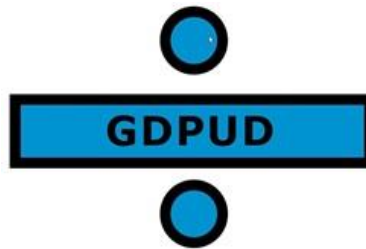


**GEORGETOWN DIVIDE PUBLIC
UTILITY DISTRICT**

**SEWER SYSTEM
MANAGEMENT PLAN**

September 2018

Prepared By:



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1.0 INTRODUCTION

This Sewer System Management Plan (SSMP) was prepared by Georgetown Divide Public Utility District (GDPUD) in June 2010 to comply with California State Water Resources Control Board (SWRCB) *Statewide General Waste Discharge Requirements for Wastewater Collection Agencies* (GWDR), dated May 2, 2006 (Order No. 2006-0003) and *Amending Monitoring and Reporting Program* (Order No. WQ 2013-0058-EXEC) included in Appendix A. The GWDR requires each agency must develop and implement a system-specific SSMP.

The purpose of this SSMP is to comply with regulatory mechanisms detailed in the GWDR for all agencies that own or operate sanitary sewer collection systems greater than one mile in length that collect and/or convey untreated or partially treated wastewater to a publicly owned treatment facility. The ultimate goal of the GWDRs is to reduce the frequency and volume of sanitary sewer overflows (SSOs) by requiring agencies to properly operate, maintain and manage their wastewater collection system.

According to the GWDRs, each agency must develop and implement a system-specific SSMP every 5-years

1.1 Development Plan and Schedule

The organization of this document is consistent with the Statewide GWDR. The SSMP includes twelve elements. Each of these elements forms a section of this document. There are specific completion dates identified in the schedule that relate to the specific elements required in the GWDR. The specific elements and completion dates are as follows:

SSMP Development Plan and Schedule

1. Goals
2. Organization Structure
3. Legal Authority
4. Operation and Maintenance Program
5. Design and Performance Provisions
6. Overflow Emergency Response Program
7. Fats, Oil and Grease (FOG) Control Program
8. System Evaluation and Capacity Assurance Plan
9. Monitoring, Measurement and program Modifications
10. SSMP Program Audits
11. Communication Program
12. Final SSMP Completion and Certification

1.2 GDPUD Service Area

1.2.1 Auburn Lake Trails On-Site Wastewater Disposal Zone

The Auburn Lake Trails Subdivision (Subdivision) is located off Hwy. 193, approximately two-miles East of Cool in El Dorado County, California. The Subdivision encompasses an area of approximately 2,500 acres and was created in 1972 by the Trans-Land Company (Figure 1). A legal dispute developed between the property owners and the developer over wastewater disposal and other issues which was eventually settled in 1984. As a result of the legal settlement, the density of the Subdivision was reduced from 1850 lots to 1,100 total lots and GDPUD became the regulatory agency responsible for wastewater disposal within the Subdivision, and the owner of the Community Disposal System (CDS). The Auburn Lake Trails On-Site Wastewater Disposal Zone (Zone) was formed on March 19, 1985. The purpose of the Zone is to preserve and protect the environment and public health through an approved management program for individual and small community waste disposal systems in lieu of an area-wide sewage collection, treatment, and disposal system. As set forth in the Resolution 84-6, (a copy of which is included in Appendix B) GDPUD shall investigate, test, design, operate, monitor, inspect and if necessary, maintain and repair the On-Site Wastewater Disposal Systems within the Zone at the individual homeowner's expense.

There are currently 1,017 developed lots within the Subdivision. A total of 880 lots in the Subdivision presently utilize some type of individual on-site wastewater disposal system and 137 homes are presently connected to the CDS with a build-out capacity of 139 homes.

Subdivision lots that could not support an individual on-site wastewater disposal system were connected to the CDS system. The CDS collects septic tank effluent from each residential septic tank; this partially treated wastewater flows by gravity or is pumped to the collection system. The collection system consists of approximately 13,300 feet of collector mains that are 4 to 8 inches diameter PVC, ABS or ACP pipe. There is a limited amount of HDPE pipe where a section of pipe was repaired. The wastewater effluent flows by gravity to a lift station. From the lift station, effluent is pumped to large disposal fields for additional treatment and disposal. There are a total of 38 manholes, a lift station and wet well and approximately 2,950 feet of force main all connected to the community disposal fields. The lift station is equipped with an emergency backup generator and transfer switch that automatically activates when there is a power outage. The lift station is also equipped with a high-level alarm which when activated, alerts GDPUD personnel through a phone/radio alarm system. Should the need arise; emergency chlorination system is available for GDPUD use. The lift station currently utilizes a duplex pump system so that if one pump fails, the other pump remains in operation. In addition, back-up pumps are also stored at the lift station as an additional failsafe measure. An ultrasonic flow meter at the CDS lift station continuously monitors wastewater flows being discharged to the disposal fields.

The community disposal fields consist of approximately 11,600 lineal feet of disposal trench. GDPUD increased the size of the community disposal fields in 2000 and retrofitted the old field with trench valves and distribution structures. The existing disposal field consists of 4,900 lineal feet of trench. The community disposal fields are permitted to dispose of an average daily wastewater of 71,800 gallons. The disposal field is divided into five separate areas, utilizing an interconnecting underground piping system. Effluent is distributed to the various disposal zones on a systematic basis to maximize treatment and ensure longevity.

Detailed maps of the CDS, identifying sewer mains, manholes, lift stations and community disposal fields are shown on Figure 2.

2.0 GOALS

This SSMP element identifies goals GDPUD has set for the management, operation and maintenance of the sewer collection system and discusses the role of the SSMP in supporting these goals. These goals provide focus for GDPUD staff to continue high-quality work and to implement improvements in the management of the GDPUDs wastewater collection system. This section fulfills the goals requirement of the SWRCB SSMP requirements.

2.1 Regulatory Requirements for Goals Element

The summarized requirements for the goals element of the SSMP are as follows:

GWDR Requirements

The goal of the SSMP is to provide a plan and schedule to properly manage, operate, and maintain all parts of its wastewater collection system. This will help reduce and prevent SSOs, as well as to mitigate any SSOs that occur.

2.2 Goals Discussion

“Protecting public health and environmental quality by conscientious management of the onsite wastewater disposal zone” is a key component to fulfilling GDPUDs mission statement.

In support of this mission, GDPUD has developed the following goals for the operation and maintenance of its sewer collection system in the Zone:

- Minimize the number and impact of SSOs that occur;
- Prevent unnecessary damage to public and private property associated with SSOs;
- Cost-effectively manage, operate, and maintain or improve all portions of GDPUD wastewater collection system in order to provide reliable service;
- To provide adequate capacity to convey the peak wastewater flows to reduce inflow and infiltration in the collection system;
- Meet all applicable regulatory notification and reporting requirements; and
- Perform all operations in a safe manner to avoid personal injury and property damage.

The SSMP will contribute to the proper management of the collection system and assist GDPUD in minimizing the frequency and impacts of SSOs by providing guidance for appropriate maintenance, capacity management and emergency response.

3.0 ORGANIZATION

3.1 Regulatory Requirements for Organization Element

The summarized requirements for the Organization element of the SSMP are as follows:

GWDR Requirements

The collection system agency's SSMP must identify:

- The name of the responsible or authorized representative;
- The names and telephone numbers for management, administrative, and maintenance positions responsible for implementing specific measures in the SSMP program. The SSMP must identify lines of authority through an organization chart or similar document with a narrative explanation; and
- The chain of communication for reporting SSOs, from receipt of a complaint or other information, including the person responsible for reporting SSOs to the State and Regional Water Board and other agencies if applicable (such as County Health Officer, County Environmental Health Agency, Regional Water Board, and/or State Office of Emergency Services (OES)).

3.2 Organization Discussion

This section discusses the organization and roles of GDPUD Zone staff, the authorized representative to the SWRCB and key staff responsible for implementing and maintaining the SSMP.

The organization chart for the management, operation and maintenance of GDPUD's wastewater collection system is shown on Figure 3. The names and phone numbers of staff filling these positions are included on Table 1.

3.3 GDPUD's Responsible or Authorized Representative

The General Manager is GDPUD responsible or authorized representative that is formally authorized by the governing body of the organization to sign GDPUD's application for the State GWDR. This application was submitted prior to the regulatory deadline of November 2, 2006.

This person is also responsible for the monthly electronic SSO reporting and for the preparation of the SSMP. The General Manager has delegated and authorized the Water Resources Manager to submit SSO reports to the appropriate government agencies on his behalf.

3.4 Description of General Responsibilities

Board of Directors

Establish policy, approve contracts and approve annual budget.

General Manager

Enforces policy, plans strategy, leads staff, allocates resources, delegates responsibility, authorizes outside contractors to perform services and serves as the public information officer.

Water Resources Manager

Coordinates development and implementation of the SSMP, prepares planning documents and regulatory compliance reports, coordinates the water quality monitoring and reporting program, manages field operations and maintenance activities, prepares and implements contingency plans, oversees emergency response, investigates and reports SSOs and provides training to Zone workers and oversees enforcement action.

ZONE Workers

The Zone worker performs the following types of inspections of all onsite wastewater systems within the Zone: routine, escrow, complaint, owner request for service, new construction and follow up inspections. Both staff persons operate and maintain all components of the CDS pump station, leach fields and collection system which includes preventive and corrective maintenance activities. The Zone workers would also respond to notification of stoppages and SSOs and would ensure that new and rehabilitated assets meet agency standards. The lead Zone worker maintains the database, and conducts initial and follow-up enforcement action and provides monthly reports to the Water Resources Manager and General Manager.

3.5 Chain of Communication for Reporting SSOs

Figure 4 contains a flowchart depicting the chain of communication for responding to and reporting SSOs, from observation of an SSO to reporting the SSO to the appropriate regulatory agencies. Table 1 lists contact phone numbers for the parties included in the chain of communication. The SSO Reporting process is described in more detail in Section 7.0 entitled "Overflow Emergency Response Plan".

4.0 LEGAL AUTHORITY

4.1 Regulatory Requirements for Legal Authority Element

The summarized requirements for the legal authority element of the SSMP are as follows:

GWDR Requirements

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

- Prevent illicit discharges into its wastewater collection system (examples may include infiltration and inflow (I/I), storm water, chemical dumping, unauthorized debris and cut roots, etc.);
- Require that sewers and connections be properly designed and constructed;
- Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the public agency;
- Limit the discharge of fats, oils, and grease and other debris that may cause blockages; and
- Enforce any violation of its sewer ordinances.

4.2 Discussion

The Subdivision is a 1,100-lot residential subdivision that was created in 1971 based on utilizing onsite wastewater disposal systems. A CDS is used for 139 subdivision lots that could not support an individual on-site wastewater disposal system. The CDS collects septic tank effluent from each residential septic tank; this partially treated wastewater flows by gravity or is pumped to the collection system. The collection system consists of approximately 13,300 feet of collector mains that are 4 to 8 inches diameter PVC, ABS or ACP pipe. The wastewater effluent flows by gravity to a lift station. From the lift station, effluent is pumped to large disposal fields for disposal. There are a total of 38 manholes, a lift station with a wet well and approximately 2,950 feet of force main connected to the community disposal fields.

After a legal dispute was settled between the ALT Property Owner's Association (POA) and the developer, GDPUD became the regulatory agency responsible for managing the onsite wastewater disposal within the Subdivision, and the owner of the CDS. The Zone was formed on March 19, 1985, pursuant to California Health and Safety Code Section 6950 et sequentia. The purpose of the Zone is to preserve and protect the environment and public health through an approved management program for individual and small community waste disposal systems in lieu of an area-wide sewage collection, treatment, and disposal system. As set forth in the Resolution 84-6, (Appendix B) GDPUD shall investigate, test, design, operate, monitor, inspect and if necessary, maintain and repair the On-Site Wastewater Disposal Systems within the Zone at the individual homeowner's expense.

The California Regional Water Quality Control Board adopted updated waste discharge requirements WDR in 2002 (Order No. R5-2002-0031). The WDRs prescribes requirements for the discharge of domestic wastewater from individual residential onsite domestic waste disposal systems and the community disposal system and establishes an ongoing monitoring program.

GDPUD has adopted several resolutions and an on-site wastewater ordinance that provides the authority to fulfill our legal obligations to design, test, investigate, operate, maintain and inspect all the on-site wastewater disposal systems and the CDS system within the Zone. GDPUD does not have a specific sewer use ordinance that applies to the existing CDS system. It is the intent of GDPUD to develop and adopt a sewer use ordinance to clarify and enhance GDPUDs legal authority and would include the following as a minimum:

- Prevent illicit discharges into its wastewater collection system to include storm water, chemical dumping, unauthorized debris and cut roots, etc.;
- Require that sewers and connections be properly designed and constructed;
- Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the Public Agency including a clarification on the ownership of the service lateral.
- Limit the discharge of fats, oils, and grease and other debris that may cause blockages, and
- Enforce any violation of its sewer ordinances.

It is anticipated that the ordinance will be developed and adopted by GDPUD's Board of Directors.

4.3 Legal Authority

The following is a discussion of GDPUD's current legal authority as it relates to prevention of inflow and infiltration, access, proper design and construction and enforcement measures.

Prevention of Illicit Discharges

GDPUD's resolution 2002-15 establishes standards for the CDS sewer tie-in and clean-out requirements, requires that the septic tank and service lateral be watertight and requires watertight testing of all septic tanks and building sewer lines connected to the CDS system to prevent inflow and infiltration.

Proper Design and Construction of Sewer and Connections

GDPUD's resolution 1985-09 requires approval of plans and specifications for CDS sewer connection prior to construction and requires all new design and construction of systems connected to the CDS to meet GDPUD Design and Construction Standards. GDPUDs Resolution 2002-15 requires that a two-way cleanout be provided where the sewer line connects to the CDS collection system. There will be no expansion of the CDS system so design and construction standards primarily apply to new septic tank/service lateral construction and repair or rehabilitation of existing

collector mains. However, the design and construction standards will be updated to include sewer rehabilitation projects.

Lateral Maintenance Access

GDPUD rules need to clarify that the property owner is responsible for maintenance, inspection or repairs of the lateral on private property. GDPUD does have the legal authority to access the system, including the service lateral for maintenance, repair, testing, etc. through a grant and easement recorded for each lot on the CDS. In addition, California Health and Safety Code Section 6977 authorize GDPUD the right to enter any premises to secure compliance with Zone requirements.

Limit Discharge of Fats, Oil, and Grease and Other Debris

GDPUD is required by the WDRs to monitor the sewage effluent from the CDS system for FOG quarterly. Sample results have demonstrated that FOG is currently not a problem as the CDS only handles liquid effluent for residential septic tanks.

Enforcement Measures

The WDRs, GDPUD resolutions and the California Health and Safety Code give GDPUD authority to require property owners served by the CDS to make all necessary repairs and to abate any public health nuisances after standard notification by GDPUD. If repairs are not made, GDPUD can make the repairs and bill the homeowner. If the bill is not paid, GDPUD can place a lien on the property. GDPUD is in the process of developing and adopting an ordinance that will clarify and update these enforcement measures.

Documents associated with the legal authority section of the SSMP are included in Appendix A and B.

5.0 OPERATIONS AND MAINTENANCE PROGRAM

A good preventive maintenance program is one component in keeping a system in good repair and preventing excessive I/I, service interruptions, and system failures, which can result in SSOs. A preventive maintenance program can also help in protecting the capital investment in the collection system.

5.1 Regulatory Requirements the Operation and Maintenance Program

GWDR Requirements

The SSMP must include those elements listed below that are appropriate and applicable to the collection system agency's system:

- 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 storm water conveyance facilities;
- Describe routine preventive 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;
- 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 closed circuit television (CCTV) inspections of manholes and sewer pipes, and a system for ranking the condition of sewer pipes and scheduling rehabilitation. Rehabilitation and replacement should focus on sewer pipes that are at risk of collapse or prone to more frequent blockages due to pipe defects. Finally, the rehabilitation and replacement plan should include a capital improvement plan 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;
- Provide training on a regular basis for staff in sanitary sewer system operations and maintenance, and require contractors to be appropriately trained; and
- Provide equipment and replacement part inventories, including identification of critical replacement parts.

5.2 GDPUD Collection System Maps

The original collection system was designed for 139 residential homes in the Subdivision. The WDR and Settlement Agreement limit the number of homes to 139 so there will be no expansion of this

system. The original hard copy maps are maintained at GDPUD office. An electronic map of the sanitary sewer system is available showing all gravity sewer line segments (approximately 13,300 feet of pipe), size of pipes, 38 manholes and one pump lift station. Maps are updated when components of the system are repaired, rehabilitated or replaced. GDPUD is currently updating its mapping system and developing an asset management program to allow more effective programming of prevention maintenance/repairs.

5.3 Operation and Maintenance Program

To ensure proper operation of the collection system, GDPUD Zone staff perform routine preventative operation and maintenance activities including inspections at the frequency detailed below.

Routine Inspection of Key Collection System Components		
System Components	Inspection Routine	Lead Responsibility
Inspect lift stations and alarms for general operation	Once per week	GDPUD Zone Staff
Inspect 20% of sewer collection system	Annually	GDPUD Zone Staff
Inspect all 38 manholes	Annually	GDPUD Zone Staff
Smoke testing of sewer collection system	Annually	GDPUD Zone Staff
Check generator for proper operation	Once per week	GDPUD Zone Staff

5.3.1 Cleaning Program

The sewer collection system only conveys liquid sewage effluent. Each home on the system has their own individual septic tank which collects and stores the wastewater solids until the tank is pumped out. Every tank is inspected annually and pumped out when the sludge/scum level is 25 percent or more of tank capacity. There has never been a main line stoppage or sewer overflow due to accumulated debris in the pipe such as sand, silt, grease, roots and rocks. If roots or other debris is identified through the CCTV program, GDPUD will contract with a sewer cleaning service to clean and/or flush the lines.

5.3.2 Sewer Collection Inspection

GDPUD currently has one full time staff to inspect and maintain the sewer collection system and pump lift station. Inspections of the sanitary sewer system are a routine and essential duty for the Zone staff. Regular inspections can help troubleshoot and minimize problems with the collection system. Connections to the system and unwanted sources of inflow are identified through sewer inspections. As part of the sewer cleaning process, crews inspect and report on any problems or deficiencies within the sanitary sewer system.

GDPUD has the equipment necessary for performing CCTV inspections and smoke testing. GDPUD's goal is to conduct CCTV inspections on 20 percent of the collection system each year, resulting in a complete inspection over a five-year period. Priority will be given to those lines that

have had historical problems. Results of the CCTV inspections are used to determine low, medium, and high areas of concern within the collection system, increase cleaning efforts and develop a capital improvement program (CIP) to correct the areas of concern where practical.

The inspection program consists of the following:

A. Visual Inspections

Visual inspections are performed on the sewer system manholes at a higher frequency than CCTV inspections because of the relative ease of performance. Each of the 38 manholes is visually inspected annually. This type of inspection can give a good indication as to the condition and proper functioning of the collection system and generally includes:

B. Manhole Inspection (conducted annually)

- Frame and cover
- Grade adjustments
- Flow surcharging
- Manhole bottom channels
- Structural integrity/manhole degradation
- I/I into manhole
- Other miscellaneous problems

C. Sewer Pipeline Inspection (20% of the system inspected annually)

- Abnormal amount of debris in line
- Excessive amounts of grease in line
- Blockage or obstruction in line
- Excessive flow (relative to upstream flows)
- Any miscellaneous problem

Any of the above items would result in further study of the sewer and include CCTV inspection, sewer repair, or manhole repair. Field crews have the authority to write up anything they deem to be a problem or potential problem to the sewer system.

1. CCTV Inspection

- In connection with I/I investigation work
- Condition assessment for justifying sewer rehabilitation work
- Routine check on the effectiveness of sewer cleaning

2. CCTV Inspection

The sewage pump station is not manned continuously. It is fully automated and is inspected on a weekly basis by GDPUD Zone staff for visual alarms, audible alarms (where applicable), and general troubleshooting. Pump run times are recorded to determine if pumps are operating properly. The following information and observations are noted on the “Lift Station Inspection Report” form contained in Appendix C. The emergency generator is also run and checked for proper operation:

- Duplex pump operation (check both pumps, controls, check valves, flowmeter, etc.);
- Flow monitoring and drawdown test, if necessary;
- Alarm condition and operation;
- Emergency generator inspection and operation;
- Structural integrity of the pump station vault; and
- Any miscellaneous problems.

Once per year, all lift station pumps are lifted from the wet well and inspected. The condition of each of the following components is noted: oil level, oil condition, wear rings, case, pull cable, cord seal, noise, vibration, level sensor, floats, panel, warning lights, and amperage draw. All observations are recorded on inspections forms included in Appendix C.

5.3.3 Maintenance

The Zone has maintenance programs and schedules to minimize the inflow and infiltration, service line stoppages, lift station failures, and calls for service. The following duties are performed regularly and as needed:

- Routine maintenance and weekly inspection of lift stations;
- Pump maintenance (annually);
- Generator maintenance (annually);
- Manhole repair and coating;
- CCTV inspection of service lines and repair as needed. If a significant repair or rehabilitation is needed, this work is subcontracted to a professional company;
- Application of chemical root control, if necessary; and
- Inspection of service lateral installation and replacement and septic tank installation.

5.3.4 Construction/Repair

GDPUD Zone staff can perform small routine and emergency repairs on the Zone sewer infrastructure, if needed. Significant repair work includes sanitary sewer replacements, spot repairs, lateral and service tap replacements, manhole repairs and rehabilitation. Majority of this repair work is conducted by a licensed subcontractor.

5.4 Condition Assessment

There are three basic parts of a sanitary sewer system: pipelines, manholes and pump stations. New sewers, manholes and pump stations generally are in good condition and, therefore, pipes do not plug (causing overflows), manholes do not leak groundwater and pump stations do not fail and overflow. As they age, pipelines can get roots growing into them (looking for water), the pipes can crack or break, and they can develop leaks where groundwater enters the pipe causing excessive I/I. As manholes age, they can start leaking groundwater through their walls, they can allow surface water to enter through the lid during rainstorms and the concrete can deteriorate from a reaction to sewer gasses. Sewer pump stations are mechanical and have a certain life to them. At different times during that life, various parts will need rehabilitation and/or replacement.

A condition assessment is a review of the three basic parts of a sewer system to determine their condition. This review is performed by an inspection of each part. Sewer pipelines are first inspected by closed circuit television. A camera is run through the entire length of the sewer allowing the operator to view (and record on tape) the condition of the inside of the sewer pipe. Roots, grease buildup, structural defects and I/I can be easily seen and recorded.

Sewer pipelines are also inspected by "Smoke Testing". In an effort to find sources of inflow (surface water entering the sewer system), non-toxic smoke is forced into the sewer system with blowers. The smoke moves up the pipes and sewer services to structures and eventually comes out through building plumbing roof vents. When smoke surfaces at other locations than roof vents, like illegal drains connected to the sewer, open cleanouts and cracks in the sewer pipe, the locations are noted and corrected. Manholes are also inspected enabling their conditions to be noted and recorded.

Pump stations are somewhat different. They are normally visited once a week while normal preventative maintenance is performed. As deteriorated conditions are noted, they are placed on a rehabilitation program for pump stations.

5.5 Rehabilitation and Replacement Plan

In addition to our normal repair work, GDPUD has adopted a capital improvement program for manhole and sewer collection repair and rehabilitation projects. Once each pipe/manhole is inspected, it is assigned a rating score that includes factors for the probability of failure and the criticality of the asset (risk assessment). Pipes/manholes with high scores are included in the rehabilitation/replacement plan which evaluates the appropriate action needed, the anticipated cost and a schedule for implementation.

GDPUD is committed to reducing the I/I into the system and the long-term sustainability of the system. The objective of all rehabilitation work is to improve the structural integrity, restore the hydraulic capacity of pipes, and the reduction of I/I into the sanitary sewer system.

GDPUD has several methods for scheduling and funding rehabilitation and replacement of existing equipment within the collection system:

1. Routine maintenance is budgeted annually and is planned by GDPUD staff as scheduled and/or needed; and
2. The CIP can be used for equipment and line replacement and/or rehabilitation. Equipment replacement reflects inspection reports recorded during routine maintenance, input from GDPUD staff and results of consultant/contractor evaluations of the collection system. GDPUD has several goals to improve the current rehabilitation and replacement plan. These goals include:
 - Develop a list of projects and the time frame for replacement needs of equipment and parts. The list will be vital for developing a schedule for implementing short and long-term needs and coordinating funding for those needs;
 - Develop a formal method for using available operation and maintenance data such as inspection reports, historical SSOs and field observations to rank the condition of parts of the collection system. Use the results of the ranking for scheduling rehabilitation activities; and
 - Develop an asset management program.

5.6 Training

Training is an important element of the job. Training helps to increase job knowledge, provides the necessary skills to perform tasks safely and helps build moral with other employees. GDPUD's ongoing training program addresses competency in the following areas: operations and maintenance, emergency response, and safety practices.

Training to all wastewater staff is documented and signed by each attendee. GDPUD's training program consists of the following:

- GDPUD has standard operating procedures for SSO response and mitigation;
- Monthly safety meetings are held and a sign-in log is maintained;
- Online safety classes through target safety, such as lock-out/tag-out, electrical safety, eye safety, materials handling, storage, use & disposal, personal protective equipment, etc.;
- Employee certifications and training; and
- Employees shall be knowledgeable of and re-trained in the confined space requirements as required, although if confined space entry is required for repair work, a subcontractor is generally used.

5.7 Equipment and Critical Replacement Parts

Operation and maintenance (O&M) manuals for most of the pump station equipment are available. The O&M manuals contain manufacturer information pertaining to recommended maintenance procedures and parts lists. A small inventory of spare parts is maintained by GDPUD. Larger parts such as impellers and motors for pumps are ordered as needed or sent out for repairs. Because the pump station is designed with one redundant pumping unit, sufficient time is typically available for ordering replacement parts and repairing the units. Information on the pumps at the existing pump lift stations is provided in Appendix D. Additional inspection and maintenance forms are included in Appendix C.

6.0 DESIGN AND PERFORMANCE PROVISIONS

6.1 Regulatory Requirements for Design and Performance Provisions Element

GWDR Requirements

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

6.2 Proper Design, Construction and Performance Testing of Septic Tanks, Service Laterals, Sewer Collection System and Pump Station

The existing Zone Rules requires approval of plans and specifications for CDS sewer connection prior to construction and requires all new design and construction of systems connected to the CDS to meet GDPUD standards. GDPUD Resolution 2002-15 also requires that a two-way cleanout be provided where the sewer line connects to the CDS collection system. There will be no expansion of the CDS system so design and construction standards primarily apply to replacement septic tank/service lateral construction and performance testing and repair or rehabilitation of existing collector mains, manholes and pump station. The existing *Georgetown Divide Public Utility District Improvement Standards for Water and Sewer Systems, dated 2001* is being used to meet this standard; however, will need to be updated is included in Appendix E.

7.0 OVERFLOW EMERGENCY RESPONSE PLAN

7.1 Regulatory Requirements for the Overflow Emergency Response Plan Element

The summarized requirements for the Overflow Emergency Response Plan element of the SSMP are as follows.

GWDR Requirements

The collection system agency shall develop and implement an overflow emergency response plan that identifies measures to protect public health and the environment. At a minimum, this plan must include the following:

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

7.2 Notification Procedures

GDPUD SSO notification procedures are as follows: SSO notification procedures are contained in GDPUD *Sanitary Sewer System Overflow Prevention and Response Plan*, and a copy is located in the on-call vehicle and at the Station 16 pump station. The procedures are in a three ring binder and are available to all staff responsible for responding to SSOs, mitigating SSOs and reporting SSOs. The organizational response plan and chain of communication chart are included as Figure 4 and

the complete written response plan including names and contact information is located in Appendix F. The SSO procedures are reviewed annually and updated as necessary. This helps to ensure timely SSO response, migration and reporting. GDPUD's notification procedures are illustrated on Figure 5.

7.3 Training

Initial and annual refresher training in sewer overflow response will be provided to all employees to ensure they are appropriately trained. SSO response exercises will be held to ensure that employees are up to date on the procedures, to verify the equipment is in working order, and the required materials are readily available. The training exercises should cover scenarios typically observed during sewer-related emergencies. Records shall be kept of all training that is provided in support of this plan.

8.0 FATS, OILS AND GREASE CONTROL PROGRAM

FOG in sewer pipes are the cause of most SSOs in smaller diameter pipes. All three form solids as they cool in the sewer, mix with other solids and then stick to the sewer pipe. The solid FOG then starts to build up until finally it completely plugs the sewer causing a backup which overflows. The FOG buildup may be at a joint in the pipe, at a broken section of pipe or at roots intruding into the pipe. Although broken pipe and roots can cause blockages of their own, by controlling the amount of FOG that gets into a sewer system, the frequency of SSOs can be reduced.

8.1 Regulatory Requirements for the FOG Element

GWDR Requirements

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

- An implementation plan and schedule for a public education outreach program that promotes proper disposal of FOG;
- 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;
- The legal authority to prohibit discharges to the system and identify measures to prevent SSOs and blockages caused by FOG;
- Requirements to install grease removal devices (such as traps or interceptors) design standards for the grease removal devices, maintenance requirements, BMP requirements, record keeping and reporting requirements;
- Authority to inspect grease producing facilities, enforcement authorities, and whether GDPUD has sufficient staff to inspect and enforce the FOG ordinance;
- An identification of sewer system sections subject to FOG blockages and establish a cleaning maintenance schedule for each section; and
- Development and implementation of source control measures, for all sources of FOG discharged to the sewer system, for each sewer system section identified above.

8.2 Existing ALT CDS Sewer Collection System

The existing sewer collection system in Auburn Lake Trails is very small, containing approximately 2.5 miles of collection pipeline. There are currently 137 homes connected to GDPUD's CDS collection system. Each individual home has their own septic tank where wastewater solids and fats, oils and grease are collected and periodically pumped out. The effluent flows by gravity (a few homes have pump systems) to GDPUD's sewer pipes, then flows to the pump station where the effluent is pumped to a series of community leach fields. There are only two more lots expected to connect to this system. It only serves residential homes and there has never been a FOG related SSO in the system or the individual septic tanks. The wastewater effluent is monitored quarterly at the pump station for FOG. This monitoring has demonstrated that FOG is not a problem in this system.

8.3 Selected FOG Source Control and Public Education Outreach Program

Due to the lack of grease in the sewer system, the most appropriate FOG Source Control and Public Education Outreach Program would be to continue the existing program of disseminating public information materials on the proper use and maintenance of septic tanks to new homeowners when the property is sold and to existing homeowners during the annual septic tank inspection. A formal FOG program is not needed at this time.

Septic system information documents intended for public education are included in Appendix G.

9.0 SYSTEM EVALUATION AND CAPACITY ASSURANCE PLAN

9.1 Regulatory Requirements for the System Evaluation and Capacity Assurance Element

GWDR Requirements

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

- **Evaluation** – Actions needed to evaluate those portions of the sanitary sewer system that are experiencing or contributing to an SSO discharge caused by hydraulic deficiency. The evaluation must provide estimates of peak flows (including flows from SSOs that escape from the system) associated with conditions similar to those causing overflow events, estimates 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;
- **Design Criteria** – Where design criteria do not exist or are deficient, undertake the evaluation identified above to establish appropriate design criteria;
- **Capacity Enhancement Measures** – The steps needed to establish a short- and long-term CIP to address identified hydraulic deficiencies, including prioritization, alternatives analysis, and schedules. The CIP may include increases in pipe size, I/I reduction programs, increases and redundancy in pumping capacity, and storage facilities. The CIP shall include an implementation schedule and shall identify sources of funding; and
- **Schedule** – The collection system agency shall develop a schedule of completion dates for all portions of the capital improvement program developed above. This schedule shall be reviewed and updated consistent with the SSMP review and update requirements.

9.2 Sewer System Capacity Analysis of the CDS system

9.2.1 Background

The Auburn Lake Trails Community Disposal system is located in the Auburn Lake Trails subdivision near Hwy 49 and 193 in El Dorado County, California. The collection system receives graywater discharge from residences that have their own on-site septic tank systems. Sewage effluent is collected from the residences through 4", 6", and 8" mains and flows to a sewage lift station operated by Georgetown Divide Public Utility District. The sewage pump station contains submersible pumps that direct the flows to a community leach field disposal system for disposal.

The system was designed and installed in the mid 1980's. The system was designed to accommodate connection of 139 single-family residential lots at buildout. Currently, the system serves 137 lots.

9.2.2 Current System Description

The collection system contains a total of 38 manholes, approximately 13,360 linear feet of collection main, a sewage lift station with submersible pumps, approximately 2,950 linear feet of discharge force main, and a community disposal leach field (Figure 2).

According to the design plans prepared by Larry Walker Associates, entitled Auburn Lake Trails Community Collection System Expansion, the collection system contains 4", 6", and 8" PVC, ABS and ACP pipe. As additional homes have connected to the existing main collection system, ABS or HDPE pipe has been extended from the home to the main line.

Each home which is connected to this system has its own septic tank which treats the waste generated at the source prior to flowing to the main collection system. After settling in the septic tank, flows continue to the main collection system. Flows continue through the collection system to the lift station, referred to as Lift Station 16, where the flow is centralized and then pumped to the community leach field system. Flows are applied to various zones of soil in the leach field for final disposal.

9.2.3 System Flows

System flows including the Average Daily Flow (ADF) and Average Dry Weather Flow (ADWF), June through August, are based on recorded flows collected from the lift station. ADF and ADWF for the past 5-years were recorded at 21,197 gallons per day (gpd) and 17,700 gpd. Monthly historical readings are presented in Table 2.

The ADF per lot is thus $21,197 \text{ gpd} / 137 \text{ lots} = 198 \text{ gpd/lot}$. At ultimate buildout, and additional two lots can be added to the existing collection system. Using the ADF of $198 \text{ gpd/lot} \times \text{two lots} = 396 \text{ gpd}$, the ADF for the system at buildout shall be based on $21,197 \text{ gpd} + 396 \text{ gpd} = 27,593 \text{ gpd}$.

A peaking factor is applied to ADWF to determine peak flows (PF) throughout the day. Peaking factor used during the 2010 SSMP of 3.8 will be applied to 2018 SSMP calculations to determine Peak Dry Weather Flow (PDWF) and Peak Wet Weather Flow (PWWF). Calculations were completed as follows:

PDWF is calculated as follows:

$$PDWF = ADWF \times PF$$

The PDWF can be used to calculate the Peak Wet Weather Flow (PWWF) using groundwater infiltration (GWI) and rainwater dependent infiltration/inflow (RDI/I) constants as follows:

$$PWWF = PDWF + GWI + RDI/I$$

Where:

GWI = 300 gallons per day per acre (gpda), groundwater < 15 feet below ground surface (bgs)

RDI/I = 2,500 gpda for sewer systems 20 to 50 years old (assumes approximately 75 service acres)

The current PDWF was calculated at 67,526 gpd and PWWF at approximately 277,526 gpd. The maximum record flow during the five-year historical period occurred in January 2017 at a flow of 89,599 gpd.

9.2.4 Infiltration and Inflow

Groundwater and rain-induced inflow also contribute to sanitary sewer system flows. I/I amounts are assumed to be included in the PWWF rates above. GDPUD performs video-taping and smoke testing of suspect areas of the collection system to look for potential sources of I/I. Additionally, GDPUD performs water tight testing of septic tanks when they are initially installed, at the time of property transfer and when the tank is 20 years or older. All septic tanks are inspected annually for proper operation and if there is any indication that the tank might leak, it is scheduled for a watertight test. At this time, the system I/I is believed to be due substantially due to leaking septic tanks and service laterals that are at least 20 years old. Since 2002, 81 leaking septic tanks have been replaced which has substantially reduced the I/I into the collection system.

9.2.5 Collection System Capacity

The capacity of the existing collection system was evaluated based on a PWWF of 277,526 gpd. The capacity of the main trunk lines were analyzed using a Manning's coefficient of $n = .010$ for PVC and ABS pipe, and assumes that at peak wet weather flow, the pipe does not exceed a maximum depth-to-Diameter (d/D) ratio of 0.8. See the spreadsheet entitled, Sewer Collection System Capacity Analysis included in Appendix H.

The collection system was divided into sub-basins lettered A,B,C,D,E, and F as provided in design plans from Larry Walker and Associates, 1985. I/I was applied to each sub-basin based on the inch-diameter-mile of pipeline attributed to each sub-basin and using the established I/I factor of 2,600 gpd/in-diameter-mile.

According to the information available, the existing collection system capacity is more than adequate for the assumed flows and can accommodate the additional two lots that are eligible to connect to the collection system in the future.

9.2.6 Lift Station Capacity

Lift Station 16 consists of a wet well, submersible pumps, controls, and a standby diesel- powered electric generator. The wet well has a capacity of approximately 3,000 gallons and has two submersible 15 horsepower Barnes pumps. Each pump has a capacity of approximately 130 gallons per minute (gpm) at 110 feet total dynamic head (TDH) per pump based on regularly performed pump drawdown test information. With both pumps running, the flow is approximately 200 gpm (288,000 gpd). This pumping capacity exceeds the maximum PWWF of 277,526 gpd (192 gpm).

The control system has alarms for high level, low level, and loss of normal power supply which are communicated via licensed frequency radio to notify the operator in case of emergency conditions. An emergency backup diesel generator is located at the station in case of loss of electrical supply to the site.

9.2.7 Leach Field Capacity

The lift station pumps the flow to the community leach field system located approximately 3,000 feet to the east for disposal. The community leach field consists of approximately 11,600 linear feet of disposal trench separated into five disposal areas. The older portion of the leach field has approximately 4,900 linear feet of disposal trench with a capacity of 30,300 gpd based on soil percolation testing. The newer trench area installed in 2000 contains 6,700 linear feet and has a capacity of 41,500 gpd based on soil percolation testing. Thus, the total monthly average disposal capacity of the system is 71,800 gpd as permitted in the current Waste Discharge Report from the Regional Water Quality Control Board. A technical memorandum prepared by Bennett Engineering Services, entitled *Inflow and Infiltration Study*, dated February 7, 2018, calculated a capacity of 78,211 gpd. Operating practice includes rotating the use of the separate disposal areas to keep the system functioning properly.

9.2.8 Summary

The existing CDS is sufficiently sized for the number of lots planned at build-out, including the current amount of I&I received based on the monthly average flows permitted by the Regional Water Quality Control Board (RWQCB).

9.3 Capital Improvement Program

GDPUD has adopted a CIP for CDS system repairs and rehabilitation which includes manhole sealing and sewer collection repair and rehabilitation projects. Once each pipe/manhole is inspected, it is assigned a rating score that includes factors for the probability of failure and the criticality of the asset (risk assessment). Pipes/manholes with high scores are included in the rehabilitation/replacement plan which evaluates the appropriate action needed, the anticipated cost and a schedule for implementation.

The CIP program is funded from fees collected bimonthly from each homeowner. A portion of these fees are placed in a restricted CDS reserve fund that can only be used for CDS capital improvements and repairs.

10.0 MONITORING, MEASUREMENT, AND PLAN DIFICATIONS

10.1 Regulatory Requirements for the Monitoring, Measurement, and Plan Modifications

GWDR Requirements

The collection system agency shall:

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

10.2 Monitoring Program

Accurate and consistent data keeping is vital to effectively manage GDPUD wastewater system. Because of this, GDPUD will take the following steps to ensure that GDPUD wastewater system runs effectively and efficiently.

- Items identified within the SSMP that require further action are logged and assigned a priority and a proposed schedule for implementation;
- The effectiveness of the SSMP is tracked through the annual audit and reported in the annual summary report;
- The effectiveness of the preventative maintenance program is tracked by reviewing scheduled and completed preventive maintenance work and corrective maintenance work orders;
- Elements within the SSMP are updated as needed based on the results of the annual audit; and
- SSO events are reported through California Integrated Water Quality System (CIWQS). The frequency, volume, location and trends are tracked by GDPUD and assessed on an annual basis.

10.3 Utility Metrics to Prioritize SSMP Activities

GDPUD has established four categories of metrics to monitor and measure the effectiveness of the various elements of this SSMP and its success in terms of meeting its goals. Those metrics include the following categories of metric information:

- System Information;
- Financial Information;
- Sewer Maintenance; and
- Performance Measures.

10.4 Metrics to Monitor Effectiveness of SSMP

GDPUD SSMP implementation schedule assigns individual staff responsibility for each SSMP element and defines the frequency that each element must be monitored and updated to ensure that the goals of this SSMP are achieved.

10.5 Metrics to Assess Preventative Maintenance Program

GDPUD uses sewer maintenance metrics to monitor and measure and adjust maintenance program activities. These metrics are maintained and monitored on a monthly, quarterly, and annual basis. The goal of GDPUD is to prevent SSOs. The sewer maintenance measures include the following metrics and the performance measures:

Total feet cleaned per year	feet
Total feet visually inspected per year (not CCTV)	feet
Manhole inspections	Each manhole/annually
Total lineal feet CCTV inspected per year	Lineal feet
Total feet smoke tested	Lineal feet
Total lineal feet of sewer roots treated	Lineal feet
Vault and distribution vault pump-outs	annually
Number of CDS septic tanks pumped	#
Number of CDS septic tanks replaced	#

10.6 SSMP Performance Monitoring and Update Process

GDPUD SSMP implementation schedule assigns individual staff responsibility for each SSMP element and defines the frequency that each element must be monitored and updated to ensure that the goals of this SSMP are achieved.

10.7 SSO Trends – Frequency, Location and Volume

GDPUD uses performance metrics to monitor and measure and adjust maintenance program activities. These metrics are maintained and monitored on a monthly, quarterly and annual basis. The performance measures include the following:

Total number of spills per year (all spills)	Category 1 SSOs-count
	Category 2 SSOs-count
	Category 3 SSOs-count
	Private Lateral SSOs-count
Total volume of spills per year (all spills)	Gallons min/max
Total number of wet weather spills per year	Spills
Total volume of wet weather spills per year	Gallons
% Spills caused by FOG and volume	%
% Spills Caused by Roots and volume	%
% Spills Caused by Vandalism and volume	%
Customer service requests per year, actionable/responsible for	Total # SR
Total number of sewer caused odor complaints	Complaints
Total # of Pump/Lift Station SSOs per year (cause overflow)	# SSOs
Total number of pipe failures per year (cause overflow)	Volume in gallons
Average response time, goal verses actual	Breaks
Number of claims per year, flooding	Minutes
Total cost of claims per year	Claims
Total work orders performed per year	\$
% of work orders completed, emergency or corrective	Word orders
	% Emergency
% of work orders completed that are preventable	% corrective
Total lineal feet of sewer pipe repaired	%
Total lineal feet of sewer pipe lined	Lineal feet
Total lineal feet of sewer pipe bursted	Lineal feet
	Lineal feet

Monitoring and maintenance forms are included in Appendix C.

11.0 SSMP PROGRAM AUDITS

11.1 Regulatory Requirements for the SSMP Program Audits

GWDR Requirements

The collection system agency 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 your agency's compliance with the SSMP requirements, including identification of any deficiencies in the SSMP and steps to correct them.

11.2 Program Audit

As part of the SSMP, GDPUD will conduct periodic internal audits which will focus on evaluating the effectiveness of the SSMP and GDPUD's compliance with the SSMP requirements. The following steps will be taken to ensure that all programs associated with the SSMP are being implemented and managed appropriately.

- Internal audits will be performed on an annual basis to determine relevance and effectiveness of each element of the SSMP. Audits will include a review of progress on deficiencies identified in the previous year audit report. A summary of the audit results and significant findings from the Monitoring, Measurement and Program Modification Section will be created and shared with GDPUD management.
- If deficiencies or modification are identified as part of the annual audit, the SSMP shall be updated accordingly. A log will be created to document and track progress on recommended program improvements

SSMP audit forms are included in Appendix I.

12.0 COMMUNICATION PROGRAM

12.1 Regulatory requirements of the Communication Program Element

GWDR Requirements

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

12.2 Communication Program

GDPUD will continue to communicate on a regular basis with the Auburn Lake Trails residents through the Subdivision POA on the development, implementation and performance of GDPUD's SSMP. An annual newsletter was distributed in June 2010 to all GDPUD customers indicating that the SSMP was being developed.

The public can view and comment on GDPUD's SSMP on the website (www.gd-pud.org). Comments will be addressed and the SSMP revised as needed. All applicable comments and suggestions during the development and annual audit and review process will be taken into consideration. GDPUD's website will provide a list of the SSMP Sections and PDF files.

13.0 SSMP COMPLETION AND CERTIFICATION

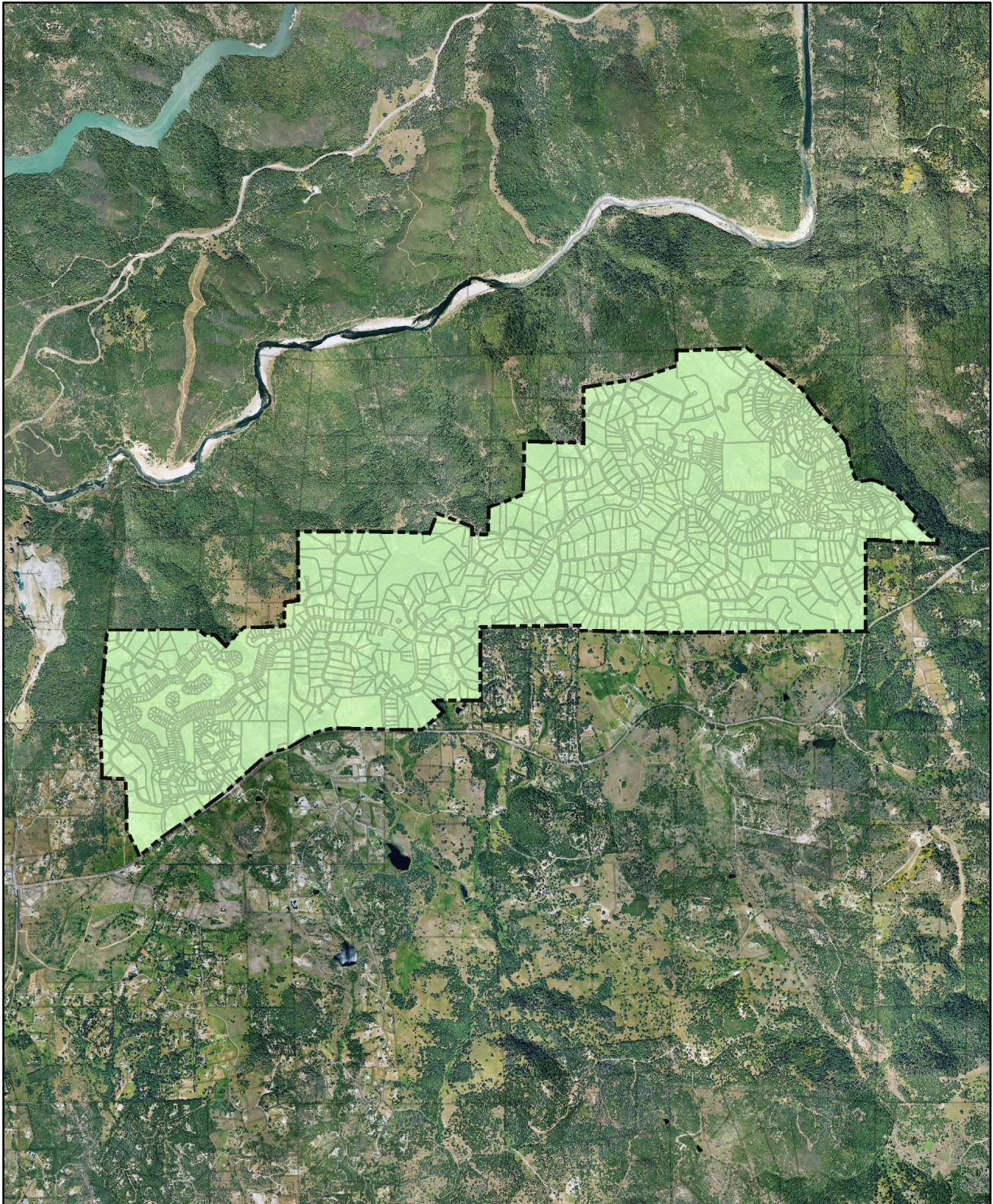
12.1 Regulatory Requirements

This section will require two actions by GDPUD on the SSMP for the Zone's CDS. Those two actions are as follows:

- The governing board is required to approve the SSMP at a public meeting.
- The authorized GDPUD representative must then certify in writing to the State Water Resources Control Board that the SSMP and their implementation are in compliance with State requirements.

This is a final step in the SSMP process and cannot be completed until all of the sections of each SSMP are written. A copy of the Board Resolution approving the SSMP is located in Appendix J.

FIGURES





Area Location Map



6425 Main Street
Georgetown, CA 95635

Legend

-  Parcel
-  Auburn Lake Trails Wastewater Treatment Zone

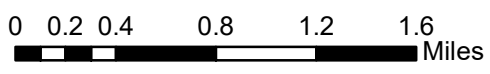
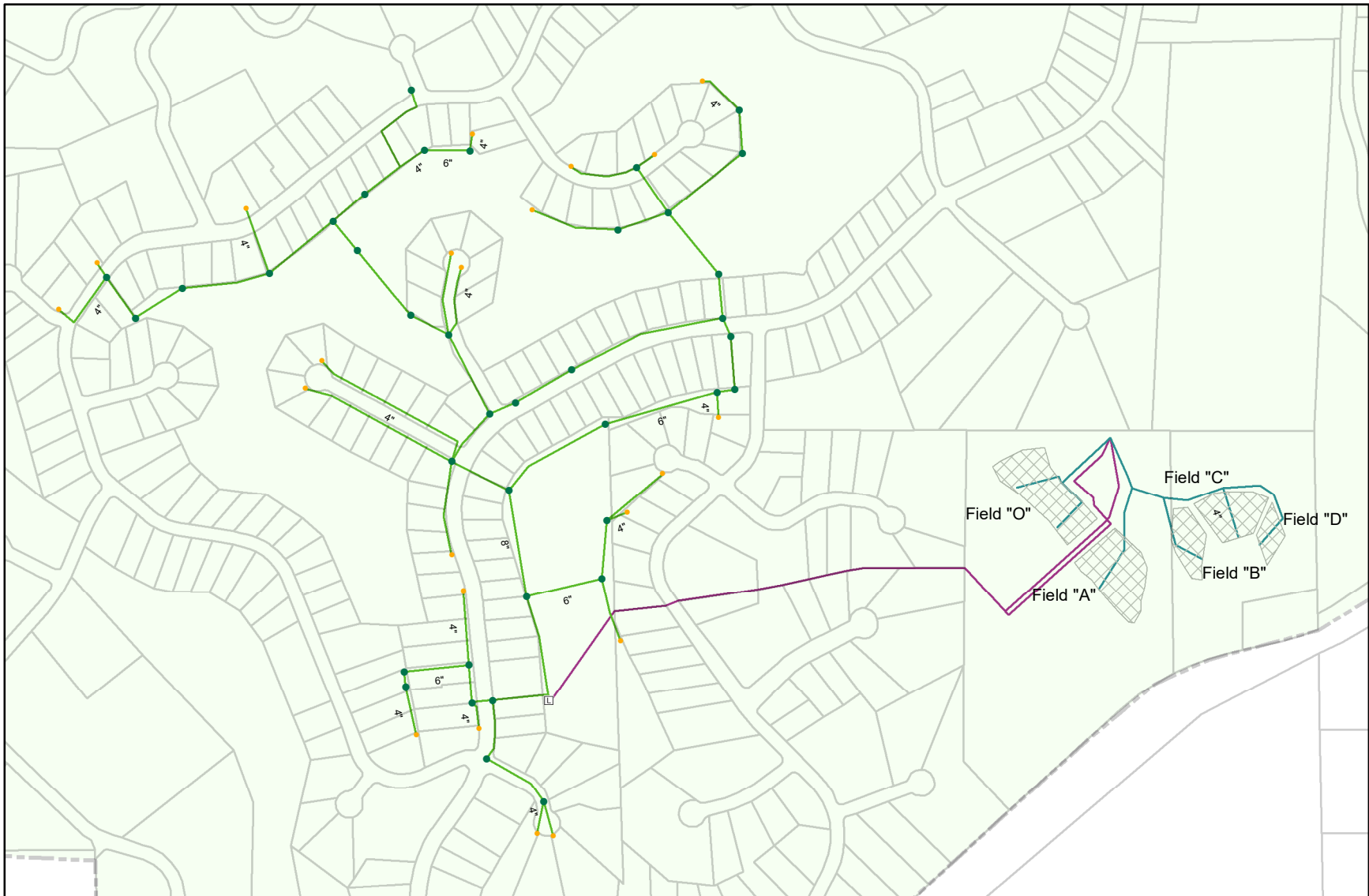


Figure 1



Community Disposal System Layout Map



6425 Main Street
Georgetown, CA 95635

Legend

- Sanitary Sewer Line
- Station 16 Pump Station Line
- Field "O" Leach Field
- L Station 16

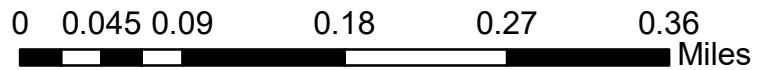
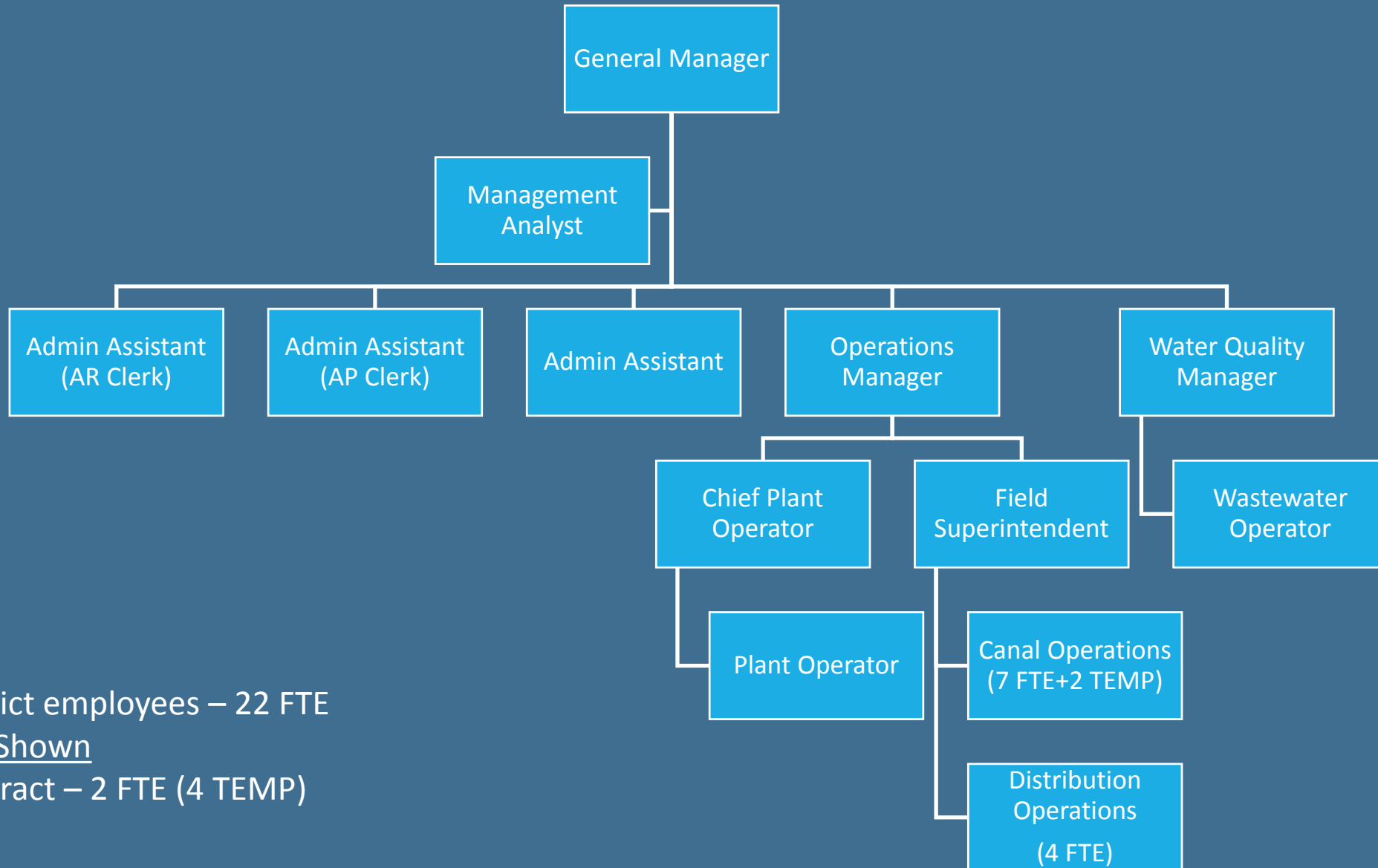


Figure 2

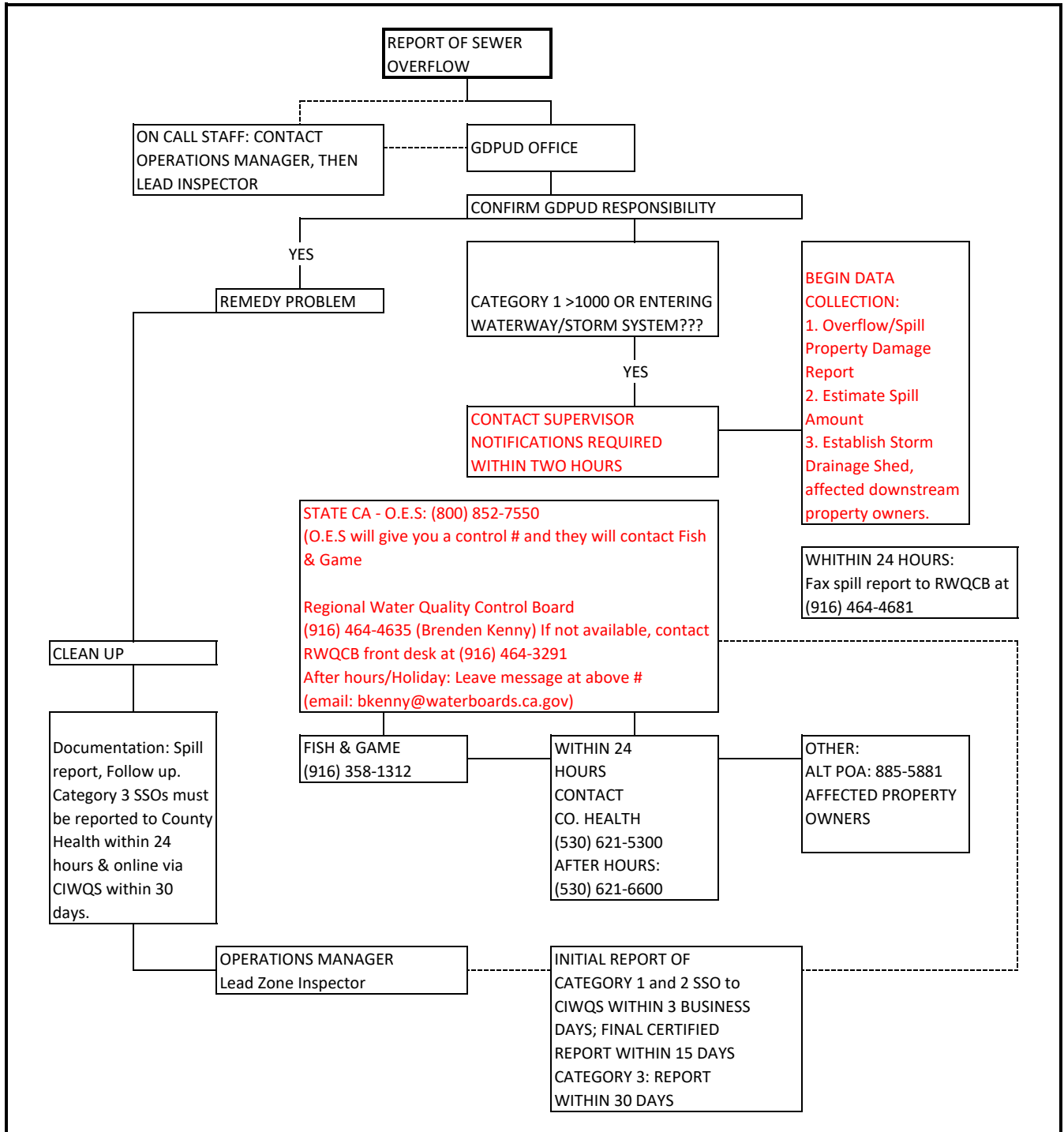
FY17/18 Organizational Chart



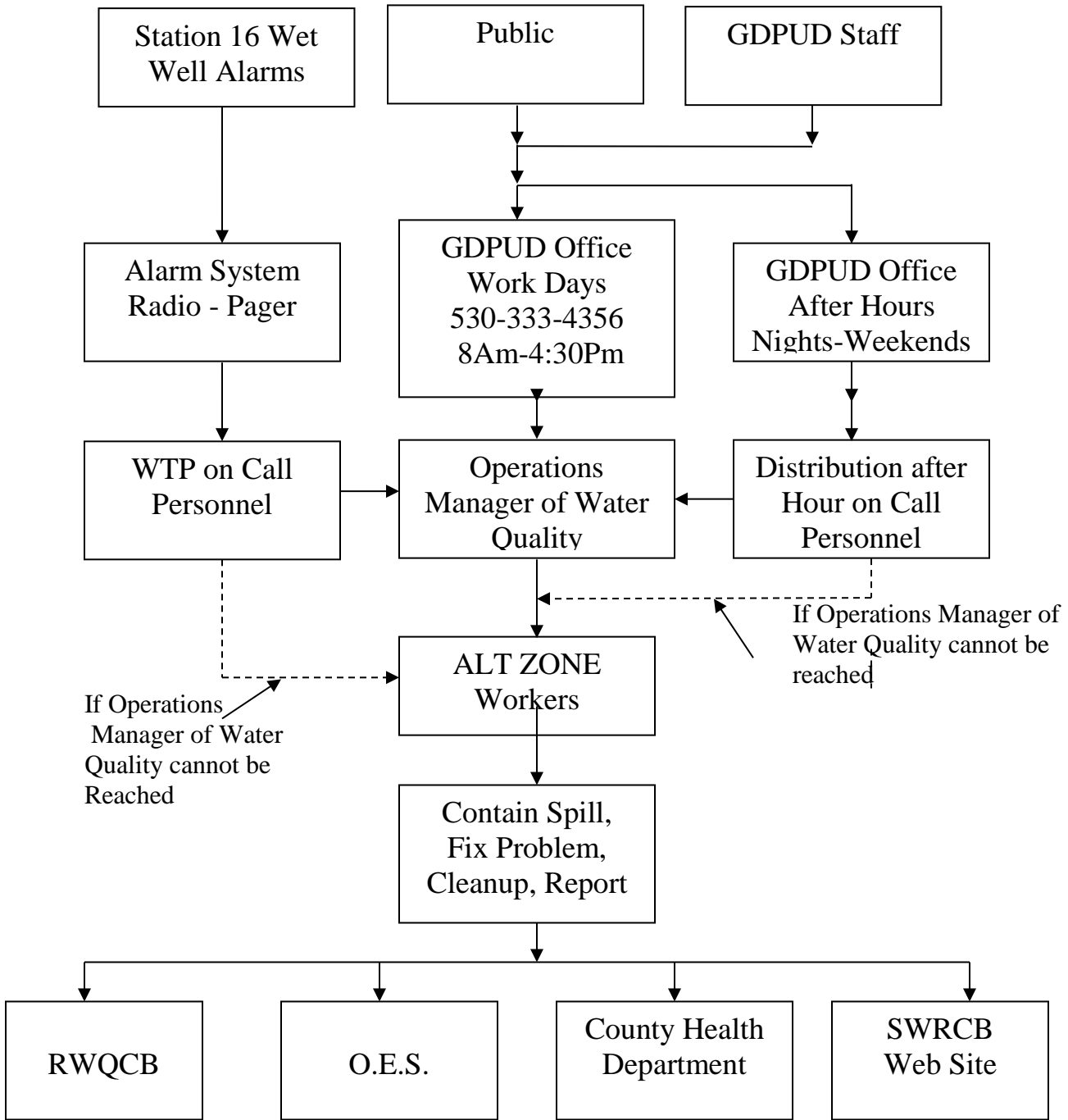
District employees – 22 FTE
Not Shown
Contract – 2 FTE (4 TEMP)

Figure 3

Figure 4
Sanitary Sewer Overflow - Flow Chart
 Georgetown Divide Public Utility District



**Figure 5
Sanitary Sewer Overflow Reporting Chain of Communication**



TABLES

Table 1
Emergency Contact Number for Overflow/Spill Prevention and Response Plan
 Georgetown Divide Public Utility District

Name	Title	Office	Home	Cell
Steven Palmer P.E.	General Manager	(530) 333-4356	(530) 857-4413	(530) 919-6426
Adam Brown	Water Resources Manager			(530) 906-4545
Darrell Creeks	Operations Manager		(530) 333-4910	(530) 333-3494
Brian Rule	Wastewater Technician			(530) 957-5492
Other On-Call Responders (After Hours)				
Jeff Pulfer	Water Treatment Plant Operator	(530) 333-4356		(530) 333-3760
Kyle Madison	Lead Distribution Operator		(530) 885-4104	(530) 333-3940

Table 2
Historical Wastewater Flow - Five Year Average
 Georgetown Divide Public Utility District

Year	January	February	March	April	May	June	July	August	September	October	November	December	Annual Average	Average Dry Weather Flows ¹	
Units	gallons per day														
2017	89,599	88,446	47,001	51,702	23,445	16,458	24,628	8,257	12,814	16,194	24,274	23,209	35,502	16,448	
2016	61,045	29,705	63,493	24,847	15,937	17,841	18,029	17,259	19,386	29,994	42,840	69,827	34,184	17,710	
2015	25,256	27,153	27,756	19,592	20,108	16,421	16,587	18,945	16,663	15,210	18,752	30,514	21,080	17,318	
2014	21,433	43,641	38,841	30,289	21,050	19,976	17,795	18,364	18,308	16,544	21,772	46,597	26,218	18,712	
2013	21,653	17,809	17,773	19,085	18,396	18,541	17,883	18,512	18,425	18,774	20,736	20,440	19,002	18,312	
													Five Year Average	27,197	17,700

Notes:

¹ - Dry weather months (June, July, August)



APPENDIX A

RWQCB CORRESPONDENCE

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

MONITORING AND REPORTING PROGRAM NO. R5-2002-0031

FOR
GEORGETOWN DIVIDE PUBLIC UTILITY DISTRICT
AUBURN LAKE TRAILS ON-SITE WASTEWATER DISPOSAL ZONE
EL DORADO COUNTY

This Monitoring and Reporting Program (MRP) incorporates requirements for monitoring of the community disposal system, influent, individual on-site systems, effluent, groundwater, and other aspects of the wastewater collection, treatment, and disposal systems and is issued pursuant to Water Code Section 13267. The Discharger shall not implement any changes to this MRP unless and until a revised MRP is issued by the Executive Officer. Sample collection stations shall be established such that the samples collected are representative of the nature and volume of the material(s) sampled.

COMMUNITY DISPOSAL SYSTEM INFLUENT MONITORING

The Discharger shall monitor the Community Disposal System influent for the following constituents according to the following schedule:

Constituents	Units	Sample Type	Sampling Frequency	Reporting Frequency
Flow	gpd	Continuous	Daily	Monthly
pH	pH units	Grab	Monthly ¹	Monthly
Electrical Conductivity	μ mhos/cm	Grab	Monthly ¹	Monthly
BOD ₅	mg/l	Grab	Monthly ¹	Monthly
Nitrates	mg/l as N	Grab	Monthly ¹	Monthly
Total Suspended Solids	mg/l	Grab	Quarterly	Quarterly
Oil and Grease	mg/l	Grab	Quarterly	Quarterly

¹ After the first year of data has been collected these are to be sampled Quarterly

COMMUNITY DISPOSAL SYSTEM MONITORING

All Community Disposal System (CDS) facilities including collection system, sewer mains, headworks, distribution lines and boxes, diversion trenches, effluent disposal trenches, and other appurtenant monitoring systems associated with the CDS water level measuring tubes(s), shall be inspected on a weekly basis. Observations made during these inspections shall be recorded on a weekly basis. Septic tanks shall be monitored annually as described above in the individual systems monitoring.

Inspections of the leachfield system facilities will be comprised of a physical evaluation of the disposal site area to determine whether waste is being contained beneath the ground surface. The ground in the immediate vicinity and surrounding the disposal site shall be inspected to determine the presence of effluent on the ground surface. The inspection report shall include any findings of springs or surfacing effluent, which would indicate a failure to the system.

A written report of the conditions observed for the system shall be prepared following each inspection. Such written description shall include name of the person making the entry, the condition of all the items listed in the above paragraphs, and shall identify any maintenance work necessary on the physical aspects of the system.

And the following measurements shall constitute the community leachfield-monitoring program:

Constituents	Units	Type of Sample	Sampling Frequency
Water Level Below Surface in All System Risers	Inches	Grab	Monthly
Flow	mgd	Continuous	Monthly

INDIVIDUAL SYSTEMS MONITORING

All leachfield, septic tank, mound, pressure dosed, sand filter, or alternate system failures shall be reported quarterly, along with the reason for failure and the type and effectiveness of remedial action taken. The total number of system correction notifications, correction repairs, complaints, and inspections conducted annually and the type of system inspected shall be reported quarterly. A daily log of operator observations and comments shall be maintained and reported quarterly. Data collected on community leachfield riser water levels and mound system effluent quality shall be summarized and reported. In addition, a tabulation of the number of systems installed with a breakdown of system type and remaining systems to be install until build out shall be included. The following schedule shall constitute each system type frequency for monitoring:

System Type	Monitoring Frequency
Conventional Systems	Annually
Mound Systems	Annually
Pressure Dosed Systems	Annually
Sand Filter Systems	Annually
Alternative Technology Systems	Annually
Community Collection and Disposal System	Weekly

All systems shall be monitored every six months for the first year and annually afterwards except the CDS (CDS monitored weekly). All septic tanks within the Subdivision shall be inspected for scum and sludge depth annually and pumped when the combined scum and sludge depth is measured to be 25% of tank volume or greater. All mound and sand filter systems shall receive distribution manifold maintenance at least annually. Pressure dosed and alternative technology systems shall receive manufacturer's specified maintenance annually.

MOUND SYSTEM MONITORING

Twenty-five Mound systems are to be inspected annually. The selection process for sampling shall be on a rotational basis, such that Mound systems where fluid is present in their upper and/or lower inspection risers shall be inspected/sampled every five years. Systems found to be in a failure or failing condition shall be monitored monthly until the system is repaired and functions properly. The upper and lower risers containing fluid shall be sampled for the following:

Constituent	Sample Type	Units
Total Coliform Organisms ¹	Grab	MPN/100 ml
Nitrate	Grab	mg/l
Chloride	Grab	mg/l
Ammonia	Grab	mg/l
Electrical Conductivity	Grab	µmhos/cm
pH	Grab	pH units
Orthophosphate	Grab	mg/l
BOD ₅ ²	Grab	mg/l

¹ Minimum of six (6) dilutions (thirty tube)

² 5-day, 20°C Biochemical Oxygen Demand

Note: Systems found to be in a failure or failing condition shall monitor septic tank effluent or mound system influent immediately and weekly thereafter for BOD, TSS, and Grease until the system is repaired and functions properly.

SURFACE WATER MONITORING

All surface water samples shall be grab samples. Surface water samples shall be taken from the following:

Station	Description
S-1 (Inlet Ditch)	Water Supply Irrigation Ditch entering ALTS
S-2 (Maine Bar Canyon)	Major stream leaving ALTS, Middle Fork tributary
S-3 (Buckeye Canyon)	Intermittent spring fed stream, Middle Fork tributary
S-4 (Wildcat Canyon)	Intermittent spring fed stream, Middle Fork tributary
S-5 (Browns Bar Canyon)	Intermittent spring fed stream, Middle Fork tributary
S-6 (Outlet Ditch)	Water Supply Irrigation Ditch leaving ALTS South Fork tributary
S-7 (CDS Creek)	Spring fed stream, down gradient of CDS

The above listed stations shall be sampled annually between December - February excepting S-1 and S-6 shall be sampled in May for the following:

Constituents	Sample Type	Units
Total Coliform Organisms ¹	Grab	MPN/100 ml
Fecal Coliform Organisms ¹	Grab	MPN/100 ml
Chloride	Grab	mg/l
Nitrate	Grab	mg/l
Orthophosphate	Grab	mg/l
Electrical Conductivity	Grab	µmhos/cm
Flow	Estimated	cfs
pH	Grab	pH units
BOD ₅ ²	Grab	mg/l

¹ Minimum of five (5) dilutions (twenty five tube)

² 5-day, 20°C Biochemical Oxygen Demand

GROUNDWATER MONITORING

Samples shall be taken from all Board approved groundwater-monitoring wells, according to Board approved sampling procedures (see Attachment B). Time of collection of a grab sample shall be recorded. The following shall constitute the groundwater-monitoring program:

Constituents	Units	Type of Sample	Sampling Frequency
Ground water elevation ¹	feet ± 0.1	Grab	Quarterly
20° C BOD ₅	mg/l	Grab	Quarterly
Temperature	Degrees °F	Grab	Quarterly
Total Coliform organisms	MPN/100 ml	Grab	Quarterly
pH	pH units	Grab	Quarterly
Total Dissolved Solids	mg/l	Grab	Quarterly
Electrical conductivity	µmhos/cm	Grab	Quarterly
Total nitrogen (N)	mg/l	Grab	Quarterly
Nitrate	mg/l	Grab	Quarterly
Nitrite	mg/l	Grab	Quarterly
Total Kjeldahl nitrogen	mg/l	Grab	Quarterly
Ammonia	mg/l	Grab	Quarterly
Total Alkalinity	mg/l	Grab	Quarterly
Total Hardness	mg/l	Grab	Quarterly
Chlorides	mg/l	Grab	Quarterly
Iron	mg/l	Grab	Quarterly
Boron	mg/l	Grab	Quarterly
Manganese	mg/l	Grab	Quarterly
Sodium	mg/l	Grab	Quarterly
Standard Minerals ²	mg/l	Grab	Annually

¹ The ground water elevation shall be used to calculate the direction and gradient of ground water flow, which must be reported in the Discharger Self Monitoring Report.

² Standard Minerals shall include, at a minimum, the following: Barium, Calcium, Magnesium, Potassium, Sulfate, Total Alkalinity (include alkalinity series), and Total Hardness.

Based on results of the groundwater-monitoring program after a minimum of two years, the Discharger may request a reduction in the constituents monitored, sample frequency, and/or locations monitored. If such reductions are warranted, this MRP may be revised by the Executive Officer.

WATER SUPPLY MONITORING

A sampling station shall be established where a representative sample of the municipal water supply can be obtained. Water supply monitoring shall include at least the following:

Constituents	Units	Sampling Frequency
Electrical Conductivity ¹	µmhos/cm	Annually
pH	pH units	Annually
Standard Minerals	mg/l	Annually ¹

¹ The District is required to conduct annual water quality sampling of its treated water system pursuant to the requirements of Department of Health Services. No additional sampling of the treated water supply appears to be warranted at this time. However, water supply quality shall be submitted to the Board as part of this Monitoring and reporting program.

REPORTING

In reporting monitoring data, the Discharger shall arrange the data in tabular form so that the date, sample type (e.g., influent, effluent, etc.), and reported analytical result for each sample are readily discernible. The data shall be summarized in such a manner to clearly illustrate compliance with waste discharge requirements and spatial or temporal trends, as applicable. The results of any monitoring done more frequently than required at the locations specified in the Monitoring and Reporting Program shall be reported to the Regional Board.

As required by the California Business and Professions Code Sections 6735, 7835, and 7835.1, all Groundwater Monitoring Reports shall be prepared under the direct supervision of a Registered Engineer or Geologist and signed by the registered professional.

Certification of the monitoring reports shall be as specified in General Reporting Requirements B.3. of the *STANDARD PROVISIONS AND REPORTING REQUIREMENTS FOR WASTE DISCHARGE REQUIREMENTS*, dated 1 March 1991, which is commonly referenced as the *Standard Provisions*.

Quarterly Reports

The Discharger shall establish a quarterly groundwater-sampling schedule such that samples are obtained approximately every three months. Quarterly Monitoring Reports for March, June, September, and December shall be submitted to the Regional Board by the **1st day of May, August, November, and February** each year. The Quarterly Report shall include the following:

1. All continuous, daily, weekly, monthly, and quarterly monitoring conducted during the quarter.

2. A narrative description of all preparations, monitoring, sampling, and analytical testing activities. The narrative shall be sufficiently detailed to verify compliance with the WDRs, this MRP, and the *Standard Provisions*. Field logs shall support the narrative for each well documenting depth to groundwater; parameters measured before, during, and after purging; method of purging; calculation of the casing volume; and total volume of water purged.
3. Calculation of groundwater elevations, an estimation of groundwater flow direction and hydraulic position with respect to nearby domestic or agricultural supply wells (if any) on the date of measurement, comparison to previous data, and discussion of seasonal trends, if any.
4. A narrative discussion of the analytical results for all media and locations monitored, including spatial and temporal trends, with reference to summary data tables, graphs, and appended analytical reports (as applicable).
5. A comparison of monitoring data to the discharge specifications, groundwater limitations and surface water limitations, and explanation of any violation of those requirements.
6. Summary data tables of historical and current monitor well elevations and analytical results.
7. A scaled map showing the lots, relevant structures and features of the subdivision, the locations of monitoring wells and any other sampling stations, and groundwater elevation contours referenced to mean sea level datum.
8. A scaled map showing history and location of correction notices, failed systems, replaced systems, and complaints.
9. Copies of laboratory analytical report(s).

Annual Monitoring Report

The December monthly report (**due by 1st day of February each year**) shall also serve as an Annual Monitoring Report. At a minimum, the Annual Monitoring Report shall include the following:

1. The contents of the December quarterly report and summarize all data collected during the year;
2. Tabular and graphical summaries of all well monitoring data obtained during previous years;
3. Information about disposal of screenings, sludges from domestic wastewater septic tanks, or other solids removed from liquid wastes that were disposed during the year such as volume, location, date, and transportation used;
4. A scaled Subdivision map showing each lot's status, its type of wastewater disposal system, location of the Community Collection System, lift stations, Community Disposal System, surface water monitoring locations, groundwater monitoring wells, and other relevant monitoring points, structures, and/or features of the wastewater collection, treatment, and disposal systems;

5. A narrative discussion of the analytical results for all media and locations monitored, including spatial and temporal trends, with reference to summary data tables, graphs, and appended analytical reports (as applicable);
6. A comparison of monitoring data to the discharge specifications, groundwater limitations and surface water limitations, and explanation of any violation of those requirements;
7. A discussion of any data gaps and potential deficiencies/redundancies in the monitoring system and/or reporting program;
8. The names, certificate grades, and general responsibilities of all persons employed by the Discharger;
9. The names and telephone numbers of persons to contact regarding the plant for emergency and routine situations;
10. A statement certifying when the flow meter and other monitoring instruments and devices were last calibrated, including identification of who performed the calibration; and
11. A statement certifying whether the current operation and maintenance manual, and contingency plan, reflect the wastewater treatment and disposal facilities as currently constructed and operated, and the dates when these documents were last revised and last reviewed for adequacy.

A letter transmitting the self-monitoring reports shall accompany each report. Such a letter shall include a discussion of requirement violations found during the reporting period, and actions taken or planned for correcting noted violations, such as operation or facility modifications. If the Discharger has previously submitted a report describing corrective actions and/or a time schedule for implementing the corrective actions, reference to the previous correspondence will be satisfactory. Pursuant to Standard Provisions, General Reporting requirements B.3, the transmittal letter shall contain the following statement by the Discharger, or the Discharger's authorized agent:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of the those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations."

MONITORING AND REPORTING PROGRAM NO. R5-2002-0031
GEORGETOWN DIVIDE PUBLIC UTILITY DISTRICT
AUBURN LAKE TRAILS ON-SITE WASTEWATER DISPOSAL ZONE
EL DORADO COUNTY

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The Discharger shall implement the above monitoring program on the first day of the month following effective date of this Order.

Ordered by:


GARY M. CARLTON, Executive Officer

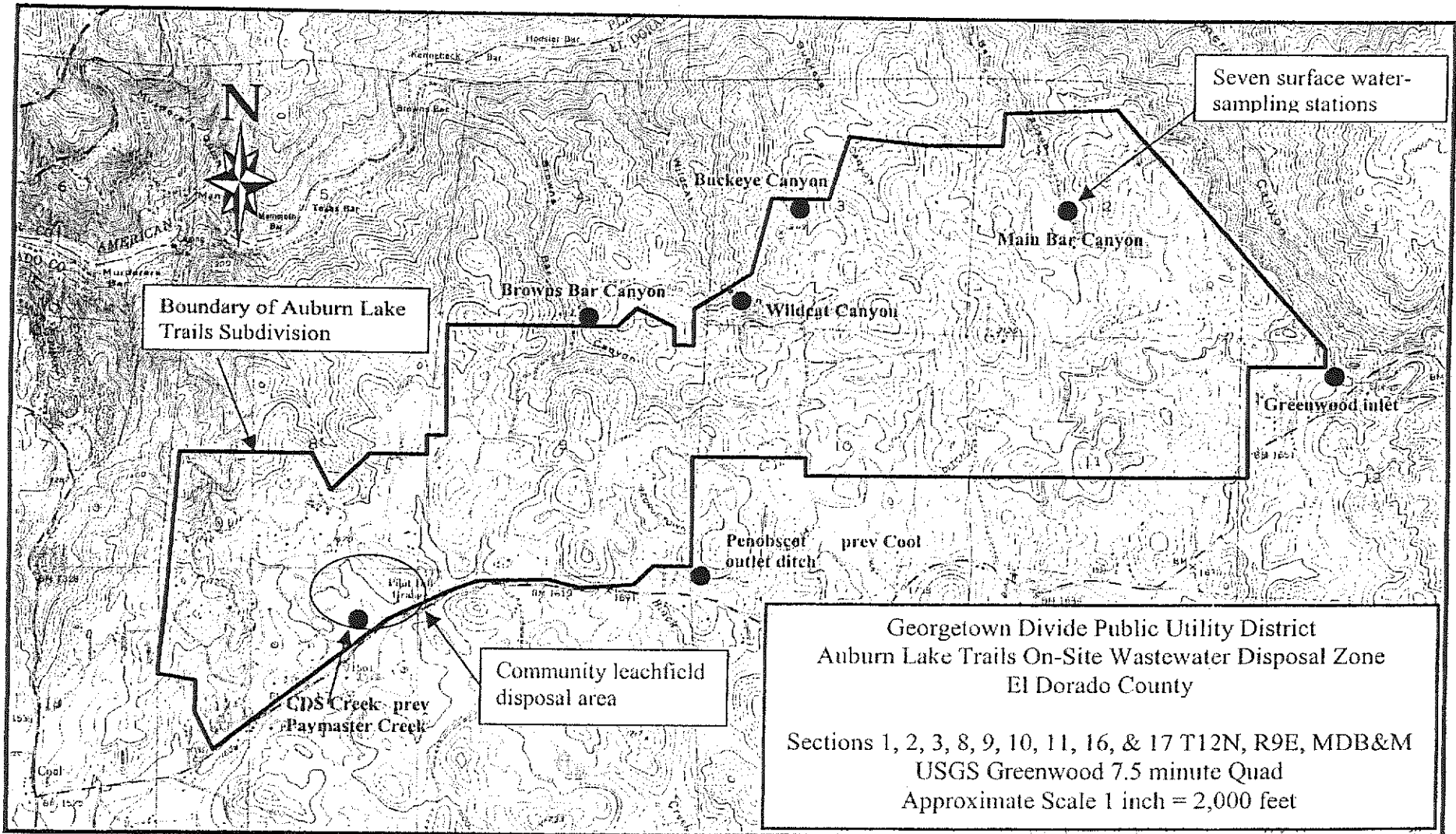
1 March 2002

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**INFORMATION NEEDS FOR
MONITORING WELL INSTALLATION WORKPLAN AND RESULTS REPORT**

Prior to installation of groundwater monitoring wells, the Discharger shall submit a workplan containing the minimum listed information. Wells may be installed after staff approve the workplan. Upon installation of the monitoring wells, the Discharger shall submit a report of results, as described below. All workplans and reports must be prepared and signed by a California registered geologist, engineering geologist, or civil engineer.

Monitoring Well Installation Workplan

A. General Information:

- Monitoring well locations and rationale
- Survey details
- Equipment decontamination procedures
- Health and safety plan
- Topographic map showing any existing monitoring wells, proposed wells, waste handling facilities, utilities, and other major physical and man-made features.
- Characterize site geology and hydrology, and identify unconfined or confined aquifers

B. Drilling Details: describe drilling and logging methods

C. Monitoring Well Design:

- Casing diameter
- Borehole diameter
- Depth of surface seal
- Well construction materials
- Diagram of well construction
- Type of well cap
- Size of perforations and rationale
- Grain size of sand pack and rationale
- Thickness and position of bentonite seal and sand pack
- Depth of well, length and position of perforated interval

D. Well Development:

- Method of development to be used
- Method of determining when development is complete
- Method of development water disposal

E. Surveying Details: discuss how each well will be surveyed to a common reference point

F. Soil Sampling (if applicable):

- Cuttings disposal method
- Analyses to be run and methods
- Sample collection and preservation method
- Intervals at which soil samples are to be collected
- Number of soil samples to be analyzed and rationale
- Location of soil samples and rationale
- QA/QC procedures

G. Well Sampling:

- Minimum time after development before sampling (48 hours)
- Well purging method and amount of purge water
- Sample collection and preservation method
- QA/QC procedures

H. Water Level Measurement:

The elevation reference point at each monitoring well shall be within 0.01 foot. Ground surface elevation at each monitoring well shall be within 0.1 foot. Method and time of water level measurement shall be specified.

I. Proposed time schedule for work.

Monitoring Well Installation Report of Results

A. Well Construction:

- Number and depth of wells drilled
- Date(s) wells drilled
- Description of drilling and construction
- Approximate locations relative to facility site(s)
- A well construction diagram for each well must be included in the report, and should contain the following details:

- Total depth drilled
- Depth of open hole (same as total depth drilled if no caving occurs)
- Footage of hole collapsed
- Length of slotted casing installed
- Depth of bottom of casing
- Depth to top of sand pack
- Thickness of sand pack
- Depth to top of bentonite seal
- Thickness of bentonite seal
- Thickness of concrete grout
- Boring diameter
- Casing diameter

- Casing material
- Size of perforations
- Number of bags of sand
- Well elevation at top of casing
- Depth to ground water
- Date of water level measurement
- Monitoring well number
- Date drilled
- Location

B. Well Development:

- Date(s) of development of each well
- Method of development
- Volume of water purged from well
- How well development completion was determined
- Method of effluent disposal
- Field notes from well development should be included in report.

C. Well Surveying: provide reference elevations for each well and surveyor's notes

D. Water Sampling:

- Date(s) of sampling
- How well was purged
- How many well volumes purged
- Levels of temperature, EC, and pH at stabilization
- Sample collection, handling, and preservation methods
- Sample identification
- Analytical methods used
- Laboratory analytical data sheets
- Water level elevation(s)
- Groundwater contour map

E. Soil Sampling (if applicable):

- Date(s) of sampling
- Sample collection, handling, and preservation method
- Sample identification
- Analytical methods used
- Laboratory analytical data sheets

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System types for Auburn Lake Trails Subdivision

- A. Conventional subsurface disposal systems utilizing alternative fields.
- B. Conventional subsurface disposal systems utilizing pressure-dosing techniques.
- C. Select fill subsurface disposal systems utilizing pressure-dosing techniques.
- D. Elevated fill subsurface disposal systems utilizing alternative fields and/or pressure-dosing techniques.
- E. Elevated fill (mound) systems.
- F. Individual on-site primary wastewater treatment systems with connection to a common subsurface disposal system.
- G. Individual on-site primary wastewater treatment systems with connection to a common mound system.

It is intended that the forgoing system types shall not be considered exclusive in that advances in technology may provide future alternatives, which are cost effective and enhance the achievement of water quality and public health objectives.

The following variances (underlined) are required from El Dorado County Ordinance Code, Chapter 15.33.020:

- H. Disposal systems shall be designed to utilize the most permeable or absorptive portion of the soil formation as determined by a percolation test and soil profile analyses. There shall be a minimum of five feet of permeable soil below the bottom of the proposed conventional sewage disposal system. There shall be a minimum of four feet of soil below the distribution manifold in a proposed pressure dosed special design system. The five feet of soil below the bottom of a conventional sewage disposal system, and the four feet below the distribution manifold of a pressure dosed special design system shall be free from the effects of groundwater and possess appropriate textural and structural characteristics to promote effective renovation of wastewater.
- I. No property shall be improved in excess of its capacity to absorb sewage effluent in the quantities and by the means provided in this code unless appropriate measures (i.e. easements) have been taken to provide sufficient suitable lands for this purpose.

Mound Design Criteria		
Criterion	State of California Guidelines ^(a)	Auburn Lake Trails On-site Wastewater Disposal Zone
Maximum Slope	12% for <60 mpi 6% for 60-120 mpi	14%
<i>SWRCB Guidelines for Mound Systems-Jan 1980</i> see Table 1, page 9		
Fill depth below Bed/Trench (Mound Body Thickness)	36" for <10 mpi 24" for 10-60 mpi 12" for >60 mpi	48" minimum fill and unsaturated soils below 60" minimum fill and permeable soils below
see Table 9, page 36		
Unsaturated Depth (ground surface to groundwater or pervious or fractured bedrock)	24"	18" minimum
see Table 1, page 9		
Minimum Soil Depth (ground surface to impermeable surface)	36" minimum 60" for slope <2.5%	30" minimum
see Table 1, page 9		
Percolation Rate	<120 mpi at 20" depth	Same
see Table 1, page 9		
Design Flow Rates	150 gpd/bedroom	Same
see page 13		
Bed/Trench Geometry (refers to entire system geometry)	Square beds Ok if <60 mpi & flat otherwise, rectangular beds	Same
see page 15		
Reserve Area	100% replacement	100% replacement of bed area
see page 14		
Basal Loading Rate	0 - 30 mpi: 1.25 gpd/sf 31 - 45 mpi: 0.70 gpd/sf 46 - 60 mpi: 0.50 gpd/sf 61-120 mpi: 0.25 gpd/sf	Same
see Table 10, page 37		
^(a) State Water Resources Control Board, <i>Guidelines for Mound Systems</i> , January, 1980		
Note: Fast soil < 10 mpi, Permeable soil 10-60 mpi, and Tight soil 61-120 mpi (ref Table 1 & 9)		

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INFORMATION SHEET

WASTE DISCHARGE REQUIREMENTS ORDER NO. R5-2002-0031
GEORGETOWN DIVIDE PUBLIC UTILITY DISTRICT
AUBURN LAKE TRAILS ON-SITE WASTEWATER DISPOSAL ZONE
EL DORADO COUNTY

Auburn Lake Trails Subdivision (Subdivision) is about two miles east on Highway 193 from Cool and the intersection of Highway 49 and Highway 193. The Subdivision was created in 1972 by a developer call Trans-Land Company. It was to originally encompass 2,800 acres and include 1,850 residential lots, equestrian center, country club and golf course, commercial facilities, and a private campground. A legal dispute developed over wastewater disposal and other things and was settled in 1984. As a result of the legal settlement, the Subdivision was modified to 1,100 total lots, and Georgetown Divide Public Utility District (hereafter Discharger) became the regulatory agency responsible for waste disposal within the Subdivision and the owner of the community disposal system.

The Georgetown Divide Public Utility District (GDPUD) Board of Directors declared their intent to form the on-site district for the Auburn Lake Trails Subdivision in Ordinance No. 84-1 and Resolution No. 84-6 and held a public hearing in October 1984. Formation of the Auburn Lake Trails On-Site Wastewater Disposal Zone (Zone) was contingent on Finality of Judgment in Class Action law suite, Case Number 34594, Superior Court of the State of California mentioned above. The case was settled and the Zone was formed.

As set forth in the Resolution, GDPUD will review design, oversee installation, investigate problems, test, redesign (if necessary), operate and monitor, and maintain and repair as required, on-site systems in the Zone financed by fees collected from the individual homeowners. GDPUD will perform similar services on existing lots currently and those proposed for hookup to the community septic tank/leachfield system.

Some variances to Regional Board *Guidelines for Waste Disposal From Land Developments* and the State Water Resources Control Board *Guidelines for Mound Systems* dated January 1980 were agreed to in the previous Regional Board Order No. 84-126 to facilitate the installation of on-site systems with in the Subdivision. In a letter from the Discharger dated 20 January 1993, the Discharger requested review and comment from the Board on changes to the variances for Mound Design Criteria d. ii and iii, which it appears to have subsequently implemented. This Order reestablishes the types of systems and design criteria from Order No. 84-126, which are contained in Attachment C.

Along with the variance agreement in Order No. 84-126, significant monitoring was required to ensure water quality was protected. Groundwater monitoring was called out in the Monitoring and Reporting Program No. 84-126, however, groundwater monitoring or reporting has not been conducted since 1991. This Order requires the installation and quarterly monitoring of groundwater wells about the Subdivision and its Community Disposal System. It also requires additional monitoring and reporting and a requirement for the Discharger to give the homeowner 30 days to modify or replace failed systems.

This Order also requires a compliance evaluation of the groundwater beneath the Subdivision with State Water Resources Control Board (SWRCB) Resolution No. 68-16 or the "Antidegradation Policy".

If groundwater monitoring results show that the discharge of waste from the Community Disposal System and/or the on-site systems are causing groundwater to contain waste constituents in

WASTE DISCHARGE REQUIREMENTS ORDER NO. R5-2002-0031
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concentrations statistically greater than background water quality, then within 120 days of the request of the Executive Officer, the Discharger shall submit a report showing that degradation of the groundwater complies with SWRCB Resolution No. 68-16, i.e., that it is (a) in the best interest of the people of the state, (b) that best practical treatment and control measures have been implemented to reduce the amount of degradation, (c) that the groundwater degradation will not exceed applicable water quality objectives, and (d) that the degradation is confined within specified boundaries.

Basin Plan, Beneficial Uses, and Regulatory Considerations

Surface water drainage from the Subdivision is to the Middle and South Forks of the American River, tributary to Folsom Lake Reservoir, tributary to the Sacramento River. The *Water Quality Control Plan for the California Regional Water Quality Control Board Central Valley Region, Fourth Edition* (Basin Plan), designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters of the Basin. Beneficial uses often determine the water quality objectives that apply to a water body. For example, waters designated as municipal and domestic supply must meet the maximum contaminant levels (MCLs) for drinking waters. The Basin Plan sets forth the applicable beneficial uses (industrial, agricultural, and domestic supply in this instance) of groundwater, procedure for application of water quality objectives, and the process for and factors to consider in allocating waste assimilation capacity.

Antidegradation

The antidegradation directives of section 13000 of the California Water Code (CWC) require that waters of the State that are better in quality than established water quality objectives be maintained "consistent with the maximum benefit to the people of the State." Waters can be of high quality for some constituents or beneficial uses and not others. Policies and procedures for complying with this directive are set forth in the Basin Plan (including by reference State Water Board Resolution No. 68-16, "Statement of Policy With Respect to Maintaining High Quality Waters in California," or "Antidegradation" Policy).

Resolution NO. 68-16 is applied on a case-by-case, constituent-by-constituent basis in determining whether a certain degree of degradation can be justified. It is incumbent upon the Discharger to provide technical information for the Board to evaluate that fully characterizes:

- all waste constituents to be discharged, the background quality of the uppermost layer of the uppermost aquifer
- the background quality of other waters that may be affected
- the underlying hydrogeologic conditions
- waste treatment and control measures
- how treatment and control measures are justified as best practicable treatment and control
- the extent the discharge will impact the quality of each aquifer
- the expected degradation compared to water quality objectives

INFORMATION SHEET

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AUBURN LAKE TRAILS ON-SITE WASTEWATER DISPOSAL ZONE
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In allowing a discharge, the Board must comply with CWC section 13263 in setting appropriate conditions. The Board is required, relative to the groundwater that may be affected by the discharge, to implement the Basin Plan and consider the beneficial uses to be protected along with the water quality objectives essential for that purpose. The Board need not authorize the full utilization of the waste assimilation capacity of the groundwater (CWC 13263(b)) and must consider other waste discharges and factors that affect that capacity. The applicable beneficial uses (industrial, agricultural, and domestic supply in this instance), procedure for application of water quality objectives, and the process for and factors to consider in allocating waste assimilation capacity are set forth in the Basin Plan.

This discharge has been occurring for years. Previous conditions of discharge allowed no degradation. However, certain waste constituents in municipal wastewater are not fully amenable to waste treatment and control and it is reasonable to expect some impact on groundwater. Some degradation for certain constituents is consistent with maximum benefit to the people of California because the technology, energy, water recycling, and waste management advantages of municipal utility service to the State far outweigh the environmental impact damage of a community that would otherwise be reliant on numerous concentrated individual wastewater systems. Economic prosperity of valley communities is of maximum benefit to the people of California, and therefore sufficient reason to accommodate increases in wastewater discharge provided terms of reasonable degradation are defined and met. The proposed Order authorizes some degradation consistent with the maximum benefit to the people of the State.

Groundwater monitoring data at this site is incomplete to establish the most appropriate receiving water limits. In addition, as explained elsewhere in this information sheet, certain aspects of waste treatment and control practices have not been and are unlikely to be justified as representative of BPTC. Reasonable time is necessary to gather specific information about the facility and the site to make informed, appropriate, long-term decisions. This Order, therefore, establishes interim receiving water limitations to assure protection of the beneficial uses of waters of the State pending the completion of certain tasks and provides time schedules to complete specified tasks. The tasks provide that the Discharger is expected to identify, implement, and adhere to best practicable treatment and control as individual practices are reviewed and upgraded in this process. During this period, degradation may occur from certain constituents, but by interim conditions can never exceed water quality objectives (or ambient background water quality should it exceed objectives) or cause nuisance.

Water quality objectives define the least stringent limits that apply as water quality limitations for groundwater at this location. The exception is when ambient background water quality is unaffected by the discharge of waste and already exceeds the objective. The values below reflect water quality objectives that must be met to maintain specific beneficial uses of groundwater. Unless natural background for a constituent proves higher, the interim groundwater quality limit established in proposed WDR is the most stringent of the values listed for the following constituents.

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 WASTE DISCHARGE REQUIREMENTS ORDER NO. R5-2002-0031
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<u>Constituent</u>	<u>Units</u>	<u>Value</u>	<u>Beneficial Use</u>	<u>Criteria or Justification</u>
Ammonia	mg/L	0.5	MUN ¹	Taste and Odor ²
Boron	mg/L	0.5	AGR ³	Class I irrigation water (Basin Plan)
		0.63	MUN ¹	Narrative Toxicity Criteria ³
		0.7	AGR ³	Boron sensitivity on certain crops ⁴
		2	AGR ³	Class II irrigation water (Basin Plan)
Chloride	mg/L	106	AGR ³	Chloride sensitivity on certain crops irrigated via sprinklers ⁴
		142	AGR ³	Chloride sensitivity on certain crops ⁴
		175	AGR ³	Class I irrigation water (Basin Plan)
		250	MUN ¹	Recommended Secondary MCL ⁵
		350	AGR ³	Class II irrigation water (Basin Plan)
		500	MUN ¹	Upper Secondary MCL ⁵
		750	AGR ³	Salt sensitivity ⁴
Conductivity (EC)	µmhos/cm	900	MUN ¹	Recommended Secondary MCL ⁵
		1,000	AGR ³	Class I irrigation water (Basin Plan)
		1,600	MUN ¹	Upper Secondary MCL ⁵
		3,000	AGR ³	Class II irrigation water (Basin Plan)
		Iron	mg/L	0.3
Manganese	mg/L	0.05	MUN ¹	Secondary MCL ⁶
Nitrate as N	mg/L	10	MUN ¹	Primary MCL ⁷
Nitrite as N	mg/L	1	MUN ¹	Primary MCL ⁷
pH	pH Units	6.5 to	MUN	Secondary MCL ⁸
		8.5		
Sodium	mg/L	69	AGR ³	Sodium sensitivity on certain crops irrigated via sprinklers ⁴
		207	AGR ³	Sodium sensitivity on certain crops ⁴
Total Coliform Organisms	MPN / 100 mL	2.2	MUN ¹	Basin Plan
Total Dissolved Solids	mg/L	450	AGR ³	Salt sensitivity ⁴
		500	MUN ¹	Recommended Secondary MCL ⁵
		700	AGR ³	Class I irrigation water (Basin Plan)
		1,000	MUN ¹	Recommended Upper MCL ⁵
		2,000	AGR ³	Class II irrigation water (Basin Plan)
Total Trihalomethanes	µg/L	80	MUN	MCL ⁹

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<u>Constituent</u>	<u>Units</u>	<u>Value</u>	<u>Beneficial Use</u>	<u>Criteria or Justification</u>
Chloroform	µg/L	1.1	MUN ¹	Narrative Toxicity Criteria ¹⁰
Bromodichloromethane	µg/L	0.27	MUN ¹	Narrative Toxicity Criteria ¹⁰
Dibromochloromethane	µg/L	0.37	MUN ¹	Narrative Toxicity Criteria ¹⁰
Bromoform	µg/L	4.0	MUN ¹	Narrative Toxicity Criteria ³

- ¹ Municipal and domestic supply
- ² Council of the European Union, On the Quality of Water Intended for Human Consumption, Council Directive 98/83/EC (3 November 1998).
- ³ Agricultural supply
- ⁴ Ayers, R. S. and D. W. Westcot, Water Quality for Agriculture, Food and Agriculture Organization of the United Nations – Irrigation and Drainage Paper No. 29, Rev. 1, Rome (1985)
- ⁵ Title 22, California Code of Regulations (CCR), section 64449, Table 64449-B
- ⁶ Title 22, CCR, section 64449, Table 64449-A
- ⁷ Title 22, CCR, section 64431, Table 64431-A
- ⁸ United States Environmental Protection Agency
- ⁹ Title 22, CCR, section 64439
- ¹⁰ California Environmental Protection Agency, Office of Environmental Health Hazard Assessment Cancer Potency Factor as a Drinking Water Level, *California Environmental Protection Agency Toxicity Criteria Database*

Municipal wastewater contains numerous dissolved inorganic waste constituents (i.e., salts, minerals) that together comprise total dissolved solids (TDS). The concentration of each component constituent of TDS is not necessarily critical to a beneficial use. Specific constituents that are critical are individually listed. The cumulative impact from these other constituents, along with the cumulative affect of the constituents that are individually listed can be effectively controlled using TDS as a generic indicator parameter. Most dissolved inorganic substances in water are in the ionized form and so contribute to a solution's ability to conduct electricity, or its "electrical conductivity" (EC). EC varies both with the number and type of ions the solution contains and is strongly temperature dependent. It is standard practice to report a solution's EC at 25° Celsius (this value is technically called "specific conductance"). Un-ionized species of weak acids or bases and uncharged soluble organic materials, such as ethyl alcohol and glucose, are poor conductors of electricity even though these constituents comprise a portion of TDS contributing to a solution's EC. Although EC is affected by the nature of the various ions, their relative concentrations, and ionic strength of the water, EC measurements can provide a quick and inexpensive practical estimate of a solution's dissolved mineral content once the relationship is established for the solution. An empirical factor representing the relationship may be developed from simultaneous sampling and measurements of TDS and EC.

Treatment Technology and Control

Given the volume and character of municipal wastewater, primary in some cases and in others secondary treatment technology is generally sufficient to control degradation of groundwater from decomposable

organic constituents. If necessary, adding disinfection to the treatment train will significantly reduce populations of pathogenic organisms, and reasonable soil infiltration rates and unsaturated soils can reduce them further. Total coliform organisms, the indicator parameter for pathogenic organisms, should not be found in groundwater in a well-designed, well-operated facility. The groundwater limit for this constituent is nondetect, which is less than the water quality objective.

Chlorine disinfection of effluent causes formation of trihalomethanes, which are toxic priority pollutants. Treatment to reduce these in wastewater generally has not been performed, and little is known at this point on the typical impact on groundwater. The limitation is based on the water quality objective for human consumption.

Municipal wastewater typically contains nitrogen in concentrations greater than water quality objectives, which vary according to the form of nitrogen. Degradation by nitrogen can be controlled by an appropriate secondary treatment system (e.g., oxidation ditch), tertiary treatment for nitrogen reduction, and agronomic reuse on harvested crops. The effectiveness varies, but generally best practicable treatment and control should be able to control nitrogen degradation at a concentration well below the water quality objectives. The limitation reflects water quality objectives.

Waste constituents that are forms of salinity pass through the treatment process and soil profile and effective control of long-term effects relies upon effective source control and pretreatment measures. In the best of circumstances, long-term land discharge of treated municipal wastewater will degrade groundwater with salt (as measured by TDS and EC) and the individual components of salts (e.g., sodium, chloride). Not all TDS constituents pass through the treatment process and soil profile in the same manner or rate. Chloride tends to pass through both rapidly to groundwater. As chloride concentrations in most groundwaters in the region are much lower than in treated municipal wastewater, chloride is a useful indicator parameter for evaluating the extent to which effluent reaches groundwater. This Order sets water quality objectives for the interim while site-specific, constituent-specific limits are developed in conjunction with a BPTC evaluation of source control and pretreatment. Subsequent Orders will likely contain effluent limits for salt components that, if met, assure groundwater quality will be controlled to an acceptable level.

Other indicator constituents for monitoring for groundwater degradation due to recharged effluent include total coliform bacteria, ammonia, total nitrogen, and total trihalomethanes (when the effluent is chlorinated). Total trihalomethanes (TTHMs) are chlorinated organic materials that are toxic at low concentrations. Common TTHMs include bromoform, bromodichloromethane, dibromochloromethane, and chloroform. While the State drinking water regulations (i.e., Title 22, CCR, section 64439) establish a maximum contaminant level for TTHMs of 80 $\mu\text{g/L}$, the actual concentrations at which TTHMs components are considered "toxic" to humans are much lower (e.g., chloroform's human health toxicity limit is 1.1 $\mu\text{g/L}$). The Basin Plan states that groundwaters "shall be maintained free of toxic substances in concentrations that produce detrimental physiological responses in human, plant, animal, or aquatic life associated with designated beneficial uses." As indicated in the above table, groundwater limitations necessary to enforce the Basin Plan's narrative toxicity objective are significantly lower than that necessary to meet the maximum contaminant level for TTHMs components in drinking water.

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Boron is another TDS constituent that may occur in wastewater in concentrations greater than groundwater depending on the source water, to the extent residents use cleaning products containing boron, and whether any industrial dischargers utilize boron (e.g., glass production, cosmetics). Because various crops are sensitive to boron, it has an individual limit intended to protect agricultural use.

Still other constituents in treated municipal waste that may pass through the treatment process and the soil profile include recalcitrant organic compounds (e.g., ethylene glycol, or antifreeze), radionuclides, and pharmaceuticals. Hazardous compounds are not usually associated with domestic wastes and when present are reduced in the discharge to inconsequential concentrations through dilution with domestic waste, treatment, and the implementation of effective pretreatment programs. Since it is inappropriate to allow degradation of groundwater with such constituents, the limitations are set to nondetect.

A discharge of wastewater that overloads soils with nutrients and organics can result in anaerobic conditions in the soil profile, which in turn creates organic acids and decreases soil pH. Under conditions of low soil pH (i.e., below 5), iron and manganese compounds in the soil can solubilize and leach into groundwater. Discharge of residual sludge to land may also lead to increases in groundwater alkalinity and hardness to concentrations that impair the water's beneficial uses and contribute to an overall increase in TDS. Overloading is preventable and does not constitute BPTC as used in Resolution 68-16. Dissolved iron and manganese, along with elevated alkalinity, hardness, and nitrogen concentrations, are useful indicators to determine whether components of the WWTP with high-strength waste constituents, such as sludge handling facilities, are effectively containing waste. Iron and manganese increases and changes in pH in groundwater are avoidable and limitations should reflect background. However, during this interim investigative period, interim limits are set at the water quality objective for iron, manganese, and pH.

Title 27

Title 27, CCR, section 20380 et seq. ("Title 27"), contains regulations to address certain discharges to land. Title 27 establishes a waste classification system, specifies siting and construction standards for containment of classified waste, requires extensive monitoring of groundwater and the unsaturated zone for any indication of failure of containment, and specifies closure and post-closure maintenance requirements. Generally, no degradation of groundwater quality by any waste constituent is acceptable.

Discharges of domestic sewage and treated effluent can be treated and controlled to a degree that will not result in unreasonable degradation of groundwater. For this reason, they have been conditionally exempted from Title 27, except for residual sludge and solid waste generated as part of the treatment process [section 20090(a) of Title 27]. The condition requires that the discharge not result in violation of any water quality objective in groundwater.

Treatment and storage facilities for sludge that are part of the WWTP are considered exempt from Title 27 under section 20090(a), under the condition that the facilities not result in a violation of any water quality objective. However, residual sludge (for the purposes of the proposed order, sludge that will not be subjected to further treatment by the WWTP) is not exempt from Title 27. Solid waste (e.g.,

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grit and screenings) that results from treatment of domestic sewage and industrial waste also is not exempt from Title 27. This residual sludge and solid waste are subject to the provisions of Title 27.

Accordingly, the municipal discharge of effluent and the operation of treatment or storage facilities associated with a municipal wastewater treatment plant can be allowed without requiring compliance with Title 27, but only if resulting degradation of groundwater is in accordance with the Basin Plan. This means, among other things, degradation of groundwater must be consistent with Resolution No. 68-16 and in no case greater than water quality objectives. The conditions for sludge, solid waste, and biosolids management must be evaluated along with other aspects of BPTC.

TERMS AND CONDITIONS

Discharge Prohibitions, Specifications and Provisions

This Order establishes the need to monitor groundwater and the submittal of a complete technical report to evaluate the subdivision's water quality impacts. This Order's discharge performance specifications for BOD₅, TSS, and Oil and Grease are based on the treatment technologies employed. This Order does not require the Discharger to disinfect the effluent. Storm water is allowed to runoff the subdivision and the subsurface land application areas under the general storm water permit. The discharge specifications regarding effluent resurfacing are consistent with Board policy for the prevention of health, pollution, or nuisance conditions, and are applied to all such facilities.

In order to protect public health and safety, this Order requires the Discharger to comply with many of the provisions of Title 22 and to implement best management practices with respect to effluent disposal (e.g., to dispose of effluent at reasonable rates considering soil conditions, climate, and subsurface irrigation management).

Monitoring Requirements

Section 13267 of the CWC authorizes the Board to require monitoring and technical reports as necessary to investigate the impact of a waste discharge on waters of the state. In recent years there has been increased emphasis on obtaining all necessary information, assuring the information is timely as well as representative and accurate, and thereby improving accountability of any discharger for meeting the conditions of discharge. Section 13268 of the CWC authorizes assessment civil administrative liability for failure to furnish technical or monitoring program reports, a statement of compliance, or falsifying any information provided therein.

This Order increases the previous Order's influent and effluent monitoring requirements, and includes flow rates, land application areas, and groundwater monitoring requirements. In order to adequately characterize its wastewater effluent, the Discharger is required to monitor for flow, pH, Electrical Conductivity, BOD, nitrates, and oil and grease. To ensure that community and individual disposal systems do not create nuisance conditions, the Discharger is required to monitor the effluent, systems' physical condition, and perform maintenance as required.

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The Title 27 zero leakage protection strategy relies heavily on extensive groundwater and unsaturated zone monitoring to increase the Discharger's awareness of, and accountability for, compliance with the prescriptive and performance standards. With a high volume, concentrated, uncontained discharge to land, monitoring takes on even greater importance. This Order includes monitoring of applied wastewater quality, application rates, and groundwater.

Title 27 regulations pertaining to groundwater monitoring and the detection and characterization of waste constituents in groundwater have been in effect and successfully implemented for many years. No regulation currently specifies similar criteria more suitable for a situation where extensive infiltration into groundwater occurs. When such infiltration occurs, it is appropriate that the Title 27 groundwater monitoring procedures be extended and applied on a case-by-case basis under CWC Section 13267.

This Order requires installation of an effective groundwater-monitoring network that includes monitoring points represented by wells forming a vertical line that extends from the soil surface into the uppermost layer of water in the uppermost aquifer. One or more wells will monitor the quality of groundwater unaffected by the discharge and serve as 'background.' Other monitoring wells will be for determining compliance with Groundwater Limitations D.1 and D.2.

The Discharger must monitor groundwater for constituents present in the discharge and capable of reaching groundwater and violating groundwater limitations. To determine if the treatment and control, and any dependency of the treatment process on sustained environmental attenuation or treatment, proves to be inadequate. As some groundwater limitations are based on background water quality, it is essential that the discharger install wells in a location that can provide groundwater quality representative of the discharge area but unaffected by both the discharge and other waste sources. This Order requires the Discharger to install sufficient well(s) to characterize receiving groundwater and background water quality with quarterly groundwater sampling events. For each constituent where no increase in concentration is authorized over background, the Discharger must, as part of each monitoring event, compare concentrations of constituents found in each monitoring well to the background concentration to determine compliance.

Reopener

The conditions of discharge in this Order were developed based on currently available technical information and applicable water quality laws, regulations, policies, and plans, and are intended to assure conformance with them. However, information is presently insufficient to develop final effluent and groundwater limitations, so this Order contains interim limitations. Additional information must be developed and documented by the Discharger as required by schedules set forth in this Order. As this additional information is obtained, decisions will be made concerning the best means of assuring the highest water quality possible may involve substantial cost. It may be appropriate to reopen the Order if applicable laws and regulations change, but the mere possibility that such laws and regulations may change is not sufficient basis for reopening the Order. The CWC requires that waste discharge requirements implement all applicable requirements.

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Several other more likely reasons for reconsidering terms of the Order exist, and the Order may be opened for this purpose at the Board's discretion. For example, Board procedures require periodic review of the effectiveness of requirements at a frequency proportional to the threat the discharge has to water quality with update as appropriate. The Order will definitely be reopened for consideration of BPTC and establishing final numeric groundwater limitations. It is also conceivable that monitoring of compliance may identify a waste constituent, possibly a toxic waste constituent, that violates or threatens to violate groundwater limitations, establishing a need to consider an appropriate numeric effluent limit for that waste constituent.

Surface water drainage is to the Middle and South Forks of the American River, tributary to Folsom Lake Reservoir, tributary to the Sacramento River.

GWL
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CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL VALLEY REGION

STANDARD PROVISIONS AND REPORTING REQUIREMENTS
FOR
WASTE DISCHARGE REQUIREMENTS
(Waste Discharge to Land)

1 MARCH 1991

A. General Provisions:

1. The requirements prescribed herein do not authorize the commission of any act causing injury to the property of another, or protect the Discharger from liabilities under federal, state, or local laws. This Order does not convey any property rights or exclusive privileges.
2. The Provisions of this Order are severable. If any provision of this Order is held invalid, the remainder of this Order shall not be affected.
3. After notice and opportunity for a hearing, this Order may be terminated or modified for cause, including but not limited to:
 - a. Violation of any term or condition contained in this Order;
 - b. Obtaining this Order by misrepresentation, or failure to disclose fully all relevant facts;
 - c. A change in any condition that results in either a temporary or permanent need to reduce or eliminate the authorized discharge; or
 - d. A material change in the character, location, or volume of discharge.
4. Before making a material change in the character, location, or volume of discharge, the Discharger shall file a new Report of Waste Discharge with the California Regional Water Quality Control Board, Central Valley Region (hereafter Board). A material change includes, but is not limited to, the following:
 - a. An increase in area or depth to be used for solid waste disposal beyond that specified in the waste discharge requirements;
 - b. A significant change in disposal method, location, or volume, e.g., change from land disposal to land treatment;
 - c. The addition of a major industrial, municipal, or domestic waste discharge facility; or

- d. The addition of a major industrial waste discharge to a discharge of essentially domestic sewage, or the addition of a new process or product by an industrial facility resulting in a change in the character of the waste.
5. Except for material determined to be confidential in accordance with California law and regulations, all reports prepared in accordance with terms of this Order shall be available for public inspection at the offices of the Board. Data on waste discharges, water quality, meteorology, geology, and hydrogeology shall not be considered confidential.
6. The Discharger shall take all reasonable steps to minimize any adverse impact to the waters of the state resulting from noncompliance with this Order. Such steps shall include accelerated or additional monitoring as necessary to determine the nature and impact of the noncompliance.
7. The Discharger shall maintain in good working order and operate as efficiently as possible any facility, control system, or monitoring device installed to achieve compliance with the waste discharge requirements.
8. The Discharger shall permit representatives of the Board and the State Water Resources Control Board (SWRCB), upon presentations of credentials, to:
 - a. Enter premises where wastes are treated, stored, or disposed of and facilities in which any records are kept;
 - b. Copy any records required to be kept under terms and conditions of this Order;
 - c. Inspect at reasonable hours, monitoring equipment required by this Order; and
 - d. Sample, photograph, and video tape any discharge, waste, waste management unit, or monitoring device.
9. For any electrically operated equipment at the site, the failure of which would cause loss of control or containment of waste materials, or violation of this Order, the Discharger shall employ safeguards to prevent loss of control over wastes. Such safeguards may include alternate power sources, standby generators, retention capacity, operating procedures, or other means.
10. The fact that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with this Order shall not be a defense for the Discharger's violations of the Order.
11. Neither the treatment nor the discharge shall create a condition of nuisance or pollution as defined by the California Water Code, Section 13050.
12. The discharge shall remain within the designated disposal area at all times.

B. General Reporting Requirements:

1. In the event the Discharger does not comply or will be unable to comply with any prohibition or limitation of this Order for any reason, the Discharger shall notify the Board by telephone at (916) 255-3000 as soon as it or its agents have knowledge of such noncompliance or potential for noncompliance, and shall confirm this notification in writing within **two weeks**. The written notification shall state the nature, time, and cause of noncompliance, and shall include a timetable for corrective actions.
2. The Discharger shall have a plan for preventing and controlling accidental discharges, and for minimizing the effect of such events.

At a minimum this plan shall:

- a. Identify the possible sources of accidental loss or leakage of wastes from each waste management, treatment, or disposal unit;
- b. Evaluate the effectiveness of present waste management/treatment units and operational procedures, and identify needed changes of contingency plans; and
- c. Predict the effectiveness of the proposed changes in waste management/treatment units and procedures and provide an implementation schedule containing interim and final dates when changes will be implemented.

The Board, after review of the plan, may establish conditions that it deems necessary to control leakages and minimize their effects.

3. All reports shall be signed by the responsible persons identified below:
 - a. For a corporation: by a principal executive officer of at least the level of senior vice-president;
 - b. For a partnership or sole proprietorship: by a general partner or the proprietor;
 - c. For a municipality, state, federal, or other public agency: by either a principal executive officer of ranking elected or appointed official; or
 - d. A duly authorized representative of a person designated in 3a, 3b, or 3c of this requirement if;
 - (1) the authorization is made in writing by a person described in 3a, 3b, or 3c of this provision;
 - (2) the authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility of activity, such as the position of plant manager, operator of a waste management unit, superintendent, or position of equivalent

responsibility. (A duly authorized representative may thus be either a named individual or any individual occupying a named position); and

- (3) the written authorization is submitted to the Board.

Any person signing a document under this Section shall make the following certification:

"I certify under penalty of law that I have personally examined and am familiar with the information submitted in this document and all attachments and that, based on my inquiry of the those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete. I am aware there are significant penalties for submitting false information, including the possibility of fines and imprisonment for knowing violations."

4. Technical and monitoring reports specified in this Order are requested pursuant to Section 13267 of the Water Code. Failing to furnish the reports by the specified deadlines and falsifying information in the reports, are misdemeanors that may result in assessment of civil liabilities against the Discharger.
5. The Discharger shall mail a copy of each monitoring report and any other reports required by this Order to:

California Regional Water Quality Control Board
Central Valley Region
3443 Routier Road, Suite A
Sacramento, CA 95827-3003

or the current address if the office relocates.

C. Provisions for Monitoring:

1. All analyses shall be made in accordance with the Environmental Protection Agency (EPA) latest edition of: (1) *Methods for Organic Chemical Analysis of Municipal and Industrial Wastewater* (EPA 600 Series) and (2) *Test Methods for Evaluating Solid Waste* (SW 846-latest edition). The test method may be modified subject to application and approval of alternate test procedures under the Code of Federal Regulations (40 CFR 136).
2. Chemical, bacteriological, and bioassay analysis shall be conducted at a laboratory certified for such analyses by the State Department of Health Services. In the event a certified laboratory is not available to the Discharger, analyses performed by a non-certified laboratory will be accepted provided a Quality Assurance-Quality Control Program is instituted by the laboratory. A manual containing the steps followed in this program must be kept in the laboratory and shall be available for inspection by Board staff. The Quality Assurance-Quality Control Program must conform to EPA guidelines or to procedures approved by the Board.

Unless otherwise specified, all metals shall be reported as Total Metals.

3. The Discharger shall retain records of all monitoring information, including all calibration and maintenance records, all original strip chart recordings of continuous monitoring instrumentation, copies of all reports required by this Order, and records of all data used to complete the application for this Order. Records shall be maintained for a minimum of three years from the date of the sample, measurement, report, or application. This period may be extended during the course of any unresolved litigation regarding this discharge or when requested by the Regional Board Executive Officer.

Record of monitoring information shall include:

- a. the date, exact place, and time of sampling or measurements,
 - b. the individual(s) who performed the sampling of the measurements,
 - c. the date(s) analyses were performed,
 - d. the individual(s) who performed the analyses,
 - e. the laboratory which performed the analysis,
 - f. the analytical techniques or methods used, and
 - g. the results of such analyses.
4. All monitoring instruments and devices used by the Discharger to fulfill the prescribed monitoring program shall be properly maintained and calibrated at least yearly to ensure their continued accuracy.
 5. The Discharger shall maintain a written sampling program sufficient to assure compliance with the terms of this Order. Anyone performing sampling on behalf of the Discharger shall be familiar with the sampling plan.
 6. The Discharger shall construct all monitoring wells to meet or exceed the standards stated in the State Department of Water Resources *Bulletin 74-81* and subsequent revisions, and shall comply with the reporting provisions for wells required by Water Code Sections 13750 through 13755.22

D. Standard Conditions for Facilities Subject to California Code of Regulations, Title 23, Division 3, Chapter 15 (Chapter 15):

1. All classified waste management units shall be designed under the direct supervision of a California registered civil engineer or a California certified engineering geologist. Designs shall include a Construction Quality Assurance Plan, the purpose of which is to:
 - a. demonstrate that the waste management unit has been constructed according to the plans and specifications as approved by the Board, and
 - b. provide quality control on the materials and construction practices used to construct the waste management unit and prevent the use of inferior products and/or materials which do not meet the approved plans and specifications.

2. Prior to the discharge of waste to any classified waste management unit, a California registered civil engineer or a California certified engineering geologist must certify that the waste management unit meets the construction or prescriptive standards and performance goals in Chapter 15, unless an engineered alternative has been approved by the Board. In the case of an engineered alternative, the registered civil engineer or a certified engineering geologist must certify that the waste management unit has been constructed in accordance with Board-approved plans and specifications.
3. Materials used to construct liners shall have appropriate physical and chemical properties to ensure containment of discharged wastes over the operating life, closure, and post-closure maintenance period of the waste management unit.
4. Closure of each waste management unit shall be performed under the direct supervision of a California registered civil engineer or a California certified engineering geologist.

E. Conditions Applicable to Discharge Facilities Exempted from Chapter 15 Under Section 2511:

1. If the Discharger's wastewater treatment plant is publicly owned or regulated by the Public Utilities Commission, it shall be supervised and operated by persons possessing certificates of appropriate grade according to California Code of Regulations, Title 23, Division 4, Chapter 14.
2. By-pass (the intentional diversion of waste streams from any portion of a treatment facility, except diversions designed to meet variable effluent limits) is prohibited. The Board may take enforcement action against the Discharger for by-pass unless:
 - a. By-pass was unavoidable to prevent loss of life, personal injury, or severe property damage. (Severe property damage means substantial physical damage to property, damage to the treatment facilities that causes them to become inoperable, or substantial and permanent loss of natural resources that can reasonably be expected to occur in the absence of a by-pass. Severe property damage does not mean economic loss caused by delays in production); and
 - b. There were no feasible alternatives to by-pass, such as the use of auxiliary treatment facilities or retention of untreated waste. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgement to prevent a by-pass that would otherwise occur during normal periods of equipment downtime or preventive maintenance; or
 - (1) by-pass is required for essential maintenance to assure efficient operation; and
 - (2) neither effluent nor receiving water limitations are exceeded; and
 - (3) the Discharger notifies the Board ten days in advance.

The permittee shall submit notice of an unanticipated by-pass as required in General Reporting Requirements B.1 above.

3. A Discharger that wishes to establish the affirmative defense of an upset (see definition in Conditions Applicable to Discharge Facilities Exempted from Chapter 15 Under Section 2511, Definitions E.6.a below) in an action brought for noncompliance shall demonstrate, through properly signed contemporaneous operating logs, or other evidence, that:
 - a. an upset occurred and the cause(s) can be identified;
 - b. the permitted facility was being properly operated at the time of the upset;
 - c. the Discharger submitted notice of the upset as required in General Reporting Requirements B.1 above; and
 - d. the Discharger complied with any remedial measures required by the waste discharge requirements.

In any enforcement proceeding, the Discharger seeking to establish the occurrence of an upset has the burden of proof.

4. A Discharger whose waste flow has been increasing, or is projected to increase, shall estimate when flows will reach hydraulic and treatment capacities of its treatment, collection, and disposal facilities. The projections shall be made in January, based on the last three years' average dry weather flows, peak wet weather flows and total annual flows, as appropriate. When any projection shows that capacity of any part of the facilities may be exceeded in four years, the Discharger shall notify the Board by **31 January**.
5. Effluent samples shall be taken downstream of the last addition of wastes to the treatment or discharge works where a representative sample may be obtained prior to disposal. Samples shall be collected at such a point and in such a manner to ensure a representative sample of the discharge.
6. Definitions:
 - a. Upset means an exceptional incident in which there is unintentional and temporary noncompliance with effluent limitations because of factors beyond the reasonable control of the Discharger. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper action.
 - b. The monthly average discharge is the total discharge by volumes during a calendar month divided the number of days in the month that the facility was discharging. This number is to be reported in gallons per day (gpd) or million gallons per day (mgd).

Where less than daily sampling is required by this Order, the monthly average shall be determined by the summation of all the measured discharges by the number of days during the month when the measurements were made.

- c. The monthly average concentration is the arithmetic mean of measurements made during the month.
- d. The "daily maximum" **discharge** is the total discharge by volume during any day.
- e. The "daily maximum" **concentration** is the highest measurement made on any single discrete sample or composite sample.
- f. A "grab" sample is any sample collected in less than 15 minutes.
- g. Unless otherwise specified, a composite sample is a combination of individual samples collected over the specified sampling period;
 - (1) at equal time intervals, with a maximum interval of one hour, or
 - (2) at varying time intervals (average interval one hour or less) so that each sample represents an equal portion of the cumulative flow.

The duration of the sampling period shall be specified in the Monitoring and Reporting Program. The method of compositing shall be reported with the results.

7. Annual Pretreatment Report Requirements:

Applies to Dischargers required to have a Pretreatment Program as stated in waste discharge requirements.

The annual report shall be submitted **by 28 February** and include, but not be limited to, the following items:

- a. A summary of analytical results from representative, flow-proportioned, 24-hour composite sampling of the influent and effluent for those pollutants EPA has identified under Section 307(a) of the Clean Water Act which are known or suspected to be discharged by industrial users.

The Discharger is not required to sample and analyze for asbestos until EPA promulgates an applicable analytical technique under 40 CFR (Code of Federal Regulations) Part 136. Sludge shall be sampled during the same 24-hour period and analyzed for the same pollutants as the influent and effluent sampling analysis. The sludge analyzed shall be a composite sample of a minimum of 12 discrete samples taken at equal time intervals over the 24-hour period. Wastewater and sludge sampling and analysis shall be performed at least **annually**. The Discharger shall also provide any influent, effluent, or sludge monitoring data for non-priority pollutants which may be causing or contributing to Interference, Pass Through, or any adverse impact to sludge quality. Sampling and analysis shall be performed in accordance with the techniques prescribed in 40 CFR Part 136 and amendments thereto.

- b. A discussion of Upset, Interference, Pass Through, or noncompliance incidents, if any, at the treatment plant which the Discharger knows or suspects were caused by industrial users of the system. The discussion shall include the reasons why the incidents occurred, the corrective actions taken and, if known, the name and address of the industrial user(s) responsible. The discussion shall also include a review of the applicable pollutant limitations to determine whether any additional limitations, or changes to existing requirements, may be necessary to prevent Upset, Interference, Pass Through, or noncompliance with sludge disposal requirements.
- c. The cumulative number of industrial users that the Discharger has notified regarding Baseline Monitoring Reports and the cumulative number of industrial user responses.
- d. An updated list of the Discharger's industrial users including their names and addresses, or a list of deletions and additions keyed to a previously submitted list. The Discharger shall provide a brief explanation for each deletion. The list shall identify the industrial users subject to federal categorical standards by specifying which set(s) of standards are applicable. The list shall indicate which categorical industries, or specific pollutants from each industry, are subject to local limitations that are more stringent than the federal categorical standards. The Discharger shall also list the noncategorical industrial users that are subject only to local discharge limitations. The Discharger shall characterize the compliance status through the year of record of each industrial user by employing the following descriptions:
 - (1) Complied with baseline monitoring report requirements (where applicable);
 - (2) Consistently achieved compliance;
 - (3) Inconsistently achieved compliance;
 - (4) Significantly violated applicable pretreatment requirements as defined by 40 CFR 403.8(f)(2)(vii);
 - (5) Complied with schedule to achieve compliance (include the date final compliance is required);
 - (6) Did not achieve compliance and not on a compliance schedule; and/or
 - (7) Compliance status unknown.

A report describing the compliance status of any industrial user characterized by the descriptions in items (d)(3) through (d)(7) above shall be **submitted quarterly from the annual report date** to EPA and the Board. The report shall identify the specific compliance status of each such industrial user. This quarterly reporting requirement shall commence upon issuance of this Order.

- e. A summary of the inspection and sampling activities conducted by the Discharger during the past year to gather information and data regarding the industrial users. The summary shall include but not be limited to, a tabulation of categories of dischargers that were inspected and sampled, how many and how often, and incidents of noncompliance detected.
- f. A summary of the compliance and enforcement activities during the past year. The summary shall include the names and addresses of the industrial users affected by the following actions:
 - (1) Warning letters or notices of violation regarding the industrial user's apparent noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the apparent violation concerned the federal categorical standards or local discharge limitations;
 - (2) Administrative Orders regarding the industrial user's noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the violation concerned the federal categorical standards or local discharge limitations;
 - (3) Civil actions regarding the industrial user's noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the violation concerned the federal categorical standards or local discharge limitations;
 - (4) Criminal actions regarding the industrial user's noncompliance with federal categorical standards or local discharge limitations. For each industrial user, identify whether the violation concerned the federal categorical standards or local discharge limitations
 - (5) Assessment of monetary penalties. For each industrial user identify the amount of the penalties;
 - (6) Restriction of flow to the treatment plant; or
 - (7) Disconnection from discharge to the treatment plant.
- g. A description of any significant changes in operating the Pretreatment Program which differ from the Discharger's approved Pretreatment Program, including, but not limited to, changes concerning: the program's administrative structure; local industrial discharge limitations; monitoring program or monitoring frequencies; legal authority of enforcement policy; funding mechanisms; resource requirements; and staffing levels.
- h. A summary of the annual pretreatment budget, including the cost of pretreatment program functions and equipment purchases.
- i. A summary of public participation activities to involve and inform the public.

- j. A description of any changes in sludge disposal methods and a discussion of any concerns not described elsewhere in the report.

Duplicate signed copies of these reports shall be submitted to the Board and EPA and SWRCB at the following addresses:

Regional Administrator
U.S. Environmental Protection Agency W-5
75 Hawthorne Street
San Francisco, CA 94105

and

State Water Resource Control Board
Division of Water Quality
P.O. Box 944213
Sacramento, CA 94244-2130

Revised March 1993 to update phone number of Central Valley Regional Water Quality Control Board

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**STATE WATER RESOURCES CONTROL BOARD
ORDER NO. 2006-0003-DWQ**

**STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS
FOR
SANITARY SEWER SYSTEMS**

The State Water Resources Control Board, hereinafter referred to as "State Water Board", finds that:

1. All federal and state agencies, municipalities, counties, districts, and other public entities that own or operate sanitary sewer systems greater than one mile in length that collect and/or convey untreated or partially treated wastewater to a publicly owned treatment facility in the State of California are required to comply with the terms of this Order. Such entities are hereinafter referred to as "Enrollees".
2. Sanitary sewer overflows (SSOs) are overflows from sanitary sewer systems of domestic wastewater, as well as industrial and commercial wastewater, depending on the pattern of land uses in the area served by the sanitary sewer system. SSOs often contain high levels of suspended solids, pathogenic organisms, toxic pollutants, nutrients, oxygen-demanding organic compounds, oil and grease and other pollutants. SSOs may cause a public nuisance, particularly when raw untreated wastewater is discharged to areas with high public exposure, such as streets or surface waters used for drinking, fishing, or body contact recreation. SSOs may pollute surface or ground waters, threaten public health, adversely affect aquatic life, and impair the recreational use and aesthetic enjoyment of surface waters.
3. Sanitary sewer systems experience periodic failures resulting in discharges that may affect waters of the state. There are many factors (including factors related to geology, design, construction methods and materials, age of the system, population growth, and system operation and maintenance), which affect the likelihood of an SSO. A proactive approach that requires Enrollees to ensure a system-wide operation, maintenance, and management plan is in place will reduce the number and frequency of SSOs within the state. This approach will in turn decrease the risk to human health and the environment caused by SSOs.
4. Major causes of SSOs include: grease blockages, root blockages, sewer line flood damage, manhole structure failures, vandalism, pump station mechanical failures, power outages, excessive storm or ground water inflow/infiltration, debris blockages, sanitary sewer system age and construction material failures, lack of proper operation and maintenance, insufficient capacity and contractor-caused damages. Many SSOs are preventable with adequate and appropriate facilities, source control measures and operation and maintenance of the sanitary sewer system.

SEWER SYSTEM MANAGEMENT PLANS

5. To facilitate proper funding and management of sanitary sewer systems, each Enrollee must develop and implement a system-specific Sewer System Management Plan (SSMP). To be effective, SSMPs must include provisions to provide proper and efficient management, operation, and maintenance of sanitary sewer systems, while taking into consideration risk management and cost benefit analysis. Additionally, an SSMP must contain a spill response plan that establishes standard procedures for immediate response to an SSO in a manner designed to minimize water quality impacts and potential nuisance conditions.
6. Many local public agencies in California have already developed SSMPs and implemented measures to reduce SSOs. These entities can build upon their existing efforts to establish a comprehensive SSMP consistent with this Order. Others, however, still require technical assistance and, in some cases, funding to improve sanitary sewer system operation and maintenance in order to reduce SSOs.
7. SSMP certification by technically qualified and experienced persons can provide a useful and cost-effective means for ensuring that SSMPs are developed and implemented appropriately.
8. It is the State Water Board's intent to gather additional information on the causes and sources of SSOs to augment existing information and to determine the full extent of SSOs and consequent public health and/or environmental impacts occurring in the State.
9. Both uniform SSO reporting and a centralized statewide electronic database are needed to collect information to allow the State Water Board and Regional Water Quality Control Boards (Regional Water Boards) to effectively analyze the extent of SSOs statewide and their potential impacts on beneficial uses and public health. The monitoring and reporting program required by this Order and the attached Monitoring and Reporting Program No. 2006-0003-DWQ, are necessary to assure compliance with these waste discharge requirements (WDRs).
10. Information regarding SSOs must be provided to Regional Water Boards and other regulatory agencies in a timely manner and be made available to the public in a complete, concise, and timely fashion.
11. Some Regional Water Boards have issued WDRs or WDRs that serve as National Pollution Discharge Elimination System (NPDES) permits to sanitary sewer system owners/operators within their jurisdictions. This Order establishes minimum requirements to prevent SSOs. Although it is the State Water Board's intent that this Order be the primary regulatory mechanism for sanitary sewer systems statewide, Regional Water Boards may issue more stringent or more

prescriptive WDRs for sanitary sewer systems. Upon issuance or reissuance of a Regional Water Board's WDRs for a system subject to this Order, the Regional Water Board shall coordinate its requirements with stated requirements within this Order, to identify requirements that are more stringent, to remove requirements that are less stringent than this Order, and to provide consistency in reporting.

REGULATORY CONSIDERATIONS

12. California Water Code section 13263 provides that the State Water Board may prescribe general WDRs for a category of discharges if the State Water Board finds or determines that:

- The discharges are produced by the same or similar operations;
- The discharges involve the same or similar types of waste;
- The discharges require the same or similar treatment standards; and
- The discharges are more appropriately regulated under general discharge requirements than individual discharge requirements.

This Order establishes requirements for a class of operations, facilities, and discharges that are similar throughout the state.

13. The issuance of general WDRs to the Enrollees will:

- a) Reduce the administrative burden of issuing individual WDRs to each Enrollee;
- b) Provide for a unified statewide approach for the reporting and database tracking of SSOs;
- c) Establish consistent and uniform requirements for SSMP development and implementation;
- d) Provide statewide consistency in reporting; and
- e) Facilitate consistent enforcement for violations.

14. The beneficial uses of surface waters that can be impaired by SSOs include, but are not limited to, aquatic life, drinking water supply, body contact and non-contact recreation, and aesthetics. The beneficial uses of ground water that can be impaired include, but are not limited to, drinking water and agricultural supply. Surface and ground waters throughout the state support these uses to varying degrees.

15. The implementation of requirements set forth in this Order will ensure the reasonable protection of past, present, and probable future beneficial uses of water and the prevention of nuisance. The requirements implement the water quality control plans (Basin Plans) for each region and take into account the environmental characteristics of hydrographic units within the state. Additionally, the State Water Board has considered water quality conditions that could reasonably be achieved through the coordinated control of all factors that affect

water quality in the area, costs associated with compliance with these requirements, the need for developing housing within California, and the need to develop and use recycled water.

16. The Federal Clean Water Act largely prohibits any discharge of pollutants from a point source to waters of the United States except as authorized under an NPDES permit. In general, any point source discharge of sewage effluent to waters of the United States must comply with technology-based, secondary treatment standards, at a minimum, and any more stringent requirements necessary to meet applicable water quality standards and other requirements. Hence, the unpermitted discharge of wastewater from a sanitary sewer system to waters of the United States is illegal under the Clean Water Act. In addition, many Basin Plans adopted by the Regional Water Boards contain discharge prohibitions that apply to the discharge of untreated or partially treated wastewater. Finally, the California Water Code generally prohibits the discharge of waste to land prior to the filing of any required report of waste discharge and the subsequent issuance of either WDRs or a waiver of WDRs.
17. California Water Code section 13263 requires a water board to, after any necessary hearing, prescribe requirements as to the nature of any proposed discharge, existing discharge, or material change in an existing discharge. The requirements shall, among other things, take into consideration the need to prevent nuisance.
18. California Water Code section 13050, subdivision (m), defines nuisance as anything which meets all of the following requirements:
 - a. Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.
 - b. Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.
 - c. Occurs during, or as a result of, the treatment or disposal of wastes.
19. This Order is consistent with State Water Board Resolution No. 68-16 (Statement of Policy with Respect to Maintaining High Quality of Waters in California) in that the Order imposes conditions to prevent impacts to water quality, does not allow the degradation of water quality, will not unreasonably affect beneficial uses of water, and will not result in water quality less than prescribed in State Water Board or Regional Water Board plans and policies.
20. The action to adopt this General Order is exempt from the California Environmental Quality Act (Public Resources Code §21000 et seq.) because it is an action taken by a regulatory agency to assure the protection of the environment and the regulatory process involves procedures for protection of the environment. (Cal. Code Regs., tit. 14, §15308). In addition, the action to adopt

this Order is exempt from CEQA pursuant to Cal.Code Regs., title 14, §15301 to the extent that it applies to existing sanitary sewer collection systems that constitute “existing facilities” as that term is used in Section 15301, and §15302, to the extent that it results in the repair or replacement of existing systems involving negligible or no expansion of capacity.

21. The Fact Sheet, which is incorporated by reference in the Order, contains supplemental information that was also considered in establishing these requirements.
22. The State Water Board has notified all affected public agencies and all known interested persons of the intent to prescribe general WDRs that require Enrollees to develop SSMPs and to report all SSOs.
23. The State Water Board conducted a public hearing on February 8, 2006, to receive oral and written comments on the draft order. The State Water Board received and considered, at its May 2, 2006, meeting, additional public comments on substantial changes made to the proposed general WDRs following the February 8, 2006, public hearing. The State Water Board has considered all comments pertaining to the proposed general WDRs.

IT IS HEREBY ORDERED, that pursuant to California Water Code section 13263, the Enrollees, their agents, successors, and assigns, in order to meet the provisions contained in Division 7 of the California Water Code and regulations adopted hereunder, shall comply with the following:

A. DEFINITIONS

1. **Sanitary sewer overflow (SSO)** - Any overflow, spill, release, discharge or diversion of untreated or partially treated wastewater from a sanitary sewer system. SSOs include:
 - (i) Overflows or releases of untreated or partially treated wastewater that reach waters of the United States;
 - (ii) Overflows or releases of untreated or partially treated wastewater that do not reach waters of the United States; and
 - (iii) Wastewater backups into buildings and on private property that are caused by blockages or flow conditions within the publicly owned portion of a sanitary sewer system.
2. **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 (such as vaults, temporary piping, construction trenches, wet wells, impoundments, tanks, etc.) are considered to be part of the sanitary sewer system, and discharges into these temporary storage facilities are not considered to be SSOs.

For purposes of this Order, sanitary sewer systems include only those systems owned by public agencies that are comprised of more than one mile of pipes or sewer lines.

3. **Enrollee** - A federal or state agency, municipality, county, district, and other public entity that owns or operates a sanitary sewer system, as defined in the general WDRs, and that has submitted a complete and approved application for coverage under this Order.
4. **SSO Reporting System** – Online spill reporting system that is hosted, controlled, and maintained by the State Water Board. The web address for this site is <http://ciwqs.waterboards.ca.gov>. This online database is maintained on a secure site and is controlled by unique usernames and passwords.
5. **Untreated or partially treated wastewater** – Any volume of waste discharged from the sanitary sewer system upstream of a wastewater treatment plant headworks.
6. **Satellite collection system** – The portion, if any, of a sanitary sewer system owned or operated by a different public agency than the agency that owns and operates the wastewater treatment facility to which the sanitary sewer system is tributary.
7. **Nuisance** - California Water Code section 13050, subdivision (m), defines nuisance as anything which meets all of the following requirements:
 - a. Is injurious to health, or is indecent or offensive to the senses, or an obstruction to the free use of property, so as to interfere with the comfortable enjoyment of life or property.
 - b. Affects at the same time an entire community or neighborhood, or any considerable number of persons, although the extent of the annoyance or damage inflicted upon individuals may be unequal.
 - c. Occurs during, or as a result of, the treatment or disposal of wastes.

B. APPLICATION REQUIREMENTS

1. **Deadlines for Application** – All public agencies that currently own or operate sanitary sewer systems within the State of California must apply for coverage under the general WDRs within six (6) months of the date of adoption of the general WDRs. Additionally, public agencies that acquire or assume responsibility for operating sanitary sewer systems after the date of adoption of this Order must apply for coverage under the general WDRs at least three (3) months prior to operation of those facilities.
2. **Applications under the general WDRs** – In order to apply for coverage pursuant to the general WDRs, a legally authorized representative for each agency must submit a complete application package. Within sixty (60) days of adoption of the general WDRs, State Water Board staff will send specific instructions on how to

apply for coverage under the general WDRs to all known public agencies that own sanitary sewer systems. Agencies that do not receive notice may obtain applications and instructions online on the Water Board's website.

3. Coverage under the general WDRs – Permit coverage will be in effect once a complete application package has been submitted and approved by the State Water Board's Division of Water Quality.

C. PROHIBITIONS

1. Any SSO that results in a discharge of untreated or partially treated wastewater to waters of the United States is prohibited.
2. Any SSO that results in a discharge of untreated or partially treated wastewater that creates a nuisance as defined in California Water Code Section 13050(m) is prohibited.

D. PROVISIONS

1. The Enrollee must comply with all conditions of this Order. Any noncompliance with this Order constitutes a violation of the California Water Code and is grounds for enforcement action.
2. It is the intent of the State Water Board that sanitary sewer systems be regulated in a manner consistent with the general WDRs. Nothing in the general WDRs shall be:
 - (i) Interpreted or applied in a manner inconsistent with the Federal Clean Water Act, or supersede a more specific or more stringent state or federal requirement in an existing permit, regulation, or administrative/judicial order or Consent Decree;
 - (ii) Interpreted or applied to authorize an SSO that is illegal under either the Clean Water Act, an applicable Basin Plan prohibition or water quality standard, or the California Water Code;
 - (iii) Interpreted or applied to prohibit a Regional Water Board from issuing an individual NPDES permit or WDR, superseding this general WDR, for a sanitary sewer system, authorized under the Clean Water Act or California Water Code; or
 - (iv) Interpreted or applied to supersede any more specific or more stringent WDRs or enforcement order issued by a Regional Water Board.
3. The Enrollee shall take all feasible steps to eliminate SSOs. In the event that an SSO does occur, the Enrollee shall take all feasible steps to contain and mitigate the impacts of an SSO.
4. In the event of an SSO, the Enrollee shall take all feasible steps to prevent untreated or partially treated wastewater from discharging from storm drains into

flood control channels or waters of the United States by blocking the storm drainage system and by removing the wastewater from the storm drains.

5. All SSOs must be reported in accordance with Section G of the general WDRs.
6. In any enforcement action, the State and/or Regional Water Boards will consider the appropriate factors under the duly adopted State Water Board Enforcement Policy. And, consistent with the Enforcement Policy, the State and/or Regional Water Boards must consider the Enrollee's efforts to contain, control, and mitigate SSOs when considering the California Water Code Section 13327 factors. In assessing these factors, the State and/or Regional Water Boards will also consider whether:
 - (i) The Enrollee has complied with the requirements of this Order, including requirements for reporting and developing and implementing a SSMP;
 - (ii) The Enrollee can identify the cause or likely cause of the discharge event;
 - (iii) There were no feasible alternatives to the discharge, such as temporary storage or retention of untreated wastewater, reduction of inflow and infiltration, use of adequate backup equipment, collecting and hauling of untreated wastewater to a treatment facility, or an increase in the capacity of the system as necessary to contain the design storm event identified in the SSMP. It is inappropriate to consider the lack of feasible alternatives, if the Enrollee does not implement a periodic or continuing process to identify and correct problems.
 - (iv) The discharge was exceptional, unintentional, temporary, and caused by factors beyond the reasonable control of the Enrollee;
 - (v) The discharge could have been prevented by the exercise of reasonable control described in a certified SSMP for:
 - Proper management, operation and maintenance;
 - Adequate treatment facilities, sanitary sewer system facilities, and/or components with an appropriate design capacity, to reasonably prevent SSOs (e.g., adequately enlarging treatment or collection facilities to accommodate growth, infiltration and inflow (I/I), etc.);
 - Preventive maintenance (including cleaning and fats, oils, and grease (FOG) control);
 - Installation of adequate backup equipment; and
 - Inflow and infiltration prevention and control to the extent practicable.
 - (vi) The sanitary sewer system design capacity is appropriate to reasonably prevent SSOs.

- (vii) The Enrollee took all reasonable steps to stop and mitigate the impact of the discharge as soon as possible.
7. When a sanitary sewer overflow occurs, the Enrollee shall take all feasible steps and necessary remedial actions to 1) control or limit the volume of untreated or partially treated wastewater discharged, 2) terminate the discharge, and 3) recover as much of the wastewater discharged as possible for proper disposal, including any wash down water.

The Enrollee shall implement all remedial actions to the extent they may be applicable to the discharge and not inconsistent with an emergency response plan, including the following:

- (i) Interception and rerouting of untreated or partially treated wastewater flows around the wastewater line failure;
 - (ii) Vacuum truck recovery of sanitary sewer overflows and wash down water;
 - (iii) Cleanup of debris at the overflow site;
 - (iv) System modifications to prevent another SSO at the same location;
 - (v) Adequate sampling to determine the nature and impact of the release; and
 - (vi) Adequate public notification to protect the public from exposure to the SSO.
8. The Enrollee shall properly, manage, operate, and maintain all parts of the sanitary sewer system owned or operated by the Enrollee, and shall ensure that the system operators (including employees, contractors, or other agents) are adequately trained and possess adequate knowledge, skills, and abilities.
9. The Enrollee shall allocate adequate resources for the operation, maintenance, and repair of its sanitary sewer system, by establishing a proper rate structure, accounting mechanisms, and auditing procedures to ensure an adequate measure of revenues and expenditures. These procedures must be in compliance with applicable laws and regulations and comply with generally acceptable accounting practices.
10. The Enrollee shall provide adequate capacity to convey base flows and peak flows, including flows related to wet weather events. Capacity shall meet or exceed the design criteria as defined in the Enrollee's System Evaluation and Capacity Assurance Plan for all parts of the sanitary sewer system owned or operated by the Enrollee.
11. The Enrollee shall develop and implement a written Sewer System Management Plan (SSMP) and make it available to the State and/or Regional Water Board upon request. A copy of this document must be publicly available at the Enrollee's office and/or available on the Internet. This SSMP must be approved by the Enrollee's governing board at a public meeting.

12. In accordance with the California Business and Professions Code sections 6735, 7835, and 7835.1, all engineering and geologic evaluations and judgments shall be performed by or under the direction of registered professionals competent and proficient in the fields pertinent to the required activities. Specific elements of the SSMP that require professional evaluation and judgments shall be prepared by or under the direction of appropriately qualified professionals, and shall bear the professional(s)' signature and stamp.
13. The mandatory elements of the SSMP are specified below. However, if the Enrollee believes that any element of this section is not appropriate or applicable to the Enrollee's sanitary sewer system, the SSMP program does not need to address that element. The Enrollee must justify why that element is not applicable. The SSMP must be approved by the deadlines listed in the SSMP Time Schedule below.

Sewer System Management Plan (SSMP)

- (i) **Goal:** The goal of the 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.
- (ii) **Organization:** The SSMP must identify:
- (a) The name of the responsible or authorized representative as described in Section J of this Order.
 - (b) The names and telephone numbers for management, administrative, and maintenance positions responsible for implementing specific measures in the SSMP program. The SSMP must identify lines of authority through an organization chart or similar document with a narrative explanation; and
 - (c) The chain of communication for reporting SSOs, from receipt of a complaint or other information, including the person responsible for reporting SSOs to the State and Regional Water Board and other agencies if applicable (such as County Health Officer, County Environmental Health Agency, Regional Water Board, and/or State Office of Emergency Services (OES)).
- (iii) **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 I/I, stormwater, chemical dumping, 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.
- (iv) **Operation and Maintenance Program.** The SSMP must include those elements listed below that are appropriate and applicable to the Enrollee's 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 preventive 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 risk of collapse or prone to more frequent blockages due to pipe defects. Finally, the rehabilitation and replacement plan should include a capital improvement plan that addresses proper management and protection of the infrastructure assets. The plan shall include a time schedule for implementing the short- and long-term plans plus a schedule for developing the funds needed for the capital improvement plan;
 - (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 replacement parts.

(v) **Design and Performance Provisions:**

(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.

(vi) **Overflow Emergency Response Plan** - Each Enrollee shall develop and implement an overflow emergency response plan that identifies measures to protect public health and the environment. At a minimum, this plan must include the following:

(a) Proper notification procedures so that the primary responders and regulatory agencies are informed of all 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 Boards, water suppliers, etc.) of all SSOs that potentially affect public health or reach the waters of the State in accordance with the MRP. All SSOs shall be reported in accordance with this MRP, the California Water Code, other State Law, and other applicable Regional Water Board WDRs or NPDES permit requirements. The SSMP should identify the officials who will receive immediate notification;

(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 the discharge of untreated and partially treated wastewater to waters of the United States and to minimize or correct any adverse impact on the environment resulting from the SSOs, including such accelerated or additional monitoring as may be necessary to determine the nature and impact of the discharge.

- (vii) **FOG Control Program:** Each Enrollee shall evaluate its service area to determine whether a FOG control program is needed. If an Enrollee determines that a FOG program is not needed, the Enrollee must provide justification for why it is not needed. If FOG is found to be a problem, the Enrollee must prepare and implement a FOG source control program to reduce the amount of these substances discharged to the sanitary sewer system. This plan shall include the following as appropriate:
- (a) An implementation plan and schedule for a public education outreach program that promotes 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 to the system and identify measures to prevent SSOs and blockages caused by FOG;
 - (d) Requirements to install grease removal devices (such as traps or interceptors), design standards for the removal devices, maintenance requirements, 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 to the sanitary sewer system for each section identified in (f) above.
- (viii) **System Evaluation and Capacity Assurance Plan:** The Enrollee shall prepare and implement a capital improvement plan (CIP) that will provide hydraulic capacity of key sanitary sewer system elements for dry weather peak flow conditions, as well as the appropriate design storm or wet weather event. At a minimum, the plan must include:
- (a) **Evaluation:** Actions needed to evaluate those portions of the sanitary sewer system that are experiencing or contributing to an SSO discharge caused by hydraulic deficiency. The evaluation must provide estimates of peak flows (including flows from SSOs

that escape from the system) associated with conditions similar to those causing overflow events, estimates 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; and
 - (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, 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.
 - (d) **Schedule:** The Enrollee shall develop a schedule of completion dates for all portions of the capital improvement program developed in (a)-(c) above. This schedule shall be reviewed and updated consistent with the SSMP review and update requirements as described in Section D. 14.
- (ix) **Monitoring, Measurement, and Program Modifications:** The Enrollee 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.
- (x) **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 (D.13), including identification of any deficiencies in the SSMP and steps to correct them.

- (xi) **Communication Program** – The Enrollee shall communicate on a regular basis with the public on the development, implementation, and performance of its SSMP. The communication system shall provide the public the opportunity to provide input to the 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.

14. 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 above 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 WDRs within the time frames identified in the time schedule provided in subsection D.15, below.

In order to complete this certification, the Enrollee's authorized representative must complete the certification portion in the Online 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 (5) years, and must include any significant program changes. Re-certification by the governing board of the Enrollee is required in accordance with D.14 when significant updates to the SSMP are made. To complete the re-certification process, the Enrollee shall enter the data in the Online SSO Database and mail the form to the State Water Board, as described above.

15. The Enrollee shall comply with these requirements according to the following schedule. This time schedule does not supersede existing requirements or time schedules associated with other permits or regulatory requirements.

Sewer System Management Plan Time Schedule

<u>Task and Associated Section</u>	Completion Date			
	Population > 100,000	Population between 100,000 and 10,000	Population between 10,000 and 2,500	Population < 2,500
Application for Permit Coverage Section C	6 months after WDRs Adoption			
Reporting Program Section G	6 months after WDRs Adoption ¹			
SSMP Development Plan and Schedule No specific Section	9 months after WDRs Adoption ²	12 months after WDRs Adoption ²	15 months after WDRs Adoption ²	18 months after WDRs Adoption ²
Goals and Organization Structure Section D 13 (i) & (ii)	12 months after WDRs Adoption ²		18 months after WDRs Adoption ²	
Overflow Emergency Response Program Section D 13 (vi)	24 months after WDRs Adoption ²	30 months after WDRs Adoption ²	36 months after WDRs Adoption ²	39 months after WDRs Adoption ²
Legal Authority Section D 13 (iii)				
Operation and Maintenance Program Section D 13 (iv)				
Grease Control Program Section D 13 (vii)	36 months after WDRs Adoption	39 months after WDRs Adoption	48 months after WDRs Adoption	51 months after WDRs Adoption
Design and Performance Section D 13 (v)				
System Evaluation and Capacity Assurance Plan Section D 13 (viii)				
Final SSMP, incorporating all of the SSMP requirements Section D 13				

1. In the event that by July 1, 2006 the Executive Director is able to execute a memorandum of agreement (MOA) with the California Water Environment Association (CWEA) or discharger representatives outlining a strategy and time schedule for CWEA or another entity to provide statewide training on the adopted monitoring program, SSO database electronic reporting, and SSMP development, consistent with this Order, then the schedule of Reporting Program Section G shall be replaced with the following schedule:

Reporting Program Section G	
Regional Boards 4, 8, and 9	8 months after WDRs Adoption
Regional Boards 1, 2, and 3	12 months after WDRs Adoption
Regional Boards 5, 6, and 7	16 months after WDRs Adoption

If this MOU is not executed by July 1, 2006, the reporting program time schedule will remain six (6) months for all regions and agency size categories.

2. In the event that the Executive Director executes the MOA identified in note 1 by July 1, 2006, then the deadline for this task shall be extended by six (6) months. The time schedule identified in the MOA must be consistent with the extended time schedule provided by this note. If the MOA is not executed by July 1, 2006, the six (6) month time extension will not be granted.

E. WDRs and SSMP AVAILABILITY

1. A copy of the general WDRs and the certified SSMP shall be maintained at appropriate locations (such as the Enrollee’s offices, facilities, and/or Internet homepage) and shall be available to sanitary sewer system operating and maintenance personnel at all times.

F. ENTRY AND INSPECTION

1. The Enrollee shall allow the State or Regional Water Boards or their authorized representative, upon presentation of credentials and other documents as may be required by law, to:
 - a. Enter upon the Enrollee’s premises where a regulated facility or activity is located or conducted, or where records are kept under the conditions of this Order;
 - b. Have access to and copy, at reasonable times, any records that must be kept under the conditions of this Order;

- c. Inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations regulated or required under this Order; and
- d. Sample or monitor at reasonable times, for the purposes of assuring compliance with this Order or as otherwise authorized by the California Water Code, any substances or parameters at any location.

G. GENERAL MONITORING AND REPORTING REQUIREMENTS

1. The Enrollee shall furnish to the State or Regional Water Board, within a reasonable time, any information that the State or Regional Water Board may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this Order. The Enrollee shall also furnish to the Executive Director of the State Water Board or Executive Officer of the applicable Regional Water Board, upon request, copies of records required to be kept by this Order.
2. The Enrollee shall comply with the attached Monitoring and Reporting Program No. 2006-0003 and future revisions thereto, as specified by the Executive Director. Monitoring results shall be reported at the intervals specified in Monitoring and Reporting Program No. 2006-0003. Unless superseded by a specific enforcement Order for a specific Enrollee, these reporting requirements are intended to replace other mandatory routine written reports associated with SSOs.
3. All Enrollees must obtain SSO Database accounts and receive a "Username" and "Password" by registering through the California Integrated Water Quality System (CIWQS). These accounts will allow controlled and secure entry into the SSO Database. Additionally, within 30 days of receiving an account and prior to recording spills into the SSO Database, all Enrollees must complete the "Collection System Questionnaire", which collects pertinent information regarding a Enrollee's collection system. The "Collection System Questionnaire" must be updated at least every 12 months.
4. Pursuant to Health and Safety Code section 5411.5, any person who, without regard to intent or negligence, causes or permits any untreated wastewater or other waste to be discharged in or on any waters of the State, or discharged in or deposited where it is, or probably will be, discharged in or on any surface waters of the State, as soon as that person has knowledge of the discharge, shall immediately notify the local health officer of the discharge. Discharges of untreated or partially treated wastewater to storm drains and drainage channels, whether man-made or natural or concrete-lined, shall be reported as required above.

Any SSO greater than 1,000 gallons discharged in or on any waters of the State, or discharged in or deposited where it is, or probably will be, discharged in or on any surface waters of the State shall also be reported to the Office of Emergency Services pursuant to California Water Code section 13271.

H. CHANGE IN OWNERSHIP

1. This Order is not transferable to any person or party, except after notice to the Executive Director. The Enrollee shall submit this notice in writing at least 30 days in advance of any proposed transfer. The notice must include a written agreement between the existing and new Enrollee containing a specific date for the transfer of this Order's responsibility and coverage between the existing Enrollee and the new Enrollee. This agreement shall include an acknowledgement that the existing Enrollee is liable for violations up to the transfer date and that the new Enrollee is liable from the transfer date forward.

I. INCOMPLETE REPORTS

1. If an Enrollee becomes aware that it failed to submit any relevant facts in any report required under this Order, the Enrollee shall promptly submit such facts or information by formally amending the report in the Online SSO Database.

J. REPORT DECLARATION

1. All applications, reports, or information shall be signed and certified as follows:
 - (i) All reports required by this Order and other information required by the State or Regional Water Board shall be signed and certified by a person designated, for a municipality, state, federal or other public agency, as either a principal executive officer or ranking elected official, or by a duly authorized representative of that person, as described in paragraph (ii) of this provision. (For purposes of electronic reporting, an electronic signature and accompanying certification, which is in compliance with the Online SSO database procedures, meet this certification requirement.)
 - (ii) An individual is a duly authorized representative only if:
 - (a) The authorization is made in writing by a person described in paragraph (i) of this provision; and
 - (b) The authorization specifies either an individual or a position having responsibility for the overall operation of the regulated facility or activity.

K. CIVIL MONETARY REMEDIES FOR DISCHARGE VIOLATIONS

1. The California Water Code provides various enforcement options, including civil monetary remedies, for violations of this Order.
2. The California Water Code also provides that any person failing or refusing to furnish technical or monitoring program reports, as required under this Order, or

falsifying any information provided in the technical or monitoring reports is subject to civil monetary penalties.

L. SEVERABILITY

1. The provisions of this Order are severable, and if any provision of this Order, or the application of any provision of this Order to any circumstance, is held invalid, the application of such provision to other circumstances, and the remainder of this Order, shall not be affected thereby.
2. This order does not convey any property rights of any sort or any exclusive privileges. The requirements prescribed herein do not authorize the commission of any act causing injury to persons or property, nor protect the Enrollee from liability under federal, state or local laws, nor create a vested right for the Enrollee to continue the waste discharge.

CERTIFICATION

The undersigned Clerk to the State Water Board does hereby certify that the foregoing is a full, true, and correct copy of general WDRs duly and regularly adopted at a meeting of the State Water Resources Control Board held on May 2, 2006.

AYE: Tam M. Doduc
Gerald D. Secundy

NO: Arthur G. Baggett

ABSENT: None

ABSTAIN: None



Song Her
Clerk to the Board

STATE OF CALIFORNIA
WATER RESOURCES CONTROL BOARD
ORDER NO. WQ 2013-0058-EXEC

AMENDING MONITORING AND REPORTING PROGRAM
FOR
STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR
SANITARY SEWER SYSTEMS

The State of California, Water Resources Control Board (hereafter State Water Board) finds:

1. The State Water Board is authorized to prescribe statewide general Waste Discharge Requirements (WDRs) for categories of discharges that involve the same or similar operations and the same or similar types of waste pursuant to Water Code section 13263(i).
2. Water Code section 13193 *et seq.* requires the Regional Water Quality Control Boards (Regional Water Boards) and the State Water Board (collectively, the Water Boards) to gather Sanitary Sewer Overflow (SSO) information and make this information available to the public, including but not limited to, SSO cause, estimated volume, location, date, time, duration, whether or not the SSO reached or may have reached waters of the state, response and corrective action taken, and an enrollee's contact information for each SSO event. An enrollee is defined as the public entity having legal authority over the operation and maintenance of, or capital improvements to, a sanitary sewer system greater than one mile in length.
3. Water Code section 13271, *et seq.* requires notification to the California Office of Emergency Services (Cal OES), formerly the California Emergency Management Agency, for certain unauthorized discharges, including SSOs.
4. On May 2, 2006, the State Water Board adopted Order 2006-0003-DWQ, "Statewide Waste Discharge Requirements for Sanitary Sewer Systems"¹ (hereafter SSS WDRs) to comply with Water Code section 13193 and to establish the framework for the statewide SSO Reduction Program.
5. Subsection G.2 of the SSS WDRs and the Monitoring and Reporting Program (MRP) provide that the Executive Director may modify the terms of the MRP at any time.
6. On February 20, 2008, the State Water Board Executive Director adopted a revised MRP for the SSS WDRs to rectify early notification deficiencies and ensure that first responders are notified in a timely manner of SSOs discharged into waters of the state.
7. When notified of an SSO that reaches a drainage channel or surface water of the state, Cal OES, pursuant to Water Code section 13271(a)(3), forwards the SSO notification information² to local government agencies and first responders including local public health officials and the applicable Regional Water Board. Receipt of notifications for a single SSO event from both the SSO reporter

¹ Available for download at:

http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2006/wqo/wqo2006_0003.pdf

² Cal OES Hazardous Materials Spill Reports available Online at:

[http://w3.calema.ca.gov/operational/mal haz.nsf/\\$defaultview](http://w3.calema.ca.gov/operational/mal haz.nsf/$defaultview) and <http://w3.calema.ca.gov/operational/mal haz.nsf>

and Cal OES is duplicative. To address this, the SSO notification requirements added by the February 20, 2008 MRP revision are being removed in this MRP revision.

8. In the February 28, 2008 Memorandum of Agreement between the State Water Board and the California Water and Environment Association (CWEA), the State Water Board committed to re-designing the CIWQS³ Online SSO Database to allow "event" based SSO reporting versus the original "location" based reporting. Revisions to this MRP and accompanying changes to the CIWQS Online SSO Database will implement this change by allowing for multiple SSO appearance points to be associated with each SSO event caused by a single asset failure.
9. Based on stakeholder input and Water Board staff experience implementing the SSO Reduction Program, SSO categories have been revised in this MRP. In the prior version of the MRP, SSOs have been categorized as Category 1 or Category 2. This MRP implements changes to SSO categories by adding a Category 3 SSO type. This change will improve data management to further assist Water Board staff with evaluation of high threat and low threat SSOs by placing them in unique categories (i.e., Category 1 and Category 3, respectively). This change will also assist enrollees in identifying SSOs that require Cal OES notification.
10. Based on over six years of implementation of the SSS WDRs, the State Water Board concludes that the February 20, 2008 MRP must be updated to better advance the SSO Reduction Program⁴ objectives, assess compliance, and enforce the requirements of the SSS WDRs.

IT IS HEREBY ORDERED THAT:

Pursuant to the authority delegated by Water Code section 13267(f), Resolution 2002-0104, and Order 2006-0003-DWQ, the MRP for the SSS WDRs (Order 2006-0003-DWQ) is hereby amended as shown in Attachment A and shall be effective on September 9, 2013.

8/6/13

Date



Thomas Howard
Executive Director

³ California Integrated Water Quality System (CIWQS) publicly available at <http://www.waterboards.ca.gov/ciwqs/publicreports.shtml>

⁴ Statewide Sanitary Sewer Overflow Reduction Program information is available at: http://www.waterboards.ca.gov/water_issues/programs/ssor/

ATTACHMENT A

STATE WATER RESOURCES CONTROL BOARD ORDER NO. WQ 2013-0058-EXEC

AMENDING MONITORING AND REPORTING PROGRAM FOR STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR SANITARY SEWER SYSTEMS

This Monitoring and Reporting Program (MRP) establishes monitoring, record keeping, reporting and public notification requirements for Order 2006-0003-DWQ, "Statewide General Waste Discharge Requirements for Sanitary Sewer Systems" (SSS WDRs). This MRP shall be effective from September 9, 2013 until it is rescinded. The Executive Director may make revisions to this MRP at any time. These revisions may include a reduction or increase in the monitoring and reporting requirements. All site specific records and data developed pursuant to the SSS WDRs and this MRP shall be complete, accurate, and justified by evidence maintained by the enrollee. Failure to comply with this MRP may subject an enrollee to civil liabilities of up to \$5,000 a day per violation pursuant to Water Code section 13350; up to \$1,000 a day per violation pursuant to Water Code section 13268; or referral to the Attorney General for judicial civil enforcement. The State Water Resources Control Board (State Water Board) reserves the right to take any further enforcement action authorized by law.

A. SUMMARY OF MRP REQUIREMENTS

Table 1 – Spill Categories and Definitions

CATEGORIES	DEFINITIONS [see Section A on page 5 of Order 2006-0003-DWQ, for Sanitary Sewer Overflow (SSO) definition]
CATEGORY 1	Discharges of untreated or partially treated wastewater of any volume resulting from an enrollee's sanitary sewer system failure or flow condition that: <ul style="list-style-type: none">• Reach surface water and/or reach a drainage channel tributary to a surface water; or• Reach a Municipal Separate Storm Sewer System (MS4) and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly. Any volume of wastewater not recovered from the MS4 is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or groundwater infiltration basin (e.g., infiltration pit, percolation pond).
CATEGORY 2	Discharges of untreated or partially treated wastewater of 1,000 gallons or greater resulting from an enrollee's sanitary sewer system failure or flow condition that do not reach surface water, a drainage channel, or a MS4 unless the entire SSO discharged to the storm drain system is fully recovered and disposed of properly.
CATEGORY 3	All other discharges of untreated or partially treated wastewater resulting from an enrollee's sanitary sewer system failure or flow condition.
PRIVATE LATERAL SEWAGE DISCHARGE (PLSD)	Discharges of untreated or partially treated wastewater resulting from blockages or other problems within a privately owned sewer lateral connected to the enrollee's sanitary sewer system or from other private sewer assets. PLSDs that the enrollee becomes aware of may be voluntarily reported to the California Integrated Water Quality System (CIWQS) Online SSO Database.

Table 2 – Notification, Reporting, Monitoring, and Record Keeping Requirements

ELEMENT	REQUIREMENT	METHOD
NOTIFICATION (see section B of MRP)	<ul style="list-style-type: none"> • Within two hours of becoming aware of any Category 1 SSO greater than or equal to 1,000 gallons discharged to surface water or spilled in a location where it probably will be discharged to surface water, notify the California Office of Emergency Services (Cal OES) and obtain a notification control number. 	Call Cal OES at: (800) 852-7550
REPORTING (see section C of MRP)	<ul style="list-style-type: none"> • Category 1 SSO: Submit draft report within three business days of becoming aware of the SSO and certify within 15 calendar days of SSO end date. • Category 2 SSO: Submit draft report within 3 business days of becoming aware of the SSO and certify within 15 calendar days of the SSO end date. • Category 3 SSO: Submit certified report within 30 calendar days of the end of month in which SSO the occurred. • SSO Technical Report: Submit within 45 calendar days after the end date of any Category 1 SSO in which 50,000 gallons or greater are spilled to surface waters. • “No Spill” Certification: Certify that no SSOs occurred within 30 calendar days of the end of the month or, if reporting quarterly, the quarter in which no SSOs occurred. • Collection System Questionnaire: Update and certify every 12 months. 	Enter data into the CIWQS Online SSO Database (http://ciwqs.waterboards.ca.gov/), certified by enrollee’s Legally Responsible Official(s).
WATER QUALITY MONITORING (see section D of MRP)	<ul style="list-style-type: none"> • Conduct water quality sampling within 48 hours after initial SSO notification for Category 1 SSOs in which 50,000 gallons or greater are spilled to surface waters. 	Water quality results are required to be uploaded into CIWQS for Category 1 SSOs in which 50,000 gallons or greater are spilled to surface waters.
RECORD KEEPING (see section E of MRP)	<ul style="list-style-type: none"> • SSO event records. • Records documenting Sanitary Sewer Management Plan (SSMP) implementation and changes/updates to the SSMP. • Records to document Water Quality Monitoring for SSOs of 50,000 gallons or greater spilled to surface waters. • Collection system telemetry records if relied upon to document and/or estimate SSO Volume. 	Self-maintained records shall be available during inspections or upon request.

B. NOTIFICATION REQUIREMENTS

Although Regional Water Quality Control Boards (Regional Water Boards) and the State Water Board (collectively, the Water Boards) staff do not have duties as first responders, this MRP is an appropriate mechanism to ensure that the agencies that have first responder duties are notified in a timely manner in order to protect public health and beneficial uses.

1. For any Category 1 SSO greater than or equal to 1,000 gallons that results in a discharge to a surface water or spilled in a location where it probably will be discharged to surface water, either directly or by way of a drainage channel or MS4, the enrollee shall, as soon as possible, but not later than two (2) hours after (A) the enrollee has knowledge of the discharge, (B) notification is possible, and (C) notification can be provided without substantially impeding cleanup or other emergency measures, notify the Cal OES and obtain a notification control number.
2. To satisfy notification requirements for each applicable SSO, the enrollee shall provide the information requested by Cal OES before receiving a control number. Spill information requested by Cal OES may include:
 - i. Name of person notifying Cal OES and direct return phone number.
 - ii. Estimated SSO volume discharged (gallons).
 - iii. If ongoing, estimated SSO discharge rate (gallons per minute).
 - iv. SSO Incident Description:
 - a. Brief narrative.
 - b. On-scene point of contact for additional information (name and cell phone number).
 - c. Date and time enrollee became aware of the SSO.
 - d. Name of sanitary sewer system agency causing the SSO.
 - e. SSO cause (if known).
 - v. Indication of whether the SSO has been contained.
 - vi. Indication of whether surface water is impacted.
 - vii. Name of surface water impacted by the SSO, if applicable.
 - viii. Indication of whether a drinking water supply is or may be impacted by the SSO.
 - ix. Any other known SSO impacts.
 - x. SSO incident location (address, city, state, and zip code).
3. Following the initial notification to Cal OES and until such time that an enrollee certifies the SSO report in the CIWQS Online SSO Database, the enrollee shall provide updates to Cal OES regarding substantial changes to the estimated volume of untreated or partially treated sewage discharged and any substantial change(s) to known impact(s).
4. PLSDs: The enrollee is strongly encouraged to notify Cal OES of discharges greater than or equal to 1,000 gallons of untreated or partially treated wastewater that result or may result in a discharge to surface water resulting from failures or flow conditions within a privately owned sewer lateral or from other private sewer asset(s) if the enrollee becomes aware of the PLSD.

C. REPORTING REQUIREMENTS

1. **CIWQS Online SSO Database Account:** All enrollees shall obtain a CIWQS Online SSO Database account and receive a “Username” and “Password” by registering through CIWQS. These accounts allow controlled and secure entry into the CIWQS Online SSO Database.
2. **SSO Mandatory Reporting Information:** For reporting purposes, if one SSO event results in multiple appearance points in a sewer system asset, the enrollee shall complete one SSO report in the CIWQS Online SSO Database which includes the GPS coordinates for the location of the SSO appearance point closest to the failure point, blockage or location of the flow condition that caused the SSO, and provide descriptions of the locations of all other discharge points associated with the SSO event.
3. **SSO Categories**
 - i. **Category 1** – Discharges of untreated or partially treated wastewater of any volume resulting from an enrollee’s sanitary sewer system failure or flow condition that:
 - a. Reach surface water and/or reach a drainage channel tributary to a surface water; or
 - b. Reach a MS4 and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly. Any volume of wastewater not recovered from the MS4 is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or groundwater infiltration basin (e.g., infiltration pit, percolation pond).
 - ii. **Category 2** – Discharges of untreated or partially treated wastewater greater than or equal to 1,000 gallons resulting from an enrollee’s sanitary sewer system failure or flow condition that does not reach a surface water, a drainage channel, or the MS4 unless the entire SSO volume discharged to the storm drain system is fully recovered and disposed of properly.
 - iii. **Category 3** – All other discharges of untreated or partially treated wastewater resulting from an enrollee’s sanitary sewer system failure or flow condition.
4. **Sanitary Sewer Overflow Reporting to CIWQS - Timeframes**
 - i. **Category 1 and Category 2 SSOs** – All SSOs that meet the above criteria for Category 1 or Category 2 SSOs shall be reported to the CIWQS Online SSO Database:
 - a. Draft reports for Category 1 and Category 2 SSOs shall be submitted to the CIWQS Online SSO Database within three (3) business days of the enrollee becoming aware of the SSO. Minimum information that shall be reported in a draft Category 1 SSO report shall include all information identified in section 8.i.a. below. Minimum information that shall be reported in a Category 2 SSO draft report shall include all information identified in section 8.i.c below.
 - b. A final Category 1 or Category 2 SSO report shall be certified through the CIWQS Online SSO Database within 15 calendar days of the end date of the SSO. Minimum information that shall be certified in the final Category 1 SSO report shall include all information identified in section 8.i.b below. Minimum information that shall be certified in a final Category 2 SSO report shall include all information identified in section 8.i.d below.

- ii. **Category 3 SSOs** – All SSOs that meet the above criteria for Category 3 SSOs shall be reported to the CIWQS Online SSO Database and certified within 30 calendar days after the end of the calendar month in which the SSO occurs (e.g., all Category 3 SSOs occurring in the month of February shall be entered into the database and certified by March 30). Minimum information that shall be certified in a final Category 3 SSO report shall include all information identified in section 8.i.e below.
- iii. **“No Spill” Certification** – If there are no SSOs during the calendar month, the enrollee shall either 1) certify, within 30 calendar days after the end of each calendar month, a “No Spill” certification statement in the CIWQS Online SSO Database certifying that there were no SSOs for the designated month, or 2) certify, quarterly within 30 calendar days after the end of each quarter, “No Spill” certification statements in the CIWQS Online SSO Database certifying that there were no SSOs for each month in the quarter being reported on. For quarterly reporting, the quarters are Q1 - January/ February/ March, Q2 - April/May/June, Q3 - July/August/September, and Q4 - October/November/December.

If there are no SSOs during a calendar month but the enrollee reported a PLSD, the enrollee shall still certify a “No Spill” certification statement for that month.
- iv. **Amended SSO Reports** – The enrollee may update or add additional information to a certified SSO report within 120 calendar days after the SSO end date by amending the report or by adding an attachment to the SSO report in the CIWQS Online SSO Database. SSO reports certified in the CIWQS Online SSO Database prior to the adoption date of this MRP may only be amended up to 120 days after the effective date of this MRP. After 120 days, the enrollee may contact the SSO Program Manager to request to amend an SSO report if the enrollee also submits justification for why the additional information was not available prior to the end of the 120 days.

5. **SSO Technical Report**

The enrollee shall submit an SSO Technical Report in the CIWQS Online SSO Database within 45 calendar days of the SSO end date for any SSO in which 50,000 gallons or greater are spilled to surface waters. This report, which does not preclude the Water Boards from requiring more detailed analyses if requested, shall include at a minimum, the following:

- i. **Causes and Circumstances of the SSO:**
 - a. Complete and detailed explanation of how and when the SSO was discovered.
 - b. Diagram showing the SSO failure point, appearance point(s), and final destination(s).
 - c. Detailed description of the methodology employed and available data used to calculate the volume of the SSO and, if applicable, the SSO volume recovered.
 - d. Detailed description of the cause(s) of the SSO.
 - e. Copies of original field crew records used to document the SSO.
 - f. Historical maintenance records for the failure location.
- ii. **Enrollee’s Response to SSO:**
 - a. Chronological narrative description of all actions taken by enrollee to terminate the spill.
 - b. Explanation of how the SSMP Overflow Emergency Response plan was implemented to respond to and mitigate the SSO.

- c. Final corrective action(s) completed and/or planned to be completed, including a schedule for actions not yet completed.

iii. **Water Quality Monitoring:**

- a. Description of all water quality sampling activities conducted including analytical results and evaluation of the results.
- b. Detailed location map illustrating all water quality sampling points.

6. **PLSDs**

Discharges of untreated or partially treated wastewater resulting from blockages or other problems within a privately owned sewer lateral connected to the enrollee's sanitary sewer system or from other private sanitary sewer system assets may be voluntarily reported to the CIWQS Online SSO Database.

- i. The enrollee is also encouraged to provide notification to Cal OES per section B above when a PLSD greater than or equal to 1,000 gallons has or may result in a discharge to surface water. For any PLSD greater than or equal to 1,000 gallons regardless of the spill destination, the enrollee is also encouraged to file a spill report as required by Health and Safety Code section 5410 et. seq. and Water Code section 13271, or notify the responsible party that notification and reporting should be completed as specified above and required by State law.
- ii. If a PLSD is recorded in the CIWQS Online SSO Database, the enrollee must identify the sewage discharge as occurring and caused by a private sanitary sewer system asset and should identify a responsible party (other than the enrollee), if known. Certification of PLSD reports by enrollees is not required.

7. **CIWQS Online SSO Database Unavailability**

In the event that the CIWQS Online SSO Database is not available, the enrollee must fax or e-mail all required information to the appropriate Regional Water Board office in accordance with the time schedules identified herein. In such event, the enrollee must also enter all required information into the CIWQS Online SSO Database when the database becomes available.

8. **Mandatory Information to be Included in CIWQS Online SSO Reporting**

All enrollees shall obtain a CIWQS Online SSO Database account and receive a "Username" and "Password" by registering through CIWQS which can be reached at CIWQS@waterboards.ca.gov or by calling (866) 792-4977, M-F, 8 A.M. to 5 P.M. These accounts will allow controlled and secure entry into the CIWQS Online SSO Database. Additionally, within thirty (30) days of initial enrollment and prior to recording SSOs into the CIWQS Online SSO Database, all enrollees must complete a Collection System Questionnaire (Questionnaire). The Questionnaire shall be updated at least once every 12 months.

i. **SSO Reports**

At a minimum, the following mandatory information shall be reported prior to finalizing and certifying an SSO report for each category of SSO:

- a. **Draft Category 1 SSOs**: At a minimum, the following mandatory information shall be reported for a draft Category 1 SSO report:
1. SSO Contact Information: Name and telephone number of enrollee contact person who can answer specific questions about the SSO being reported.
 2. SSO Location Name.
 3. Location of the overflow event (SSO) by entering GPS coordinates. If a single overflow event results in multiple appearance points, provide GPS coordinates for the appearance point closest to the failure point and describe each additional appearance point in the SSO appearance point explanation field.
 4. Whether or not the SSO reached surface water, a drainage channel, or entered and was discharged from a drainage structure.
 5. Whether or not the SSO reached a municipal separate storm drain system.
 6. Whether or not the total SSO volume that reached a municipal separate storm drain system was fully recovered.
 7. Estimate of the SSO volume, inclusive of all discharge point(s).
 8. Estimate of the SSO volume that reached surface water, a drainage channel, or was not recovered from a storm drain.
 9. Estimate of the SSO volume recovered (if applicable).
 10. Number of SSO appearance point(s).
 11. Description and location of SSO appearance point(s). If a single sanitary sewer system failure results in multiple SSO appearance points, each appearance point must be described.
 12. SSO start date and time.
 13. Date and time the enrollee was notified of, or self-discovered, the SSO.
 14. Estimated operator arrival time.
 15. For spills greater than or equal to 1,000 gallons, the date and time Cal OES was called.
 16. For spills greater than or equal to 1,000 gallons, the Cal OES control number.
- b. **Certified Category 1 SSOs**: At a minimum, the following mandatory information shall be reported for a certified Category 1 SSO report, in addition to all fields in section 8.i.a :
1. Description of SSO destination(s).
 2. SSO end date and time.
 3. SSO causes (mainline blockage, roots, etc.).
 4. SSO failure point (main, lateral, etc.).
 5. Whether or not the spill was associated with a storm event.
 6. Description of spill corrective action, including steps planned or taken to reduce, eliminate, and prevent reoccurrence of the overflow; and a schedule of major milestones for those steps.
 7. Description of spill response activities.
 8. Spill response completion date.
 9. Whether or not there is an ongoing investigation, the reasons for the investigation and the expected date of completion.

10. Whether or not a beach closure occurred or may have occurred as a result of the SSO.
 11. Whether or not health warnings were posted as a result of the SSO.
 12. Name of beach(es) closed and/or impacted. If no beach was impacted, NA shall be selected.
 13. Name of surface water(s) impacted.
 14. If water quality samples were collected, identify parameters the water quality samples were analyzed for. If no samples were taken, NA shall be selected.
 15. If water quality samples were taken, identify which regulatory agencies received sample results (if applicable). If no samples were taken, NA shall be selected.
 16. Description of methodology(ies) and type of data relied upon for estimations of the SSO volume discharged and recovered.
 17. SSO Certification: Upon SSO Certification, the CIWQS Online SSO Database will issue a final SSO identification (ID) number.
- c. **Draft Category 2 SSOs:** At a minimum, the following mandatory information shall be reported for a draft Category 2 SSO report:
1. Items 1-14 in section 8.i.a above for Draft Category 1 SSO.
- d. **Certified Category 2 SSOs:** At a minimum, the following mandatory information shall be reported for a certified Category 2 SSO report:
1. Items 1-14 in section 8.i.a above for Draft Category 1 SSO and Items 1-9, and 17 in section 8.i.b above for Certified Category 1 SSO.
- e. **Certified Category 3 SSOs:** At a minimum, the following mandatory information shall be reported for a certified Category 3 SSO report:
1. Items 1-14 in section 8.i.a above for Draft Category 1 SSO and Items 1-5, and 17 in section 8.i.b above for Certified Category 1 SSO.

ii. **Reporting SSOs to Other Regulatory Agencies**

These reporting requirements do not preclude an enrollee from reporting SSOs to other regulatory agencies pursuant to state law. In addition, these reporting requirements do not replace other Regional Water Board notification and reporting requirements for SSOs.

iii. **Collection System Questionnaire**

The required Questionnaire (see subsection G of the SSS WDRs) provides the Water Boards with site-specific information related to the enrollee's sanitary sewer system. The enrollee shall complete and certify the Questionnaire at least every 12 months to facilitate program implementation, compliance assessment, and enforcement response.

iv. **SSMP Availability**

The enrollee shall provide the publicly available internet web site address to the CIWQS Online SSO Database where a downloadable copy of the enrollee's approved SSMP, critical supporting documents referenced in the SSMP, and proof of local governing board approval of the SSMP is posted. If all of the SSMP documentation listed in this subsection is not publicly available on the Internet, the enrollee shall comply with the following procedure:

- a. Submit an **electronic** copy of the enrollee's approved SSMP, critical supporting documents referenced in the SSMP, and proof of local governing board approval of the SSMP to the State Water Board, within 30 days of that approval and within 30 days of any subsequent SSMP re-certifications, to the following mailing address:

State Water Resources Control Board
Division of Water Quality
Attn: SSO Program Manager
1001 I Street, 15th Floor, Sacramento, CA 95814

D. WATER QUALITY MONITORING REQUIREMENTS:

To comply with subsection D.7(v) of the SSS WDRs, the enrollee shall develop and implement an SSO Water Quality Monitoring Program to assess impacts from SSOs to surface waters in which 50,000 gallons or greater are spilled to surface waters. The SSO Water Quality Monitoring Program, shall, at a minimum:

1. Contain protocols for water quality monitoring.
2. Account for spill travel time in the surface water and scenarios where monitoring may not be possible (e.g. safety, access restrictions, etc.).
3. Require water quality analyses for ammonia and bacterial indicators to be performed by an accredited or certified laboratory.
4. Require monitoring instruments and devices used to implement the SSO Water Quality Monitoring Program to be properly maintained and calibrated, including any records to document maintenance and calibration, as necessary, to ensure their continued accuracy.
5. Within 48 hours of the enrollee becoming aware of the SSO, require water quality sampling for, at a minimum, the following constituents:
 - i. Ammonia
 - ii. Appropriate Bacterial indicator(s) per the applicable Basin Plan water quality objective or Regional Board direction which may include total and fecal coliform, enterococcus, and e-coli.

E. RECORD KEEPING REQUIREMENTS:

The following records shall be maintained by the enrollee for a minimum of five (5) years and shall be made available for review by the Water Boards during an onsite inspection or through an information request:

1. General Records: The enrollee shall maintain records to document compliance with all provisions of the SSS WDRs and this MRP for each sanitary sewer system owned including any required records generated by an enrollee's sanitary sewer system contractor(s).
2. SSO Records: The enrollee shall maintain records for each SSO event, including but not limited to:
 - i. Complaint records documenting how the enrollee responded to all notifications of possible or actual SSOs, both during and after business hours, including complaints that do not

result in SSOs. Each complaint record shall, at a minimum, include the following information:

- a. Date, time, and method of notification.
 - b. Date and time the complainant or informant first noticed the SSO.
 - c. Narrative description of the complaint, including any information the caller can provide regarding whether or not the complainant or informant reporting the potential SSO knows if the SSO has reached surface waters, drainage channels or storm drains.
 - d. Follow-up return contact information for complainant or informant for each complaint received, if not reported anonymously.
 - e. Final resolution of the complaint.
- ii. Records documenting steps and/or remedial actions undertaken by enrollee, using all available information, to comply with section D.7 of the SSS WDRs.
 - iii. Records documenting how all estimate(s) of volume(s) discharged and, if applicable, volume(s) recovered were calculated.
3. Records documenting all changes made to the SSMP since its last certification indicating when a subsection(s) of the SSMP was changed and/or updated and who authorized the change or update. These records shall be attached to the SSMP.
 4. Electronic monitoring records relied upon for documenting SSO events and/or estimating the SSO volume discharged, including, but not limited to records from:
 - i. Supervisory Control and Data Acquisition (SCADA) systems
 - ii. Alarm system(s)
 - iii. Flow monitoring device(s) or other instrument(s) used to estimate wastewater levels, flow rates and/or volumes.

F. CERTIFICATION

1. All information required to be reported into the CIWQS Online SSO Database shall be certified by a person designated as described in subsection J of the SSS WDRs. This designated person is also known as a Legally Responsible Official (LRO). An enrollee may have more than one LRO.
2. Any designated person (i.e. an LRO) shall be registered with the State Water Board to certify reports in accordance with the CIWQS protocols for reporting.
3. Data Submitter (DS): Any enrollee employee or contractor may enter draft data into the CIWQS Online SSO Database on behalf of the enrollee if authorized by the LRO and registered with the State Water Board. However, only LROs may certify reports in CIWQS.
4. The enrollee shall maintain continuous coverage by an LRO. Any change of a registered LRO or DS (e.g., retired staff), including deactivation or a change to the LRO's or DS's contact information, shall be submitted by the enrollee to the State Water Board within 30 days of the change by calling (866) 792-4977 or e-mailing help@ciwqs.waterboards.ca.gov.

5. A registered designated person (i.e., an LRO) shall certify all required reports under penalty of perjury laws of the state as stated in the CIWQS Online SSO Database at the time of certification.

CERTIFICATION

The undersigned Clerk to the Board does hereby certify that the foregoing is a full, true, and correct copy of an order amended by the Executive Director of the State Water Resources Control Board.

7/30/13

Date



Jeanine Townsend
Clerk to the Board

APPENDIX B

**GDPUD RESOLUTIONS, CALIFORNIA HEALTH AND SAFETY CODE AND GRANT AND
AGREEMENT**

RESOLUTION NO. 84-6

A RESOLUTION OF THE BOARD OF DIRECTORS OF GEORGETOWN
DIVIDE PUBLIC UTILITY DISTRICT DECLARING INTENT
TO FORM AN ON-SITE WASTEWATER DISPOSAL ZONE IN A
PORTION OF GEORGETOWN DIVIDE PUBLIC UTILITY DISTRICT

AUBURN LAKE TRAILS SUBDIVISION
ON-SITE WASTEWATER DISPOSAL ZONE
GEORGETOWN DIVIDIE PUBLIC UTILITY DISTRICT

BE IT RESOLVED by the Board of Directors (BOARD) of
Georgetown Divide Public Utility District (DISTRICT), El Dorado
County, California:

WHEREAS, the BOARD of DISTRICT has been requested by
representatives of Transamerica Development Company (TADCO) and the
Auburn Lake Trails Property Owners Association (ASSOCIATION) to form
an On-Site Wastewater Disposal Zone for Auburn Lake Trails Subdivision,
which comprises a portion of DISTRICT territory, a copy of said
request, marked Exhibit B, is attached hereto, incorporated herein,
and made a part hereof; and,

WHEREAS, TADCO and ASSOCIATION have further requested the
BOARD to discontinue the proceedings of Sewer Assessment District No.
1, which would provide for the construction of a sanitary sewage
system for all of the lots and properties within the boundaries of
the Auburn Lake Trails Subdivision, as more particularly set forth
in said Exhibit A; and,

WHEREAS, A Summary Report of On-Site Disposal Suitability
for Auburn Lake Trails Subdivision has been prepared dated May, 1984,
revised June and July, 1984, marked Exhibit C, attached hereto, made
a part hereof, and incorporated herein by reference, which finds,
subject to conditions and limitations stated therein, that
approximately 1105 but not exceeding 1110 lots have been judged

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1 sewage systems, which subdivision community-wide sewers or sewage
2 systems may not be financially feasible.

3 6. A description of the proposed type of On-Site
4 Wastewater Disposal Zone systems is attached hereto, marked
5 Exhibit D, made a part hereof and incorporated herein by reference.

6 7. The proposed plan for wastewater disposal is
7 attached hereto, marked Exhibit E, made a part hereof, and incorp-
8 orated herein by reference. The individual lots within the Zone,
9 except as hereinafter noted shall utilize a system based upon an
10 on-site investigation which includes, but is not limited to, (a)
11 Soils analysis, (b) Depth to groundwater, (c) Depth to impermeable
12 barrier, (d) Percolation characteristics, (e) Topographic analysis,
13 and (f) Legislated setbacks. The DISTRICT shall investigate, test,
14 design, operate, monitor, inspect, and if necessary, maintain and
15 repair the On-Site Wastewater Disposal Systems within the Zone at
16 the individual homeowner's expense. A limited number of lots
17 within an area known as the Community Disposal System (CDS) have
18 been investigated, tested, and designed and shall be operated,
19 monitored, inspected, and, if necessary, maintained and repaired
20 at the individual homeowner's expense. CDS lots shall incorporate
21 individual on-site primary wastewater treatment systems with
22 connection to common sub-surface and/or mound disposal systems.
23 The DISTRICT shall assume jurisdiction over maintenance and opera-
24 tion functions, and if necessary construct additions to existing
25 said common sub-surface disposal systems and common mound disposal
26 systems, investigate, test, design, operate, monitor, inspect and
27 if necessary maintain and operate said common sub-surface disposal
28 systems and common mound disposal systems.

1 The DISTRICT will issue a permit for each on-site system,
2 subject to final design approval by the DISTRICT and El Dorado County
3 Health Department.

4 8. The number of residential units and commercial units in
5 the proposed Zone which the DISTRICT proposes to serve is:

6 A. Approximately 1105, but not to exceed 1110 single family
7 residential units, and one residential unit connected to a clubhouse
8 on-site disposal system;

9 B. Not more than 12 other on-site disposal system units for
10 equestrian center users, office complex users, clubhouse users,
11 swimming pool users, tennis court users, campground users, and a small
12 building now used by a private day school, all of which are, or shall
13 be facilities owned or controlled by the ASSOCIATION.

14 9. The proposed means of financing the operation of the
15 Zone are service charges for maintenance and operation, connection
16 charges and transfer of ASSOCIATION funds for capital improvements
17 and replacements of the Community Disposal System. Extraordinary
18 expenses incurred by the DISTRICT for maintenance operation, testing,
19 monitoring, surveillance, repairs or replacement of individual on-
20 site wastewater disposal systems or community disposal systems shall
21 be assessed solely to the benefitting property owners as provided for
22 under Section 6978, et sec. of Health and Safety Code of the State
23 of California. The proposed budget at today's costs for the first
24 year's operation of said On-Site Wastewater Disposal Zone is attached
25 hereto, marked Exhibit F, made a part hereof, and incorporated herein
26 by reference.

27 10. The time and place for hearing by the Board for the
28 proposed On-Site Wastewater Disposal Zone on the question of formation

1 of the proposed Zone, and on the type of residential and commercial
2 users that the DISTRICT proposes to serve in the proposed Zone is
3 October __, 1984 at ____ P.M. at the Northside School Auditorium,
4 Highway 49, Cool, California. At such time and place, any interested
5 persons will be heard by the Board.

6 11. A certified copy of this Resolution of Intention shall
7 be filed and recorded in the Office of the County Recorder of El
8 Dorado County, in which all of the land in the proposed Zone is situated.

9 12. Notice of said hearing shall be given pursuant to Section
10 6958 of the Health and Safety Code of California.

11 13. The local Health Officer is requested to review and
12 report his findings in writing to the Board pursuant to Section 6960
13 of the Health and Safety Code of California.

14 14. The California Regional Water Quality Control Board
15 Central Valley Region, is requested to review the proposed formation
16 and report its findings in writing to the Board pursuant to Section
17 6960.1 of the Health and Safety Code of California.

18 15. The formation of the On-Site Wastewater Disposal Zone
19 shall be effective but shall not become operative until the following
20 conditions have been met:

21 A. There is Finality of Judgment in Class Action, Case
22 Number 34594, Superior Court of the State of California, in and for
23 the County of El Dorado, as a result of the Agreement of Compromise
24 and Settlement of Class Action executed by TADCO and ASSOCIATION.
25 Finality of Judgment will occur on the date which is 20 days after
26 the date the time for appeal shall expire as to any judgment approving
27 the ASSOCIATION and TADCO Settlement is made by the Superior Court
28

1 or, if an appeal is taken, the date of final judgment on appeal
2 approving the Settlement.

3 B. TADCO shall agree to retire, pay off, or amortize all
4 obligations for water bonds with respect to lots deeded by TADCO to
5 ASSOCIATION as open space. If TADCO elects to amortize payment of
6 these water bonds, TADCO agrees to indemnify the ASSOCIATION from and
7 against any loss from water bonds attributable to lots and other TADCO
8 properties so deeded to ASSOCIATION as common area. With respect to
9 restricted and easement lots defined in said Agreement of Compromise
10 and Settlement of Class Action, TADCO shall agree to pay off or
11 amortize the water bonds for the period in which it owns said restricted
12 and easement lots reserving the right to sell these lots subject to
13 purchasers' assumption of water bond obligations, providing any water
14 bond obligation thereon is a legally chargeable obligation against
15 any purchaser thereof, and if not, reserving the right to sell these
16 lots and retire, pay off, or amortize all obligations for water bonds
17 with respect to these lots.

18
19 C. El Dorado County shall adopt an Ordinance substantially
20 in the form of Exhibit G, attached hereto, incorporated herein and
21 made a part hereof applicable only to Auburn Lake Trails Subdivision.

22
23 D. The California Regional Water Quality Control Board,
24 Central Valley Region, shall accept the variances from the State Water
25 Resources Control Board, Guidelines for Mound Systems, January, 1980,
26 set forth in said Exhibit D.

27
28

1 E. TADCO shall make the contributions set forth in said
2 Exhibit F to be made on behalf of TADCO and convey any easements owned
3 by TADCO required for disposal sites for the CDS and MCDS as referred
4 to in Exhibit F.

5
6 F. POA shall make the contributions set forth in Exhibit F
7 to be made on behalf of POA, shall execute an agreement to collect
8 fees as provided in said Exhibit F, shall convey any easements owned
9 by POA required for disposal sites for the CDS and MCDS as referred to
10 in Exhibit F, and shall amend its by-laws for DISTRICT participation
11 in its Design Committee as set forth in said Exhibit E.

12
13 G. The California Regional Water Quality Control Board,
14 Central Valley Region, shall issue its Waste Discharge Requirements
15 required for said On-Site Wastewater Disposal Zone and providing for
16 the removal of TADCO and POA from any obligation under said Waste
17 Discharge Requirements, unless TADCO and/or POA waive such removal.
18

19 PASSED AND ADOPTED by the Board of Directors of Georgetown
20 Divide Public Utility District this 8th day of August, 1984, at
21 a duly called regular meeting by the following vote:

22 AYES: Directors John C. Lampson, Fred G. DeBerry,
23 Wade B. Milner, Arthur E. Smoot and Robert E. Flynn
24 NOES: None.
25 ABSENT: None.

26 John C. Lampson
John C. Lampson, President
Board of Directors
GEORGETOWN DIVIDE PUBLIC UTILITY DISTRICT

27 ATTEST:
28 Charles F. Gierau
Charles F. Gierau, Clerk and ex officio
Secretary, Board of Directors, GDPUD

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CERTIFICATE

I hereby certify that the foregoing is a full, true and correct copy of Resolution 84-6, duly and regularly adopted by the Board of Directors of the GEORGETOWN DIVIDE PUBLIC UTILITY DISTRICT, El Dorado County, State of California.



CHARLES F. GIERAU, Clerk and
ex officio Secretary, Board of
Directors, GEORGETOWN DIVIDE
PUBLIC UTILITY DISTRICT

PROPOSED PLAN FOR WASTEWATER DISPOSAL

The proposed plan for wastewater disposal; individual lots within the Zone, except as hereinafter noted shall utilize a system based upon an on-site investigation which includes, but is not limited to, (a) Soils analysis, (b) Depth to groundwater, (c) Depth to impermeable barrier, (d) Percolation characteristics, (e) Topographic analysis, and (f) Legislated setbacks. The District shall investigate, test, design, operate, monitor, inspect, and if necessary, maintain and repair the On-Site Wastewater Disposal Systems within the Zone. A limited number of lots within an area known as the Community Disposal System (CDS) have been investigated, tested, and designed and shall be operated, monitored, inspected, and, if necessary, maintained and repaired. CDS lots shall incorporate individual on-site primary wastewater treatment systems with connection to common sub-surface and/or mound disposal systems. The District shall assume jurisdiction over maintenance and operation functions, and if necessary construct additions to existing said common sub-surface disposal systems and common mound disposal systems, investigate, test, design, operate, monitor, inspect and if necessary maintain and operate said common sub-surface disposal systems and common mound disposal systems.

The DISTRICT will issue a permit for each on-site system, subject to final design approval by the DISTRICT and El Dorado County Health Department.

The DISTRICT on behalf of the Zone will assume management, jurisdiction and control of the CDS, including the disposal site and

collection system currently in place and additional collection system to be installed at the subdivision, and the MCDS including the disposal site and collection system scheduled to be constructed at the subdivision and to collect connection charges from lot owners connecting to them.

The DISTRICT on behalf of the Zone will accept ownership of easements for the disposal sites of the CDS and any Mini Community Disposal System (MCDS), and easements for the collection lines, transmission lines, pumping stations and appurtenances for the CDS and MCDS.

The DISTRICT on behalf of the Zone shall pay for, from funds collected by it for connection charges and funds transferred to it by POA above for the CDS, shall make future modifications and/or expansion of the CDS and MCDS as may be required as additional homes are connected, also paid from said funds and charges.

It is presently contemplated that 80 homes may be served in the existing CDS on-site disposal area after modifications to said CDS System and an additional 58 homes may be served by expansion of the CDS System.

It is presently estimated that 6 homes may be served on the MCDS to be constructed.

A staff person of DISTRICT (one responsible for design) on behalf of the Zone shall participate on POA's Design Committee as a non-voting member and for purposes of Zone input only.

The DISTRICT on behalf of the Zone may exercise all powers authorized by Sections 6975 through 6979 of the Health and Safety Code of California in the conduct of said Zone, in addition to any other DISTRICT powers provided by law.

EXHIBIT E

TENTATIVE BUDGET
 AUBURN LAKE TRAILS
 ON-SITE WASTEWATER DISPOSAL ZONE
 FISCAL YEAR 1984-85

LABOR		\$ 69,630
ADMINISTRATION	\$ 5,739	
TECHNICAL	23,608	
PROFESSIONAL	31,949	
CLERICAL	8,334	
ACCOUNTING AND AUDIT		1,200
EQUIPMENT M & O - GENERAL		250
EQUIPMENT M & O - C.D.S.		1,500
OFFICE SUPPLIES		750
MATERIALS & SUPPLIES		1,500
UTILITIES, GENERAL		2,750
UTILITIES, C.D.S.		1,000
VEHICLE MAINTENANCE		250
VEHICLE OPERATION		1,000
COMPUTER BILLING		500
DEPRECIATION		1,500
CAPITAL EXPENDITURES, GENERAL		3,000
CAPITAL REPLACEMENT, C.D.S.		4,800
U.S.G.S. CONTRACT		4,500
MISCELLANEOUS EXPENSES		500
ENGINEERING CONSULTATION		4,000
LEGAL CONSULTATION		3,000
INSURANCE		1,000
COMPUTER INPUT		10,000
	SUB TOTAL	\$ 112,630
	CONTINGENCIES 10%	11,263
	TOTAL	\$ 123,893

CHARGES

\$11.25 per month per homesite except Community Disposal System (CDS)
\$21.55 per month per homesite in CDS
\$ 5.75 per month per vacant lot, except in CDS
\$ 8.75 per month per vacant lot in CDS
\$415.00 Design and inspection fee
\$265.00 Design review if design done by private consultant and
inspection fee.
\$1,365.00 Design, inspection and connection fee in CDS

CONTRIBUTIONS

A sum not to exceed \$20,000.00 to be paid to DISTRICT from Transamerica Development Company (TADCO) representing any and all monies required by DISTRICT for acquisition of computer software and hardware in connection with the set up and operation of said Zone.

A sum not to exceed \$7,500.00 to be paid to DISTRICT by TADCO to be expended by DISTRICT for a Report and Design Costs as estimated by Larry Walker & Associates in connection with the CDS and the Mini Community Disposal System (MCDS) now planned for said Zone.

The cost of installation of pipe to the community leach field system which is required in order to connect the additional 58 lots to be connected to said system pursuant to the summary report referenced in Paragraph 2 hereof to be paid by TADCO.

EXHIBIT F

1 suitable for on-site disposal in Auburn Lake Trails, subject to the
2 final design approval and issuance of DISTRICT permit and El Dorado
3 County Health Department approval; and,

4 WHEREAS, the proposal to form Sewer Assessment District No.
5 1 to construct a sanitary sewage system has met with opposition of
6 many landowners within the Auburn Lake Trails Subdivision.

7 NOW, THEREFORE, THE BOARD OF DISTRICT finds and orders as
8 follows:

9 1. The Board of Directors deems it necessary to form an On-
10 Site Wastewater Disposal Zone for Auburn Lake Trails Subdivision,
11 which comprises a portion of DISTRICT territory.

12 2. The Board of Directors hereby declares its intent to
13 form an On-Site Wastewater Disposal Zone in a portion of DISTRICT,
14 known as the Auburn Lake Trails Subdivision.

15 3. A description of the boundaries of the territory proposed
16 to be included in the Zone is attached hereto, marked Exhibit A, made
17 a part hereof, and incorporated herein by reference.

18 4. A map showing the boundaries of said Auburn Lake Trails
19 Subdivision and the On-Site Wastewater Disposal Zone is on file at
20 the office of DISTRICT, Main Street, Georgetown, California.

21 5. The public benefit to be derived from the establishment
22 of an On-Site Wastewater Disposal Zone in the Auburn Lake Trails
23 Subdivision is to protect existing and future water uses, protect
24 public health, prevent and abate nuisances, promote water quality,
25 prevent the pollution, waste, and contamination of water and to allow
26 most property owners, including TADCO, to develop their property in
27 the Auburn Lake Trails Subdivision, which would otherwise not occur
28 without the construction of subdivision community-wide sewers or

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Auburn Lake Trails Property Owners Association (POA)

shall transfer to DISTRICT its remaining accounts of three Time Deposit funds in the amount of approximately \$31,407.04 plus any interest which has accrued. Said funds will be held by DISTRICT for the following purposes: approximately \$14,427.00, capital reserve for CDS leach field expansion; approximately \$8,840.00 for capital replacement and improvement to CDS collection system, and approximately \$8,140.00 for CDS operation and maintenance fund.

If the DISTRICT on behalf of the Zone is precluded for collecting connection fees from owners connecting to the CDS or Mini Community Disposal System (MCDS), the POA will collect such fees from connecting owners and pay such amounts to the DISTRICT.

The DISTRICT on behalf of the Zone may exercise all financial powers authorized by Sections 6975 through 6981 of the Health and Safety Code of California in the conduct of said Zone, in addition to any other DISTRICT powers provided by law.

POA and TADCO shall convey any easements owned by them required for disposal sites for CDS and MCDS, and required for CDS and MCDS collection line, pumping station and transmission line easements.

EXHIBIT F

- 3 -

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APPENDIX J.

RESOLUTION NO. 85-9

A RESOLUTION OF THE BOARD OF DIRECTORS OF GEORGETOWN
DIVIDE PUBLIC UTILITY DISTRICT ADOPTING RULES, REGU-
LATIONS AND STANDARD PRACTICES FOR AUBURN LAKE TRAILS
SUBDIVISION, ON-SITE WASTEWATER DISPOSAL ZONE, GEORGE-
TOWN DIVIDE PUBLIC UTILITY DISTRICT

AUBURN LAKE TRAILS SUBDIVISION
ON SITE WASTEWATER DISPOSAL ZONE
GEORGETOWN DIVIDE PUBLIC UTILITY DISTRICT

BE IT RESOLVED by the Board of Directors (BOARD) of George-
town Divide Public Utility District (DISTRICT), El Dorado County,
California:

WHEREAS, there has been presented to the BOARD of DISTRICT
for its consideration the Auburn Lake Trails On-Site Wastewater
Disposal Zone Rules, Regulations and Standard Practices dated
March 19, 1985.

NOW, THEREFORE, BE IT RESOLVED by the Board of Directors as
follows:

1. The BOARD adopts the Auburn Lake Trails On-Site
Wastewater Disposal Zone Rules, Regulations and Standard Practices,
Auburn Lake Trails Subdivision, On-Site Wastewater Disposal Zone,
Georgetown Divide Public Utility District, dated March 19, 1985,
the original of which is on file with the Clerk of the DISTRICT as
a public record, which original is incorporated in this Resolution
by reference.

2. The BOARD directs the Clerk of the DISTRICT to insert
a certified copy of this Resolution No. 85-9 behind the face sheet
of the Auburn Lake Trails On-Site Wastewater Disposal Zone Rules,

1 Regulations and Standard Practices dated March 19, 1985 as evidence
2 of adoption.

3 PASSED AND ADOPTED by the Board of Directors of Georgetown
4 Divide Public Utility District this 19th day of March, 1985 at an
5 adjourned regular meeting by the following vote:

6 AYES: Directors Lampson, Smoot, Flynn, and Milner

7 NOES: None

8 ABSENT: Director DeBerry

9
10 *John C. Lampson*
11 JOHN C. LAMPSON, President
12 Board of Directors
13 Georgetown Divide Public Utility
14 District

15 ATTEST:

16 *Charles F. Gierau*

17 CHARLES F. GIERAU, Clerk and
18 Ex-Officio Secretary of the
19 Board of Directors



20 CERTIFICATION

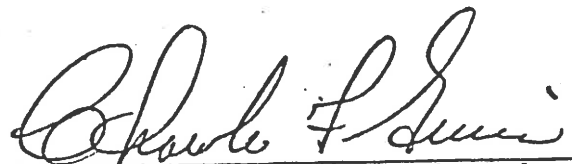
21 I hereby certify that the foregoing is a full, true, and
22 correct copy of Resolution No. 85-9 duly and regularly adopted by
23 the Board of Directors of the Georgetown Divide Public Utility Dis-
24 trict, El Dorado County, California, at an adjourned regular meeting
25 held on the 19th day of March, 1985, by the following vote:

26 AYES, and in favor thereof, Directors Lampson, Smoot, Flynn,
and Milner

NOES: None

ABSENT: Director DeBerry

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CHARLES F. GIERAU, Clerk and
Ex-Officio Secretary of the
Board of Directors

RESOLUTION 2002-15

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE
GEORGETOWN DIVIDE PUBLIC UTILITY DISTRICT
AMENDING RULES, REGULATIONS AND STANDARD
PRACTICES FOR AUBURN LAKE TRAILS SUBDIVISION
ON-SITE WASTEWATER DISPOSAL ZONE
GEORGETOWN DIVIDE PUBLIC UTILITY DISTRICT

WHEREAS, the Georgetown Divide Public Utility District (hereinafter "District") adopted Resolution No. 85-9 on March 19, 1985, whereby the District adopted the Auburn Lake Trails On-Site Wastewater Disposal Zone Rules, Regulations and Standard Practices, Auburn Lake Trails Subdivision, On-Site Wastewater Disposal Zone, Georgetown Divide Public Utility District, dated March 19, 1985; and

WHEREAS, the Board of Supervisors of El Dorado County adopted Ordinance No. 3476 on August 21, 1985, providing guidelines regarding the formation of an on-site wastewater disposal system by the Georgetown Divide Public Utility District for Auburn Lake Trails Subdivision; and

WHEREAS, the State of California has recently amended its Waste Discharge Requirements which directly impacts the On-Site Wastewater Disposal Zone of the Auburn Lake Trails Subdivision; and

WHEREAS, in order to conform to the amended Waste Discharge Requirements issued by the State of California, GDPUD must amend its rules, regulations and standard practices as they relate to the Auburn Lake Trails Subdivision.

NOW, THEREFORE, BE IT RESOLVED AS FOLLOWS:

1. All septic tanks and pump tanks located within the Auburn Lake Trails Subdivision (hereinafter "ALT") shall be equipped with gas-tight and watertight access risers and lids. Access risers shall be constructed out of polyethylene and fiberglass lids. Access risers shall be constructed to grade and remain accessible at all times.
2. On-site wastewater disposal systems which utilize pressure dosing for effluent distribution shall have sweeping elbows with caps, properly boxed to facilitate hydro-flushing.
3. All residences in ALT that are connected to the Community Disposal System (hereinafter "CDS") shall have their septic tanks inspected by the District after the tank has been pumped by a licensed pumper. All septic tank pumpers are to notify the District twenty-four (24) hours in advance of any scheduled pumping within ALT.

4. Septic tanks, pump tanks and building sewer lines shall be tested for water-tightness. This test will determine whether or not portions of the sanitary sewer system need to be repaired or replaced due to excessive leakage. This testing will determine if groundwater is leaking in or sewage is leaking out of the sewer system.

5. A two-way cleanout shall be provided where the building sewer line connects to the CDS collection system. All cleanouts shall be brought up to grade and properly boxed. Cleanouts are used for system monitoring and for cleaning purposes in the event of an emergency.

6. The above modifications, repairs, improvements and tests shall be conducted upon any of the following events:

- a. Prior to the close of escrow;
- b. Remodeling of the house to an extent of more than fifty percent (50%) of the assessed valuation, as determined by El Dorado County;
- c. Installation of additional plumbing fixtures;
- d. Major repair or replacement of the sewage disposal system;
- e. The addition of living quarters or conversion of garages into living quarters with plumbing fixtures;
- f. An inspection by the District indicates reasonable cause;
- g. Upon determination by the General Manager of the District that testing and repair are required for the protection of public health, safety and welfare.

7. The owner or agent of property served by the District's community collection system or an individual on-site wastewater disposal system shall be responsible for all costs associated with the testing, repair or replacement of the said facilities.

8. All wastewater disposal facilities found in need of repair as a result of testing or inspection shall be repaired and/or installed in accordance with District specifications. All required testing and repairs shall be completed within thirty (30) days of standard notification by the District.

9. To aid and assist owners in ALT to upgrade or repair their septic and/or wastewater disposal systems the District agrees to provide those individuals who can demonstrate financial hardship or other extenuating circumstances with a deferred payment plan for funds expended by the District to secure compliance with these amended rules, regulations and standard practices, pursuant to Health and Safety Code Section 6976 and following. The General Manager shall develop rules and regulations to implement the deferred payment plan. Any delinquent payments under the deferred payment plan shall be assessed a ten percent (10%) penalty by the General Manager. Any delinquent sums, including penalties, owing to the District under a deferred payment plan shall constitute a lien on the real property of the individual and may be collected


with the ad valorem taxes by the County of El Dorado, pursuant to Health and Safety Code Section 6978.

PASSED AND ADOPTED by the Board of Directors of Georgetown Divide Public Utility District this 6th day of August, 2002, at a regular meeting by the following vote:

AYES: Directors David E. Whittington, Robert E. Flynn, Douglas C. Pickell, JoAnn A. Shepherd, and Kris Anderson-Moore.

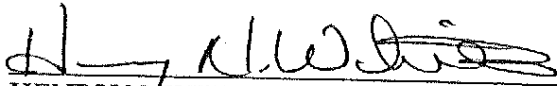
NOES: None.

ABSENT: None.



DAVID E. WHITTINGTON, President
Board of Directors
GEORGETOWN DIVIDE PUBLIC
UTILITY DISTRICT

ATTEST:



HENRY N. WHITE, Clerk and ex officio Secretary
Board of Directors
GEORGETOWN DIVIDE PUBLIC UTILITY DISTRICT

**RESOLUTION No. 2006-03 OF THE
BOARD OF DIRECTORS OF THE
GEORGETOWN DIVIDE PUBLIC UTILITY DISTRICT
AMENDING RULES AND REGULATIONS OF THE AUBURN LAKE
TRAILS ON-SITE WASTEWATER DISPOSAL ZONE AND ESTABLISHING
A LOAN PROGRAM FOR PROPERTY OWNERS WITHIN THE
COMMUNITY DISPOSAL SYSTEM**

BE IT RESOLVED by the Board of Directors (the "Board") of the Georgetown Divide Public Utility District ("District"), El Dorado County, California:

WHEREAS, on August 8, 1984, the Board adopted Resolution No. 84-6 declaring its intent to form an On-Site Wastewater Disposal Zone in the Auburn Lake Trails Subdivision, pursuant to the provisions of Health and Safety Code Section 6950 et seq.; and

WHEREAS, pursuant to Resolution No. 84-6, a hearing was held on October 3, 1984 and said hearing was continued to October 17, 1984 and at the conclusion of the hearing, the Board adopted Resolution No. 84-25, a Resolution making findings and declarations regarding the formation of the Auburn Lake Trails Subdivision On-Site Wastewater Disposal Zone; and

WHEREAS, at the October 17, 1984 hearing the Board further adopted Resolution No. 84-26 authorizing the formation of the Auburn Lake Trails Subdivision On-Site Wastewater Disposal Zone;

WHEREAS, Resolution 84-6 and 84-26 were duly recorded in the official records of the County of El Dorado; and

WHEREAS, Resolution No. 85-9 adopted rules, regulations and standard practices for the Auburn Lake Trails Subdivision On-Site Wastewater Disposal Zone; and

WHEREAS, the rules and regulations and standard practices prohibit the discharge of any effluent from any sewage disposal system; and

WHEREAS, in order to prevent the discharge of effluent it is necessary to maintain sewage disposal systems in working order and to modify or replace sewage disposal systems that either have failed or are at risk of failing; and

WHEREAS, the rules and regulations are amended through this regulation to clarify that modifications, repairs and the replacement of a sewage disposal system within the Auburn Lake Trails Subdivision On-Site Wastewater Disposal Zone may be required prior to the actual failure of a system in order to prevent the discharge of effluent to the surface water or groundwater; and

WHEREAS, on March 1, 2002 the California Regional Water Quality Control Board revised its waste discharge requirements for the Auburn Lake Trails Subdivision On-site Wastewater Disposal Zone and issued Waste Discharge Requirements Order R5-2002-0031; and

WHEREAS, the revised discharge requirements from the California Regional Water Quality Control Board set forth more stringent discharge requirements to protect the public health and safety; and

WHEREAS, the District has the authority set forth in Health and Safety Code Section 6950 et seq. to acquire, design, own, construct, install, operate, monitor, inspect and maintain on-site wastewater disposal systems in a manner which will promote water quality, prevent the pollution, waste and contamination of water, and abate nuisances; and

WHEREAS, some property owners of ALT have septic systems that utilize a Community Disposal System collection system ("CDS"); and

WHEREAS, many of these septic systems have deteriorated with age and could pose a substantial risk of contamination to the ground water from leaking septic tanks and spillage; and

WHEREAS, the cost to repair the septic systems that utilize the CDS can range anywhere from \$5,000 to \$10,000 per system; and

WHEREAS, some property owners are unable to bear the cost of system repairs without the aid of financial assistant; and

WHEREAS, the District has developed a loan program to assist property owners with the cost of modifying, repairing, or replacing their septic systems.

NOW THEREFORE, be it resolved as follows:

1. Amendment of the Rules and Regulations. The Auburn Lake Trails On-Site Wastewater Disposal Zone Rules, Regulations, and Standard Practices are hereby amended to include the following requirements:

A. All Property Owners within the Auburn Lake Trails Subdivision On-Site Wastewater Disposal Zone, including those within the CDS, shall continue to be responsible for the maintenance, repair and replacement of their septic systems as necessary to prevent the discharge of effluent from their system to the surface water or ground water and to prevent the contamination of the surface water or ground water.

B. The owner of any lot identified by the District as requiring a modification, repair or replacement of the septic system shall make the required modification, repair or replacement at his or her own expense. It is not necessary for a system to actually fail and discharge effluent into the surface water or groundwater before the District can require the Owner to modify, repair or replace the system. In the event the modification, repair or replacement is not made within thirty days after written notice, mailed to the Owners address as shown on the last county equalized assessment roll or as filed with the Clerk of the District, then District may make such modification, repair or replacement and the lot shall be subject to a service charge therefore. The General Manager of the District may grant additional time to complete the improvements on a case-by-case basis. Failure to make the modification, repair or replacement shall be considered a public nuisance and a violation of the rules and regulations of the District pursuant to Health and Safety Code Section 6978. The charge and assessment to abate the nuisance shall be a lien on the property and added to the annual property taxes pursuant to Health and Safety Code Section 6978(b).

2. Establishment of Loan Program within the Community Disposal System. In order to assist property owners within the CDS to make the necessary modifications, repairs and replacements of their system, the District hereby establishes the following loan program for property owners within the CDS:

A. Subject to available funding, property owners within the CDS who have septic systems that need to be modified, repaired or replaced may apply to the District to participate in the District's loan program. The District's loan program will be available to property owners within the CDS whose septic systems need to be repaired or replaced to prevent the discharge of effluent to surface water or ground water or to prevent the contamination of the surface water or ground water.

B. If the property owner is approved for the loan program, the owner may elect to borrow District funds for either the entire cost to repair or replace the septic system or a lesser amount. The General Manager may implement and enforce requirements and procedures to ensure that the District funds are used solely to repair or replace the septic system, to provide a priority system to

identify the systems in the greatest need of repair, and establishing procedures and requirements for the collection of the funds.

C. The property owner will be required to contract with a qualified septic system engineer for the repair of the system and provide the District with the engineer's estimate of the cost to repair the system.

D. The District's loan program will be funded solely by funds generated by the CDS and the District shall determine whether funds are available within the CDS to provide loans as herein provided.

E. All systems within the CDS that are more than five years old shall have the system inspected by the District to determine whether the septic system needs to be repaired to prevent contamination of the surface water or ground water. The District may also require the inspection of any system that District suspects may be in need of repair or replacement. All independent inspectors shall be from an approved list of the District. Inspections by District shall be subject to an inspection fee.

F. The loan period shall be for a term of one year and shall be interest free during the one-year period. After one year the loan shall be paid in full. If the loan is not fully repaid at the end of one year, the loan shall be declared delinquent and interest shall accrue at the rate of seven percent (7%) per year from the origination of the loan. Penalties shall be assessed for delinquent payments on the same basis as for delinquent service charges.

G. The loan shall be provided to abate a public nuisance resulting from the leakage or failure or potential leakage or failure of the property owner's septic system. If the property owner defaults on the loan amount, said outstanding amount shall be added to, and become part of, the annual taxes next levied upon the real property and shall constitute a lien upon that real property as of the same time and in the same manner as does the tax lien securing such annual taxes, as set forth in Health and Safety Code section 6978. All laws applicable to the collection and enforcement of county ad valorem taxes shall be applicable to the outstanding amount, except that if any real property to which such lien would attach has been transferred or conveyed to a bona fide purchaser for value, or if a lien of a bona fide encumbrancer for value has been created and attached thereon, prior to the date on which such delinquent charges appear on the assessment roll, then a lien which would otherwise be imposed by this section shall not attach to such real property and the delinquent and unpaid charges relating to such property shall be transferred to the unsecured roll for collection. Any of the outstanding amounts collected are to be credited to the funds of the CDS.

H. Each property owner who participates in the District's loan program will be provided with an amortization schedule at the time of entering into the loan program.

I. Notwithstanding any provision to the contrary in Section 2(G) above, each property owner who participates in the District's loan program shall agree that the loan amount shall be fully repaid in the event of a sale or transfer of the real property to a third party.

PASSED AND ADOPTED at a duly noticed public hearing this fourteenth day of March 2006.

AYES: Bob Diekon, Norman Krizl, Doug Pickell, JoAnn Shepherd and Hy Vitcov

NOES: None

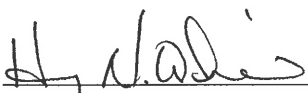
ABSTAIN: None

ABSENT: None



Bob Diekon, Board President
Georgetown Divide Public Utility District

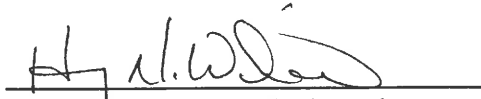
ATTEST:



Henry N. White
Secretary, Georgetown Divide
Public Utility District

CERTIFICATION

I hereby certify that the foregoing is a full, true, and correct copy of Resolution 2006-03 duly and regularly adopted by the Board of Directors of the Georgetown Divide Public Utility District, El Dorado County, California, at a meeting duly held on the 14th day of March 2006.

A handwritten signature in black ink, appearing to read "H. N. White", is written over a solid horizontal line.

Henry N. White, Clerk and
ex officio Secretary of the
Georgetown Divide Public Utility District


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HEALTH AND SAFETY CODE - HSC

DIVISION 6. SANITARY DISTRICTS [6400 - 6982] (*Division 6 enacted by Stats. 1939, Ch. 60.*)

PART 2. OTHER SANITARY DISTRICT ACTS [6935 - 6982] (*Part 2 added by Stats. 1941, Ch. 990.*)

CHAPTER 3. On-Site Wastewater Disposal Zones [6950 - 6982] (*Chapter 3 added by Stats. 1977, Ch. 1125.*)

ARTICLE 1. Definitions [6950 - 6954] (*Article 1 added by Stats. 1977, Ch. 1125.*)

[6950.](#) "Board" or "board of directors" means the governing authority of a public agency.

(Added by Stats. 1977, Ch. 1125.)

[6951.](#) "Public agency" means a city, a county, a special district, or any other political subdivision of the state which is otherwise authorized to acquire, construct, maintain, or operate sanitary sewers or sewage systems.

"Public agency" does not mean an improvement district organized pursuant to the Improvement Act of 1911 (Division 7 (commencing with Section 5000), Streets and Highways Code), or the Municipal Improvement Act of 1913 (Division 12 (commencing with Section 10000), Streets and Highways Code) or the Improvement Bond Act of 1915 (Division 10 (commencing with Section 8500), Streets and Highways Code), or a county maintenance district.

(Amended by Stats. 1978, Ch. 445.)

[6952.](#) "On-site wastewater disposal system" means any of several works, facilities, devices, or other mechanisms used to collect, treat, recycle, or dispose of wastewater without the use of communitywide sanitary sewers or sewage systems.

(Amended by Stats. 1995, Ch. 28, Sec. 8. Effective January 1, 1996.)

[6952.5.](#) "Owner of real property" means any public agency owning land and any person shown as the owner of land on the last equalized assessment roll; provided that where such person is no longer the owner, the term means any person entitled to be shown as owner on the next assessment roll and where land is subject to a recorded written agreement of sale, the term means any person shown therein as purchaser.

(Added by Stats. 1978, Ch. 445.)

[6953.](#) "Zone" means an on-site wastewater disposal zone formed pursuant to this chapter.

(Added by Stats. 1977, Ch. 1125.)

[6954.](#) "Real property" means both land and improvements to land which benefit, directly or indirectly from, or on behalf of, the activities of the zone.

(Added by Stats. 1977, Ch. 1125.)


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HEALTH AND SAFETY CODE - HSC

DIVISION 6. SANITARY DISTRICTS [6400 - 6982] (*Division 6 enacted by Stats. 1939, Ch. 60.*)

PART 2. OTHER SANITARY DISTRICT ACTS [6935 - 6982] (*Part 2 added by Stats. 1941, Ch. 990.*)

CHAPTER 3. On-Site Wastewater Disposal Zones [6950 - 6982] (*Chapter 3 added by Stats. 1977, Ch. 1125.*)

ARTICLE 2. Formation [6955 - 6974.5] (*Article 2 added by Stats. 1977, Ch. 1125.*)

6955. Whenever the board of directors of a public agency deems it necessary to form an on-site wastewater disposal zone in all or a portion of the public agency's jurisdiction, the board shall by resolution declare that it intends to form such a zone.

(*Added by Stats. 1977, Ch. 1125.*)

6955.1. A proposed zone shall contain at least 12 voters, as defined in Section 359 of the Elections Code. However, where there are fewer than 12 registered voters within a proposed zone, the public agency may form a zone if the county health officer determines that an existing or potential public health hazard exists. The board of supervisors shall receive a notice of this determination.

(*Amended by Stats. 1994, Ch. 923, Sec. 126. Effective January 1, 1995.*)

6956. The resolution of intention shall also state:

- (a) A description of the boundaries of the territory proposed to be included within the zone. The description may be accompanied by a map showing such boundaries.
- (b) The public benefit to be derived from the establishment of such a zone.
- (c) A description of the proposed types of on-site wastewater disposal systems and a proposed plan for wastewater disposal.
- (d) The number of residential units and commercial users in the proposed zone which the public agency proposes to serve.
- (e) The proposed means of financing the operations of the zone.
- (f) The time and place for a hearing by the board on the question of the formation and extent of the proposed zone, and the question of the number and type of the residential units and commercial units that the public agency proposes to serve in the proposed zone.
- (g) That at such time and place any interested persons will be heard.

(*Added by Stats. 1977, Ch. 1125.*)

6956.5. The resolution of intention shall be filed for record in the office of the county recorder of the county in which all or the greater portion of the land in the proposed zone is situated.

(*Added by Stats. 1977, Ch. 1125.*)

6957. (a) A proposal to form a zone within a public agency may also be initiated by filing a petition with the board. Such a petition shall contain all the matters specified in subdivisions (a), (b), (c), and (d) of Section 6956. Such a petition shall be signed as provided in either of the following:

- (1) By not less than 10 percent of the voters who reside within the territory proposed to be included within the zone.

(2) By not less than 10 percent of the number of owners of real property, including both land and improvements to land, within the territory proposed to be included within the zone who also own not less than 10 percent of the assessed value of the real property within such territory.

(b) Each signer of a petition shall add to his or her signature, the date of signing. If the signer is signing the petition as a voter, he or she shall add to his or her signature his or her place of residence, giving street and number, or a designation sufficient to enable the place of residence to be readily ascertained. If the signer is signing the petition as an owner of real property, he or she shall add to his or her signature a description of the real property owned by him or her sufficient to identify the real property.

(c) Following certification of the petition, the board shall set the time and place of the hearing on the question of the formation of the proposed zone.

(Added by Stats. 1977, Ch. 1125.)

6958. (a) Notice of the hearing shall be given by publishing a copy of the resolution of intention or the petition, pursuant to Section 6066 of the Government Code, prior to the time fixed for the hearing in a newspaper circulated in the public agency.

(b) Notice of the hearing shall also be given to the local health officer, the board of supervisors, the governing body of any other public agency within the boundaries of the proposed zone, the governing body of any public agency whose sphere of influence, as determined pursuant to the provisions of Section 54774 of the Government Code, includes the proposed zone, the affected local agency formation commission, and the regional water quality control board in whose jurisdiction the proposed zone lies.

(Added by Stats. 1977, Ch. 1125.)

6959. The hearing by the board on the question of the formation of the proposed zone shall be commenced no less than 45 days nor more than 60 days from adoption of a resolution of intention or the receipt of a petition containing a sufficient number of signatures and shall be completed no more than 90 days after the first day of the hearing.

(Amended by Stats. 1978, Ch. 445.)

6960. After receiving notice pursuant to subdivision (b) of Section 6958, a local health officer shall review the proposed formation and report his or her findings in writing to the board of directors of the public agency. The report shall specify the maximum number, type, volume, and location of on-site wastewater disposal systems which could be operated within the proposed zone without individually or collectively, directly or indirectly, resulting in a nuisance or hazard to public health. The local health officer may require from the public agency such information as may be reasonably necessary to make the findings required in this section.

(Added by Stats. 1977, Ch. 1125.)

6960.1. After receiving notice pursuant to subdivision (b) of Section 6958, the affected regional water quality control board shall review the proposed formation and report its findings in writing to the board of directors of the public agency. The report shall specify the maximum number, type, volume, and location of on-site wastewater disposal systems which could be operated within the proposed zone without individually or collectively, directly or indirectly, resulting in a pollution or nuisance, or adversely affecting water quality. The regional water quality control board may require from the public agency such information as may be reasonably necessary to make the findings required in this section.

(Added by Stats. 1977, Ch. 1125.)

6960.2. The number, type, volume, and location of on-site wastewater disposal systems to be operated within the zone shall not exceed the number specified pursuant to either Section 6960 or Section 6960.1.

(Added by Stats. 1977, Ch. 1125.)

6960.3. The formation of an on-site wastewater disposal zone shall be subject to review and approval by a local agency formation commission which has adopted rules and regulations affecting the functions and services of special districts pursuant to Chapter 5 (commencing with Section 56450) of Part 2 of Division 3 of Title 5 of the Government Code.

(Amended by Stats. 1989, Ch. 323, Sec. 8.)

6960.4. Prior to any decision on the question of the formation of the proposed zone, the board shall obtain approval for the proposed plan for wastewater disposal from the affected regional water quality control board if such plan involves the disposal of wastewater to a wastewater treatment facility. For any other method of wastewater disposal, and prior to any decision, the board shall obtain approval for the proposed plan from the local health officer and the affected regional water quality control board. The affected regional water quality control board or the local health officer shall not approve any plan which does not comply with applicable requirements of federal, state, regional, or local law, order, regulation, or rule relating to water pollution, the disposal of waste, or public health.

(Added by Stats. 1977, Ch. 1125.)

6961. At the time and place fixed in the resolution of intention or the petition, or at any time or place to which the hearing is adjourned, any interested person may appear and present any matters material to the questions set forth in the resolution of intention or the petition. At the hearing the board shall also hear the reports of any local health officer, and any public agency with statutory responsibilities for setting water quality standards, regarding any matters material to the questions set forth in the resolution of intention or the petition.

(Added by Stats. 1977, Ch. 1125.)

6962. At the hearing the board shall also hear and receive any oral or written protests, objections, or evidence which shall be made, presented, or filed. Any person who shall have filed a written protest may withdraw the same at any time prior to the conclusion of the hearing. The board shall have the following powers and duties:

(a) To exclude any territory proposed to be included in a zone when the board finds that such territory will not be benefited by becoming a part of such zone.

(b) To include any additional territory in a proposed zone when the board finds that such territory will be benefited by becoming a part of such zone.

(Added by Stats. 1977, Ch. 1125.)

6963. At the close of the hearing the board shall find and declare by resolution that written protests, filed and not withdrawn prior to the conclusion of the hearing, represent one of the following:

(a) Less than 35 percent of either of the following:

(1) The number of voters who reside in the proposed zone.

(2) The number of owners of real property in the proposed zone who also own not less than 35 percent of the assessed value of the real property within the proposed zone.

(b) Not less than 35 percent but less than 50 percent of either of the following:

(1) The number of voters who reside in the proposed zone.

(2) The number of owners of real property in the proposed zone who also own not less than 35 percent but less than 50 percent of the assessed value of the real property within the proposed zone.

(c) Not less than 50 percent of either of the following:

(1) The number of voters who reside in the proposed zone.

(2) The number of owners of real property in the proposed zone who also own not less than 50 percent of the assessed value of the real property within the proposed zone.

(Added by Stats. 1977, Ch. 1125.)

6964. If the number of written protests filed and not withdrawn is the number described in subdivision (c) of Section 6963, the board shall abandon any further proceedings on the question of forming a proposed zone.

(Added by Stats. 1977, Ch. 1125.)

6965. If the number of written protests filed and not withdrawn is the number described in subdivision (a) of Section 6963, the board shall find and declare by resolution all of the following:

(a) A description of the exterior boundaries of the zone as proposed or modified.

(b) The number of on-site wastewater disposal systems which the public agency proposes to acquire, operate, maintain, or monitor.

(c) That the operation of the proposed zone will not result in land uses that are not consistent with applicable general plans, zoning ordinances, or other land use regulations.

(d) The method of financing the operations of the zone.

(Amended by Stats. 1978, Ch. 445.)

6966. The board may order the formation of the zone either without election or subject to confirmation by the voters within the zone upon the question of such formation. However, the board shall not order any such formation without an election if the number of written protests filed and not withdrawn is a number described in subdivision (b) of Section 6963.

(Amended by Stats. 1978, Ch. 445.)

6967. If the board does not order the formation of the proposed zone, an election on the question shall be conducted if, within 30 days of the date upon which the board did not order the formation, the board receives a petition requesting such an election signed by either of the following:

(a) Not less than 35 percent of the voters who reside within the territory proposed to be included within the zone.

(b) Not less than 35 percent of the number of owners of real property within the territory proposed to be included within the zone who also own not less than 35 percent of the assessed value of the real property within such territory.

(Added by Stats. 1977, Ch. 1125.)

6968. Any election conducted pursuant to the provisions of this chapter shall be conducted pursuant to the provisions of law pertaining to regular or special elections held in the public agency.

(Amended by Stats. 1978, Ch. 445.)

6969. After the canvass of returns of any election on the question of forming a proposed zone, the board shall adopt a resolution ordering the formation of the zone if a majority of votes cast at such election are in favor of such formation.

(Added by Stats. 1977, Ch. 1125.)

6970. No public agency shall form a zone which includes any territory already included within another zone.

(Added by Stats. 1977, Ch. 1125.)

6971. No public agency shall form a zone if such formation will permit other land uses which are not consistent with the general plans, zoning ordinances, or other land use regulations of any county or city within which the proposed zone is located.

(Added by Stats. 1977, Ch. 1125.)

6972. After the formation of the zone pursuant to this article, all taxes levied to carry out the purposes of the zone shall be levied exclusively upon the property taxable in the zone by the public agency.

(Added by Stats. 1977, Ch. 1125.)

6973. If the board does not form a zone after the close of a hearing in accordance with Section 6967 and no petition is filed pursuant to Section 6967, or if the board abandons proceedings on the proposal to form a zone, or if the formation of a zone is not confirmed by the voters, no further proceeding shall be taken thereon. No application for a subsequent proposal involving substantially the same territory and undertaken pursuant to the provisions of this chapter shall be considered or acted upon by the public agency for at least one year after the date of disapproval of, abandonment of, or election on the proceedings.

(Amended by Stats. 1978, Ch. 445.)

6974. Territory within the public agency may be annexed to a zone, provided that such territory is not part of another zone. The requirements and proceedings for the annexation of territory shall be the same as the requirements and proceedings for formation of a zone.

(Added by Stats. 1978, Ch. 445.)

6974.5. Land already a part of a zone may be detached if the board finds and determines, following notice and hearing in the same manner provided for formation of the zone, that the land will not be benefitted by its continued inclusion in the zone.

(Added by Stats. 1978, Ch. 445.)


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HEALTH AND SAFETY CODE - HSC

DIVISION 6. SANITARY DISTRICTS [6400 - 6982] (*Division 6 enacted by Stats. 1939, Ch. 60.*)

PART 2. OTHER SANITARY DISTRICT ACTS [6935 - 6982] (*Part 2 added by Stats. 1941, Ch. 990.*)

CHAPTER 3. On-Site Wastewater Disposal Zones [6950 - 6982] (*Chapter 3 added by Stats. 1977, Ch. 1125.*)

ARTICLE 3. Powers [6975 - 6982] (*Article 3 added by Stats. 1977, Ch. 1125.*)

6975. An on-site wastewater disposal zone may be formed to achieve water quality objectives set by regional water quality control boards, to protect existing and future beneficial water uses, protect public health, and to prevent and abate nuisances. Whenever an on-site wastewater disposal zone has been formed pursuant to this chapter, the public agency shall have the powers set forth in this article, which powers shall be in addition to any other powers provided by law. A public agency shall exercise its powers on behalf of a zone.

(Added by Stats. 1977, Ch. 1125.)

6976. An on-site waste water disposal zone shall have the following powers:

(a) To collect, treat, reclaim, or dispose of waste water without the use of communitywide sanitary sewers or sewage systems and without degrading water quality within or outside the zone.

(b) To acquire, design, own, construct, install, operate, monitor, inspect, and maintain on-site wastewater disposal systems, not to exceed the number of systems specified pursuant to either Section 6960 or Section 6960.1, within the zone in a manner which will promote water quality, prevent the pollution, waste, and contamination of water, and abate nuisances.

(c) To conduct investigations, make analyses, and monitor conditions with regard to water quality within the zone.

(d) To adopt and enforce reasonable rules and regulations necessary to implement the purposes of the zone. Such rules and regulations may be adopted only after the board conducts a public hearing after giving public notice pursuant to Section 6066 of the Government Code.

(Amended by Stats. 1978, Ch. 445.)

6977. The public agency shall do all such acts as are reasonably necessary to secure compliance with any federal, state, regional, or local law, order, regulation, or rule relating to water pollution or the discharge of pollutants, waste, or any other material within the zone. For such purpose, any authorized representative of the public agency, upon presentation of his credentials, or, if necessary under the circumstances, after obtaining an inspection warrant pursuant to Title 13 (commencing with Section 1822.50) of Part 3 of the Code of Civil Procedure, shall have the right of entry to any premises on which a water pollution, waste, or contamination source, including, but not limited to, septic tanks, is located for the purpose of inspecting such source, including securing samples of discharges therefrom, or any records required to be maintained in connection therewith by federal, state, or local law, order, regulation, or rule.

(Amended by Stats. 1978, Ch. 445.)

6978. (a) Violation of any of the provisions of a rule or regulation adopted pursuant to subdivision (d) of Section 6976 may be abated as a public nuisance by the board. The board may by regulation establish a procedure for the abatement of such a nuisance and to assess the cost of such abatement to the violator. If the violator maintains the nuisance upon real property in which he has a fee title interest, the assessment shall constitute a lien upon such real property in the manner provided in subdivision (b).

(b) The amount of any costs, which are incurred by the zone in abating such a nuisance upon real property, shall be assessed to such real property and shall be added to, and become part of, the annual taxes next levied upon the

real property subject to abatement and shall constitute a lien upon that real property as of the same time and in the same manner as does the tax lien securing such annual taxes. All laws applicable to the collection and enforcement of county ad valorem taxes shall be applicable to such assessment, except that if any real property to which such lien would attach has been transferred or conveyed to a bona fide purchaser for value, or if a lien of a bona fide encumbrancer for value has been created and attached thereon, prior to the date on which such delinquent charges appear on the assessment roll, then a lien which would otherwise be imposed by this section shall not attach to such real property and the delinquent and unpaid charges relating to such property shall be transferred to the unsecured roll for collection. Any amounts of such assessments collected are to be credited to the funds of the zone from which the costs of abatement were expended.

(Added by Stats. 1977, Ch. 1125.)

6979. (a) The owner of any real property upon which is located an on-site wastewater disposal system, which system is subject to abatement as a public nuisance by the public agency, may request the public agency to replace or repair, as necessary, such system. If replacement or repair is feasible, the board may provide for the necessary replacement or repair work.

(b) The person or persons employed by the board to do the work shall have a lien, subject to the provisions of subdivision (b) of Section 6978, for work done and materials furnished, and the work done and materials furnished shall be deemed to have been done and furnished at the request of the owner. The zone, in the discretion of the board, may pay all, or any part, of the cost or price of the work done and materials furnished; and, to the extent that the zone pays the cost or price of the work done and materials furnished, the zone shall succeed to and have all the rights, including, but not limited to, the lien, of such person or persons employed to do the work against the real property and the owner.

(Amended by Stats. 1978, Ch. 445.)

6980. A board may exercise all of the public agency's existing financial powers on behalf of a zone, excepting that any assessment or tax levied upon the real property of a zone shall be subject to the provisions of Sections 6978 and 6981.

(Added by Stats. 1977, Ch. 1125.)

6981. Notwithstanding any other provision of law, a public agency may levy an assessment reasonably proportional to the benefits derived from the zone, as determined by the board, and subject to the approval of the voters pursuant to the provisions of Article 6 (commencing with Section 2285) of Chapter 3 of Part 4 of Division 1 of the Revenue and Taxation Code. Such benefit assessment shall be in addition to any other charges, assessments, or taxes otherwise levied by the public agency upon the property in the zone.

(Amended by Stats. 1978, Ch. 445.)

6982. (a) Notwithstanding Section 6952, the West Bay Sanitary District may use the procedures in this chapter to provide alternative or innovative wastewater technologies in the district's jurisdiction.

(b) The determination of a public health officer pursuant to Section 6955.1 shall include written findings, adopted by the district board of directors, regarding the existing or potential public health hazard.

(c) "Alternative or innovative wastewater technologies" means either (1) an onsite wastewater disposal system, as defined in Section 6952, or (2) such a system in conjunction with communitywide sewer or sewage systems, if one or more of the components of the system is located on or in close proximity to the real property and employs innovative or alternative wastewater technologies, including, but not limited to, grinder pump pressure sewer systems, septic tank effluent pump pressure sewer systems, vacuum sewer systems, or small-diameter gravity septic tank systems.

(Amended by Stats. 2004, Ch. 193, Sec. 78. Effective January 1, 2005.)

Recording requested by:

GDPUD
P. O. Box 4240
Georgetown, CA 95634

GRANT AND AGREEMENT

I/We, the undersigned hereby grant to GEORGETOWN DIVIDE PUBLIC UTILITY DISTRICT the right to maintain, operate and repair the sewage disposal facility situate upon Lot ____, Auburn Lake Trails Subdivision, Unit No. ____, El Dorado County, California as shown on the map recorded in Book ____, of Maps, at Page ____, El Dorado County Records, upon its Completion to the satisfaction of said District.

I/We, the undersigned agree to observe all of said Districts rules, regulations, and ordinances heretofore and hereinafter enacted, and pay all of said Districts charges including, but not limited to, charges incurred by the District for modifications required by said rules, regulations, and ordinances, which I/We fail to make as so required.

I/We, the undersigned further agree that this grant and agreement shall be binding upon all of my/our successors and assigns of said lot.

I/We, the undersigned further agree that this grant and agreement shall not obligate said District in itself to maintenance, operation or repair of said sewage disposal system.

DATED: _____

SIGNED: _____

ACKNOWLEDGMENT

A notary public or other officer completing this certificate verifies only the identity of the individual who signed the document to which this certificate is attached, and not the truthfulness, accuracy, or validity of that document.

State of California
County of _____)

On _____ before me, _____
(insert name and title of the officer)

personally appeared _____, who proved to me on the basis of satisfactory evidence to be the person(s) whose name(s) is/are subscribed to the within instrument and acknowledged to me that he/she/they executed the same in his/her/their authorized capacity(ies), and that by his/her/their signature(s) on the instrument the person(s), or the entity upon behalf of which the person(s) acted, executed the instrument.

I certify under PENALTY OF PERJURY under the laws of the State of California that the foregoing paragraph is true and correct.

WITNESS my hand and official seal.

Signature _____ (Seal)

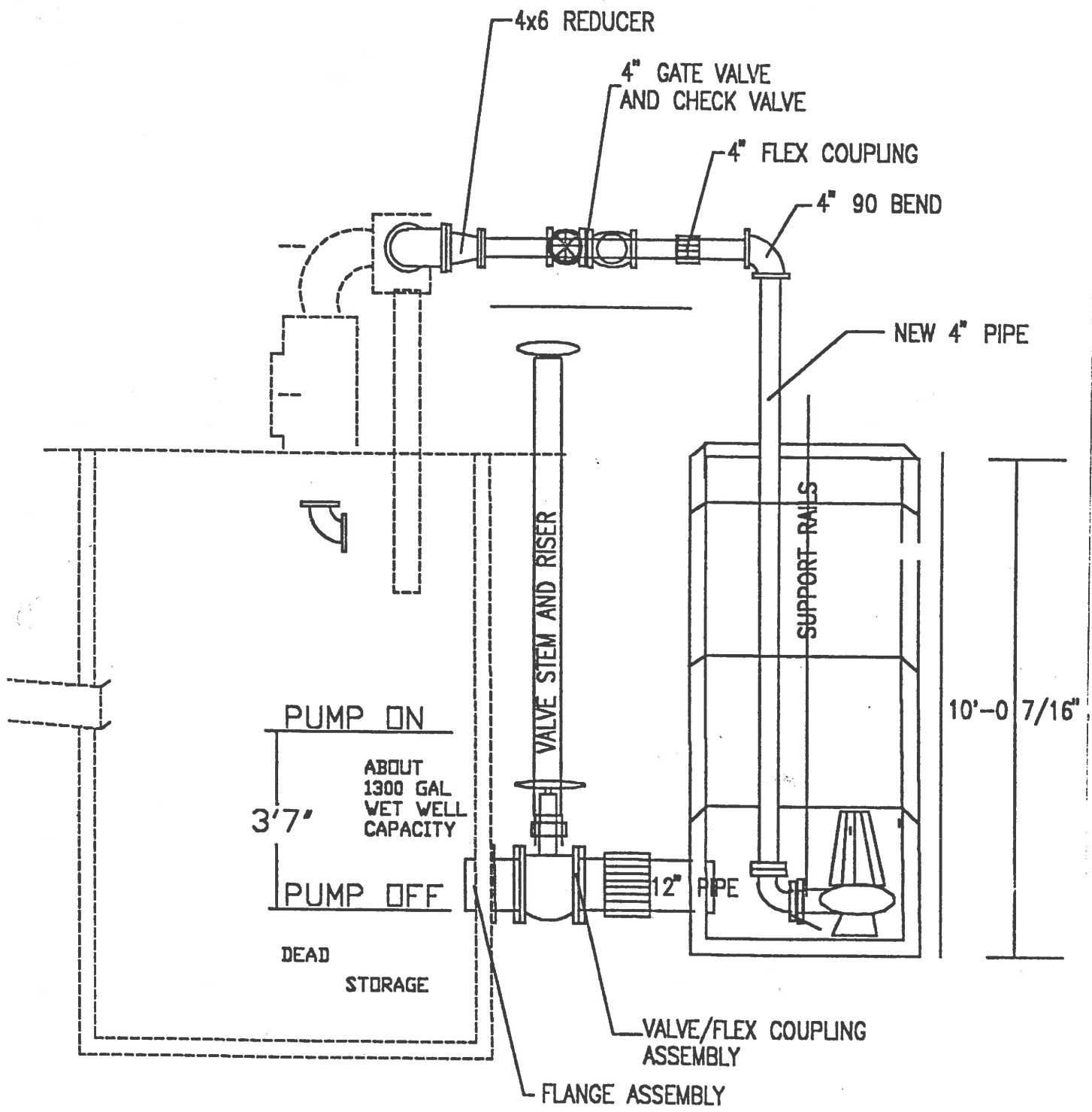
APPENDIX C

ALT ZONE RELATED INSPECTION FORMS

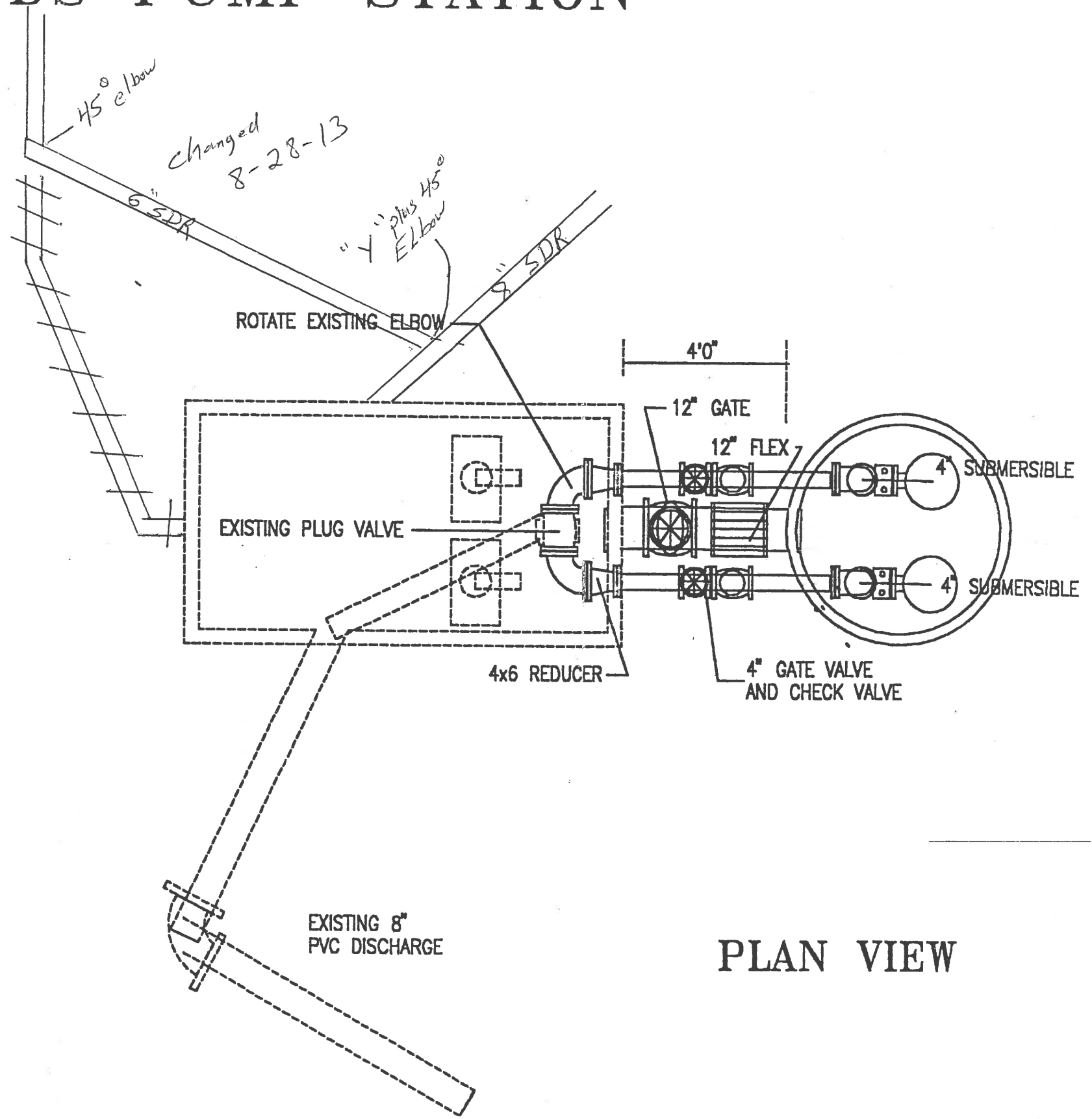
APPENDIX D

STATION 16 SPECIFICATIONS

CDS PUMP STATION



ELEVATION VIEW



PLAN VIEW

SAFETY FIRST!

Please Read This Before Installing Or Operating Pump. This information is provided for **SAFETY** and to **PREVENT EQUIPMENT PROBLEMS**. To help recognize this information, observe the following symbols:



IMPORTANT! Warns about hazards that can result in personal injury or indicates factors concerned with assembly, installation, operation, or maintenance which could result in damage to the machine or equipment if ignored.

CAUTION! Warns about hazards that can or will cause minor personal injury or property damage if ignored. Used with symbols below.

WARNING! Warns about hazards that can or will cause serious personal injury, death, or major property damage if ignored. Used with symbols below.



Hazardous fluids can cause fire or explosions, burns or death could result.



Extremely hot - Severe burns can occur on contact.



Biohazard can cause serious personal injury.



Hazardous fluids can cause hazardous pressure, eruptions or explosions could cause personal injury or property damage.



Rotating machinery Amputation or severe laceration can result.



Hazardous voltage can shock, burn or cause death.

Only qualified personnel should install, operate and repair pump. Any wiring of pumps should be performed by a qualified electrician.



WARNING! To reduce risk of electrical shock, pumps and control panels must be properly grounded in accordance with the National Electric Code (NEC) or the Canadian Electrical Code (CEC) and all applicable state, province, local codes and ordinances. Improper grounding voids warranty.



WARNING! To reduce risk of electrical shock, always disconnect the pump from the power source before handling or servicing. Lock out power and tag.



WARNING! Operation against a closed discharge valve will cause premature bearing and seal failure on any pump, and on end suction and self priming pump the heat build may cause the generation of steam with resulting dangerous pressures. It is recommended that a high case temperature switch or pressure relief valve be installed on the pump body.



CAUTION! Never operate a pump with a plug-in type power cord without a ground fault circuit interrupter.



CAUTION! Pumps build up heat and pressure during operation-allow time for pumps to cool before handling or servicing.



WARNING! Do not pump hazardous materials (flammable, caustic, etc.) unless the pump is specifically designed and designated to handle them.



CAUTION! Do not block or restrict discharge hose, as discharge hose may whip under pressure.



WARNING! Do not wear loose clothing that may become entangled in moving parts.



WARNING! Keep clear of suction and discharge openings. **DO NOT** insert fingers in pump with power connected.



Always wear eye protection when working on pumps.



Make sure lifting handles are securely fastened each time before lifting. **DO NOT** operate pump without safety devices in place. Always replace safety devices that have been removed during service or repair. Secure the pump in its operating position so it can not tip over, fall or slide.



DO NOT exceed manufacturers recommendation for maximum performance, as this could cause the motor to overheat.



DO NOT remove cord and strain relief. **DO NOT** connect conduit to pump.



WARNING! Cable should be protected at all times to avoid punctures, cut, bruises and abrasions. Inspect frequently. Never handle connected power cords with wet hands.



WARNING! To reduce risk of electrical shock, all wiring and junction connections should be made per the NEC or CEC and applicable state or province and local codes. Requirements may vary depending on usage and location.



WARNING! Submersible Pumps are not approved for use in swimming pools, recreational water installations decorative fountains or any installation where human contact with the pumped fluid is common.



WARNING! Products returned must be cleaned, sanitized, or decontaminated as necessary prior to shipment, to insure that employees will not be exposed to health hazards in handling said material. All Applicable Laws And Regulations Shall Apply.



Bronze/brass and bronze/brass fitted pumps may contain lead levels higher than considered safe for potable water systems. Lead is known to cause cancer and birth defects or other reproductive harm. Various government agencies have determined that leaded copper alloys should not be used in potable water applications. For non-leaded copper alloy materials of construction, please contact factory.



Crane Pumps & Systems, Inc. is not responsible for losses, injury, or death resulting from a failure to observe these safety precautions, misuse or abuse of pumps or equipment.

SPECIFICATIONS:

MODEL: BAF-4 (087315)
LOCATION:

This BAF-4 is designed for wet wells, tanks, or lift stations where it is necessary to remove a pump from service and reinstall the pump without maintenance personnel entering the pit to unbolt the pump flanges.

STATIONARY ELBOW:
MOVABLE FITTING:
GUIDE RAIL CAP:

Cast iron, ASTM A48, Class 30.
 Ductile iron, ASTM A536.

HARDWARE:
O-RINGS:
GASKETS:
PAINT:

Bracket: 304 stainless steel
Plugs: Ductile iron, ASTM A536-84.
 300 series stainless steel.
 BUNA-N, 70 +/- 5 Duro.
 Rubber
 Air Dry Enamel

MODEL: BAF-E4 (087316)
LOCATION:

This BAF-E4 is designed for wet wells, tanks, or lift stations classified as Hazardous location Class 1, Group D, Division 1 and/or non-hazardous locations, where it is necessary to remove a pump from service and reinstall the pump without maintenance personnel entering the pit to unbolt the pump flanges.

STATIONARY ELBOW:
MOVABLE FITTING:
GUIDE RAIL CAP:

Cast iron, ASTM A48, Class 30.
 Bronze (81-3-7-9).

HARDWARE:
O-RINGS:
GASKETS:
PAINT:

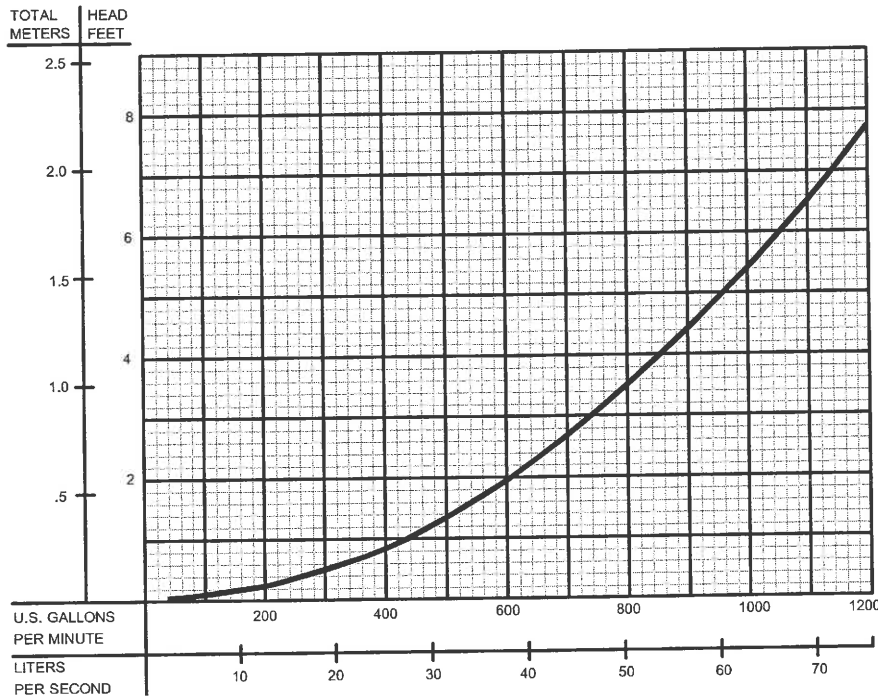
Bracket: 304 Stainless steel
Plugs: Cast iron, ASTM A48, Class 30
 300 Series stainless steel.
 Buna-N, 70 +/- 5 Duro.
 Rubber
 Air Dry Enamel

OPTIONAL:
INTERMEDIATE SUPPORT:

Bracket: 304 Stainless Steel.
Plugs: Cast iron, ASTM A48, Class 30.
Hardware: 300 Series Stainless Steel.
O-Rings: Buna-N, 70 +/- 5 Duro.

LIFTING CHAIN:

1/4, 5/16, or 3/8 in., proof coil chain, hot galvanized.



Testing is performed with water, specific gravity of 1.0 @ 68° F, other fluids may vary performance

inches
(mm)

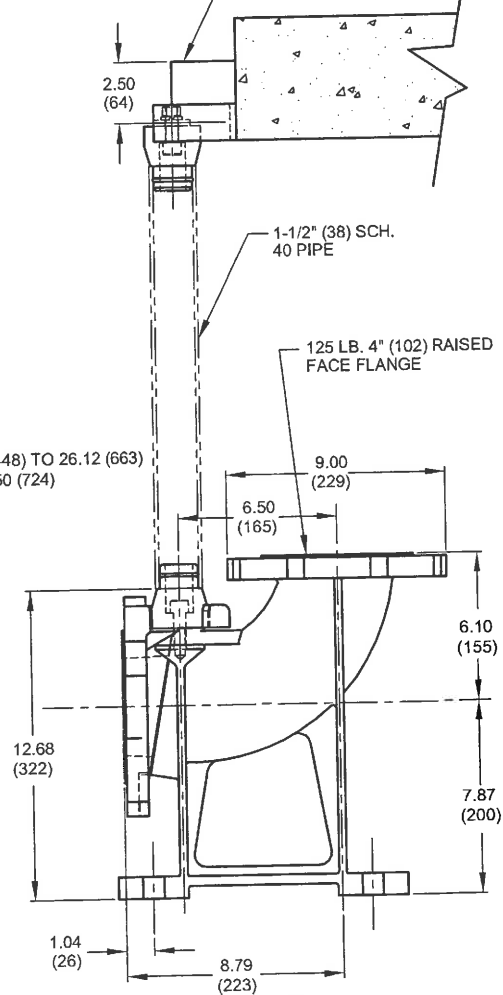
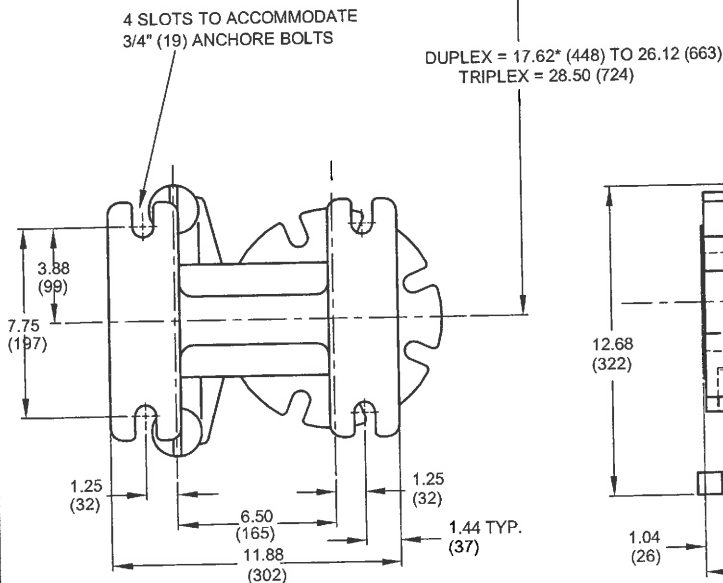
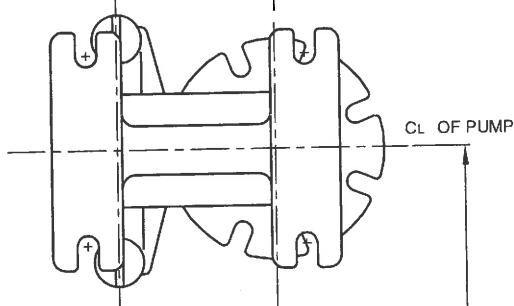
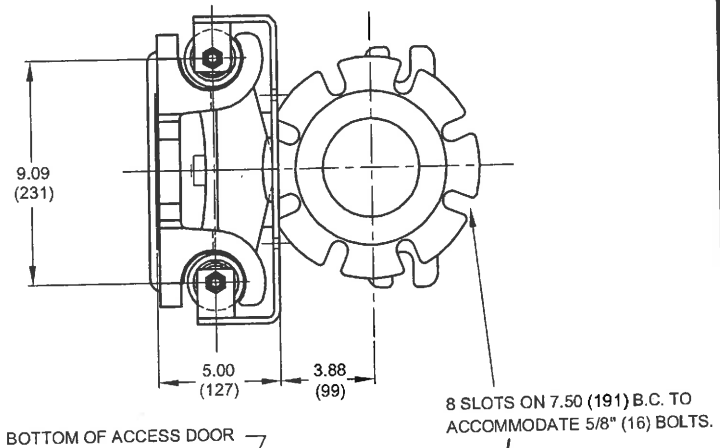
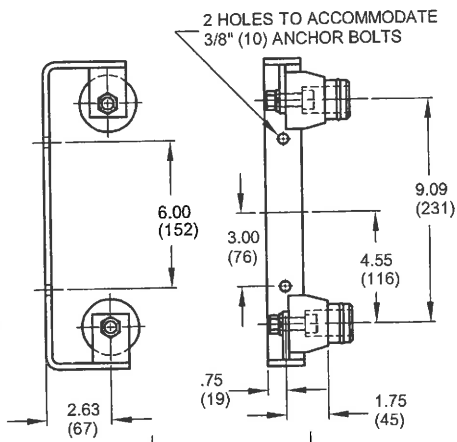


Figure 1

Figure 2

(*) 22.12 (562) for 4SE10036EHA thru 4SE25046EHA, 4SE25034EHA thru 4SE100044EHA, 4XSE10036EHA thru 4XSE25046EHA and 4XSE25034EHA thru 4XSE100044EHA.

SECTION B: GENERAL INFORMATION

B-1) Introduction:

Barnes Break Away Fittings (BAF) are precision engineered and manufactured of the highest quality castings. Each one is individually inspected by a Quality Assurance Program to allow years of continuous service. Through proper installation this unit will provide superior service. This manual will provide basic information for installation, maintenance, and repair.

B-2) Receiving:

Upon receiving this unit, inspect it for damage or shortages. If damage has occurred, file a claim immediately with the delivery company that delivered your equipment. If the manual is removed from the crating, do not lose or misplace it.

B-3) Storage:

This unit has been packaged and protected for shipping and indoor storage. If it is to be stored outside for an extended period, additional protection must be added.

Short Term - For best results, retain BAF factory assembled, in a dry atmosphere with constant temperature for up to six (6) months.

Long Term - Any length of time exceeding six (6) months, but not more than twenty four (24) months. The units should be stored in a temperature controlled area, a roofed over walled enclosure that provides protection from the elements (rain, snow, wind blown dust, etc.), and whose temperature can be maintained between +40 deg. F and +120 deg. F. If extended high humidity is expected to be a problem, all exposed parts should be inspected before storage and all surfaces that have the paint scratched, damaged, or worn should be recoated. All surfaces should then be sprayed with a rust-inhibiting oil.

B-4) Service Centers:

For the location of the nearest Barnes Service Center, check your Barnes representative or Crane Pumps & Systems, Inc., Service Department in Piqua, Ohio, telephone (937) 778-8947 or Crane Pumps & Systems Canada Inc., Bramton, Ontario (905) 457-6223.

SECTION: C INSTALLATION

C-1) Location:

The Break Away Fitting Model BAF-4, when used in conjunction with Barnes Pumps 4" Submersible Sewage Pumps (Series 4SE, 4SEV, and 4SEVH) and 4" Submersible Cutter Pumps (Series 4SCE, 4SCF, 4SCG, and 4SCH) is recommended for operation in a wet well, tank, or lift station.

The Non-Sparking Break-A-Way Fitting Model BAF-E4 when used in conjunction with Barnes Pumps 4" Explosion Proof Submersible Sewage Pumps (Series 4XSE, 4XSEV, and 4XSEVH) and 4" Explosion Proof Submersible Cutter Pumps (Series 4XSCE, 4XSCEV, 4XSCG, and 4XCH) is recommended for operation in a non-hazardous or Class 1, Group D, Division 1 hazardous location wet well, basin, or lift station.

C-2) Design Layout:

Models BAF-4 and BAF-E4 assembled with pumps listed in Section C-1 can be installed through access covers with sizes as listed in Table 1.

***EXCEPTION:** Models 4XSE10036EHA thru 4XSE25046EHA, 4SE25034EHA thru 4SE100044EHA, 4XSE10036EHA thru 4XSE25046EHA and 4XSE25034EHA thru 4XSE100044EHA requires a 30" (762mm) X 48" (1219mm) access cover regardless of standard or special piping when designing a duplex system.

COVER TYPE	COVER SIZE	FIGURE
Simplex	30" (762mm) x 30" (762mm)	1,2 and 3
Duplex (Standard Piping)	30" (762mm) x 48" (1219mm)	1,2 and 4
Duplex (Special Piping)	30" (762mm) x 36" (914mm)	1,2 and 5

Figures 1 through 5 provide clearance dimensions, guide pipe locations, and proposed anchor bolt locations at the access cover opening. It is recommended that the guide rail cap be installed with 3/8 inch stainless steel anchors.

Figures 1 and 2 provide the required anchor bolt locations for the stationary elbow to be installed with four anchor bolts set in a metal sleeve and accurately set into concrete.

Hook bolts can be used, however, they are more difficult to locate in concrete. Use required shims under the stationary elbow base to level the horizontal flange and then grout under the base as required. A 30 day concrete cure is required before a full load can be applied to the anchor bolts. Design the anchor bolts for 1.6 kip uplift per bolt.

The 1-1/2" schedule 40 guide rail pipes must be plumbed after mounting on the stationary base elbow plugs. Pipe material may be galvanized steel or stainless steel (optional from manufacturer or supplied by customer).

C-3) Intermediate Support Assembly:

Whenever the guide pipe lengths exceed 13 feet, an optional intermediate guide rail support bracket should be used (see Figure 6). The intermediate guide rail support brackets may be supported from the vertical discharge pipe.

C-4) Installing Pump To Break Away Fitting:

(See Figure 7) These instructions apply to all BARNES pumps with a 125 lb. flange horizontal discharge on volute. All parts for standard and non-sparking BAF's are the same except for moveable assembly. BAF-4 standard assemblies use a cast iron moveable assembly and BAF-E4 non-sparking assemblies use a bronze moveable assembly.

Figure 5
Duplex Installation
(Optional)

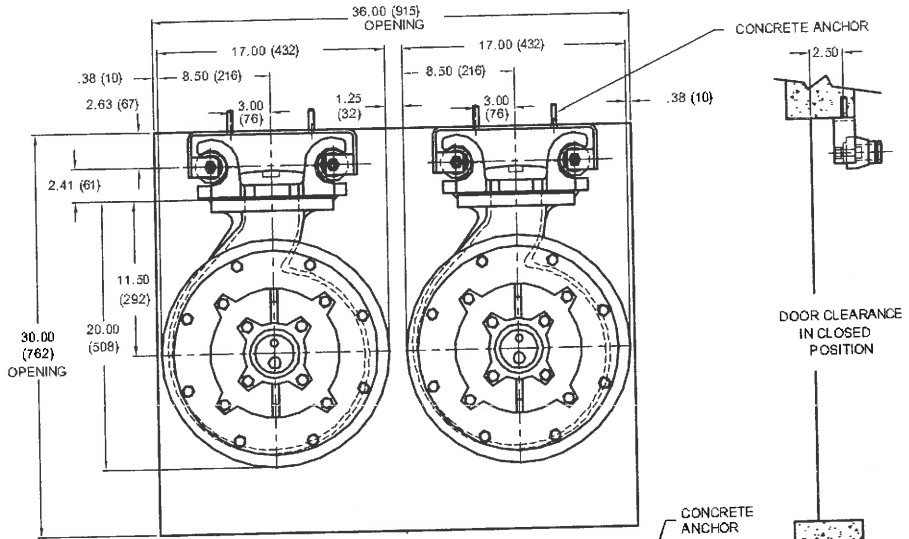


Figure 4
Duplex Installation
(Standard)

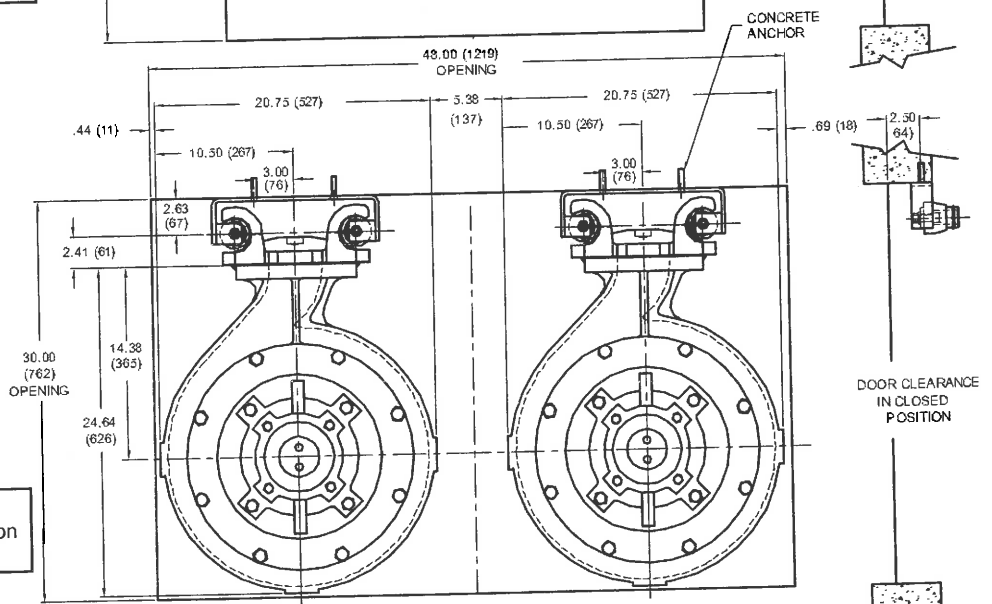
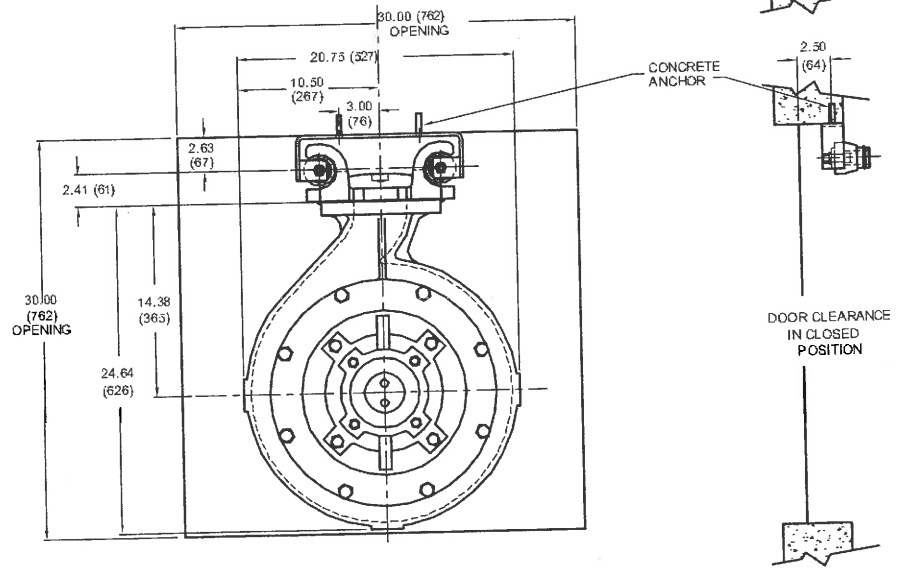


Figure 3
Simplex Installation



Position one gasket (4) between the moveable assembly (1) comprised of Moveable (1A) and O-Ring (1B), and the pump body discharge flange. Attach the discharge flange to the slide assembly with 8 hex. head bolts (5), 8 split lock washers (6), and 8 hex. nuts (7). Torque each bolt to 75/85 ft. lbs.



IMPORTANT! - Bolts must be installed with heads on slide assembly. Bottom 2 bolt heads fit in recesses on slide.

C-5) Pump Body Leg Removal:

It is advisable to remove the pump body legs if they are within one inch of the floor when the pump is in the operating position. This affects the following pump models when installed in standard applications: 4SE___EL, 4SEV___EL, 4SEVH___EL, 4XSE___EA, 4XSEV___EA, 4XSEVH___EA, and 4XSE___EHA. Remove 6 hex head bolts and 6 washers holding legs in place. Remove legs from pump body and replace bolts and washers.

C-6) Thread Locking Compound:

Thread locking compound can be purchased locally in small quantities. When used, it provides extra assurance the bolted joint will remain together. These Anaerobic Adhesive/Sealant Thread Locking compounds are available in several grades from several suppliers and recommendations are as follows:

DESCRIPTION	LOCTITE®	PERMA-LOC®	STALOC®
Thread Locking Compound #242 (General Purpose)	242	MM5	T42
Thread Locking Compound # RC609 (High Strength)	RC609	HM128	T70

C-7) Lifting Chain Installation:

For models 4SE___L and 4SE___HL, optional lifting chain (1/4" dia. proof coil chain, hot galvanized) is looped through lifting yoke and fastened together with two 5/16" steel, zinc plated cold shut. Force cold shut closed and weld together.

For models 4SE___EL, 4SE___EDS, 4SEV___EL, 4SEVH___EL, 4SCE___EL, 4SCF___EL, 4SCG___EL, and 4SCH___EL (Standard units) and models 4XSE___A, 4XSE___HA, 4XSE___EA, 4XSEV___EA, 4XSE___EHA, 4XSCE___EA, 4XSCF___EA, 4XSCG___EA, and 4XSCH___EA (Non-Sparking units), optional lifting chain (1/4, 5/16, or 3/8" dia. proof coil chain, hot galvanized, sized to match lifting chain assembly supplied with pump) is fastened to pump chain with a 5/16, 3/8, or 7/16" steel, zinc plated cold shut. Cold shut is supplied with pump motor chain. **NOTE:** Pumps are supplied from manufacturer with motor chain aligned with discharge flange (see figure 6). Find center of pump motor chain. Find chain link 1 to 1-1/2 links away from center on side opposite pump discharge. Insert cold shut in this link. Attach to lifting chain.

Force cold shut closed and weld together. When pump is lifted, pump discharge should tilt below horizontal centerline from 5 to 10.

C-8) Installation Descent Speed:

When lowering pump into wet well on the guide rails, do not exceed a descent speed of 3.2 inches per second or 16 feet per minute.

SECTION D: MAINTENANCE AND REPAIR.

D-1) Maintenance:

Whenever the pump is lifted for inspection, it is recommended any foreign material be flushed from moveable fitting, guide plugs, and stationary base elbow face before replacement in wet well.

D-2) Repair:

NOTE: All item numbers in () refer to Figure 7.

D-2.1) Moveable Assembly:

To install a new o-ring in moveable assembly (1), completely remove o-ring (1B) and thoroughly clean groove recess in moveable (1A).



NOTE: Care should be taken so dove-tailed groove is not damaged when removing o-ring.

Set moveable (1A) with dove-tail groove up on an arbor press. Shim and/or clamp moveable so sealing face is level. Run a light bead of quick set adhesive (Aron Alpha or equivalent) around center of groove bottom. Set o-ring (1B) over groove. Place a flat plate over o-ring (1B), center under press. Using press, force o-ring (1B) into groove. Hold for around 1 minute to allow adhesive to set. **NOTE: DO NOT USE EXCESSIVE PRESSURE AFTER O-RING SLIPS INTO GROOVE.**

D-2.2) Stationary Base Elbow:

To replace Guide Plug(s) (2B) on Stationary Elbow (2A), remove socket head screw (2C). Inspect o-ring (2D) for damage or cuts and replace if required. Reassemble by placing guide plug (2B) on stationary (2A), insert screw (2C) into guide plug and tighten.

D-2.3) Guide Rail Cap:

To replace Guide Plug(s) (3B) on Guide Rail Cap (3A), remove socket head screw (3C), washer (3E) and nut (3F). Inspect o-ring (3D) for damage or cuts and replace if required. Reassemble by placing guide plug (3B) on tab of bracket (3A), insert screw (3C) thru guide plug and assemble washer (3E) and nut (3F) onto screw and tighten.

D-2.4) Intermediate Support :

To replace Guide Plug(s) (9B) on Intermediate support (9A), remove socket head screw (9C), washer (9D) and nut (9E). Inspect o-ring (9F) for damage or cuts and replace if required. Reassemble by placing guide plug (9B) on tab of bracket (9A), insert screw (9C) thru guide plug and assemble washer (9D) and nut (9E) onto screw and tighten.

SECTION E: REPLACEMENT PARTS

E-1) Ordering Replacement Parts:

When ordering replacement parts, always furnish the following information:

1. Product Model
2. Part Description
3. Part Number
4. Quantity Required
5. Shipping Instructions
6. Billing Instructions

Product improvements are made from time to time. The latest part design will be furnished if it is interchangeable with the old part.

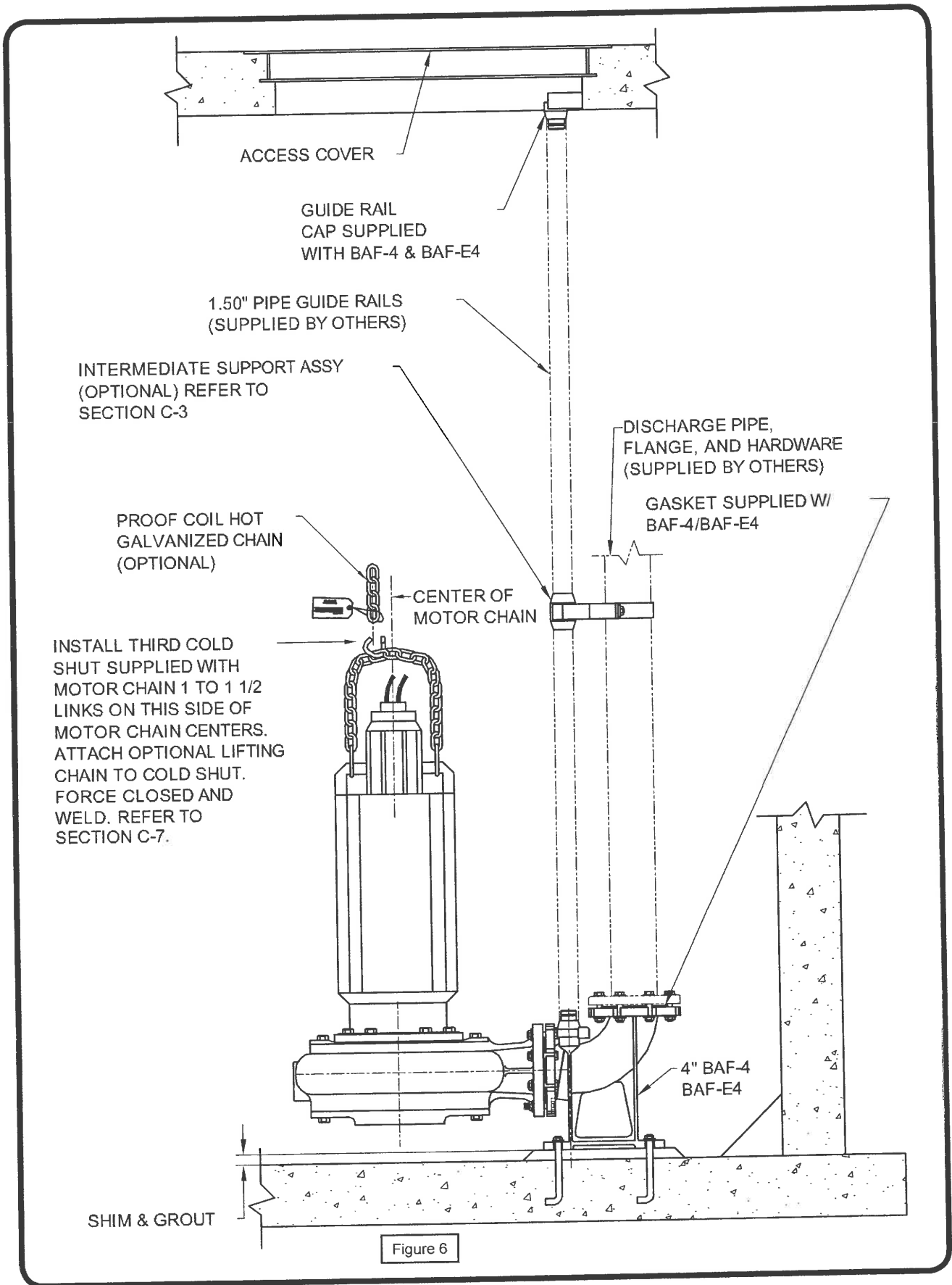


Figure 6

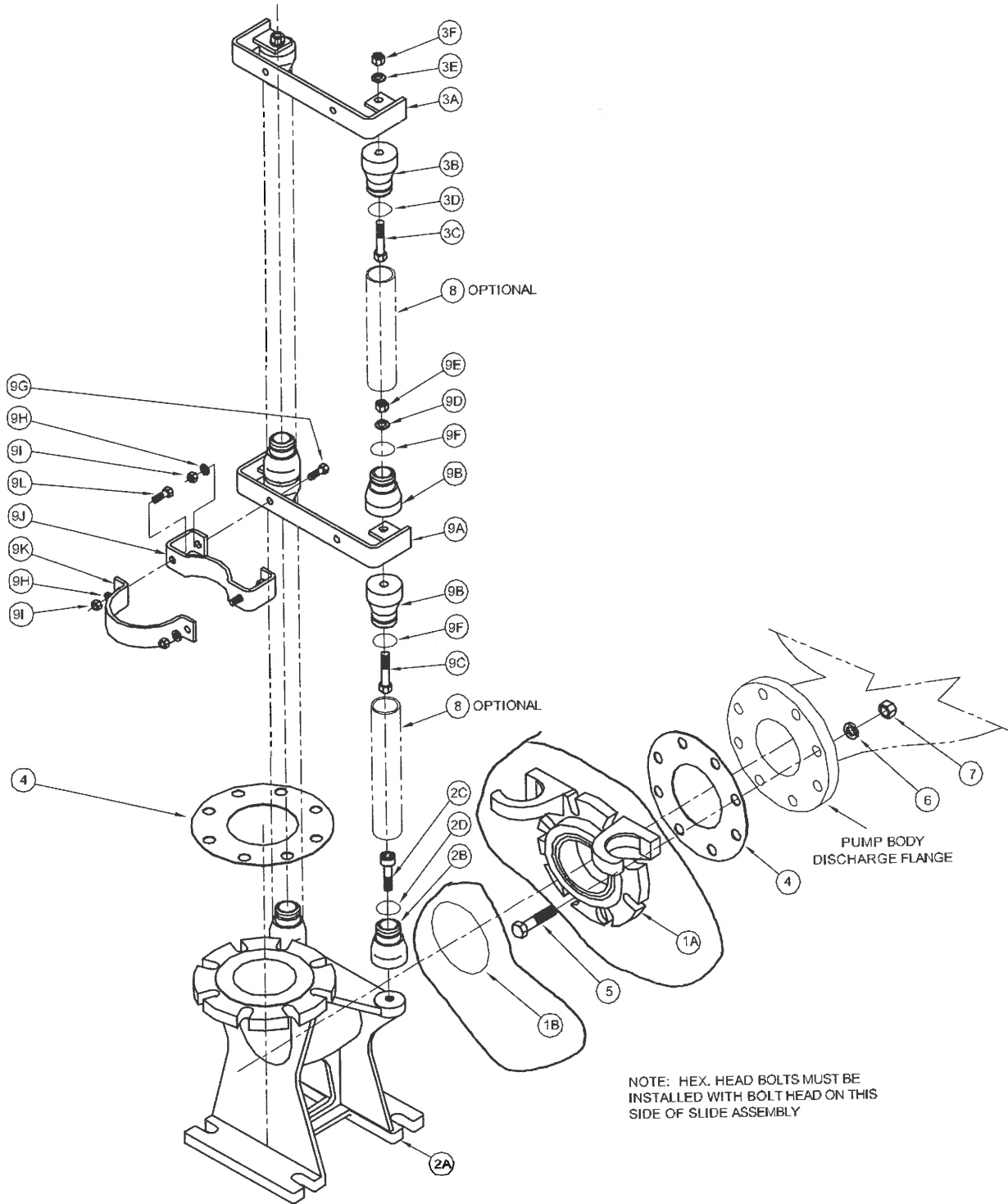


Figure 7

PARTS LIST

BAF-4 P/N: 087315

ITEM	QTY.	PART NO.	DESCRIPTION
1	1	087313	Moveable Fitting Assembly
1A	1	087388	Moveable (Ductile Iron, ASTM A536)
1B	1	089283	* O-Ring, 4.5 I.D. (Buna-N)
2	1	087312	Stationary Base Elbow Assembly
2A	1	087391	Stationary Base Elbow (Cast Iron, Class 30)
2B	2	087392	* Guide Plug (Cast Iron, Class 30)
2C	2	11-81-1	* Sk. Hd. Screw (.50-13 x 1.25 Lg. Stainless)
2D	2	625-02501	* O-Ring, 1.375 I.D. (Buna-N)
3	1	087307	Guide Rail Cap Assembly
3A	1	087309	Guide Rail Bracket (Stainless Steel)
3B	2	087392	* Guide Plug (Cast Iron, Class 30)
3C	2	11-82-1	* Sk. Hd. Screw (1.50-13 x 1.25 Lg. Stainless)
3D	2	625-02501	* O-Ring, 1.375 I.D. (Buna-N)
3E	2	20-15-1	* Split Lock Washer (.50, Stainless)
3F	2	15-6-1	* Hex Nut (.50-13, Stainless)
4	2	026859	* Gasket (SBR-75 Rubber)
5	8	1-99-1	* Hex Hd. Screw (.625-11 x 3.25 Lg. Stainless)
6	8	20-24-1	* Split Lock Washer (.625 Stainless)
7	8	15-21-1	* Hex Nut (.625-11 Stainless)

BAF-E4

P/N: 087316

ITEM	QTY	PART No.	DESCRIPTION
1	1	087314	Moveable Fitting Assembly
1A	1	087389	Moveable (Bronze)
1B	1	089283	* O-Ring, 4.5 I.D. (Buna-N)
2	1	087312	Stationary Base Elbow Assembly
2A	1	087391	Stationary Base Elbow (Cast Iron, Class 30)
2B	2	087392	* Guide Plug (Cast Iron, Class 30)
2C	2	11-81-1	* Sk. Hd. Screw (.50-13 x 1.25 Lg. Stainless)
2D	2	625-02501	* O-Ring, 1.375 I.D. (Buna-N)
3	1	087307	Guide Rail Cap Assembly
3A	1	087309	Guide Rail Bracket (Stainless Steel)
3B	2	087392	* Guide Plug (Cast Iron, Class 30)
3C	2	11-82-1	* Sk. Hd. Screw (1.50-13 x 1.25 Lg. Stainless)
3D	2	625-02501	* O-Ring, 1.375 I.D. (Buna-N)
3E	2	20-15-1	* Split Lock Washer (.50, Stainless)
3F	2	15-6-1	* Hex Nut (.50-13, Stainless)
4	2	026859	* Gasket (SBR-75 Rubber)
5	8	1-99-1	* Hex Hd. Screw (.625-11 x 3.25 Lg. Stainless)
6	8	20-24-1	* Split Lock Washer (.625 Stainless)
7	8	15-21-1	* Hex Nut (.625-11 Stainless)

* = Available as individual replacement parts.

OPTIONAL EQUIPMENT PARTS LIST

INTERMEDIATE SUPPORT: For 4" Disch. Pipe

ITEM	QTY	PART No.	DESCRIPTION
9	1	088449	Intermediate Support Assembly
9A	1	087309	Guide Rail Bracket (Stainless)
9B	4	087392	Guide Plug (Cast Iron)
9C	2	11-85-1	Sk. Hd. Screw (.50-13 x 2.25 Lg. Stainless)
9D	2	20-15-1	Split Lock Washer (.50 Stainless)
9E	2	15-6-1	Hex Nut (.50-13 Stainless)
9F	4	625-02501	O-Ring 1.375 I.D. (Buna-N)
9G	2	1-34-1	Hex Hd. Screw (.375-16 x 1.00Lg. Stainless)
9H	4	20-14-1	Split Lockwasher (.375 Stainless)
9I	4	15-23-1	Hex Nut (.375-16 Stainless)
9J	1	088445	Bracket (Stainless)
9K	1	083937	Clamp (Stainless)
9L	2	1-36-1	Hex Hd. Screw (.375-16 x 1.25 Lg. Stainless)

INTERMEDIATE SUPPORT: For 6" Disch. Pipe

ITEM	QTY	PART No	DESCRIPTION
9	1	088450	Intermediate Support Assembly
9A	1	087309	Guide Rail Bracket (Stainless)
9B	4	087392	Guide Plug (Cast Iron)
9C	2	11-85-1	Sk. Hd. Screw (.50-13 x 2.25 Lg. Stainless)
9D	2	20-15-1	Split Lock Washer (.50 Stainless)
9E	2	15-6-1	Hex Nut (.50-13 Stainless)
9F	4	625-02501	O-Ring 1.375 I.D. (Buna-N)
9G	2	1-34-1	Hex Hd. Screw (.375-16 x 1.00Lg. Stainless)
9H	4	20-14-1	Split Lockwasher (.375 Stainless)
9I	4	15-23-1	Hex Nut (.375-16 Stainless)
9J	1	088448	Bracket (Stainless)
9K	1	083937D	Clamp (Stainless)
9L	2	1-36-1	Hex Hd. Screw (.375-16 x 1.25 Lg. Stainless)

CHAIN (Not Shown)

10A	A/R	625-01584	.250 Dia. Chain (Galvanized)
10B	A/R	625-01582	.312 Dia. Chain (Galvanized)
10C	A/R	625-01583	.375 Dia. Chain (Galvanized)
11A	A/R	625-00830	.312 Dia. Cold Shut (Zinc Plated)
11B	A/R	625-00828	.375 Dia. Cold Shut (Zinc Plated)
11C	A/R	625-00826	.437 Dia. Cold Shut (Zinc Plated)

NOTE: Chain and Cold Shut(s) must be sized same as supplied with motor (Exception: Models 4SE____L and 4SE____HL use 62501584 chain and 625-00830 cold shut(s)).

GUIDE RAIL PIPE

8	2 Per Pump	625-01225	1.50" Guide Rail Pipe Sch. 40
---	------------	-----------	-------------------------------

BARNES®**BARNES®**
PRESSURE **PS** SYSTEMS**burks®****WEINMAN®****DEMING®****PROSSER®**

Limited 24 Month Warranty

Crane Pumps & Systems warrants that products of our manufacture will be free of defects in material and workmanship under normal use and service for twenty-four (24) months after manufacture date, when installed and maintained in accordance with our instructions. This warranty gives you specific legal rights, and there may also be other rights which vary from state to state. In the event the product is covered by the Federal Consumer Product Warranties Law (1) the duration of any implied warranties associated with the product by virtue of said law is limited to the same duration as stated herein, (2) this warranty is a LIMITED WARRANTY, and (3) no claims of any nature whatsoever shall be made against us, until the ultimate consumer, his successor, or assigns, notifies us in writing of the defect, and delivers the product and/or defective part(s) freight prepaid to our factory or nearest authorized service station. Some states do not allow limitations on how long an implied warranty lasts, so the above limitation may not apply. **THE SOLE AND EXCLUSIVE REMEDY FOR BREACH OF ANY AND ALL WARRANTIES WITH RESPECT TO ANY PRODUCT SHALL BE TO REPLACE OR REPAIR AT OUR ELECTION, F.O.B. POINT OF MANUFACTURE OR AUTHORIZED REPAIR STATION, SUCH PRODUCTS AND/OR PARTS AS PROVEN DEFECTIVE. THERE SHALL BE NO FURTHER LIABILITY, WHETHER BASED ON WARRANTY, NEGLIGENCE OR OTHERWISE.** Unless expressly stated otherwise, guarantees in the nature of performance specifications furnished in addition to the foregoing material and workmanship warranties on a product manufactured by us, if any, are subject to laboratory tests corrected for field performance. Any additional guarantees, in the nature of performance specifications must be in writing and such writing must be signed by our authorized representative. Due to inaccuracies in field testing if a conflict arises between the results of field testing conducted by or for user, and laboratory tests corrected for field performance, the latter shall control. **RECOMMENDATIONS FOR SPECIAL APPLICATIONS OR THOSE RESULTING FROM SYSTEMS ANALYSES AND EVALUATIONS WE CONDUCT WILL BE BASED ON OUR BEST AVAILABLE EXPERIENCE AND PUBLISHED INDUSTRY INFORMATION. SUCH RECOMMENDATIONS DO NOT CONSTITUTE A WARRANTY OF SATISFACTORY PERFORMANCE AND NO SUCH WARRANTY IS GIVEN.**

This warranty shall not apply when damage is caused by (a) improper installation, (b) improper voltage (c) lightning (d) excessive sand or other abrasive material (e) scale or corrosion build-up due to excessive chemical content. Any modification of the original equipment will also void the warranty. We will not be responsible for loss, damage or labor cost due to interruption of service caused by defective parts. Neither will we accept charges incurred by others without our prior written approval.

This warranty is void if our inspection reveals the product was used in a manner inconsistent with normal industry practice and/or our specific recommendations. The purchaser is responsible for communication of all necessary information regarding the application and use of the product. **UNDER NO CIRCUMSTANCES WILL WE BE RESPONSIBLE FOR ANY OTHER DIRECT OR CONSEQUENTIAL DAMAGES, INCLUDING BUT NOT LIMITED TO TRAVEL EXPENSES, RENTED EQUIPMENT, OUTSIDE CONTRACTOR FEES, UNAUTHORIZED REPAIR SHOP EXPENSES, LOST PROFITS, LOST INCOME, LABOR CHARGES, DELAYS IN PRODUCTION, IDLE PRODUCTION, WHICH DAMAGES ARE CAUSED BY ANY DEFECTS IN MATERIAL AND/OR WORKMANSHIP AND/OR DAMAGE OR DELAYS IN SHIPMENT. THIS WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER EXPRESS OR IMPLIED WARRANTY, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.**

No rights extended under this warranty shall be assigned to any other person, whether by operation of law or otherwise, without our prior written approval.



A Crane Co. Company

PUMPS & SYSTEMS

420 Third Street
Piqua, Ohio 45356
Phone: (937) 778-8947
Fax: (937) 773-7157
www.cranepumps.com

83 West Drive, Brampton
Ontario, Canada L6T 2J6
Phone: (905) 457-6223
Fax: (905) 457-2650

**IMPORTANT!
WARRANTY REGISTRATION**

Your product is covered by the enclosed Warranty.
To complete the Warranty Registration Form go to:

<http://www.cranepumps.com/ProductRegistration/>

If you have a claim under the provision of the warranty, contact your local
Crane Pumps & Systems, Inc. Distributor.

RETURNED GOODS

**RETURN OF MERCHANDISE REQUIRES A "RETURNED GOODS AUTHORIZATION".
CONTACT YOUR LOCAL CRANE PUMPS & SYSTEMS, INC. DISTRIBUTOR.**



**Products Returned Must Be Cleaned, Sanitized,
Or Decontaminated As Necessary Prior To Shipment,
To Insure That Employees Will Not Be Exposed To Health
Hazards In Handling Said Material. All Applicable Laws
And Regulations Shall Apply.**

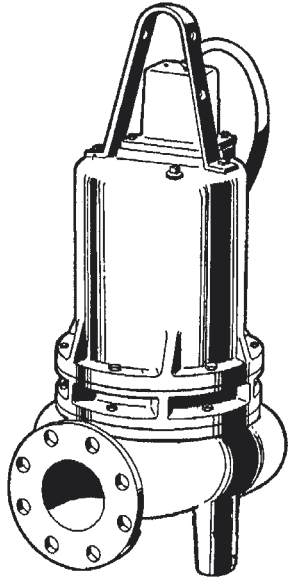
Series 4SEU-L

2³/₈" Spherical Solids Handling
Double Seal

BARNES®

www.cranepumps.com

4" Horizontal Discharge - Submersible Non-Clog Pumps



**Series: 4SEU-L 15HP,
1750RPM, 60Hz**
**Series: 4SEU-L 15HP,
3450RPM, 60Hz**



Sample Specifications: Section 1 Page 16.

DESCRIPTION:

SUBMERSIBLE NON-CLOG SEWAGE PUMP
DESIGNED FOR TYPICAL RAW SEWAGE
APPLICATIONS

DISCHARGE 4" 125lb., Flange Horizontal
LIQUID TEMPERATURE 104°F (40°C) Continuous
VOLUTE Cast Iron ASTM A-48, Class 30
MOTOR HOUSING Cast Iron ASTM A-48, Class 30
SEAL PLATE Cast Iron ASTM A-48, Class 30
IMPELLER:
Design 2 Vane, Open with pump out vanes on back side, Dynamically Balanced, ISO G6.3
Material Cast Iron ASTM A-48, Class 30
SHAFT 416 Stainless Steel
SQUARE RINGS Buna-N
DIAPHRAGM Buna-N
HARDWARE 300 Series Stainless Steel
PAINT Air Dry Enamel
SEAL: *Design* Double Mechanical, Oil filled pressure equalized reservoir
Material Carbon/Ceramic/Buna-N
Hardware - 300 Series Stainless
CORD ENTRY 40 ft. (12.1 m) Cord. Epoxy Sealed Housing with secondary pressure grommet for sealing and strain relief
SPEED 1750 and 3450 RPM (Nominal)
UPPER BEARING Single Row, Ball, Oil Lubricated
Load Radial
LOWER BEARING Double Row, Ball, Oil Lubricated
Load Radial & Thrust
MOTOR: *Design* NEMA B - Three Phase, Torque Curve, Oil Filled, Squirrel Cage Induction
Insulation Class F
THREE PHASE Dual Voltage motor 230/460
Requires Overload Protection to be included in Control Panel
MOISTURE SENSOR Normally Open (N/O), Requires relay in control panel
TEMPERATURE SENSOR .. Normally Closed (N/C), Requires relay in control panel.
OPTIONAL EQUIPMENT Seal Material, Impeller Trims, Additional Cord

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PAGE 30
DATE 3/07

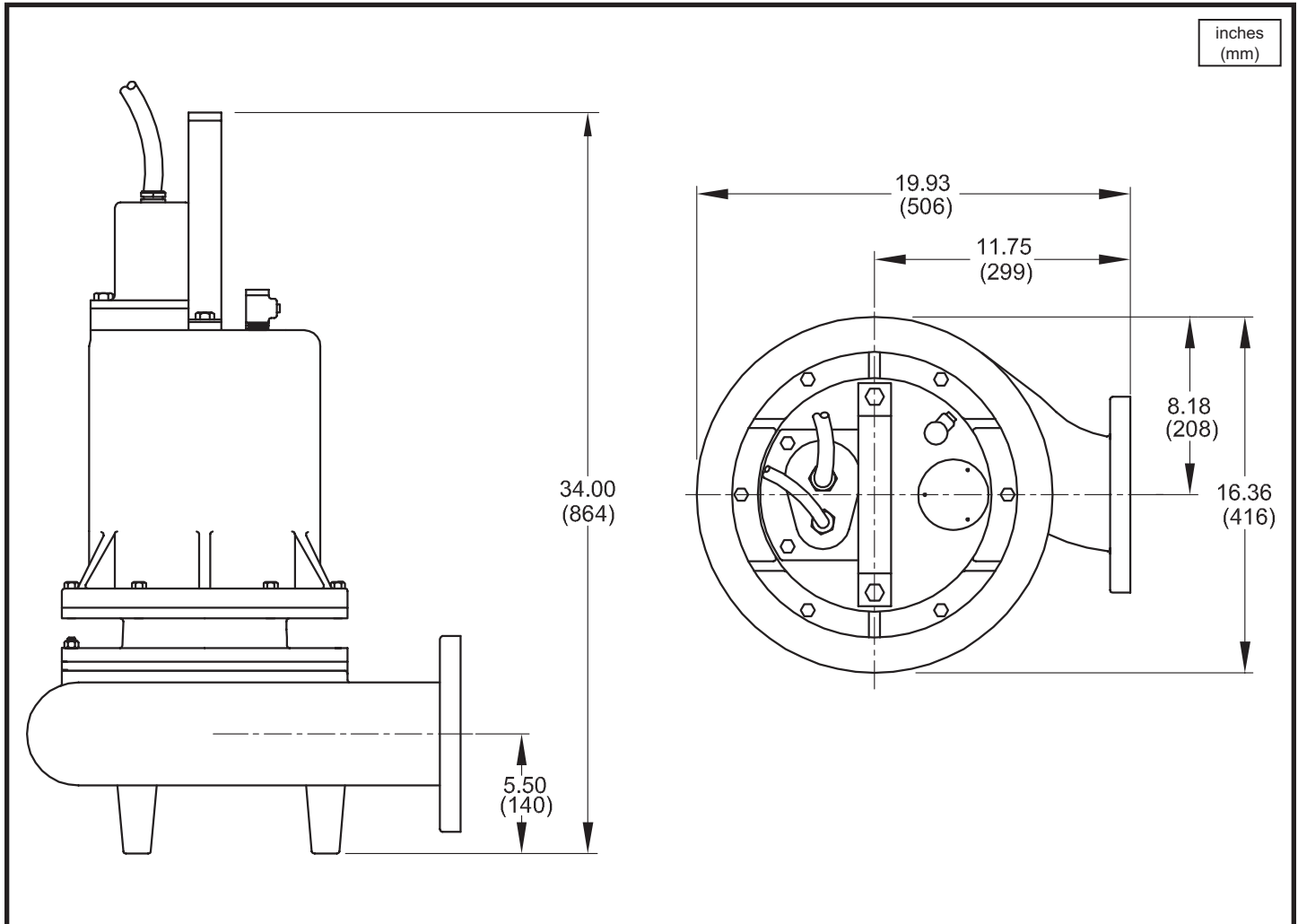
CRANE®

A Crane Co. Company

PUMPS & SYSTEMS

USA: (937) 778-8947 • Canada: (905) 457-6223 • International: (937) 615-3598

4" Horizontal Discharge - Submersible Non-Clog Pumps



MODEL NO	PART NO	HP	VOLT/PH	Hz	RPM (Nom)	NEMA START CODE	FULL LOAD AMPS	LOCKED ROTOR AMPS	CORD SIZE	CORD TYPE	CORD O.D inch (mm)
4SEU15034L	088832	15	230/3	60	1750	D	38.0	160.0	6/4	SOW	1.06 (27)
4SEU15044L	088833	15	460/3	60	1750	D	19.0	80.0	6/4	SOW	1.06 (27)
4SEU15054L	088834	15	575/3	60	1750	D	15.2	63.8	10/4	SOW	0.75 (19.1)
4SEU15032L	088835	15	230/3	60	3450	D	38.0	160.0	6/4	SOW	1.06 (27)
4SEU15042L	088836	15	460/3	60	3450	D	19.0	80.0	6/4	SOW	1.06 (27)
4SEU15052L	088837	15	575/3	60	3450	D	15.2	63.8	10/4	SOW	0.75 (19.1)

Moisture/Temperature sensor cord for all phase models is 18/5 SOW, 0.476 (12.1mm) O.D.

IMPORTANT !

- 1.) PUMP MAY BE OPERATED "DRY" FOR EXTENDED PERIODS WITHOUT DAMAGE TO MOTOR AND/OR SEALS.
- 2.) THIS PUMP IS APPROPRIATE FOR THOSE APPLICATIONS SPECIFIED AS CLASS I DIVISION II HAZARDOUS LOCATIONS.
- 3.) THIS PUMP IS NOT APPROPRIATE FOR THOSE APPLICATIONS SPECIFIED AS CLASS I DIVISION I HAZARDOUS LOCATIONS.
- 4.) INSTALLATIONS SUCH AS DECORATIVE FOUNTAINS OR WATER FEATURES PROVIDED FOR VISUAL ENJOYMENT MUST BE INSTALLED IN ACCORDANCE WITH THE NATIONAL ELECTRIC CODE ANSI/NFPA 70 AND/OR THE AUTHORITY HAVING JURISDICTION. THIS PUMP IS NOT INTENDED FOR USE IN SWIMMING POOLS, RECREATIONAL WATER PARKS, OR INSTALLATIONS IN WHICH HUMAN CONTACT WITH PUMPED MEDIA IS A COMMON OCCURRENCE.

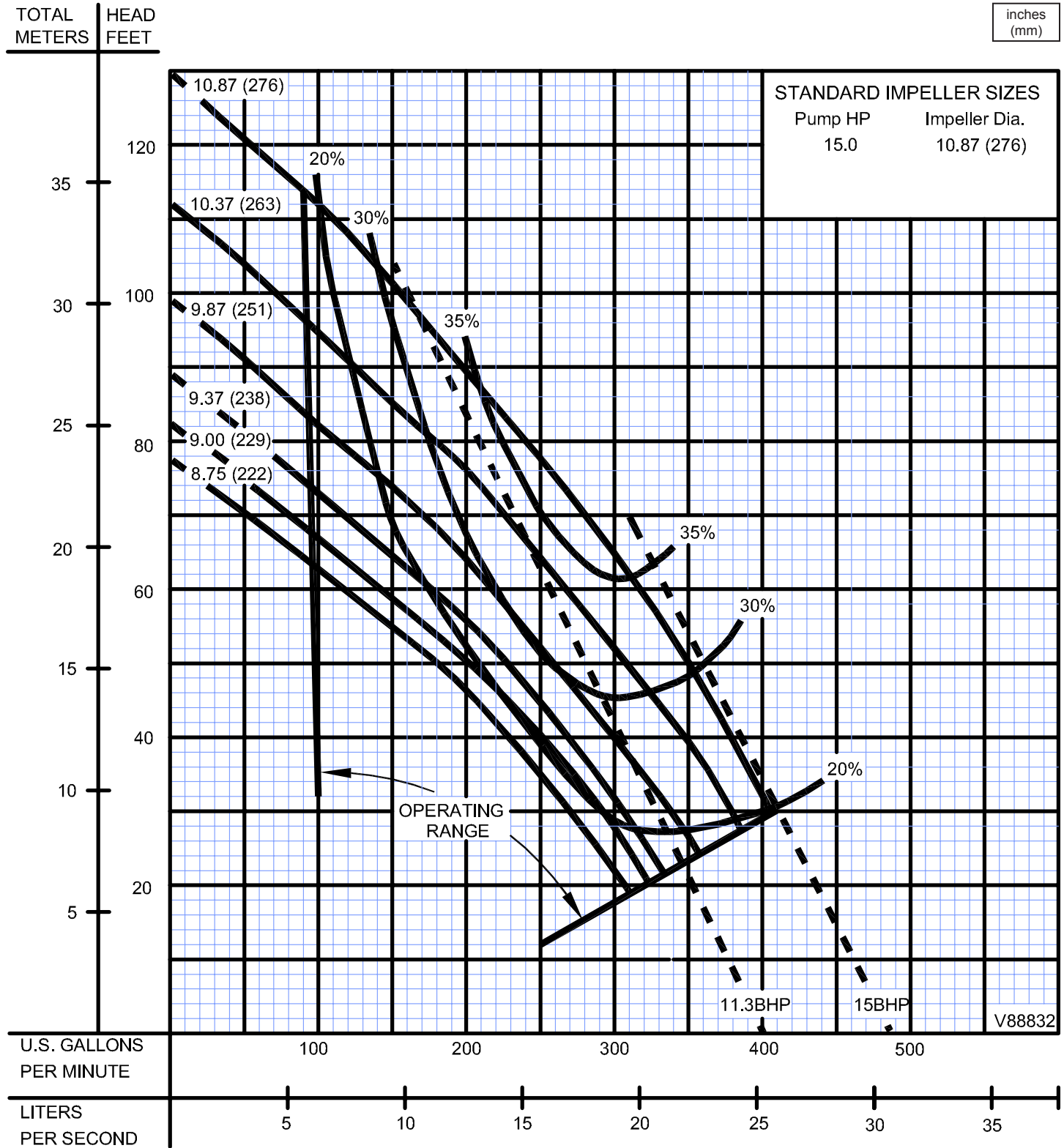
Series 4SEU-L

Performance Curve
15HP, 1750RPM, 60Hz

BARNES®

www.cranepumps.com

4" Horizontal Discharge - Submersible Non-Clog Pumps



Testing is performed with water, specific gravity 1.0 @ 68° F @ (20°C), other fluids may vary performance

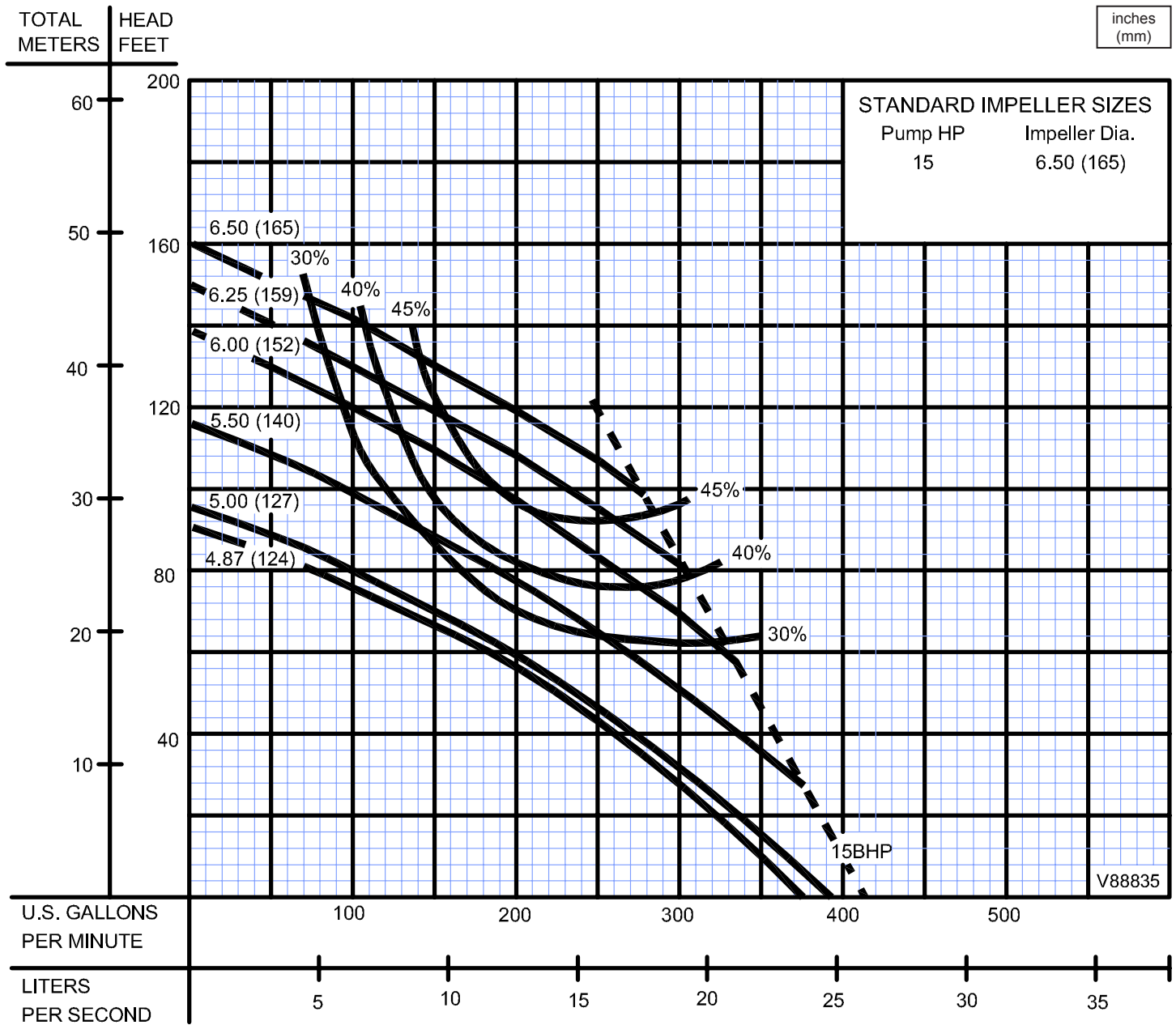
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CRANE
A Crane Co. Company

PUMPS & SYSTEMS

USA: (937) 778-8947 • Canada: (905) 457-6223 • International: (937) 615-3598

4" Horizontal Discharge - Submersible Non-Clog Pumps



Testing is performed with water, specific gravity 1.0 @ 68° F @ (20°C), other fluids may vary performance

APPENDIX E

GDPUD IMPROVEMENT STANDARDS

**GEORGETOWN DIVIDE
PUBLIC UTILITY DISTRICT
IMPROVEMENT STANDARDS
FOR
WATER SYSTEMS
AND
SEWER SYSTEMS
PLANNING
AND
DESIGN**

DATE , 2001

7

THE UNIVERSITY OF CHICAGO

PHYSICS DEPARTMENT

5300 S. DICKINSON DRIVE

10

CHICAGO, ILLINOIS 60637

TEL: 773-936-3700

FAX: 773-936-3701

WWW.PHYSICS.UCHICAGO.EDU

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SECTION 100

DEFINITIONS AND TERMS

101 Introduction. These Improvement Standards shall govern general project requirements and procedures, project design, preparation of plans and specifications, review procedures, inspection procedures and all other work in connection with improvements and private works to be dedicated to the public and accepted by the **GEORGETOWN DIVIDE PUBLIC UTILITY DISTRICT (GDPUD)** for operation and maintenance.

It is recognized that it is not possible to anticipate all situations that may arise or prescribe standards applicable to every situation. Therefore, any items or situations not included in this Standard shall be resolved in accordance with the best professional engineering practice. The Engineering Committee and or the Board must approve any variance to these improvement standards.

102 General. Whenever the following terms, titles or abbreviations are used in this Standard, or in any other document or instrument where this Standard governs, the intent and meaning shall be as herein defined.

103 Definitions:

Acceptance. The formal written acceptance by the District of an entire contract, which has been completed in all respects in accordance with the plans and specifications and any modifications thereof previously, approved.

Agreement, or Water- Service Facilities Agreement. The formal Agreement between the District and the Owner setting forth those mutual conditions, procedures and

requirements in connection with improvements and private works to be dedicated to the public and accepted by GDPUD for operation and maintenance.

Annexation. Is the process of inclusion of property within the District boundaries by proper legal procedures.

"As-Built" Plans. Original plans signed and dated by the Consulting Engineer indicating that the plans have been reviewed and revised, if necessary, to accurately reflect all "As-Built" construction details.

Board. The Board of Directors of the Georgetown Divide Public Utility District.

GDPUD. The Georgetown Divide Public Utility District.

GDPUD Engineer. GDPUD Engineer is also Ex-Officio Engineer of the District for which work will be done under this Standard acting personally or through agents or assistants duly authorized by the District Engineer or Chief Engineer.

Connection Costs. The costs to set water service to a parcel, when none exists. Costs will be charged on a time and material basis and will be determined by the Engineering Department upon request by the Owner. The District forces will do connection work only.

Consulting Engineer. Any individual, partnership, firm or corporation legally authorized to practice civil engineering in the State of California who prepares or submits improvement plans and specifications to GDPUD for acceptance.

Contractor. Shall mean any individual, partnership, firm or corporation licensed in the State of California to perform the type of work involved, who has entered into a contract with any individual, partnership, firm, corporation, special district, or the District as party

or parties of the second part, or his or their legal representatives, for the construction of any improvement or portions of any improvement within the District.

County. The County of El Dorado, State of California.

Cut Sheets. Cut sheets are sheets of tabulated data, indicating stationing, structures, fittings, angle points, curve data, staking offset, elevations, offset cuts and pipe depth.

Developer. Any individual, partnership, firm or corporation by whom the Consulting Engineer has been retained or who, as the property Owner, is making arrangements with the District.

Distribution Line. A public water supply line which has been or is to be constructed to distribute water to more than one service.

DIP. Ductile Iron Pipe

District, or "the District". The Georgetown Divide Public Utility District.

District Engineer. District Engineer shall mean the GDPUD Engineer.

Dwelling Unit. Those individual, residential units wherein a single family does, or could, reside.

Easements. Easements are areas along the line of all public utilities, which are outside of dedicated utility easements or right-of-ways and shall be prepared granting rights along the line of the utility to the District.

Engineering Committee. A standing committee authorized by the Board to review and approve engineering and technical matters.

Expansion Fee. An expansion fee may be charged to pay for existing or future system expansion or improvements. Expansion fees are set by ordinance by the District and may vary from area to area. Expansion fees are due and payable at the time service is requested.

Final Plan Acceptance. The stamp on the plans signed and dated by the District Engineer indicating that plans have been reviewed by the District and released for construction.

General Manager. The executive officer of GDPUD also referred to as "the Manager".

Improvement(s), or Improvement Systems. Those utility systems, or portions of utility systems, as designated in the Agreement, to be dedicated to the public and accepted by GDPUD for operation and maintenance.

Improvement District. That Improvement District formed for special benefit in accordance with the provisions of the Public Utilities Code, Public Utility District Act 15501, et seq., or any other manner permitted and provided under the laws of the State of California.

Improvement Standards. See "Standard".

I&A Project. Innovative and Alternative Project.

Inspector. The engineering or technical personnel authorized to act as agents for the District's Engineer in the inspection of work covered by the plans and specifications, limited to the particular duties entrusted to the inspector(s).

Owner. Any individual, partnership, firm or corporation holding any interest in real property as recorded in the Official Records of the Office of the Recorder of El Dorado County.

Parcel Number. Parcel number shall mean the assessor's parcel number (APN) as assigned by the El Dorado County Assessor.

Plans.

Construction plans, including system maps, plans and profiles, cross sections, detail drawings, etc., or reproductions thereof, approved or to be approved by the District's Engineer which show the location, character, dimensions and details for the work to be done and which constitute a supplement to the Standard Construction Specifications. "Drawings" and "Plans" may be used interchangeably.

Planning Reviewed. Plans stamped "Planning Reviewed", dated and signed by the District's Engineer, indicates that the plans have been reviewed and released for design, based on submitted drawings.

PVC. Polyvinyl Chloride.

Right-of-Way. All land or interest therein which by deed, conveyance, agreement, easement, dedication, usage or process of law is reserved for, or dedicated to, the use of the general public, within which the District shall have the right to install, reconstruct and maintain its facilities.

Service or Utility Service. A utility service other than water, i.e. phone, electrical, CATV gas, etc.

Special Conditions. The special conditions are specific clauses setting forth conditions or requirements peculiar to the work and supplementary to the Standard Specifications.

Specifications. The word "Specifications" shall mean the District Standard Specifications, Special Conditions and all subsequent additions, deletions or revisions thereto of the Contract, together with all addenda and change orders issued with respect thereto for the work to be done and which constitute a supplement to the Plans.

Standard, or Improvement Standards, as contained herein and all subsequent additions, deletions or revisions thereto.

Standard Drawings. The plans, drawings, etc., of structures, devices or details commonly used on District work, adopted by the District and made a part of this Standard and/or the Standard Specifications.

Standard Specifications. The Standard Specifications adopted by the District and all subsequent additions, deletions or revisions thereto. See Specifications for definition.

Structures. Those structures or devices designated on the standard drawings as vaults, pressure reducing stations, air relief stations, etc. Detailed drawings of structures or devices commonly used in District work and mentioned in this Standard are included in the Standard Specifications.

The term "structures" also includes those special buildings, pumping stations, treatment units, etc., as required and as shown on the drawings.

Subdivision. That certain real property for which the Owner has entered into an agreement with the District in connection with improvements and private works to be dedicated to the public and accepted by the District for operation and maintenance. As

defined herein, subdivision shall include all such real property as described in said agreement, whether or not said real property is as defined as a subdivision in County's "Subdivision and Land Division Regulations", or the State Subdivision Map Act, as may be amended.

System Plans. The plans/drawings of a water system, used by the District operation and maintenance personnel. The District creates these drawings from the "as-built" plans. An estimate of the cost to develop the system plans will be given to the Owner upon request.

Transmission Line. A public water supply line which has been or is to be constructed to transmit water to more than one distribution line and is normally ten (10) inches or greater in diameter and to which services are not normally connected.

Water Service. The District owned and maintained portion of the water service line, which links the water plumbing of a house or building with the distribution line. This publicly owned portion of the service line is normally one (1) inch in diameter and normally extends from the distribution line to the meter box and includes the meter and customer service valve at the property line or right-of-way line.

Work. All the improvements to be done under District permit, or inspection, whether in or out of contract, in accordance with the plans, specifications, special provisions and/or permit conditions.

SECTION 200

GENERAL PROJECT REQUIREMENTS AND PROCEDURES

201 Agreement. The Owner shall enter into a formal Agreement with the District setting mutual conditions, procedures and requirements in connection with improvements and private works to be dedicated to the public and accepted by the District for operation and maintenance. The form of the Agreement shall be as provided by the District. No review of plans shall be made until such Agreement has been executed.

The Agreement shall become null and void with the expiration of the Tentative Map unless the bonds required under Section 402, Performance and Payment Bonds have been filed with the District. Or, the Board had previously granted an extension of time or upon acceptance of the facilities for Operation and Maintenance by the Board.

202 System Adequacy. The parties to said Agreement understand and agree that the complete improvement system, as designated in said Agreement and as generally described below, shall be adequate to provide service to all of the subdivision once that subdivision has been fully developed. A complete improvement system shall include, but not necessarily be limited to, the following:

Complete water system shall consist of all transmission, distribution service lines, pressure systems, storage facilities, pumping facilities, treatment facilities, source facilities, telemetry, auxiliary power, all required lands and easements and other miscellaneous and associated appurtenances necessary to bring domestic water from the source or sources to the vicinity of all the lots as shown on the parcel map or the final subdivision map.

203 Formation or Annexation to Improvement District. The Owner's Consulting Engineer shall promptly and diligently act to obtain the necessary legal descriptions required for the formation of, or the annexation to, an appropriate Improvement District. The Owner shall file a petition requesting said formation or annexation. Upon receipt of said petition, the Board will promptly initiate action to form an Improvement District or annex to an existing Improvement District, as may appear appropriate to said Board, including the lands within the subdivision. Said formation or annexation to be made in accordance with the provisions of Public Utility District Code Section 15501, et seq., or any other manner permitted and provided under the laws of the State of California. The Owner and the District shall consent to and cooperate in every way in said formation or annexation. The purpose of the formation or annexation by the District will be to take over, maintain and operate the complete improvement system as described in the Agreement, which will be constructed **entirely** at the expense of the Owner and **without cost** to the District or the Improvement District so organized.

204 Conveyance to the District. Upon completion of the improvement system as designated in the Agreement and its approval by the Board, the Owner shall grant, transfer and assign all of the improvement system, including, but not limited to, all necessary easements and right-of-ways, to the District free **and clear of any encumbrances.**

In consideration of the performance by the Owner and the transfer, the District agrees to accept said improvement system and facilities so transferred to it. The District will operate and maintain said improvement system and to provide system services to the owners of real property in the subdivision served by the improvement system in accordance with its then current rate schedule and thereafter as the schedule is amended from time to time. It is understood, however, that the cost of operation and maintenance may exceed the charges made to improvement system users on the current, appropriate rate schedule and the schedule may from time to time be changed. In such case, it may be necessary to impose a fee for vacant lots or parcels within the

service area, pursuant to applicable provisions of law, over all of the property in the Improvement District to raise the required funds.

205 Improvement District. When the subdivision or project has been improved as contemplated in the Agreement and the improvement system turned over to the District and accepted for operation and maintenance, the said Improvement District shall thereafter be governed in all respects as provided by the applicable laws of the State of California.

SECTION 300

GENERAL DISTRICT POLICIES

301 Engineering Policy. The engineering policy of the District requires strict compliance with the Civil and Professional Engineers Act of the California Business and Professions Code. All plans, calculations, specifications, cost estimates, reports or documents shall be prepared by, or under the direction of, a registered civil engineer and shall be signed by said engineer and stamped with engineer's seal to indicate engineer's responsibility for them. Electrical plans, calculations, specifications, cost estimates, reports or documents shall be prepared by, or under the direction of, a registered electrical engineer and shall be signed by said engineer and stamped with engineer's seal to indicate engineer's responsibility for them.

It shall be the Owners Consulting Engineer's responsibility to review any proposed improvement, extension and/or existing system change with the District, prior to engineering or design work, to determine any special requirements or whether the proposal is permissible.

302 Annexation Policy. The Annexation Policy requires the consideration of service to any property in the ultimate service area and that all properties served may annex to the appropriate Improvement District. The annexation fee(s) and/or in-lieu fee(s), if any, represent the unit value of the major District facilities. Properties annexed must provide their own local facilities and must pay any applicable fees prior to receipt of service. Only complete properties of legal record will be annexed.

303 Right-of-Way Policy. The right-of-way policy requires that all-public water line facilities be in easements or right-of-ways granted or dedicated therefor or for public use. In the case of public roads or public utility easements (PUE), further dedication is not necessary unless specifically required. All new easements must be granted or

dedicated to the District as PUE's unless specifically approved otherwise (see Section 600).

Treatment plant sites, pumping station sites, storage tank sites and sites for similar major facilities shall be granted to the District in fee title and recorded in the District's name.

The cost of all such easements, right-of-ways, fee title sites, etc., shall be borne entirely by the Owner.

304 Condemnation Policy. When a public water line must pass through private property and a right-of-way cannot be obtained through negotiation with the property owner, the District may, under certain conditions, order condemnation of the required easement. If condemnation by the District is desired, the following will be required:

Submit complete construction plans, a detailed easement plan, listing of all legal owners, legal description of each parcel including total acreage. Submit a letter to the Board explaining the situation and stating that all reasonable means to acquire the easement through normal procedures have been exhausted, that no agreement could be reached and requesting the Board to order condemnation.

If the District orders condemnation, reproducible drawings of the easement map shall be submitted showing the entire easement, temporary working easement and affected properties. Submit a description of easement and temporary working easement including correct and complete name and address of vested owner(s) of the property or other interests shall be furnished.

All costs of the condemnation shall be borne by the applicant. There shall be a minimum fee deposited with the District prior to any action.

305 Reversion of Lands and Facilities. If, at any time within seven (7) years from the recording date of the deed of the property to be used for a water treatment plant; the District shall cease to use said real property for water purposes, the real property shall then revert to the Owner.

306 Department of Real Estate Statement. Should the Owner request the District to issue a statement to the California Department of Real Estate guaranteeing water service to a subdivision and should said request be made prior to completion and acceptance by the District of the improvement system. The bonds or letters of credit required under Section 402 (Performance and Payment Bonds), the bonds or letters of credit required under Section 403 (Annexation, Lot, In-Lieu Fees, Bonds) and all other fees required under Section 401 (Review and Inspection Fees) shall be submitted concurrently with the request.

307 Fencing. The District requires that every effort be made to protect its facilities from theft, vandalism, unauthorized entry, etc. Exposed mechanical sites, including but not limited to storage tanks, treatment plants, pumping stations, etc., shall be enclosed in a chain link fence with or without redwood pickets and with wire extensions barbed wire and/or razor wire at the option of the District. Gates shall allow vehicular access.

All District property shall be fenced along the property line and shall be signed as required and prohibiting general public access.

308 Lighting. All mechanical areas, doorways and stairs shall be adequately lighted for night operation and maintenance. Lighting normally will be controlled by automatic light sensors or timers with manual override switching.

309 Auxiliary Power Generator. All pump stations and treatment plants shall be equipped with auxiliary generator power (aux power) equipment. The aux power equipment shall be capable of powering the equipment as follows:

Pump stations	All equipment necessary to run the station in a simplex mode.
Treatment Plants	All equipment necessary to run the plant in a mode necessary to meet the average daily flow quantity.

The aux power shall start and transfer power automatically from grid to generator power when the grid power fails for more than one (1) minute. Upon return of grid power the aux power shall continue to operate for five (5) minutes before transferring back to grid power. The aux power generator shall have a cool down period not less than twenty (20) minutes before shutting down.

SECTION 400

FEES AND BONDS

401 Review and Inspection Fees. The Owner will pay all costs directly related to the District's review of calculations, plans, specifications, cost estimates, property descriptions and right-of-ways, permits and for the complete improvement system and will pay all costs directly related to the construction inspection, permits, licenses, bonds, administration and the preparation of "As-Built" drawings.

The District prior to beginning plan checking shall receive the Water Service Facilities Agreement and the Plan Check Fee Deposit.

The District prior to the plans being "Released for Construction" shall receive the Inspection Fee Deposit.

A. Planning Review Fees. Concurrently with the submittal of calculations, plans, specifications, cost estimates and legal property descriptions for District review, the Owner will advance in cash or check a sum calculated in accordance with the following schedule:

Planning Review - Concept Acceptance (non - refundable)

1. Parcel Maps \$150
2. Subdivision Maps \$400

Preliminary Construction Estimate**Plan Checking Fee Advance**

Less than \$10,000

\$250 (non-refundable) or 5% of estimate, whichever is greater.

\$10,000- \$100,000

\$500 or 1% of estimate, whichever is greater.

Greater than \$100,000

\$750 or 3/4% of estimate, whichever is greater.

All fee calculations shall be rounded to the nearest whole dollar amount.

The Owner shall reimburse the District each month for review services rendered. The reimbursement shall be paid within thirty (30) days after receipt of invoice from the District. Accounts unpaid for more than thirty (30) days are subject to a monthly late charge of ten (10) percent per annum, (.8333 per month). If the Owner is not current with the District invoicing, the District may discontinue all review services to the Owner. Any excess amounts shall be credited to the Owner's inspection fee account.

B. Inspection Fee. Concurrently with the submittal of the Bonds or Letters of Credit required to guarantee completion and payment of the complete improvement system, the Owner will advance in cash or check an Inspection Fee Deposit calculated in accordance with the following schedule. The District prior to the plans being "Released for Construction" shall receive the Inspection Fee Deposit.

Final Construction Estimate**Inspection Fee Deposit**

- | | |
|---------------------------|---|
| 1. Less than \$10,000 | \$250.00 (non-refundable) or 5% of the estimate, whichever is greater |
| 2. \$10,000-\$200,000 | \$500.00 or 2-1/2% of estimate, whichever is greater. |
| 3. Greater than \$200,000 | \$5,000.00 |

The Owner shall reimburse the District each month for inspection services rendered. The reimbursement shall be paid within thirty (30) days after receipt of invoice from the District. Accounts unpaid for more than thirty (30) days are subject to a monthly late charge of ten (10) percent per annum (.8333 per month). If the Owner is not current with invoicing, the District may discontinue all inspection services to the Owner. All construction activity shall cease until the Owner is current with invoicing.

The District until shall hold the Inspection Fee Deposit after the receipt of the As-Built drawings from the engineer.

The District shall make further payment or refund, whichever is the case, after District acceptance of the system and completion of the System drawings.

402 Performance and Payment Bonds. When the Owner desires to file the Final Parcel or Subdivision Map prior to the completion and acceptance of the improvements; the District shall require that bonds be posted to ensure completion of and payment for the Improvement System in accordance with the approved plans and specifications. The Owner will provide and deliver to the District a Performance Bond and a Payment

Bond prior to receiving a Notice to Proceed. Each bond shall be issued by a surety company authorized to do business in the State of California and acceptable to a Performance Bond and a Payment Bond. Each bond shall be in the amount of 100% of the final estimate of the construction costs for the complete Improvement System. The Bonds will guarantee completion of and payment for the Improvement System contemplated in the Agreement in accordance with the approved plans and specifications. The Bonds will remain in full force and effect until such time as the District accepts the Improvement System. The District will permit the conversion of a Performance Bond to a Maintenance Bond.

403 Annexation, Lot, In-Lieu Fees. The Owner may be required to pay any annexation and/or lot fees (or lot usage fees), "in-lieu" fees and any other fees, as appropriate and as required in the Agreement.

404 Maintenance Bond. As a condition precedent to the acceptance of the complete improvement system, the Owner shall furnish either a corporate surety maintenance bond of an acceptable surety company, authorized to do business in the State of California, or an irrevocable letter of credit issued by a banking firm acceptable to the District. Alternative methods of bonding may be utilized upon the approval of the Board of Directors. The bond shall protect the District against the results of faulty materials, poor workmanship, or defective equipment. The bond shall be for a period of **two (2) years** after acceptance of the project. Said bond or letter of credit shall be in a sum as shown in the table below:

Project Construction Costs

Percentage

- | | |
|-----------------------------|----|
| 1. Up to \$100,000 | 40 |
| 2. \$100,000 to \$1,000,000 | 30 |
| 3. Greater than \$1,000,000 | 20 |

SECTION 500

PROJECT REVIEW AND ACCEPTANCE

501 General. The Owner will submit to the District all engineering calculations, plans, specifications, cost estimates and property descriptions designed to provide a complete Improvement System within the development in accordance with these Improvement Standards, the Standard Specifications of the District, the executed Agreement and any other appropriate and necessary governmental authorities.

See Section 1000, Design Criteria for Water Systems for specific requirements.

502 Planning Review-Concept Review Fee. The Planning Review Fee shall be paid to the District prior to any project review.

503 Planning Review - Concept Review. The purpose of the Planning Review is to evaluate overall project general concepts, to determine approximate location and sizing of major system components, the effect of the project on adjacent improvements and areas, to estimate preliminary project costs and to establish general project feasibility. When submitting plans for Planning Review, three (3) complete sets of plans, engineering calculations, etc., shall be submitted in sufficient detail to determine general sizing and arrangement of major components and the general organization and design of the project as a whole. Generally, plans submitted will be based on the "system maps" and will become part of the Final Plans.

A print of the approved tentative subdivision or parcel map and a copy of the County Planning Commission Conditions shall be included with each set of improvement plans submitted.

The submitted plans will be reviewed by the District and, if there are no required and/or recommended revisions, the plans will be submitted to the Engineering Committee for "Concept Review" (this is not approval for construction) and one (1) set returned to the Consulting Engineer. However, if there are required and/or recommended revisions, they will be noted on the plans, etc. and one (1) set will be returned to the Consulting Engineer for necessary revisions and resubmittal for "Concept Review". The Concept Review shall become void six (6) months from the date of approval unless plans have been submitted for Plan Checking and the water service facilities agreement has been finalized.

504 Water Service Facilities Agreement. The Owner will enter into a Water Service Facilities Agreement with the District on all property where service is being requested. The Agreement shall state and provide for design, engineering and installation of a complete water system at the expense of the Owner; and thereafter, the system will be operated, maintained and dedicated to the District.

The Agreement will provide for, but not be limited to, provisions for the Owner to prepare and submit to the District for review all engineering calculations, plans, specifications, cost estimates, property descriptions, pay all fees, deliver all bonds, construct and pay for all facilities. The Owner will do all other work as required to provide a complete Improvement System within the development. The Improvement System is to be constructed in compliance with these Improvement Standards, Standard Specifications, together with any and all amendments thereto and all other requirements of each and every governmental authority having any jurisdiction with development.

The agreement shall provide that at the time of completion, the system shall be granted, in its entirety, free and clear of any and all encumbrances, to the District. Upon acceptance of the system, the District will charge expansion fees, monthly fees to

the users and may impose or raise fees in order to operate, maintain and improve the system.

505 Easements. Grants of Easements to the District shall be prepared and obtained by the Owner for all installations on off-site private property. The Grant of Easement properly signed and notarized and the original right-of-way description shall be submitted to the District for acceptance and recording prior to Release for Construction.

506 Geological Investigation. Because of the inherent hazards may be involved in excavation, trenching and pipe laying in certain formations within the County, the right is reserved to require a geological investigation and report prior to the Release for Construction. In general, locations on steep side hills, locations in areas of recognized instability, locations in known fault or slip zones, spring or seepage areas or areas where concentrated or unusual development exists or is planned, shall be investigated and construction controlled by the recommendations contained in the geological report.

507 Final Review - Release for Construction. When submitting plans for review for construction, three (3) complete sets of prints shall be presented. All easement descriptions and right-of-way documents, fully executed and ready for recording, complete specifications, cost estimates, executed water facilities agreement, etc., shall also be furnished to the District prior to review for construction. **The Owner shall sign and date the plan Title Sheet.**

The Owner's Consulting Engineer shall allow a minimum of three (3) weeks for this final review by the District. Plans "Released for Construction" imply that the District has reviewed the plans, calculations, etc. and the field area in which the work is proposed and that the plans, calculations, etc. and field conditions seem to meet the requirements of the District and construction may begin. Significant office or field change from plans "Released for Construction" which will affect the project, nullifies any prior approval of the plans and will require that revisions and/or new plans be

submitted and reviewed prior to construction. If field conditions are encountered during construction that necessitate significant deviation from the plans "Released for Construction", construction shall be halted until the Consulting Engineer, re-submitted to the District and again "Released for Construction revises plans". Minor utility relocations are not considered significant. Stoppage of work would only affect the area or significant change. Work in unaffected areas may continue.

"Released for Construction" for any portion of the work may be withdrawn at any time it is determined that any portion of the plans, calculations, etc. and/or construction work fails to meet the District requirements. **"Released for Construction" shall become void six (6) months from date of release, unless construction of the project, as detailed on the plans, has begun.**

508 Other Agency Review.

A. State Review Procedure.

State Department of Health Services (DoHS). The Consulting Engineer shall provide the DoHS with complete plans and specifications for review, in such manner and detail as they may request. Plans "Released for Construction" are expressly contingent upon DoHS approval and/or issuance of any required permit or license and the District may withhold final acceptance of the improvement plans until receipt of said approval and/or required permit or license.

B. County Review Procedures. The Consulting Engineer shall provide the following County Departments with complete plans and specifications for their general review and coordination in such manner and detail as those departments may require. The District shall withhold "Released for Construction" until these departments have signified by their signatures on the Title Sheet or by a letter to the District that they have reviewed and approved the proposed improvements.

1. County Health Department (Sanitarian)
2. Director of Public Works
3. Planning Director
4. Appropriate fire protection agency (water projects)

509 Plan Revisions. All revisions recommended or required by the District will be indicated on the plans by their respective reference numbers as they appear in these standards and/or by notes written on the plans. Any revisions noted shall be made. The plans, cut sheets, etc., shall be resubmitted for review.

510 Commencement of Work. No work will be permitted to proceed until all District requirements have been met, including payment of all fees, acquisition of all off-site easements, permits, licenses, plans "Released for Construction" by the District and the posting of all required bonds.

SECTION 600

EASEMENTS, RIGHT-OF-WAYS AND PERMITS

601 Easements and Right-of-Ways. Right-of-ways define and establish the rights of the District to construct, reconstruct and maintain facilities in the location designated by the Consulting Engineer. The Consulting Engineer shall provide Grant of Easements to the District and a Right-of-Way Map for improvements for all installations in off-site private property. No construction work will be permitted to proceed in off-site private property until the District receives and accepts all Right-of-Way easements.

A. Right-of-Way Width. The minimum width of easements shall be fifteen (15) feet for lines less than twelve (12) inches in diameter and twenty (20) feet for lines twelve (12) inches or greater in diameter or the width shall be three (3) times the depth of the line which ever is greater. The easement shall be centered on the line whenever possible. Additional widths may be required in special conditions.

B. Descriptions and Exhibits. The Consulting Engineer shall prepare descriptions or exhibits for easements to be acquired along the alignment of the improvements. The parcel number shall appear on the description or exhibit. The correct name of the grantor (individual(s), partnership or corporation) shall appear on the description or exhibit. Two (2) copies of each description or exhibit with its respective Right-of-Way Map shall be submitted with plans prior to being "Released for Construction".

C. Grant of Easement. After the Consulting Engineer has submitted the descriptions or exhibits and Right-of-Way Map for checking, the District will prepare the Grant of Easements forms for the respective Right-of-Way. The original Grant of Easement form together with its description or exhibit shall be returned to the Consulting Engineer to secure the proper signature(s) and notarization(s). The

properly executed Grant of Easement shall be submitted to the District for acceptance by the Board and recording at the County.

D. Right-of-Way Map. The Right-of-Way Map shall be prepared and shall show the entire area to be covered by the easement, permit or license. A separate plat shall be prepared for each parcel and shall show all necessary survey ties, courses and distances. The Right-of-Way Map shall accompany each description of an easement; permit or license and the original drawing shall be submitted to the District.

E. Easements and/or Reserves. Easements and/or reserves may be shown on Final Maps and shall be dedicated for the purposes of constructing, reconstruction, laying and maintaining and operating the improvements and appurtenances. A copy of the proposed Final Map or other evidence shall be submitted prior to the plans being "Released for Construction" to substantiate the easements and/or reserves.

F. Easements for Future Extensions. Easements shall be dedicated or granted to the District in all cases where future extensions of lines will be required on property being served. Such easements will be included on the parcel or subdivision map and shown on the construction plans when there is any doubt as to the ability to properly serve the ultimate service area.

602 Permits and Licenses. Where permits and/or licenses, other than those issued by the District are required, the Consulting Engineer shall prepare and provide to the District all necessary permit or license requirements prior to the plans being "Released for Construction".

The District will make required applications and must receive approved permits and/or licenses prior to the plans being "Released for Construction". The Consulting Engineering shall prepare all reports, Right-of-Way Maps or other exhibits required to

secure the permit or license. All District costs shall be paid in accordance with Section 400.

CalTrans, Railroad and Utility Encroachment Permit. The Consulting Engineer shall obtain railroad right-of-ways and utility right-of-ways applications for all work within State Highways, and copies submitted to the District with the final review plans.

El Dorado County or City Encroachment Permits. Applications for all work within County roads or City streets shall be obtained by the Consulting Engineer and copies submitted to the District with the final review plans.

603 Fee Title. Fee title to treatment plant sites, pumping station sites, storage tank sites and sites for similar major facilities shall be granted to the District and recorded in the District's name. The District shall accept all sites and descriptions prior to the plans being "Released for Construction" and recording must be completed prior to the District's acceptance of the improvements.

SECTION 700

PREPARATION OF PLANS

701 Sizes of Required Maps, Plans, etc. are as outlined below:

- System Maps - Sheet Size, 22" x 34".
- Improvement Plans - Sheet Size, 22" x 34".
- Right-of-Way Maps - Sheet Size, 18" x 26" or 22" x 34"
- Description or Exhibit - Sheet Size, 8½" X 11".
- Disks - 3.5" 1.44 Mb or Iomega 100Mb or 250 Mb; DWG or DXF Extension, AutoCAD, Windows compatible.

702 Original Drawings. All original drawings shall be CAD prepared by the Consulting Engineer and shall be on "Mylar" film in ink.

703 Prints. All prints of plans shall be high quality blue or black on white background.

704 Plan Sets. The following details are to be shown on plans submitted for review. This does not in any way exempt the Consulting Engineer who is preparing plans from the responsibility of preparing neat, accurate and comprehensive plans in keeping with the standards of the profession. If the plans submitted are not prepared in accordance with these Standards, the Standard Specifications, the Agreement, etc., or are not in keeping with the highest standards of the engineering profession, District Engineer may return such plans unmarked, unapproved and include a list of deficient items.

A. General. All sheets of each set of plans shall be in order and stapled together as a complete set which shall generally consist of a Title Sheet, System Map(s), Plan

and Profile Sheet(s), Detail Sheets, etc. Each revision and its date shall be indicated on the pertinent sheet. The project name shall appear on each sheet of the plans.

1. Legible Original Drawings. To produce legible original drawings, half-size reproducible copies and prints, all line work must be clear, sharp and heavy. Letters and numerals must be 1/4 inch minimum height (font size 18). Station grid lines shall not bisect numerals showing profile elevations.

2. Standard Symbols and Legend. Standard symbols and legend shall be incorporated into all plans as shown on the District's Standard Details.

3. Signature and Stamp. The signature and stamp of the Consulting Engineer(s) (responsible registered engineer, registration number and date of expiration) shall appear on each sheet of the plans.

4. Title Blocks. Each sheet within the set of drawings shall have a title block showing the sheet title, number, date, scale and the Consulting Engineer's name and registration number and the name of the subdivision, project or assessment district.

5. Stationing and Orientation. The stationing on plan and profile sheets shall normally read from left to right. Plans shall be so arranged that the North arrow points towards the top or upper 180 degrees, insofar as practical.

6. Benchmarks. The benchmarks and datum shall be clearly pointed out on the plans both as to location, description and elevations. The datum shall be USGS. Consulting Engineer(s) shall contact the USGS and/or the County for location and elevation of the nearest official benchmark.

The District Engineer may require that the proposed improvements be tied to latitudes and longitudes with Global Positioning Survey equipment.

7. Typical Sections. A typical section for each type of street within the improvement setting out the structural features shall be a part of the plans.

8. Cross-Sections. Cross sections shall be included in the plans where determined necessary by the District Engineer. When, in limited areas, unusual topographic features or special conditions occur that would affect the work, individual cross-sections may be shown on the pertinent plan sheet.

9. Special Notes. Special notes shall be clearly indicated. When the District has agreed to cooperate in any portion of work shown on Consulting Engineer's plans, these plans shall be clearly noted: "Contractor shall submit a proposal to and obtain a purchase order from the District prior to construction". The District will not pay for any work done without a purchase order.

10. Design Criteria. The design criteria used shall be shown on the plans. It can be summarized in table form.

B. Title Sheet. On improvement plans exceeding three (3) sheets in one set, a title sheet shall be prepared showing project title, the Owner, the Developer, the Consulting Engineer, general notes, sheet index, location map, etc.

1. Names and Signatures. The printed name, signature and date of the following, when applicable to the improvement project, shall appear on the title sheet:

- a) Consulting Engineer (properly stamped)
- b) Owner
- c) Director of Public Works
- d) Chief, appropriate fire protection agency
- e) District Engineer

2. General Notes. The following information is to be included in the general notes:

- a) Datum information.
- b) Depth of underground utilities if known.
- c) Contractor responsible for notifying USA.
- d) Stationing along street centerline unless otherwise noted.
- e) Time of completion.
- f) Special sequence of construction.
- g) Reference to the District Standard Specifications.
- h) Reference to the District Standard Details.
- i) Drafting symbol legend.
- j) Clearances shown are from construction centerline to the nearest surface of object noted.

C. Overall System Map The system map scale shall normally be 1 inch = 200 feet. The system map shall cover sufficient area to show adjacent, existing and proposed improvements, all properties to be served, contours with intervals not more than 20 feet, line sizing, pressure zones for water systems, water tanks with base elevation and tank height, pumping stations, treatment plants, street names, subdivision names and/or numbers, project boundaries, key layout of plan and profile sheets, permanent benchmarks, etc. Areas not served within the project boundaries and which cannot be served at a future date by simple extension of the project's system (without pumping) shall be indicated.

Preliminary System Maps are to be submitted as part of the Planning Review phase and must be sufficient in detail to determine general concepts, system adequacy and potential service to adjacent properties. See Sections 1000 and 1100 for specific requirements.

Final System Maps are to be submitted with the Final Review Plans and shall show all valve, ARV, PRS, and HPRS fire hydrants and etc. locations.

D. Plan and Profile Sheets. When the project is in unimproved land, plans should be drawn from topo base maps. When the project is in improved land, plans should be drawn from aerial photos. In both cases the topo or aerial photo is to be placed on the back of the Mylar film.

1. Plan. The scale normally shall be 1 inch = 40 feet or 1 inch = 50 feet horizontal (1 inch = 40 feet required when proposed facilities are to be constructed in existing improved or built-up areas). The plan show the true horizontal relationship between the proposed improvements and the existing and/or proposed field conditions, including existing or proposed utilities and other facilities in accordance with available information. Plans also shall include topographic contours, line size, pipe type, pipe class and designation, all structures and their respective numbers, lot numbers, all property lines and corners adjacent to the alignment, all necessary and required stationing, location dimensions, horizontal curve data and street names.

a. Services. The location of each service be constructed shall be indicated on the plans by stationing or by reference to a permanent, well-defined structure. Improvements or lots shown on a plan sheet but served by a line shown on another plan sheet shall have the service shown by a small triangle and the letter "W" (water service).

b. Permanent and Working Easements. Permanent and working easements shall be shown to scale on the plans. Easement dimensions shall be shown. Each easement shall be tied to both the property line and the improvement line.

c. Improvement Line. The proposed improvement line shall be shown on each plan sheet as a solid line. Sufficient dimensions from Right-of-Way centerline shall be given. If the line is to be located in an easement, sufficient dimensions to locate the line in the field shall be shown on the plans.

d. Utilities. Existing and proposed gas, water, sewer, power, telephone and all other utility lines above or below the ground shall be determined and shown upon the plans with accuracy as great as practicable. The location of any utility line that is within 5 feet of the improvement line, shall be shown to an accuracy of $1.0\pm$ foot and the clearance shown upon the plans. Service lines shall be shown.

e. Obstructions. Trees and other objects within the working easement shall have their correct location shown on the plans, the clearance from construction centerline shown the diameter of tree trunks and interfering heavy tree branches noted. Removal of a tree or object or other special handling shall be noted on the plans. The Consulting Engineer shall assume full responsibility for such notes because it is assumed that the Consulting Engineer has made all necessary arrangements with the owner of the object to be handled. Tree removal within public Right-of-Way must be approved by the appropriate public agency.

f. Culverts. Culverts shall be shown on both plan and profile sheets when crossed by the construction and shall be shown when parallel and within twenty (20) feet of the construction line or may affect location or depth of services to individual lots. The size and type of all such culverts shall be indicated. When the culvert crosses or is perpendicular or nearly so to the construction line, the invert(s) of the culvert affecting the work shall be shown.

g. Pavement and Base Rock Designation. The existing pavement type and condition shall be indicated on each sheet. Pavement and base rock replacement type and location also shall be indicated.

h. Miscellaneous Structures. Driveways, curbs, sidewalks, pavement edges, buildings and all other items that could influence the work shall be shown.

2. Profile. The profile shall show the approximate vertical relationship between underground utility improvement lines and the ground surface at the time of construction and the finish ground and/or paving surface. Size and location of structures shall be repeated in profile. Designate all clearances when less than twelve (12) inches. All sections of line necessarily designed with less than the required minimum cover shall be noted with the length of the section indicated and shall require special approval in each case.

The length, size, type and strength designation shall be shown in the profile view between well-defined points. Valves, vaults, fire hydrants, and numerous appurtenances shall be numbered as required by the District.

Indicate the pipe material and class. Imported sand bedding and initial backfill is required on all non-metallic pipes. If more than one combination of pipe class, maximum limiting trench width, or bedding type is available; a practical range of such combinations shall be shown on the plans.

E. Detail Sheets. Items of special nature such as creek crossings, pressure reducing stations, etc. shall be shown in large scale upon a separate sheet of plans labeled "Detail Sheet". This Detail Sheet shall be bound immediately after the plan and profile sheets. The District will provide its standard detail sheets at no cost to the Consulting Engineer.

F. Pumping Station and Treatment Plant. Pumping station and treatment plant shall include site plans, erosion control plans, drainage plans, grading plans, pump

curves, detail plans, sections, electrical details, miscellaneous details, process flow sheets (treatment plants), etc., sufficient to describe, layout and construct the proposed facilities. Preparation of such plans shall be closely coordinated with the District Engineer.

SECTION 800

CONSTRUCTION OF FACILITIES

801 Construction of Facilities. The Owner shall promptly and diligently cause the Improvements as described in the Agreement to be constructed and installed to serve all of the parcels or services of the Development in accordance with the accepted plans, specifications, real property descriptions, etc.

Phased development: The Owner may construct and install portions of the improvements from time to time contemporaneously with other Development related improvements as they are installed in the Development from time to time as approved by the District Engineer. The Improvements shall be installed and in operating condition and offered to the District within two (2) year after the District has accepted the plans, specifications, legal property descriptions, etc., unless an extension of time has been authorized by the engineering committee.

All construction shall be in accordance with the District's Standard Specifications and performed by an appropriately licensed contractor for the work being performed.

802 Cut Sheets. The Consulting Engineer shall prepare cut sheets for water lines when the depth varies from the standard depth shown in the trench detail. The Consulting Engineer shall submit the cut sheets to the District Engineer after field staking.

803 Construction Inspection. Any improvements will be constructed to the District requirements and in accordance with the plans released for construction. Where it is intended that such improvements are dedicated to and accepted by the District for operation and maintenance, the District must inspect those improvements during

construction. Each phase or unit of development must be inspected and accepted prior to proceeding to subsequent phases or units.

Any improvements constructed without inspection as provided above or constructed contrary to the orders or instructions of the District Engineer will be deemed as not complying with these requirements and will not be accepted by the District.

The Owner will pay all costs directly related to the construction inspection of the system as outlined in Section 400. Copies of inspection reports, which shall include the number of hours on the job for that project, will be provided to the owner on a weekly or timely basis.

All inspection shall be in accordance with the District's Standard Specifications.

804 Final Inspection. Upon completion of any Improvements that are constructed under and in conformance with these Standards, the area to be inspected shall be thoroughly cleaned of all rubbish, excess material and equipment, prior to requesting a final inspection. All portions of the work shall be left in a neat and orderly condition satisfactory to the District Engineer.

Within fifteen (15) days after receiving the request for final inspection, the District Engineer shall inspect the work. The Contractor, Consulting Engineer and Owner will be notified in writing as to any particular defects or deficiencies to be remedied. The Contractor shall correct any such deficiencies within thirty (30) days. At such time as the work has been completed, a second inspection shall be made by the District Engineer to determine if the previously mentioned defects have been repaired, altered and completed.

DATE 2001

GDPUD IMPROVEMENT STANDARDS

At such time as the District Engineer accepts the work and the Board accepts the Improvements, the Contractor, Consulting Engineer and Owner will be notified in writing as to the date of final approval, acceptance and recording.

For assessment districts and projects where the District participates in the costs thereof, quantities will be measured in the presence of the District Engineer and Contractor.

SECTION 900

PREPARATION OF AS-BUILT PLANS

901 General. Upon completion of the work, subsequent to the final inspection but prior to the Board's acceptance of the improvements, the Consulting Engineer shall submit accurate project "As-built" plans and CAD disk to the District. To the extent feasible, the District will cooperate in compiling necessary field data to aid in the preparation of "As-built" plans.

The Owner will pay all costs directly related to the preparation of the "System Plans" which will be prepared by the District.

The District shall hold the Inspection Fee Deposit after the receipt of the As-Built drawings from the engineer until the completion of the System Plans by the District. The inspection fee deposit may be reduced after receipt of the As-Built drawings.

902 As-built Plans. "As-built" plans shall include all details shown on the original plans "Released for Construction", corrected and/or expanded to reflect all design or construction changes. The original drawings as corrected for As-builts, noted and signed by the Consulting Engineer as "As-builts" plans, shall be submitted to the District for acceptance. "As-built" plans will be reviewed and signed, if acceptable, by the District Engineer.

903 Items to Consider (Water Projects). Items to be considered for inclusion in the preparation of "As-built" plans, but not necessarily limited to:

- A. Line, valve and hydrant locations.
- B. Mechanical and electrical details. Wire and Terminal Strip Identifications.

- C. Ground and road surfaces and water line vertical elevations (where different from "standard").
- D. Size, type and Class of pipe used.
- E. Service locations and depth.
- F. Mechanical modifications (treatment plant, pumping stations, etc.).
- G. Backflow devices.
- H. Pressure Reducing, High Pressure Relief and Air Relief Valves.
- I. Survey Datum.

904 Items to Consider (Irrigation Projects). Items to be considered in the preparation of "As-built" plans, but not necessarily limited to:

- A. Line and structure locations.
- B. Distance between structures.
- C. Surface and invert elevations of structures.
- D. Slope, size type and Class of pipe used between structures.
- E. Service locations by station number or from structures and elevations.
- F. Mechanical modifications (siphons, structures, pumping stations, etc.).
- G. Survey Datum.

DESIGN CRITERIA

SECTION 1000 - WATER SYSTEMS

1001 Introduction. These design criteria shall govern the engineering design of domestic water systems, which will be dedicated to the public and accepted by the District for maintenance, and operation and those systems designed for the District by its consultants.

It is the intent of these criteria to provide a water system that will dependably and safely convey the required amount of high quality water at adequate pressures and with minimum maintenance and operational costs.

The Owner shall furnish, without cost to the District, all intrinsic and auxiliary components for maintenance and operation as necessary to provide a complete water system.

1002 Regulatory Standards. Pertinent requirements of the following agency standards, including all changes and updates, shall be considered and complied with, except that, in the event of conflict, the stricter design criteria shall prevail.

- A. United States Public Health Service (USPHS) Drinking Water Standards and the Environmental Public Agency (EPA) Standards.
- B. California Safe Drinking Water Act, Laws and Standards of the State of California, Department of Health Services, Public Water Supply Branch.
- C. The Porter-Cologne Water Quality Control Act and the California Regional Water Quality Control Board, Central Valley Region
- D. Ordinances of the County of El Dorado.
- E. Uniform Fire Code and Local Fire Ordinances.
- F. Others as appropriate.

1003 Design Procedure. A design for each project proposed to be constructed shall be submitted to and accepted by, the District Engineer in accordance with Section 500, Project Review and Approval Procedures of these Standards. In addition to the general requirements of the Section, the following requirements are applicable.

Hydraulic analysis of any proposed distribution system shall be done by computer analysis. The District's standard software is Haested Methods. The District prefers that the hydraulic analysis be done using Haested Methods software. If consultants do not have Haested Methods they may use EPANET Windows version to perform the hydraulic analysis.

The District will provide one set of reproducible Standard Details to the Design Engineer when the plans are Released for Construction. A copy of the Standard Details will be provided during the design.

Preliminary Design. The preliminary Design shall be submitted in the form of a map (and associated calculations) to include the following:

1. Location of project.
2. Tributary areas outside project.
3. Adjacent areas.
4. Contours over complete map (not more than 20-foot intervals).
5. Major line layout and preliminary pipe size.
6. Residual pressures with design flows at major junctions and critical points; pressure zones.
7. Predicted design flows (peak and/or average as appropriate) at major junctions, including flows into and out of the project area.
8. Direction of flow under design conditions.
9. Zoning used to predict flows.

10. Special areas such as hospitals, schools, large office buildings, industrial, commercial areas, etc.
11. Boundaries of areas within the project, which are tributary points of, major flow.
12. Location and sizing of major system components, including water treatment plant and storage facilities, if included in the project.
13. Electrical and telemetry details at final design.

Final Design. The final design shall be an expansion and refinement of the preliminary design in such detail as to verify all preliminary sizing of facilities and to size those facilities not included in the preliminary design. All such final design calculations shall accompany the construction plans and specifications for the review leading to the plans being "Released for Construction".

1004 Benefiting Areas Not Included Within Project Boundaries. A parcel or area which benefits **and participates** in a project but is not included within the project boundaries shall have a note to this effect placed on the overall project map and on the plan and profile sheet if the parcel appears thereon. Parcels not so noted which make use of a project's facilities after the project's completion will be required to pay an "expansion fee" prior to such use.

1005 Calculations. Hydraulic analysis of any proposed distribution system shall be done by computer analysis. The District's standard software is Haested Methods. The District prefers that the hydraulic analysis be done using Haested Methods software. If consultants do not have Haested Methods they may use EPANET Windows version to perform the hydraulic analysis. To obtain the EPANET software, go to the USEPA web site <www.epa.gov/ORD/NRMRL/wswrd/epanet.html>. Other, Haested compatible software may be approved by the District Engineer.

The Hazen-Williams formula shall be used in the hydraulic study of the system, using a "C" value of 140 or the value recommended by the pipe manufacturer, whichever is lower. Pipe with a "C" less than 140 shall not be used. When analyzing existing transmission or distribution system a "C" value of 120 shall be used unless the District Engineer agrees to a different value. The hydraulic analysis of any proposed distribution system shall be supplied to the District.

1006 Municipal Flow Requirements.

A. Zoning. Flow determination shall be based upon the current or proposed zoning. The minimum population density in areas of potential development shall be equivalent to that of single family zoning. The area shall be examined for trends toward population concentration and, if found an estimate should be made of the probable extent of such concentration. This estimate shall be used as the basis for determining flow. All calculations shall assume full development, except where a stage concept has been specifically approved by the District.

B. Residential Living Units.

1. Design population per living unit.

Developments of 100 living units and less - 3.5

Developments of greater than 100 living units - 3.0

2. Average per capita daily flow requirement.

Forested, Residential Developments (approximately above 3,000 ft. elevation),
200 gallons per person per day.

Urban and Non-forested Residential Developments (approximately below 3,000
ft. elevation), 250 gallons per person per day.

C. Commercial, Industrial Development. Every attempt should be made to base flow requirements on specific development plans. Consult the District Engineer.

D. Schools. The larger flow, as determined from one of the two following methods, shall be used:

1. The entire school area shall be assumed a single family zoning with minimum sized lots assumed.
2. Flow shall be based on ultimate design student population plus administration, teaching and operating personnel.

E. Average Daily Flow (ADF). Shall be determined for tributary service area(s) by multiplying the sum of the area(s) design population by the average per capita daily flow requirement as designated above, plus any commercial, industrial, school, etc., contribution(s).

F. Maximum Daily Flow (MDF). Shall be determined by multiplying the ADF by a factor of two (2).

G. Maximum Hourly Flow (MHF). Shall be determined by multiplying the ADF by a factor of three (3).

1007 Fire Flow (FF). The fire protection district responsible for the area being developed will set the fire flow requirements. In the absence of any requirements from the local or county fire protection district, the following minimum design requirements shall be used.

A. Single Family and Duplex Residential Areas - 500 gpm from a single hydrant.

B. Townhouse, Multiple Residential and similar density, two and three floor structures - 1,000 gpm from two hydrants.

C. Commercial, as may be appropriate to the areas and as approved in writing by the fire protection agency involved - 1,500 gpm from two hydrants.

D. Industrial, to be determined by the fire protection district, depending on the industry.

1008 Source. This section is applicable where it is necessary to develop a new source of water for the proposed Development, i.e., where existing District facilities are either inadequate or unavailable to the Development or where a District approved firm supply contract cannot be obtained through another water supply agency.

A. Quality. Quality of the water shall conform to the current EPA Drinking Water Standards and **all** of the current requirements of the State and County Health Departments. A pollution survey of existing and potential sources of contamination shall be prepared and forwarded for review with other data submitted for Planning Review. Refer to and utilize the watershed surveys prepared for the Department of Health Services.

B. Testing. Developer shall provide sufficient tests during significant times of the year to determine the quality of water and to determine the design parameters for required treatment processes. Such tests shall include, but not necessarily be limited to, complete Public Health Service chemical tests (including heavy metals), dissolved oxygen, turbidity, temperature, bacteriological (including fecal coliform), pH, organics, radioactivity, pesticides, herbicides etc.

C. Reliability. Sufficient geological, hydrological and meteorological studies will be required to prove that the design flows can be maintained through the driest years of record. **The District does not usually consider wells a firm source of water.**

1009 Treatment Plant and Pumping Station Desigs. All phases of treatment plant and pumping station design shall be closely coordinated with the District. In general, such facilities shall include all necessary components and amenities as required to ensure a complete, automated, operating facility that will lend itself to minimum maintenance and operational costs. All electrical and telemetry equipment must be designed to be compatible with existing equipment. Treatment plants need to be designed in accordance with the CA Surface Water Treatment Rule requirements. All treatment plants and pumping stations shall be designed in accordance with the Fencing, Lighting and Auxiliary Generator Power policies in Section 300.

A. Pumping Units. Pumping units shall approximately pace the expected flow pattern with 100% redundancy and shall be capable of providing the maximum day design flow with the largest pumping unit out of service.

B. Access. All weather, asphalt paved access shall be provided to treatment plants and pump stations.

C. Structures. Treatment plant and pump station structures shall provide protection against weather and vandalism, and shall be designed to blend architecturally with the character of nearby properties or the Development and shall afford minimum maintenance. Access to lower or upper structure levels shall be by inside stairways. Structures shall be multipurpose whenever practical and must provide toilet and sink facilities.

Laboratory, storage and/or warehouse facilities may be required where the new development cannot practically utilize existing District facilities. An "in-lieu" fee will be

required where it is practical to expand existing facilities to accommodate the new development.

D. Treatment Process. Treatment process will, in general, consist of preliminary clarification equipment and multi-barrier gravity filter installation, membrane technology and/or any other process equipment required to adequately treat the raw water from the approved source to meet Surface Water Treatment Rules guidelines for water treatment plant design to meet DoHS Standards.

E. Chlorination Facilities. Chlorination facilities will consist of gas or liquid chlorinator(s) and their associated equipment. Chlorinators shall be capable of pacing water demand either by a flow proportional chlorinator governed by a residual analyzer or a series of individual chlorinators activated from the pump control panel, as approved by the District.

Chlorine contact facilities shall be designed to provide not less than thirty (30) minutes contact time at max day discharge rate and must meet the DoHS requirements.

F. Chlorine Analyzer. A chlorine analyzer with circular recorder chart will be installed at all treatment plants.

G. Clear Well Facilities. Clear well facilities should be sized in conjunction with distribution system storage to relieve the filters from having to meet all fluctuations in water use or to meet peak demands, including use for backwashing filters and loss of capacity due to filter outages. Additionally, clear wells will provide for the minimum contact time (CT) as required by the DoHS for disinfection at max day demands.

H. Backwash Water Recovery Facilities. Backwash water recovery facilities will be included with all new or modified treatment plants.

I. Flocculation. Flocculation process may be included in the treatment process.

J. pH. pH adjustment may be required.

K. Turbidity. Turbidity monitors with recorder(s) will be installed at all treatment plants and will control the chemical feed system.

L. Corrosion Control. Chemical feeders, as a result of corrosive water, may be required at the completion of the water treatment process, prior to entering the distribution system.

M. Metering, Recording and Monitoring Equipment. Metering, recording and monitoring shall be provided at all treatment plants and at major pumping stations as determined by the District. All such equipment shall be compatible with District equipment. Radio monitoring and alarm equipment (SCADA) shall be purchased from and installed by the District's vendor or a vendor approved by the District Engineer. Generally requirements are as follows:

Treatment Plants:

1. Flow meter and recorder (seven (7) day programmable circular chart).
2. Recording, continuous reading turbidimeter, both raw and finished for each filter, equipped with low and high alarm contacts to activate the alarm and stop water production on indication of high turbidity.
3. Recording, continuous reading chlorine analyzer to detect chlorine residual and equipped with adjustable low and high alarm contacts to actuate the alarm and stop water production on indication of excessive or low chlorine residual.
4. Radio monitoring and alarm (SCADA) equipment shall be compatible and interface with District equipment.

5. Monitor the status of auxiliary power generation equipment.

Pumping Stations:

1. Flow meter and recorder (seven (7) day programmable circular chart).
2. Radio monitoring and alarm equipment.
3. Monitor the status of auxiliary power generation equipment.

N. Design Flow. Pumping stations and treatment plants are normally designed to treat and/or pump the Maximum Daily Flow (MDF); maximum hourly, emergency and fire demands are normally supplied from storage without pumping. Where storage facilities are not available, such facilities shall be designed for the Maximum Hourly Flow (MHF), including fire demands and standby power or pumping equipment will be required.

O. Ozone. Ozone treatment of the raw water may be included in the plant design.

P. Lighting. All mechanical areas, doorways and stairs shall be adequately lighted for night operation and maintenance. Lighting normally will be controlled by automatic light sensors or timers with manual override switching.

Q. Fencing. The District requires that every effort be made to protect its facilities from theft, vandalism, unauthorized entry, etc. Exposed mechanical sites, including but not limited to storage tanks, treatment plants, pumping stations, etc., shall be enclosed in a chain link fence with or without redwood pickets and with wire extensions barbed wire and/or razor wire at the option of the District. Gates shall allow vehicular access.

All District property shall be fenced along the property line and shall be signed as required and prohibiting general public access.

R. Auxiliary Generator Power. All pump stations and treatment plants shall be equipped with auxiliary generator power (aux power) equipment. The aux power equipment shall be capable of powering the equipment as follows:

Pump stations	All equipment necessary to run the station in a simplex mode.
Treatment Plants	All equipment necessary to run the plant in a mode necessary to meet the average daily flow quantity.

The aux power shall start and transfer power automatically from grid to generator power when the grid power fails for more than one (1) minute. Upon return of grid power the aux power shall continue to operate for five (5) minutes before transferring back to grid power. The aux power generator shall have a cool down period not less than twenty (20) minutes before shutting down.

1010 Storage Facilities. Storage capacity shall be equal to the sum of the fire storage reservation, plus the allowance for system peaking, plus an allowance for emergency reserve. The minimum size storage tank shall be 250,000 gallons.

A. Fire Storage Reservation (FSR). Shall be the product of the appropriate fire flow and the design fire duration. The minimum design fire duration shall be four (4) hours but may be increased upwards by the appropriate fire protection agency, where a higher figure is deemed appropriate.

B. System Peaking Storage (SPS). Is a function of the system design and generally is approximately twenty (20) per cent of the total maximum daily flows (assuming a 24-hour pumping rate).

C. Emergency Storage (ES). Shall provide sufficient capacity, without encroaching into the fire storage reservation or the system peaking storage, to carry

the system through reasonable periods of system failure. An emergency storage increment of four (4) hour duration, based on the Maximum Daily Flow (MDF) is normally considered adequate. Isolated developments may require a larger increment and must be discussed individually with the District.

D. Overflow Pipes. Must be sized to pass the maximum incoming flow rate with a design head of four (4) inches; head loss calculators must include both entrance and friction losses. Overflow must be directed to a natural watercourse in a manner that prevents scouring.

E. In-Lieu Fee. Where it is impractical to construct required facilities at the required elevations, or, where, in the opinion of the District, it is more practical to expand existing facilities, Owner shall pay an "In-Lieu" fee based on required storage volume and current construction cost.

1011 Transmission Line. The following requirements are applicable from a source to a storage facility and where there are no services off the transmission line. Beyond the point of storage, or if storage is not available, or where services are taken off, the requirements of Distribution Lines normally apply. Pipe material shall be C-900/C-905 PVC CL 150/200 or DIP CL 200 minimum. The District Engineer may approve other materials.

A. Design Flow Rate. Size line to pass the Maximum Daily Flow (MDF) and shall not be less than eight (8) inches in size. The velocity shall not exceed 10 feet per second (fps) without District approval.

B. Design Pressure. Design pressure shall be such that the Design Flow Rate can be maintained to supply water from the source to the storage facility. The pressure shall not exceed 200 psi without the District approval.

C. Main Line, Valves, Blow-off Assemblies and Air Release Valve. Main line valves shall be provided every 1,800 lineal feet and the District must approve any exceptions. Air release valves shall be installed at all major summits and every 1,500-3,000 feet and both ends of long horizontal runs of pipe. Blow-offs shall be installed at all major low points. Whenever practical, a fire hydrant shall be substituted for blow-off valves. Whenever possible, valves shall be shown as required in Section 1012. All valve risers shall be eight (8) inches minimum diameter.

1012 Distribution Lines. The following requirements are applicable on all water lines not classified as transmission lines. Pipe material shall be C-900/C-905 PVC CL 150/200 or DIP CL 200 minimum. The District Engineer may approve other materials.

A. Design Flow Rate. Size lines for the higher of the following two conditions at the Design Pressures:

1. Municipal Service - Maximum Hourly Flow (MHF).
2. Fire Flow Demand rate plus Maximum Daily Flow (MDF).
3. The velocity shall not exceed 10 fps without District approval.

B. Design Pressure. Shall be such that the Design Flow Rate can be maintained as follows:

- The pressure shall not exceed 150 psi without District approval.
- Municipal Service Pressure (MSP).

Minimum - 35 psi at highest point of lot to be served.

Maximum - 115 psi at lowest point of lot to be served.

The distribution system shall be zoned to provide the above pressure range.

- Fire Demand plus Maximum Daily Flow (MDF) at 20 psi.

C. Minimum Size Lines. In general, the minimum pipe size shall not be less than six (6) inches inside nominal diameter.

Dead-end water mains less than or equal to 1,000 feet in length shall be constructed of pipe size not less than six (6) inches nominal inside diameter.

Dead-end water mains less than or equal to 2,000 feet in length shall be constructed of pipe size not be less than eight (8) inches nominal inside diameter.

Dead-end water mains longer than 2000 feet in length shall be sized by design.

1. Residential Areas, Single Family and Duplex - 6 inch. The installation of four (4) inch mains shall be limited to cul-de-sacs or courts where the length of the pipeline is 300 feet or less and where there is a maximum of twelve (12) residential services, no fire hydrants will be connected and no future extensions will be constructed.
2. Townhouse, Multiple Residential and similar density two and three story structures.
 - Looped System - 6 inch.
 - Dead-end system - 8 inch.
3. Commercial/Industrial - 8 inch.
4. Transmission and major distribution lines shall not be less in diameter than the lines that they serve.

D. Service Connections.

Backflow Devices. Backflow devices (BFD) will be required for all connections where there is potential contamination to the water system.

Water Meters. Water meters are required for each residence, dwelling, commercial and industrial unit. The number of water meters set can be less than the number of electrical meters set.

Water meters shall be set using Ford 170 series coppersetter with a lockable angle meter stop on the District side and a customer service valve and handle on the customer side of the meter. Inlet fittings shall be pack joints with solid stainless steel inserts suitable for use with copper tube size polyethylene tubing. Outlet fittings shall be suitable for use with polyvinyl chloride pipe. All meter boxes shall be marked with a Carsonite water service marker with a water meter decal or equal.

Residential meters shall be single services, doubled single services on adjacent property lines, when possible. Commercial meters shall be set in a cluster(s) whenever possible.

E. Valves. The distribution system shall be designed with a sufficient number of valves. No single shut down will result in shutting down a distribution line or necessitate the removal from service, of a length of pipe greater than 500 feet in school, commercial, industrial, or multiple family dwelling areas or greater than 900 feet in other districts. In no case, shall the closing of one valve cause more than two (2) fire hydrants to be removed from service. The valves shall be so located that any section of main can be shut down without going to more than three (3) locations to close valves. Valves shall preferably be located at street intersections. If it is necessary to install valves between street intersections, they shall be located on the prolongation of property lines between lots.

F. Pressure Reducing Stations, High Pressure Relief Stations. Pressure Reducing Stations (PRS) will be installed when appropriate and shall automatically reduce a higher inlet pressure to a steady lower downstream pressure. High Pressure Relief Stations (HPRS) shall be installed to relieve excessive downstream pressure in

the case of failure of the PRS. HPRS will be placed downstream of PRS and set at 25 psi above static pressure at that point. HPRS relief valves shall be one size smaller than the main they are connected.

All stations shall be located within the street right-of-way and outside of the traveled way and protected from traffic.

G. Blow-off Assemblies. In general, fire hydrants shall be used for blow-off assemblies. A blow-off assembly shall be installed on all permanent dead-end runs and at all significant low points in the system. Special attention shall be given to those of a temporary nature, taking into consideration the length of the dead-end run, the number of services on the line and the estimated time before extension. Wherever possible, the blow-off shall be installed in the street right-of-way and outside of the traveled way. In no case, shall the location be such that there is a possibility of back-siphonage into the distribution system.

A section of pipeline should be capable of being drained within 2 to 4 hours. The blowoff shall be capable of creating a velocity of not less than 2.5 fps in the pipeline. Pipelines up to 10-inches can be blown off with a fire hydrant. Pipelines over 10-inches will require special designed blow-offs.

H. Air and Vacuum Valves. Small-orifice air release valves allow the discharge of air from the pipe while the pipe is in operation. Large-orifice air and vacuum valves allow large quantities of air to be expelled during line filling and allow air to enter the pipeline during draining or the line. Combination air valves combine both the features of the air release and the air/vacuum valves. Combination valves are generally specified for the District's system.

Combination valve assemblies shall be provided at all significant high points in the system, protected against freezing and protected from traffic. Valve assemblies shall be installed in such to prevent contamination of the system from back siphonage.

The following guideline is provided for determining size: Determine the rate of flow equal to the filling rate of the pipeline.

When a pump is filling the pipeline, convert the gpm of the pump to cfs.

$$\text{cfs} = (\text{gpm of pump})/449$$

When the pipeline is being filled or drained by gravity use the following conversion:

$$\text{cfs} = 0.087(\text{SD}^5)^{1/2}$$

S = most severe slope or gradient (ft. per foot)

D = diameter of pipe in inches

When the pipeline is being filled, the air pressure across the valve shall not exceed 2 psi. When the line is to be drained the pressure across the valve shall not exceed 5 psi.

Using the calculated flows and pressure limits, the appropriate combination air valve from manufacture's literature can be selected. For most installations involving 6 and 8-inch pipelines, the valve will be 1-inch size.

I. Line Location. All water mains shall be designed to be within the paved portion of the roadway, normally six (6) feet from the right-of-way centerline and parallel with the centerline, or in a public easement. County Director of Public Works shall approve all locations within road right-of-ways. If it is necessary to install a water main within a

private road, the easement shall be the width of the paving plus one (1) foot each side, or fifteen (15) feet, whichever is larger.

J. Sample Sites. Sample sites will be provided throughout the system as required by the District and protected from traffic.

K. Regulations Relating to Sanitary Hazards. All construction shall conform to applicable regulations relative to safeguarding the public health, particularly the regulations relating to cross-connections as established by the California Administrative Code, Title 17.

In designing the distribution system, it is intended that ten (10) feet be the minimum horizontal distance between parallel water and sanitary sewer lines and that the water main be at least twelve (12) inches higher.

When crossing a sanitary sewer force main, the water main shall be a minimum of twelve (12) inches above the sewer line.

M. Main Layout. The distribution system, whenever possible, shall be in a grid form so that pressures throughout the pressure zone(s) tend to become equalized under varying rates and locations of maximum demand. Further attention will be given to avoid all "dead-ends" within the system whenever possible. The minimum pressures and flows as specified above shall govern design of the system.

Dual mains (one pipeline on each side of the street) may be required in streets which carry heavy concentrations of traffic, or the right-of-ways of which are 100 feet or more in width. State highways may be included in this category. In those streets classified for dual mains, the minimum size shall be six (6) inches on each side in residential areas. In commercial districts the sizes shall be not less than one (1) eight (8)-inch and one (1) six (6)-inch.

1013 Fire Protection.

A. Type of Fire Hydrants. Fire hydrants shall be dry barrel type with "two hose and one pumper" outlet types and meet the requirements of the appropriate fire agency with five and one-quarter (5-1/4) inch minimum main valves. A minimum 6" diameter riser shall supply hydrants. Normal depth of bury shall be forty-two (42) inch (36" of cover) when served by a six (6) inch or an eight (8) inch main. Greater depth of bury may be required when main size is larger or when required by the topography.

B. Spacing of Fire Hydrants. The fire protection district responsible for the area being developed will set the spacing requirements. In the absence of any requirements from the local fire protection district, the following design requirements shall be used.

1. Single Family and Duplex Residential Developments, not to exceed 500 feet.
2. Townhouse, Multiple-residential and similar density, two floor structures and/or commercial/industrial areas, not to exceed 300 feet.

C. Guard Valves. Guard valves are required for all fire hydrants; risers shall be eight (8) inch minimum.

1014 Tapping Existing Lines. The Owner shall make all taps into existing lines. A note to this effect "**The District shall inspect all taps.**" shall be placed on each plan sheet which requires such tapping.

1015 Connection to Transmission Lines. Services shall **not** connect to transmission lines ten (10) inches in diameter and larger without the written approval of the District Engineer.

1016 Creek Crossings. Crossing details of pipe, pier, anchorage, transition couplings, etc. shall be shown upon a detail sheet of the plans in large scale. A stream bed alteration permit from the California Department of Fish & Game may be required. The Owner shall obtain the permit prior to beginning construction.

Ductile iron pipe shall be used under the full creek width plus ten (10) feet beyond the top of each bank. All soft or organic material shall be replaced with select imported backfill. Special care shall be used to provide a firm base for the pipe bedding. Full concrete encasement is required.

If the pipe must cross above the creek bed, ductile iron pipe shall be used. Reinforced concrete cylindrical piers of adequate depth shall be used. Stainless steel straps, with stainless anchor bolts of adequate size, shall hold the pipe in cylindrical cradles formed in the pier tops. Cushion material shall be placed between the pipe, clamps and support.

Pipelines may be suspended from road bridges with approval from the Engineering Department of the County, CalTrans or of the agency having jurisdiction of the bridge.

Calculations shall be submitted which clearly indicate the design of the pipe and supports regarding impact, horizontal and vertical forces, overturning, pier and anchorage reactions, etc.

1017 Locator Wire. All runs of non-metallic pipe shall have a No. 12 AWG solid, soft drawn copper wire with Type UF insulation. The wire shall be looped up inside valve boxes, pump stations and PRV vaults, etc. Locator wire shall be grounded with a ground rod at end of a pipe run.

APPENDIX F

SANITARY SEWER SYSTEMS OVERFLOW PREVENTION AND RESPONSE PLAN

**AUBURN LAKE TRAILS COMMUNITY DISPOSAL
SYSTEM**

**SANITARY SEWER SYSTEM
OVERFLOW PREVENTION AND
RESPONSE PLAN**

September 2018

Prepared By:



6425 Main Street
P.O. Box 4240
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1.0 OVERFLOW/SPILL PREVENTION AND RESPONSE PLAN

1.1 Development Plan and Schedule

The following procedures apply to any sewage overflow, bypass and/or spill that occurs within the Georgetown Divide Public Utility District (GDPUD) Auburn Lake trails (ALT) Community Disposal System (CDS). The State Water Resource Control Board (SWRCB) *Amending Monitoring and Reporting Program for Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (Order No. WQ 2013-0058-EXEC)* included in Appendix A, outlines Sanitary Sewer Overflow (SSO) spill categories and definitions, notification, reporting, monitoring and record keeping requirements. The following Sections detail requirements and outlines actions needed in the event of SSO.

1.2 Development Plan and Schedule

The first priority is to stop, contain and recover all spilled material and debris as a result of any sewage overflow, bypass or spill. If possible, all material and debris should be recovered either by pumping or draining back into the system after the stoppage is cleared or, by vacuuming into a Hydro-Vac unit and surface water samples collection. The area is to be swept or raked and debris taken off site for disposal.

Additional clean-up procedures may be necessary, such as washing the area down with excessive amounts of clean water and/or disinfecting the site with bleach or swimming pool chlorine. Note, these additional steps can only be done with the permission of a supervisor and proper authorities if there is the potential for the chlorinated water to enter a drainage way.

Responding personnel must immediately notify an Operations Manager. An emergency phone list of GDPUD personnel is included in Appendix B. In the event that an Operations or General Manager is not available, responding personnel has the authorization to approve expenditures for contract service to stop or clean up the spill.

1.3 SSO Notification/Reporting Timeframes and Requirements

The second priority is to protect human health and the environment. The Operations Manager or his/her designee will contact appropriate wastewater, water and/or regulatory agencies. Please follow the procedures listed below for each category:

1.4 SSO Categories

1.4.1 Category 1

All discharges of sewage resulting from a failure in GDPUD's sanitary sewer system that:

- Result in a discharge to reach surface water and/or reach a drainage channel tributary to a surface water; or
- Reach a Municipal Separate Storm Sewer System (MS4) and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed properly. Any volume of wastewater not recovered from the MS4 is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or groundwater infiltration basin.

1.4.2 Category 2

Discharges of untreated or partially treated wastewater of 1,000 gallons or greater resulting from GDPUD sanitary sewer failure or flow condition that do not reach surface water, drainage channel or MS4 unless the entire SSO discharge to the storm drain system is fully recovered and disposed of properly.

1.4.3 Category 3

All other discharges of sewage resulting from a failure in GDPUD's sanitary sewer system.

1.4.4 Private Lateral Sewage Discharges

Sewage discharges that are caused by blockages or other problems within a privately-owned lateral. Private lateral spills are the responsibility of the property owner there is no regulatory requirement for reporting private lateral spills.

1.5 SSO Notification Requirements

For discharges that meet the above criteria for Category 1 and 2 SSOs must be reported as soon as possible by the Operations Manager or standby personnel to State of California Office of Emergency Services (Cal OES) at (800) 852-7550 as soon as possible, but not later than two hours, if:

- 1) GDPUD has knowledge of the discharge;
- 2) Reporting is possible; and
- 3) Reporting can be provided without substantially impeding cleanup or other emergency measures.

To receive a notification control number the following information will need to be provided to Cal OES:

- i. Name of person notifying Cal OES and direct return phone number;
- ii. Estimated SSO volume discharged (gallons);
- iii. If ongoing, estimated SSO discharge rate (gallons per minute);
- iv. SSO Incident Description;
 - a. Brief narrative;
 - b. On-scene point of contact for additional information (name and cell phone number);
 - c. Date and time enrollee became aware of the SSO;
 - d. Name of sanitary sewer system agency causing the SSO; and
 - e. SSO cause (if known).
- v. Indication of whether the SSO has been contained;
- vi. Indication of whether surface water is impacted;
- vii. Name of surface water impacted by the SSO, if applicable;
- viii. Indication of whether a drinking water supply is or may be impacted by the SSO;
- ix. Any other known SSO impacts; and
- x. SSO incident location (address, city, state and zip code).

SSO reporting flow chain is included in Appendix C.

1.6 SSO Reporting Requirements

All SSOs are to be submitted by authorized GDPUD personnel to California Integrated Water Quality System (CIWQS) Online SSO database. Each Category requires a specific reporting timeframe as follows:

- a. Draft Category 1 and 2 SSO reports are to be submitted to the CIWQS online database within three business days;
- b. The final Category 1 or 2 SSO reports are to be certified through CIWQS online database within 15 days.
- c. Category 3 SSOs are to be submitted to the CIWQS online database within 30 days; and
- d. No Spill certification are to be submitted every 30 days to the CIWQS online database.

Sewage Spill/Overflow Report Form must be completed for **all** sewage spills/overflows/stoppages that GDPUD staff responds to. Information provided on the Spill Report Form will include a detailed description of the discharge, location, estimated flow and volume, the receiving water (if there is one), a description of the sewer system component from which the release occurred (e.g. manhole, constructed overflow pipe, crack in pipe, lift station failure, etc.), the cause of the discharge, the estimated time and date when the overflow began and stopped or will be stopped, clean-up measures, steps to mitigate impact and reduce, eliminate and prevent reoccurrence.

In the event the discharge enters flowing drainages, creeks or lakes, the Responding Personnel must also identify the surface water drainage and any impacts to the drainage must be noted. Please make note of any erosion, fish kill, or increased turbidities that the discharge caused. When

completed, this form is immediately submitted to the Operations Manager. For reference, a copy of the spill response form is provided in Appendix D.

Reporting of SSOs must be submitted to the CIWQS at the timeframe identified above. Specific reporting requirements are included in Appendix A and Appendix E.

1.7 Public Notification

In the event that a wastewater overflow, bypass or spill occurs that imminently and substantially endangers human health, all potentially affected downstream property owners will be notified as soon as practicable using one of the following methods:

- 1) Door hangers;
- 2) Telephone Call;
- 3) Email Correspondence; or
- 4) Direct Contact.

In addition, the Auburn Lake Trails Property Owners Association (POA) office will be contacted regarding the specifics of the discharge. A list of property owners that are located downstream of the CDS lift station and community disposal fields is included in Appendix F.

1.8 Cleanup/Disinfection

Following a spill, bypass or overflow event, the impacted area will be cleaned as quickly and thoroughly as possible. Cleanup always requires removal of any visible solid waste material. A pumper truck may be utilized to vacuum liquids and debris from the discharge site.

If the discharge is confined to solid surfaces, final cleanup should include spraying the area with a dilute chlorine bleach solution (about 5%). **DO NOT USE** this type of disinfection if the discharge is flowing to flowing waters, lakes, ponds, or drainage ditches. A masking agent may be used in areas that have sensitive landscaping. Sample templates for SSO volume estimation are included in Appendix G.

1.9 Water Quality Sampling

If the wastewater discharge is flowing to surface waters, such as a creek, pond, lake or drainage system, all attempts must be made to contain the spill and divert it away from surface waters. In addition, water samples are to be collected upstream from the spill, at the spill mixing zone and at a point below the spill. The Responding Personnel should collect samples as soon as possible after stopping the spill and after all emergency cleanup has been completed. Bacteriological samples should be collected in sterilized bottles using disposable gloves. Records of monitoring information shall include:

- a. The date, exact place, and time of sampling or measurements;
- b. The individual(s) who performed the sampling or measurements;
- c. The date(s) analyses were performed;
- d. The individual(s) who performed the analyses;
- e. The analytical technique or method used; and
- f. The results of such analyses.

Sampling guidelines are presented in Appendix H.

1.10 Posting of Warning Signs

The El Dorado County (EDC) Department of Environmental Management will be notified of all sewage spills and overflows. Posting of warning signs will be conducted by County personnel, at their discretion. The County will be advised of the spill location and directions to the site, as well as the nature of the spill.

1.11 Lift Station Failure

The CDS lift station currently utilizes an alternating duplex pump system. If one of the pumps fails, the other pump remains in operation until the required repairs are completed. In addition, back up pumps are also installed at the lift station as a failsafe measure. The lift station is equipped with an emergency backup generator which automatically activates via a transfer switch when there is a power outage. The generator and transfer switch are operated/exercised and checked weekly. The lift station is equipped with a high-level alarm, which when activated, alerts GDPUD personnel through a pager and radio alarm system. If for any reason the transfer switch is not working properly (as determined by the weekly inspection), the on-call person will report to the lift station when there is a power outage alarm and manually turn the generator on. This procedure will only be necessary until the transfer switch can be repaired or replaced.

GDPUD's flow meter at the lift station allows GDPUD personnel to continuously monitor wastewater flows from the GDPUD office. Should the need arise, an emergency chlorination system is available for GDPUD use. Emergency procedures are included in Appendix I.

1.12 Record Keeping

- 1) Individual SSO records shall be maintained by GDPUD for a minimum of five years from the date of the SSO. This period may be extended when requested by a Regional Water Board Executive Officer.
- 2) All records shall be made available for review upon State or Regional Water Board staff's request.

- 3) All monitoring instruments and devices that are used by GDPUD to fulfill the prescribed monitoring and reporting program shall be properly maintained and calibrated as necessary to ensure their continued accuracy.
- 4) GDPUD shall retain records of all SSOs, such as, but not limited to and when applicable:
 - a. Record of Certified report, as submitted to the online SSO database;
 - b. All original recordings for continuous monitoring instrumentation;
 - c. Service call records and complaint logs of calls received by GDPUD;
 - d. SSO calls;
 - e. SSO records;
 - f. Steps that have been and will be taken to prevent the SSO from recurring and a schedule to implement those steps;
 - g. Work orders, work completed, and any other maintenance records from the previous 5 years which are associated with responses and investigations of system problems related to SSOs;
 - h. A list and description of complaints from customers or others from the previous 5 years; and
 - i. Documentation of performance and implementation measures for the previous 5 years.

APPENDIX A

SWRCB CORRESPONDENCE

STATE OF CALIFORNIA
WATER RESOURCES CONTROL BOARD
ORDER NO. WQ 2013-0058-EXEC

AMENDING MONITORING AND REPORTING PROGRAM
FOR
STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR
SANITARY SEWER SYSTEMS

The State of California, Water Resources Control Board (hereafter State Water Board) finds:

1. The State Water Board is authorized to prescribe statewide general Waste Discharge Requirements (WDRs) for categories of discharges that involve the same or similar operations and the same or similar types of waste pursuant to Water Code section 13263(i).
2. Water Code section 13193 *et seq.* requires the Regional Water Quality Control Boards (Regional Water Boards) and the State Water Board (collectively, the Water Boards) to gather Sanitary Sewer Overflow (SSO) information and make this information available to the public, including but not limited to, SSO cause, estimated volume, location, date, time, duration, whether or not the SSO reached or may have reached waters of the state, response and corrective action taken, and an enrollee's contact information for each SSO event. An enrollee is defined as the public entity having legal authority over the operation and maintenance of, or capital improvements to, a sanitary sewer system greater than one mile in length.
3. Water Code section 13271, *et seq.* requires notification to the California Office of Emergency Services (Cal OES), formerly the California Emergency Management Agency, for certain unauthorized discharges, including SSOs.
4. On May 2, 2006, the State Water Board adopted Order 2006-0003-DWQ, "Statewide Waste Discharge Requirements for Sanitary Sewer Systems"¹ (hereafter SSS WDRs) to comply with Water Code section 13193 and to establish the framework for the statewide SSO Reduction Program.
5. Subsection G.2 of the SSS WDRs and the Monitoring and Reporting Program (MRP) provide that the Executive Director may modify the terms of the MRP at any time.
6. On February 20, 2008, the State Water Board Executive Director adopted a revised MRP for the SSS WDRs to rectify early notification deficiencies and ensure that first responders are notified in a timely manner of SSOs discharged into waters of the state.
7. When notified of an SSO that reaches a drainage channel or surface water of the state, Cal OES, pursuant to Water Code section 13271(a)(3), forwards the SSO notification information² to local government agencies and first responders including local public health officials and the applicable Regional Water Board. Receipt of notifications for a single SSO event from both the SSO reporter

¹ Available for download at:

http://www.waterboards.ca.gov/board_decisions/adopted_orders/water_quality/2006/wqo/wqo2006_0003.pdf

² Cal OES Hazardous Materials Spill Reports available Online at:

[http://w3.calema.ca.gov/operational/mal haz.nsf/\\$defaultview](http://w3.calema.ca.gov/operational/mal haz.nsf/$defaultview) and <http://w3.calema.ca.gov/operational/mal haz.nsf>

and Cal OES is duplicative. To address this, the SSO notification requirements added by the February 20, 2008 MRP revision are being removed in this MRP revision.

8. In the February 28, 2008 Memorandum of Agreement between the State Water Board and the California Water and Environment Association (CWEA), the State Water Board committed to re-designing the CIWQS³ Online SSO Database to allow "event" based SSO reporting versus the original "location" based reporting. Revisions to this MRP and accompanying changes to the CIWQS Online SSO Database will implement this change by allowing for multiple SSO appearance points to be associated with each SSO event caused by a single asset failure.
9. Based on stakeholder input and Water Board staff experience implementing the SSO Reduction Program, SSO categories have been revised in this MRP. In the prior version of the MRP, SSOs have been categorized as Category 1 or Category 2. This MRP implements changes to SSO categories by adding a Category 3 SSO type. This change will improve data management to further assist Water Board staff with evaluation of high threat and low threat SSOs by placing them in unique categories (i.e., Category 1 and Category 3, respectively). This change will also assist enrollees in identifying SSOs that require Cal OES notification.
10. Based on over six years of implementation of the SSS WDRs, the State Water Board concludes that the February 20, 2008 MRP must be updated to better advance the SSO Reduction Program⁴ objectives, assess compliance, and enforce the requirements of the SSS WDRs.

IT IS HEREBY ORDERED THAT:

Pursuant to the authority delegated by Water Code section 13267(f), Resolution 2002-0104, and Order 2006-0003-DWQ, the MRP for the SSS WDRs (Order 2006-0003-DWQ) is hereby amended as shown in Attachment A and shall be effective on September 9, 2013.

8/6/13

Date



Thomas Howard
Executive Director

³ California Integrated Water Quality System (CIWQS) publicly available at <http://www.waterboards.ca.gov/ciwqs/publicreports.shtml>

⁴ Statewide Sanitary Sewer Overflow Reduction Program information is available at: http://www.waterboards.ca.gov/water_issues/programs/ssol/

ATTACHMENT A

STATE WATER RESOURCES CONTROL BOARD ORDER NO. WQ 2013-0058-EXEC

AMENDING MONITORING AND REPORTING PROGRAM FOR STATEWIDE GENERAL WASTE DISCHARGE REQUIREMENTS FOR SANITARY SEWER SYSTEMS

This Monitoring and Reporting Program (MRP) establishes monitoring, record keeping, reporting and public notification requirements for Order 2006-0003-DWQ, "Statewide General Waste Discharge Requirements for Sanitary Sewer Systems" (SSS WDRs). This MRP shall be effective from September 9, 2013 until it is rescinded. The Executive Director may make revisions to this MRP at any time. These revisions may include a reduction or increase in the monitoring and reporting requirements. All site specific records and data developed pursuant to the SSS WDRs and this MRP shall be complete, accurate, and justified by evidence maintained by the enrollee. Failure to comply with this MRP may subject an enrollee to civil liabilities of up to \$5,000 a day per violation pursuant to Water Code section 13350; up to \$1,000 a day per violation pursuant to Water Code section 13268; or referral to the Attorney General for judicial civil enforcement. The State Water Resources Control Board (State Water Board) reserves the right to take any further enforcement action authorized by law.

A. SUMMARY OF MRP REQUIREMENTS

Table 1 – Spill Categories and Definitions

CATEGORIES	DEFINITIONS [see Section A on page 5 of Order 2006-0003-DWQ, for Sanitary Sewer Overflow (SSO) definition]
CATEGORY 1	Discharges of untreated or partially treated wastewater of any volume resulting from an enrollee's sanitary sewer system failure or flow condition that: <ul style="list-style-type: none">Reach surface water and/or reach a drainage channel tributary to a surface water; orReach a Municipal Separate Storm Sewer System (MS4) and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly. Any volume of wastewater not recovered from the MS4 is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or groundwater infiltration basin (e.g., infiltration pit, percolation pond).
CATEGORY 2	Discharges of untreated or partially treated wastewater of 1,000 gallons or greater resulting from an enrollee's sanitary sewer system failure or flow condition that do not reach surface water, a drainage channel, or a MS4 unless the entire SSO discharged to the storm drain system is fully recovered and disposed of properly.
CATEGORY 3	All other discharges of untreated or partially treated wastewater resulting from an enrollee's sanitary sewer system failure or flow condition.
PRIVATE LATERAL SEWAGE DISCHARGE (PLSD)	Discharges of untreated or partially treated wastewater resulting from blockages or other problems within a privately owned sewer lateral connected to the enrollee's sanitary sewer system or from other private sewer assets. PLSDs that the enrollee becomes aware of may be voluntarily reported to the California Integrated Water Quality System (CIWQS) Online SSO Database.

Table 2 – Notification, Reporting, Monitoring, and Record Keeping Requirements

ELEMENT	REQUIREMENT	METHOD
NOTIFICATION (see section B of MRP)	<ul style="list-style-type: none"> • Within two hours of becoming aware of any Category 1 SSO greater than or equal to 1,000 gallons discharged to surface water or spilled in a location where it probably will be discharged to surface water, notify the California Office of Emergency Services (Cal OES) and obtain a notification control number. 	Call Cal OES at: (800) 852-7550
REPORTING (see section C of MRP)	<ul style="list-style-type: none"> • Category 1 SSO: Submit draft report within three business days of becoming aware of the SSO and certify within 15 calendar days of SSO end date. • Category 2 SSO: Submit draft report within 3 business days of becoming aware of the SSO and certify within 15 calendar days of the SSO end date. • Category 3 SSO: Submit certified report within 30 calendar days of the end of month in which SSO the occurred. • SSO Technical Report: Submit within 45 calendar days after the end date of any Category 1 SSO in which 50,000 gallons or greater are spilled to surface waters. • “No Spill” Certification: Certify that no SSOs occurred within 30 calendar days of the end of the month or, if reporting quarterly, the quarter in which no SSOs occurred. • Collection System Questionnaire: Update and certify every 12 months. 	Enter data into the CIWQS Online SSO Database (http://ciwqs.waterboards.ca.gov/), certified by enrollee’s Legally Responsible Official(s).
WATER QUALITY MONITORING (see section D of MRP)	<ul style="list-style-type: none"> • Conduct water quality sampling within 48 hours after initial SSO notification for Category 1 SSOs in which 50,000 gallons or greater are spilled to surface waters. 	Water quality results are required to be uploaded into CIWQS for Category 1 SSOs in which 50,000 gallons or greater are spilled to surface waters.
RECORD KEEPING (see section E of MRP)	<ul style="list-style-type: none"> • SSO event records. • Records documenting Sanitary Sewer Management Plan (SSMP) implementation and changes/updates to the SSMP. • Records to document Water Quality Monitoring for SSOs of 50,000 gallons or greater spilled to surface waters. • Collection system telemetry records if relied upon to document and/or estimate SSO Volume. 	Self-maintained records shall be available during inspections or upon request.

B. NOTIFICATION REQUIREMENTS

Although Regional Water Quality Control Boards (Regional Water Boards) and the State Water Board (collectively, the Water Boards) staff do not have duties as first responders, this MRP is an appropriate mechanism to ensure that the agencies that have first responder duties are notified in a timely manner in order to protect public health and beneficial uses.

1. For any Category 1 SSO greater than or equal to 1,000 gallons that results in a discharge to a surface water or spilled in a location where it probably will be discharged to surface water, either directly or by way of a drainage channel or MS4, the enrollee shall, as soon as possible, but not later than two (2) hours after (A) the enrollee has knowledge of the discharge, (B) notification is possible, and (C) notification can be provided without substantially impeding cleanup or other emergency measures, notify the Cal OES and obtain a notification control number.
2. To satisfy notification requirements for each applicable SSO, the enrollee shall provide the information requested by Cal OES before receiving a control number. Spill information requested by Cal OES may include:
 - i. Name of person notifying Cal OES and direct return phone number.
 - ii. Estimated SSO volume discharged (gallons).
 - iii. If ongoing, estimated SSO discharge rate (gallons per minute).
 - iv. SSO Incident Description:
 - a. Brief narrative.
 - b. On-scene point of contact for additional information (name and cell phone number).
 - c. Date and time enrollee became aware of the SSO.
 - d. Name of sanitary sewer system agency causing the SSO.
 - e. SSO cause (if known).
 - v. Indication of whether the SSO has been contained.
 - vi. Indication of whether surface water is impacted.
 - vii. Name of surface water impacted by the SSO, if applicable.
 - viii. Indication of whether a drinking water supply is or may be impacted by the SSO.
 - ix. Any other known SSO impacts.
 - x. SSO incident location (address, city, state, and zip code).
3. Following the initial notification to Cal OES and until such time that an enrollee certifies the SSO report in the CIWQS Online SSO Database, the enrollee shall provide updates to Cal OES regarding substantial changes to the estimated volume of untreated or partially treated sewage discharged and any substantial change(s) to known impact(s).
4. PLSDs: The enrollee is strongly encouraged to notify Cal OES of discharges greater than or equal to 1,000 gallons of untreated or partially treated wastewater that result or may result in a discharge to surface water resulting from failures or flow conditions within a privately owned sewer lateral or from other private sewer asset(s) if the enrollee becomes aware of the PLSD.

C. **REPORTING REQUIREMENTS**

1. **CIWQS Online SSO Database Account:** All enrollees shall obtain a CIWQS Online SSO Database account and receive a “Username” and “Password” by registering through CIWQS. These accounts allow controlled and secure entry into the CIWQS Online SSO Database.
2. **SSO Mandatory Reporting Information:** For reporting purposes, if one SSO event results in multiple appearance points in a sewer system asset, the enrollee shall complete one SSO report in the CIWQS Online SSO Database which includes the GPS coordinates for the location of the SSO appearance point closest to the failure point, blockage or location of the flow condition that caused the SSO, and provide descriptions of the locations of all other discharge points associated with the SSO event.
3. **SSO Categories**
 - i. **Category 1** – Discharges of untreated or partially treated wastewater of any volume resulting from an enrollee’s sanitary sewer system failure or flow condition that:
 - a. Reach surface water and/or reach a drainage channel tributary to a surface water; or
 - b. Reach a MS4 and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly. Any volume of wastewater not recovered from the MS4 is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or groundwater infiltration basin (e.g., infiltration pit, percolation pond).
 - ii. **Category 2** – Discharges of untreated or partially treated wastewater greater than or equal to 1,000 gallons resulting from an enrollee’s sanitary sewer system failure or flow condition that does not reach a surface water, a drainage channel, or the MS4 unless the entire SSO volume discharged to the storm drain system is fully recovered and disposed of properly.
 - iii. **Category 3** – All other discharges of untreated or partially treated wastewater resulting from an enrollee’s sanitary sewer system failure or flow condition.
4. **Sanitary Sewer Overflow Reporting to CIWQS - Timeframes**
 - i. **Category 1 and Category 2 SSOs** – All SSOs that meet the above criteria for Category 1 or Category 2 SSOs shall be reported to the CIWQS Online SSO Database:
 - a. Draft reports for Category 1 and Category 2 SSOs shall be submitted to the CIWQS Online SSO Database within three (3) business days of the enrollee becoming aware of the SSO. Minimum information that shall be reported in a draft Category 1 SSO report shall include all information identified in section 8.i.a. below. Minimum information that shall be reported in a Category 2 SSO draft report shall include all information identified in section 8.i.c below.
 - b. A final Category 1 or Category 2 SSO report shall be certified through the CIWQS Online SSO Database within 15 calendar days of the end date of the SSO. Minimum information that shall be certified in the final Category 1 SSO report shall include all information identified in section 8.i.b below. Minimum information that shall be certified in a final Category 2 SSO report shall include all information identified in section 8.i.d below.

- ii. **Category 3 SSOs** – All SSOs that meet the above criteria for Category 3 SSOs shall be reported to the CIWQS Online SSO Database and certified within 30 calendar days after the end of the calendar month in which the SSO occurs (e.g., all Category 3 SSOs occurring in the month of February shall be entered into the database and certified by March 30). Minimum information that shall be certified in a final Category 3 SSO report shall include all information identified in section 8.i.e below.
- iii. **“No Spill” Certification** – If there are no SSOs during the calendar month, the enrollee shall either 1) certify, within 30 calendar days after the end of each calendar month, a “No Spill” certification statement in the CIWQS Online SSO Database certifying that there were no SSOs for the designated month, or 2) certify, quarterly within 30 calendar days after the end of each quarter, “No Spill” certification statements in the CIWQS Online SSO Database certifying that there were no SSOs for each month in the quarter being reported on. For quarterly reporting, the quarters are Q1 - January/ February/ March, Q2 - April/May/June, Q3 - July/August/September, and Q4 - October/November/December.

If there are no SSOs during a calendar month but the enrollee reported a PLSD, the enrollee shall still certify a “No Spill” certification statement for that month.
- iv. **Amended SSO Reports** – The enrollee may update or add additional information to a certified SSO report within 120 calendar days after the SSO end date by amending the report or by adding an attachment to the SSO report in the CIWQS Online SSO Database. SSO reports certified in the CIWQS Online SSO Database prior to the adoption date of this MRP may only be amended up to 120 days after the effective date of this MRP. After 120 days, the enrollee may contact the SSO Program Manager to request to amend an SSO report if the enrollee also submits justification for why the additional information was not available prior to the end of the 120 days.

5. **SSO Technical Report**

The enrollee shall submit an SSO Technical Report in the CIWQS Online SSO Database within 45 calendar days of the SSO end date for any SSO in which 50,000 gallons or greater are spilled to surface waters. This report, which does not preclude the Water Boards from requiring more detailed analyses if requested, shall include at a minimum, the following:

- i. **Causes and Circumstances of the SSO:**
 - a. Complete and detailed explanation of how and when the SSO was discovered.
 - b. Diagram showing the SSO failure point, appearance point(s), and final destination(s).
 - c. Detailed description of the methodology employed and available data used to calculate the volume of the SSO and, if applicable, the SSO volume recovered.
 - d. Detailed description of the cause(s) of the SSO.
 - e. Copies of original field crew records used to document the SSO.
 - f. Historical maintenance records for the failure location.
- ii. **Enrollee’s Response to SSO:**
 - a. Chronological narrative description of all actions taken by enrollee to terminate the spill.
 - b. Explanation of how the SSMP Overflow Emergency Response plan was implemented to respond to and mitigate the SSO.

- c. Final corrective action(s) completed and/or planned to be completed, including a schedule for actions not yet completed.

iii. **Water Quality Monitoring:**

- a. Description of all water quality sampling activities conducted including analytical results and evaluation of the results.
- b. Detailed location map illustrating all water quality sampling points.

6. **PLSDs**

Discharges of untreated or partially treated wastewater resulting from blockages or other problems within a privately owned sewer lateral connected to the enrollee's sanitary sewer system or from other private sanitary sewer system assets may be voluntarily reported to the CIWQS Online SSO Database.

- i. The enrollee is also encouraged to provide notification to Cal OES per section B above when a PLSD greater than or equal to 1,000 gallons has or may result in a discharge to surface water. For any PLSD greater than or equal to 1,000 gallons regardless of the spill destination, the enrollee is also encouraged to file a spill report as required by Health and Safety Code section 5410 et. seq. and Water Code section 13271, or notify the responsible party that notification and reporting should be completed as specified above and required by State law.
- ii. If a PLSD is recorded in the CIWQS Online SSO Database, the enrollee must identify the sewage discharge as occurring and caused by a private sanitary sewer system asset and should identify a responsible party (other than the enrollee), if known. Certification of PLSD reports by enrollees is not required.

7. **CIWQS Online SSO Database Unavailability**

In the event that the CIWQS Online SSO Database is not available, the enrollee must fax or e-mail all required information to the appropriate Regional Water Board office in accordance with the time schedules identified herein. In such event, the enrollee must also enter all required information into the CIWQS Online SSO Database when the database becomes available.

8. **Mandatory Information to be Included in CIWQS Online SSO Reporting**

All enrollees shall obtain a CIWQS Online SSO Database account and receive a "Username" and "Password" by registering through CIWQS which can be reached at CIWQS@waterboards.ca.gov or by calling (866) 792-4977, M-F, 8 A.M. to 5 P.M. These accounts will allow controlled and secure entry into the CIWQS Online SSO Database. Additionally, within thirty (30) days of initial enrollment and prior to recording SSOs into the CIWQS Online SSO Database, all enrollees must complete a Collection System Questionnaire (Questionnaire). The Questionnaire shall be updated at least once every 12 months.

i. **SSO Reports**

At a minimum, the following mandatory information shall be reported prior to finalizing and certifying an SSO report for each category of SSO:

- a. **Draft Category 1 SSOs**: At a minimum, the following mandatory information shall be reported for a draft Category 1 SSO report:
1. SSO Contact Information: Name and telephone number of enrollee contact person who can answer specific questions about the SSO being reported.
 2. SSO Location Name.
 3. Location of the overflow event (SSO) by entering GPS coordinates. If a single overflow event results in multiple appearance points, provide GPS coordinates for the appearance point closest to the failure point and describe each additional appearance point in the SSO appearance point explanation field.
 4. Whether or not the SSO reached surface water, a drainage channel, or entered and was discharged from a drainage structure.
 5. Whether or not the SSO reached a municipal separate storm drain system.
 6. Whether or not the total SSO volume that reached a municipal separate storm drain system was fully recovered.
 7. Estimate of the SSO volume, inclusive of all discharge point(s).
 8. Estimate of the SSO volume that reached surface water, a drainage channel, or was not recovered from a storm drain.
 9. Estimate of the SSO volume recovered (if applicable).
 10. Number of SSO appearance point(s).
 11. Description and location of SSO appearance point(s). If a single sanitary sewer system failure results in multiple SSO appearance points, each appearance point must be described.
 12. SSO start date and time.
 13. Date and time the enrollee was notified of, or self-discovered, the SSO.
 14. Estimated operator arrival time.
 15. For spills greater than or equal to 1,000 gallons, the date and time Cal OES was called.
 16. For spills greater than or equal to 1,000 gallons, the Cal OES control number.
- b. **Certified Category 1 SSOs**: At a minimum, the following mandatory information shall be reported for a certified Category 1 SSO report, in addition to all fields in section 8.i.a :
1. Description of SSO destination(s).
 2. SSO end date and time.
 3. SSO causes (mainline blockage, roots, etc.).
 4. SSO failure point (main, lateral, etc.).
 5. Whether or not the spill was associated with a storm event.
 6. Description of spill corrective action, including steps planned or taken to reduce, eliminate, and prevent reoccurrence of the overflow; and a schedule of major milestones for those steps.
 7. Description of spill response activities.
 8. Spill response completion date.
 9. Whether or not there is an ongoing investigation, the reasons for the investigation and the expected date of completion.

10. Whether or not a beach closure occurred or may have occurred as a result of the SSO.
 11. Whether or not health warnings were posted as a result of the SSO.
 12. Name of beach(es) closed and/or impacted. If no beach was impacted, NA shall be selected.
 13. Name of surface water(s) impacted.
 14. If water quality samples were collected, identify parameters the water quality samples were analyzed for. If no samples were taken, NA shall be selected.
 15. If water quality samples were taken, identify which regulatory agencies received sample results (if applicable). If no samples were taken, NA shall be selected.
 16. Description of methodology(ies) and type of data relied upon for estimations of the SSO volume discharged and recovered.
 17. SSO Certification: Upon SSO Certification, the CIWQS Online SSO Database will issue a final SSO identification (ID) number.
- c. **Draft Category 2 SSOs:** At a minimum, the following mandatory information shall be reported for a draft Category 2 SSO report:
1. Items 1-14 in section 8.i.a above for Draft Category 1 SSO.
- d. **Certified Category 2 SSOs:** At a minimum, the following mandatory information shall be reported for a certified Category 2 SSO report:
1. Items 1-14 in section 8.i.a above for Draft Category 1 SSO and Items 1-9, and 17 in section 8.i.b above for Certified Category 1 SSO.
- e. **Certified Category 3 SSOs:** At a minimum, the following mandatory information shall be reported for a certified Category 3 SSO report:
1. Items 1-14 in section 8.i.a above for Draft Category 1 SSO and Items 1-5, and 17 in section 8.i.b above for Certified Category 1 SSO.

ii. **Reporting SSOs to Other Regulatory Agencies**

These reporting requirements do not preclude an enrollee from reporting SSOs to other regulatory agencies pursuant to state law. In addition, these reporting requirements do not replace other Regional Water Board notification and reporting requirements for SSOs.

iii. **Collection System Questionnaire**

The required Questionnaire (see subsection G of the SSS WDRs) provides the Water Boards with site-specific information related to the enrollee's sanitary sewer system. The enrollee shall complete and certify the Questionnaire at least every 12 months to facilitate program implementation, compliance assessment, and enforcement response.

iv. **SSMP Availability**

The enrollee shall provide the publicly available internet web site address to the CIWQS Online SSO Database where a downloadable copy of the enrollee's approved SSMP, critical supporting documents referenced in the SSMP, and proof of local governing board approval of the SSMP is posted. If all of the SSMP documentation listed in this subsection is not publicly available on the Internet, the enrollee shall comply with the following procedure:

- a. Submit an **electronic** copy of the enrollee's approved SSMP, critical supporting documents referenced in the SSMP, and proof of local governing board approval of the SSMP to the State Water Board, within 30 days of that approval and within 30 days of any subsequent SSMP re-certifications, to the following mailing address:

State Water Resources Control Board
Division of Water Quality
Attn: SSO Program Manager
1001 I Street, 15th Floor, Sacramento, CA 95814

D. WATER QUALITY MONITORING REQUIREMENTS:

To comply with subsection D.7(v) of the SSS WDRs, the enrollee shall develop and implement an SSO Water Quality Monitoring Program to assess impacts from SSOs to surface waters in which 50,000 gallons or greater are spilled to surface waters. The SSO Water Quality Monitoring Program, shall, at a minimum:

1. Contain protocols for water quality monitoring.
2. Account for spill travel time in the surface water and scenarios where monitoring may not be possible (e.g. safety, access restrictions, etc.).
3. Require water quality analyses for ammonia and bacterial indicators to be performed by an accredited or certified laboratory.
4. Require monitoring instruments and devices used to implement the SSO Water Quality Monitoring Program to be properly maintained and calibrated, including any records to document maintenance and calibration, as necessary, to ensure their continued accuracy.
5. Within 48 hours of the enrollee becoming aware of the SSO, require water quality sampling for, at a minimum, the following constituents:
 - i. Ammonia
 - ii. Appropriate Bacterial indicator(s) per the applicable Basin Plan water quality objective or Regional Board direction which may include total and fecal coliform, enterococcus, and e-coli.

E. RECORD KEEPING REQUIREMENTS:

The following records shall be maintained by the enrollee for a minimum of five (5) years and shall be made available for review by the Water Boards during an onsite inspection or through an information request:

1. General Records: The enrollee shall maintain records to document compliance with all provisions of the SSS WDRs and this MRP for each sanitary sewer system owned including any required records generated by an enrollee's sanitary sewer system contractor(s).
2. SSO Records: The enrollee shall maintain records for each SSO event, including but not limited to:
 - i. Complaint records documenting how the enrollee responded to all notifications of possible or actual SSOs, both during and after business hours, including complaints that do not

result in SSOs. Each complaint record shall, at a minimum, include the following information:

- a. Date, time, and method of notification.
 - b. Date and time the complainant or informant first noticed the SSO.
 - c. Narrative description of the complaint, including any information the caller can provide regarding whether or not the complainant or informant reporting the potential SSO knows if the SSO has reached surface waters, drainage channels or storm drains.
 - d. Follow-up return contact information for complainant or informant for each complaint received, if not reported anonymously.
 - e. Final resolution of the complaint.
- ii. Records documenting steps and/or remedial actions undertaken by enrollee, using all available information, to comply with section D.7 of the SSS WDRs.
 - iii. Records documenting how all estimate(s) of volume(s) discharged and, if applicable, volume(s) recovered were calculated.
3. Records documenting all changes made to the SSMP since its last certification indicating when a subsection(s) of the SSMP was changed and/or updated and who authorized the change or update. These records shall be attached to the SSMP.
 4. Electronic monitoring records relied upon for documenting SSO events and/or estimating the SSO volume discharged, including, but not limited to records from:
 - i. Supervisory Control and Data Acquisition (SCADA) systems
 - ii. Alarm system(s)
 - iii. Flow monitoring device(s) or other instrument(s) used to estimate wastewater levels, flow rates and/or volumes.

F. CERTIFICATION

1. All information required to be reported into the CIWQS Online SSO Database shall be certified by a person designated as described in subsection J of the SSS WDRs. This designated person is also known as a Legally Responsible Official (LRO). An enrollee may have more than one LRO.
2. Any designated person (i.e. an LRO) shall be registered with the State Water Board to certify reports in accordance with the CIWQS protocols for reporting.
3. Data Submitter (DS): Any enrollee employee or contractor may enter draft data into the CIWQS Online SSO Database on behalf of the enrollee if authorized by the LRO and registered with the State Water Board. However, only LROs may certify reports in CIWQS.
4. The enrollee shall maintain continuous coverage by an LRO. Any change of a registered LRO or DS (e.g., retired staff), including deactivation or a change to the LRO's or DS's contact information, shall be submitted by the enrollee to the State Water Board within 30 days of the change by calling (866) 792-4977 or e-mailing help@ciwqs.waterboards.ca.gov.

5. A registered designated person (i.e., an LRO) shall certify all required reports under penalty of perjury laws of the state as stated in the CIWQS Online SSO Database at the time of certification.

CERTIFICATION

The undersigned Clerk to the Board does hereby certify that the foregoing is a full, true, and correct copy of an order amended by the Executive Director of the State Water Resources Control Board.

7/30/13

Date



Jeanine Townsend
Clerk to the Board

APPENDIX B

GDPUD EMERGENCY CONTACT NUMBERS

Emergency Contact Number for Overflow/Spill Prevention and Response Plan
 Georgetown Divide Public Utility District

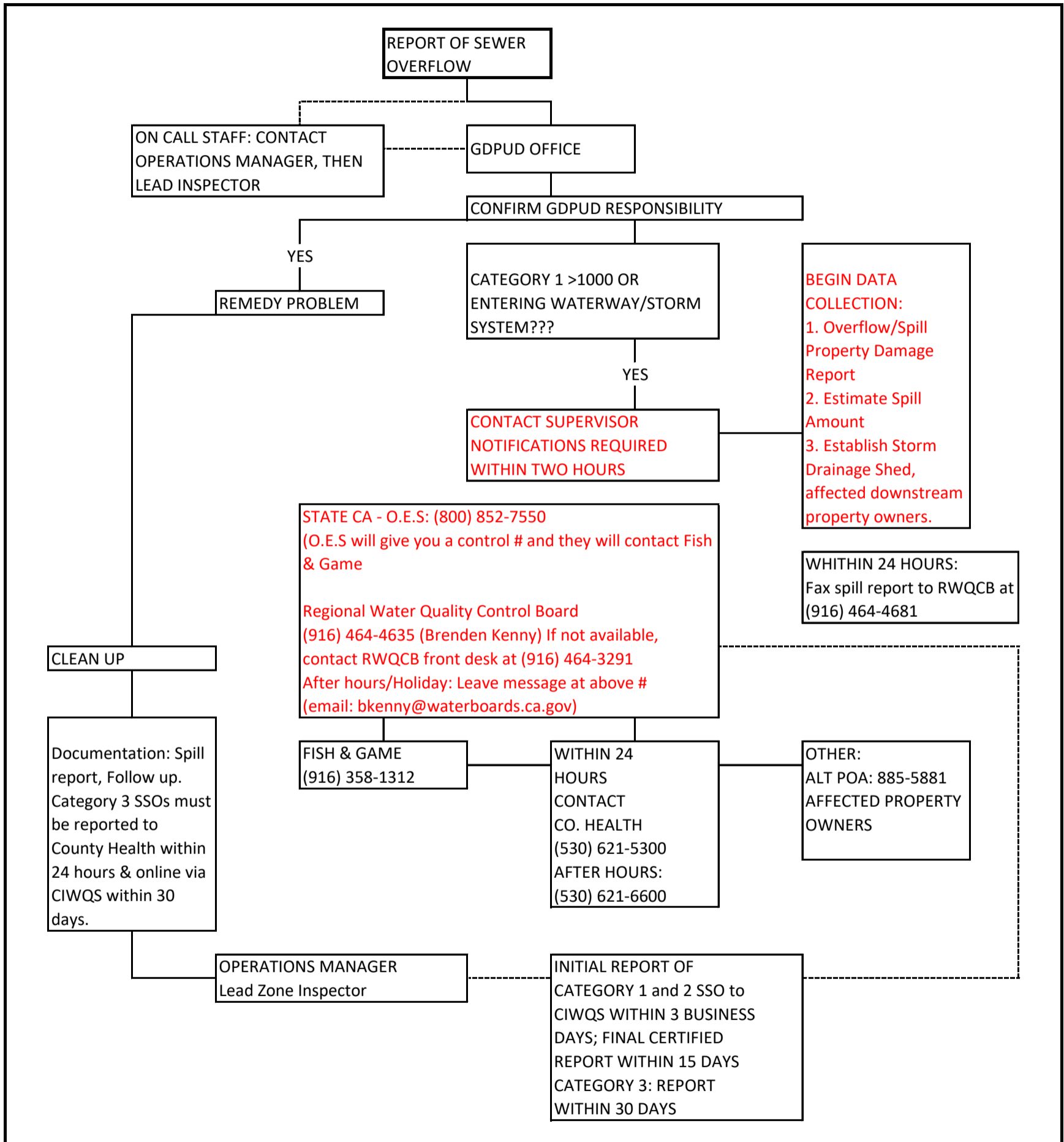
Name	Title	Office	Home	Cell
Steven Palmer P.E.	General Manager	(530) 333-4356	(530) 857-4413	(530) 919-6426
Adam Brown	Water Resources Manager			(530) 906-4545
Darrell Creeks	Operations Manager		(530) 333-4910	(530) 333-3494
Brian Rule	Wastewater Technician			(530) 957-5492

Other On-Call Responders (After Hours)				
Jeff Pulfer	Water Treatment Plant Operator	(530) 333-4356		(530) 333-3760
Kyle Madison	Lead Distribution Operator		(530) 885-4104	(530) 333-3940

APPENDIX C

GDPUD SSO FLOW CHART

Sanitary Sewer Overflow - Flow Chart
Georgetown Divide Public Utility District



APPENDIX D

SPILL RESPONSE FORM

Sewage Spill Report Form
Georgetown Divide Public Utility District

Report No: _____

Reported By: _____ Phone No: _____

Date Reported: _____ Time Reported: _____ Time Spill Started: _____

Time of Arrival: _____ Time Spill Ended: _____

SPILL DETAILS: SSO TYPE: CATEGORY (1, 2, 3) _____ PRIVATE LATERAL _____

SPILL LOCATION: Lift Station CDS Disposal Field Manhole Clean-out Private Lateral

GPS Coordinates of Spill: Latitude: _____ Longitude: _____

Address of Spill: _____ Nearest Cross St. _____

Estimated Spill Volume in gallons: _____ Estimated SSO Volume Recovered: _____

Diameter of sewer pipe at point of discharge: _____

Material of pipe at point of discharge: _____ Estimated age of sewer pipe at point of discharge: _____

Did spill enter: Storm System (i.e., catch basin, culvert, storm drain, etc.) Yes No
Surface Waters (i.e., drainage channel, creek, pond, etc.) Yes No

Did spill discharge to a storm drainpipe that was not fully captured & returned to the sewer system? Yes No

If yes, describe the affected surface water drainage. Note any erosion, turbidities or fish kill caused by the spill.

Was spill confined to an isolated area? Yes No Describe: _____

Final Spill Destination? (i.e., building structure, captured in stormdrain, dry dirt, etc.) _____

CAUSE OF SPILL: Blockage Power Outage Line Break Roots Pump Failure
Line Collapse Pump Failure Excavation Mechanical I & I

Describe: _____

SPILL CONTROL/CLEAN UP: Hydro/Vac Rake/Shovel Hand Rod Dig Up
Berms/Barrier Disinfection Pump Flush
Samples Collected Location _____

Describe Clean-up Efforts _____

Sewage Spill Report Form
Georgetown Divide Public Utility District

WITNESSES (If Available):

Name: _____	Name: _____
Address: _____	Address: _____
Phone: _____	Phone: _____
Name: _____	Name: _____
Address: _____	Address: _____
Phone: _____	Phone: _____

AGENCIES NOTIFIED (Include names, dates and times of notification) See flow chart for notification requirements.

Office of Emergency Services (OES)
Phone (800) 852-7550
OES Control Number (Required if Category 1 or 2 spill) _____
Name: _____
Date: _____ Time: _____

SWRQCB - Phone (916) 464-4635
After Hours: (916) 464-3291
Name: _____
Date: _____ Time: _____

El Dorado County Environmental Health - Phone (530) 621-5300
After Hours: (530) 621-6600
Name: _____
Date: _____ Time: _____

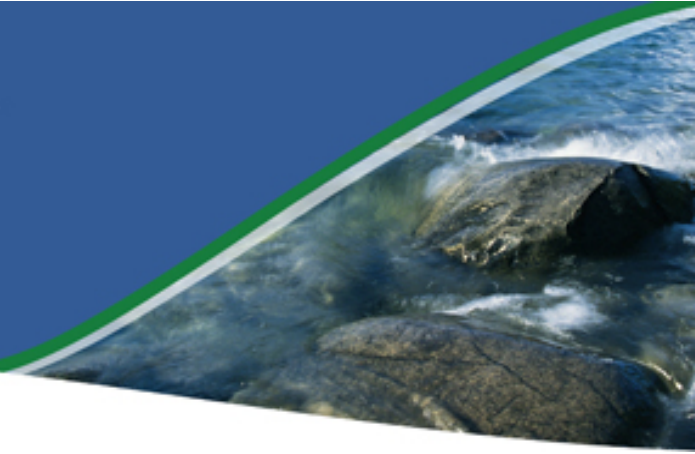
California Fish & Game - Phone (916) 358-1312
OES should contact Fish & Game but contact also if Category 1 SSO
Name: _____
Date: _____ Time: _____

REPORT COMPLETED BY: _____
Name Date/Time

Note: Location of Station 16: Latitude: 38°53'41.98" North Longitude: 121°00'02.30" West

APPENDIX E

CIWQS SSO DISCHARGE WORKBOOK



Enrollee's Guide to the SSO Database

Sanitary Sewer Overflow Reduction Program



State Water Resources Control Board



Last Updated August 2013

Acknowledgements

This Enrollee's Guide to the CIWQS SSO Database (SSO Database) was developed by way of a collaborative effort between stakeholders and State Water Board staff. The following agencies contributed to the development of this guide (in alphabetical order):

- Central Valley Clean Water Association
- Central Contra Costa Sanitary District
- City of Redding
- City of Vacaville
- Fairfield-Suisun Sewer District
- Orange County Sanitation District
- Sacramento Area Sewer District
- Sacramento Regional County Sanitation District
- Union Sanitary District

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1.0 GENERAL GUIDANCE

This guide was developed to assist enrollees in completing the required SSO reporting forms contained in SSO Database. The guide contains general guidance, detailed information on how to enter the SSO Database module in the California Integrated Water Quality System (CIWQS), how to complete and submit the information which is required annually and after each spill occurrence, a list of [acronyms](#), and a glossary. The format of the guide generally shows individual items from the SSO Database screens in bold brown print and then offers an explanation of how to complete that particular item. This guide was produced by stakeholders in the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, a number of people working in the wastewater industry, and the staff of the State Water Resources Control Board. This guidance document is a “living document” and, it will be updated as necessary.

To provide a consistent, statewide regulatory approach to address SSOs, the State Water Resources Control Board (State Water Board) adopted Statewide General Waste Discharge Requirements for Sanitary Sewer Systems, Water Quality Order No. 2006-0003 (SSS WDRs), on May 2, 2006. All public agencies that own or operate a sanitary sewer system that is comprised of more than one mile of pipes or sewer lines which convey wastewater to a publicly owned treatment facility must apply for coverage under the SSS WDRs. The application or Notice of Intent (NOI) for enrollment should have been submitted to the State Water Board by November 2, 2006.

The SSS WDRs requires enrollees, among other things, to maintain compliance with the Monitoring and Reporting Program for the SSS WDRs. Enrollees use the SSO Database to comply with the reporting requirements of the SSS WDRs. The SSO Database is used to collect and store an enrollee’s facility and organizational information (collection system questionnaire) and details of all SSOs which occur from an enrollee’s sanitary sewer system (SSO reports). All of the information collected in the SSO Database is entered by enrollees. State Water Board staff cannot modify any information in the database except for deleting erroneous SSO reports and “no-spill” certifications on request from an enrollee with a valid explanation of why the report or certification is erroneous.

The SSO Database is accessed through the [California Integrated Water Quality System \(CIWQS\)](#), which is the State Water Board’s regulatory and water quality information management system. Enrollees will automatically be assigned a CIWQS account to access the SSO Database when they register as a Legally Responsible Official or Data Submitter.

Access to the SSO Database allows enrollees to complete the collection system questionnaire, certify completion of the Sewer System Management Plan, and submit SSO reports as required by the SSS WDRs. The SSS WDRs requires enrollees to complete the collection system questionnaire within 30 calendar days of enrolling and to update it annually. The Legally Responsible Official (LRO) for each enrollee will receive their CIWQS user ID and password via email to access the SSO Database. Once the LRO has received their CIWQS user ID and password, the enrollee can register additional staff as LROs or Data Submitters (DS) for individual access to the SSO Database. Instructions for completing this registration process are available on the [CIWQS Help Center webpage](#). Electronic LRO and DS forms can be filled out at the following link on the [SSO Database home page](#): <https://ciwqs.waterboards.ca.gov/ciwqs/newUser.jsp>.

For additional questions, call the CIWQS Help Center at:

Phone: 866-79-CIWQS (24977)

Email: ciwqs@waterboards.ca.gov

Monday through Friday (excluding State Holidays) 8:00 a.m. - 5:00 p.m.

On adoption In 2006, the SSS WDRs required enrollees to begin reporting all SSOs to the SSO Database according to the following schedule: Regions 4,8, and 9 - starting January 2, 2007; Regions 1,2, and 3 -starting May 2, 2007; and Regions 5,6, and 7 - starting September 2, 2007.

Detailed information on each SSO is submitted by enrollees in the SSO report. Enrollees are required to report all SSOs that result from a failure or flow condition in any portion of a sanitary sewer system under their ownership or management. For the purposes of reporting, SSOs fall into one of three categories: Category 1, Category 2, and Category 3. The definitions for each Category are listed in Table 1, below.

CATEGORIES	DEFINITIONS [see Section A on page 5 of SSS WDRs for SSO definition]
CATEGORY 1	Discharges of untreated or partially treated wastewater of any volume resulting from an enrollee's sanitary sewer system failure or flow condition that: Reach surface water and/or reach a drainage channel tributary to a surface water; or Reach a municipal separate storm sewer system and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly. Any volume of wastewater not recovered from the municipal separate storm sewer system is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or ground water infiltration basin (e.g., infiltration pit, percolation pond).
CATEGORY 2	Discharges of untreated or partially treated wastewater of 1,000 gallons or greater resulting from an enrollee's sanitary sewer system failure or flow condition that do not reach surface water, a drainage channel, or a municipal separate storm sewer system unless the entire SSO discharged to the storm drain system is fully recovered and disposed of properly.
CATEGORY 3	All other discharges of untreated or partially treated wastewater resulting from an enrollee's sanitary sewer system failure or flow condition.
PRIVATE LATERAL SEWAGE DISCHARGE (PLSD)	Discharges of untreated or partially treated wastewater resulting from blockages or other problems within a privately owned sewer lateral connected to the enrollee's sanitary sewer system or from other private sewer assets. PLSDs that the enrollee becomes aware of may be <u>voluntarily</u> reported to the SSO Database.

Table 1 – Spill Categories and Definitions

The reporting deadline for submittal of a SSO report depends on the classification of the spill as shown in Table 2. For Category 1 and 2 SSOs, the enrollee must submit an initial, draft report of the SSO as soon as possible but no later than 3 business days after becoming aware of the SSO. The final, certified report for Category 1 and 2 SSOs must be submitted within 15

calendar days of the SSO end date. For Category 3 SSOs, the enrollee must submit a final, certified report (no initial, Draft report required) within 30 calendar days after the end of the calendar month in which the SSO occurred. For instance, if the SSO occurred on February 1st, the enrollee must certify the Category 3 SSO before March 30th.

ELEMENT	REQUIREMENT	METHOD
NOTIFICATION (see section B)	Within 2 hours of becoming aware of any Category 1 SSO greater than or equal to 1,000 gallons notify the California Office of Emergency Services (Cal OES) and obtain a notification control number.	Call Cal OES at: (800) 852-7550
REPORTING (see section C)	<p>Category 1 SSO: Submit Draft report within 3 business days of becoming aware of the SSO and certify within 15 calendar days of SSO end date.</p> <p>Category 2 SSO: Submit Draft report within 3 business days of becoming aware of the SSO and certify within 15 calendar days of SSO end date.</p> <p>Category 3 SSO: Submit Certified report within 30 calendar days of the end of month in which SSO occurred.</p> <p>“No Spill” Monthly Certification: Certify that no SSOs occurred within 30 calendar days of the end of the month in which no SSOs occurred.</p> <p>Collection System Questionnaire: Update and Certify every 12 months.</p>	Enter data into the California Integrated Water Quality System (CIWQS) Online SSO Database (http://ciwqs.waterboards.ca.gov/), certified by enrollee’s Legally Responsible Official(s).

Table 2 – Notification, Reporting, Monitoring, and Record Keeping Requirements

Notification to Cal OES is required within two hours of becoming aware of a Category 1 SSO greater than or equal to 1,000 gallons that results or may result in a discharge to surface waters. Specifically, the enrollee shall, as soon as possible, but not later than two (2) hours after (A) the enrollee has knowledge of the discharge, (B) notification is possible, and (C) notification can be provided without substantially impeding cleanup or other emergency measures, notify the California Office of Emergency Services (Cal OES) and obtain a notification control number.

With the exception of enrollees in the San Diego region, Private Lateral Sewage Discharges (PLSDs) are not required to be reported, but they can be voluntarily reported to the database. The State Water Board encourages enrollees to Notify Cal OES for PLSDs greater than or equal to 1,000 gallons that result or may result in a discharge to surface waters.

No-spill Certifications are required within 30 days after the end of each calendar month if there are no SSOs during the calendar month. If there are no SSOs during a calendar month but the enrollee reported a PLSD, the enrollee must still file a “No Spill” certification statement for that

month.

1.1 CIWQS USER REGISTRATION

In order to be able to use the SSO Database (i.e., report SSOs, No Spill Certifications, etc.) you need to be registered in the database as a Legally Responsible Official (LRO) or a Data Submitter (DS). If you are not registered in the SSO Database and wish to be registered as a LRO or DS for your agency, follow the steps below:

1. Start by going to the CIWQS login screen at: <http://ciwqs.waterboards.ca.gov/>.



2. Click on “User Registration”.
3. Select one of user responsibility.

CIWQS User Registration:

Please select one of the following:

I am the legally responsible person for my facility or location.

I wish to be able to submit data on behalf of my facility or location, but am not the legally responsible person.

I am a Water Board staff person. (You will be directed to the CIWQS intranet page to complete an account request form.)

If you have questions regarding registration, please contact the California State Water Control Board at 866-79-CIWQS (24977) or your local Water Control Board.

4. A form corresponding to the user responsibility will appear. From the “Discharge Type” dropdown, select “Sanitary Sewer Overflows (SSO).”

- Next, enter the WDID corresponding to your sanitary sewer system. After you enter the WDID number, the form will auto populate information corresponding to your agency.

- Complete the form. Note: Your account PIN can be used to reset your account if you forget your security question answers and inadvertently lock your account.
- If you are registering as Data Submitter, you can submit your form electronically.
- If you are registering as a Legally Responsible Official, you need to print, sign, and send the form to the address below:

CIWQS Registration
P.O. Box 671
Sacramento, CA 95812

- The CIWQS Help Center will send an email notification with your user name and password after the registration has been approved.

2.0 SSO DATABASE SCREENS AND REPORTS

The following sections describe how to use the SSO Database and provide a description of each screen and information required to be entered.

2.1 LOGGING IN AND CHANGING PERSONAL INFORMATION

To get you started we are going to show you how to log into the system, a view of the main menu, and how to make changes to your personal information. While these are very basic

tasks, it is one of the best beginner demonstrations to SSO Database and it will introduce you to the methods with which all information is changed in the system.

2.1.1 CIWQS LOG IN

User roles that need to review this section: All

1. Start by going to the CIWQS login screen at: <http://ciwqs.waterboards.ca.gov/>.
2. Once the page loads enter your CIWQS username into the “User ID:” field and your password into the “Password:” field.
3. Press “Login”.



2.1.2 MAIN MENU

4. After you press “Login” the SSO Database main menu will appear. Depending on your access rights, you will be provided with the links to various CIWQS modules including but not limited to:
 - Submit/Review a Self-Monitoring Report (SMR)
 - Run Reports
 - View/Change My Personal Information
 - Administer System
 - SSO - Sanitary Sewer Overflows

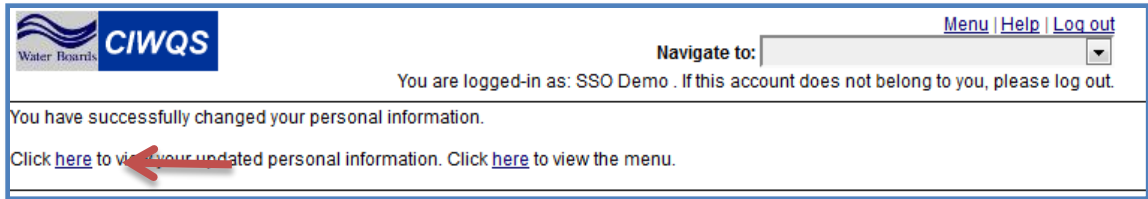
2.1.3 CHANGING PERSONAL INFORMATION

5. Select the “View/Change My Personal Information” module hyperlink.
6. You will be taken to the Personal Information page. Here you can update your contact information, add a new facility, change your password, or request other changes.
7. Let’s start with changing your password. To change your password, press the “Change Password” button.

- After pressing “Change Password” you will be taken to a new screen asking you to enter the new password you have selected twice.

- Once you have entered your new password press “Save”.
- After pressing “Save” you will be asked to verify that you wish to save, press “Ok”.
- You will be returned to the personal information screen. If you scroll down a little you can view all of your contact information.

- If you make any changes to your contact information, they have to be saved by pressing the “Save Changes” button at the bottom of the page.
- After pressing “Save Changes”, you will see a screen verifying that your changes were logged. You will also be provided with two hyperlinks. Press the first “here” hyperlink to return to the personal information screen.



14. To make other changes to your account that are not available on this page, press the “Request Another Change” button near the bottom of the “view/change my personal information” page.
15. After pressing the “Request Another Change” button, your computer’s email client will launch a new email window with the CIWQS Help Center email address in the “To:” field. Describe the change you wish to have made to your account and send the email. Be sure to include your full name, agency and username.
16. We are now done with this module. Press the “Menu” hyperlink at the top right corner of the page to return to the SSO Database main menu.

2.2 SSO DATABASE MENU

As you log into the SSO Database to enter information regarding your sanitary sewer system, there will be a number of forms you will be required to complete one time, monthly, yearly or every time there is a sewer system overflow (SSO). These forms are as follows:

- Collection System Questionnaire
- Sewer System Management Plan (SSMP) Certification
- Reporting New SSO
- Modifying Existing SSO
- Generate No Spill Certification
- View SSO Incident Map - Public Collection Systems (Not Site Specific)
- View SSO Incident Map - Private Laterals (Not Site Specific)

This discharge’s guide is designed to help sewer system operators in completing the above forms in order to meet their reporting obligations under the SSS WDRs.

2.2.1 COLLECTION SYSTEM QUESTIONNAIRE

The Collection System Questionnaire must be completed initially at the time of enrollment before any SSO reports can be submitted. Additionally, the collection system questionnaire must be updated at least annually. **Notice that if the questionnaire is not updated at least annually, the database will prevent you from reporting SSOs and No-Spill Certifications.**

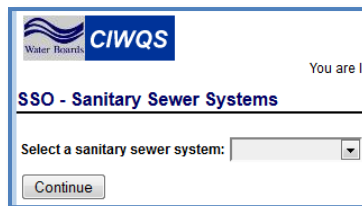
User roles that need to review this section: LRO

1. If you are not already logged into SSO Database, proceed to this URL <http://ciwqs.waterboards.ca.gov/> and login.

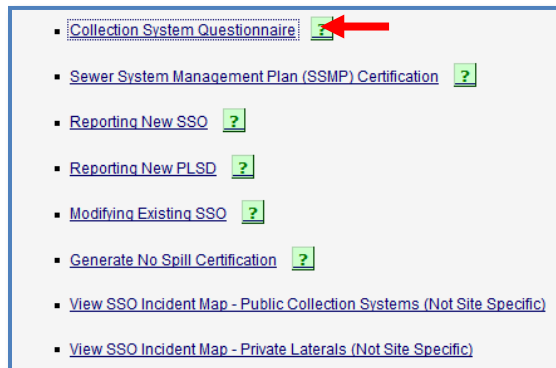
2. After logging in you will see the CIWQS main menu. Select the “SSO” hyperlink to proceed to the “SSO - Sanitary Sewer Overflows” module.



3. If you are registered as a DS or LRO for multiple enrolled sanitary sewer systems, upon entering the SSO Database you will be required to select the sanitary sewer system you wish to submit information for from the “Select a Sanitary Sewer System:” dropdown. After selecting the appropriate sanitary sewer system press the “Continue” button.



4. When a sanitary sewer system has been selected you will be taken to the main menu of the SSO Database. At the top of this menu will be the “Collection System Questionnaire” hyperlink. Select that hyperlink.



5. You will be taken to the “Collection System Questionnaire” page. This page has a series of fields that need to be filled in with current information regarding your sanitary sewer system.

2.2.2 QUESTIONS

There are thirty (30) questions to be answered to complete the SSO Questionnaire. These questions are shown below in bold brown type followed by an explanation on how to complete them. On the questionnaire, following each question is a box with a drop down or a place to

insert the answer.

1. **Sewer System Category:**
Select the appropriate category from the scroll down menu that best fits your sanitary sewer system. Note, selections include: airport, hospital, marina (i.e., pleasure craft), military, municipal, other, park, port (i.e., commerce), prison, and school.
2. **What is the population served by your agency's sewer system?**
Enter the number of people within the general population served by your agency, district, or city. Include any satellites systems that are under your jurisdiction. Use your billing information, recent [US Census](#) Data, Realtor Association, County Planning, or other official means of substantiating population estimates.
3. **What is your current annual operation and maintenance budget for sewer system facilities?**
Enter the dollar amount of your agency, district or city's annual Operation & Maintenance Budget for the Sanitary Sewer System for the current fiscal year (include portion of laterals agency owned – none/lower/upper & lower, mains, trunk sewers, lift stations, and force mains, etc., but do not include the Wastewater Treatment Plant O&M or other non- sanitary sewer system related monies). This includes all personnel contributing to routine O&M activities. Estimate the percent of time that a group of employees works on sanitary sewer system activities if they have other shared responsibilities (e.g., storm water, roads, etc.). Use rounded dollar amount with commas up to 12 digits.
4. **What is your current annual capital expenditure budget for sewer system facilities?**
Enter the dollar amount of your agency, district, or city's annual Capital Expenditure Budget for the Sanitary Sewer System for the current Fiscal year (include portion of laterals agency owned – none/lower/upper & lower, mains, trunk sewers, etc., but do not include the Wastewater Treatment Plant or other non- sanitary sewer system related capital improvement monies).

Questions 5 through 8 – Employee Information

For questions 5 through 8 below, technical and mechanical employees are all those employees involved in the operation and maintenance of your sanitary sewer system. This will include employee's time, or fraction thereof, working on the portion of laterals agency owned – none/lower/upper & lower, trunk sewers, interceptor sewers, collector sewers, pump stations, lift stations, and force mains.

If you have employees that work on your sewer system but either split their time with other sewer systems or with non-sewer related work, you can enter a decimal point representing the fraction of a full time staff member for these four questions (e.g., 0.6 persons, 2.3 persons, etc.). Professional certification information for employees is requested in questions 9 through 13.

5. **Entry Level (Less than 2 years' experience) - Number of agency employees?**
Provide the number of Entry Level technical and mechanical staff employees that have less than 2 years of sanitary sewer system work experience with your or any

other agency, district, or city.

6. **Journey Level (Greater than or equal 2 years' experience) - Number of agency employees?**

Provide the number of Journey Level technical and mechanical staff employees that have greater than 2 years of sanitary sewer system work experience with your or any other agency, district, or city. Certification or licenses of any kind are not considered important in this question; only the number of years of working experience.

7. **Supervisory Level - Number of agency employees?**

Provide number of agency, district, or city employees that supervise the technical and mechanical staff employees listed above. A supervisor is a person who supervises one or more crews of maintenance personal and is not a crew foreman. Supervisors split their time between field and office work.

8. **Managerial Level - Number of Agency Employees?**

Provide number of agency, district, or city employees that manage the supervisors, technical and mechanical staff employees listed above. A manager oversees supervisors along with providing managerial duties such as budgeting, purchasing and cost control.

Questions 9 through 13 – Employee Certification Information

For questions 9 through 13 below, use whole numbers when showing how many employees have with the various types and grades of certifications. If management and engineering staff have the certifications listed below, include them in the totals. Do not include contract employees.

9. **CWEA Grade I**

Number of certified (Grade I Collection System Maintenance) agency employees:

Enter the number of employees that possess valid, current CWEA Grade I Collection System Maintenance certification.

Number of certified (Grade I Plant Maintenance Technologist) agency employees

Enter the number of employees that possess valid, current CWEA Grade I Plant Maintenance Technologist certification.

10. **CWEA Grade II**

Number of certified (Grade II Collection System Maintenance) agency employees:

Enter the number of employees that possess valid, current CWEA Grade II Collection System Maintenance certification.

Number of certified (Grade II Electrical/Instrumentation Technologist) agency employees:

Enter the number of employees that possess valid, current CWEA Grade II Electrical/Instrumentation Technologist certification.

Number of certified (Grade II Mechanical Technologist) agency employees:
Enter the number of employees that possess valid, current CWEA Grade II Mechanical Technologist certification.

11. CWEA Grade III

Number of certified (Grade III Collection System Maintenance) agency employees:
Enter the number of employees that possess valid, current CWEA Grade III Collection System Maintenance certification.

Number of certified (Grade III Electrical/Instrumentation Technologist) agency employees:
Enter the number of employees that possess valid, current CWEA Grade III Electrical/Instrumentation Technologist certification.

Number of certified (Grade III Mechanical Technologist) agency employees:
Enter the number of employees that possess valid, current CWEA Grade III Mechanical Technologist certification.

12. CWEA Grade IV

Number of certified (Grade IV Collection System Maintenance) agency employees:
Enter the number of employees that possess valid, current CWEA Grade IV Collection System Maintenance certification.

Number of certified (Grade IV Electrical/Instrumentation Technologist) agency employees:
Enter the number of employees that possess valid, current CWEA Grade IV Electrical/Instrumentation Technologist certification.

Number of certified (Grade IV Mechanical Technologist) agency employees:
Enter the number of employees that possess valid, current CWEA Grade IV Mechanical Technologist certification.

**13. OFFICE OF WATER PROGRAMS at CALIFORNIA STATE UNIVERSITY
CERTIFICATES OF COMPLETION:**

Number of certified (Operation and Maintenance of Wastewater Collection Systems, Volume I) agency employees:
Enter the number of employees that possess a certification of completion for the Operation and Maintenance of Wastewater Collection Systems, Volume I.

Number of certified (Operation and Maintenance of Wastewater Collection Systems, Volume II) agency employees:
Enter the number of employees that possess a certification of completion for the Operation and Maintenance of Wastewater Collection Systems, Volume II.

14. Estimated Size Distribution of Assets:

Diameter of sewer pipe	Gravity Mainlines (%)	Force Mains (%)
6 inches or less	<input type="text"/>	<input type="text"/>
8 inches	<input type="text"/>	<input type="text"/>
9 - 18 inches	<input type="text"/>	<input type="text"/>
19 - 36 inches	<input type="text"/>	<input type="text"/>
> 36	<input type="text"/>	<input type="text"/>
Unknown Diameter	<input type="text"/>	<input type="text"/>
Totals	<input type="text"/>	<input type="text"/>

Enter the estimated total percentage (%) of gravity mainlines and force mains for each size category (pipe diameter) comprising the enrolled sanitary sewer system.

15. How many miles of force mains and other pressure systems?

Enter the estimated total miles of force mains in the enrolled sanitary sewer system.

16. How many miles of gravity sewers?

Enter the estimated total miles of gravity mainlines in the enrolled sanitary sewer system. Do not include public or private laterals.

17. Estimated total miles of laterals (upper and lower)?

Enter the total miles of laterals, including private laterals and both upper and lower laterals, that are connected to the enrolled sanitary sewer system. See [definitions](#) of Lateral, Lower Lateral and Upper Lateral in the Glossary.

18. Which portion of laterals is your agency responsible?

For laterals connected to the sanitary sewer system which you have jurisdiction over, enter the portion of these laterals for which your agency is responsible. Responsibility includes inspection, cleaning, maintenance and replacement or any combination thereof.

19. Estimated total miles of laterals your agency is responsible for?

Enter the estimated total miles of the laterals reported in Question 17 that your agency owns and/or is responsible for maintaining. If you have service laterals on G.I.S., use that software to determine the total miles of service laterals you maintain. If not, estimate the mileage by multiplying the number of laterals by the average half width of a street and/or easement and then convert feet to miles.

20. Number of service lateral connections?

Enter the total number of service lateral connections to your sanitary sewer system. Assuming very few parcels connected to your sanitary sewer system have more than one lateral, the total number of service lateral connections can roughly be calculated by adding up the number of parcels of land (or billing accounts) connected to your sanitary sewer system.

21. Approximately, what percentage of your sewer system piping and number of pump stations were constructed between the years of:

Age	Gravity Mainlines & Force Mains (%)	Pump Stations (*) 75k Gal/day & Over (number of stations)	Pump Stations (*) Under 75k Gal/day (number of stations)
2000 - Present	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
1980 - 1999	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
1960 - 1979	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
1940 - 1959	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
1920 - 1939	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
1900 - 1919	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Before 1900	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Unknown Age	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Totals	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>

For pump stations, flow categories are the maximum flow rate occurring over a 24-hr period based on annual operating data (e.g., based on measured flow) or calculated peak flow (e.g., # EDUs x Flow/EDU x Peaking Factor). Age is date asset was originally constructed.

In the second column, enter the percent of your sanitary sewer system that was constructed during the ten year periods noted in the first column. Calculate the percentages based on as-built drawings and other available information. When entering the number of pump or lift stations you maintain, enter the year they were originally constructed or the year that they were significantly improved or re-built. To determine the capacity of the pump station use the design peak wet weather flow rate with no standby pumps running.

22. Estimated total miles of your sewer system not accessible for maintenance?

Enter the estimated total miles of the sanitary sewer system your agency has jurisdiction over that are not accessible for maintenance by vehicle or other means for routine maintenance.

23. How many miles of sewer system did you clean last year (miles)?

Enter the number of linear miles of the sanitary sewer system your agency cleaned or re-cleaned in the last complete fiscal year.

24. How many miles of sewer system did you inspect (e.g., CCTV) last year (miles)?

Enter the number of linear miles of the sanitary sewer system your agency visually inspected or re-inspected in the last complete fiscal year.

25. **Estimated Sewer System Flow Characteristics**

Average Daily Dry Weather Flow (MGD)	Peak Daily Wet Weather Flow (MGD)
<input type="text" value="0"/>	<input type="text" value="0"/>

Average Dry Weather Flow (ADWF) – ADWF consists of average daily sewage flows and groundwater infiltration (GWI) and can be determined from the average measured daily flow of the three consecutive driest months of the year or the time period as defined by the agency’s ordinance, standards, or other planning documents.

Peak Daily Wet Weather Flow (PDWWF) – PDWWF consists of ADWF plus rainfall-dependent inflow and infiltration (RDII). Peak daily wet weather flow is the highest measured daily flow that occurs during the wet weather season period as defined by the agency’s ordinance, standards, or other planning documents.

Wastewater flows can be measured (as noted above), estimated, or modeled. An example of an estimated flow would be the number of Equivalent Dwelling Units (EDUs) times an assumed or measured average flow per EDU times a wet weather peaking factor. This method is often used in the initial design of the sanitary sewer system.

26. **Where does this Sanitary Sewer System Discharge to?**

Where it goes?	Name	WDID
<input type="text" value="Select ..."/>	<input type="text"/>	<input type="text"/>
<input type="text" value="Select ..."/>	<input type="text"/>	<input type="text"/>
<input type="text" value="Select ..."/>	<input type="text"/>	<input type="text"/>
<input type="text" value="Select ..."/>	<input type="text"/>	<input type="text"/>

Select whether your collection sewer system discharges to a sanitary sewer system or a wastewater treatment plant. Next enter the name and WDID (if Known) of the sanitary sewer system(s) or wastewater treatment plant(s) to which your Sanitary sewer system discharges.

27. **Sanitary Sewer System tributaries:**

a. Are there any tributary sanitary sewer systems:

Select whether another enrolled sanitary sewer system discharges to your sanitary sewer system. If the answer is “Yes”, question 26b must be answered.

b. If yes, please list below:

Tributary system owned by your agency?	Tributary Collection System Name	Tributary Collection System WDID
Yes ▾	<input type="text"/>	<input type="text"/>
Select ... ▾	<input type="text"/>	<input type="text"/>
Select ... ▾	<input type="text"/>	<input type="text"/>
Select ... ▾	<input type="text"/>	<input type="text"/>
Select ... ▾	<input type="text"/>	<input type="text"/>

Select whether the tributary sanitary sewer system is owned by your agency or another agency. Next enter the name and WDID (if Known) of the sanitary sewer system(s).

28. How many gravity sewer aerial or underground crossings of water bodies (i.e., gravity sewer lines crossing over or under water bodies) are located throughout the sewer system?

Enter the number of locations where a gravity sewer crosses over or under a water body (e.g., gravity sewers attached to the side of a bridge or other support). A pipeline parallel to a stream or creek should not be included unless the pipeline is conveying flow from one side of the water body to the other. A water body is any significant accumulation of water such as streams, rivers, ponds, lakes, reservoirs, wetlands, oceans or seas.

29. How many force main aerial or underground crossings of water bodies (e.g., pressurized sewer lines crossing over or under water bodies) are located throughout the sewer system?




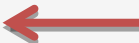
Enter the number of locations where a force main crosses over or under a water body (e.g., force mains attached to the side of a bridge or other support). A pipeline parallel to a stream or creek should not be included unless the pipeline is conveying flow from one side of the water body to the other. A water body is any significant accumulation of water such as streams, rivers, ponds, lakes, reservoirs, wetlands, oceans or seas.

30. How many siphons used to convey sewage are located throughout the sewer system?

Enter the number of wastewater siphons located throughout the sanitary sewer system.

2.3 SSO REPORTS

When you log on to SSO Database to report a sanitary sewer overflow (SSO) on the main menu you will click on the “SSO-Sanitary Sewer Overflows” link, then select your sanitary sewer system (if your agency owns more than one), next you are going to click on the “Reporting New SSO” link.

- [Collection System Questionnaire](#) 
Pertinent information regarding your collection system.
- [Sewer System Management Plan \(SSMP\) Certification](#) 
Certify SSMP completion
- [Reporting New SSO](#)  
Submit Individual SSO Reports.

This will bring you to Screen 1, which is where you fill in basic data about the SSO. On this screen you will enter some basic spill data and the SSO Database will then direct you to the appropriate spill data entry form (i.e., Category 1, Category 2, or Category 3). Figure 1 below is a flow chart illustrating how the categorization is determined. The volumes used by the SSO Database will be shown at the bottom of the page. **NOTE, all SSOs are required to be reported to the SSO database regardless of the SSO volume.**

You should note that the SSS WDRs defines an SSO as an overflow, spill, release, discharge or diversion of untreated or partially treated wastewater from a sanitary sewer system and it defines a sanitary sewer system as being upstream of a wastewater treatment plant head works. Therefore, discharges in a wastewater treatment plant, a reclaimed water system or even from the back of a tanker truck are not SSOs and should not be reported in the SSO Database. However, these types of sewage spills should be reported to your Regional Board per the requirements in the wastewater treatment plant NPDES permit (refer to the Monitoring and Reporting Program in your permit) and/or local Health Department.

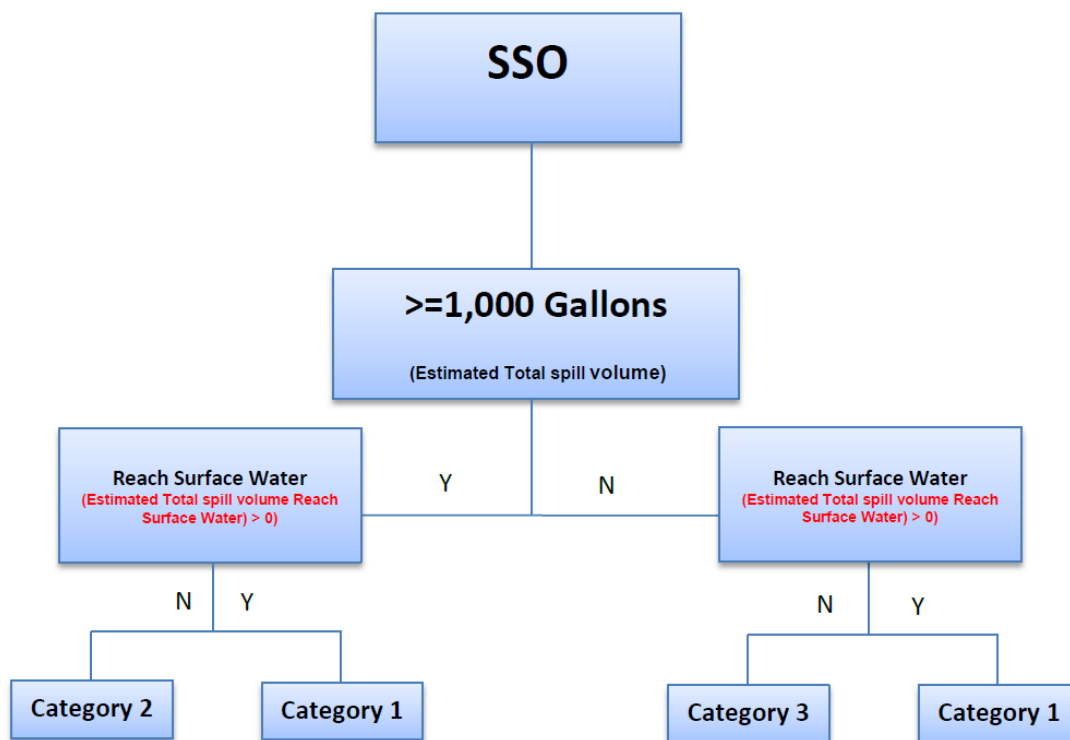


Figure 1 – SSO Categorization

2.3.1 SCREEN 1 FOR BASIC SPILL DATA

1. Physical location details

If one SSO event results in multiple appearance points in a sanitary sewer system asset, enter the GPS coordinates for the location of the SSO appearance point closest to the failure point, blockage or location of the flow condition that caused the SSO and provide descriptions of the locations of all other discharge points associated with the SSO event.

a. Spill location name

Enter the name of the location where the SSO occurred in the “Spill Location Name” field. This entry may be a general descriptor of the SSO location (e.g., street address, intersection, or manhole number or any other identification you wish to use).

b. Latitude of spill location

Enter the latitude of the spill location. A handheld GPS unit or the “GIS Tool” link on the SSO Database spill report page in the SSO Database can be used to determine this information. This field must be completed to “submit draft” for any SSO report but not to “save work in progress”.

c. Longitude of spill location

Enter the longitude of the spill location. A handheld GPS unit or the “GIS Tool” link on the SSO Database spill report page can be used to determine this information. This field must be completed to “submit draft” for any SSO report but not to “save work in progress”.

d. County

Enter the County where the SSO occurred. This field will be auto filled based on the location information provided above.

e. Regional Water Quality Control Board

Enter the Regional Water Quality Control Board where the SSO occurred. This field will be auto filled based on the location information provided above.

2. Estimate Spill Volumes

a. Estimated spill volume that reached a separate storm drain that flows to a surface water body?

Enter the volume, in whole numbers, that entered the separate storm drain.

b. Estimated spill volume recovered from the separate storm drain that flows to a surface water body?

Enter the volume, in whole numbers, that was recovered from the separate storm drain. **Do not include wash water recovered.**

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

Enter the volume, in whole numbers, that was discharged to a drainage channel.

Do not include any volume that entered a separate storm drain.

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

Enter the volume, in whole numbers, that was recovered from the drainage channel. Do not include volume recovered from the separate storm drain or wash water recovered.

e. Estimated spill volume discharged directly to a surface water body?

Enter the volume, in whole numbers, that was discharged directly to a surface water body.

f. Estimated spill volume recovered from the surface water body?

Enter the volume, in whole numbers, that was recovered from the surface water body. Refer to question 36 in section 3.0 for important notification requirements required before diverting from surface water bodies.

g. Estimated spill volume discharged to land?

Enter the volume, in whole numbers, that discharged to the land (e.g., soil, grass, curb, street, etc.)

h. Estimated spill volume recovered from the discharge to land?

Enter the volume, in whole numbers, recovered from the discharge to land. This includes discharges directly to land, and discharges to a storm drain system or drainage channel that flows to a storm water infiltration/retention structure, field, or other non-surface water location.

After entering all the required information, select “Continue” to go to the next screen. If there are any errors or missing information, the system will highlight the questions with errors on the form in red.

2.3.2 SCREEN 2 FOR CATEGORY 3 SSO

The SSO Database will direct you to the following screen based on the information you entered on Screen 1 if the spill is a Category 3 spill (i.e., the SSO was less than 1,000 gallons and did not reach surface waters). On this screen, you will enter additional data on the SSO that was not entered onto Screen 1.

Note that all of the data entered on Screen 1 was carried forward onto Screen 2. Questions 1-11 are automatically populated based on the data entered in the Estimated Spill Volumes fields on Screen 1. Questions 1-11 on Screen 2 should be reviewed for accuracy and can be over written with correct data as necessary. This step may be necessary to correct the “County” or “Regional Water Quality Control Board” fields if the spill occurs close to a boundary and/or your sanitary sewer system spans multiple counties or Regional Water Quality Control Boards.

There are 30 questions total with 22 (including the questions answered in Screen 1) that have to be answered to complete Screen 2 for a Category 3 SSO. These thirty questions are shown below with the questions carried over from Screen 1. Note that on this screen you can modify the information entered on Screen 1. Questions with one asterisk (*) are required to submit a “draft” report and questions with two asterisks (**) are required to certify the report.

1. Spill Type:

The spill type is automatically determined based on the information you entered on Screen 1. In this case, the SSO is a Category 3 SSO (i.e., a spill less than 1,000 gallons and not reaching surface waters).

2. Estimated spill volumes:*

a) Estimated spill volume that reached a separate storm drain that flows to a surface water body?

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

b) Estimated spill volume recovered from the separate storm drain that flows to a surface water body?

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

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

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

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

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

e) Estimated spill volume discharged directly to a surface water body?

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

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

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

g) Estimated spill volume discharged to land?

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

h) Estimated spill volume recovered from the discharge to land?

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

3. Did the spill discharge to a drainage channel and/or surface water?*

This question is auto populated based on the answers to the Estimated Spill Volumes on screen 1. A “Yes” will be displayed if the answer to question 2.a is greater than the answer to question 2.b, the answer to question 2.c is greater than zero, and/or the answer to question 2.e is greater than zero. A “No” will be displayed

if the answer to question 2.a equals the answer to question 2.b, the answer to question 2.c equals zero, and/or the answer to question 2.e equals zero.

4. Did the spill reach a storm drainpipe that is not part of a combined sewer system?*

This question is auto populated based on the answers to the Estimated Spill Volumes on screen 1. A “Yes” will be displayed if the answer to question 2.a is greater than zero. A “No” will be displayed if the answer to question 2.a equals zero.

5. If spill reached a separate storm drainpipe, was all of the wastewater fully captured from the separate storm drain and returned to the sanitary sewer system?*

This answer is auto populated based on the answers to the Estimated Spill Volumes. A “Yes” will be displayed if the answer to question 2.b equals the answer to question 2.a. A “No” will be displayed if the answer to question 2.b is less than the answer to question 2.a.

6. Spill location name:*

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

7. Latitude of spill location:*

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

8. Longitude of spill location:*

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

9. County:*

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

10. Regional Water Quality Control Board:*

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

11. Spill location description:

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

12. Number of Appearance Points:*

Enter the number of appearance points. If one SSO event results in multiple appearance points in a sewer system asset enter the number of appearance points if greater than one (1).

13. Spill appearance point:*

Select the spill appearance point from the “Spill Appearance Point:” dropdown. If you selected “other” you are required to enter a description in text box No. 14 below. The “Spill Appearance Point:” is where wastewater first surfaced on the spill site. Multiple

spill appearance points can be selected by holding the CTRL key on your keyboard.

14. Spill appearance point explanation:

If “Other” and/or multiple appearance points are selected, enter a description of the “Other” SSO appearance point not listed in the dropdown menu and/or, for multiple appearance points, enter a description including location details of each appearance point in this text field.

15. Final spill destination:**

Select the final destinations of the spill in the “Final Spill Destination” box. Multiple spill destinations can be selected by holding the CTRL key on your keyboard. If you selected “other” you are required to enter a description in the text box No 16 below. The “Final Spill Destination:” describes all areas that the wastewater flowed through and ultimately reached, which means multiple entries can be selected if necessary.

16. Explanation of final spill destination:

If the “final spill destination” is not listed in the dropdown menu and “Other” was selected, then enter a description of the final spill destination.

17. Estimated spill start date/time:*

Enter the estimated spill start date/time in a 24-hour clock format.

18. Date and time sanitary sewer system agency was notified of or discovered the spill:*

Enter when your agency was notified or discovered the spill date/time in a 24-hour clock format. The date/time has to be the same or later than the estimated spill start date/time.

19. Estimated Operator arrival date/time:*

Enter the estimated Operator arrival date/time in a 24-hour clock format. The date/time has to be the same or later than the estimated spill start date/time.

20. Estimated spill end date/time:**

Enter the estimated spill end date/time in a 24-hour clock format. The date/time has to be later than the estimated spill start date/time.

21. Spill cause:**

Select a cause for the spill from the dropdown menu. Multiple spill causes can be selected by holding the CTRL key on your keyboard. If the cause selected was “Other”, you are required to enter an explanation in text box No. 22 below.

22. Spill cause explanation:

If the “spill cause” is not listed in the dropdown menu and “Other” was selected in question 21, then enter a description of the spill cause.

23. Where did failure occur?***

Select where the failure occurred from the dropdown menu. Multiple failure locations can be selected by holding the CTRL key on your keyboard. If the cause selected is “Other”, you are required to enter an explanation in text box No. 24 below.

- 24. Explanation of where failure occurred:**
If the “where failure occurred” is not listed in the dropdown menu and “Other” was selected in question 23, then enter a description of where failure occurred.
- 25. Was this spill associated with a storm event?***
Select from the drop down whether a sewer flow condition resulting from storm induced inflow and/or infiltration where contributing factors for this SSO event.
- 26. Diameter of sewer pipe at the point of blockage or failure (if applicable):**
If applicable, enter the size in inches of the diameter of the sewer pipe where the point of blockage for the pipe or failure occurred.
- 27. Material of sewer pipe at the point of blockage or failure (if applicable):**
If applicable, enter the material of sewer pipe where the point of blockage for the pipe or failure occurred. Abbreviations such as PVC and VCP are acceptable.
- 28. Estimated age of sewer asset at the point of blockage or failure (if applicable):**
If applicable, enter the estimated age of the sewer asset, in whole numbers, where the point of blockage for the asset or failure occurred.
- 29. Explanation of volume estimation methods used:**
Give an explanation of the method(s) used to estimate the volume of the spill. The agency may refer to its spill response procedures or attach a sketch, if needed. The explanation may reference estimation methods contained within your agency’s SSO response procedures.
- 30. SSO Contact information:***
- a. Name and Title (Contact person who can answer specific questions about this SSO)
 - b. Contact Person Phone Number

2.3.3 SCREEN 2 FOR CATEGORY 2 SSO

The SSO Database will direct you to the following screen based on the information you entered on Screen 1 if the spill is a Category 2 spill (i.e., SSO was greater than 1,000 gallons and did not reach surface waters). On this screen, you will enter additional data on the SSO that was not entered onto Screen 1.

Note that all of the data entered on Screen 1 was carried forward onto Screen 2. Questions 1-11 are automatically populated based on the data entered in the Estimated Spill Volumes fields on Screen 1. Questions 1-11 on Screen 2 should be reviewed for accuracy and can be over written with correct data as necessary. This step may be necessary to correct the “County” or “Regional Water Quality Control Board” fields if the spill occurs close to a boundary and/or your sanitary sewer system spans multiple counties or Regional Water Quality Control Boards.

There are 36 questions total with 28 (including the questions answered in Screen 1) that have to be answered to complete Screen 2 for a Category 2 SSO. These thirty questions are shown below with the questions carried over from Screen 1. Note that on this screen you can modify the information entered on Screen 1. Questions with one asterisk (*) are required to submit a “draft” report and questions with two asterisks (**) are required to certify the report.

1. Spill Type:

This is automatically determined based on the information you entered on Screen 1. In this case, the SSO is a Category 2 SSO (i.e., spill is greater than 1,000 gallons and not reaching surface waters).

2. Estimated spill volumes:*

a) Estimated spill volume that reached a separate storm drain that flows to a surface water body?

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

b) Estimated spill volume recovered from the separate storm drain that flows to a surface water body?

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

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

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

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

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

e) Estimated spill volume discharged directly to a surface water body?

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

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

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

g) Estimated spill volume discharged to land?

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

h) Estimated spill volume recovered from the discharge to land?

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

3. Did the spill discharge to a drainage channel and/or surface water?*

This question is auto populated based on the answers to the Estimated Spill Volumes on Screen 1. A “Yes” will be displayed if the answer to question 2.a is greater than the answer to question 2.b, the answer to question 2.c is greater than zero, and/or the answer to question 2.e is greater than zero. A “No” will be displayed

if the answer to question 2.a equals the answer to question 2.b, the answer to question 2.c equals zero, and/or the answer to question 2.e equals zero.

4. Did the spill reach a storm drainpipe that is not part of a combined sewer system?*

This question is auto populated based on the answers to the Estimated Spill Volumes on Screen 1. A “Yes” will be displayed if the answer to question 2.a is greater than zero. A “No” will be displayed if the answer to question 2.a equals zero.

5. If spill reached a separate storm drainpipe, was all of the wastewater fully captured from the separate storm drain and returned to the sanitary sewer system? *

This answer is auto populated based on the answers to the Estimated Spill Volumes. A “Yes” will be displayed if the answer to question 2.b equals the answer to question 2.a. A “No” will be displayed if the answer to question 2.b is less than the answer to question 2.a.

6. Spill location name:*

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

7. Latitude of spill location:*

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

8. Longitude of spill location:*

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

9. County:*

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

10. Regional Water Quality Control Board:*

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

11. Spill location description:

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

12. Number of Appearance Points:*

Enter the number of appearance points. If one SSO event results in multiple appearance points in a sewer system asset enter the number of appearance points if greater than one (1).

13. Spill appearance point:*

Select the spill appearance point from the “Spill Appearance Point:” dropdown. If you selected “other” you are required to enter a description in text box No. 14 below. The “Spill Appearance Point:” is where wastewater first surfaced on the spill site. Multiple

spill appearance points can be selected by holding the CTRL key on your keyboard.

14. Spill appearance point explanation:*

If “Other” and/or multiple appearance points are selected, enter a description of the “Other” SSO appearance point not listed in the dropdown menu and/or, for multiple appearance points, enter a description including location details of each appearance point in this text field.

15. Final spill destination:**

Select the final destinations of the spill in the “Final Spill Destination” box. Multiple spill destinations can be chosen by holding the CTRL key on your keyboard. If you selected “other” you are required to enter a description in the text box No 16 below. The “Final Spill Destination:” describes all areas that the wastewater flowed through and ultimately reached, which means multiple entries can be selected if necessary.

16. Explanation of final spill destination:

If the “final spill destination” is not listed in the dropdown menu and “Other” was selected, then enter a description of the final spill destination

17. Estimated spill start date/time:*

Enter the estimated spill start date/time in a 24-hour clock format.

18. Date and time sanitary sewer system agency was notified of or discovered the spill:*

Enter when your agency was notified or discovered the spill date/time in a 24-hour clock format. The date/time has to be the same or later than the estimated spill start date/time.

19. Estimated Operator arrival date/time:*

Enter the estimated Operator arrival date/time in a 24-hour clock format. The date/time has to be the same or later than the estimated spill start date/time.

20. Estimated spill end date/time:**

Enter the estimated spill end date/time in a 24-hour clock format. The date/time has to be later than the estimated spill start date/time.

21. Spill cause:**

Select a cause for the spill from the dropdown menu. Multiple spill causes can be selected by holding the CTRL key on your keyboard. If the cause selected was “Other”, you are required to enter an explanation in text box No. 22 below.

22. Spill cause explanation:

If the “spill cause” is not listed in the dropdown menu and “Other” was selected in question 21, then enter a description of the spill cause.

23. Where did failure occur?***

Select where the failure occurred from the dropdown menu. Multiple failure locations can be selected by holding the CTRL key on your keyboard. If the cause selected is “Other”, you are required to enter an explanation in text box No. 24 below.

- 24. Explanation of where failure occurred:**
If the “where failure occurred” is not listed in the dropdown menu and “Other” was selected in question 23, then enter a description of where failure occurred.
- 25. Was this spill associated with a storm event?***
Select from the drop down whether a sewer flow condition resulting from storm induced inflow and/or infiltration were contributing factors for this SSO event.
- 26. Diameter of sewer pipe at the point of blockage or failure (if applicable):**
If applicable, enter the size in inches of the diameter of the sewer pipe where the point of blockage for the pipe or failure occurred.
- 27. Material of sewer pipe at the point of blockage or failure (if applicable):**
If applicable, enter the material of sewer pipe where the point of blockage for the pipe or failure occurred. Abbreviations such as PVC and VCP are acceptable.
- 28. Estimated age of sewer asset at the point of blockage or failure (if applicable):**
If applicable, enter the estimated age of the sewer asset, in whole numbers, where the point of blockage for the asset or failure occurred.
- 29. Spill response activities:***
Select the response activities from the dropdown menu that your agency completed in responding to the spill. Multiple response activities can be selected by holding the CTRL key on your keyboard. If your selection was “Other”, you are required to enter a description of the response activities in text box No. 30 below.
- 30. Explanation of spill response activities:**
If the “spill response activities” completed are not listed in the dropdown menu and “Other” was selected in question 29, enter a description of the spill response activities completed.
- 31. Spill response completion date:***
Enter the spill response completion date/time in a 24-hour clock format (i.e., when agency staff completed their cleanup work). The date/time has to be later than the estimated spill start date/time.
- 32. Spill corrective action taken:***
Select the corrective actions which were taken by your agency in response to the spill. Multiple corrective actions can be selected by holding the CTRL key on your keyboard. If your selection was “Other”, you are required to enter a description of the corrective actions taken in text box No. 33 below.
- 33. Explanation of spill corrective action taken:**
If the “spill corrective action taken” tasks completed are not listed in the dropdown menu and “Other” was selected, then enter a description of the spill corrective actions taken.
- 34. Is there an ongoing investigation:***
Select “yes” from the dropdown menu if there is an ongoing investigation of the SSO. Select “no” from the dropdown menu if the investigation of the SSO has been

completed.

35. Explanation of volume estimation methods used:

Provide a description of the method(s) used to estimate the volume of the spill. Attach your calculations and a sketch if needed. The explanation may reference estimation methods contained within your agency's SSO response procedures.

36. SSO Contact information:*

- a. Name and Title (Contact person who can answer specific questions about this SSO)
- b. Contact Person Phone Number

2.3.4 SCREEN 2 FOR CATEGORY 1 SSO

The SSO Database will direct you to the following screen based on the information you entered on Screen 1 if the spill is a Category 1 spill (i.e., the SSO reached surface waters). On this screen, you will enter additional data on the SSO that was not entered on Screen 1.

Note that all of the data entered on Screen 1 was carried forward onto Screen 2. Questions 1-11 are automatically populated based on the data entered in the Estimated Spill Volumes fields on Screen 1. Questions 1-11 on Screen 2 should be reviewed for accuracy and can be over written with correct data as necessary. This step may be necessary to correct the "County" or "Regional Water Quality Control Board" fields if the spill occurs close to a boundary and/or your sanitary sewer system spans multiple counties or Regional Water Quality Control Boards.

There are 47 questions total with 37 (including the questions answered in Screen 1) that have to be answered to complete Screen 2. These forty seven questions are shown below with the questions carried over from Screen 1. Note that on this screen you can modify the information entered on Screen 1. Questions with one asterisk (*) are required to submit a "draft" report and questions with two asterisks (**) are required to certify the report.

1. Spill Type:

This is automatically determined based on the information you entered on Screen 1. In this case, the SSO is a Category 1 SSO (i.e., the spill reached surface waters).

2. Estimated spill volumes:*

a) Estimated spill volume that reached a separate storm drain that flows to a surface water body?

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

b) Estimated spill volume recovered from the separate storm drain that flows to a surface water body?

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

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

The answer to this question is carried over from Screen 1. See section 2.3.1

for guidance.

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

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

e) Estimated spill volume discharged directly to a surface water body?

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

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

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

g) Estimated spill volume discharged to land?

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

h) Estimated spill volume recovered from the discharge to land?

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

3. Did the spill discharge to a drainage channel and/or surface water?*

This question is auto populated based on the answers to the Estimated Spill Volumes on Screen 1. A “Yes” will be displayed if the answer to question 2.a is greater than the answer to question 2.b, the answer to question 2.c is greater than zero, and/or the answer to question 2.e is greater than zero. A “No” will be displayed if the answer to question 2.a equals the answer to question 2.b, the answer to question 2.c equals zero, and/or the answer to question 2.e equals zero.

4. Did the spill reach a storm drainpipe that is not part of a combined sewer system?*

This question is auto populated based on the answers to the Estimated Spill Volumes on Screen 1. A “Yes” will be displayed if the answer to question 2.a is greater than zero. A “No” will be displayed if the answer to question 2.a equals zero.

5. If spill reached a separate storm drainpipe, was all of the wastewater fully captured from the separate storm drain and returned to the sanitary sewer system?*

This answer is auto populated based on the answers to the Estimated Spill Volumes. A “Yes” will be displayed if the answer to question 2.b equals the answer to question 2.a. A “No” will be displayed if the answer to question 2.b is less than the answer to question 2.a.

6. Spill location name:*

The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.

- 7. Latitude of spill location:***
The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.
- 8. Longitude of spill location:***
The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.
- 9. County:***
The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.
- 10. Regional Water Quality Control Board:***
The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.
- 11. Spill location description:**
The answer to this question is carried over from Screen 1. See section 2.3.1 for guidance.
- 12. Number of Appearance Points:***
Enter the number of appearance points. If one SSO event results in multiple appearance points in a sewer system asset enter the number of appearance points if greater than one (1).
- 13. Spill appearance point:***
Select the spill appearance point from the “Spill Appearance Point:” dropdown. If you selected “other” you are required to enter a description in text box No. 14 below. The “Spill Appearance Point:” is where wastewater first surfaced on the spill site. Multiple spill appearance points can be selected by holding the CTRL key on your keyboard.
- 14. Spill appearance point explanation:***
If “Other” and/or multiple appearance points are selected, enter a description of the “Other” SSO appearance point not listed in the dropdown menu and/or, for multiple appearance points, enter a description including location details of each appearance point in this text field.
- 15. Final spill destination:****
Select the final destinations of the spill in the “Final Spill Destination” box. Multiple spill destinations can be selected by holding the CTRL key on your keyboard. If you selected “other” you are required to enter a description in text box No 16 below. The “Final Spill Destination:” describes all areas that the wastewater flowed through and ultimately reached, which means multiple entries can be selected if necessary.
- 16. Explanation of final spill destination:**
If the “final spill destination” is not listed in the dropdown menu and “Other” was selected, then enter a description of the final spill destination

- 17. Estimated spill start date/time:***
Enter the estimated spill start date/time in a 24-hour clock format.
- 18. Date and time sanitary sewer system agency was notified of or discovered spill:***
Enter when your agency was notified or discovered the spill date/time in a 24-hour clock format. The date/time has to be the same or later than the estimated spill start date/time.
- 19. Estimated Operator arrival date/time:***
Enter the estimated Operator arrival date/time in a 24-hour clock format. The date/time has to be the same or later than the estimated spill start date/time.
- 20. Estimate spill end date/time:****
Enter the estimated spill end date/time in a 24-hour clock format. The date/time has to be the later than the estimated spill start date/time.
- 21. Spill cause: ****
Select a cause for the spill from the dropdown menu. Multiple spill causes can be selected by holding the CTRL key on your keyboard. If the cause selected was "Other", you are required to enter an explanation in text box No. 22 below.
- 22. Spill cause explanation: ****
If the "spill cause" is not listed in the dropdown menu and "Other" was selected in question 21, then enter a description of the spill cause.
- 23. Where did failure occur? ****
Select where the failure occurred from the dropdown menu. Multiple failure locations can be selected by holding the CTRL key on your keyboard. If the cause selected is "Other" you are required to enter an explanation in text box No. 24 below.
- 24. Explanation of where failure occurred:**
If the "where failure occurred" is not listed in the dropdown menu and "Other" was selected in question 23, then enter a description of where the failure occurred.
- 25. Was this spill associated with a storm event? ****
Select from the drop down whether a sewer flow condition resulting from storm induced inflow and/or infiltration where contributing factors for this SSO event.
- 26. Diameter of sewer pipe at the point of blockage or failure (if applicable):**
If applicable, enter the size in inches of the diameter of the sewer pipe where the point of blockage of the pipe or failure occurred.
- 27. Material of sewer pipe at the point of blockage or failure (if applicable):**
If applicable, enter the material of sewer pipe where the point of blockage of the pipe or failure occurred. Abbreviations such as PVC and VCP are acceptable.
- 28. Estimated age of sewer asset at the point of blockage or failure (if applicable):**
If applicable, enter the estimated age of the sewer asset, in whole numbers, where the point of blockage of the asset or failure occurred.

- 29. Spill response activities:****
Select the response activities from the dropdown menu that your agency completed in responding to the spill. Multiple response activities can be selected by holding the CTRL key on your keyboard. If your selection was “Other”, you are required to enter a description of the response activities in text box No. 30 below.
- 30. Explanation of spill response activities:**
If the “spill response activities” completed are not listed in the dropdown menu and “Other” was selected, then enter a description of the spill response activities completed.
- 31. Spill response completion date:****
Enter the spill response completion date/time in a 24-hour clock format (i.e., when agency staff completed their cleanup work). The date/time has to be later than the estimated spill start date/time.
- 32. Spill corrective action taken:****
Select the corrective actions which were taken by your agency in response to the spill. Multiple corrective actions can be selected by holding the CTRL key on your keyboard. If your selection was “Other”, you are required to enter a description of the corrective actions taken in text box No. 33 below.
- 33. Explanation of spill corrective action taken:**
If the “spill corrective action taken” tasks completed are not listed in the dropdown menu and “Other” was selected, then enter a description of the spill corrective actions taken.
- 34. Is there an ongoing investigation?:****
Select “yes” from the dropdown menu if there is an ongoing investigation of the SSO. Select “no” from the dropdown menu if the investigation of the SSO has been completed.
- 35. Visual inspection results from impacted surface water:**
Describe any observations made during visual inspections of surface waters impacted by the SSO.
- 36. Health warnings posted?:****
Select whether or not health warning signs or notices were posted at or near the water bodies, beaches, and/or other areas affected by the SSO.
- 37. Did the spill result in a beach closure (If YES, answer question 38)?:****
Select whether or not the SSO resulted in a beach or aquatic recreation area closure.
- 38. Name of closed beach(es):****
Enter the names of any beaches or aquatic recreation areas closed by the SSO. Use commas to separate multiple entries.
- 39. Name of impacted surface water(s):****
Enter the names of all surface waters impacted by the SSO. Use commas to

separate multiple entries. If a receiving surface water body is un-named, enter “Un-named Tributary to “XXXXX” where XXXXX is the name of the first named (e.g., on the USGS Topo Map for the area) downstream surface water body.

40. Water quality samples analyzed for:**

Select the water quality indicators for which water quality sample results were obtained. Multiple indicators can be chosen by holding the CTRL key on your keyboard. Select “No water quality samples taken” if the SSO reached a surface water, but water quality sampling was not performed. If your selection included “Other”, “Other chemical indicator(s)”, or “Biological Indicator(s)”, you are required to enter an explanation of the other indicators analyzed in text box No. 41 below.

41. Explanation of water quality samples analyzed for:

If “Other”, “Other chemical indicator(s)”, or “Biological Indicator(s)” were selected, enter an explanation of the indicators analyzed in the water quality sample(s).

42. Water quality sample results reported to:**

Select which agencies the water quality sample results were reported to. Multiple agencies can be selected by holding the CTRL key on your keyboard. Select “No water quality samples taken” if the SSO reached a surface water, but water quality sampling was not performed. If your selection includes “Other”, you are required to enter the names of the other agencies reported to in text box No. 43 below.

43. Explanation of water quality samples reported to:

If “Other” was selected, then enter the names of the other agencies the water quality sample results were reported to.

44. Explanation of volume estimation methods used:**

Provide a description of the method(s) used to estimate the volume of the spill. Attach your calculations and a sketch if needed. The explanation may reference estimation methods contained within your agency’s SSO response procedures.

45. Cal OES Control Number:**

For spills of 1,000 gallons or greater, enter the control number received from Cal OES when you notified them of the SSO. The control number must be entered without dashes. If multiple notifications were made to Cal OES, use the control number for the first notification. The control number can also be found on the Cal OES website at: [http://w3.calema.ca.gov/operational/mal haz.nsf/\\$defaultview](http://w3.calema.ca.gov/operational/mal haz.nsf/$defaultview). NOTE: Per section B.3 of the SSS WDRs, Monitoring and Reporting Program (MRP), information provided to Cal OES must be updated related to volume and impacts to surface water if there are significant changes to this information after your initial report.

46. Cal OES called date/time:**

Enter the date and time Cal-OES was notified in a 24-hour clock format. If multiple notifications were made to Cal-OES, use the first call time associated with the control number entered in box No. 45 above. The call date and time can be found on the Cal OES website at: [http://w3.calema.ca.gov/operational/mal haz.nsf/\\$defaultview](http://w3.calema.ca.gov/operational/mal haz.nsf/$defaultview)

47. SSO Contact information:*

- a. Name and Title (Contact person who can answer specific questions about this SSO)
- b. Contact Person Phone Number

2.4 PRIVATE LATERAL SEWER DISCHARGE (PLSD)

The MRP for the SSS WDRs requires that all Category 1, Category 2, and Category 3 SSOs from an Enrollee's sanitary sewer systems be reported to the SSO Database, however, when failures from Private Laterals result in sewage discharges and the enrollee has knowledge of it, they are not required to report those discharges to the SSO Database. The enrollee can, however, report the PLSD to the SSO Database voluntarily.

Generally, a sanitary sewer lateral is defined as the sewer line running from a connection to a sewer main line to a structure or facility connected to that sanitary sewer system. The lower lateral is usually defined as that portion of the lateral running from the point of connection to the sewer main to the property line or easement line of the parcel being served. The upper lateral is usually defined as that portion of the lateral running from the property or easement line to the structure(s) being served. Some sewer agencies do not own or maintain either portion of the lateral, some agencies own and maintain only the lower lateral, and in some cases, an agency may own and maintain both the upper and lower lateral.

There are thirty four (34) questions total with, depending on how the location information is answered, twelve to fifteen (12-15) of those questions that have to be answered to complete a PLSD report.

2.4.1 PLSD REPORT

1. Spill Location Name:*

Enter the name of the party responsible for the spill. Do not enter private party information (i.e., name or other identifying information).

2. Estimated spill volume?*

Enter the total estimated spill volume. This can be ascertained by questioning the property occupants regarding the spill duration and estimating the volume using standard spill volume estimation methods.

3. Did the spill discharge to a drainage channel and/or surface water?*

This can be determined by the physical evidence at the site.

4. Did the spill reach a storm drainpipe that is not part of a combined sewer system?*

This can be determined by the physical evidence at the site.

5. If spill reached a separate storm drainpipe, was all of the wastewater fully captured from the separate storm drain and returned to the sanitary sewer system?*

If your agency assisted the private property owner in the cleanup of the site this can be determined. The answer may also be determined by questioning property owners.

- 6. Estimated volume of spill recovered:**
If your agency assisted the private property owner in the cleanup of the site this can be determined. The answer may also be determined by questioning the property occupants.
- 7. Estimated volume of spill that reached surface water, drainage channel, or not recovered from a separate storm drain:**
If your agency assisted the private property owner in the cleanup of the site this can be determined. The answer may also be determined by questioning the property occupants.
- 8. Latitude of spill location (only required if questions 10-14 are not answered): ***
If questions 10 – 14 are not answered, enter the latitude of the spill location. A handheld GPS unit or the “GIS Tool” link on the SSO Database spill report page can be used to determine this information. This field must be completed to “submit draft” for any SSO report but not to “save work in progress”.
- 9. Longitude of spill location(only required if questions 10-14 are not answered): ***
If questions 10 – 14 are not answered, enter the longitude of the spill location. A handheld GPS unit or the “GIS Tool” link on the SSO Database spill report page can be used to determine this information. This field must be completed to “submit draft” for any SSO report but not to “save work in progress”.
- 10. Physical Location Details (only required if questions 8 & 9 are not answered):***
If questions 8 and 9 are not answered, for questions 10 – 14, enter the street number, street name, Suite or Apt, City and zip code of the site of the PLSD.
- 15. Spill location description:**
Enter a detailed spill location description. This field is optional and allows for a detailed description of the spill site including any significant characteristics or considerations.
- 16. Spill appearance point:***
Select the spill appearance point from the “Spill Appearance Point:” dropdown. If you selected “other”, you are required to enter a description in text box No. 17 below. The “Spill Appearance Point:” is where wastewater first surfaced on the spill site. Multiple spill appearance points can be selected by holding the CTRL key on your keyboard.
- 17. Spill appearance point explanation:**
If “Other” and/or multiple appearance points are selected, enter a description of the “Other” SSO appearance point not listed in the dropdown menu and/or, for multiple appearance points, enter a description including location details of each appearance point in this text field.
- 18. Final spill destination:**
Select the final destinations of the spill in the “Final Spill Destination” field. Multiple spill locations can be selected by holding the CTRL key on your keyboard. If you selected “other”, you are required to enter a description in text box No 19 below. The

“Final Spill Destination” describes all the areas that wastewater flowed through and ultimately reached, which means multiple entries can be selected if necessary.

19. Explanation of final spill destination:

If the “final spill destination” is not listed in the dropdown menu and “Other” was selected question 18, then enter a description of the final spill destination

20. Estimated spill start date/time:*

Enter the estimated spill start date/time in a 24-hour clock format.

21. Date and time sanitary sewer system agency was notified of or discovered the spill: *

Enter the date/time, in a 24-hour clock format, when your agency was notified or discovered the spill. The date/time has to be the same or later than the estimated spill start date/time.

22. Estimated Operator arrival date/time:

Enter the estimated Operator arrival date/time in a 24-hour clock format. The date/time has to be the same or later than the estimated spill start date/time.

23. Estimated spill end date/time:

Enter the estimated spill end date/time in a 24-hour clock format. The date/time has to be the later than the estimated spill start date/time.

24. Spill cause:*

Select a cause for the spill from the dropdown menu. Multiple spill causes can be selected by holding the CTRL key on your keyboard. If the cause selected was “Other”, you are required to enter an explanation in text box No. 25 below.

25. Spill cause explanation:

If the “spill cause” is not listed in the dropdown menu and “Other” was selected in question 24, then enter a description of the spill cause.

26. PLSD Source:

Select the source of the spill from the dropdown menu. Multiple sources can be selected by holding the CTRL key on your keyboard. If the source selected is “Other”, you are required to enter an explanation in text box No. 27 below.

27. Explanation of PLSD Source:

If the “PLSD Source” is not listed in the dropdown menu and “Other” was selected in question 26, then enter a description of the PLSD Source.

28. Where did failure occur?*

Select where the failure occurred from the dropdown menu. Multiple failure locations can be selected by holding the CTRL key on your keyboard. If the location selected is “Other”, you are required to enter an explanation in text box No. 29 below.

29. Explanation of Where Failure Occurred:

If the “where failure occurred” is not listed in the dropdown menu and “Other” was selected in question 28, then enter a description of where the failure occurred.

- 30. Diameter of sewer pipe at the point of blockage or failure (if applicable):**
If applicable, enter the lateral diameter in inches.
- 31. Material of sewer pipe at the point of blockage or failure (if applicable):**
If applicable, enter the material type of the lateral.
- 32. Estimated age of sewer asset at the point of blockage or failure (if applicable):**
If applicable, enter the estimated age of the sewer asset in whole numbers.
- 33. Spill response activities:**
Select the response activities from the dropdown menu that your agency completed in responding to the spill. Multiple response activities can be selected by holding the CTRL key on your keyboard. If your selection was “Other”, enter a description of the response activities in text box No. 34 below.
- 34. Explanation of spill response activities:**
If the “spill response activities” completed are not listed in the dropdown menu and “Other” was selected in question 33, then enter a description of the spill response activities completed.

2.5 NO SPILL CERTIFICATION

The SSS WDRs require enrollees to certify on a monthly basis in the SSO Database that they have not had any overflows for months in which they do not report one or more SSOs. This is a simple process that takes about three clicks of a mouse.

When you are at the main SSO Database screen for your sanitary sewer system, click on the “Generate No Spill Certification” button and the no spill certification screen will appear. You will see three items: (1) a paragraph starting with “I certify under penalty of law that ...”; (2) drop downs and a certification button; and (3) a list of previous No Spill Certifications that your sanitary sewer system staff has submitted (see sample below).

To certify a no-spill month, use the two drop downs to select the month and year and then click on the “Certify” button and your certification will be added to the list below. You should note that in reviewing the list of previous certifications, if you find a month that had no spills and for some reason it was not reported, you can certify that month at any time.

If you have a spill that continues over two months (i.e., starts on the last day of a month but is not stopped until the next month), you should report the spill on the month that it started and, if no other spills occur in the next month in which the spill ended, then that month can be considered a no-spill month. If you have reported one or more Private Lateral Sewage Discharges in a given month but had no SSOs then, a no-spill certification is required to be submitted for that month.

3.0 FREQUENTLY ASKED QUESTIONS

1. What is a sanitary sewer overflow (SSO)?

An SSO is any overflow, spill, release, discharge or diversion of untreated or partially treated wastewater from a sanitary sewer system. SSOs include:

- a. Overflows or releases of untreated or partially treated wastewater that reach waters of the United States;
- b. Overflows or releases of untreated or partially treated wastewater that do not reach waters of the United States; and
- c. Wastewater backups into buildings and on private property that are caused by blockages or flow conditions within the publicly owned portion of a sanitary sewer system.

If a release of sewage in a construction trench results from construction activity, this is not considered an SSO unless the spill escapes the construction trench.

2. What is a sanitary sewer system?

Any system of pipes, pump stations, sewer lines or other conveyances, upstream of a wastewater treatment plant head-works, used to collect and convey wastewater to the publicly owned treatment facility or another sanitary sewer system. Temporary storage and conveyance facilities (such as vaults, temporary piping, construction trenches, wet wells, impoundments, tanks, etc.) are considered to be part of the sanitary sewer system, but discharges into these temporary storage facilities are not considered to be SSOs. Other common terms for a sanitary sewer system are collection system, wastewater collection system, and sewer system (not to be confused with a storm sewer).

3. What is the purpose of Statewide General Waste Discharge Requirements for Sanitary Sewer Systems – Water Quality Order No. 2006-0003-DWQ (SSS WDRs)?

The purpose of the SSS WDRs is to uniformly regulate sanitary sewer systems throughout the State in an effort to reduce the number and volume of SSOs. The SSS WDRs requires sanitary sewer system agencies to implement sewer system management plans and electronically report all SSOs. The SSS WDRs is available for viewing on the State Water Resource Control Board's (State Water Board's) SSO program web page – www.waterboards.ca.gov/sso/index.html.

4. Who has to apply for coverage under the SSS WDRs?

All federal and state agencies, municipalities, counties, districts, and other public entities that own or operate a sanitary sewer system comprised of more than one mile of pipes or sewer lines which collects and conveys untreated wastewater to a publicly owned treatment facility in the State of California are required to apply for coverage under the SSS WDRs. If your sanitary sewer system has one mile or less of sewer pipes or lines, your agency is not required to apply for coverage under the SSS WDRs.

5. How does a sanitary sewer system agency apply for coverage under the SSS WDRs?

To apply for coverage under the SSS WDRs, an agency needs to complete and submit a Notice of Intent (available at State Water Board's SSO program web

page - http://www.waterboards.ca.gov/water_issues/programs/ssw/docs/noi.pdf) to the State Water Board at the address listed on the form. Additionally, instructions on how to complete the Notice of Intent form are available on the [SSO program web page](#).

6. Do sanitary sewer system agencies have to report all SSOs?

Yes. All SSOs from sanitary sewer systems that are covered under the SSS WDRs must be reported electronically to the State Water Board's online SSO Database through the California Integrated Water Quality System (CIWQS). This reporting is in addition to any other notification/reporting that the sanitary sewer system agency is required to do for other State agencies.

7. How do sanitary sewer system agencies report SSOs to meet the requirements of the SSS WDRs?

SSO reports are submitted electronically through the State Water Board's online SSO Database available at <http://ciwqs.waterboards.ca.gov/>.

8. Do sanitary sewer system agencies still have to report SSOs to other agencies?

Yes. Sanitary sewer system agencies must fulfill any and all other applicable SSO reporting requirements pertaining to other agencies or statutes/regulations. The reporting requirements of the SSS WDRs do not supersede or preclude, and are in addition to, reporting requirements from other agencies.

Typically, reporting to other agencies is limited to notification of Cal OES for spills to surface water of 1,000 gallons or more and notification of your local Health Department for spills meeting their threshold reporting requirements. When Cal OES is notified, they will notify all applicable agencies in your jurisdiction of the spill. You should inquire with your local agencies and Health Department staff regarding their notification and reporting requirements.

9. If a sanitary sewer system agency doesn't have any SSOs during the month, does it still have to report?

Yes. If no SSOs occurred during a calendar month, the sanitary sewer system agency must submit a "no spill" certification in the SSO Database.

10. Do sanitary sewer system agencies covered under the SSS WDRs have to report a SSO that results in sewage spilling into someone's home or onto private property?

If the SSO is caused by blockages or flow conditions within the publicly owned portion of the sanitary sewer system, then it must be reported to the SSO Database as an SSO, regardless of the specific spill appearance point.

11. What is a sewer system management plan (SSMP)?

An SSMP is a plan and schedule to properly manage, operate, and maintain all parts of the agencies sanitary sewer system. The SSS WDRs specifies the elements to be included in an SSMP.

12. Who has to implement an SSMP?

All sanitary sewer system agencies that are covered under the SSS WDRs must develop and implement an SSMP.

13. When do sanitary sewer system agencies have to implement their SSMP?

The [Statewide General WDRs for Sanitary Sewer Systems \(SSS WDRs\), WQO No. 2006-0003-DWQ](#) specifies the SSMP implementation schedule that each sanitary sewer system agency was required to follow on adoption of the SSS WDRs. If you are enrolling after adoption of the SSS WDRs, contact State Water Board SSO Reduction Program staff, and they will work out a reasonable schedule with you for development of the SSMP.

14. What if an element of the SSMP isn't applicable to an agency's sanitary sewer system?

The sanitary sewer system agency doesn't need to implement an element of the SSMP if it isn't applicable to their sanitary sewer system. However, the agency must provide an explanation in the SSMP of why that element isn't applicable to their sanitary sewer system and a statement indicating that element will be added if it becomes applicable in the future. If that element becomes applicable in the future, the agency must develop and implement that specific element.

15. Does a sanitary sewer system agency covered under the SSS WDRs have to report the status of their SSMP implementation?

Yes. Each completed phase of an agency's SSMP implementation must be certified in the SSO Database.

16. Do sanitary sewer system agencies have to pay a fee if they are covered under the SSS WDRs?

Yes. All sanitary sewer system agencies covered under the SSS WDRs must pay an annual fee according to the State Water Board's [Waste Discharge Requirement Fee Schedule](#). Once enrolled, agencies will be automatically billed each subsequent year by the State Water Board.

17. How do I remove an erroneous SSO Report or a No-Spill Certification from the database?

If an SSO or No-spill Certification needs to be removed from the database, the CIWQS Help Center needs to be contacted by email. The email should specify the event id# and include a brief explanation of why SSO report or No-Spill Certification should be removed. Valid reasons for SSO Report deletions include, but may not be limited to, duplicate reports and erroneous reports (e.g., the spill turned out to be potable water). Valid reasons for No-Spill certification removals include, but may not be limited to, erroneous No-Spill certifications (e.g., there actual was an SSO in the agencies system for the month in which the No-Spill certification was filed).

18. How often do I have to update my sanitary sewer system Questionnaire?

The Sanitary Sewer System Questionnaire is required to be updated at least every twelve months. If you do not update the Sanitary Sewer System Questionnaire within twelve months of initially filling it out or your last update, the SSO Database will not allow you to enter any reports or certifications until the questionnaire is updated.

19. How do I certify the SSMP elements in CIWQs?

Once the SSMP elements are completed the completion dates for each of the elements is required to be entered in the SSO Database by the agencies LRO.

20. How do I reset my Password?

The password can be reset manually in the SSO Database login screen (<https://ciwqs.waterboards.ca.gov/ciwqs/forgotPassword.jsp>) or by calling the CIWQS Help Center at 866-79-CIWQS (24977).

21. Why do I receive the automated email reminders?

The Email reminders are sent each month to sanitary sewer systems enrolled in the SSS WDRs with outstanding reporting issues like missed No-Spill certifications or draft reports that are overdue for certification. The outstanding items will be listed in the email reminders until the items are completed or corrected in the SSO Database.

22. How do I remove personnel (i.e., LROs and DSs) from the SSO Database?

Agencies are required to notify the State Water Board when there is a change in personnel registered in the SSO Database (e.g., an LRO retires). Request for removal of personnel registered in the SSO Database should be made in writing to the CIWQS Help Center at CIWQS@waterboards.ca.gov.

23. How do I become a Legally Responsible Official (LRO) or Data Submitter (DS) for my agency?

The forms can be downloaded from the SSO Reduction Program Website:
http://www.waterboards.ca.gov/water_issues/programs/ssodocs/lro_form.pdf
http://www.waterboards.ca.gov/water_issues/programs/ssodocs/datasubmitter_form.pdf

Agencies are encouraged to enroll multiple personnel as LROs and DSs to ensure SSO reporting and other reporting requirements of the SSS WDRs can be completed on time in the case of staff vacations, sickness, etc.

24. Can I share my username and password?

NO, that activity is considered a fraudulent activity and may be prosecuted as criminal activity.

25. Who can be contacted for additional information?

For additional information, please contact the:

CIWQS Help Center
Phone: 866-79-CIWQS (24977)
Email: ciwqs@waterboards.ca.gov
Monday through Friday (excluding State Holidays)
8:00 a.m. - 5:00 p.m.

Or

SSO Reduction Program Staff
http://www.waterboards.ca.gov/water_issues/programs/sso/index.shtml#contact

26. What INFORMAL enforcement could an Enrollee expect for not complying with the SSS WDRs?

- a. Verbal warning.
- b. Notice of Violation (NOV).
- c. Staff Enforcement Letter
 - i. Penalties of \$10,000 per day and \$10 per gallon for spills over 1,000 gallons (per Water Code 13350 or 13383).

For additional information, contact the [State Water Board Office of Enforcement](#) at 916-341-5272.

27. What FORMAL enforcement could an Enrollee be subject to for not complying with the SSS WDRs?

- a. Water Code 13267 Order:
 - i. Technical report/justified by need.
- b. Discharge To Surface Waters/Storm Drain Not Recovered:
 - i. Penalties of \$10,000 per day and \$10 per gallon for spills over 1,000 gallons (per Water Code 13350 or 13383)
- c. Violations of the SSS WDRs not associated with a discharge:
 - Water Code 13268 violations (\$1,000 per day for failure to):
 - i. Failure to comply with any MRP requirement, including:
 - 1. Failure to report and certify all SSOs.
 - 2. Failure to accurately reporting (i.e., intentional falsification) of any SSO.
 - 3. Failure to provide 2 hour notification for an SSO to surface water of 1,000 gallons or more.
 - 4. Failure to submit a draft SSO report within the required time line (e.g., failure to submit draft Category 2 SSO report within 3 business days).
 - 5. Failure to submit a certified SSO report within the required time line (e.g., failure to submit certified Category 1 SSO report within 15 business days).
 - 6. Failure to certify SSMP elements within the required timeframes.
 - 7. Failure to implement the SSMP as specified in the adopted plan.
 - 8. Failure to comply with any record keeping requirement.
 - 9. Failure to complete the questionnaire or update it every twelve months.
 - 10. Failure to complete an SSMP audit within required timeframes.

28. Where can I find some examples of FORMAL enforcement actions that have been taken by the State or Regional Water Boards?

- a. [Enforcement Reports.](#)
- b. [Region 3 \(Central Coast Water Board\).](#)
- c. [Region 9 \(San Diego Water Board\).](#)
- d. [Region 2 \(San Francisco Bay Area Water Board\).](#)
- e. [Region 4 \(Los Angeles Water Board\).](#)
- f. [Region 5 \(Central Valley Water Board\).](#)

29. If my agency owns multiple sanitary sewer systems of one mile or greater that are not contiguous, are we required to submit an NOI (i.e., enroll) each sanitary sewer system separately or can they all be included under one NOI?

Enrollees who own multiple sanitary sewer systems meeting enrollment requirements that are not physically connected are required to enroll each distinct sanitary sewer system separately under the SSS WDRs if they are managed as distinct assets in the form of separate sanitation districts, under separate operations and maintenance, and/or capital improvement budgets, or are otherwise managed as distinct and separate sanitary sewer systems.

30. What is the difference between a PLSD and an SSO?

The failure point determines the difference between a PLSD and an SSO. PLSDs are sewage discharges that are caused by blockages or other problems within a privately-owned lateral or other private sewer asset, regardless of actual sewage appearance point(s). SSOs are sewage discharges that are caused by blockages or other problems within the publicly-owned sanitary sewer system, regardless of actual sewage appearance point(s). For instance, if a blockage in the publicly –owned sanitary sewer system causes a back-up in a private residence (e.g., a basement, a cleanout), the overflow should be reported to the SSO Database as an SSO not a PLSD.

31. Do I have to submit my internal two-year audits to the State and Regional Water Boards?

No, unless it is requested by the State and/or Regional Water Boards. The Audit findings should be kept in your records and made available upon State and/or Regional Water Board staff request.

32. When is governing board approval required for changes to the SSMP?

The SSMP must be updated every five (5) years, and must include any significant program changes. Re-certification by the governing board of the SSMP is only required, in accordance with section D.14 of the SSS WDRs, when significant updates to the SSMP are made. Significant updates generally mean SSMP updates requiring additional monies to implement the SSMP which must be approved by the governing board.

33. Can I register multiple LROs and DSs for my sanitary sewer system?

Yes, it is encouraged to have multiple LROs and DSs. See [Section 1.1](#) for additional information.

34. Where can I access SSO data submitted by my agency?

SSO data is publicly available via the [SSO Reduction Program website](#).

- a. [Interactive SSO Report](#) - The SSO Report allows users to view summary information of the certified SSOs reported by Enrollees as well as complete certified reports submitted for specific sewage discharge locations.
- b. [Public Sewage Spill Incident Map](#) - These interactive geographic information system (GIS) maps, updated nightly, graphically display all certified sanitary sewer overflow (SSO) reports entered by enrolled sanitary sewer systems. The GIS map data includes the spill location, amount, cause, and name of the responsible or reporting agency.

- c. [SSO Data Flat Files](#) – These files contain all the raw data submitted to the SSO Database. The raw data files include draft, work in progress, and certified SSO and PLSD reports.

35. Do I have to notify other agencies if my agency intends to recover sewage from a surface water?

Yes. Based on guidance from the California Department of Fish and Wildlife (CDFW), Lake and Streambed Alteration Program, Habitat Conservation Planning Branch staff, the following notifications and permits may be required to recover water from a surface water body:

For Lake and Streambed Alteration program purposes, a formal notification to the Department will be necessary to block a creek for any purpose. If the applicant has an agreement before the spill occurs, there will likely be measures within the agreement that include a spill contingency plan outlining steps necessary to protect fish and wildlife resources.

In the event of an emergency, work can begin without entering into an agreement with the Department, however an Emergency Notification must still be sent to the Department within 14 days of beginning work. Emergencies are defined by the program as follows:

- 1) Immediate emergency work necessary to protect life or property;
- 2) Immediate emergency repairs to public service facilities necessary to maintain service as a result of a disaster in an area in which the Governor has proclaimed a state of emergency; and/or
- 3) Emergency projects undertaken, carried out, or approved by a state or local governmental agency to maintain, repair, or restore an existing highway, as defined in Vehicle Code section 360, within the existing right-of-way of the highway, that has been damaged as a result of fire, flood, storm, earthquake, land subsidence, gradual earth movement, or landslide, within one year of the damage.

The Notification forms, instructions and current fee schedule can be accessed online at <http://www.dfg.ca.gov/habcon/1600/forms.html>. The complete Notification along with all applicable fees should be sent to the regional office serving the county in which the project will take place. Regional contact information can also be accessed online at <http://www.dfg.ca.gov/regions/>. Enrollees can contact CDFW at **1-888-334-2258**.

If there are listed species, the entity may need an Incidental Take Permit (ITP) from the California Endangered Species Act (CESA) permitting program. A regional representative for the office serving the county in which a project may take place will be able to assist you in navigating the Department permits an entity may need for this type of work. You can find contact information for regional offices online at <http://www.dfg.ca.gov/regions/>.

In addition, the agencies noted below may also need to be contacted to gain approval for diverting water from waters of the U.S. and waters of the State:

State agencies:

- Coastal Commission
- Department of Conservation
- Department of Forestry
- Department of Water Resources
- Regional Water Quality Control Boards
- State Lands Commission

Federal agencies:

- NOAA Fisheries
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- U.S. Forest Service

SSO Reduction Program Staff acknowledges the efforts that some agencies take to mitigate the effects of SSOs that reach surface waters. However, staff believes that regardless of the amount of wastewater recovered from a surface water, the damage to the surface water may not be mitigated, and may be exacerbated, by recovery of the comingled sewage and receiving water. Each case is unique, and the enrollees should follow the procedures outlined in their Overflow Emergency Response Plan element of the SSMP to cleanup and mitigate the effects of their SSOs.

4.0 LIST OF ACRONYMS

BACWA	Bay Area Clean Water Agencies
BMP	Best Management Practice
CCTV	Closed-Circuit Television
CDO	Cease and Desist Order
CIP	Capital Improvements Program
CIWQS	California Integrated Water Quality System
CMMS	Computerized Maintenance Management System
CVCWA	Central Valley Clean Water Agencies
CWEA	California Water Environmental Association
CY	Calendar Year
DS	Data Submitter
DWQ	Department of Water Quality (of the State Water Resources Control Board)
ES	Executive Summary
FOG	Fats, Oils, and Grease
FSE	Food Service Establishments

FY	Fiscal Year
GIS	Geographic Information System
GSC	Grease Source Control
I/I	Infiltration and Inflow
LRO	Legally Responsible Official
MUD	Municipal Utility District
NGO	Non-Government Organization
NOV	Notice of Violation
O&M	Operations & Maintenance
PLCO	Property Line Clean-Out
PM	Preventive Maintenance
POTW	Publicly Owned Treatment Works
PVC	Polyvinyl Chloride
QA/QC	Quality Assurance/Quality Control
RWQCB	Regional Water Quality Control Board
SCADA	Supervisory Control and Data Acquisition
SECAP	System Evaluation and Capacity Assurance Plan
SOP	Standard Operating Procedure
SSMP	Sewer System Management Plan
SSO	Sanitary Sewer Overflow
SSS WDR	Waste Discharge Requirements for Sanitary Sewer Systems
SWRCB	State Water Resources Control Board
TVI	Television Inspection
USEPA	United States Environmental Protection Agency
VCP	Vitrified Clay Pipe
WDR	Waste Discharge Requirements
WDID	Waste Discharge Identification Number
WEF	Water Environment Federation
WWTP	Wastewater Treatment Plant

5.0 GLOSSARY OF TERMS

Enrollee – A public entity that owns or operates a sanitary sewer system and has submitted a complete and approved application for coverage under Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (WQO No. 2006-0003-DWQ)

Event ID – A unique identifier assigned by the SSO Database to each reported SSO or private lateral sewage discharge.

Lateral (also called Service Lateral) – The segment of pipe which connects a private home, building, or development to the publicly owned sewer main. The responsibility for maintaining a lateral can be solely that of the sewerage agency or private property owner; or it can be shared between the two parties. Local communities and land ownership dictate lateral responsibility and the basis for a shared arrangement, if it applies. See Lower Lateral and Upper Lateral definitions.

Lower Lateral – That portion of a lateral usually from the property line or easement line to the sewer main. Sewer agencies may or may not be responsible for maintenance of this portion of the lateral. If not, the lower lateral is owned and maintained by the property owner of the property its serves.

Miles of Private Laterals – Amount of private laterals tributary to an Enrollee’s sanitary sewer system, which private property owners are responsible for maintaining, expressed in miles.

Percent Reached Surface Water – Volume of sewage discharged from an SSO or PLSD that reached surface water divided by the total volume of the SSO or PLSD.

Percent Recovered – Volume of the SSO or PLSD that was captured and returned to the sanitary sewer system or private lateral divided by the total volume of the SSO or PLSD.

Private Lateral – Privately owned lateral.

Private Lateral Sewage Discharge (PLSD) – Sewage discharges that are caused by blockages or other problems within privately owned laterals or other private sewer system assets which are tributary to the reporting Enrollee’s sanitary sewer system. Reports of these events are submitted by Enrollees on a voluntary basis but are not their responsibility. This type of sewage discharge is the responsibility of the private lateral owner.

Sanitary Sewer Overflow (SSO) – Any overflow, spill, release, discharge or diversion of untreated or partially treated wastewater from a sanitary sewer system. SSOs include:

- i. Overflows or releases of untreated or partially treated wastewater that reach waters of the United States;

- ii. Overflows or releases of untreated or partially treated wastewater that do not reach waters of the United States ; and
- iii. Wastewater backups into buildings and on private property that are caused by blockages or flow conditions within the publicly owned portion of a sanitary sewer system.

Sanitary Sewer System – For the purposes of the SSS WDRs, any system of pipes, pump stations, sewer lines, or other conveyances, upstream of a wastewater treatment plant head works which is comprised of more than one mile of pipes and sewer lines, used to collect and convey wastewater to a publicly owned treatment facility.

Service Lateral – See Lateral definition.

Spill – Generic term referring to any sewage discharge (i.e., SSO or private lateral sewage discharge) resulting from a failure in a sanitary sewer system or privately owned lateral or other private sewer system asset.

SSO Category 1 – Discharges of untreated or partially treated wastewater of any volume resulting from an enrollee’s sanitary sewer system failure or flow condition that:

- Reach surface water and/or reach a drainage channel tributary to a surface water; or
- Reach a municipal separate storm sewer system and are not fully captured and returned to the sanitary sewer system or not otherwise captured and disposed of properly. Any volume of wastewater not recovered from the municipal separate storm sewer system is considered to have reached surface water unless the storm drain system discharges to a dedicated storm water or ground water infiltration basin (e.g., infiltration pit, percolation pond).

SSO Category 2 – Discharges of untreated or partially treated wastewater of 1,000 gallons or greater resulting from an enrollee’s sanitary sewer system failure or flow condition that do not reach a surface water or a drainage channel. Discharges that reach a municipal separate storm sewer system are considered Category 2 SSOs if the entire SSO discharged to the storm drain system is fully recovered and disposed of properly.

SSO Category 3 – All other discharges of untreated or partially treated wastewater resulting from an enrollee’s sanitary sewer system failure or flow condition. Specifically, discharges of untreated or partially treated wastewater of less than 1,000 gallons resulting from an enrollee’s sanitary sewer system failure or flow condition that do not reach a surface water or a drainage channel. Discharges of less than 1,000 gallons that reach a municipal separate storm sewer system are considered Category 3 SSOs if the entire SSO discharged to the storm drain system is fully recovered and disposed of properly.

SSO Database – Online reporting system developed, hosted, and maintained by the State Water Resources Control Board for compliance with the Monitoring and Reporting Program contained in the Statewide General Waste Discharge Requirements for Sanitary Sewer Systems (WQO No. 2006-0003-DWQ).

Total # of SSOs per 100 miles of Sewer – Broad metric used to compare the relative performance of Enrollees and their sanitary sewer systems. This metric expresses the number of SSOs, for which the reporting Enrollee is responsible, for every 100 miles of pipe or sewer lines in an Enrollee’s sanitary sewer system. Due to the large variation in facility specific characteristics, this metric should only be viewed as a rough comparison of the operation and maintenance performance of Enrollees and their sanitary sewer systems. The metric is calculated as described below:

$$SSOs \text{ per } 100 \text{ Miles of Sewer} = \frac{\text{Total Number of SSOs}}{\text{Total Miles of Pipe} * } \times 100$$

* Miles of Pressure Sewer + Miles of Gravity Sewer + Miles of Public Laterals

Total Volume of SSOs Reached Surface Water per 100 miles of Sewer – Broad metric used to compare the relative performance of Enrollees and their sanitary sewer systems. This metric expresses the volume of SSOs, for which the reporting Enrollee is responsible, that reached surface water for every 100 miles of pipe or sewer lines in an Enrollee’s sanitary sewer system. Because sewage discharges that reach surface water pose a greater threat to public health and the environment, this metric reflects some accounting of the impact posed by an Enrollee’s SSOs. Due to the large variation in facility specific characteristics, this metric should only be viewed as a rough comparison of the operation and maintenance performance of Enrollees and their sanitary sewer systems. The metric is calculated as described below:

$$SSO \text{ Volume Reaching SW (gal)} = \frac{\text{Total SSO Volume Reachign SW}}{\text{Total Miles of Pipe} * } \times 100$$

* Miles of Pressure Sewer + Miles of Gravity Sewer + Miles of Public Laterals

Total Volume Reached Surface Water – Amount of sewage discharged from a sanitary sewer system or private lateral or other private sewer system asset that reaches a surface water.

Total Volume Recovered – Amount of sewage discharged that was captured and returned to the sanitary sewer system or private sewer system asset.

Upper Lateral – Portion of a lateral usually from the building foundation to the property line or easement line where it is connected to the Lower Lateral. Sewer agencies usually do not own and maintain this portion of a Lateral. That responsibility is usually with the owner of the property the lateral serves.

WDID – Waste Discharge Identification number which is a unique identifier assigned by the State Water Board to each Enrollee for regulatory record and data management purposes.

6.0 SPILL FORMS AND QUESTIONNAIRE EXAMPLES

6.1 QUESTIONNAIRE



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Navigate to:

You are logged-in as: SSO Demo . If this account does not belong to you, please log out.

SSO - Questionnaire ? [SSO Menu](#)

Regional Water Board: Region 5S - Sacramento
Agency: State Water Resources Control Board
Sanitary Sewer System: Demo South CS
WDID: 5SSO10000

Collection System Questionnaire

Save

Note: All questions are required to be answered. Enter NA or 0 for questions that do not apply.

Last updated: 2013-07-24 **First updated:** 2007-04-10

Collection System Questionnaire ?

1) Sanitary Sewer System Category:

2) What is the population served by your agency's sanitary sewer system?

3) What is your current annual operation and maintenance budget for sanitary sewer system facilities?

4) What is your current annual capital expenditure budget for sanitary sewer system facilities?

Please identify the total number of employees (technical and mechanical) for your agency's sanitary sewer system (including pump station operations) working within the different classifications listed below.

5) Entry Level (Less than 2 years experience)
 Number of agency employees?

6) Journey Level (Greater than or equal 2 years experience)
 Number of agency employees?

7) Supervisory Level
 Number of agency employees?

8) Managerial Level
 Number of agency employees?

Please identify the total number of employees who hold CWEA Certification for Collection System Maintenance and/or Plant Maintenance-Includes Mechanical Technologist and Electrical/Instrumentation for your agency's sanitary sewer system (including pump station operations) for the various Certificates and Grades levels listed below.

9) Grade I
 Number of certified (Grade I Collection System Maintenance) agency employees:
 Number of certified (Grade I Plant Maintenance Technologist) agency employees?

10) Grade II
 Number of certified (Grade II Collection System Maintenance) agency employees:
 Number of certified (Grade II Electrical/Instrumentation Technologist) agency employees:
 Number of certified (Grade II Mechanical Technologist) agency employees:

11) Grade III
 Number of certified (Grade III Collection System Maintenance) agency employees:
 Number of certified (Grade III Electrical/Instrumentation Technologist) agency employees:
 Number of certified (Grade III Mechanical Technologist) agency employees:

12) Grade IV
 Number of certified (Grade IV Collection System Maintenance) agency employees:
 Number of certified (Grade IV Electrical/Instrumentation Technologist) agency employees:
 Number of certified (Grade IV Mechanical Technologist) agency employees:

13) OFFICE OF WATER PROGRAMS at CALIFORNIA STATE UNIVERSITY's CERTIFICATES OF COMPLETION
 Number of certified (Operation and Maintenance of Wastewater Collection Systems, Volume I) agency employees:
 Number of certified (Operation and Maintenance of Wastewater Collection Systems, Volume II) agency employees:

14) Estimated Size Distributions of Assets (note: total % must sum to 100%)

Diameter of sewer pipe	Gravity Mainlines (%)	Force Mains (%)

6 inches or less	<input type="text" value="14"/>	<input type="text" value="14"/>
8 inches	<input type="text" value="14"/>	<input type="text" value="14"/>
9 - 18 inches	<input type="text" value="14"/>	<input type="text" value="14"/>
19 - 36 inches	<input type="text" value="14"/>	<input type="text" value="14"/>
> 36	<input type="text" value="14"/>	<input type="text" value="14"/>
Unknown Diameter	<input type="text" value="30"/>	<input type="text" value="30"/>
Totals	<input type="text" value="100"/>	<input type="text" value="100"/>

15) How many miles of forced mains and other pressure systems?

16) How many miles of gravity sewers?

17) Estimated total miles of laterals (upper and lower)?

18) Which portion of laterals is your agency responsible for?

(If the answer of question-18 is None, answer 0 (zero) for question-19)

19) Estimated total miles of laterals your agency is responsible for?

20) Number of service lateral connections?

21) Approximately, what percentage of your sewer system piping and number of pump stations were constructed between the years of: (note: total % must sum to 100%)

Age	Gravity Mainlines & Force Mains (%)	Pump Stations (*) 75k Gal/day & Over (number of stations)	Pump Stations (*) Under 75k Gal/day (number of stations)
2000 - Present	<input type="text" value="1"/>	<input type="text" value="1"/>	<input type="text" value="2"/>
1980 - 1999	<input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
1960 - 1979	<input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
1940 - 1959	<input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
1920 - 1939	<input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
1900 - 1919	<input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Before 1900	<input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Unknown Age	<input type="text" value="93"/>	<input type="text" value="0"/>	<input type="text" value="0"/>
Totals	<input type="text" value="100"/>	<input type="text" value="1"/>	<input type="text" value="2"/>

(*) For pump stations, flow categories are the maximum flow rate occurring over a 24-hr period based on annual operating data (i.e., flow measurement) or calculated peak flow (e.g., # EDUs x Flow/EDU x Peaking Factor). Age is date asset was originally constructed.

22) Estimated total miles of your sewer system not accessible for maintenance?

23) How many miles of sewer system did you clean last year(miles)?

24) How many miles of sewer system did you inspect(e.g., CCTV) last year (miles)?

25) Estimated Sewer System Flow Characteristics

Average Daily Dry Weather Flow (MGD) Peak Daily Wet Weather Flow (MGD)

26) Where does this Sanitary Sewer System Discharge to?

Where it goes?	Name	WDID
<input type="text" value="WWTP same agency"/>	<input type="text" value="Wastewater Treatment Plant"/>	<input type="text" value="5 12345678"/>
<input type="text" value="Select ..."/>	<input type="text"/>	<input type="text"/>
<input type="text" value="Select ..."/>	<input type="text"/>	<input type="text"/>
<input type="text" value="Select ..."/>	<input type="text"/>	<input type="text"/>

27a) Are there any tributary sanitary sewer systems?

27b) If yes, please list below:

Tributary system owned by your agency?	Tributary Collection System Name	Tributary Collection System WDID
<input type="text" value="No"/>	<input type="text" value="Example CS"/>	<input type="text" value="5SSO12345"/>
<input type="text" value="Select ..."/>	<input type="text"/>	<input type="text"/>

Select ... ▼

Select ... ▼

28) How many gravity mainline aerial or under ground crossings of water bodies (i.e. gravity sewer lines crossing over water bodies) are located throughout the sewer system

29) How many force main aerial or under ground crossings of water bodies (e.g. pressurized sewer lines crossing over or under water bodies) are located throughout the sewer system?

30) How many siphons used to convey sewage are located throughout the sewer system?

Save

Note: All questions are required to be answered. Enter NA for questions that do not apply or unknown.

[Export Questionnaire History To Excel](#)

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6.2 SSO CATEGORY 1



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Navigate to:

You are logged-in as: SSO Demo. If this account does not belong to you, please log out.

Spill - General Information ?

[SSO Menu](#)

Spill Event ID: New Regional Water Board: Region 5S - Sacramento
 Spill Location Name: Test Agency: State Water Resources Control Board
 WDID: 5SSO10000 Sanitary Sewer System: Demo South CS

[General Info](#) [Spill Related Parties](#) [Attachments](#)

Spill - General Information, Screen 2

Save Work in Progress Submit Draft Ready to Certify

You have minutes to save your report before your session expires.

Note: Questions with ****** are required to be answered for 'Save Work in Progress'.
 Questions with ***** are required to be answered for 'Submit Draft'.
 Questions with ******* are required to be answered for 'Ready to Certify'.

Submit Draft On:

Last Updated By: [SSO Demo](#)

1 - Spill Type: Category 1

*** 2 - Estimate Spill Volumes**

- a) Estimated spill volume that reached a separate storm drain that flows to a surface water body? gallons
- b) Estimated spill volume recovered from the separate storm drain that flows to a surface water body? (Do not include water used for clean-up) gallons
- c) Estimated spill volume that reached a drainage channel that flows to a surface water body? gallons
- d) Estimated spill volume recovered from a drainage channel that flows to a surface water body? gallons
- e) Estimated spill volume discharged directly to a surface water body? gallons
- f) Estimated spill volume recovered from surface water body? gallons
- g) Estimated spill volume discharged to land? (Includes discharges directly to land, and discharges to a storm drain system or drainage channel that flows to a storm water infiltration/retention structure, field, or other non-surface water location.) gallons
- h) Estimated spill volume recovered from the discharge to land? (Do not include water used for clean-up) gallons

Estimated Total spill volume to Reach Surface Water (a-b+c+e)	Estimated Total spill volume to Reach Land (g)	Estimated Total spill volume Recovered (b+d+f+h)	Estimated Total spill volume (a+c+e+g)
<input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="1"/>

* 3 - Did the spill discharge to a drainage channel and/or surface water?

* 4 - Did the spill reach a storm drainpipe that is not part of a combined sewer system?

* 5 - If spill reached a separate storm drainpipe, was all of the wastewater fully captured from the separate storm drain and returned to the sanitary sewer system?

Physical Location Details

* 6 - Spill location name:

* 7 - Latitude of spill location: deg. min. sec. OR decimal degrees [\[Map \]](#)

* 8 - Longitude of spill location: deg. min. sec. OR decimal degrees [\[Map \]](#)

* 9 - County:

* 10 - Regional Water Quality Control Board:

11 - Spill location description:
 (Use attachment if location description is more than 2000 characters)

Spill Details

*** 12 - Number Of appearance points:**

*** 13 - Spill appearance point:**
(Hold Ctrl key to Select Multiple answers from the list)

*** 14 - Spill appearance point explanation:**
(Required if spill appearance point is "Other" and/or multiple appearance points are selected)

**** 15 - Final spill destination:**
(Hold Ctrl key to Select Multiple answers from the list)

16 - Explanation of final spill destination:
(Required if final spill destination is "Other")

*** 17 - Estimated spill start date/time:** : Date Format: MM/DD/YYYY

*** 18 - Date and time sanitary sewer system agency was notified of or discovered spill:** : Date Format: MM/DD/YYYY

*** 19 - Estimated Operator arrival date/time:** : Date Format: MM/DD/YYYY

**** 20 - Estimated spill end date/time:** : Date Format: MM/DD/YYYY

**** 21 - Spill cause:**

22 - Spill cause explanation:
(Required if spill Cause is "Other")

**** 23 - Where did failure occur?**

24 - Explanation of Where Failure Occurred:
(Required if Where Failure Occurred is "Other")

**** 25 - Was this spill associated with a storm event?**

26 - Diameter of sewer pipe at the point of blockage or failure: inches

27 - Material of sewer pipe at the point of blockage or failure:

28 - Estimated age of sewer asset at the point of blockage or failure:

**** 29 - Spill response activities:**
(Hold Ctrl key to Select Multiple answers from the list)

30 - Explanation of spill response activities:
(Required if spill response activities is "Other", use attachment if the text is more than 1700 characters)

**** 31 - Spill response completion date:** : Date Format: MM/DD/YYYY

**** 32 - Spill corrective action taken:**
(Hold Ctrl key to Select Multiple answers from the list)

33 - Explanation of spill corrective action taken:
(Required if spill corrective action is "Other")

**** 34a - Is there an ongoing investigation?**

34b - Reason for ongoing investigation?

35 - Visual inspection results from impacted receiving water:

**** 36 - Health warnings posted?**

**** 37 - Did the spill result in a beach closure (If YES, answer questions 38)?**

**** 38 - Name of impacted beach(es) (enter NA if None):**

39 - Name of impacted surface water(s) (enter Un-named Tributary to XXXXX where XXXXX is the name of first named downstream tributary if receiving surface water body is un-named):

****40 - Water quality samples analyzed for:**
 (Hold Ctrl key to Select Multiple answers from the list)

41 - Explanation of water quality samples analyzed for:
 (Required if water quality samples analyzed for is "Other chemical indicator(s)", "Biological indicator(s)", or "Other")

****42 - Water quality sample results reported to:**
 (Hold Ctrl key to Select Multiple answers)

43 - Explanation of water quality sample results reported to:
 (Required if water quality sample results reported to is "Other")

**** 44 - Explanation of volume estimation methods used:**
 (Describe how you developed spill volume estimates for this spill)

Notification Details

45 - Cal OES Control Number
 (Required for **Category 1** - see SSO Monitoring and Reporting Program Requirements):

46 - Cal OES Called Date/Time
 (Required for **Category 1** - see SSO Monitoring and Reporting Program Requirements):

Date Format: MM/DD/YYYY

*** 47(a) - Name and Tittle (Contact person who can answer specific questions about this SSO)**

*** 47(b) - Contact Person Phone Number**

6.3 SSO CATEGORY 2



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Navigate to:

You are logged-in as: SSO Demo. If this account does not belong to you, please log out.

Spill - General Information ?

[SSO Menu](#)

Spill Event ID: New Regional Water Board: Region 5S - Sacramento
 Spill Location Name: Test Agency: State Water Resources Control Board
 WDID: 5SSO10000 Sanitary Sewer System: Demo South CS

[General Info](#) [Spill Related Parties](#) [Attachments](#)

Spill - General Information, Screen 2

Save Work in Progress Submit Draft Ready to Certify

You have minutes to save your report before your session expires.

Note: Questions with ****** are required to be answered for 'Save Work in Progress'.
 Questions with ***** are required to be answered for 'Submit Draft'.
 Questions with ******* are required to be answered for 'Ready to Certify'.

Submit Draft On:

Last Updated By: [SSO Demo](#)

1 - Spill Type: Category 2

*** 2 - Estimate Spill Volumes**

- a) Estimated spill volume that reached a separate storm drain that flows to a surface water body? gallons
- b) Estimated spill volume recovered from the separate storm drain that flows to a surface water body? (Do not include water used for clean-up) gallons
- c) Estimated spill volume that reached a drainage channel that flows to a surface water body? gallons
- d) Estimated spill volume recovered from a drainage channel that flows to a surface water body? gallons
- e) Estimated spill volume discharged directly to a surface water body? gallons
- f) Estimated spill volume recovered from surface water body? gallons
- g) Estimated spill volume discharged to land? (Includes discharges directly to land, and discharges to a storm drain system or drainage channel that flows to a storm water infiltration/retention structure, field, or other non-surface water location.) gallons
- h) Estimated spill volume recovered from the discharge to land? (Do not include water used for clean-up) gallons

Estimated Total spill volume to Reach Surface Water (a-b+c+e)	Estimated Total spill volume to Reach Land (g)	Estimated Total spill volume Recovered (b+d+f+h)	Estimated Total spill volume (a+c+e+g)
<input type="text" value="0"/>	<input type="text" value="1000"/>	<input type="text" value="0"/>	<input type="text" value="1000"/>

* 3 - Did the spill discharge to a drainage channel and/or surface water?

* 4 - Did the spill reach a storm drainpipe that is not part of a combined sewer system?

* 5 - If spill reached a separate storm drainpipe, was all of the wastewater fully captured from the separate storm drain and returned to the sanitary sewer system?

Physical Location Details

* 6 - Spill location name:

* 7 - Latitude of spill location: deg. min. sec. OR decimal degrees [\[Map \]](#)

* 8 - Longitude of spill location: deg. min. sec. OR decimal degrees [\[Map \]](#)

* 9 - County:

* 10 - Regional Water Quality Control Board:

11 - Spill location description:
 (Use attachment if location description is more than 2000 characters)

Spill Details

* 12 - Number Of appearance points:

* 13 - Spill appearance point:
(Hold Ctrl key to Select Multiple answers from the list)

* 14 - Spill appearance point explanation:
(Required if spill appearance point is "Other" and/or multiple appearance points are selected)

** 15 - Final spill destination:
(Hold Ctrl key to Select Multiple answers from the list)

16 - Explanation of final spill destination:
(Required if final spill destination is "Other")

* 17 - Estimated spill start date/time: : Date Format: MM/DD/YYYY

* 18 - Date and time sanitary sewer system agency was notified of or discovered spill: : Date Format: MM/DD/YYYY

* 19 - Estimated Operator arrival date/time: : Date Format: MM/DD/YYYY

** 20 - Estimated spill end date/time: : Date Format: MM/DD/YYYY

** 21 - Spill cause:

22 - Spill cause explanation:
(Required if spill Cause is "Other")

** 23 - Where did failure occur?

24 - Explanation of Where Failure Occurred:
(Required if Where Failure Occurred is "Other")

** 25 - Was this spill associated with a storm event?

26 - Diameter of sewer pipe at the point of blockage or failure: inches

27 - Material of sewer pipe at the point of blockage or failure:

28 - Estimated age of sewer asset at the point of blockage or failure:

** 29 - Spill response activities:
(Hold Ctrl key to Select Multiple answers from the list)

30 - Explanation of spill response activities:
(Required if spill response activities is "Other", use attachment if the text is more than 1700 characters)

** 31 - Spill response completion date: : Date Format: MM/DD/YYYY

** 32 - Spill corrective action taken:
(Hold Ctrl key to Select Multiple answers from the list)

33 - Explanation of spill corrective action taken:
(Required if spill corrective action is "Other")

** 34a - Is there an ongoing investigation?

35 - Explanation of volume estimation methods used:
(Describe how you developed spill volume estimates for this spill)

* 36(a) - Name and Tittle (Contact person who can answer specific questions about this SSO)

* 36(b) - Contact Person Phone Number

6.4 SSO CATEGORY 3



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Spill - General Information ?

[SSO Menu](#)

Spill Event ID: New Regional Water Board: Region 5S - Sacramento
 Spill Location Name: Test Agency: State Water Resources Control Board
 WDID: 5SSO10000 Sanitary Sewer System: Demo South CS

[General Info](#) [Spill Related Parties](#) [Attachments](#)

Spill - General Information, Screen 2

You have minutes to save your report before your session expires.

Note: Questions with ****** are required to be answered for 'Save Work in Progress'.
 Questions with ***** are required to be answered for 'Submit Draft'.
 Questions with ******* are required to be answered for 'Ready to Certify'.

Submit Draft On:

Last Updated By: [SSO Demo](#)

1 - Spill Type: Category 3

*** 2 - Estimate Spill Volumes**

- a) Estimated spill volume that reached a separate storm drain that flows to a surface water body? gallons
- b) Estimated spill volume recovered from the separate storm drain that flows to a surface water body? (Do not include water used for clean-up) gallons
- c) Estimated spill volume that reached a drainage channel that flows to a surface water body? gallons
- d) Estimated spill volume recovered from a drainage channel that flows to a surface water body? gallons
- e) Estimated spill volume discharged directly to a surface water body? gallons
- f) Estimated spill volume recovered from surface water body? gallons
- g) Estimated spill volume discharged to land? (Includes discharges directly to land, and discharges to a storm drain system or drainage channel that flows to a storm water infiltration/retention structure, field, or other non-surface water location.) gallons
- h) Estimated spill volume recovered from the discharge to land? (Do not include water used for clean-up) gallons

Estimated Total spill volume to Reach Surface Water (a-b+c+e)	Estimated Total spill volume to Reach Land (g)	Estimated Total spill volume Recovered (b+d+f+h)	Estimated Total spill volume (a+c+e+g)
<input type="text" value="0"/>	<input type="text" value="1"/>	<input type="text" value="0"/>	<input type="text" value="1"/>

* 3 - Did the spill discharge to a drainage channel and/or surface water?

* 4 - Did the spill reach a storm drainpipe that is not part of a combined sewer system?

* 5 - If spill reached a separate storm drainpipe, was all of the wastewater fully captured from the separate storm drain and returned to the sanitary sewer system?

Physical Location Details

* 6 - Spill location name:

* 7 - Latitude of spill location: deg. min. sec. OR decimal degrees [\[Map \]](#)

* 8 - Longitude of spill location: deg. min. sec. OR decimal degrees [\[Map \]](#)

* 9 - County:

* 10 - Regional Water Quality Control Board:

11 - Spill location description:
 (Use attachment if location description is more than 2000 characters)

Spill Details

* 12 - Number Of appearance points:

* 13 - Spill appearance point:
(Hold Ctrl key to Select Multiple answers from the list)

* 14 - Spill appearance point explanation:
(Required if spill appearance point is "Other" and/or multiple appearance points are selected)

** 15 - Final spill destination:
(Hold Ctrl key to Select Multiple answers from the list)

16 - Explanation of final spill destination:
(Required if final spill destination is "Other")

* 17 - Estimated spill start date/time: : Date Format: MM/DD/YYYY

* 18 - Date and time sanitary sewer system agency was notified of or discovered spill: : Date Format: MM/DD/YYYY

* 19 - Estimated Operator arrival date/time: : Date Format: MM/DD/YYYY

** 20 - Estimated spill end date/time: : Date Format: MM/DD/YYYY

** 21 - Spill cause:

22 - Spill cause explanation:
(Required if spill Cause is "Other")

** 23 - Where did failure occur?

24 - Explanation of Where Failure Occurred:
(Required if Where Failure Occurred is "Other")

** 25 - Was this spill associated with a storm event?

26 - Diameter of sewer pipe at the point of blockage or failure: inches

27 - Material of sewer pipe at the point of blockage or failure:

28 - Estimated age of sewer asset at the point of blockage or failure:

29 - Explanation of volume estimation methods used:
(Describe how you developed spill volume estimates for this spill)

* 30(a) - Name and Tittle (Contact person who can answer specific questions about this SSO)

* 30(b) - Contact Person Phone Number

6.1 NO SPILL CERTIFICATION



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Navigate to:

You are logged-in as: SSO Demo . If this account does not belong to you, please log out.

SSO - No Spill Certification [?](#) [SSO Menu](#)

Regional Water Board: Region 5S - Sacramento
Agency: State Water Resources Control Board
Sanitary Sewer System: Demo South CS
WDID: 5SSO10000

No Spill Certification:

I certify under penalty of law that no spills occurred for the month specified below. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine or imprisonment, for knowing violations. Clicking the "Certify" button below indicates my certification of this report and my understanding of the above conditions.

Month/Year Without Spills:

Certifier Name*:

Certifier Title*:

Executed On*:

Executed At*:

Previously Submitted Months with "No Spill Certification"

Confirmation Number	No Spill Certificate for the Month of	Entered Date/Time	Certified UserID	Certified Name
2362863	February 2013	2013-7-19.13.39. 26. 0	SSO Demo	d
2362859	January 2013	2013-7-17.14.51. 11. 0	SSO Demo	test
2306210	September 2011	2011-11-10.9.34. 37. 0	SSO Demo	Test
2294930	January 2011	2011-7-15.11.57. 22. 0	SSO Demo	
2253851	July 2010	2010-8-19.8.59. 38. 0	SSO Demo	
2247649	June 2010	2010-7-7.13.43. 35. 0	SSO Demo	
2239286	April 2010	2010-4-29.11.10. 18. 0	SSO Demo	
2212902	December 2009	2009-11-9.8.19. 48. 0	SSO Demo	
821795	December 2009	2009-4-9.7.47. 6. 0	SSO Demo	
2199725	August 2009	2009-8-31.7.18. 33. 0	SSO Demo	
2186309	July 2009	2009-7-13.10.4. 36. 0	SSO Demo	
2186308	July 2009	2009-7-13.9.47. 7. 0	SSO Demo	
829411	June 2009	2009-5-27.16.9. 12. 0	SSO Demo	
821794	April 2009	2009-4-9.7.42. 29. 0	SSO Demo	
826402	March 2009	2009-5-11.8.26. 15. 0	SSO Demo	
821793	March 2009	2009-4-9.7.41. 39. 0	SSO Demo	
821792	March 2009	2009-4-9.7.28. 7. 0	SSO Demo	
803308	November 2008	2008-11-12.15.7. 17. 0	SSO Demo	
803281	October 2008	2008-11-12.10.16. 34. 0	SSO Demo	
803282	October 2008	2008-11-12.10.18. 7. 0	SSO Demo	
821791	April 2008	2009-4-9.7.25. 16. 0	SSO Demo	
2182154	February 2008	2009-7-1.10.40. 39. 0	SSO Demo	
803303	January 2008	2008-11-12.14.1. 34. 0	SSO Demo	
2174848	December 2007	2009-6-22.13.7. 40. 0	SSO Demo	
2232727	January 2007	2010-3-8.11.33. 49. 0	SSO Demo	
2248328	August 2006	2010-7-12.9.40. 51. 0	SSO Demo	
491397	February 2006	2007-4-10.9.41. 34. 0	SSO Demo	

7.0 RESOURCES
7.1 PRE-INSPECTION QUESTIONNAIRE



SEWER COLLECTION SYSTEM
PRE-INSPECTION QUESTIONNAIRE
Version 1.5

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PART 1 — DESCRIPTION

This Sewer Collection System Pre-Inspection Questionnaire (Questionnaire) includes mandatory questions specific to the requirements in the Sanitary Sewer System Waste Discharge Requirements Water Quality Order No. 2006-0003-DWQ (hereafter SSSWDR), and its accompanying Amended Monitoring Plan Order No. 2008-0002-EXEC (hereafter Amended MRP).

All of the questions in this Questionnaire must be answered by the Enrollee (one Questionnaire for each collection system only) to demonstrate how the agency is complying with the SSSWDR and the Amended MRP. All responses provided in the Questionnaire along with the documentation required to be submitted by each Enrollee (see Part 3, Section 1) will be used by the Water Boards to prioritize inspection and enforcement activities statewide for the SSSWDR.

PART 2 — INSTRUCTIONS

1. Complete all questions in the Questionnaire.
2. Save an electronic copy of the completed Pre-Inspection Questionnaire (in MS Word), and the other documentation required for your collection system (see Part 3, Section 1). Print the last page of this Questionnaire and sign it in ink. Submit the electronic copy (e.g., CD) and the original completed last page to:

State Water Resources Control Board
Office of Enforcement, Special Investigations Unit
1001 I Street, 16th Floor, Sacramento, CA 95814

PART 3 — REQUIRED INFORMATION

1 DOCUMENTATION

Please mail an electronic copy (e.g., CD) of the following documents to:

State Water Resources Control Board
Office of Enforcement, Special Investigations Unit
1001 I Street, 16th Floor, Sacramento, CA 95814

- 1.1 Sewer System Management Plan [(SSMP) [Sanitary Sewer System General Waste Discharge Requirements (SSSWDR), Sect. D.13] and any documents referenced within the SSMP. Also include documentation showing approval of the SSMP by your agency's local governing board (e.g., Board Resolution or other documentation).
- 1.2 SSMP Program Audit¹ [SSSWDR, Sect. D.13(x)], if not contained within your agency's SSMP
- 1.3 Sewer System Area Map [SSSWDR, Sect. D.13(iv)], if not contained within your agency's SSMP
- 1.4 Local Sewer Use Ordinance [SSSWDR, Sects. D.13(iii) and D.13(vi)], if not contained within your agency's SSMP
- 1.5 Evidence of Agency's SSO Field Response Documentation [SSSWDR, Amended MRP, B.5], if not contained within your agency's SSMP
- 1.6 Rehabilitation and Replacement Plan [SSSWDR, Sect. D.13(iv)(c)], if not contained within your agency's SSMP

¹ To satisfy SSSWDR, Sect. D.13(x), the SSMP Audit must occur at least every two years following the original approval date of the agency's SSMP by the local governing board. The SSMP Audit must measure the effectiveness and compliance of an Enrollee's SSMP.

1.7 Capital Improvement Plan (CIP) Schedule for System Evaluation and Capacity Assurance Plan (SECAP) [SSSWDR, Sect. D.13(viii)], if not contained within your agency's SSMP

2 Basic Information

2.1 Collection System Waste Discharge ID number (WDID) and Collection System Name: _____

2.2 Collection System Main Point(s) of Contact (name, title, address, email, and telephone number):

2.3 Type of Sanitary Sewer System (select ONE of the following: Municipal, Park, School, Military, Hospital, Prison, Airport, Port, Other)

2.4 What is the population served by your agency's sanitary sewer system?

2.5 What is this fiscal year's budget for operation and maintenance sanitary sewer system facilities?

2.6 What is this fiscal year's budget for capital expenditures for sanitary sewer system facilities?

For questions 2.7 - 2.10, please identify the total number of employees (technical and mechanical) for your agency's sanitary sewer system (including pump station operations) working within the different classifications listed below.

2.7 Entry Level (Less than 2 years experience)

Number of agency employees?

2.8 Journey Level (Greater than or equal to 2 years experience)

Number of agency employees?

2.9 Supervisory Level

Number of agency employees?

2.10 Managerial Level

Number of agency employees?

For questions 2.11 – 2.14, please identify the total number of employees who hold CWEA Certification for Collection System Maintenance for your agency's sanitary sewer system (including pump station operations) for the various Certificates and Grades levels listed below.

2.11 Grade I

Number of certified (Grade I Collection System Maintenance) agency employees:

Number of certified (Grade I Plant Maintenance Technologist) agency employees:

2.12 Grade II

Number of certified (Grade II Collection System Maintenance) agency employees:

Number of certified (Grade II Electrical/Instrumentation Technologist) agency employees:

Number of certified (Grade II Mechanical Technologist) agency employees:

2.13 Grade III

Number of certified (Grade III Collection System Maintenance) agency employees:

Number of certified (Grade III Electrical/Instrumentation Technologist) agency employees:

Number of certified (Grade III Mechanical Technologist) agency employees:

2.14 Grade IV

Number of certified (Grade IV Collection System Maintenance) agency employees:

Number of certified (Grade IV Electrical/Instrumentation Technologist) agency employees:

Number of certified (Grade IV Mechanical Technologist) agency employees:

2.15 Estimated Size Distribution of Assets

Diameter of sewer pipe	Gravity Sewers (miles)	Force Mains (miles)
6 inches or less	[# or ENTER ZERO]	[# or ENTER ZERO]
8 inches	[# or ENTER ZERO]	[# or ENTER ZERO]
9 - 18 inches	[# or ENTER ZERO]	[# or ENTER ZERO]
19 - 36 inches	[# or ENTER ZERO]	[# or ENTER ZERO]
> 36 inches	[# or ENTER ZERO]	[# or ENTER ZERO]
Unknown Diameter	[# or ENTER ZERO]	[# or ENTER ZERO]
Totals	[# or ENTER ZERO]	[# or ENTER ZERO]

2.16 For which portion of sewer service laterals is your agency responsible?

(If None, skip question 2.17.)

2.17 Estimated total miles of sewer service laterals (upper and lower) for which your agency is responsible?

2.18 Number of sewer service lateral connections?

2.19 Estimated total miles of easements within your sanitary sewer system?

2.20 What is your total easement sewer system cleaning production in miles/year?

2.21 What is your total gravity sewer system cleaning production in miles/year?

2.22 Does your agency own any separately enrolled collection systems? [Y/N]

2.23 If yes to question 2.22, which collection system(s) does your agency own?

Collection System name(s):

Collection System WDID(s):

2.24 Which wastewater treatment plant(s) (WWTPs) ultimately receive wastewater from this collection system?

Receiving Treatment Plant name(s):

Receiving Treatment Plant WDID(s):

2.25 For question 2.24, does your agency own this/these WWTP(s)? [Y/N]

2.26 Does your collection system discharge into any other collection system(s)]? [Y/N]

2.27 If yes to question 2.26, which collection system(s) receive wastewater from this collection system?

Receiving Collection System name(s):

Receiving Collection System WDID(s):

2.28 Do any upstream collection systems greater than 25,000 gallons/day (gpd) discharge into this collection system? [Y/N]

2.29 If yes to question 2.28, which collection system(s) discharge into this collection system?

Upstream Collection System name(s):

Upstream Collection System WDID(s):

2.30 Estimated Collection System Flow Characteristics for your collection system:

Average Daily Dry Weather Flow (MGD)	Peak Daily Wet Weather Flow (MGD)
[# or Unknown]	[# or Unknown]
Enter description here how info. Is derived (based on EDUs measured, etc.)	Enter description here how info. Is derived (based on EDUs measured, etc.)

2.31 How many pump stations are there throughout the sewer collection system?

2.32 How many feet of above ground gravity pipelines are there throughout the sewer collection system?

2.33 How many feet of above ground pressurized pipelines are located throughout the sewer collection system?

2.34 How many air relief valves (ARVs) are located throughout the sewer collection system?

2.35 How many siphons are there throughout the sewer collection system?

2.36 Specify the percentage of piping and the number of pump stations constructed in the following table below:
(note: total percentage must equal 100%)

Age	Source of Age Info. (records, estimated, etc.)	Gravity & Pressure Sewers (%)	Pump Stations ² 25k Gal/day & Over (number of stations)	Pump Stations ¹ Under 25k Gal/day (number of stations)
2000 - Present		[%]	[# or ENTER ZERO]	[# or ENTER ZERO]
1980 - 1999		[%]	[# or ENTER ZERO]	[# or ENTER ZERO]
1960 - 1979		[%]	[# or ENTER ZERO]	[# or ENTER ZERO]
1940 - 1959		[%]	[# or ENTER ZERO]	[# or ENTER ZERO]
1920 - 1939		[%]	[# or ENTER ZERO]	[# or ENTER ZERO]
1900 - 1919		[%]	[# or ENTER ZERO]	[# or ENTER ZERO]
Before 1900		[%]	[# or ENTER ZERO]	[# or ENTER ZERO]
Unknown Age		[%]	[# or ENTER ZERO]	[# or ENTER ZERO]
Totals		[%]	[# or ENTER ZERO]	[# or ENTER ZERO]

¹ For pump stations, flow categories are the maximum flow rate occurring over a 24-hr period based on annual operating data. Age is date asset was originally constructed.

3 ORGANIZATION

Local Governing Board Information

3.1 [SSSWDR, Sect. D.13(ii)]: Is/are your agency's Legally Responsible Official(s) and Data Submitter(s) registration information up-to-date with the State Water Board? [Y/N]

3.2 [SSSWDR, Sect. D.13(ii)]: If your local governing board has an internet website, please specify the internet address here:

3.3 [SSSWDR, Sect. D.13(ii)]: Please list the names and titles of each of your agency's current governing board members:

Sewer System Management Plan Information

3.4 [SSSWDR, Sect. E.]: Is your agency's SSMP available on your agency's website? [Y/N]

3.5 [SSSWDR, Sect. E.]: If yes to question 3.4, please provide the internet address here: _____

4 SEWER SYSTEM ASSETS

General System Information

4.1 [SSSWDR, Findings 2 & 3]: Please specify the basis for the population estimate in question 2.4 (e.g., official census data, estimated by agency, etc.)?

4.2 [SSSWDR, Sects. D.8, D.10]: What is the approximate size of the service area served by the sewer collection system for your agency, in square miles? [# or Unknown]

4.3 [SSSWDR, Sects. D.8, D.10]: Please describe the terrain within your agency's sewer service area (Mountainous, Hilly, Flat, Valley, etc.)?

4.4 [SSSWDR, Sects. D.8, D.10]: Please specify what percentage of the collection system's flow comes from residential, commercial, industrial, and institutional sources. [% FOR EACH or Unknown]

Asset Mapping

4.5 [SSSWDR, D.13(iv)]: Has your agency identified and mapped all the gravity sewer line segments, public access points (manholes, lamp holes, rod holes, etc.), pumping facilities, pressure pipes and valves, and stormwater-related facilities? [Y/N]

4.6 [SSSWDR, D.13(iv)]: Does your agency currently have sewer system assets mapped in a Geographic Information System (GIS)? [Y/N]

4.7 [SSSWDR, D.13(iv)]: Does your agency currently have stormwater-related facilities mapped in GIS? [Y/N]

4.8 [SSSWDR, D.8 and D.10]: What is the estimated number of gravity sewer line pipe segments located throughout the collection system? [# or Unknown]

4.9 [SSSWDR, D.13(iv)]: Does your agency have a formal review process in place to ensure that any mapping issues noted by field staff or others are addressed? [Y/N]

4.10 [SSSWDR, D.13(iv)]: Please indicate the total number of public access points (manholes, lamp holes, rod holes, etc.) located within your sewer collection system. [# or Unknown]

Sewer Service Laterals [SSSWDR, D.8, D.13(iv)]

4.11 Has your agency ever historically owned or maintained any portion of sewer service laterals? [Y/N or Unknown]

4.12 Does your agency have a voluntary sewer service lateral incentive program in place? [Y/N]

4.13 How many incoming complaints did your agency receive for privately-owned sewer service lateral problems in the previous fiscal year? [# or Unknown]

4.14 How many service calls did your agency respond to in the field for privately-owned service lateral problems in the previous fiscal year? [# or Unknown]

Pumping Facility Assets

For questions 4.15 – 4.32 refer to your pump station assets from question 2.31 (above)

- 4.15 [SSSWDR, D.8, D.13(iv)]: Has your agency mapped each pump station's actual GPS coordinates? [Y/N]
- 4.16 [SSSWDR, D.8, D.13(iv)]: Has your agency conducted a risk assessment for each asset? [Y/N]
- 4.17 [SSSWDR, D.8 and D.10]: How many of these assets have redundant pipelines installed? [#]
- 4.18 [SSSWDR, D.8 and D.10]: How many have dedicated emergency stand-by power generators located onsite? [#]
- 4.19 [SSSWDR, D.8 and D.10]: Has your agency developed standard and emergency operating procedures for each asset in the event of a power and/or pumping failure? [Y/N]
- 4.20 [SSSWDR, D.8 and D.10]: Has your agency determined the lowest hydraulic overflow point(s) and calculated the longest possible holding time(s) for each asset? [Y/N]
- 4.21 [SSSWDR, D.6(iii) and (vi), D.8 and D.10]: Has your agency identified critical spare parts for each asset? [Y/N]
- 4.22 [SSSWDR, D.6(iii) and (vi), D.8 and D.10]: For question 4.21, does your agency maintain the spare parts identified for each asset? [Y/N]
- 4.23 [SSSWDR, D.8 and D.10]: How many facilities are located within 100 feet of a surface water, creek or drainage channel? [#]
- 4.24 [SSSWDR, D.8 and D.10]: How many are located within 20 feet of a storm drain inlet? [#]
- 4.25 [SSSWDR, D.8 and D.10]: How many pump stations are equipped with audible and/or visual alarms located in public view to expedite notification to your agency in the event of an SSO? [#]
- 4.26 [SSSWDR, D.8 and D.10]: How many pump stations are equipped with an Auto Dialer Alarm System(s) for detecting pump failure and/or high wet well levels? [#]
- 4.27 [SSSWDR, D.8 and D.10]: How many have a supervisory, control and data acquisition system (SCADA) installed and operational? [#]
- 4.28 [SSSWDR, D.8 and D.10]: For question 4.27, how many can be remotely operated? [#]
- 4.29 [SSSWDR, D.8 and D.10]: How many pump stations display emergency notification signage, including agency contact information, in public view to expedite notification to your agency in the event of an SSO? [#]
- 4.30 [SSSWDR, D.8 and D.10]: Does your agency implement vandalism control efforts to discourage unauthorized access and/or vandalism to these assets? [#]
- 4.31 [SSSWDR, D.8 and D.10]: How many pump stations have built-in pumping bypass capability for emergency use? [#]
- 4.32 [SSSWDR, D.8 and D.10]: How many have electrical power connections installed to allow for the use of portable emergency generators? [#]

Force Main Sewer Assets

- 4.33 [SSSWDR, D.8, D.13(iv)]: How many sewer force mains are owned by your agency? [#]
- 4.34 [SSSWDR, D.8, D.13(iv)]: For the assets in question 4.33, has your agency conducted a risk assessment for each asset? [Y/N]
- 4.36 [SSSWDR, D.8 and D.10]: For the assets in question 4.33, how many have a dedicated corrosion protection system(s) installed? [#]
- 4.37 [SSSWDR, D.8 and D.10]: For the assets in question 4.33, what is the total number of air relief valves installed? [#]

5 FINANCIAL INFORMATION

Funding Sources and Revenues [SSSWDR, D.9]

- 5.1 Does your agency utilize an Enterprise Fund for services provided to the public? [Y/N]
- 5.2 If yes to question 5.1, what are the total estimated annual revenues generated from this fund? [#]
- 5.3 If yes to 5.1, what is the current fund balance? [#]
- 5.4 Please provide a brief description of all sewer collection system funding source(s) (e.g., user fees, annual budget allocation, property taxes, etc.).
-
- 5.5 What is your agency's total number of billed sewer connections? [# OR Unknown]
- 5.6 What is your agency's total number of billed customers for sewer service? [# OR Unknown]
- 5.7 What is your agency's current average monthly household user fee for sewage collection only? [\$ or Unknown]
- 5.8 For the answer in 5.7, what is your agency's sewer fee rate basis (e.g., measured flow, calculated flow, flat fee, etc.)
- 5.9 Has your local governing board approved any future sewer use fee increase(s)? [Y/N]

Operations, Maintenance and Capital Funds and Expenditures [SSSWDR, Sects. D.9]

- 5.10 How much did your agency spend in the last fiscal year for operations and maintenance activities (O&M) of sewer assets? [\$]
- 5.11 How much did your agency spend in the last fiscal year on capital expenditures for sewer assets (e.g., new pipelines or equipment)? [\$]

6 LOCAL SEWER USE ORDINANCE [SSSWDR, D.13(iii) and/or D.13(vii)]

- 6.1 Does your agency have an adopted sewer use ordinance (Ordinance)? [Y/N]
- If no to question 6.1, skip to question 7.1
- 6.2 Specify the date of last update/change of your agency's local Ordinance approved by your agency's local governing board. [DATE]
- 6.3 Specify the time frequency in which the Ordinance is reviewed. [FREQ]
- 6.4 Does your agency have legal authority within the Ordinance to limit and enforce illicit discharges from upstream public and/or private satellite collection system(s)? [Y/N]
- 6.5 If no to question 6.4, does your agency have service agreements or other procedures to limit and enforce illicit discharges from upstream public and/or private satellite collection system(s)? [Y/N]
- 6.6 Does the Ordinance ban inflow from stormwater sources? [Y/N]
- 6.7 Does the Ordinance specify who owns and/or maintains the sewer service lateral from the building foundation to the property line (upper lateral portion)? [Y/N]
- 6.8 Does the Ordinance specify who owns and/or maintains the sewer service lateral from the property line to the sewer main line (lower lateral portion)? [Y/N]
- 6.9 Does the Ordinance require testing and/or inspection of the sewer service lateral upon remodeling, renovations and/or transfer of property/residence? [Y/N]

- 6.10 Does the Ordinance prohibit illicit discharges from service connections into the sewer? [Y/N]
- 6.11 Does the Ordinance require sewers and connections to be properly designed and constructed? [Y/N]
- 6.12 Does the Ordinance require proper maintenance, inspection and repairs of laterals? [Y/N]
- 6.13 Does the Ordinance limit the discharge of fats, oils and grease (FOG) and other debris that may cause blockages? [Y/N]
- 6.14 Does the Ordinance give your agency the authority to inspect grease producing facilities? [Y/N]
- 6.15 Does the Ordinance reference the Uniform Building Code? [Y/N]
- 6.16 Does the Ordinance reference the California Plumbing Code? [Y/N]
- 6.17 Does the Ordinance give your agency the authority to inspect, maintain and repair assets located within sewer easements? [Y/N]
- 6.18 Does the Ordinance provide your agency with the proper authority to issue notices of violation (NOVs)? [Y/N]
- 6.19 If yes to question 6.18, how many NOVs has your agency issued in the past 3 years? [# or Unknown]
- 6.20 Does the Ordinance provide your agency with the proper authority to issue enforcement penalties for violators? [Y/N]
- 6.21 If yes to question 6.20, how many enforcement penalties has your agency issued in the past 3 years? [# or Unknown]
- 6.22 Does Ordinance provide your agency with the proper authority to ban connections and/or disconnect services for violators? [Y/N]
- 6.23 If yes to question 6.22, how many actions has your agency undertaken in the past 3 years? [Y/N]
- 6.24 Does the Ordinance provide your agency with the authority to limit future development and/or building? [Y/N]
- 6.25 If yes to question 6.24, how many actions has your agency undertaken in the past 3 years? [# or Unknown]

7 CAPITAL IMPROVEMENT PLAN

- 7.1 [SSSWDR, D.9]: What is the approval date of your Sewer Capital Improvement Plan (Sewer CIP) by your agency's local governing board? [M/D/Y]
- 7.2 [SSSWDR, D.8 and D.13(iv)]: For question 7.1, is your Sewer CIP available on the internet for public review? [Y/N]
- 7.3 [SSSWDR, D.8 and D.13(iv)]: If yes to question 7.2, please specify the internet address:

- 7.4 [SSSWDR, D.8 and D.13(iv)]: What is the projected date of your next Sewer CIP update? [M/D/Y]

8 OPERATIONS AND MAINTENANCE PROGRAM

Computerized Maintenance Management System (CMMS)

- 8.1 [SSSWDR, D.8 and D.13(iv)]: Does your agency use a computerized maintenance management system (CMMS) to generate work orders and track sewer maintenance, operations and management information? [Y/N]
- 8.2 [SSSWDR, D.7 and D.13(iv)]: If yes to question 8.1, is CMMS data used for ongoing strategies to eliminate/reduce SSOs? [Y/N]
- 8.3 [SSSWDR, D.7 and D.13(iv)]: If yes to question 8.1, is the CMMS data used to evaluate cleaning production rates? [Y/N]
- 8.4 [SSSWDR, D.7, D.13(iv) and D.13(ix)]: If yes to question 8.1, does your agency use the CMMS information to provide data for tracking system trends, problems and/or performance? [Y/N]
- 8.5 [SSSWDR, D.7, D.13(iv) and D.13(ix)]: If no to question 8.1, does your agency have a different method in place to provide data for tracking system trends, problems and/or performance? [Y/N]

Inspections, Operations and Management Activities

- 8.6 [SSSWDR, D.8, D.13(iv)]: What was your agency's total gravity sewer collection system cleaning production (hydro flushing, mechanical and hand rodding) over the past 12 months (miles per year)? [# or Unknown]
- 8.7 [SSSWDR, D.8, D.13(iv)]: What is your agency's total gravity sewer collection system cleaning production scheduled (hydro flushing, mechanical and hand rodding) for the next 12 months (miles per year)? [# or Unknown]
- 8.8 [SSSWDR, D.8, D.13(iv)]: What was your agency's total video (CCTV) Inspection production in the past 12 months (miles)? [# or Unknown]
- 8.9 [SSSWDR, D.8, D.13(iv)]: What is your agency's total video (CCTV) inspection production scheduled for the next 12 months (miles)? [# or Unknown]
- 8.10 [SSSWDR, D.8, D.13(iv)]: Does your agency have a method in use for reviewing and analyzing force main sewers and their components? [Y/N]
- 8.11 [SSSWDR, D.7 and D.13(iv)]: What is the total number of focused problem areas ("SSO hot spots") located throughout the collection system? [# or Unknown]
- 8.12 [SSSWDR, D.8 and D.10]: Does your agency have a program to inspect and maintain air relief valves (ARVs)? [Y/N/ n/a]
- 8.13 [SSSWDR, D.8 and D.10]: How many ARVs are not accessible for inspection/maintenance? [#/ n/a]
- 8.14 [SSSWDR, D.7 and D.13(iv)]: What was the total number of ARVs exercised and cleaned in past 12 months? [# or Unknown]
- 8.15 [SSSWDR, D.7 and D.13(iv)]: What is the total number of ARVs planned to be exercised and cleaned in the next 12 months? [# or Unknown]
- 8.16 [SSSWDR, D.13(iv)]: What is the total number of public access points (manholes, lamp holes, rod holes, etc.) inspected in the past 12 months? [# or Unknown]
- 8.17 [SSSWDR, D.13(iv)]: What is the total number of public access points (manholes, lamp holes, rod holes, etc.) scheduled to be inspected in the next 12 months? [# or Unknown]
- 8.18 [SSSWDR, D.13(iv)]: Does your agency visually inspect pipeline routes at least annually, and after major storms, earthquakes or other events that could damage these assets, to check for sink holes or leaks along force main(s)? [Y/N]
- 8.19 [SSSWDR, D.13(iv)]: How many above ground crossings (if applicable) were inspected in the past 12 months? [#, N/A or Unknown]
- 8.20 [SSSWDR, D.13(iv)]: How many siphons (if applicable) were inspected in the past 12 months? [#, N/A or Unknown]
- 8.21 [SSSWDR, D.13(iv)]: Does your agency have a process to identify areas subject to excess hydrogen sulfide corrosion? [Y or N]
- 8.22 [SSSWDR, D.13(iv)]: Does your agency have a formal pipe grading process in place to identify pipe discontinuities? [Y or N]
- 8.23 [SSSWDR, D.13(iv)]: Does your agency require video (CCTV) inspections before and after cleaning to measure the effectiveness of these activities? [#]
- 8.24 [SSSWDR, D.13(iv)]: Does your agency video (CCTV) inspect pipes after all SSO(s)? [Y/N]
- 8.25 [SSSWDR, D.13(iv)]: Does your agency conduct smoke, dye or other tests to check for illicit connections? [Y/N]
- 8.26 [SSSWDR, D.13(iv)]: If yes to question 8.25, how many miles of sewer system were tested in the past 12 months? [# or Unknown]
- 8.27 [SSSWDR, D.13(iv)]: Does your agency use video (CCTV) to monitor discharger compliance for illicit connections? [Y/N]
- 8.28 [SSSWDR, D.13(iv)]: If yes to question 8.27, list the total number of miles of video (CCTV) inspection conducted for this purpose in the past 12 months. [# or Unknown]

- 8.29 [SSSWDR, D.13(iv) and D.13(viii)]: Does your agency have formal agreements in place to increase resources through established mutual assistance agreements with other agencies/contractors for wet weather episodes or for SSO response activities? [Y/N]
- 8.30 [SSSWDR, D.13(iv) and D.13(viii)]: Does your agency have a program in place to identify areas with inflow and infiltration (I/I) ? [Y/N]
- 8.31 [SSSWDR, D.13(iv) and D.13(viii)]: If yes to question 8.30, estimate the total number of miles identified by this program. [# or Unknown]
- 8.32 [SSSWDR, D.13(iv)]: Does your agency have an active root control program in place? [Y/N]
- 8.33 [SSSWDR, D.13(iv)]: If yes to question 8.32, please list the type(s) of control efforts in place (e.g., chemical, mechanical, etc.).
- 8.34 [SSSWDR, D.13(iv)]: If your agency uses chemical(s) for root control, please list chemical(s) used. [N/A if no chem. root program]

Fats, Oils and Grease [SSSWDR, D.13(iv) and D.13(viii)]

- 8.35 Does your agency have a commercial FOG program in place? [Y/N]
- 8.36 If no to question 8.35, has your agency justified in its SSMP why a FOG program is not needed? [Y/N]
- 8.37 If yes to question 8.35, does your agency have a FOG Ordinance separate from the sewer use ordinance? [Y/N]
- 8.38 If yes to question 8.37, please list the FOG Ordinance citation number:
- 8.39 If yes to question 8.35, approximately how many food service establishments (FSEs) such as restaurants, schools, hospitals, jails, and convalescent homes are subject to FOG control. [#]
- 8.40 If yes to question 8.35, what is the total number of FSE permits issued for FOG control? [#]
- 8.41 If yes to question 8.35, what is the total number of dedicated FSE FOG inspectors? [#]
- 8.42 If yes to question 8.35, how many FSE FOG inspections were conducted in past 12 months? [#]
- 8.43 If yes to question 8.35, how many FSE FOG enforcement action(s) were initiated in the past 12 months?
- 8.44 If yes to question 8.35, how many FSE FOG inspections are planned for the next 12 months? [#]
- 8.45 Does your agency have a residential FOG program in place? [Y/N]
- 8.46 If yes to question 8.45, briefly describe the program: _____

Sewer Contract Services

- 8.47 [SSSWDR, D.8 and D.13(iv)]: Does your agency retain contract service(s) for sewer collection system maintenance, operations, and/or management? [Y/N]
- 8.48 [SSSWDR, D.8 and D.13(iv)]: If yes to question 8.47, for services in excess of \$10,000/year, please provide some basic information about these services in the table below:

Contractor Name	Description (cleaning, root control, repairs, , etc.)	Frequency of Contract	Budget (annual \$)

9 SSO EMERGENCY RESPONSE PROGRAM [SSSWDR, D.13(vi)]

- 9.1 Does your agency's SSO Emergency Response Plan incorporate procedures for pump stations/force main sewers? [Y/N]
- 9.2 Does your agency have a dispatcher(s) within your agency to handle, dispatch and document incoming complaints from your sewer system customers? [Y/N]
- 9.3 If yes to 9.2, does your agency utilize a dispatch radio system for notifying collection crews who respond to SSOs? [Y/N]
- 9.4 If yes to 9.3, please list the frequency(s) in use for the dispatch radio system: _____
- 9.5 Does your agency have standard operating procedures (SOPs) in place to test and document, at least once per year, the performance of its after-hours emergency notification system(s)? [Y/N]
- 9.6 Does your agency provide and document any scenario-based SSO emergency response simulation training for collections staff at least on an annual basis to ensure staff are properly trained and prepared in the event of an SSO? [Y/N]
- 9.7 If yes to 9.6, does this training include practical exercises including researching SSO start times and calculating the SSO volume spilled and recovered? [Y/N]
- 9.8 Do your emergency operating procedures (EOPs) include requirements to determine the impact of an SSO, including accelerated or additional environmental monitoring? [Y/N]

10 SSO REDUCTION PERFORMANCE AND MONITORING PROGRAM [SSSWDR, D.13(ix)]

- 10.1 Does your agency have a process in place to collect data to monitor performance of its SSMP and efforts in reducing SSOs? [Y/N]
- 10.2 If yes to question 9.1, does your agency use the data collected to update SSMP program elements? [Y/N]

11 COLLECTIONS STAFFING AND TRAINING

- 11.1 [SSSWDR, D.9]: What is the total number of dedicated sewer maintenance crews in place at your agency? [#]
- 11.2 [SSSWDR, D.9]: For question 11.1, how many staff are typically in each maintenance crew? [#]
- 11.3 [SSSWDR, D.9 and D.13(iv)(d)]: Does your agency have a program in place to identify and document the core competencies/capabilities of collections staff at least on an annual basis (examples include sewer line cleaning, point repairs, video (CCTV) inspection, pump station maintenance, excavation, utility line locating, etc.)? [Y/N]
- 11.4 [SSSWDR, D.9]: If yes to question 11.3, does this program identify gap(s) in competencies/capabilities of collections staff? [Y/N]
- 11.5 [SSSWDR, E]: Does your agency require collections staff to review the SSSWDR and the agency's SSMP at least annually? [Y/N]
- 11.6 [SSSWDR, D.9]: Does your agency use a workforce planning/retention program to ensure adequate future collections staff? [Y/N]
- 11.7 [SSSWDR, D.8 and D.13(iv) and (vi)]: Does your agency provide initial and recurrent training to appropriate staff [including outside contractor(s)] regarding your agency's SSO Emergency Response Plan and O&M programs? [Y/N]
- 11.8 [SSSWDR, D.8 and D.13(iv) and (vi)]: If yes to 11.7, what is the total number of individuals trained in the past 12 months. [#]
- 11.9 [SSSWDR, D.8 and D.13(iv) and (vi)]: For contracted sewer services, do your contracting specifications contain specific language requiring initial and recurrent training of contractor staff regarding your agency's SSO Emergency Response Plan and O&M programs? [Y/N]

12 MAJOR EQUIPMENT INVENTORY [SSSWDR, D.4, D.7, D.8, D.13(iv)]

- 12.1 How many combination truck(s) (hydro flush/vacuum models) are owned and/or leased by your agency? [#]
- 12.2 For question 12.1, how many have a dedicated logbook(s) to document fieldwork activities? [#]
- 12.3 How many hydro flusher(s) are owned and/or leased by your agency? [#]
- 12.4 How many mechanical rodder(s) are owned and/or leased by your agency? [#]
- 12.5 How many video (CCTV) inspection vehicle(s) are owned and/or leased by your agency? [#]
- 12.6 How many utility truck(s) are owned and/or leased by your agency? [#]
- 12.7 How many portable sewage pump(s) are owned and/or leased by your agency? [#]
- 12.8 How many portable generator(s) are owned and/or leased by your agency? [#]
- 12.9 Does your agency own equipment designed to block the storm drain system, in an emergency, to prevent untreated or partially treated wastewater from reaching surface waters? [Y/N]

13 EXTERNAL COMMUNICATIONS PROGRAM

- 13.1 [SSSWDR, D.13(xi)]: Does your agency have a program in place for communicating on a regular basis with the public regarding the development, implementation, and performance of its SSMP?
- 13.2 [SSSWDR, D.13(xi)]: Does your agency have a program in place for communicating with upstream or downstream satellite sewer system(s) connected to its collection system? [Y/N or N/A]
- 13.3 [SSSWDR, D.11]: Does your agency participate in responding to Underground Service Alert(s) (USA) or other similar organizations to identify and mark sewer lines? [Y/N]
- 13.4 [SSSWDR, D.7, D.13(iv), G, and Amended MRP]: Does your agency's communication program give the public the opportunity to provide input as your SSMP is being implemented? [Y/N]

14 NOTIFICATION, REPORTING AND RECORD KEEPING

- 14.1 [SSSWDR, Amended MRP B(5)]: Are all the records required in the Amended MRP, B(5) ("Record Keeping") readily available for review by the Water Boards? [Y/N]
- 14.2 [SSSWDR, Amended MRP, B(5)]: Does your agency maintain a list and description of all sewer-related complaints from customers for the past 5 years, including calls received after normal working hours? [Y/N]
- 14.3 [SSSWDR, Amended MRP, B(5)]: If yes to question 14.2, does this include information for privately owned sewer laterals? [Y/N]
- 14.4 [SSSWDR, G, and Amended MRP]: Does your agency have a quality assurance/quality control (QA/QC) procedure in place for review of technical information collected by field staff prior to certification of the SSO report(s) in the Water Board's online reporting system (CIWQS) by the Legally Responsible Official(s)? [Y/N]
- 14.5 [SSSWDR, G and Amended MRP]: Does your agency require crews to take photos of all SSOs? [Y/N]
- 14.6 [SSSWDR, G and Amended MRP]: If no to question 14.5, does your agency at least require crews to take photos of SSOs that result in backups into structures? [Y/N]
- 14.7 [SSSWDR, G and Amended MRP]: Does your agency have a procedure(s) in place for collecting field information to assist in determining the actual SSO start time? [Y/N]

- 14.8 [SSSWDR, G and Amended MRP]: Does your agency use SOPs to estimate SSO volume spilled, recovered and not recovered, including estimation of cleanup water used? [Y/N]
- 14.9 [SSSWDR, G and Amended MRP]: Does your agency regularly update initial reports given to the California Emergency Management Agency, local health department, and Regional Board as information develops regarding SSOs requiring notification? [Y/N]
- 14.10 [Amended MRP, B.6]: Does your agency maintain water quality monitoring records as required by the Amended MRP, section B(6)?

15 SSO PREVENTION AND MITIGATION

- 15.1 [SSSWDR, D.13(ix)]: Does your agency generate SSO reduction performance metric(s) for its collection system for use in future planning? [Y/N]
- 15.2 [SSSWDR, D.13(ix)]: Does your agency have a program in place to conduct periodic video (CCTV) inspections of areas throughout the collection system that have never been evaluated by video (CCTV) to date? [Y/N or N/A]
- 15.3 [SSSWDR, D.13(ix)]: Does your agency document meetings between O&M and source control staff, if applicable? [Y/N or N/A]
- 15.4 [SSSWDR, 8 and D.6]: Does your agency document meetings between O&M and engineering staff to discuss system problem areas and projects, if applicable? [Y/N or N/A]
- 15.5 [SSSWDR, 8 and D.6]: Does your agency hold post-SSO briefings with collections staff, management and others involved, to evaluate root cause of SSOs and document service changes necessary to be prepared in responding to SSOs in the future? [Y/N]
- 15.6 [SSSWDR, 8 and D.6]: Does your agency pursue investigation of upstream satellite(s) or potential illicit dischargers as part of the SSO cause determination process? [Y/N]
- 15.7 [SSSWDR, 8 and D.6]: Does your agency adjust sewer collection system cleaning interval(s) for problem areas based on review and analysis of each past SSO? [Y/N]
- 15.8 [SSSWDR, 8 and D.6]: How many of the SSOs over the past 12 months were preventable through more proactive maintenance? [# OR Unknown]
- 15.9 [SSSWDR, 8 and D.6]: How many of the SSOs over the past 4 years occurred at repeat locations? [# OR Unknown]

15 DECLARATION

INSTRUCTIONS: Please print this page, sign it, and mail the original of this page to:

State Water Resources Control Board
Office of Enforcement, Special Investigations Unit
1001 I Street, 16th Floor, Sacramento, CA 95814


I, _____, the approved Legally Responsible Official (LRO) of collection system (name and Waste Discharge ID#) _____ certify under penalty of law that based on my inquiry of the person or persons who manage this system, or those persons directly responsible for gathering the information, the information in this Pre-Inspection Questionnaire (Version 1.0) is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of a fine or imprisonment, for knowing violations.

Legally Responsible Official Signature


Date

7.2 INTERNAL SELF-AUDITS

California
Water Boards
Protecting California's Water



Sewer System Management Plan SELF AUDITS




Jim Fischer, P.E.
Julie Berrey
State Water Resources Control Board
Office of Enforcement

Bay Area Clean Water Agencies (December 8, 2011)




1. Review of SSMP Self Audit requirements
2. How SSMP Self Audits are used by Water Boards
3. Response to noncompliance
4. Summary of what we've seen so far
5. **Sample SSMP Audits**
6. Changes to Audit requirements being considered
7. Contact Information

2



1. Review of Audit Requirements

3



1. Review of Audit Requirements, cont.

WHY discharger must do SSMP Self Audit:

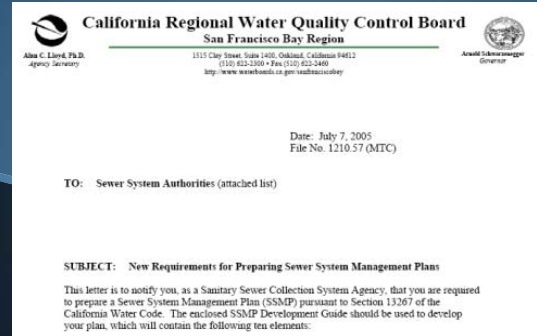
1. San Francisco Regional Water Board (Region 2) letter issued 5/7/2005 requires it annually for collection systems >10,000 population in Region 2
2. Statewide General WDR issued 5/2/2006 requires it at a minimum every 2 years (post-SSMP adoption) for all systems (not just those in Region 2)

4

1.a. Region 2 Requirements

1.a. Review of Audit Requirements, cont.

Annual SSMP Audit required for systems serving population >10,000 (since 5/7/2005)



1.a. Review of Audit Requirements, cont.

Region 2: Accelerated SSMP timelines

Region 2

SSMP Item	Required Completion Date
<ul style="list-style-type: none"> Goals Organization Emergency Response Plan FOG Control Program 	August 31, 2006
<ul style="list-style-type: none"> Legal Authority Monitors and Activities Design and Construction Standards Capacity Management Monitoring, Measurement, and Program Modifications SSMP Audits 	August 31, 2007
	August 31, 2008

General WDR

Task and Associated WDR Section	Preparation	Regulatory Review (MTR and CTR)	Publication (Regulatory Notice and CTR)	Preparation
Local Agency Plan and Schedule	August 1, 2007	November 1, 2007	February 1, 2008	May 1, 2008
Local Agency	November 1, 2007	November 1, 2007	May 1, 2008	May 1, 2008
Local Agency	November 1, 2008	May 1, 2008	November 1, 2008	February 1, 2009
Local Agency	May 1, 2008	August 1, 2008	May 1, 2009	August 1, 2009

1.a. Review of Requirements, cont.

Region 2: Developed SSMP Audit Guidelines

- “SSMP Development Guide” issued in July 2005
- Developed jointly by Region 2 and Bay Area Clean Water Agencies (BACWA)
- Guidelines only; no approved Audit format developed



1.a. Review of Requirements, cont.



Region 2 “SSMP Development Guide” contents

10. SSMP Audits

Requirement: Each wastewater collection system agency shall conduct an annual audit of their SSMP which includes any deficiencies and steps to correct them (if applicable), appropriate to the size of the system and the number of overflows, and submit a report of such audit.

This section can be waived for collection systems serving a population of 10,000 or less.

9

1.a. Review of Requirements, cont.



Region 2 “SSMP Development Guide” contents, cont.

Key Point

The audit should cover the most recent calendar year, and be submitted to the Regional Water Board by March 15 of the year following the calendar year for which the analysis applies.

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1.a. Review of Requirements, cont.



Region 2 “SSMP Development Guide” contents, cont.

Helpful Information

The audit can contain information about successes in implementing the most recent version of the SSMP, and identify revisions that may be needed for a more effective program. Information collected as part of Section 9 above can be used in preparing the audit. Tables and figures or

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1.a. Review of Requirements, cont.



Region 2 “SSMP Development Guide” contents, cont.

charts can be used to summarize information about these indicators. An explanation of the SSMP development, and accomplishments in improving the sewer system, should be included in the audit, including:

- Progress made on development of SSMP elements, and if the sewer system agency is on schedule in development of the SSMP. Provide justification on the delay if the sewer system agency is behind schedule on development of the SSMP;
- How the sewer system agency implemented SSMP elements in the past year;
- The effectiveness of implementing SSMP elements;
- A description of the additions and improvements made to the sanitary sewer collection system in the past reporting year; and
- A description of the additions and improvements planned for the upcoming reporting year with an estimated schedule for implementation.

1.a. Review of Requirements, cont.



Region 2 "SSMP Development Guide" contents, cont.

Additional Tips

Helpful Information

- You may want to include a section up front entitled "System Overview," which describes the size and physical features of the system, to put the rest of the document into context.
- When you prepare the SSMP for the first time, you may want to include a "Sewer Overflow History" to give you a place to start from in evaluating any trends for SSOs in the future.

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1.b. General WDR Requirements



14

1.b. Review of Audit Requirements, cont.



General WDR, section D.13(x):

- ✓ Essentially mirrors RB2 SSMP Audit requirements
- ✓ Only required min. of every 2 years following initial SSMP adoption date

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1.b. Review of Audit Requirements, cont.



(e) identify and illustrate SSO trends, including frequency, location, and volume.

- (x) **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

State Water Resources Control Board Order No. 2006-0003-DWQ
Statewide General WDR For Wastewater Collection Agencies

Page 15 of 20
5/2/06

Enrollee's compliance with the SSMP requirements identified in this subsection (D.13), including identification of any deficiencies in the SSMP and steps to correct them.

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1.b. Review of Audit Requirements, cont.



General WDR, section D.13(x):

“...audit shall focus on evaluating the effectiveness of the SSMP and the Enrollee’s compliance with the SSMP requirements identified in this subsection (D.13), including identification of any deficiencies in the SSMP and steps to correct them.”

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1.b. Review of Audit Requirements, cont.



Minimum Audit Contents per General WDR:

1. Narrative of SSMP Effectiveness
 - Documents things working well
 - Documents areas needing improvement
 - Lists strategies to reduce/eliminate SSOs/impacts
2. Demonstration of agency’s compliance with ALL applicable SSMP requirements
 - Validates status of SSMP compliance with D.13

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1.b. Review of Requirements, cont.



General WDR, section D.13(x) also says Audit are “appropriate to the size of the system and number of SSOs.”

- Larger systems with **HIGH** number/volume of SSOs:
 - **MORE** in-depth discussion expected about problems and planned improvements/solutions
- Smaller systems with **LOW** number/volume SSOs:
 - **LESS** in-depth discussion expected about problems and planned improvements/solutions

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2. How SSMP Self Audits are used by the Water Boards



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2. How SSMP Audits are Used, cont.



1. Provides tool for checking adequacy of: 1) system operations/management; 2) compliance performance; and, 3) level of effort/professionalism in reducing SSOs
2. Assists with statewide inspection/enforcement prioritization
3. Improves efficiency of Water Board/contractor inspections
4. Provides data to justify CIWQS data submitted
5. Improves Waterboard knowledge for regulatory purposes

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3. Response to Noncompliance



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3. Response to Noncompliance, cont.



- ✓ What if discharger found to be in violation of SSMP Self Audit Requirement?
 - Must provide information to address violation
 - May be issued Notice of Violation (NOV)
 - May be issued 13267 Order
 - May be subject to inspection/investigation
 - May be subject to formal enforcement (ACL, etc.)

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4. Summary of What We've Seen so Far



24

4. Summary of What We've Seen, cont.



✓ October 2011 Statewide SSMP Audit Request:

- 42 systems statewide (population 40-50K)
- 2-year SSMP self Audit requested
- System Evaluation and Capacity Assurance Plan (SECAP) also requested

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4. Summary of What We've Seen, cont.



✓ RESULTS: Most systems not complying with D.13(x)

- Many missed evaluation of SSMP effectiveness
- Some missed SSMP compliance evaluation
- Some failed to submit any information or missed deadline

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5. Sample SSMP Audits



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5. Sample SSMP Audits, cont.



1. City of Woodland, CA

- + Measures SSMP effectiveness
- Does not completely evaluate SSMP compliance with section D.13

2. Union Sanitary District (Union City, CA)

- + Measures SSMP effectiveness
- Does not completely evaluate SSMP compliance with D.13

3. City of La Mesa, CA

- + Evaluates SSMP compliance with D.13
- Does not completely measure SSMP effectiveness

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5. Sample SSMP Audits, cont.



- 4. Discharger "1" (uses BACWA SSMP checklist)
 - + Evaluates SSMP element compliance with D.13
 - Does not completely measure SSMP effectiveness
- 5. Discharger "2" (generic audit)
 - Does not measure SSMP effectiveness
 - Does not evaluate SSMP compliance

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5. Sample SSMP Audits, cont.



Example #1:

City of Woodland

- + Measures SSMP effectiveness
- Does not completely evaluate SSMP compliance with section D.13 in General WDR
- ✓ Presents improvements needed to SSMP and to system operations to reduce SSOs/impacts

Objectives

This memorandum summarizes the performance of the City of Woodland's Sewer System Management Plan (SSMP) for FY09/10 and 10/11. The purpose of the SSMP is to provide a written framework for the management, operation, and maintenance programs executed by the City, with the ultimate goal of maintaining the level of service of the sewer collection system while minimizing sanitary sewer overflows (SSOs). This review is completed as part of the annual audit process described in sections ix and x of the City's SSMP. This process helps the SSMP document to evolve over time to address identified deficiencies in the management, operation and maintenance of the sewer collection system. This memorandum summarizes the following information:

1. SSO history, describing the number and nature of SSOs over the past six years.
2. Summary of progress of further development of the SSMP elements which have a plan and schedule for full implementation.
3. Summary How SSMP elements were implemented over last year
4. Effectiveness of the implemented SSMP elements
5. What SSMP elements are planned to be implemented next year
6. Description of additions and improvements to the collection system over the last year
7. Description of the additions and improvements to the collection system planned for the upcoming year
8. Review of performance indicators and overall summary of the past two fiscal years with proposed modifications for implementation in fiscal year 11/12 in areas in need of improvement.

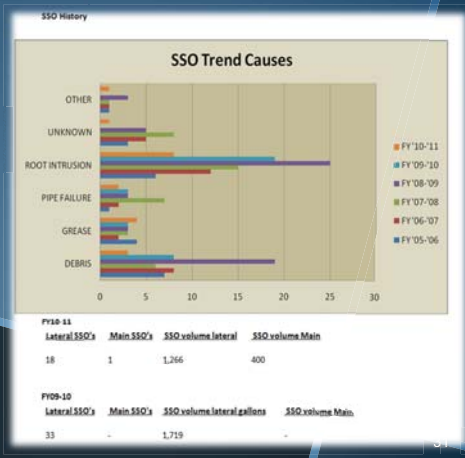
30

5. Sample SSMP Audits, cont.



Example #1, cont.:

City of Woodland



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5. Sample SSMP Audits, cont.



Example #1, cont.: City of Woodland

- ✓ Example narrative explaining necessary SSMP improvements

Progress on development of SSMP elements

The SSMP audit has identified some elements that need refinement in the frequency of data collection and type of data collected for both the Utility Maintenance Workers and management staff. Some elements only need to be collected on an annual basis. Some new data needs to be collected to facilitate data collection for the SSMP and analysis of future needs. Furthermore, the communication plan for the SSMP was not completely implemented and progress of finishing implementation will happen in FY11/12. Overall, the SSMP is 90% complete.

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5. Sample SSMP Audits, cont.

Example #1, cont.: City of Woodland

- ✓ SSMP Performance Indicators used to track necessary collection system operational improvements (CCTV improvements)

Performance Indicators	Rating			
	Below Goal	Acceptable	Good	Excellent
1 Feet inspected with CCTV / year	< 100,000	100,000-170,000	170,000-200,000	> 200,000
2 Pipe segments inspected / year	< 400	400-600	600-800	> 800
3 Footage inspected / 16 work hours	<1500	1500-1750	1750-2000	> 2000
4 % Passing quality control check	< 90%	90%	95%	98%

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5. Sample SSMP Audits, cont.

Example #1, cont.: City of Woodland

- ✓ SSMP Performance Indicators used to track necessary collection system operational improvements (CCTV improvements)

Date	Goal	1	2	3	4	Performance Assessment Comments
FY 10-11	Value	125,976	375	1,665	N/A	2. Staffing vacancies attributed to low number of inspections 4. QA/QC field not in use because CCTV has not been implemented with CA&CIP module.

Annual Performance Assessment / Recommendations for Updates

FY 10-11 Ratings:

1. Acceptable
2. Below Goal
3. Acceptable
4. Below Goal

Recommendation #1: Filling vacancies will increase the amount of pipe inspected
 Recommendation #2: Filling vacancies will increase the amount of pipe inspected
 Recommendation #3: Filling vacancies will increase the amount of pipe inspected
 Recommendation #4: Anticipate CA&CIP linkage to CCTV module FY 11/12.

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5. Sample SSMP Audits, cont.

Example #1, cont.: City of Woodland

- ✓ SSMP Performance Indicators track collection system operational improvements (SSO reduction performance)

Performance Indicators	Rating			
	Below Goal	Acceptable	Good	Excellent
1 % captured of SSO (flat, 1-5%)	<70%	70%-80%	90-90%	90-100%
2 % captured of SSO (steep, >5%)	<30%	30-50%	50-90%	90-100%
3 Average time to investigate SSO with CCTV	>1 week	5-7 days	3-5 days	< 3 days
4 % complete on-line reporting for category 3 spills	< 70%	70-80%	80-90%	90-100%

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5. Sample SSMP Audits, cont.

Example #1, cont.: City of Woodland

- ✓ SSMP Performance Indicators track collection system operational improvements (SSO reduction performance)

Date	Goal	1	2	3	4	Performance Assessment Comments
FY 09-10	Value	99%	N/A	24/46	50%	3. 24 out of 46 SSO were CCTV but can't capture time CCTV occurred for 22 of the work orders. 4. 10 private lateral SSO's and 5 reported on-line

Annual Performance Assessment / Recommendations for Updates

FY 09-10 Ratings:

1. Excellent – generally sewer captures 100% of any spill.
2. Below Goal – Not applicable to Woodland.
3. Below Goal – 22 work orders did not specify when the CCTV occurred. CCTV is at the spill site but difficulty in capturing the time in the work orders.
4. Below Goal – Decision was made during the FY to stop reporting private lateral SSO's on-line as no other city does report private lateral SSO's

Recommendation #1: None.
 Recommendation #2: Woodland is a flat area with a slope of less than 5% throughout the city, performance indicator does not apply in Woodland and should be removed.
 Recommendation #3: Modify data entry in Cityworks to capture time CCTV began
 Recommendation #4: Change or remove performance indicator.

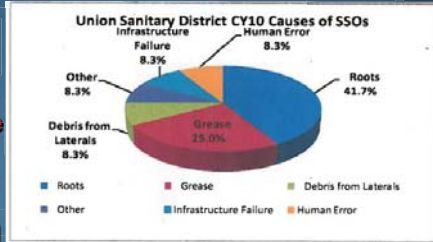
36

5. Sample SSMP Audits, cont.



Example #2: Union Sanitary District

- + Measures SSMP effectiveness
- Does not completely evaluate SSMP compliance with D.13



- ✓ Includes historic and planned activities to reduce SSOs/impacts

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5. Sample SSMP Audits, cont.



Example #2, cont.: Union Sanitary District

- ✓ Includes detailed SSO information (SSO causes and corrective actions undertaken as a result of overflows)

Location of SSOs and Preventive Measures			
2010 Major Spills Summary (Over 1000 gallons)			
SSO ID#	Date	Amount	Summary
No Major Spills			
2010 Minor Spills Summary (100 to 1000 gallons)			
SSO ID#	Date	Amount	Summary
748187	01/02/2010	200	This spill occurred from USD manhole #H13036, on Hartwell St in Union City. All of the 200 gallons spilled were recovered and returned back to the collection system. On January 6, a CCTV was sent out to inspect the line, which was reported to have signs of grease and debris. The line is being inspected every six months for 1.5 years to determine if the cleaning schedule needs changed.
749372	02/02/2010	200	This spill occurred from USD manhole #I15003, at 3440 Mission Blvd. in Union City. All of the 200 gallons spilled were recovered and returned back to the collection system. After the review of this structure's history, the cleaning frequency was increased and a Smart Cover was installed.
749401	03/07/2010	320	This spill occurred from USD manhole #C18006, at the end of L St. in Fremont. Estimated spill volume was 320 gallons and 315 gallons were recovered. It was estimated that 5 gallons trickled down the r/riap and soaked into the dirt. Water samples for ammonia were taken and all results came back negative. None of the wastewater reached the creek. The crew washed down the affected area, vacuumed up all of the water and returned it to the collection system. A CCTV crew inspected the line and found a large root mass which was determined to cause the spill. The line was re-cleaned and has been added to our root control program.
752644	04/04/2010	600	This spill occurred from USD manhole #20027, located on Tremouth St. in Fremont. All of the 600 gallons spilled were recovered and returned back to the collection system. The street, gutter, and storm basins were also washed down and all of the water was vacuumed up and returned to the collection system. On April 6, a CCTV crew inspected the line and found small amounts of grease and root intrusion in several locations. The line was cleaned

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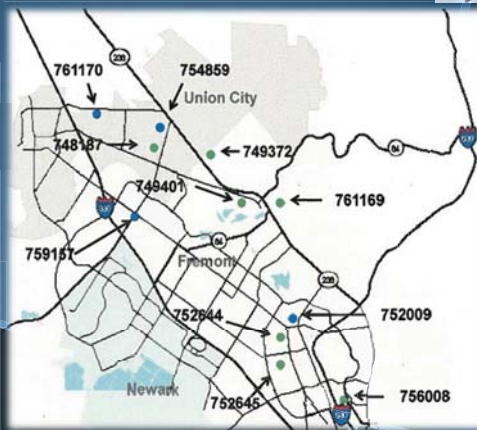
5. Sample SSMP Audits, cont.



Example #2, cont.:

Union Sanitary District

- ✓ Includes sewer system map showing each SSO location



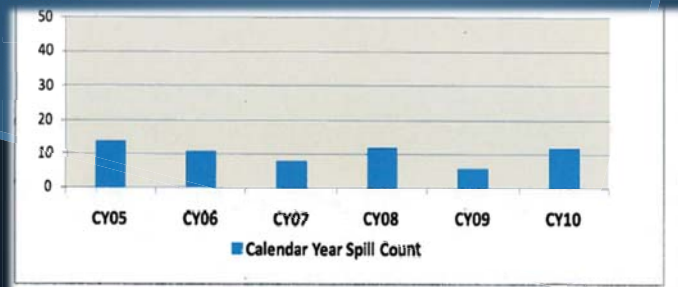
39

5. Sample SSMP Audits, cont.



Example #2, cont.: Union Sanitary District

- ✓ Graphic shows historic SSO performance



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5. Sample SSMP Audits, cont.

Example #2, cont.: Union Sanitary District

✓ Highlights Accomplishments

Other Information

In the calendar year 2010, we had the following accomplishments:

Progress/Accomplishments

- Completed 1,021,413 feet of cleaning and 588,948 feet of televising of sewer lines in CY2010
- Responded to 258 service request calls in CY2010
- Completed a total of 212 main repairs in CY2010
- Provided support on the following projects: Asset Hierarchy, Solar Project, Pipe Vulnerabilities, Blallow Rd, Cast Iron Pipe Lining, IT Master Plan Update, and Plant Shut Downs
- Provided input on CIWQS online SSO reporting to State Water Board
- Hosted the kick off meeting for the CIWQS Data Review Task Force (TF)
- Participated with the Summit Partners WDR TF - Discussing potential changes to the General Waste Discharge Requirements
- Presented and handed out the new Best Practices Manual for SSO Reduction Strategies at the annual BACWA membership meeting.
- Participated in CWEA TCP update and validation TF
- Presented for CWEA Santa Clara Section - Failure Analysis/SSO Prevention Strategies
- Presented for CWEA Mid Summer Conference in Merced Bay
- Presented for CWEA at Northern Regional Training Conference in Modesto
- Presented for CWEA SF Bay Section training in Antioch
- Attended CWEA Safety Conference in Woodland
- Hosted the CWEA SF Bay Section Vendor Fair
- Attended APWA training conference
- Attended CSRMA workshop on SSOs and Flooded Buildings
- Attended the Sewer Smart Summit hosted by ABAG

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5. Sample SSMP Audits, cont.

Example #2, cont.: Union Sanitary District

✓ Explains details about historic/future efforts

SSMP Summary

USD has an SSMP addressing all of the required elements that has been in place for six years. We use our SSMP as a tool to manage our collection system. In 2010, we updated our SSMP twice. Specifics of the changes can be made available upon request.

Twice a year we audit and update our SSMP, once at the beginning of the Fiscal Year and once at the beginning of the Calendar Year.

In 2010, CIP completed the following:

- Completed the construction of the Blallow Rd. Sewer Rehabilitation/Replacement project
- Completed the construction of the Misc. Sewer Spot Repairs - Phase I project
- Completed the construction of the Cast Iron Sewer Pipeline Rehabilitation - Phase I project
- Completed the Treatment Plant Drainage study

In 2011, CIP is expected to work on:

- The design of the I-680 Freeway Sewer Crossing replacement at Hayward Fault
- The design and construction of the SFPUC/Mission Blvd. Relocation project
- The design of the Misc. Sewer Spot Repairs - Phase III project
- The design of the Cast Iron Sewer Pipeline Rehabilitation - Phase III project
- The design of replacing the flanged coupling adapters on the force main pipelines inside the pump station valve boxes

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5. Sample SSMP Audits, cont.

Example #2, cont.:

Union Sanitary District

✓ Shows summary chart of sewage collected and sewage spilled

Description	Gallons	Percentage
CY10 Gallons Collected	9,415,160,000	99.999999%
CY10 Gallons Spilled	2,084	0.000221%
CY10 Not Recovered, That Did Not Reach State Waters	5	0.000001%
CY10 Reached State Waters	0	0.000000%

✓ Shows list of efforts being undertaken to prevent SSOs

CY 2010 Efforts to Prevent SSOs and Minimize Their Impact Through O & M

Cost	Description Of Efforts	CY09
258	Service Requests Investigated	245
56	Spot Repairs Completed	41
185	Trenchless Point Repairs Completed	136
741	Mains Cleaned on the Selective Maintenance Program (these are lines that have had blockages in the past)	555
1,970	Mains cleaned on 72 Month Preventative Maintenance Program	2,861
896	Mains Treated for Root Cuts/ (these are lines that have had root caused blockages in the past or were likely to in the future)	751
18	Stoppages that did not result in a spill due to a quick response or our system design with grade breaks and relief points	17
2,363	Mains Televised to assess line condition	3,249
128	Mains had their schedule adjusted to a more frequent schedule on the	25

5. Sample SSMP Audits, cont.

Example #3

City of La Mesa

- ✓ Evaluates SSMP compliance with D.13
- ✓ Does not completely measure SSMP effectiveness

Performance Measures	2008 Actual	2009 Actual	2010 Actual
Input			
Total number of wastewater field personnel	9	9	9
Workload/Output			
Total number of SSO responded to in 12-month period	6	7	9
Total miles of sewer line maintained	172	195	198
Linear feet of sewer televised	27,948	13,530	25,805
Total SSO > 1,000 gallons responded to	0	0	5
Total FOG related SSOs responded to	0	0	2
Total root related SSOs responded to	3	2	1
Total SSOs due to other causes (debris, vandalism, etc)	3	5	1
Total number of capacity related SSOs	0	0	5
Total number of SSOs due to pump station malfunction	0	0	0
Number of SSOs responded to within 2 hours or less	6	6	9
Total number of SSOs not reaching storm drain system	1	4	0
Effectiveness/Outcome			
Percentage of SSOs > 1,000 gallons	0%	0%	66%
Percentage of SSOs due to FOG	0%	0%	22%
Percentage of SSOs due to roots	50%	29%	11%
Percentage of SSOs due to other causes	50%	71%	66%
Percentage of SSOs that reached waters of United States	83%	43%	100%
Percentage of SSOs with response time 2 hours or less	100%	88%	100%

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5. Sample SSMP Audits, cont.



Example #3, cont.: City of La Mesa

SSMP Program Audit
City of La Mesa

Chapter 4.0: Legal Authority

The Legal Authority element includes the following subsections:

- Regulatory Requirements for Legal Authority Provisions
- Background for Legal Authority
- Summary and Evaluation of the City's Existing Legal Authority

The intent of the Legal Authority element is to provide authority for the City to administer its collection system and to provide measures to enforce codes and regulations.

Audit Questions:

Does the SSMP contain current information about the City's legal authority?
Yes No

Does the City have sufficient legal authority to control sewer use and maintenance?
Yes No

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5. Sample SSMP Audits, cont.



Example #3, cont.: City of La Mesa

Discussion:

The SSMP contains a background section which discusses the regulatory authority derived from Federal and State regulations as well as a section which discusses and evaluates the City's existing legal authority. As stated in the SSMP, on April 14, 2009, the City adopted additional municipal codes to ensure the City possesses the necessary legal authority to require, implement, and enforce compliance with the SSMP elements. As elements of the SSMP evolve and are further refined, the legal authority necessary to implement the provisions and require compliance by its residents and rate payers may also be addressed. At this time, it is determined that the City has adequate legal authority to administer the collection system, and enforce codes and regulations.

Updates to This Chapter:

The City shall add the Fats, Oils, and Grease (FOG) Ordinance 2009-2794 and 2009-2795 to Appendix H of the Sewer Master Plan, which is referenced in the SSMP. The updates are included within Attachment A-1 to this document.

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5. Sample SSMP Audits, cont.



Example #3, cont.: City of La Mesa

SSMP Program Audit
City of La Mesa

Chapter 4.0: Legal Authority

The Legal Authority element includes the following subsections:

- Regulatory Requirements for Legal Authority Provisions
- Background for Legal Authority
- Summary and Evaluation of the City's Existing Legal Authority

The intent of the Legal Authority element is to provide authority for the City to administer its collection system and to provide measures to enforce codes and regulations.

Audit Questions:

Does the SSMP contain current information about the City's legal authority?
Yes No

Does the City have sufficient legal authority to control sewer use and maintenance?
Yes No

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5. Sample SSMP Audits, cont.



Example #4:

Discharger "1"

- Does not measure SSMP effectiveness
- Presents no details

Directions: Please check YES or NO for each question. If NO is answered for any question, describe the updates/changes needed and the timeline to complete those changes in the "Description of Scheduled Updates/Changes to the SSMP" section at the end of this form.

	YES	NO
PERFORMANCE GOALS		
A. Are the goals stated in the SSMP still appropriate and accurate?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ELEMENTS ORGANIZATION		
A. Is the Public Works Key Staff Telephone List current?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
B. Is the Sanitary Sewer Overflow Response Telephone List current?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
C. Is the SSMP "City Organization Chart" current?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
D. Are the position descriptions an accurate portrayal of staff responsibilities?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
E. Is the SSMP "Chain of Communication for Reporting and Responding to SSOs" accurate and up-to-date?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ELEMENTS OF LEGAL AUTHORITY		
Does the SSMP contain excerpts from the current City Municipal Code documenting the City's legal authority to:		
A. Prevent illicit discharges?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
B. Require proper design and construction of sewers and connections?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
C. Ensure access for maintenance, inspection, or repairs for portions of the lateral owned or maintained by the City?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
D. Limit discharges of fats, oils, and grease?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
E. Enforce any violation of its sewer ordinances?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ELEMENTS OF OPERATIONS AND MAINTENANCE		
Collection System Maps		
A. Does the SSMP reference the current process and procedures for maintaining the City's wastewater collection system maps?	<input checked="" type="checkbox"/>	<input type="checkbox"/>

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5. Sample SSMP Audits, cont.

Example #4, cont.:

Discharger "1"

B	Are the City's wastewater collection system maps complete, current, and sufficiently detailed?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Resources and Budget			
C	Does the City allocate sufficient funds for the effective operation, maintenance and repair of the wastewater collection system and is the current budget structure documented in the SSMP?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Prioritized Preventive Maintenance			
D	Does the SSMP describe current preventive maintenance activities and the system for prioritizing the cleaning of sewer lines?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
E	Are the City's preventive maintenance activities sufficient and effective in minimizing SSOs and blockages?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Scheduled Inspections and Condition Assessments			
F	Is there an ongoing assessment program sufficient to develop a capital improvement plan addressing the proper management and protection of infrastructure assets? Are the current components of this program documented in the SSMP?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Contingency Equipment and Replacement Inventory			
G	Does the SSMP list the major equipment currently used in the operation and maintenance of the collection system and document the procedures on inventory management?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
H	Are contingency equipment and replacement parts sufficient to respond to emergencies and properly conduct regular maintenance?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Training			
I	Is the training calendar current?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
J	Does the SSMP document current training expectations and programs within the City's Wastewater Division?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
Outreach to Plumbers and Building Contractors			
K	Does the SSMP document current outreach efforts to plumbers and building contractors?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ELEMENTS DESIGN AND PERFORMANCE STANDARDS			
A	Does the SSMP contain current design and construction standards for the installation of new sanitary sewer systems, pump stations and other appurtenances and for the rehabilitation and repair of existing sewer systems?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
B	Does the SSMP document current procedures and standards for inspecting and testing the installation of new sewers, pumps, and other appurtenances and the rehabilitation and repair of existing sewer lines?	<input checked="" type="checkbox"/>	<input type="checkbox"/>
ELEMENTS OVERFLOW AND EMERGENCY RESPONSE PLAN			

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5. Sample SSMP Audits, cont.

Example #5: Discharger "2"

X. SSMP Program Audits

New, or different information that has been reflected in SSMP keeping the document accurate in terms of staff, and contact information, and the addition of two SSO's which have occurred since August 2009.

Organization

LRO:

Data Submitter: I

Operations staff:

Recent SSO's

February 6, 2010: (reached receiving waters)

April 4, 2010:

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6. SSMP Audit changes being considered

6. SSMP Audit Changes Being Considered, cont.

1. Delete RB2 Annual SSMP Audit Requirement; revert to General WDR's 2-year time requirement
2. Possible changes being considered for inclusion in revised General WDR:
 - 1) Require results of D.13(ix), "Monitoring, Measurement and Program Modifications" to be included in 2-year Audit
 - 2) Consider 2-year Audit time clock to "reset" if SSMP is re-adopted by local governing board

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6. SSMP Audit Changes Being Considered, cont.

3. Develop new Online CIWQS Form to satisfy 2-year SSMP Audit requirement.

Benefits:

- Helps discharger comply with General WDR SSMP Audit requirements
- Helps ensure statewide consistency and compliance
- Utilizes CIWQS information to auto generate audit metrics (# of SSOs, volume, causes, etc.)
- Provides platform to showcase discharger's strategic efforts, programs, strategies, and approaches to reduce/eliminate SSOs

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Contact Information

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San Francisco Regional Water Board
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(510) 622-2223

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7.3 OTHER RESOURCES

- 7.3.1 [California Water Environment Association](http://www.cwea.org/et_ssowdr.shtml)
(http://www.cwea.org/et_ssowdr.shtml)
- 7.3.2 [California Rural Water Association](http://www.calruralwater.org/)
(<http://www.calruralwater.org/>)
- 7.3.3 [Rural Community Assistance Corporation](http://www.rcac.org/pages/81)
(<http://www.rcac.org/pages/81>)
- 7.3.4 [Central Valley Clean Water Association](http://www.cvcwa.org/)
(<http://www.cvcwa.org/>)
- 7.3.5 [Bay Area Clean Water Agencies](http://bacwa.org/)
(<http://bacwa.org/>)
- 7.3.6 [Southern California Alliance of Publicly Owned Treatment Works](http://scap1.org/SitePages/Home.aspx)
(<http://scap1.org/SitePages/Home.aspx>)
- 7.3.7 [Cal FOG](http://www.calfog.org)
(<http://www.calfog.org>)

APPENDIX F

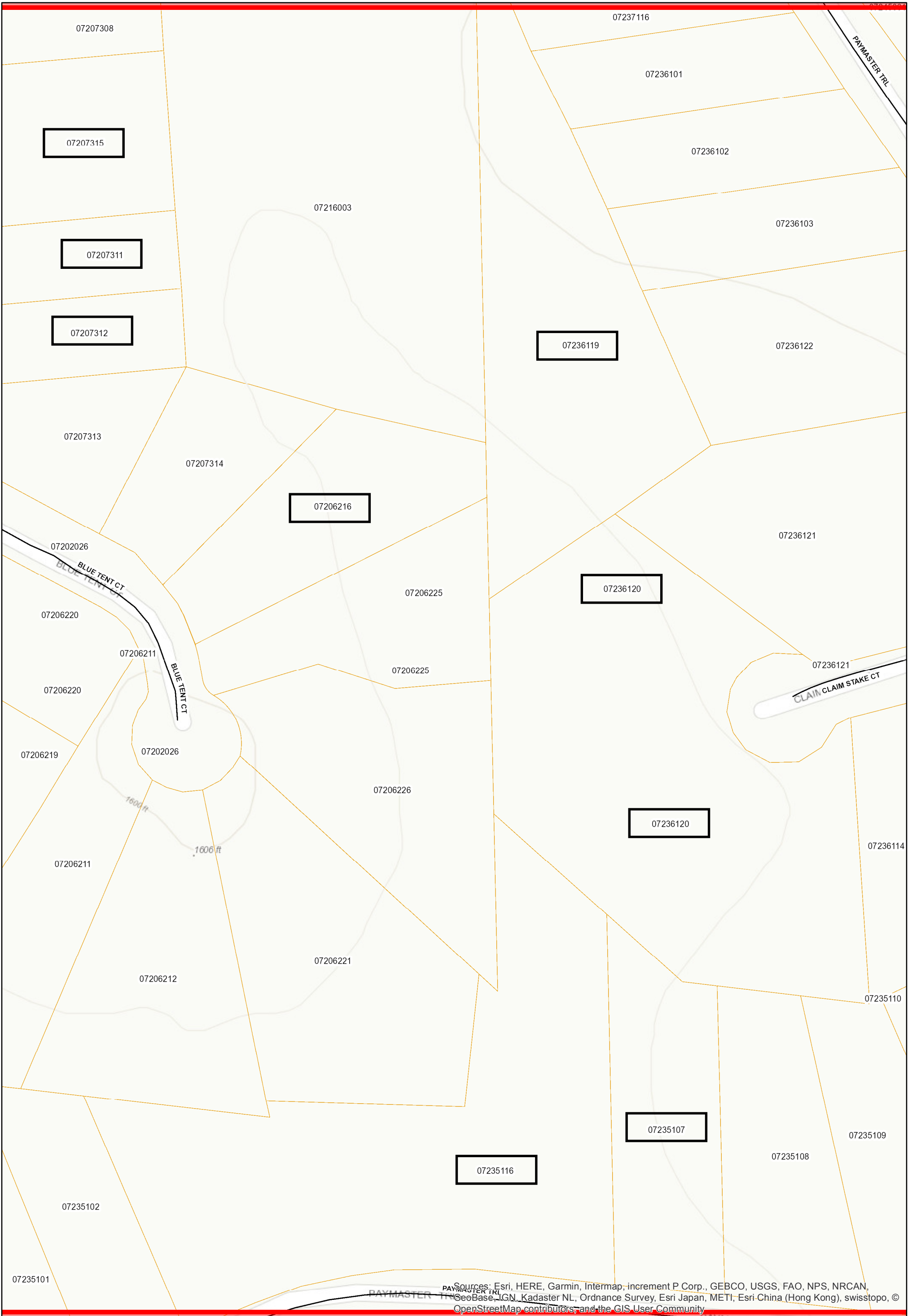
**SITE MAP AND LISTING OF PROPERTY OWNER LOCATED DOWNSTREAM OF CDS PUMP
STATION AND COMMUNITY DISPOSAL FIELDS**

List of Parcels From Station 16 to American River
Georgetown Divide Public Utility District

North of Hwy 193	ALT Lot #	Name	Physical Address	Mailing Address	Home	Acres	Comments
Auburn Lake Trails Lots and North of State Highway 193							
072-073-15-100	21	Cornelius Van Puffelen	1534 American River Tr. Cool, CA 95614		Yes	0.63	Station 16 located behind property.
072-073-11-100	20	Louis J Bacco	1522 American River Tr. Cool, CA 95614	P.O. Box 483 Renton WA, 98057	Yes	0.3	Station 16 located behind property.
072-073-12-100	19	Linda & Robert Dreher	1516 American River Tr. Cool, CA 95614		Yes	0.3	Station 16 located behind property.
072-062-16-100	16	Richard & Sheryl Swenson	1395 Blue Tent Ct. Cool, CA 95614		Yes		Creek runs behind property.
072-361-119		ALT Property Association		P.O. Box 181 Cool, CA 95614			Creek runs through property.
072-361-20	1837, 1838, 1839, 1840	George T Linder & Barbara L McKellar	1447 Claim Stake Ct. Cool, CA 95614		Yes		Creek runs behind and through property.
072-351-16	1822, 1823, 1824, 1825	Jody Gray	2880 Paymaster Tr. Cool, CA 95614		Yes		Creek runs through property.
072-351-07	1826	Daniel and Elizabeth Vidovich	2870 Paymaster Tr. Cool, CA 95614		Yes		An drainage/SSO from Station 16 does not appear that it will affect this property.
072-352-18	1927, 1928	Isidore Natsios	2895 Paymaster Tr. Cool, CA 95614	149 Blackfield Dr., Belvedere Tiburon, CA 94920	Yes		Creek runs through property. Property is a rental.
072-352-15	1924, 1925, 1926	Page M Laurie	2855 Paymaster Tr. Cool, CA 95614		Yes		Creek runs through the western edge of property beyond their fence.
072-052-04		Michael & Shaunda Crane	1400 Ligaya Ln. Cool, CA 95614		Yes		Creek runs along eastern edge of property.
South of Hwy 193 to Cherry Acres Road							
071-032-43		Triola Family	1620, 1600 & 1622 State Hwy. 193	1620 Highway 193 Cool, CA 95614	Yes	70	Drainage from CDS fields could affect this property but not drainage from Station 16.
071-032-16		Patrica Hill and Smith Family Trust		4800 El Camino Carmichael, CA 95608	No	42.5	Knickerbocker Creek runs through property.
071-032-15-100		Kirk A Brelsford	3100 Triple Seven Rd., Cool, CA 95614		Yes	25.06	Knickerbocker Creek runs through property.
071-100-06-100		Joan C Kemper	1390 State Hwy 193 Cool, CA 95614		Yes	2	Knickerbocker Creek runs through property.
071-100-04-100		Jill Wyatt	1380 State Hwy 193 Cool, CA 95614		Yes	5.59	Knickerbocker Creek runs through property.
071-100-07-100		Ann Gualtieri	3060 Triple Seven Rd. Cool, CA 95614		Yes	2	Knickerbocker Creek runs through property.
071-100-05-100		Ann Gualtieri	3060 Triple Seven Rd. Cool, CA 95614		No	2	Knickerbocker Creek runs through property.
071-100-15-100		Otto Galdal	1310 State Hwy 193 Cool, CA 95614		Yes	3.3	Knickerbocker Creek runs through property.

List of Parcels From Station 16 to American River
Georgetown Divide Public Utility District

North of Hwy 193	ALT Lot #	Name	Physical Address	Mailing Address	Home	Acres	Comments
071-100-10-100		Thomas and Stacy Reese		5000 Pleasant Grove Rd., Pleasant Grove, Ca 95668	No	2	Knickerbocker Creek runs through property.
071-100-08-100		Larry Niegel		4906 Pleasant Grove Rd., Pleasant Grove, CA 95668	No	2	Knickerbocker Creek runs through property.
071-100-01-100		Douglas Avery	1220 State Hwy 193 Cool, CA 95614	P.O. Box 604 Cool, CA 95614	Yes	5.86	Knickerbocker Creek runs through property.
Cherry Acres Road to Bureau of Reclamation Property							
071-032-40-100		Carl Ross Living Trust		7850 S Dean Martin Rd. #502 Las Vegas, NV 89139	Yes	146.2	Knickerbocker Creek runs through property.
071-480-08		Robert & Kathleen Ellinghouse		P.O. Box 1414 Lincoln, CA 95648	Yes	33.48	Knickerbocker Creek runs through property.
071-032-39-100		Carl Ross Living Trust		7850 S Dean Martin Rd. #502 Las Vegas, NV 89139	No	32.92	Knickerbocker Creek runs through property.
071-280-65-100		Daniel and Cynthia Hitchner	3981 Grand Fir Cr. Cool, CA 95614		Yes	6	Knickerbocker Creek runs through property.
071-280-51-100		Steve & Nancy Costa	3980 Grand Fir Cr. Cool, CA 95614	921 Orchard Ct. Pilot Hill, CA 95664	Yes	3.39	Knickerbocker Creek runs through property. Private well on property.
071-280-45-100		Charles & Mary Jones John and Judith Kemp	4080 Grand Fir Cr. Cool, CA 95614	P.O. Box 183 Corte Madera, CA 94976	Yes	4	Knickerbocker Creek runs along property before it crosses Hwy. 49.
071-390-10-100		Mary Lynne Reuss Trust	3210 State Hwy 49 Cool, CA 95614	2838 Sweetwater Tr. Cool, CA 95614	Yes	5	Knickerbocker Creek runs between this property and 071-390-05-100
071-390-05			3320 State Hwy. 49 Cool, CA 95614		Yes	9.91	Knickerbocker Creek runs through the property.
071-032-08		Thomas Huff			No	202.3	Knickerbocker Creek runs through property.
071-020-21		Bureau of Reclamation			No	--	Knickerbocker Creek runs through property.
071-020-23		Bureau of Reclamation			No	10.1	Knickerbocker Creek runs through property.
071-020-14		Bureau of Reclamation			No	365.22	Knickerbocker Creek runs through property.
071-020-27		Bureau of Reclamation			No	15	Knickerbocker Creek runs through property.
071-020-25		Bureau of Reclamation			No	25	Knickerbocker Creek runs through property.
071-040-05		Bureau of Reclamation			No	60	Knickerbocker Creek runs through property.
071-020-13		Bureau of Reclamation			No	296.4	Knickerbocker Creek runs through property.
071-020-10				2800 Cottage Way Sacramento, CA 95825	No	7	End of Knickerbocker Creek at American River.



July 16, 2018

ALT Lots - Map 1

County Outline **Major Roads**
 Highway Labels — Major Roads
 Highways — Minor Roads

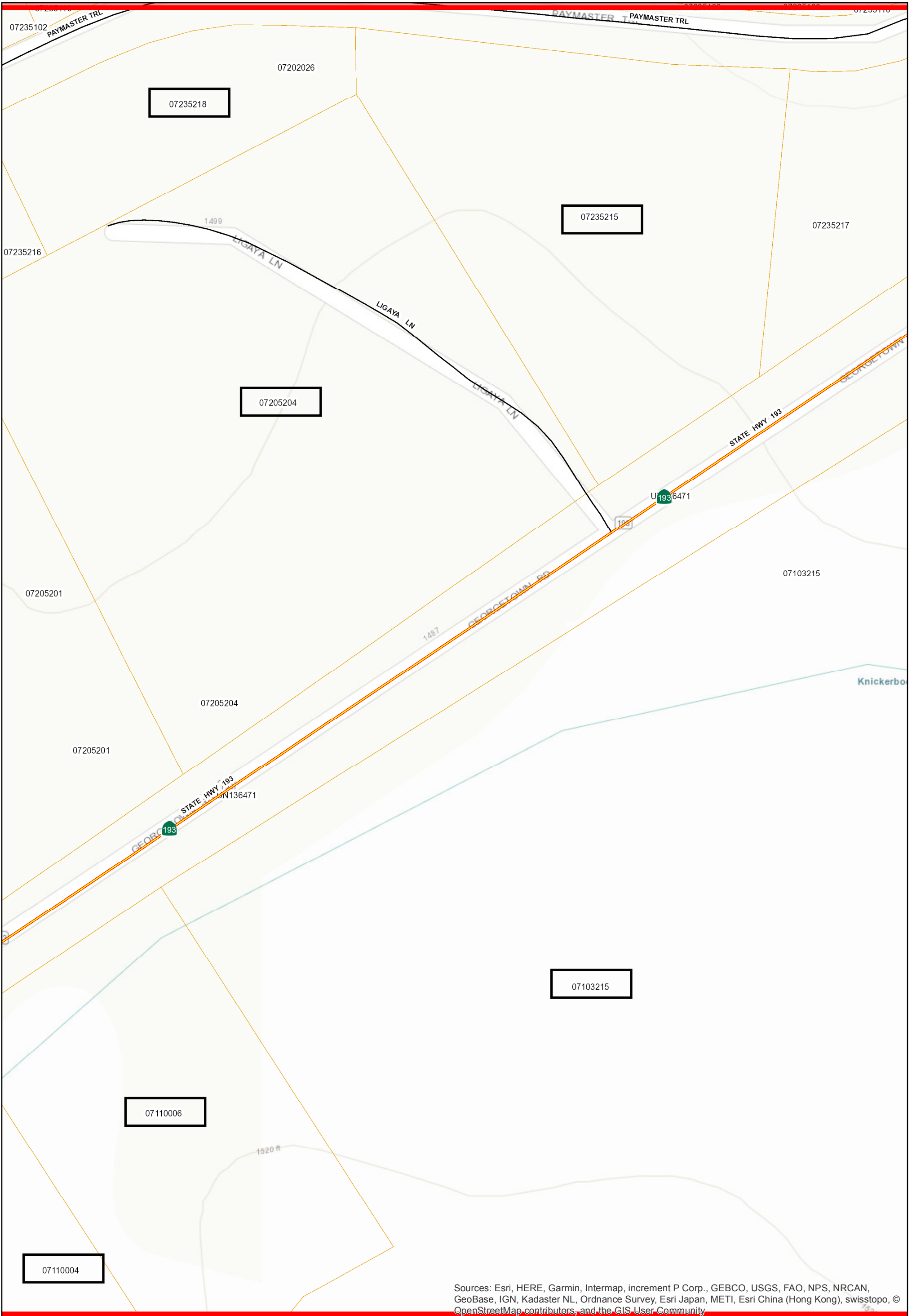
— Cities
 — Parcels
 Labels - Assessor's Parcel Number

— Parcels, County Owned



0 30 60 90 120 Feet

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community



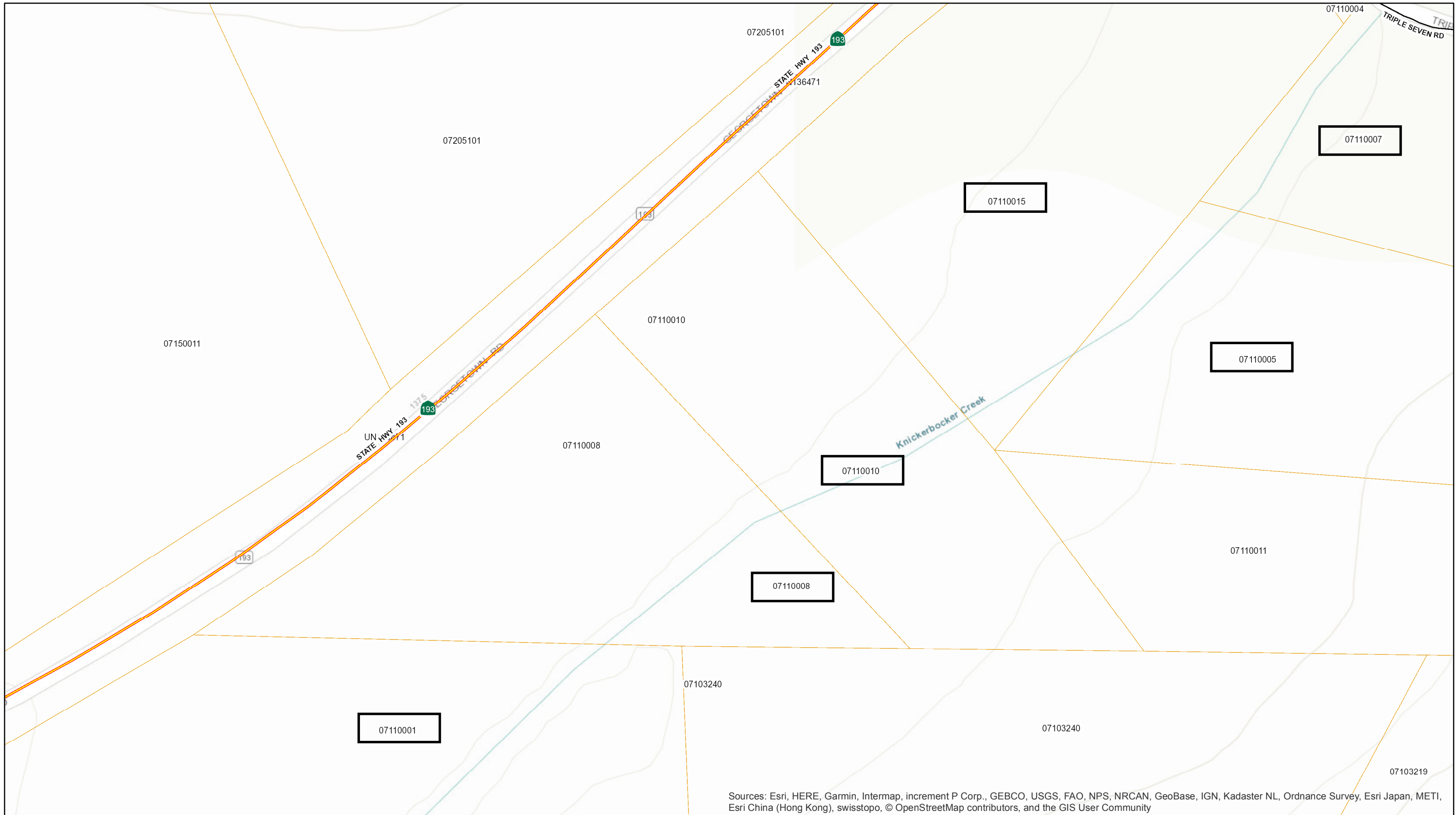
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

July 16, 2018

ALT Lots and Highway 193 - Map 2

County Outline	Major Roads	Cities	Parcels, County Owned
Highway Labels	Major Roads	Parcels	
Highways	Minor Roads	Labels - Assessor's Parcel Number	

0 30 60 90 120 Feet

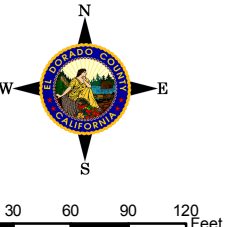


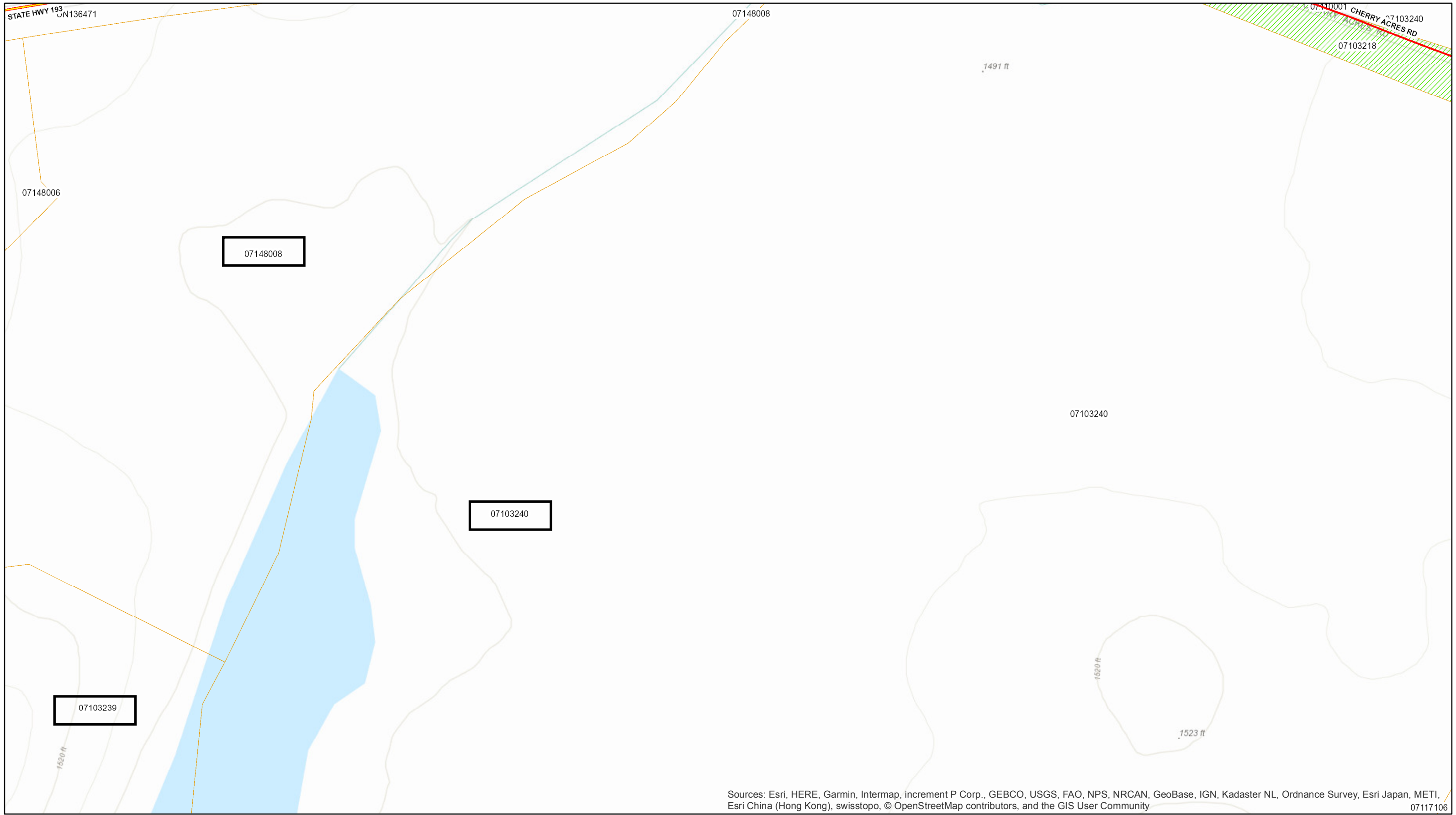
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

July 16, 2018

South Highway 193 - Map 3

- Highway Labels
- Major Roads
- Highways
- Major Roads
- Minor Roads
- Cities
- Parcels
- Labels - Assessor's Parcel Number
- Parcels, County Owned



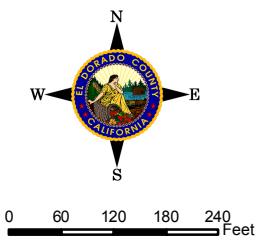


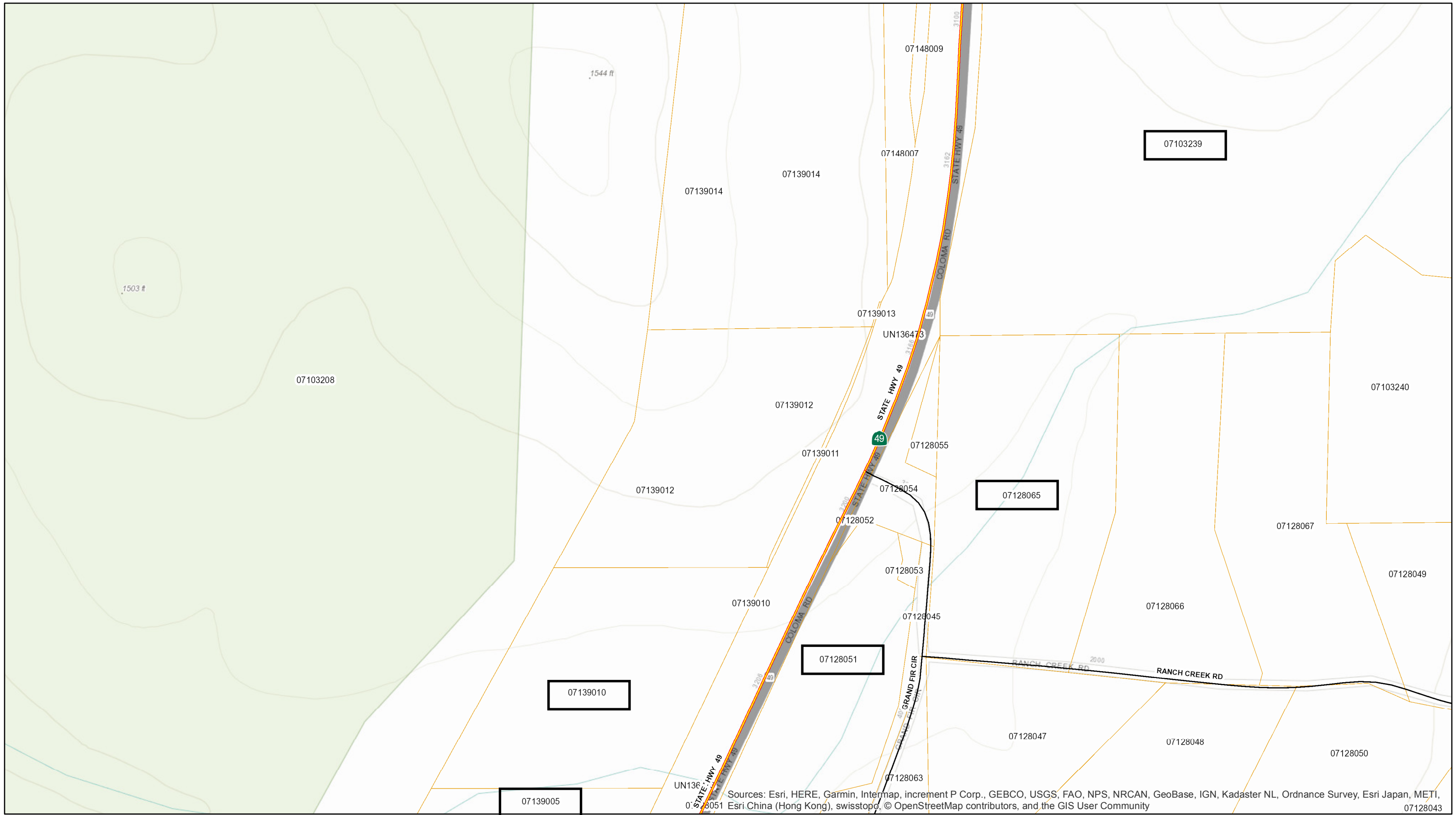
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community 07117106

July 16, 2018

South Highway 193 - Map 4

- | | | | |
|----------------|--------------------|-----------------------------------|-----------------------|
| Highway Labels | Major Roads | Cities | Parcels, County Owned |
| Highways | Major Roads | Parcels | |
| | Minor Roads | Labels - Assessor's Parcel Number | |



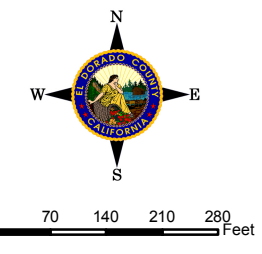


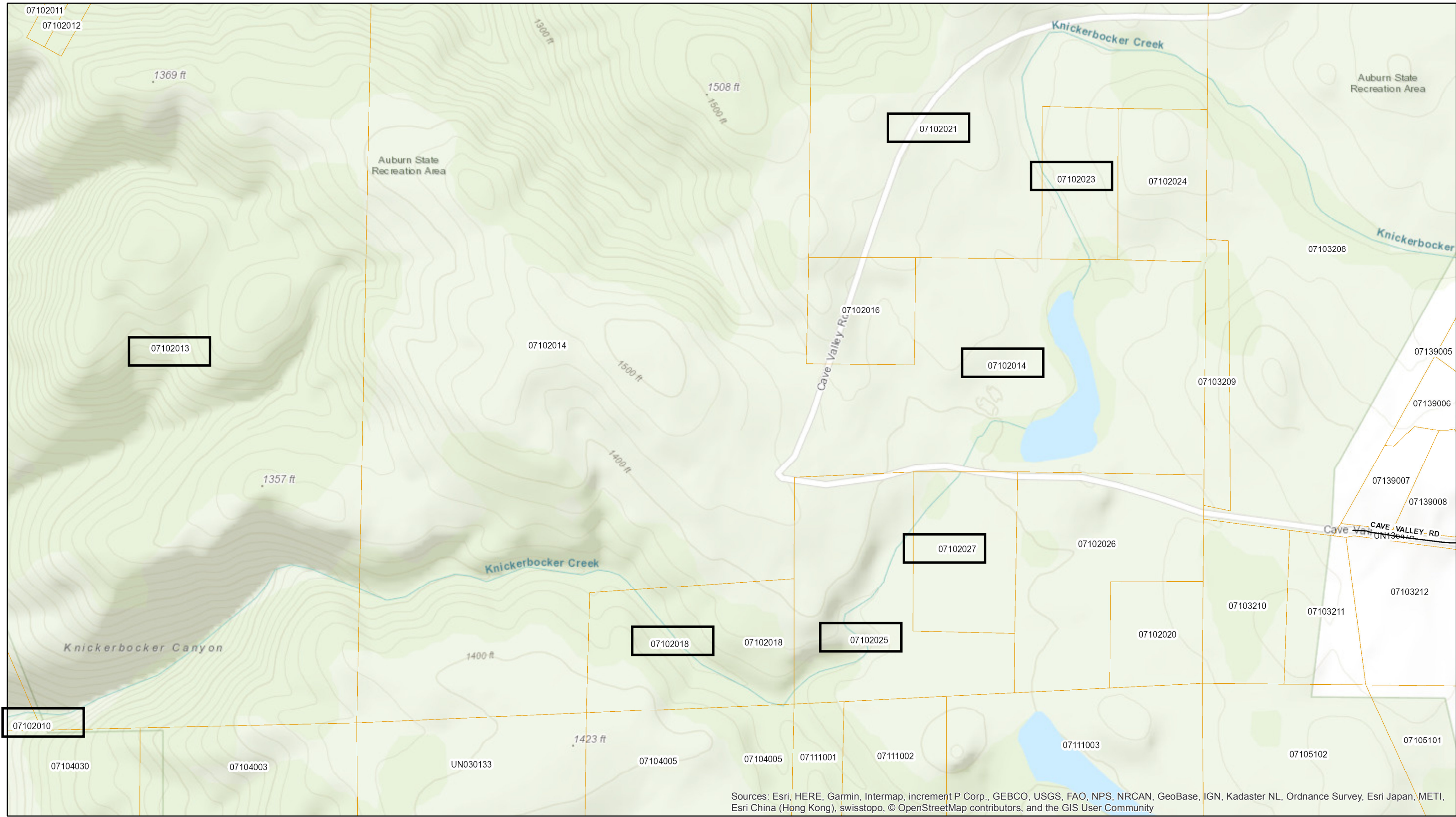
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

July 16, 2018

South Highway 193 - Map 5

County Outline	Major Roads	Cities	Parcels, County Owned
Highway Labels	Major Roads	Parcels	Labels - Assessor's Parcel Number
Highways	Minor Roads		





Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

July 16, 2018

State Highway to American River - Map 6

County Outline	Major Roads	Cities	Parcels, County Owned
Highway Labels	Major Roads	Parcels	
Highways	Minor Roads	Labels - Assessor's Parcel Number	

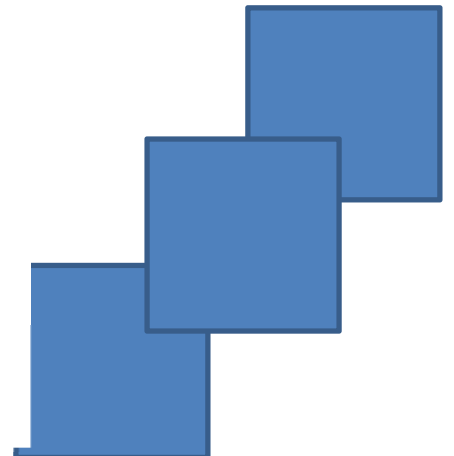
APPENDIX G

SAMPLE TEMPLATES FOR SSO VOLUME ESTIMATION



SEWER SPILL ESTIMATION GUIDE

**Developed by the Orange County
Area Waste Discharge
Requirements Steering Committee**



Sewer Spill Estimation Guide

A Guide to Estimating Sanitary Sewer Overflow (SSO) Volumes

**Developed by the Orange County Area
Waste Discharge Requirements Steering Committee
Orange County, CA**

February 18, 2014
Revised May 15, 2014

Acknowledgements

This Sewer Spill Estimation Guide has been compiled through the efforts of members of the Orange County Wastewater Discharge Requirements (WDR) Steering Committee. This committee was originally formed to address the requirements of the original WDR imposed by the California Regional Water Quality Board, Region 8 and later the statewide WDR imposed by the California State Water Resources Control Board. Committee members who assisted in the compilation of this Sewer Spill Estimation Guide are:

Nicholas J. Arhontes	Director Facilities Support Services	Orange County Sanitation District
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Rob Hamers	District Engineer	Costa Mesa Sanitary District
Robert Kreg	(Former) Director of Support Services	South Coast Water District (Retired)

Disclaimer

This Sewer Spill Estimation Guide is freely offered to agencies to assist the user with the estimation process for a sanitary sewer overflow. Methods used for spill estimation and the estimate itself are solely the responsibility of the agency making the estimate. The authors or contributors to this Sewer Spill Estimation Guide do not accept any responsibility for the spill estimation methods used; their accuracy or any spill estimate determined through the use of this guide. Information found in this guide is commonly available on the internet and is also common practice with many cities and sewerage agencies throughout Southern California.

No statewide or national standards issued by a regulatory agency exist at this time.

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SSO Volume Estimation

Accurate flow estimation is essential to determine the volume of a Sanitary Sewer Overflow (SSO). An accurate estimate of an SSO is required for reporting to the California Integrated Water Quality System (CIQWS) and to the local health care agency. The estimated volume of an SSO is used to determine the category of the SSO and can also be used in the calculation of penalties or fines from the State or Regional Water Quality Control Boards in California. Additionally, accurate flow estimation is important to determine the extent of the cleanup and its effectiveness.

Volume estimation is basically the flow rate (gallons per minute) times the amount of time (in minutes) the flow has occurred. Each SSO tends to be unique requiring different strategies for determining the volume of the SSO. Different methods can also be used for the same SSO acting as a check to ensure the most accurate estimate. The method(s) utilized will be determined by several factors including the type of SSO and the personnel responding. Some SSO volumes, due to terrain, rainfall or other factors, can be very difficult for field staff to determine and may require someone with additional expertise. There is no one method that works for all types of SSOs. The following are methods that may be utilized for SSO volume estimation. These methods are effective means of estimating a sewer spill volume during dry weather but may not be effective during rain events.

During rain events, infiltration and/or inflow into the collection system and runoff in the stormwater system, including the curb and gutter, can affect the SSO estimate. When estimating an SSO during a rain event, the SSO estimate is to include only the wastewater that left the collection system and not any waters that the wastewater comingled with after leaving the system. The same is true for any wash down water; although contaminated, the water is not considered part of the SSO estimate. Any water that infiltrated into the collection system upstream of the SSO and subsequently became part of the SSO is included in the SSO volume estimate.

Start Time

Determining the start time for an SSO is one of the most critical, yet can be one of the most difficult, factors to determine. Depending upon the location and time of day, an SSO may occur for some time before it is reported to the City or Agency or it may trickle for an extended period of time before being noticed. What is known is that the SSO started some time before the City or Agency was notified. It is common for SSOs to start and stop as flows in the pipeline routinely rise and fall because most blockages do not entirely block the flow in the pipe. Every effort should be utilized to determine the most accurate start time of each SSO. These efforts may include:

- If possible, contact the person who reported the SSO to determine when they became aware of the SSO.
- Make contact with residences or businesses in the area of the SSO to determine if there were any witnesses that could help establish the start time.
- Conditions change during the SSO. This is particularly true in remote areas out of public view. Initially, there may be an amount of toilet paper and solids around the spill site. This will increase the longer the SSO continues. After a few days to a week, these may form a light brown residue that may turn dark after a few weeks to a month.

Lacking direct evidence supporting a specific start time the operator should rely upon their experience and system flow characteristics based upon observed conditions to establish a reasonable estimated start time for the event. The agency's management staff should review the estimate before being finalized. Methods used to establish the start time should be documented.

Stop Time

The stop time is the time that wastewater stopped overflowing. For manhole covers in low areas, this is noted by water flowing back into the manhole through the vent holes and should be easy to determine by SSO response personnel. Care should be taken to accurately record the time that the SSO stopped.

Photographs

Take photographs of the spill event. Try to include objects of known size in the photographs to give a perspective of the extent of the spill. Photographs should include the initial spill, remediation efforts, clean up, and the spill area after the spill remediation has been completed. Photographs should be maintained with the spill report information.

Flow Rate

The flow rate is the volume of flow per unit time that is escaping from the collection system. SSOs do not always occur at a constant rate. This is because flows into the collection system are not constant and rise and fall throughout the day. Additionally, most blockages are not full blockages. Pressure buildup as the wastewater surcharges in the pipe can cause the blockage to clear or partially clear, resulting in changes to the flow rate.

To make an SSO volume estimate as accurate as possible, the onsite City or Agency employee should note the time and the amount of change of any significant differences in flow noticed during the event. For example, if the employee determines the flow rate escaping from the manhole is 100 gallons per minute when they arrive on scene but noticed that it has dropped to 50 gallons per minute five minutes later, their report should reflect that fact. The estimated flow rate and the time period for that flow rate should be recorded. During any one SSO event there could be multiple flow rates spread over the duration of the SSO.

Volume Estimation Methods

Visual or Eyeball Method

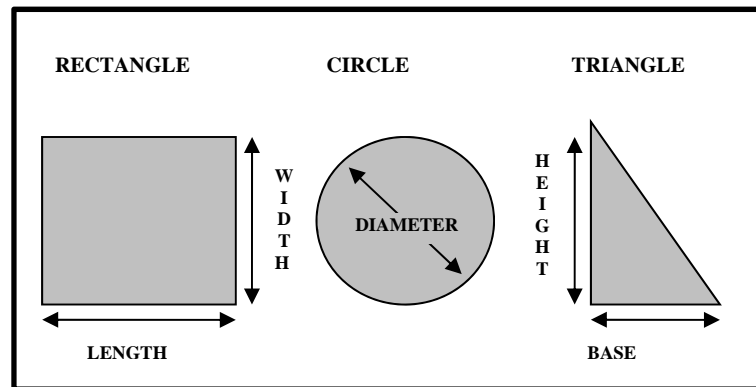
The volume of small spills can be estimated using an “eyeball estimate.” To use this method, imagine the amount of water that would spill from a bucket or a barrel. A full bucket may contain 1, 2 or 5 gallons and a barrel contains 55 gallons when full. If the spill is larger than 55 gallons, try to divide the standing water into barrels and then multiply by 55 gallons. This method is useful for contained spills up to approximately 200 gallons. This method can be useful on spills that occur on hard surfaces such as concrete or asphalt. Crews can be trained

by estimating the volume of a measured amount of potable water spilled upon concrete and asphalt surfaces.

Measured Volume

The volume of most small spills that have been contained can be estimated using this method. The shape, dimensions, and the depth of the contained wastewater are needed. The shape and dimensions are used to calculate the area of the spills and the depth is used to calculate the volume.

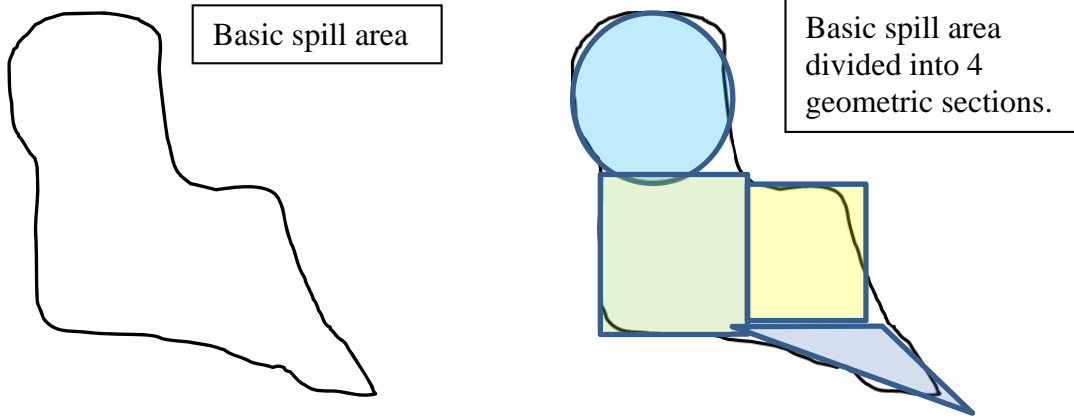
Common Shapes and Dimensions



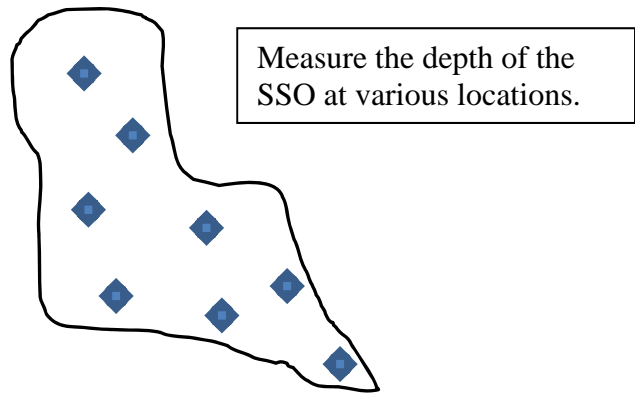
1. Sketch the shape of the contained wastewater.
2. Measure or pace off the dimensions.
3. Measure the depth at several locations and select an average.
4. Convert the dimensions, including depth, to feet.
5. Calculate the area:
 - Rectangle: $\text{Area} = \text{length (feet)} \times \text{width (feet)}$
 - Circle: $\text{Area} = \text{diameter (feet)} \times \text{diameter (feet)} \times 3.14 \text{ divided by } 4$
 - Triangle: $\text{Area} = \text{base (feet)} \times \text{height (feet)} \times 0.5$
6. Multiply the area (square feet) times the depth (in feet) to obtain the volume in cubic feet.
7. Multiply the volume in cubic feet by 7.48 to convert to gallons

Not all SSOs will conform to a specific shape. When this occurs, break up the area of the SSO into various shapes or segments, then calculate the amount of wastewater spilled in each segment, adding them together to arrive at the total spill volume.

Example:



Determine the area of each of the geometric sections adding them all together to determine the total area of the spill.



Where it is difficult to measure wet spots on asphalt, use a depth of 0.0026' or 1/32". For wet spots on concrete use depths of 0.0013' or 1/64" for reasonable estimates.

Inch to Feet Conversion:		
Inches	to	Feet
1/8"	=	0.01'
1/4"	=	0.02'
3/8"	=	0.03'
1/2"	=	0.04'
5/8"	=	0.05'
3/4"	=	0.06'
7/8"	=	0.07'
1"	=	0.08'
2"	=	0.17'
3"	=	0.25'
4"	=	0.33'
5"	=	0.42'
6"	=	0.50'
7"	=	0.58'
8"	=	0.67'
9"	=	0.75'
10"	=	0.83'
11"	=	0.92'
12"	=	1.00'

Sample Calculation:
 A 20 ft x 20 ft square wet spot on concrete equals 3.9 gal
 and for asphalt is 7.8 gal.

Counting Connections

Once the location of the blockage has been established, the amount of the SSO could be estimated by counting the number of upstream connections. On the sewer atlas maps or GIS system, locate the pipeline where the SSO occurred. Count all of the developed parcels that are connected to the pipeline upstream of the blockage. The typical single family residential parcel may discharge 8 to 10 gallons of wastewater per hour during active times of the day. For a multi-family residential development such as an apartment or condo complex, count each apartment as a single family residential unit. Use the higher flow number (10 gallons per hour) during typical peak flow hours and the lower flow number (8 gallons per hour) during low flow periods. Multiply the number of connections times the average flow (8 to 10 gallons per hour) times the time period (duration) that the SSO occurred.

Example for an SSO occurring on a weekday at 8:00am:

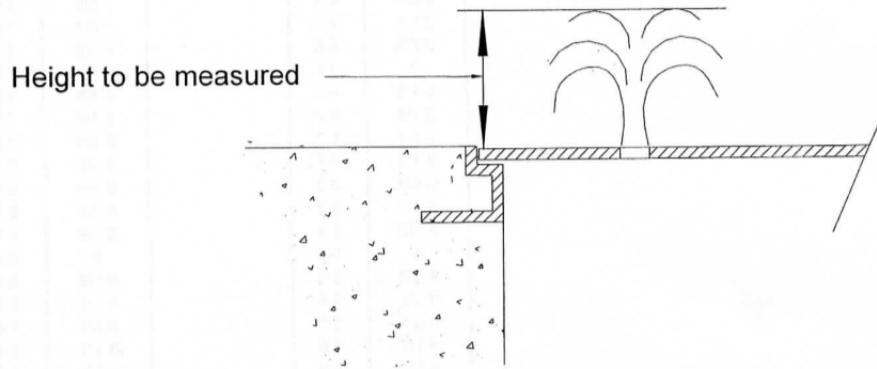
Number of upstream connections	22
Estimated flow per parcel	10 gallons per hour
Duration of SSO event	45 minutes
Total spill estimation (22 x 10 x .75)	165 gallons
(22 connections x 10 gallons per hour x 45 minutes (.75 hour) = 165 gallons)	

Data may be available in your drainage area from your capacity planners at your city or agency. Consult with them on reasonable flow amounts or rates of flow.

Pick and Vent Holes in Manhole Covers

Small SSOs will occur where the wastewater escaping from the manhole is isolated to the pick or vent holes in the cover. Larger SSOs may involve both the discharge from the pick and/or vent holes and the gap between the manhole cover and manhole frame. To estimate an SSO occurring from the manhole pick and vent holes, measure the height of the wastewater plume exiting the holes. Find that height and hole diameter on the manhole pick or vent hole chart to determine the flow rate escaping the pick/vent hole. Multiply the flow rate times the number of holes that are discharging wastewater. Once the total volume (gpm) has been determined,

multiply the gpm by the duration of the SSO in minutes. This will result in the total estimated gallons of the SSO.



Example: Measured height of plume exiting pick/vent hole is 1 inch from a ½-inch vent hole and there are 4 vent holes. The total volume per minute would be .94 gpm per hole (from attached chart) or 3.76 gpm total (.94 gpm x 4 holes) from the manhole cover. If the SSO lasted one hour, the total wastewater lost would be 226 gallons (3.76 x 60 = 225.6).

Number of pick holes	4
Flow from each pick hole	.94 gpm
Duration of SSO	60 minutes
Total SSO volume (.94 x 4 x 60=225.6)	226 gallons

Pick and Vent Hole Estimation Chart

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

Hole Dia. inches	Area sq. ft.	Coeff. of Vel. Cv	Coeff. Of Cont. Cc	C Cv x Cc	Water Ht inches	Water Ht inches	Water Ht feet	Q cfs	Q gpm	Q gph
	Formula: =0.785*Ax* Ax/144			Formula: =Ix*449			Formula: =Gx/12	Formula: =Ex*Bx*(S QRT(2*32. 2*Hx))	Formula: =Ix*449	Formula: =Jx*60
Vent Hole										
0.50	0.00136	0.945	0.70	0.662	1/16 th	0.063	0.005	0.0005	0.23	14
0.50	0.00136	0.945	0.70	0.662	1/8 th	0.125	0.010	0.0007	0.33	20
0.50	0.00136	0.945	0.70	0.662	1/4 th	0.250	0.021	0.0010	0.47	28
0.50	0.00136	0.945	0.70	0.662	one half	0.500	0.042	0.0015	0.66	40
0.50	0.00136	0.945	0.70	0.662	3/4 ths	0.750	0.063	0.0018	0.81	49
0.50	0.00136	0.945	0.70	0.662	1 inch	1.000	0.083	0.0021	0.94	56
0.50	0.00136	0.945	0.70	0.662	1 1/4 "	1.250	0.104	0.0023	1.05	63
0.50	0.00136	0.945	0.70	0.662	1 3/8"	1.375	0.115	0.0024	1.10	66
0.50	0.00136	0.945	0.70	0.662	1 1/2"	1.500	0.125	0.0026	1.15	69
0.50	0.00136	0.945	0.70	0.662	1 5/8"	1.625	0.135	0.0027	1.20	72
0.50	0.00136	0.945	0.70	0.662	1 3/4"	1.750	0.146	0.0028	1.24	74
0.50	0.00136	0.945	0.70	0.662	2 inches	2.000	0.167	0.0030	1.33	80
0.50	0.00136	0.945	0.70	0.662	2 1/4"	2.250	0.188	0.0031	1.41	84
0.50	0.00136	0.945	0.70	0.662	2 1/2"	2.500	0.208	0.0033	1.48	89
0.50	0.00136	0.945	0.70	0.662	2 3/4"	2.750	0.229	0.0035	1.56	93
0.50	0.00136	0.945	0.70	0.662	3 inches	3.000	0.250	0.0036	1.62	97
0.50	0.00136	0.945	0.70	0.662	3 1/4"	3.250	0.271	0.0038	1.69	101
0.50	0.00136	0.945	0.70	0.662	3 1/2"	3.500	0.292	0.0039	1.75	105
0.50	0.00136	0.945	0.70	0.662	3 3/4"	3.750	0.313	0.0040	1.82	109
0.50	0.00136	0.945	0.70	0.662	4.000	4.000	0.333	0.0042	1.88	113
Vent Hole										
0.75	0.00307	0.955	0.67	0.640	1/16 th	0.063	0.005	0.0011	0.51	31
0.75	0.00307	0.955	0.67	0.640	1/8 th	0.125	0.010	0.0016	0.72	43
0.75	0.00307	0.955	0.67	0.640	1/4 th	0.250	0.021	0.0023	1.02	61
0.75	0.00307	0.955	0.67	0.640	one half	0.500	0.042	0.0032	1.44	87
0.75	0.00307	0.955	0.67	0.640	3/4 ths	0.750	0.063	0.0039	1.77	106
0.75	0.00307	0.955	0.67	0.640	1 inch	1.000	0.083	0.0045	2.04	122
0.75	0.00307	0.955	0.67	0.640	1 1/4 "	1.250	0.104	0.0051	2.28	137
0.75	0.00307	0.955	0.67	0.640	1 3/8"	1.375	0.115	0.0053	2.39	144
0.75	0.00307	0.955	0.67	0.640	1 1/2"	1.500	0.125	0.0056	2.50	150
0.75	0.00307	0.955	0.67	0.640	1 5/8"	1.625	0.135	0.0058	2.60	156
0.75	0.00307	0.955	0.67	0.640	1 3/4"	1.750	0.146	0.0060	2.70	162
0.75	0.00307	0.955	0.67	0.640	2 inches	2.000	0.167	0.0064	2.89	173
0.75	0.00307	0.955	0.67	0.640	2 1/4"	2.250	0.188	0.0068	3.06	184
0.75	0.00307	0.955	0.67	0.640	2 1/2"	2.500	0.208	0.0072	3.23	194
0.75	0.00307	0.955	0.67	0.640	2 3/4"	2.750	0.229	0.0075	3.38	203
0.75	0.00307	0.955	0.67	0.640	3 inches	3.000	0.250	0.0079	3.53	212
0.75	0.00307	0.955	0.67	0.640	3 1/4"	3.250	0.271	0.0082	3.68	221
0.75	0.00307	0.955	0.67	0.640	3 1/2"	3.500	0.292	0.0085	3.82	229
0.75	0.00307	0.955	0.67	0.640	3 3/4"	3.750	0.313	0.0088	3.95	237
0.75	0.00307	0.955	0.67	0.640	4.000	4.000	0.333	0.0091	4.08	245
Vent Hole										
1.00	0.00545	0.960	0.65	0.624	1/16 th	0.063	0.005	0.0020	0.88	53
1.00	0.00545	0.960	0.65	0.624	1/8 th	0.125	0.010	0.0028	1.25	75
1.00	0.00545	0.960	0.65	0.624	1/4 th	0.250	0.021	0.0039	1.77	106
1.00	0.00545	0.960	0.65	0.624	one half	0.500	0.042	0.0056	2.50	150
1.00	0.00545	0.960	0.65	0.624	3/4 ths	0.750	0.063	0.0068	3.06	184
1.00	0.00545	0.960	0.65	0.624	1 inch	1.000	0.083	0.0079	3.54	212
1.00	0.00545	0.960	0.65	0.624	1 1/4 "	1.250	0.104	0.0088	3.96	237
1.00	0.00545	0.960	0.65	0.624	1 3/8"	1.375	0.115	0.0092	4.15	249
1.00	0.00545	0.960	0.65	0.624	1 1/2"	1.500	0.125	0.0097	4.33	260
1.00	0.00545	0.960	0.65	0.624	1 5/8"	1.625	0.135	0.0100	4.51	271
1.00	0.00545	0.960	0.65	0.624	1 3/4"	1.750	0.146	0.0104	4.68	281
1.00	0.00545	0.960	0.65	0.624	2 inches	2.000	0.167	0.0111	5.00	300
1.00	0.00545	0.960	0.65	0.624	2 1/4"	2.250	0.188	0.0118	5.31	318
1.00	0.00545	0.960	0.65	0.624	2 1/2"	2.500	0.208	0.0125	5.59	336
1.00	0.00545	0.960	0.65	0.624	2 3/4"	2.750	0.229	0.0131	5.87	352
1.00	0.00545	0.960	0.65	0.624	3 inches	3.000	0.250	0.0136	6.13	368

Pick and Vent Hole Estimation Chart - continued

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

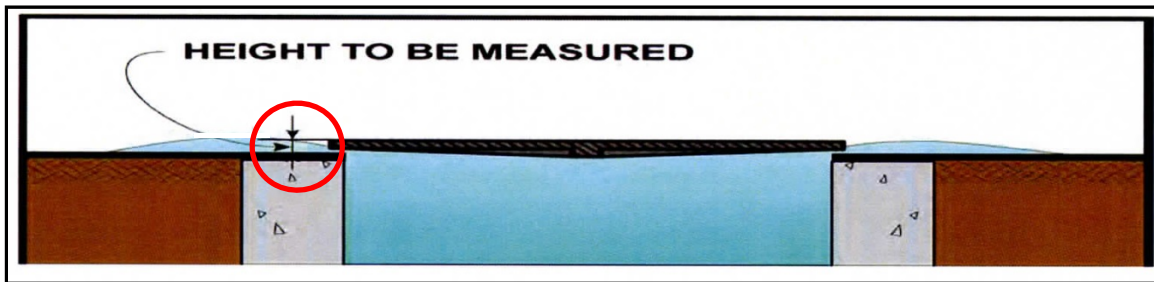
Hole Dia. Inches	Area sq. ft.	Coeff. of Vel. Cv	Coeff. Of Cont. Cc	C Cv x Cc	Water Ht Inches	Water Ht Inches	Water Ht feet	Q cfs	Q gpm	Q gph
	Formula: =0.785*Ax* Ax/144			Formula: =Ix*449			Formula: =Gx/12	Formula: =Ex*Bx*(S QRT(2*32. 2'Hx))	Formula: =Ix*449	Formula: =Jx*60
Vent Hole										
1.00	0.00545	0.960	0.65	0.624	3 1/4"	3.250	0.271	0.0142	6.38	383
1.00	0.00545	0.960	0.65	0.624	3 1/2"	3.500	0.292	0.0147	6.62	397
1.00	0.00545	0.960	0.65	0.624	3 3/4"	3.750	0.313	0.0153	6.85	411
1.00	0.00545	0.960	0.65	0.624	4.000	4.000	0.333	0.0158	7.08	425
Pick Hole semicircular area										
1.00	0.00273	0.960	0.65	0.624	1/16 th	0.063	0.005	0.0010	0.44	27
1.00	0.00273	0.960	0.65	0.624	1/8 th	0.125	0.010	0.0014	0.63	38
1.00	0.00273	0.960	0.65	0.624	1/4 th	0.250	0.021	0.0020	0.89	53
1.00	0.00273	0.960	0.65	0.624	one half	0.500	0.042	0.0028	1.25	75
1.00	0.00273	0.960	0.65	0.624	3/4 ths	0.750	0.063	0.0034	1.53	92
1.00	0.00273	0.960	0.65	0.624	1 inch	1.000	0.083	0.0039	1.77	106
1.00	0.00273	0.960	0.65	0.624	1-1/2 inch	1.500	0.125	0.0048	2.17	130
1.00	0.00273	0.960	0.65	0.624	2 inches	2.000	0.167	0.0056	2.51	150
1.00	0.00273	0.960	0.65	0.624	2 1/4"	2.250	0.188	0.0059	2.66	159
1.00	0.00273	0.960	0.65	0.624	2 1/2"	2.500	0.208	0.0062	2.80	168
1.00	0.00273	0.960	0.65	0.624	2 3/4"	2.750	0.229	0.0065	2.94	176
1.00	0.00273	0.960	0.65	0.624	3 inches	3.000	0.250	0.0068	3.07	184
1.00	0.00273	0.960	0.65	0.624	3 1/4"	3.250	0.271	0.0071	3.19	192
1.00	0.00273	0.960	0.65	0.624	3 1/2"	3.500	0.292	0.0074	3.31	199
1.00	0.00273	0.960	0.65	0.624	3 3/4"	3.750	0.313	0.0076	3.43	206
1.00	0.00273	0.960	0.65	0.624	4.000	4.000	0.333	0.0079	3.54	213

Courtesy of OCSD: Created 5/17/99 and modified 5/15/14, as an estimating tool for field staff. This is based on flow through orifices assumptions. Your city or agency may want to develop a similar tool.

**$Q=CA(2gh)^{.5}$ Where Q=cfs C=Cv x Cc A=area(sq. ft.) g=32.2 ft/sec/sec
h= water height (ft.)**

Manhole Ring

Some manhole covers in use today typically only have one pick hole forcing most of the wastewater to escape from the perimeter of the manhole cover during higher flow SSOs. To estimate the volume in this example, measure the observed height of the wastewater plume exiting the manhole cover. Find the height and manhole diameter on the Manhole with Cover in Place to determine the flow rate escaping the manhole. The chart has two columns, one for 24-inch diameter covers and one for 36-inch diameter covers. Wastewater will also be escaping from the pick hole and must be accounted for separately by following the instructions for estimating an SSO from pick/vent hole. Multiply the flow rate times the number of holes that are discharging. The total estimated rate (gpm) is determined by adding together the rate being lost (gpm) from around the cover with the rate being lost (gpm) from the pick and/or vent hole(s). Once the total rate (gpm) has been determined, multiply the gpm by the duration of the SSO in minutes. This will result in the total estimated gallons of the SSO.



Example: The measured height of the plume exiting the ring of a 36-inch manhole is 1 inch. The total volume per minute would be 13 gpm from around the ring of a 36-inch manhole cover (from the attached chart). (Calculate the amount exiting the pick hole(s) and add to the total being lost around the ring). If the SSO lasted one hour the total wastewater lost would be 780 gallons ($13 \times 60 = 780$).

Estimated loss around ring (from chart)	13 gpm
Duration of SSO	60 minutes
Total SSO (without loss from pick hole)	780 gallons
(13 gal/min x 60 minutes = 780 gallons plus amount lost from pick hole(s))	

ESTIMATED SSO FLOW OUT OF MH WITH COVER IN PLACE

24" COVER

Height of spout above M/H rim H in inches	SSO FLOW Q		Min. Sewer size in which these flows are possible
	in gpm	in MGD	
1/4	1	0.001	
1/2	3	0.004	
3/4	6	0.008	
1	9	0.013	
1 1/4	12	0.018	
1 1/2	16	0.024	
1 3/4	21	0.030	
2	25	0.037	
2 1/4	31	0.045	
2 1/2	38	0.054	
2 3/4	45	0.065	
3	54	0.077	
3 1/4	64	0.092	
3 1/2	75	0.107	
3 3/4	87	0.125	
4	100	0.145	
4 1/4	115	0.166	
4 1/2	131	0.189	
4 3/4	148	0.214	
5	166	0.240	
5 1/4	185	0.266	
5 1/2	204	0.294	
5 3/4	224	0.322	6"
6	244	0.352	
6 1/4	265	0.382	
6 1/2	286	0.412	
6 3/4	308	0.444	
7	331	0.476	
7 1/4	354	0.509	
7 1/2	377	0.543	
7 3/4	401	0.578	8"
8	426	0.613	
8 1/4	451	0.649	
8 1/2	476	0.686	
8 3/4	502	0.723	
9	529	0.761	

36" COVER

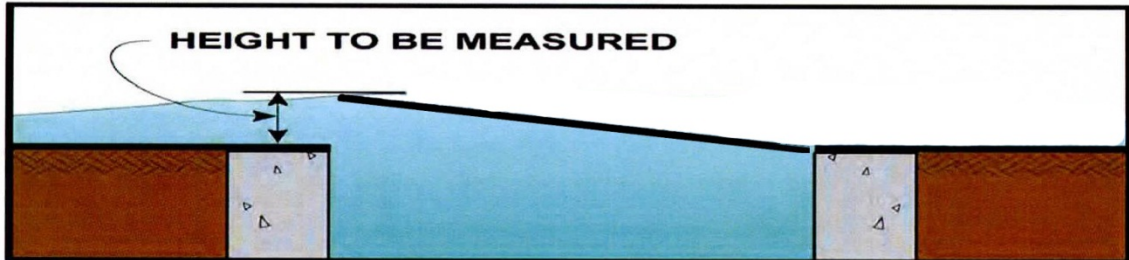
Height of spout above M/H rim H in inches	SSO FLOW Q		Min. Sewer size in which these flows are possible
	in gpm	in MGD	
1/4	1	0.002	
1/2	4	0.006	
3/4	8	0.012	
1	13	0.019	
1 1/4	18	0.026	
1 1/2	24	0.035	
1 3/4	31	0.044	
2	37	0.054	
2 1/4	45	0.065	
2 1/2	55	0.079	
2 3/4	66	0.095	
3	78	0.113	
3 1/4	93	0.134	
3 1/2	109	0.157	
3 3/4	127	0.183	
4	147	0.211	
4 1/4	169	0.243	
4 1/2	192	0.276	
4 3/4	217	0.312	6"
5	243	0.350	
5 1/4	270	0.389	
5 1/2	299	0.430	
5 3/4	327	0.471	
6	357	0.514	
6 1/4	387	0.558	8"
6 1/2	419	0.603	
6 3/4	451	0.649	
7	483	0.696	
7 1/4	517	0.744	
7 1/2	551	0.794	
7 3/4	587	0.845	10"
8	622	0.896	
8 1/4	659	0.949	
8 1/2	697	1.003	
8 3/4	734	1.057	
9	773	1.113	

The formula used to develop Table 1 measures the maximum height of the water coming out of the maintenance manhole above the rim. The formula was taken from Hydraulics and Its Application by A.H. Gibson (Constable & Co. Limited).

Partially Covered Manhole

Sometimes an SSO will occur that only lifts one side of the manhole cover. This is especially true of manholes where the cover is on an incline with the cover lifting on the downward side of the manhole. To estimate the volume of an SSO under these conditions, calculate the area (in square feet) from where the wastewater is escaping and the velocity (in feet per second) that the wastewater is normally traveling in the sewer at half the pipe depth. The velocity is estimated from visual observation with 2 feet/second or less being a small velocity, 4 to 5 feet/second being a medium velocity, and 7 feet/second or higher being a large velocity. Velocities in the sewer above 7 feet/second may be strong enough to blow the manhole cover off. Higher velocities also tend to raise the manhole lid higher. Next, multiply by the duration

(in seconds) that the SSO occurred. Finally, multiply by 7.48 to determine the volume of the SSO in gallons. The formula is Volume (gallons) = Area (sq. ft.) x Velocity (ft/sec) x Time (in seconds) x 7.48 (gal/cu. ft.).



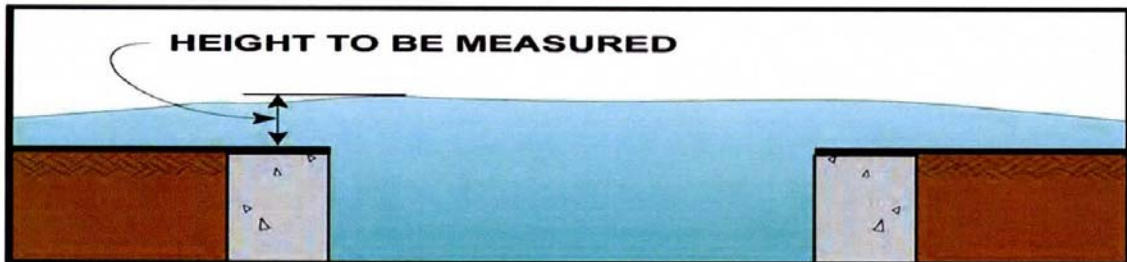
Example: The measured height of the plume exiting the side ring of a 24-inch manhole is 2 inches. Based upon the data provided in the Area Calculation Chart below, a 2-inch plume from one side of a 24-inch manhole cover provides 0.524 square feet of area. The velocity of the flow is estimated at 4 ft/sec (visual observation) with the assumed duration of the flow lasting for one hour. The total amount of the SSO is estimated at 56,441 gallons (.524 x 4 x 60 x 60 x 7.48 = 56,441)

Height of plume	2 inches
Area for 24 inch manhole	0.524 square feet
Estimated velocity	4 ft/sec
Duration of SSO	60 minutes
Conversion from cu. ft. to gallons	7.48
Total estimated SSO volume	56,441 gallons
(.524 sq. ft. x 4 ft/sec x 60 minutes x 60 sec/min x 7.48 gal/cu ft = 56,441 gal)	

Area Calculation Chart		
Height of Flow	24 Inch Manhole	36 Inch Manhole
.5 inches	0.131 sq. ft.	0.195 sq. ft.
1 inches	0.262 sq. ft.	0.391 sq. ft.
1.5 inches	0.393 sq. ft.	0.586 sq. ft.
2 inches	0.524 sq. ft.	0.782 sq. ft.
2.5 inches	0.655 sq. ft.	0.977 sq. ft.
3 inches	0.786 sq. ft.	1.173 sq. ft.
3.5 inches	0.917 sq. ft.	1.368 sq. ft.
4 inches	1.048 sq. ft.	1.564 sq. ft.

Open Manhole

In large events the force of the overflowing wastewater will have sufficient pressure and volume to unseat the cover from the frame and move the manhole cover away from the manhole. Typically, when the SSO rates reach approximately 7 cfs (approximately 3,000 gpm or about 4.32 mgd), there is sufficient flow and pressure to blow off the manhole cover. To estimate the volume of an SSO where the manhole cover has been removed, the average height of the plume of wastewater exiting the manhole must be measured. This measurement is from the pavement surface close to the manhole ring to the top of the plume. Take several measurements in several locations around the ring and average the findings. If possible, and being safe to protect yourself from the open manhole, find the average height of the plume for the size of the manhole lid (24-inch or 36-inch diameter) on the Area Calculation Chart to determine the rate of flow exiting the manhole. Multiply the flow rate expressed in gallons per minute from the chart multiplied by the duration of the SSO in minutes to determine the total volume of the SSO. A photo taken at a safe distance upon arrival may help you refine your estimate.



Example: Determine the observed height of the plume at several locations around the ring of the manhole and average the results. Determine the size of the manhole cover. If the average height of the plume exiting an open 24-inch diameter manhole is 2 inches, find 2 inches on the 24-inch Manhole Cover Removed Chart. Based upon the data provided in the Manhole Cover Removed Chart, the flow in gallons per minute would be 3,444 gpm. If the duration of the flow lasted for one hour (60 minutes), the total amount of the SSO would be estimated at 206,640 gallons ($3,444 \times 60 = 206,640$).

Height of plume (average) on 24-inch manhole	2 inches
Estimated flow from chart	3,444 gpm
Duration of SSO	60 minutes
Estimated SSO total volume	206,640 gallons
(Est flow from chart 3,444 x 60 minutes = 206,640)	

ESTIMATED SSO FLOW OUT OF M/H WITH COVER REMOVED

24" FRAME

Water Height above M/H frame H in inches	S S O FLOW		Min. Sewer size in which these flows are possible
	Q		
	in gpm	in MGD	
1/8	28	0.04	
1/4	62	0.09	
3/8	111	0.16	
1/2	160	0.23	
5/8	215	0.31	6"
3/4	354	0.51	8"
7/8	569	0.82	10"
1	799	1.15	12"
1 1/8	1,035	1.49	
1 1/4	1,340	1.93	15"
1 3/8	1,660	2.39	
1 1/2	1,986	2.86	
1 5/8	2,396	3.45	18"
1 3/4	2,799	4.03	
1 7/8	3,132	4.51	
2	3,444	4.96	21"
2 1/8	3,750	5.4	
2 1/4	3,986	5.74	
2 3/8	4,215	6.07	
2 1/2	4,437	6.39	
2 5/8	4,569	6.58	24"
2 3/4	4,687	6.75	
2 7/8	4,799	6.91	
3	4,910	7.07	

36" FRAME

Water Height above M/H frame H in inches	S S O FLOW		Min. Sewer size in which these flows are possible
	Q		
	in gpm	in MGD	
1/8	49	0.07	
1/4	111	0.16	
3/8	187	0.27	6"
1/2	271	0.39	
5/8	361	0.52	8"
3/4	458	0.66	
7/8	556	0.8	10"
1	660	0.95	12"
1 1/8	1,035	1.49	
1 1/4	1,486	2.14	15"
1 3/8	1,951	2.81	
1 1/2	2,424	3.49	18"
1 5/8	2,903	4.18	
1 3/4	3,382	4.87	
1 7/8	3,917	5.64	21"
2	4,458	6.42	
2 1/8	5,000	7.2	24"
2 1/4	5,556	8	
2 3/8	6,118	8.81	
2 1/2	6,764	9.74	
2 5/8	7,403	10.66	
2 3/4	7,972	11.48	30"
2 7/8	8,521	12.27	
3	9,062	13.05	
3 1/8	9,604	13.83	
3 1/4	10,139	14.6	
3 3/8	10,625	15.3	36"
3 1/2	11,097	15.98	
3 5/8	11,569	16.66	
3 3/4	12,035	17.33	
3 7/8	12,486	17.98	
4	12,861	18.52	
4 1/8	13,076	18.83	
4 1/4	13,285	19.13	
4 3/8	13,486	19.42	

Disclaimer:

This sanitary sewer overflow table was developed by Ed Euyen, Civil Engineer, P.E. No. 33955, California, for County Sanitation District 1. This table is provided as an example. Other Agencies may want to develop their own estimating tables.

Pictorial Reference

Currently there are two picture charts being widely used to assist with estimating SSO volumes. The older chart is the city of San Diego's Manhole Overflow Rate Chart with the newer chart being the CWEA Southern Section Collection Systems Committee (SSCSC) Manhole Overflow Gauge. Each chart is a pictorial depiction of how an overflowing manhole appears at a given flow rate. The SSCSC Manhole Overflow Gauge has an additional picture for each flow rate showing a wide angle view of the spill area. When using either of the pictorial reference charts, select which picture most accurately represents the SSO being estimated. Use the gpm of the associated picture multiplied times the duration of the SSO to determine the total spill volume. Example: If the selected picture shows 300 gpm and the duration of SSO is 55 minutes, the total estimated spill volume would be 16,500 gallons (300 gpm x 55 min).

Selected picture volume	300 gpm
Duration of SSO	55 minutes
Total estimated SSO	16,500 gallons
(300 gpm x 55 minutes = 16,500 gallons)	

Note: Data was obtained at training facilities where potable water was metered and photos were taken at various flow rates.

Training facilities also exist at the Orange County Sanitation District in Fountain Valley, CA.

As a reference point, an 8-inch diameter sewer flowing half full at a velocity of 2.5 ft/sec would have a flow rate of about 192 gal/min. If fully blocked, the SSO rate would be 192 gpm. For a partial blockage, the SSO rate will be less.

Other agencies have developed above ground estimating tools such as frame and cover sets that can be pressurized using potable water and simple flow meters.



City of San Diego
Metropolitan Wastewater Department

Reference Sheet for Estimating Sewer Spills from Overflowing Sewer Manholes

All estimates are calculated in gallons per minute (gpm)

Wastewater Collection Division
(619) 654-4160



City of San Diego Manhole Overflow Picture Chart



5 gpm



25 gpm



50 gpm



100 gpm



150 gpm



200 gpm



225 gpm



250 gpm



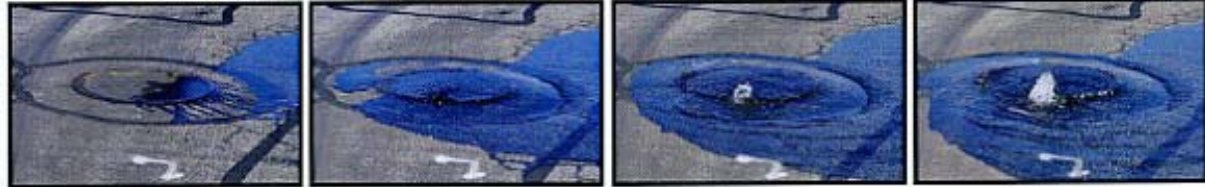
275 gpm

All photos were taken during a demonstration using metered water from a hydrant in cooperation with the City of San Diego's Water Department.

rev. 4/99

SSCSC MANHOLE OVERFLOW GAUGE
 Overflow Simulation courtesy of Eastern Municipal Water District

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



5 gpm 25 gpm 50 gpm 100 gpm



150 gpm 200 gpm 300 gpm 400 gpm



CWEA
 SOUTHERN SECTION COLLECTION SYSTEMS COMMITTEE

PROVIDING QUALITY TRAINING FOR COLLECTION SYSTEM PERSONNEL SINCE 1991

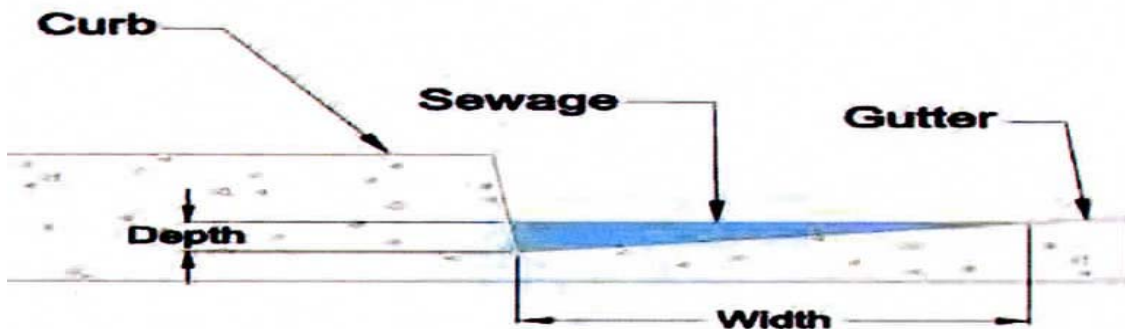
Mission Statement: To continuously increase the level of professionalism of Collection Systems personnel involved in the operation, maintenance, design and construction of Wastewater Collection Systems, by providing education and training, taking an active role in promoting certification, and recognizing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

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

SSCSC Manhole Overflow Gauge

Gutter Flow (Simplified Version)

Although the traditional Manning's Equation is used to calculate flows in open channels, this simplified version can be used to measure SSOs that are flowing in open channels such as ditches, curb and gutter, etc. and still achieve reasonable estimations. Two things need to be determined to utilize this method of spill estimation, the cross sectional area of the channel and the velocity of the flow in the channel. First, determine the cross sectional dimensions of the channel (width and depth of flow) to determine the area of the flow. Then determine the velocity of the flow in the channel. To determine the velocity, drop a small floating object (ping pong ball, leaf, small piece of wood, etc.) into the flow and time how long it takes the object to travel a measured distance. This should be practiced several times in a non-SSO situation, and averaged to determine the flow velocity. The velocity of the flow multiplied by the cross sectional area of the flow multiplied by the duration of the SSO will result in the approximate volume of the SSO.



$$Q = V \times A$$

$$\text{Flow (gal/min)} = \text{Velocity (ft/sec)} \times \text{Area (ft}^2\text{)} \times 7.48 \text{ gal/cu ft} \times 60 \text{ sec/min}$$

Example: If the cross section triangular area of the spill is calculated at .5 sq.ft. with the velocity measured at .25 ft. per second, the flow would be .125 cubic feet per second. Multiply times 449 (one cubic foot per second equals 449 gallons per minute) to determine the gallons per minute (56 gpm). If the SSO lasted for 35 minutes the total estimated spill volume would be 1,964 gallons.

Simplified Cross Section Area of the SSO



Estimated Triangular Area

0.5 square feet

Estimated Velocity

.25 feet per second

Duration of the SSO

35 minutes

Gallons per minute per cubic foot per second conversion

449

Total estimated spill volume

1,964 gallons

(Area .5 sq.ft. x Est velocity .25 ft. per sec. = .125 cfs x 449 = 56 gpm x 35 minutes = 1,964 estimated gallons spilled)

Gutters on steep hillsides will flow at higher velocities. Practice your estimating on flatter areas and steeper areas of your service area.

Bucket Method

This method can be used for small spills due to partial blockages where the entire flow stream could be captured in a bucket. Estimate how many minutes it takes to fill the bucket. Dividing the volume of the bucket (in gallons) by the elapsed time to fill the bucket (in minutes). This provides the flow rate in gallons per minute (gpm). Once the gpm has been established, multiply the gpm by the total time duration in minutes of the SSO until it stopped to determine the total estimated volume of the SSO.

Example: If it takes 30 seconds (.5 minutes) to fill a 5 gallon bucket and the total spill duration was 20 minutes, the total spill volume would be 200 gallons. (5gal/.5 min = 10 gpm x 20 min = 200 gal).

Time to fill a 5 gallon bucket

30 seconds (.5 minute)

Duration of SSO

20 minutes

Estimated spill volume

200 gallons

(5 gallons every 30 seconds equals 10 gallons per minute x 20 minutes = 200 gallons)

You can practice visual estimating by filling a bucket of known volume for a measured time from a garden hose.

Pipe Size

To calculate an SSO based upon pipe size requires the diameter of the pipe, the depth of flow in the pipe downstream of the blockage during and after the blockage, and the flow velocity in the pipe. This method calculates the amount of flow in the pipe at the same time of the day during the blockage compared to the amount of flow normally in the pipe to determine how much flow had been lost over time.

To use this method, measure the flow depth at the nearest manhole downstream from the blockage. Record the depth reading. Once the blockage has been cleared and the flow stabilized, measure the flow depth at the same manhole as before and record the reading. The attached chart can be used on various size pipelines where the velocity is 2.0 feet per second. Pipelines of other rates will have to be calculated.

To use the attached chart, find the depth of the flow during the blockage in column 1. Follow the row across to the diameter of the pipe where the blockage has occurred. The number listed will be the flow rate in gallons per minute for pipelines with a velocity of 2 feet per second. Next find the flow depth after the blockage has been removed and the flow stabilized. Move across the chart to the proper pipe size and record the flow rate for a free flowing pipeline. Subtract the flow rate from the blocked pipe from the flow rate of the free flowing pipe. The remainder will be the flow rate lost. Multiply the flow rate lost times the duration of the SSO to determine the total flow volume lost. Example: If the flow depth during the blockage of a 10-inch pipe was 1 inch, the flow rate would 25 gpm. After the blockage was cleared and the flow stabilized, the flow depth was now 5 inches then the flow rate would be 240 gpm. To determine the amount lost, subtract the gpm (pipe blocked) from the gpm (pipe cleared) ($240 \text{ gpm} - 25 \text{ gpm} = 215 \text{ gpm}$) leaving the flow rate of the SSO. Multiply the remaining flow rate multiplied by the duration of the SSO in minutes to estimate the total volume of the SSO.

Flow Depth Inches	8" PIPE	10" PIPE	12" PIPE	15" PIPE	18" PIPE	21" PIPE	24" PIPE
1	20 GPM	25 GPM	30 GPM	35 GPM	40 GPM	45 GPM	50 GPM
2	60	70	80	85	95	105	125
3	110	125	135	150	175	185	210
4	160	180	200	235	260	285	320
5	190	240	280	315	360	380	445
6	260	310	355	415	455	500	555
7	290	370	425	495	570	620	695
8	320	430	500	600	680	760	815
9		465	575	690	800	890	965
10		490	625	775	905	1005	1120
11			685	870	1020	1135	1275
12			715	935	1130	1260	1410
13				1020	1240	1415	1580
14				1070	1345	1520	1690
15				1105	1425	1650	1850
16					1495	1760	1990
17					1550	1880	2110
18					1595	1980	2285
19						2050	2410
20						2115	2530
21						2160	2630
22							2700
23							2765
24							2820

Note: the chart assumes V = 2.0 feet per second and n = 0.013

1. Record the time that spill was reported.
2. Record the flow, in inches, downstream of the spill or blockage. Record the pipe size in inches. Determine flow rate in gallons per minute (GPM) using chart above.
3. Re-establish flow and allow stabilizing. Record the time that flow stabilizes and the depth of flow, in inches. Determine flow rate using chart above.
4. Subtract the flow rate calculated in #2 from the flow rate calculated in #3.
5. Multiply the result of 4 by the minutes elapsed from notification to stopping overflow.
6. Report total amount in gallons on the SSO Report.

Note: The above chart is only for pipelines of the diameters shown and flowing at a velocity of 2.0 ft/sec.

Metered Flow

Estimates of the amount of wastewater spilled from a continuously metered system can be achieved utilizing upstream and downstream flow meters located close to the point where the wastewater escaped. Flow meters may be located at strategic locations throughout the wastewater collection system or at the intake or discharge of wastewater pump or lift stations. Flow metering usually occurs on pressure systems. If a spill is suspected on a metered upstream wastewater line, check the flow meter readings for abnormalities and note the time they start. Also check the flow meter readings at the downstream flow meter. If the downstream readings are lower than usual, the difference may be the amount of wastewater being lost to a spill. Abnormal pumping cycles for pump or lift stations located downstream from the spill can also be used to estimate the volume of a spill. Portable flow meters could also be installed in gravity sewers after a SSO event to help verify average flows at various times of the day when full or partial blockages may have occurred. You should also perform

this on the same day of the week that the SSO occurred. This is also a good way to understand how flows will change during the day in various parts of your system.

Rain Events

Previous examples of methods throughout the document were all in dry weather situations. Rain events cause substantial difficulties for SSO responders in establishing an accurate estimate of an SSO. Infiltration into the sewer system will increase, sometimes dramatically, the system flow including the amount of the SSO. When estimating the SSO amount during a rain event, the estimate is to include only the amount of wastewater that left the collection system (this includes any clear water inflow and/or infiltration (I&I) that entered the collection system upstream of the SSO) and not any waters that the wastewater comingled with after leaving the system. Although the comingled waters are considered contaminated by the SSO and may be involved in the cleanup, they should not be considered in the estimate of the volume of sewage spilled for the event. Consult with your city or agency management or your site-specific procedures to be used during wet weather SSOs.

Saturated Soils

Spills that have occurred on or migrated to grassy or dirt areas can be estimated if the area is dry and is not regularly irrigated like a field or dirt parking lot. This method is effective only during dry weather and not during or after a rain event. To estimate how much wastewater has been lost to the soil, first determine how many cubic feet of soil has been wetted. First determine the size of the area where the spill occurred. This is done in the same manner as for spills that occurred on hard surfaces and as discussed in the Measured Volume Method. Next determine how deep the soil has been saturated. To determine the depth of the soil saturation, dig several test holes with a round point shovel until dry soil is reached. Measure the depth of each hole and determine the average depth of the saturated soil. Multiply the area of the spill (in square feet) times the average depth of the soil saturation to determine the amount (in cubic feet) of saturated soil. Different types of soils will retain moisture in different amounts. Water will penetrate sandy soils quicker than clay soils and clay soils are capable of holding more moisture than sandy soils. Use an average of 18% moisture content when estimating the amount of wastewater that has saturated the soil.

Example: If the spill was contained in a dry dirt or grassy area of 10 feet by 20 feet, the area of the spill would be 200 square feet if it was a perfect rectangle (assumed). If the wastewater penetrated the soil to an average depth of 3 inches, the total amount of saturated soil would be 50 cubic feet ($10 \times 20 \times .25 = 50$ cf.). To determine the amount of wastewater suspended in the wetted soil, multiply the 50 cubic feet times 7.48 gallons per cubic foot ($50 \text{ cf} \times 7.48 \text{ gal/cf} = 374$ gallons). Next multiply the gallons times the average amount of moisture the soil can hold (use 18% as a rough estimate or calculate the soil moisture) to determine the actual estimated amount of wastewater that has saturated the soil ($374 \text{ gal} \times .18 = 67.3$ gallons of wastewater contained in the soil for the area of the spill). Add the amount of wastewater estimated to be contained in the soil with the amount of surface wastewater that was removed to achieve an estimated total amount of the wastewater spill.

Simple method to calculate soil moisture content:

Equipment needed: One coffee filter; a funnel; a graduated measuring cup; a jar or bottle.

Place the coffee filter into the funnel. Place the funnel into the mouth of the jar or bottle.

Place one cup of clean dry soil from the spill site onto the coffee filter. Pour one cup (8 ounces) of water onto the soil and allow the water to drain into the jar. Once the water has stopped dripping from the funnel, remove the funnel and measure the amount of water in the jar. The difference between the amount of water in the jar and the 8 ounces originally poured over the soil is the amount of moisture the soil retained.

Example: If six and one half ounces (6.5) remained in the jar, one and one half ounce (1.5) or 18.75% remained in the soil. The soil moisture content would be 18.75%.

Combo Truck or Vacuum Truck Recovery

When the spill is contained to a specific area and recovered by a combo or vacuum truck, the amount recovered can be used in calculating the amount of the original spill. If the spill is contained on a hard surface, estimate the total spill volume by what was captured by the combo or vacuum truck plus the amount that could not be captured. To estimate the amount not captured by the combo or vacuum truck, use the Measured Volume Method. For wet spots on concrete, use a depth of 0.0013 ft. or 1/64 inch. For wet stains on asphalt, use a depth of

0.0026 ft. or 1/32 inch. If the spill is contained on soil, use the Saturated Soils Method to determine how much of the spill soaked into the soil and add to the amount captured by the combo or vacuum truck.

Conversion Factors

1.0 cfs = .6463 mgd

One cubic foot of water (cf) = 7.48 gallons

One cubic foot of water per second (cfs) = 448.8 gallons per minute

A cylinder 1 foot in diameter and one foot deep = 5.87 gallons

A 1 square foot triangle 1 foot deep = 3.25 gallons

One inch or 1/12 ft = .083 feet

Volumes Recovered with Trucks or Pumped to Tanks

Level gauge on truck or

Known volume of the full tank or

Number of full tank trucks used during large SSO events

Use your agency's approved conversion factors, if available.

References

California Environmental Protection Agency

<http://www.calepa.ca.gov/>

State Water Resources Control Board

<http://www.swrcb.ca.gov/>

Sanitary Sewer Overflow (SSO) Reduction Program

http://www.swrcb.ca.gov/water_issues/programs/sso/index.shtml

Sample Worksheet

(City or Agency Name)

SSO Volume Estimation Worksheet

SSO Address/Location: _____ Date: _____

SSO Volume Method of Estimation (check appropriate box and provide appropriate information for method used below)

Pictorial Reference Flow Rate Chart (San Diego Chart CWEA Ruler
Vent or Pick Holes Eyeball estimate

Measured volume Counting Connections Manhole Ring Partially Covered
Manhole Open Manhole

Bucket Method Pipe Size Method Gutter Flow Method Metered Flow
Rain Event Method

Saturated Soils Method Combo/Vacuum Truck Recovery Method

Spill Start Date: _____ Spill Start Time: _____

Spill End Date: _____ Spill End Time: _____ Total Est. Spill Volume (gal): _____

Provide a detailed description of the method(s) used to determine the SSO estimate. (Use additional sheets as needed)

Signed: _____

Date: _____

APPENDIX H

SEWAGE SPILL SAMPLE COLLECTION GUIDELINES

SEWAGE SPILL SAMPLE COLLECTION GUIDELINES

Use the following sample method if a discharge flows into a body of water, including seasonal drainage ways:

1. Collect one sample in a 100 milliliter (ml) sterilized plastic container upstream from the spill. Label this sample with the name of the stream, drainage, the approximate distance from the mixing zone, the date, the time and collectors name. Make sure the sample is taken far enough upstream that the spill does not impact the sample.
2. Collect one sample in a 100 ml sterilized plastic container from the mixing zone (i.e. the point where the spill and body of water combine). Label this sample with the location, date, time and collectors name.
3. Collect one sample in a 100 ml sterilized plastic container downstream from the spill point. Label this sample with the location, the approximate distance from the mixing zone, date, time and collectors name.

Samples should be collected in laboratory supplied containers, sealed, placed on ice for transport to a State Certified Laboratory, California Laboratory Services (CLS) of Rancho Cordova, California under strict chain of custody (COC) protocols. Grab samples as to be analyzed for fecal and total coliform by Standard Method 9221 and ammonia by United States Environmental Protection Agency (USEPA) 350.1.

APPENDIX I

STATION 16 EMERGENCY RESPONSE PROCEDURES FOR ON-CALL STAFF

APPENDIX F

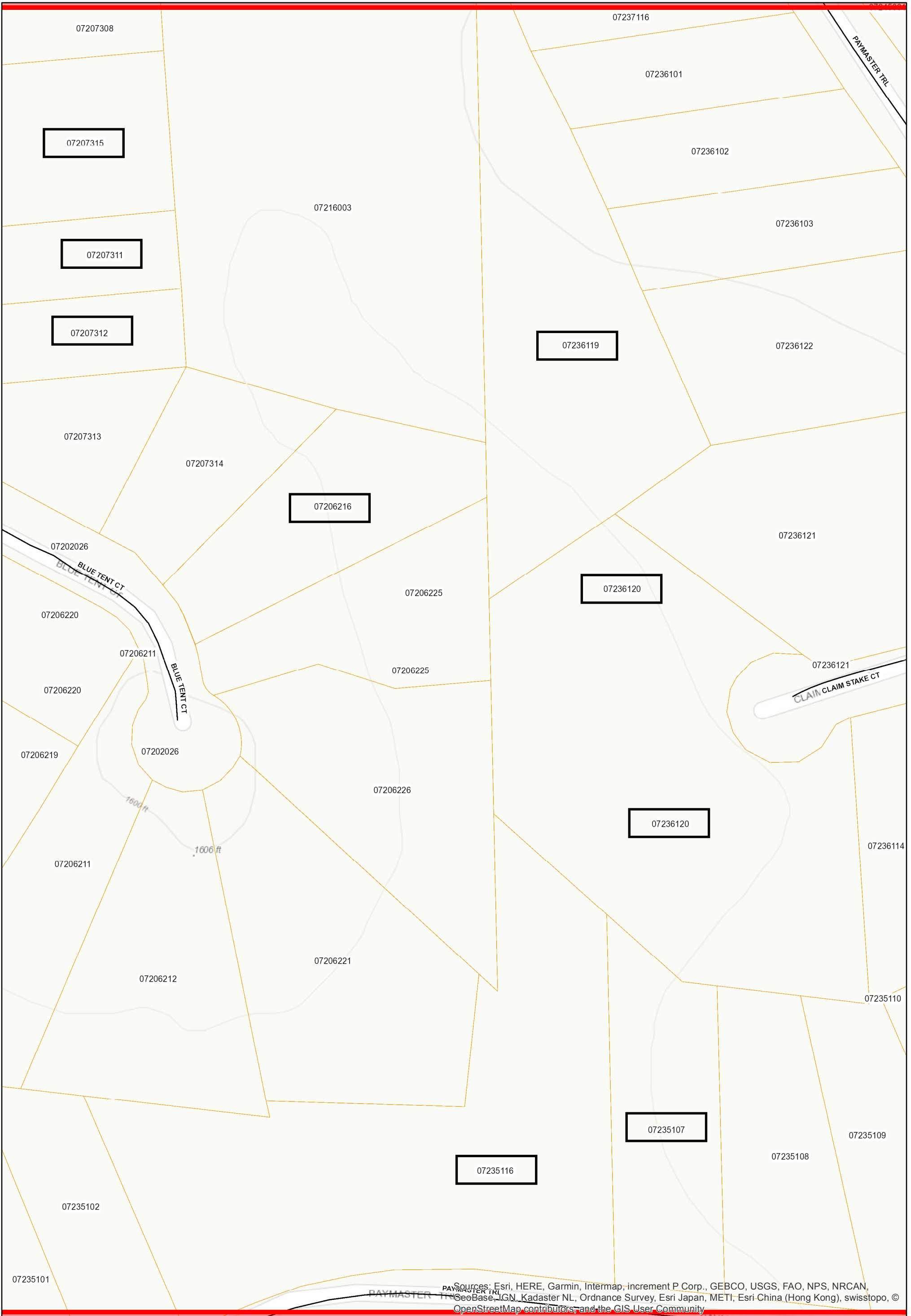
**SITE MAP AND LISTING OF PROPERTY OWNER LOCATED DOWNSTREAM OF CDS PUMP
STATION AND COMMUNITY DISPOSAL FIELDS**

List of Parcels From Station 16 to American River
Georgetown Divide Public Utility District

North of Hwy 193	ALT Lot #	Name	Physical Address	Mailing Address	Home	Acres	Comments
Auburn Lake Trails Lots and North of State Highway 193							
072-073-15-100	21	Cornelius Van Puffelen	1534 American River Tr. Cool, CA 95614		Yes	0.63	Station 16 located behind property.
072-073-11-100	20	Louis J Bacco	1522 American River Tr. Cool, CA 95614	P.O. Box 483 Renton WA, 98057	Yes	0.3	Station 16 located behind property.
072-073-12-100	19	Linda & Robert Dreher	1516 American River Tr. Cool, CA 95614		Yes	0.3	Station 16 located behind property.
072-062-16-100	16	Richard & Sheryl Swenson	1395 Blue Tent Ct. Cool, CA 95614		Yes		Creek runs behind property.
072-361-119		ALT Property Association		P.O. Box 181 Cool, CA 95614			Creek runs through property.
072-361-20	1837, 1838, 1839, 1840	George T Linder & Barbara L McKellar	1447 Claim Stake Ct. Cool, CA 95614		Yes		Creek runs behind and through property.
072-351-16	1822, 1823, 1824, 1825	Jody Gray	2880 Paymaster Tr. Cool, CA 95614		Yes		Creek runs through property.
072-351-07	1826	Daniel and Elizabeth Vidovich	2870 Paymaster Tr. Cool, CA 95614		Yes		An drainage/SSO from Station 16 does not appear that it will affect this property.
072-352-18	1927, 1928	Isidore Natsios	2895 Paymaster Tr. Cool, CA 95614	149 Blackfield Dr., Belvedere Tiburon, CA 94920	Yes		Creek runs through property. Property is a rental.
072-352-15	1924, 1925, 1926	Page M Laurie	2855 Paymaster Tr. Cool, CA 95614		Yes		Creek runs through the western edge of property beyond their fence.
072-052-04		Michael & Shaunda Crane	1400 Ligaya Ln. Cool, CA 95614		Yes		Creek runs along eastern edge of property.
South of Hwy 193 to Cherry Acres Road							
071-032-43		Triola Family	1620, 1600 & 1622 State Hwy. 193	1620 Highway 193 Cool, CA 95614	Yes	70	Drainage from CDS fields could affect this property but not drainage from Station 16.
071-032-16		Patrica Hill and Smith Family Trust		4800 El Camino Carmichael, CA 95608	No	42.5	Knickerbocker Creek runs through property.
071-032-15-100		Kirk A Brelsford	3100 Triple Seven Rd., Cool, CA 95614		Yes	25.06	Knickerbocker Creek runs through property.
071-100-06-100		Joan C Kemper	1390 State Hwy 193 Cool, CA 95614		Yes	2	Knickerbocker Creek runs through property.
071-100-04-100		Jill Wyatt	1380 State Hwy 193 Cool, CA 95614		Yes	5.59	Knickerbocker Creek runs through property.
071-100-07-100		Ann Gualtieri	3060 Triple Seven Rd. Cool, CA 95614		Yes	2	Knickerbocker Creek runs through property.
071-100-05-100		Ann Gualtieri	3060 Triple Seven Rd. Cool, CA 95614		No	2	Knickerbocker Creek runs through property.
071-100-15-100		Otto Galdal	1310 State Hwy 193 Cool, CA 95614		Yes	3.3	Knickerbocker Creek runs through property.

List of Parcels From Station 16 to American River
Georgetown Divide Public Utility District

North of Hwy 193	ALT Lot #	Name	Physical Address	Mailing Address	Home	Acres	Comments
071-100-10-100		Thomas and Stacy Reese		5000 Pleasant Grove Rd., Pleasant Grove, Ca 95668	No	2	Knickerbocker Creek runs through property.
071-100-08-100		Larry Niegel		4906 Pleasant Grove Rd., Pleasant Grove, CA 95668	No	2	Knickerbocker Creek runs through property.
071-100-01-100		Douglas Avery	1220 State Hwy 193 Cool, CA 95614	P.O. Box 604 Cool, CA 95614	Yes	5.86	Knickerbocker Creek runs through property.
Cherry Acres Road to Bureau of Reclamation Property							
071-032-40-100		Carl Ross Living Trust		7850 S Dean Martin Rd. #502 Las Vegas, NV 89139	Yes	146.2	Knickerbocker Creek runs through property.
071-480-08		Robert & Kathleen Ellinghouse		P.O. Box 1414 Lincoln, CA 95648	Yes	33.48	Knickerbocker Creek runs through property.
071-032-39-100		Carl Ross Living Trust		7850 S Dean Martin Rd. #502 Las Vegas, NV 89139	No	32.92	Knickerbocker Creek runs through property.
071-280-65-100		Daniel and Cynthia Hitchner	3981 Grand Fir Cr. Cool, CA 95614		Yes	6	Knickerbocker Creek runs through property.
071-280-51-100		Steve & Nancy Costa	3980 Grand Fir Cr. Cool, CA 95614	921 Orchard Ct. Pilot Hill, CA 95664	Yes	3.39	Knickerbocker Creek runs through property. Private well on property.
071-280-45-100		Charles & Mary Jones John and Judith Kemp	4080 Grand Fir Cr. Cool, CA 95614	P.O. Box 183 Corte Madera, CA 94976	Yes	4	Knickerbocker Creek runs along property before it crosses Hwy. 49.
071-390-10-100		Mary Lynne Reuss Trust	3210 State Hwy 49 Cool, CA 95614	2838 Sweetwater Tr. Cool, CA 95614	Yes	5	Knickerbocker Creek runs between this property and 071-390-05-100
071-390-05			3320 State Hwy. 49 Cool, CA 95614		Yes	9.91	Knickerbocker Creek runs through the property.
071-032-08		Thomas Huff			No	202.3	Knickerbocker Creek runs through property.
071-020-21		Bureau of Reclamation			No	--	Knickerbocker Creek runs through property.
071-020-23		Bureau of Reclamation			No	10.1	Knickerbocker Creek runs through property.
071-020-14		Bureau of Reclamation			No	365.22	Knickerbocker Creek runs through property.
071-020-27		Bureau of Reclamation			No	15	Knickerbocker Creek runs through property.
071-020-25		Bureau of Reclamation			No	25	Knickerbocker Creek runs through property.
071-040-05		Bureau of Reclamation			No	60	Knickerbocker Creek runs through property.
071-020-13		Bureau of Reclamation			No	296.4	Knickerbocker Creek runs through property.
071-020-10				2800 Cottage Way Sacramento, CA 95825	No	7	End of Knickerbocker Creek at American River.

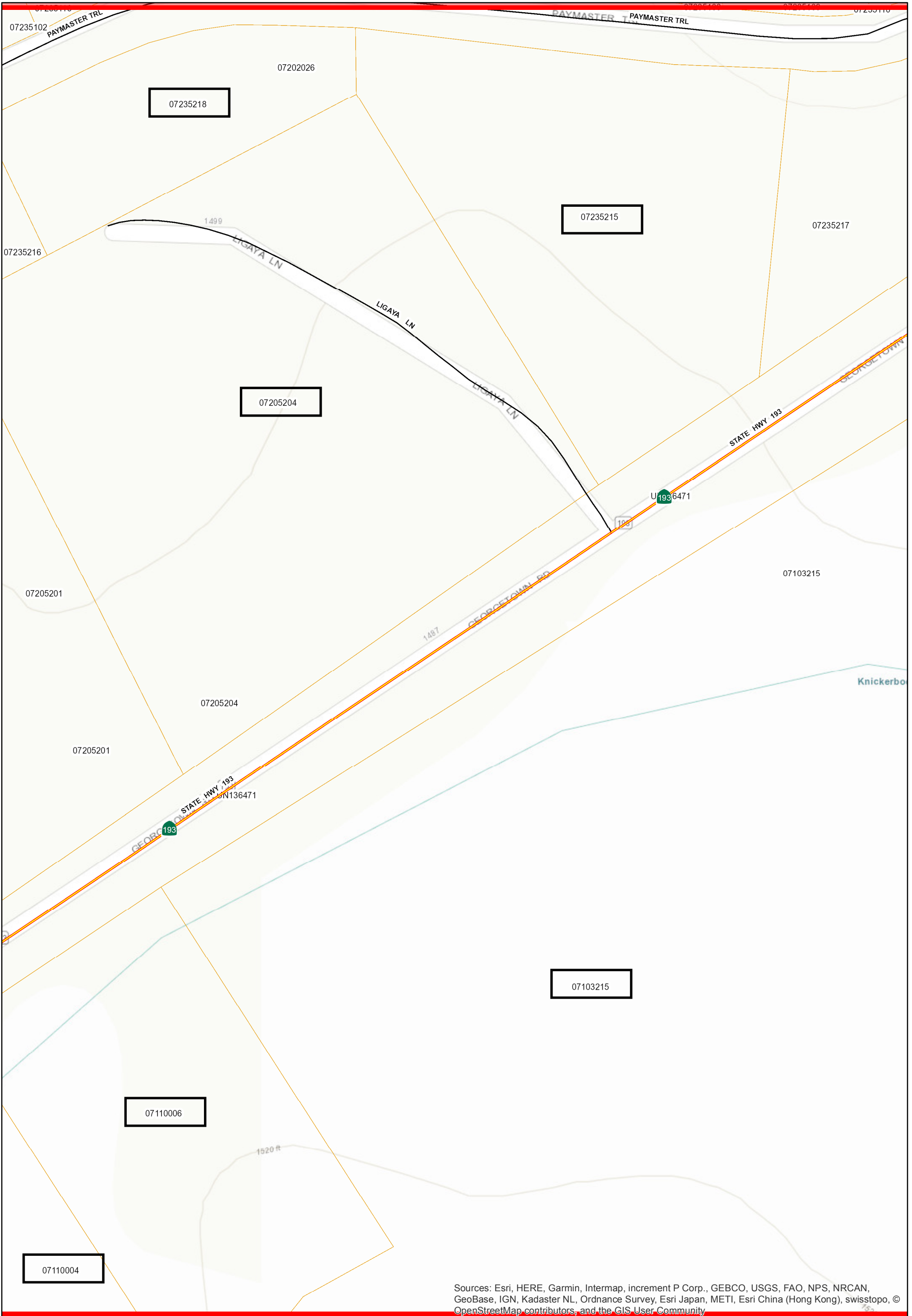


July 16, 2018

ALT Lots - Map 1

County Outline	Major Roads	Cities	Parcels, County Owned
Highway Labels	Major Roads	Parcels	
Highways	Minor Roads	Labels - Assessor's Parcel Number	

Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community




Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

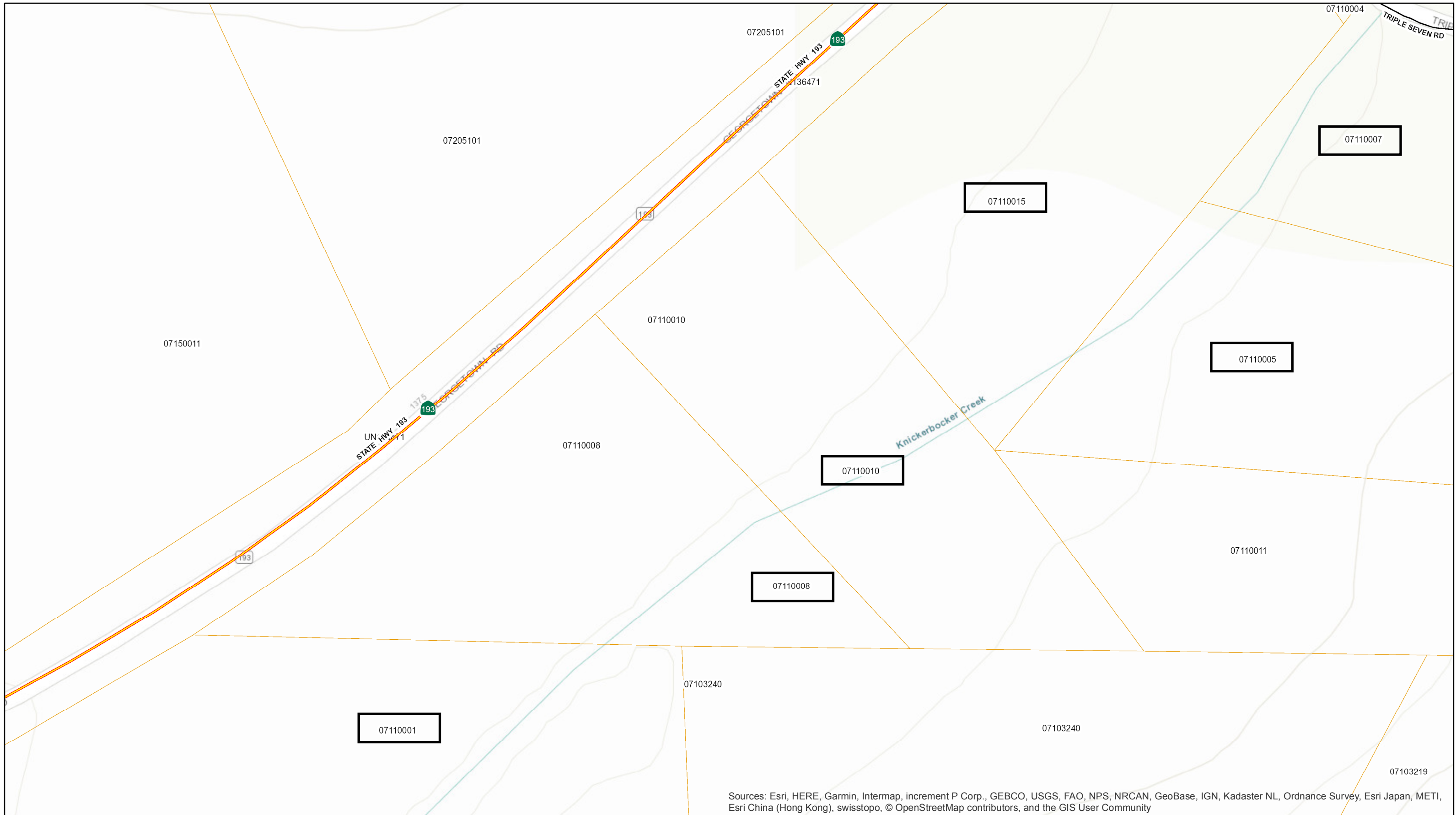
July 16, 2018

ALT Lots and Highway 193 - Map 2

County Outline	Major Roads	Cities	Parcels, County Owned
Highway Labels	Major Roads	Parcels	
Highways	Minor Roads	Labels - Assessor's Parcel Number	



0 30 60 90 120 Feet

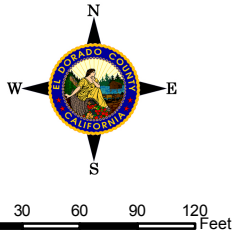


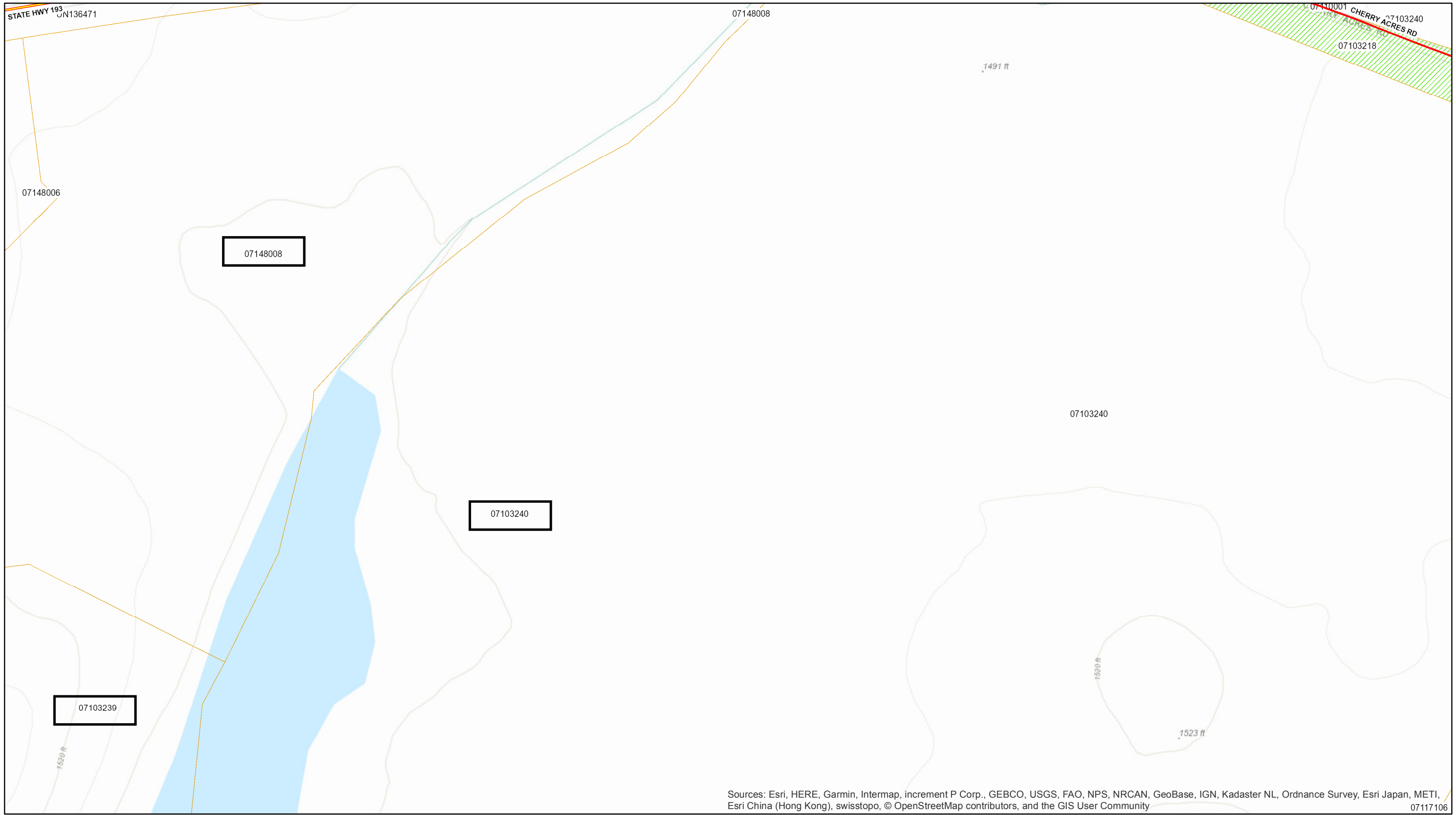
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

July 16, 2018

South Highway 193 - Map 3

- Highway Labels
- Major Roads
- Highways
- Major Roads
- Minor Roads
- Cities
- Parcels
- Labels - Assessor's Parcel Number
- Parcels, County Owned



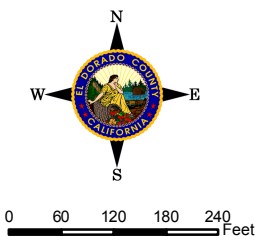


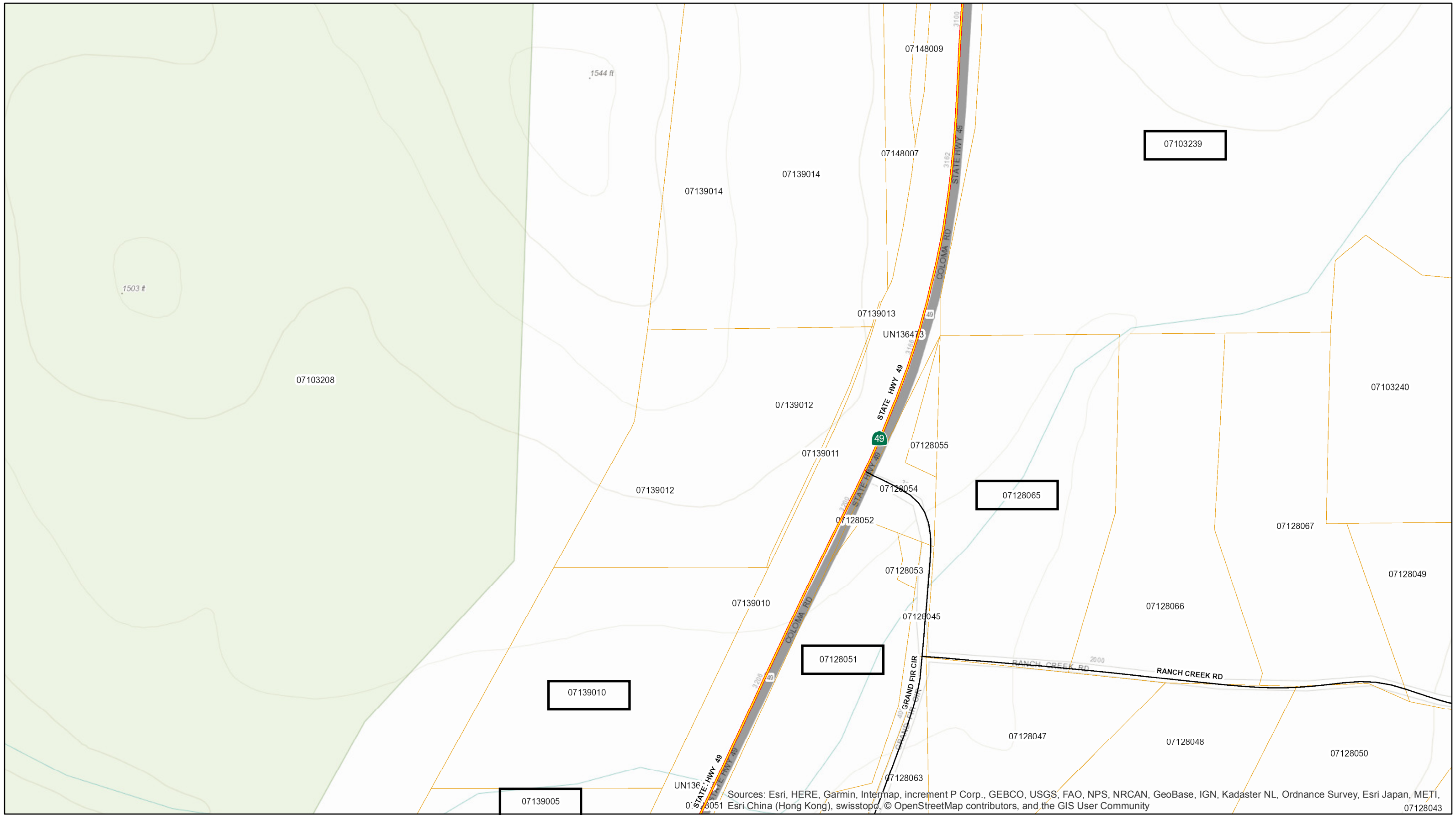
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community 07117106

July 16, 2018

South Highway 193 - Map 4

- | | | | |
|----------------|--------------------|-----------------------------------|-----------------------|
| Highway Labels | Major Roads | Cities | Parcels, County Owned |
| Highways | Major Roads | Parcels | |
| | Minor Roads | Labels - Assessor's Parcel Number | |



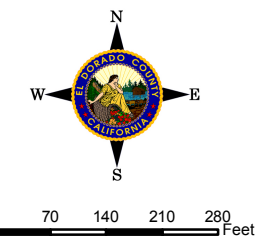


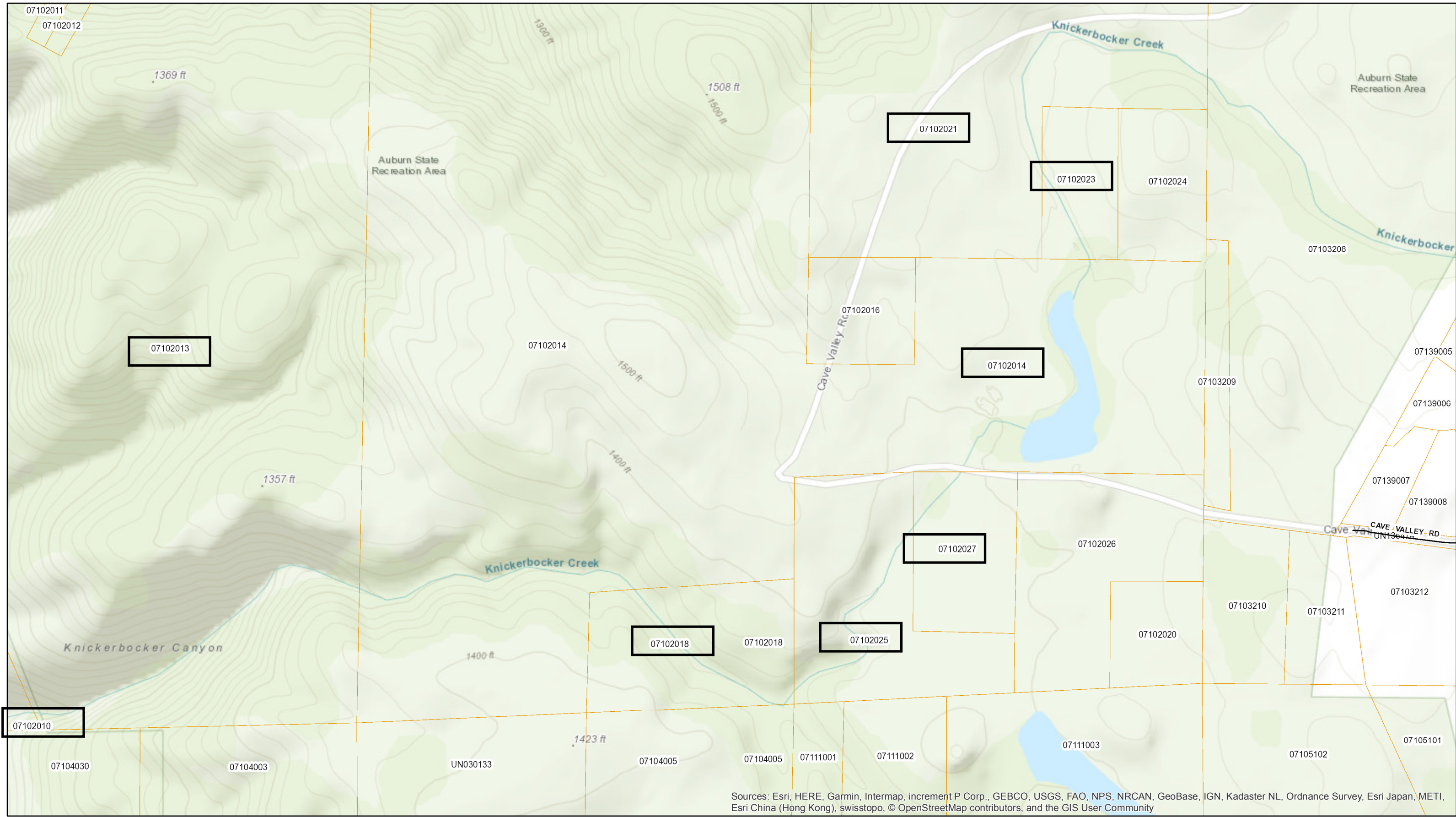
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

July 16, 2018

South Highway 193 - Map 5

- | | | | |
|----------------|--------------------|---------|-----------------------------------|
| County Outline | Major Roads | Cities | Parcels, County Owned |
| Highway Labels | Major Roads | Parcels | Labels - Assessor's Parcel Number |
| Highways | Minor Roads | | |





Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, © OpenStreetMap contributors, and the GIS User Community

July 16, 2018

State Highway to American River - Map 6

County Outline	Major Roads	Cities	Parcels, County Owned
Highway Labels	Major Roads	Parcels	
Highways	Minor Roads	Labels - Assessor's Parcel Number	

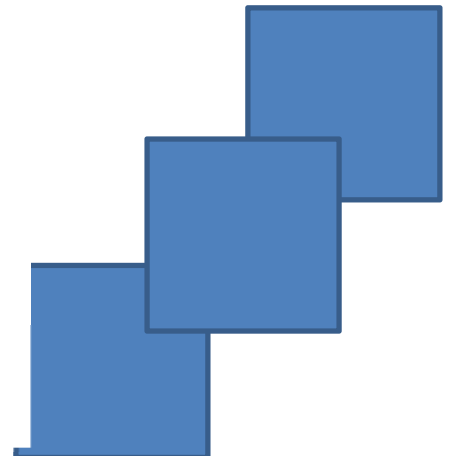
APPENDIX G

SAMPLE TEMPLATES FOR SSO VOLUME ESTIMATION



SEWER SPILL ESTIMATION GUIDE

**Developed by the Orange County
Area Waste Discharge
Requirements Steering Committee**



Sewer Spill Estimation Guide

A Guide to Estimating Sanitary Sewer Overflow (SSO) Volumes

**Developed by the Orange County Area
Waste Discharge Requirements Steering Committee
Orange County, CA**

February 18, 2014
Revised May 15, 2014

Acknowledgements

This Sewer Spill Estimation Guide has been compiled through the efforts of members of the Orange County Wastewater Discharge Requirements (WDR) Steering Committee. This committee was originally formed to address the requirements of the original WDR imposed by the California Regional Water Quality Board, Region 8 and later the statewide WDR imposed by the California State Water Resources Control Board. Committee members who assisted in the compilation of this Sewer Spill Estimation Guide are:

Nicholas J. Arhontes	Director Facilities Support Services	Orange County Sanitation District
Peggy Echavarria	Executive Assistant	Orange County Sanitation District
Gene Estrada	Environmental Program Manager	City of Orange
Rob Hamers	District Engineer	Costa Mesa Sanitary District
Robert Kreg	(Former) Director of Support Services	South Coast Water District (Retired)

Disclaimer

This Sewer Spill Estimation Guide is freely offered to agencies to assist the user with the estimation process for a sanitary sewer overflow. Methods used for spill estimation and the estimate itself are solely the responsibility of the agency making the estimate. The authors or contributors to this Sewer Spill Estimation Guide do not accept any responsibility for the spill estimation methods used; their accuracy or any spill estimate determined through the use of this guide. Information found in this guide is commonly available on the internet and is also common practice with many cities and sewerage agencies throughout Southern California.

No statewide or national standards issued by a regulatory agency exist at this time.

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SSO Volume Estimation

Accurate flow estimation is essential to determine the volume of a Sanitary Sewer Overflow (SSO). An accurate estimate of an SSO is required for reporting to the California Integrated Water Quality System (CIQWS) and to the local health care agency. The estimated volume of an SSO is used to determine the category of the SSO and can also be used in the calculation of penalties or fines from the State or Regional Water Quality Control Boards in California. Additionally, accurate flow estimation is important to determine the extent of the cleanup and its effectiveness.

Volume estimation is basically the flow rate (gallons per minute) times the amount of time (in minutes) the flow has occurred. Each SSO tends to be unique requiring different strategies for determining the volume of the SSO. Different methods can also be used for the same SSO acting as a check to ensure the most accurate estimate. The method(s) utilized will be determined by several factors including the type of SSO and the personnel responding. Some SSO volumes, due to terrain, rainfall or other factors, can be very difficult for field staff to determine and may require someone with additional expertise. There is no one method that works for all types of SSOs. The following are methods that may be utilized for SSO volume estimation. These methods are effective means of estimating a sewer spill volume during dry weather but may not be effective during rain events.

During rain events, infiltration and/or inflow into the collection system and runoff in the stormwater system, including the curb and gutter, can affect the SSO estimate. When estimating an SSO during a rain event, the SSO estimate is to include only the wastewater that left the collection system and not any waters that the wastewater comingled with after leaving the system. The same is true for any wash down water; although contaminated, the water is not considered part of the SSO estimate. Any water that infiltrated into the collection system upstream of the SSO and subsequently became part of the SSO is included in the SSO volume estimate.

Start Time

Determining the start time for an SSO is one of the most critical, yet can be one of the most difficult, factors to determine. Depending upon the location and time of day, an SSO may occur for some time before it is reported to the City or Agency or it may trickle for an extended period of time before being noticed. What is known is that the SSO started some time before the City or Agency was notified. It is common for SSOs to start and stop as flows in the pipeline routinely rise and fall because most blockages do not entirely block the flow in the pipe. Every effort should be utilized to determine the most accurate start time of each SSO. These efforts may include:

- If possible, contact the person who reported the SSO to determine when they became aware of the SSO.
- Make contact with residences or businesses in the area of the SSO to determine if there were any witnesses that could help establish the start time.
- Conditions change during the SSO. This is particularly true in remote areas out of public view. Initially, there may be an amount of toilet paper and solids around the spill site. This will increase the longer the SSO continues. After a few days to a week, these may form a light brown residue that may turn dark after a few weeks to a month.

Lacking direct evidence supporting a specific start time the operator should rely upon their experience and system flow characteristics based upon observed conditions to establish a reasonable estimated start time for the event. The agency's management staff should review the estimate before being finalized. Methods used to establish the start time should be documented.

Stop Time

The stop time is the time that wastewater stopped overflowing. For manhole covers in low areas, this is noted by water flowing back into the manhole through the vent holes and should be easy to determine by SSO response personnel. Care should be taken to accurately record the time that the SSO stopped.

Photographs

Take photographs of the spill event. Try to include objects of known size in the photographs to give a perspective of the extent of the spill. Photographs should include the initial spill, remediation efforts, clean up, and the spill area after the spill remediation has been completed. Photographs should be maintained with the spill report information.

Flow Rate

The flow rate is the volume of flow per unit time that is escaping from the collection system. SSOs do not always occur at a constant rate. This is because flows into the collection system are not constant and rise and fall throughout the day. Additionally, most blockages are not full blockages. Pressure buildup as the wastewater surcharges in the pipe can cause the blockage to clear or partially clear, resulting in changes to the flow rate.

To make an SSO volume estimate as accurate as possible, the onsite City or Agency employee should note the time and the amount of change of any significant differences in flow noticed during the event. For example, if the employee determines the flow rate escaping from the manhole is 100 gallons per minute when they arrive on scene but noticed that it has dropped to 50 gallons per minute five minutes later, their report should reflect that fact. The estimated flow rate and the time period for that flow rate should be recorded. During any one SSO event there could be multiple flow rates spread over the duration of the SSO.

Volume Estimation Methods

Visual or Eyeball Method

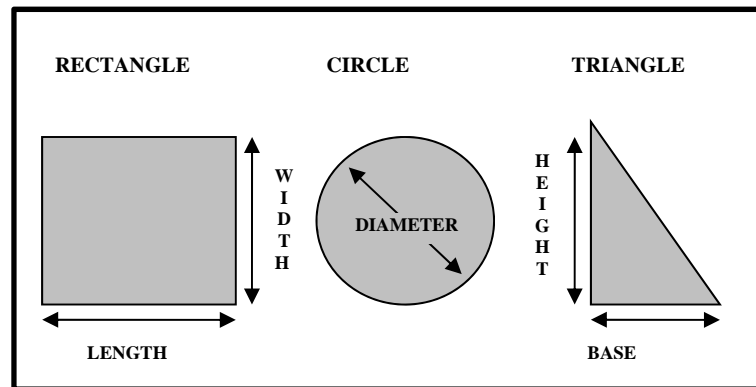
The volume of small spills can be estimated using an “eyeball estimate.” To use this method, imagine the amount of water that would spill from a bucket or a barrel. A full bucket may contain 1, 2 or 5 gallons and a barrel contains 55 gallons when full. If the spill is larger than 55 gallons, try to divide the standing water into barrels and then multiply by 55 gallons. This method is useful for contained spills up to approximately 200 gallons. This method can be useful on spills that occur on hard surfaces such as concrete or asphalt. Crews can be trained

by estimating the volume of a measured amount of potable water spilled upon concrete and asphalt surfaces.

Measured Volume

The volume of most small spills that have been contained can be estimated using this method. The shape, dimensions, and the depth of the contained wastewater are needed. The shape and dimensions are used to calculate the area of the spills and the depth is used to calculate the volume.

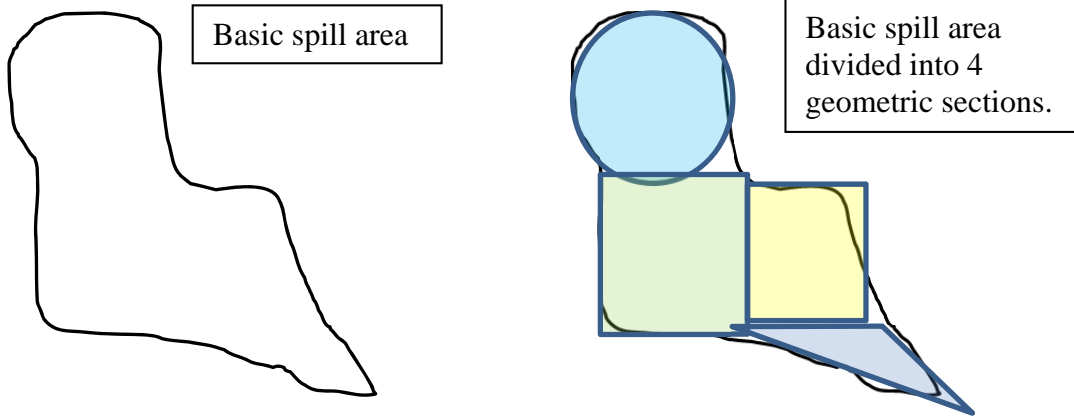
Common Shapes and Dimensions



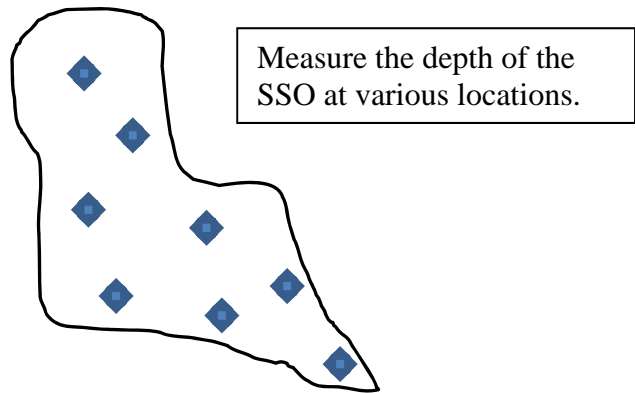
1. Sketch the shape of the contained wastewater.
2. Measure or pace off the dimensions.
3. Measure the depth at several locations and select an average.
4. Convert the dimensions, including depth, to feet.
5. Calculate the area:
 - Rectangle: $\text{Area} = \text{length (feet)} \times \text{width (feet)}$
 - Circle: $\text{Area} = \text{diameter (feet)} \times \text{diameter (feet)} \times 3.14 \text{ divided by } 4$
 - Triangle: $\text{Area} = \text{base (feet)} \times \text{height (feet)} \times 0.5$
6. Multiply the area (square feet) times the depth (in feet) to obtain the volume in cubic feet.
7. Multiply the volume in cubic feet by 7.48 to convert to gallons

Not all SSOs will conform to a specific shape. When this occurs, break up the area of the SSO into various shapes or segments, then calculate the amount of wastewater spilled in each segment, adding them together to arrive at the total spill volume.

Example:



Determine the area of each of the geometric sections adding them all together to determine the total area of the spill.



Where it is difficult to measure wet spots on asphalt, use a depth of 0.0026' or 1/32". For wet spots on concrete use depths of 0.0013' or 1/64" for reasonable estimates.

Inch to Feet Conversion:		
Inches	to	Feet
1/8"	=	0.01'
1/4"	=	0.02'
3/8"	=	0.03'
1/2"	=	0.04'
5/8"	=	0.05'
3/4"	=	0.06'
7/8"	=	0.07'
1"	=	0.08'
2"	=	0.17'
3"	=	0.25'
4"	=	0.33'
5"	=	0.42'
6"	=	0.50'
7"	=	0.58'
8"	=	0.67'
9"	=	0.75'
10"	=	0.83'
11"	=	0.92'
12"	=	1.00'

Sample Calculation:
 A 20 ft x 20 ft square wet spot on concrete equals 3.9 gal
 and for asphalt is 7.8 gal.

Counting Connections

Once the location of the blockage has been established, the amount of the SSO could be estimated by counting the number of upstream connections. On the sewer atlas maps or GIS system, locate the pipeline where the SSO occurred. Count all of the developed parcels that are connected to the pipeline upstream of the blockage. The typical single family residential parcel may discharge 8 to 10 gallons of wastewater per hour during active times of the day. For a multi-family residential development such as an apartment or condo complex, count each apartment as a single family residential unit. Use the higher flow number (10 gallons per hour) during typical peak flow hours and the lower flow number (8 gallons per hour) during low flow periods. Multiply the number of connections times the average flow (8 to 10 gallons per hour) times the time period (duration) that the SSO occurred.

Example for an SSO occurring on a weekday at 8:00am:

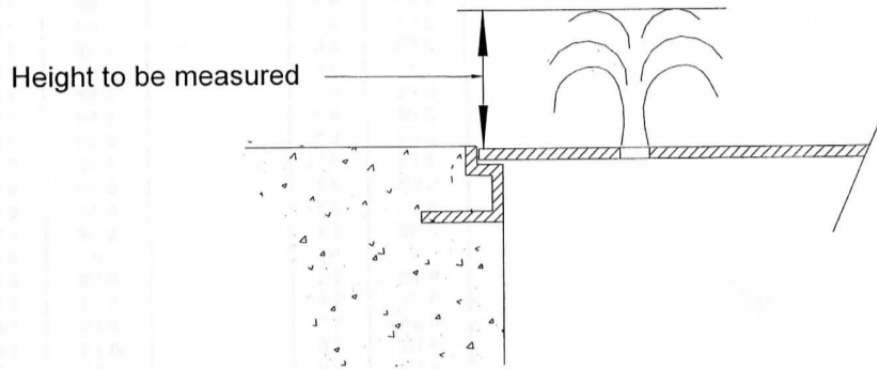
Number of upstream connections	22
Estimated flow per parcel	10 gallons per hour
Duration of SSO event	45 minutes
Total spill estimation (22 x 10 x .75)	165 gallons
(22 connections x 10 gallons per hour x 45 minutes (.75 hour) = 165 gallons)	

Data may be available in your drainage area from your capacity planners at your city or agency. Consult with them on reasonable flow amounts or rates of flow.

Pick and Vent Holes in Manhole Covers

Small SSOs will occur where the wastewater escaping from the manhole is isolated to the pick or vent holes in the cover. Larger SSOs may involve both the discharge from the pick and/or vent holes and the gap between the manhole cover and manhole frame. To estimate an SSO occurring from the manhole pick and vent holes, measure the height of the wastewater plume exiting the holes. Find that height and hole diameter on the manhole pick or vent hole chart to determine the flow rate escaping the pick/vent hole. Multiply the flow rate times the number of holes that are discharging wastewater. Once the total volume (gpm) has been determined,

multiply the gpm by the duration of the SSO in minutes. This will result in the total estimated gallons of the SSO.



Example: Measured height of plume exiting pick/vent hole is 1 inch from a ½-inch vent hole and there are 4 vent holes. The total volume per minute would be .94 gpm per hole (from attached chart) or 3.76 gpm total (.94 gpm x 4 holes) from the manhole cover. If the SSO lasted one hour, the total wastewater lost would be 226 gallons (3.76 x 60 = 225.6).

Number of pick holes	4
Flow from each pick hole	.94 gpm
Duration of SSO	60 minutes
Total SSO volume (.94 x 4 x 60=225.6)	226 gallons

Pick and Vent Hole Estimation Chart

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

Hole Dia. inches	Area sq. ft.	Coeff. of Vel. Cv	Coeff. Of Cont. Cc	C Cv x Cc	Water Ht inches	Water Ht inches	Water Ht feet	Q cfs	Q gpm	Q gph
	Formula: =0.785*Ax* Ax/144			Formula: =Ix*449			Formula: =Gx/12	Formula: =Ex*Bx*(S QRT(2*32. 2*Hx))	Formula: =Ix*449	Formula: =Jx*60
Vent Hole										
0.50	0.00136	0.945	0.70	0.662	1/16 th	0.063	0.005	0.0005	0.23	14
0.50	0.00136	0.945	0.70	0.662	1/8 th	0.125	0.010	0.0007	0.33	20
0.50	0.00136	0.945	0.70	0.662	1/4 th	0.250	0.021	0.0010	0.47	28
0.50	0.00136	0.945	0.70	0.662	one half	0.500	0.042	0.0015	0.66	40
0.50	0.00136	0.945	0.70	0.662	3/4 ths	0.750	0.063	0.0018	0.81	49
0.50	0.00136	0.945	0.70	0.662	1 inch	1.000	0.083	0.0021	0.94	56
0.50	0.00136	0.945	0.70	0.662	1 1/4 "	1.250	0.104	0.0023	1.05	63
0.50	0.00136	0.945	0.70	0.662	1 3/8"	1.375	0.115	0.0024	1.10	66
0.50	0.00136	0.945	0.70	0.662	1 1/2"	1.500	0.125	0.0026	1.15	69
0.50	0.00136	0.945	0.70	0.662	1 5/8"	1.625	0.135	0.0027	1.20	72
0.50	0.00136	0.945	0.70	0.662	1 3/4"	1.750	0.146	0.0028	1.24	74
0.50	0.00136	0.945	0.70	0.662	2 inches	2.000	0.167	0.0030	1.33	80
0.50	0.00136	0.945	0.70	0.662	2 1/4"	2.250	0.188	0.0031	1.41	84
0.50	0.00136	0.945	0.70	0.662	2 1/2"	2.500	0.208	0.0033	1.48	89
0.50	0.00136	0.945	0.70	0.662	2 3/4"	2.750	0.229	0.0035	1.56	93
0.50	0.00136	0.945	0.70	0.662	3 inches	3.000	0.250	0.0036	1.62	97
0.50	0.00136	0.945	0.70	0.662	3 1/4"	3.250	0.271	0.0038	1.69	101
0.50	0.00136	0.945	0.70	0.662	3 1/2"	3.500	0.292	0.0039	1.75	105
0.50	0.00136	0.945	0.70	0.662	3 3/4"	3.750	0.313	0.0040	1.82	109
0.50	0.00136	0.945	0.70	0.662	4.000	4.000	0.333	0.0042	1.88	113
Vent Hole										
0.75	0.00307	0.955	0.67	0.640	1/16 th	0.063	0.005	0.0011	0.51	31
0.75	0.00307	0.955	0.67	0.640	1/8 th	0.125	0.010	0.0016	0.72	43
0.75	0.00307	0.955	0.67	0.640	1/4 th	0.250	0.021	0.0023	1.02	61
0.75	0.00307	0.955	0.67	0.640	one half	0.500	0.042	0.0032	1.44	87
0.75	0.00307	0.955	0.67	0.640	3/4 ths	0.750	0.063	0.0039	1.77	106
0.75	0.00307	0.955	0.67	0.640	1 inch	1.000	0.083	0.0045	2.04	122
0.75	0.00307	0.955	0.67	0.640	1 1/4 "	1.250	0.104	0.0051	2.28	137
0.75	0.00307	0.955	0.67	0.640	1 3/8"	1.375	0.115	0.0053	2.39	144
0.75	0.00307	0.955	0.67	0.640	1 1/2"	1.500	0.125	0.0056	2.50	150
0.75	0.00307	0.955	0.67	0.640	1 5/8"	1.625	0.135	0.0058	2.60	156
0.75	0.00307	0.955	0.67	0.640	1 3/4"	1.750	0.146	0.0060	2.70	162
0.75	0.00307	0.955	0.67	0.640	2 inches	2.000	0.167	0.0064	2.89	173
0.75	0.00307	0.955	0.67	0.640	2 1/4"	2.250	0.188	0.0068	3.06	184
0.75	0.00307	0.955	0.67	0.640	2 1/2"	2.500	0.208	0.0072	3.23	194
0.75	0.00307	0.955	0.67	0.640	2 3/4"	2.750	0.229	0.0075	3.38	203
0.75	0.00307	0.955	0.67	0.640	3 inches	3.000	0.250	0.0079	3.53	212
0.75	0.00307	0.955	0.67	0.640	3 1/4"	3.250	0.271	0.0082	3.68	221
0.75	0.00307	0.955	0.67	0.640	3 1/2"	3.500	0.292	0.0085	3.82	229
0.75	0.00307	0.955	0.67	0.640	3 3/4"	3.750	0.313	0.0088	3.95	237
0.75	0.00307	0.955	0.67	0.640	4.000	4.000	0.333	0.0091	4.08	245
Vent Hole										
1.00	0.00545	0.960	0.65	0.624	1/16 th	0.063	0.005	0.0020	0.88	53
1.00	0.00545	0.960	0.65	0.624	1/8 th	0.125	0.010	0.0028	1.25	75
1.00	0.00545	0.960	0.65	0.624	1/4 th	0.250	0.021	0.0039	1.77	106
1.00	0.00545	0.960	0.65	0.624	one half	0.500	0.042	0.0056	2.50	150
1.00	0.00545	0.960	0.65	0.624	3/4 ths	0.750	0.063	0.0068	3.06	184
1.00	0.00545	0.960	0.65	0.624	1 inch	1.000	0.083	0.0079	3.54	212
1.00	0.00545	0.960	0.65	0.624	1 1/4 "	1.250	0.104	0.0088	3.96	237
1.00	0.00545	0.960	0.65	0.624	1 3/8"	1.375	0.115	0.0092	4.15	249
1.00	0.00545	0.960	0.65	0.624	1 1/2"	1.500	0.125	0.0097	4.33	260
1.00	0.00545	0.960	0.65	0.624	1 5/8"	1.625	0.135	0.0100	4.51	271
1.00	0.00545	0.960	0.65	0.624	1 3/4"	1.750	0.146	0.0104	4.68	281
1.00	0.00545	0.960	0.65	0.624	2 inches	2.000	0.167	0.0111	5.00	300
1.00	0.00545	0.960	0.65	0.624	2 1/4"	2.250	0.188	0.0118	5.31	318
1.00	0.00545	0.960	0.65	0.624	2 1/2"	2.500	0.208	0.0125	5.59	336
1.00	0.00545	0.960	0.65	0.624	2 3/4"	2.750	0.229	0.0131	5.87	352
1.00	0.00545	0.960	0.65	0.624	3 inches	3.000	0.250	0.0136	6.13	368

Pick and Vent Hole Estimation Chart - continued

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

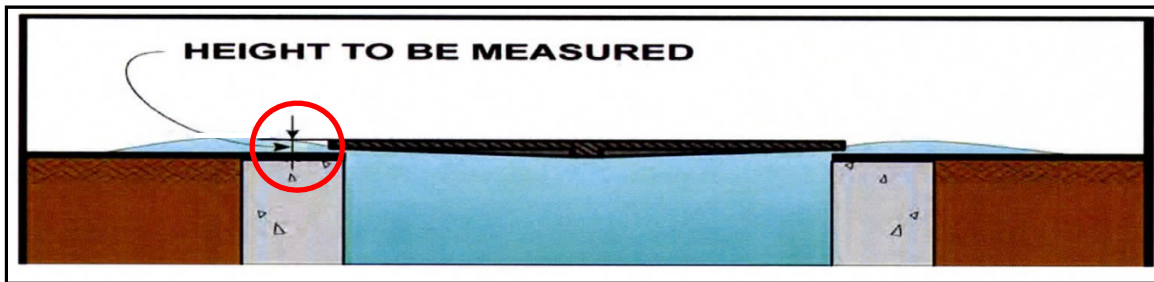
Hole Dia. Inches	Area sq. ft.	Coeff. of Vel. Cv	Coeff. Of Cont. Cc	C Cv x Cc	Water Ht Inches	Water Ht Inches	Water Ht feet	Q cfs	Q gpm	Q gph
	Formula: =0.785*A*x* A/x/144			Formula: =I*x^449			Formula: =G*x/12	Formula: =E*x*B*x*(S QRT(2*32. 2*H*x))	Formula: =I*x^449	Formula: =J*x*60
Vent Hole										
1.00	0.00545	0.960	0.65	0.624	3 1/4"	3.250	0.271	0.0142	6.38	383
1.00	0.00545	0.960	0.65	0.624	3 1/2"	3.500	0.292	0.0147	6.62	397
1.00	0.00545	0.960	0.65	0.624	3 3/4"	3.750	0.313	0.0153	6.85	411
1.00	0.00545	0.960	0.65	0.624	4.000	4.000	0.333	0.0158	7.08	425
Pick Hole semicircular area										
1.00	0.00273	0.960	0.65	0.624	1/16 th	0.063	0.005	0.0010	0.44	27
1.00	0.00273	0.960	0.65	0.624	1/8 th	0.125	0.010	0.0014	0.63	38
1.00	0.00273	0.960	0.65	0.624	1/4 th	0.250	0.021	0.0020	0.89	53
1.00	0.00273	0.960	0.65	0.624	one half	0.500	0.042	0.0028	1.25	75
1.00	0.00273	0.960	0.65	0.624	3/4 ths	0.750	0.063	0.0034	1.53	92
1.00	0.00273	0.960	0.65	0.624	1 inch	1.000	0.083	0.0039	1.77	106
1.00	0.00273	0.960	0.65	0.624	1-1/2 inch	1.500	0.125	0.0048	2.17	130
1.00	0.00273	0.960	0.65	0.624	2 inches	2.000	0.167	0.0056	2.51	150
1.00	0.00273	0.960	0.65	0.624	2 1/4"	2.250	0.188	0.0059	2.66	159
1.00	0.00273	0.960	0.65	0.624	2 1/2"	2.500	0.208	0.0062	2.80	168
1.00	0.00273	0.960	0.65	0.624	2 3/4"	2.750	0.229	0.0065	2.94	176
1.00	0.00273	0.960	0.65	0.624	3 inches	3.000	0.250	0.0068	3.07	184
1.00	0.00273	0.960	0.65	0.624	3 1/4"	3.250	0.271	0.0071	3.19	192
1.00	0.00273	0.960	0.65	0.624	3 1/2"	3.500	0.292	0.0074	3.31	199
1.00	0.00273	0.960	0.65	0.624	3 3/4"	3.750	0.313	0.0076	3.43	206
1.00	0.00273	0.960	0.65	0.624	4.000	4.000	0.333	0.0079	3.54	213

Courtesy of OCSD: Created 5/17/99 and modified 5/15/14, as an estimating tool for field staff. This is based on flow through orifices assumptions. Your city or agency may want to develop a similar tool.

**$Q=CA(2gh)^{.5}$ Where Q=cfs C=Cv x Cc A=area(sq. ft.) g=32.2 ft/sec/sec
h= water height (ft.)**

Manhole Ring

Some manhole covers in use today typically only have one pick hole forcing most of the wastewater to escape from the perimeter of the manhole cover during higher flow SSOs. To estimate the volume in this example, measure the observed height of the wastewater plume exiting the manhole cover. Find the height and manhole diameter on the Manhole with Cover in Place to determine the flow rate escaping the manhole. The chart has two columns, one for 24-inch diameter covers and one for 36-inch diameter covers. Wastewater will also be escaping from the pick hole and must be accounted for separately by following the instructions for estimating an SSO from pick/vent hole. Multiply the flow rate times the number of holes that are discharging. The total estimated rate (gpm) is determined by adding together the rate being lost (gpm) from around the cover with the rate being lost (gpm) from the pick and/or vent hole(s). Once the total rate (gpm) has been determined, multiply the gpm by the duration of the SSO in minutes. This will result in the total estimated gallons of the SSO.



Example: The measured height of the plume exiting the ring of a 36-inch manhole is 1 inch. The total volume per minute would be 13 gpm from around the ring of a 36-inch manhole cover (from the attached chart). (Calculate the amount exiting the pick hole(s) and add to the total being lost around the ring). If the SSO lasted one hour the total wastewater lost would be 780 gallons ($13 \times 60 = 780$).

Estimated loss around ring (from chart)	13 gpm
Duration of SSO	60 minutes
Total SSO (without loss from pick hole)	780 gallons
(13 gal/min x 60 minutes = 780 gallons plus amount lost from pick hole(s))	

ESTIMATED SSO FLOW OUT OF MH WITH COVER IN PLACE

24" COVER

Height of spout above M/H rim H in inches	SSO FLOW Q		Min. Sewer size in which these flows are possible
	in gpm	in MGD	
1/4	1	0.001	
1/2	3	0.004	
3/4	6	0.008	
1	9	0.013	
1 1/4	12	0.018	
1 1/2	16	0.024	
1 3/4	21	0.030	
2	25	0.037	
2 1/4	31	0.045	
2 1/2	38	0.054	
2 3/4	45	0.065	
3	54	0.077	
3 1/4	64	0.092	
3 1/2	75	0.107	
3 3/4	87	0.125	
4	100	0.145	
4 1/4	115	0.166	
4 1/2	131	0.189	
4 3/4	148	0.214	
5	166	0.240	
5 1/4	185	0.266	
5 1/2	204	0.294	
5 3/4	224	0.322	6"
6	244	0.352	
6 1/4	265	0.382	
6 1/2	286	0.412	
6 3/4	308	0.444	
7	331	0.476	
7 1/4	354	0.509	
7 1/2	377	0.543	
7 3/4	401	0.578	8"
8	426	0.613	
8 1/4	451	0.649	
8 1/2	476	0.686	
8 3/4	502	0.723	
9	529	0.761	

36" COVER

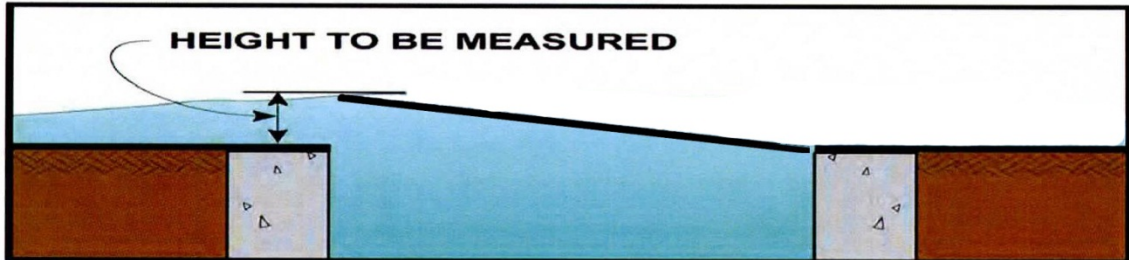
Height of spout above M/H rim H in inches	SSO FLOW Q		Min. Sewer size in which these flows are possible
	in gpm	in MGD	
1/4	1	0.002	
1/2	4	0.006	
3/4	8	0.012	
1	13	0.019	
1 1/4	18	0.026	
1 1/2	24	0.035	
1 3/4	31	0.044	
2	37	0.054	
2 1/4	45	0.065	
2 1/2	55	0.079	
2 3/4	66	0.095	
3	78	0.113	
3 1/4	93	0.134	
3 1/2	109	0.157	
3 3/4	127	0.183	
4	147	0.211	
4 1/4	169	0.243	
4 1/2	192	0.276	
4 3/4	217	0.312	6"
5	243	0.350	
5 1/4	270	0.389	
5 1/2	299	0.430	
5 3/4	327	0.471	
6	357	0.514	
6 1/4	387	0.558	8"
6 1/2	419	0.603	
6 3/4	451	0.649	
7	483	0.696	
7 1/4	517	0.744	
7 1/2	551	0.794	
7 3/4	587	0.845	10"
8	622	0.896	
8 1/4	659	0.949	
8 1/2	697	1.003	
8 3/4	734	1.057	
9	773	1.113	

The formula used to develop Table 1 measures the maximum height of the water coming out of the maintenance manhole above the rim. The formula was taken from Hydraulics and Its Application by A.H. Gibson (Constable & Co. Limited).

Partially Covered Manhole

Sometimes an SSO will occur that only lifts one side of the manhole cover. This is especially true of manholes where the cover is on an incline with the cover lifting on the downward side of the manhole. To estimate the volume of an SSO under these conditions, calculate the area (in square feet) from where the wastewater is escaping and the velocity (in feet per second) that the wastewater is normally traveling in the sewer at half the pipe depth. The velocity is estimated from visual observation with 2 feet/second or less being a small velocity, 4 to 5 feet/second being a medium velocity, and 7 feet/second or higher being a large velocity. Velocities in the sewer above 7 feet/second may be strong enough to blow the manhole cover off. Higher velocities also tend to raise the manhole lid higher. Next, multiply by the duration

(in seconds) that the SSO occurred. Finally, multiply by 7.48 to determine the volume of the SSO in gallons. The formula is Volume (gallons) = Area (sq. ft.) x Velocity (ft/sec) x Time (in seconds) x 7.48 (gal/cu. ft.).



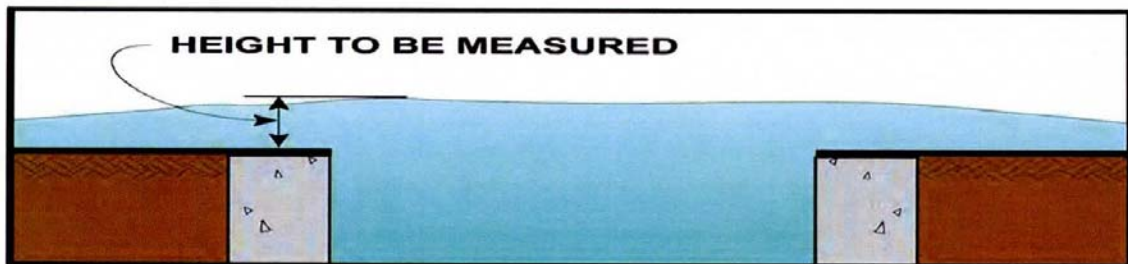
Example: The measured height of the plume exiting the side ring of a 24-inch manhole is 2 inches. Based upon the data provided in the Area Calculation Chart below, a 2-inch plume from one side of a 24-inch manhole cover provides 0.524 square feet of area. The velocity of the flow is estimated at 4 ft/sec (visual observation) with the assumed duration of the flow lasting for one hour. The total amount of the SSO is estimated at 56,441 gallons (.524 x 4 x 60 x 60 x 7.48 = 56,441)

Height of plume	2 inches
Area for 24 inch manhole	0.524 square feet
Estimated velocity	4 ft/sec
Duration of SSO	60 minutes
Conversion from cu. ft. to gallons	7.48
Total estimated SSO volume	56,441 gallons
(.524 sq. ft. x 4 ft/sec x 60 minutes x 60 sec/min x 7.48 gal/cu ft = 56,441 gal)	

Area Calculation Chart		
Height of Flow	24 Inch Manhole	36 Inch Manhole
.5 inches	0.131 sq. ft.	0.195 sq. ft.
1 inches	0.262 sq. ft.	0.391 sq. ft.
1.5 inches	0.393 sq. ft.	0.586 sq. ft.
2 inches	0.524 sq. ft.	0.782 sq. ft.
2.5 inches	0.655 sq. ft.	0.977 sq. ft.
3 inches	0.786 sq. ft.	1.173 sq. ft.
3.5 inches	0.917 sq. ft.	1.368 sq. ft.
4 inches	1.048 sq. ft.	1.564 sq. ft.

Open Manhole

In large events the force of the overflowing wastewater will have sufficient pressure and volume to unseat the cover from the frame and move the manhole cover away from the manhole. Typically, when the SSO rates reach approximately 7 cfs (approximately 3,000 gpm or about 4.32 mgd), there is sufficient flow and pressure to blow off the manhole cover. To estimate the volume of an SSO where the manhole cover has been removed, the average height of the plume of wastewater exiting the manhole must be measured. This measurement is from the pavement surface close to the manhole ring to the top of the plume. Take several measurements in several locations around the ring and average the findings. If possible, and being safe to protect yourself from the open manhole, find the average height of the plume for the size of the manhole lid (24-inch or 36-inch diameter) on the Area Calculation Chart to determine the rate of flow exiting the manhole. Multiply the flow rate expressed in gallons per minute from the chart multiplied by the duration of the SSO in minutes to determine the total volume of the SSO. A photo taken at a safe distance upon arrival may help you refine your estimate.



Example: Determine the observed height of the plume at several locations around the ring of the manhole and average the results. Determine the size of the manhole cover. If the average height of the plume exiting an open 24-inch diameter manhole is 2 inches, find 2 inches on the 24-inch Manhole Cover Removed Chart. Based upon the data provided in the Manhole Cover Removed Chart, the flow in gallons per minute would be 3,444 gpm. If the duration of the flow lasted for one hour (60 minutes), the total amount of the SSO would be estimated at 206,640 gallons ($3,444 \times 60 = 206,640$).

Height of plume (average) on 24-inch manhole	2 inches
Estimated flow from chart	3,444 gpm
Duration of SSO	60 minutes
Estimated SSO total volume	206,640 gallons
(Est flow from chart 3,444 x 60 minutes = 206,640)	

ESTIMATED SSO FLOW OUT OF M/H WITH COVER REMOVED

24" FRAME

Water Height above M/H frame H in inches	S S O FLOW		Min. Sewer size in which these flows are possible
	Q		
	in gpm	in MGD	
1/8	28	0.04	
1/4	62	0.09	
3/8	111	0.16	
1/2	160	0.23	
5/8	215	0.31	6"
3/4	354	0.51	8"
7/8	569	0.82	10"
1	799	1.15	12"
1 1/8	1,035	1.49	
1 1/4	1,340	1.93	15"
1 3/8	1,660	2.39	
1 1/2	1,986	2.86	
1 5/8	2,396	3.45	18"
1 3/4	2,799	4.03	
1 7/8	3,132	4.51	
2	3,444	4.96	21"
2 1/8	3,750	5.4	
2 1/4	3,986	5.74	
2 3/8	4,215	6.07	
2 1/2	4,437	6.39	
2 5/8	4,569	6.58	24"
2 3/4	4,687	6.75	
2 7/8	4,799	6.91	
3	4,910	7.07	

36" FRAME

Water Height above M/H frame H in inches	S S O FLOW		Min. Sewer size in which these flows are possible
	Q		
	in gpm	in MGD	
1/8	49	0.07	
1/4	111	0.16	
3/8	187	0.27	6"
1/2	271	0.39	
5/8	361	0.52	8"
3/4	458	0.66	
7/8	556	0.8	10"
1	660	0.95	12"
1 1/8	1,035	1.49	
1 1/4	1,486	2.14	15"
1 3/8	1,951	2.81	
1 1/2	2,424	3.49	18"
1 5/8	2,903	4.18	
1 3/4	3,382	4.87	
1 7/8	3,917	5.64	21"
2	4,458	6.42	
2 1/8	5,000	7.2	24"
2 1/4	5,556	8	
2 3/8	6,118	8.81	
2 1/2	6,764	9.74	
2 5/8	7,403	10.66	
2 3/4	7,972	11.48	30"
2 7/8	8,521	12.27	
3	9,062	13.05	
3 1/8	9,604	13.83	
3 1/4	10,139	14.6	
3 3/8	10,625	15.3	36"
3 1/2	11,097	15.98	
3 5/8	11,569	16.66	
3 3/4	12,035	17.33	
3 7/8	12,486	17.98	
4	12,861	18.52	
4 1/8	13,076	18.83	
4 1/4	13,285	19.13	
4 3/8	13,486	19.42	

Disclaimer:

This sanitary sewer overflow table was developed by Ed Euyen, Civil Engineer, P.E. No. 33955, California, for County Sanitation District 1. This table is provided as an example. Other Agencies may want to develop their own estimating tables.

Pictorial Reference

Currently there are two picture charts being widely used to assist with estimating SSO volumes. The older chart is the city of San Diego's Manhole Overflow Rate Chart with the newer chart being the CWEA Southern Section Collection Systems Committee (SSCSC) Manhole Overflow Gauge. Each chart is a pictorial depiction of how an overflowing manhole appears at a given flow rate. The SSCSC Manhole Overflow Gauge has an additional picture for each flow rate showing a wide angle view of the spill area. When using either of the pictorial reference charts, select which picture most accurately represents the SSO being estimated. Use the gpm of the associated picture multiplied times the duration of the SSO to determine the total spill volume. Example: If the selected picture shows 300 gpm and the duration of SSO is 55 minutes, the total estimated spill volume would be 16,500 gallons (300 gpm x 55 min).

Selected picture volume	300 gpm
Duration of SSO	55 minutes
Total estimated SSO	16,500 gallons
(300 gpm x 55 minutes = 16,500 gallons)	

Note: Data was obtained at training facilities where potable water was metered and photos were taken at various flow rates.

Training facilities also exist at the Orange County Sanitation District in Fountain Valley, CA.

As a reference point, an 8-inch diameter sewer flowing half full at a velocity of 2.5 ft/sec would have a flow rate of about 192 gal/min. If fully blocked, the SSO rate would be 192 gpm. For a partial blockage, the SSO rate will be less.

Other agencies have developed above ground estimating tools such as frame and cover sets that can be pressurized using potable water and simple flow meters.

City of San Diego Manhole Overflow Picture Chart



Wastewater Collection Division
(619) 654-4160



50 gpm



200 gpm



275 gpm

rev. 4/99

Reference Sheet for Estimating Sewer Spills
from Overflowing Sewer Manholes
All estimates are calculated in gallons per minute (gpm)



25 gpm



150 gpm



250 gpm

All photos were taken during a demonstration using metered water from a hydrant in cooperation with the City of San Diego's Water Department.



5 gpm



100 gpm



225 gpm

City of San Diego
Metropolitan Wastewater Department



SSCSC Manhole Overflow Gauge

3/24

DISCLAIMER: The overflow elevation may appear different from those in other systems because of the manhole lid not being uniform. Manhole lids with single or multiple job holes may appear differently during overflow conditions. However, the volume of overflow and the footprint of the wet area should appear relatively the same under similar slope conditions.

DISCLAIMER: The overflow elevation may appear different from those in other systems because of the manhole lid not being uniform. Manhole lids with single or multiple job holes may appear differently during overflow conditions. However, the volume of overflow and the footprint of the wet area should appear relatively the same under similar slope conditions.

5 gpm
25 gpm
50 gpm
100 gpm
150 gpm
200 gpm
300 gpm
400 gpm

SSCSC MANHOLE OVERFLOW GAUGE

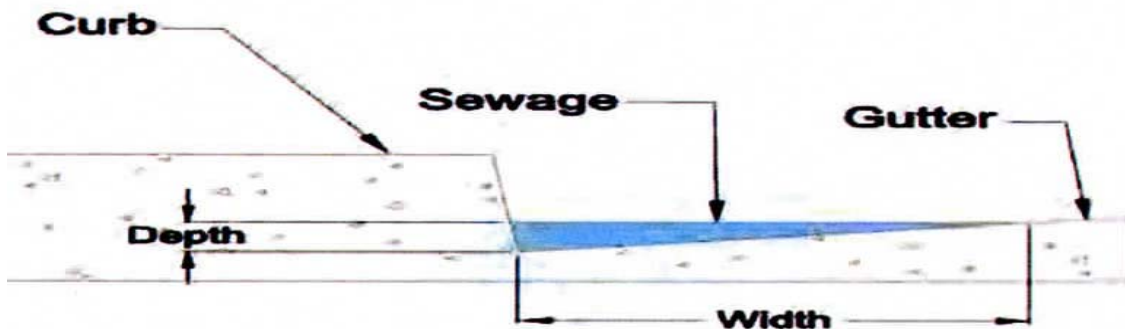
Overflow Simulation courtesy of Eastern Municipal Water District

PROVIDING QUALITY TRAINING FOR COLLECTION SYSTEM PERSONNEL SINCE 1991

Mission Statement: To continuously increase the level of professional of Collection Systems personnel involved in the operation, design and construction of the sewer, storm and collection of the sewerage system by providing education and training, using an active role in providing education, and recognizing proficiency in our field.

Gutter Flow (Simplified Version)

Although the traditional Manning's Equation is used to calculate flows in open channels, this simplified version can be used to measure SSOs that are flowing in open channels such as ditches, curb and gutter, etc. and still achieve reasonable estimations. Two things need to be determined to utilize this method of spill estimation, the cross sectional area of the channel and the velocity of the flow in the channel. First, determine the cross sectional dimensions of the channel (width and depth of flow) to determine the area of the flow. Then determine the velocity of the flow in the channel. To determine the velocity, drop a small floating object (ping pong ball, leaf, small piece of wood, etc.) into the flow and time how long it takes the object to travel a measured distance. This should be practiced several times in a non-SSO situation, and averaged to determine the flow velocity. The velocity of the flow multiplied by the cross sectional area of the flow multiplied by the duration of the SSO will result in the approximate volume of the SSO.



$$Q = V \times A$$

$$\text{Flow (gal/min)} = \text{Velocity (ft/sec)} \times \text{Area (ft}^2\text{)} \times 7.48 \text{ gal/cu ft} \times 60 \text{ sec/min}$$

Example: If the cross section triangular area of the spill is calculated at .5 sq.ft. with the velocity measured at .25 ft. per second, the flow would be .125 cubic feet per second. Multiply times 449 (one cubic foot per second equals 449 gallons per minute) to determine the gallons per minute (56 gpm). If the SSO lasted for 35 minutes the total estimated spill volume would be 1,964 gallons.

Simplified Cross Section Area of the SSO



Estimated Triangular Area

0.5 square feet

Estimated Velocity

.25 feet per second

Duration of the SSO

35 minutes

Gallons per minute per cubic foot per second conversion

449

Total estimated spill volume

1,964 gallons

(Area .5 sq.ft. x Est velocity .25 ft. per sec. = .125 cfs x 449 = 56 gpm x 35 minutes = 1,964 estimated gallons spilled)

Gutters on steep hillsides will flow at higher velocities. Practice your estimating on flatter areas and steeper areas of your service area.

Bucket Method

This method can be used for small spills due to partial blockages where the entire flow stream could be captured in a bucket. Estimate how many minutes it takes to fill the bucket. Dividing the volume of the bucket (in gallons) by the elapsed time to fill the bucket (in minutes). This provides the flow rate in gallons per minute (gpm). Once the gpm has been established, multiply the gpm by the total time duration in minutes of the SSO until it stopped to determine the total estimated volume of the SSO.

Example: If it takes 30 seconds (.5 minutes) to fill a 5 gallon bucket and the total spill duration was 20 minutes, the total spill volume would be 200 gallons. (5gal/.5 min = 10 gpm x 20 min = 200 gal).

Time to fill a 5 gallon bucket

30 seconds (.5 minute)

Duration of SSO

20 minutes

Estimated spill volume

200 gallons

(5 gallons every 30 seconds equals 10 gallons per minute x 20 minutes = 200 gallons)

You can practice visual estimating by filling a bucket of known volume for a measured time from a garden hose.

Pipe Size

To calculate an SSO based upon pipe size requires the diameter of the pipe, the depth of flow in the pipe downstream of the blockage during and after the blockage, and the flow velocity in the pipe. This method calculates the amount of flow in the pipe at the same time of the day during the blockage compared to the amount of flow normally in the pipe to determine how much flow had been lost over time.

To use this method, measure the flow depth at the nearest manhole downstream from the blockage. Record the depth reading. Once the blockage has been cleared and the flow stabilized, measure the flow depth at the same manhole as before and record the reading. The attached chart can be used on various size pipelines where the velocity is 2.0 feet per second. Pipelines of other rates will have to be calculated.

To use the attached chart, find the depth of the flow during the blockage in column 1. Follow the row across to the diameter of the pipe where the blockage has occurred. The number listed will be the flow rate in gallons per minute for pipelines with a velocity of 2 feet per second. Next find the flow depth after the blockage has been removed and the flow stabilized. Move across the chart to the proper pipe size and record the flow rate for a free flowing pipeline. Subtract the flow rate from the blocked pipe from the flow rate of the free flowing pipe. The remainder will be the flow rate lost. Multiply the flow rate lost times the duration of the SSO to determine the total flow volume lost. Example: If the flow depth during the blockage of a 10-inch pipe was 1 inch, the flow rate would 25 gpm. After the blockage was cleared and the flow stabilized, the flow depth was now 5 inches then the flow rate would be 240 gpm. To determine the amount lost, subtract the gpm (pipe blocked) from the gpm (pipe cleared) ($240 \text{ gpm} - 25 \text{ gpm} = 215 \text{ gpm}$) leaving the flow rate of the SSO. Multiply the remaining flow rate multiplied by the duration of the SSO in minutes to estimate the total volume of the SSO.

Flow Depth Inches	8" PIPE	10" PIPE	12" PIPE	15" PIPE	18" PIPE	21" PIPE	24" PIPE
1	20 GPM	25 GPM	30 GPM	35 GPM	40 GPM	45 GPM	50 GPM
2	60	70	80	85	95	105	125
3	110	125	135	150	175	185	210
4	160	180	200	235	260	285	320
5	190	240	280	315	360	380	445
6	260	310	355	415	455	500	555
7	290	370	425	495	570	620	695
8	320	430	500	600	680	760	815
9		465	575	690	800	890	965
10		490	625	775	905	1005	1120
11			685	870	1020	1135	1275
12			715	935	1130	1260	1410
13				1020	1240	1415	1580
14				1070	1345	1520	1690
15				1105	1425	1650	1850
16					1495	1760	1990
17					1550	1880	2110
18					1595	1980	2285
19						2050	2410
20						2115	2530
21						2160	2630
22							2700
23							2765
24							2820

Note: the chart assumes V = 2.0 feet per second and n = 0.013

1. Record the time that spill was reported.
2. Record the flow, in inches, downstream of the spill or blockage. Record the pipe size in inches. Determine flow rate in gallons per minute (GPM) using chart above.
3. Re-establish flow and allow stabilizing. Record the time that flow stabilizes and the depth of flow, in inches. Determine flow rate using chart above.
4. Subtract the flow rate calculated in #2 from the flow rate calculated in #3.
5. Multiply the result of 4 by the minutes elapsed from notification to stopping overflow.
6. Report total amount in gallons on the SSO Report.

Note: The above chart is only for pipelines of the diameters shown and flowing at a velocity of 2.0 ft/sec.

Metered Flow

Estimates of the amount of wastewater spilled from a continuously metered system can be achieved utilizing upstream and downstream flow meters located close to the point where the wastewater escaped. Flow meters may be located at strategic locations throughout the wastewater collection system or at the intake or discharge of wastewater pump or lift stations. Flow metering usually occurs on pressure systems. If a spill is suspected on a metered upstream wastewater line, check the flow meter readings for abnormalities and note the time they start. Also check the flow meter readings at the downstream flow meter. If the downstream readings are lower than usual, the difference may be the amount of wastewater being lost to a spill. Abnormal pumping cycles for pump or lift stations located downstream from the spill can also be used to estimate the volume of a spill. Portable flow meters could also be installed in gravity sewers after a SSO event to help verify average flows at various times of the day when full or partial blockages may have occurred. You should also perform

this on the same day of the week that the SSO occurred. This is also a good way to understand how flows will change during the day in various parts of your system.

Rain Events

Previous examples of methods throughout the document were all in dry weather situations. Rain events cause substantial difficulties for SSO responders in establishing an accurate estimate of an SSO. Infiltration into the sewer system will increase, sometimes dramatically, the system flow including the amount of the SSO. When estimating the SSO amount during a rain event, the estimate is to include only the amount of wastewater that left the collection system (this includes any clear water inflow and/or infiltration (I&I) that entered the collection system upstream of the SSO) and not any waters that the wastewater comingled with after leaving the system. Although the comingled waters are considered contaminated by the SSO and may be involved in the cleanup, they should not be considered in the estimate of the volume of sewage spilled for the event. Consult with your city or agency management or your site-specific procedures to be used during wet weather SSOs.

Saturated Soils

Spills that have occurred on or migrated to grassy or dirt areas can be estimated if the area is dry and is not regularly irrigated like a field or dirt parking lot. This method is effective only during dry weather and not during or after a rain event. To estimate how much wastewater has been lost to the soil, first determine how many cubic feet of soil has been wetted. First determine the size of the area where the spill occurred. This is done in the same manner as for spills that occurred on hard surfaces and as discussed in the Measured Volume Method. Next determine how deep the soil has been saturated. To determine the depth of the soil saturation, dig several test holes with a round point shovel until dry soil is reached. Measure the depth of each hole and determine the average depth of the saturated soil. Multiply the area of the spill (in square feet) times the average depth of the soil saturation to determine the amount (in cubic feet) of saturated soil. Different types of soils will retain moisture in different amounts. Water will penetrate sandy soils quicker than clay soils and clay soils are capable of holding more moisture than sandy soils. Use an average of 18% moisture content when estimating the amount of wastewater that has saturated the soil.

Example: If the spill was contained in a dry dirt or grassy area of 10 feet by 20 feet, the area of the spill would be 200 square feet if it was a perfect rectangle (assumed). If the wastewater penetrated the soil to an average depth of 3 inches, the total amount of saturated soil would be 50 cubic feet ($10 \times 20 \times .25 = 50$ cf.). To determine the amount of wastewater suspended in the wetted soil, multiply the 50 cubic feet times 7.48 gallons per cubic foot ($50 \text{ cf} \times 7.48 \text{ gal/cf} = 374$ gallons). Next multiply the gallons times the average amount of moisture the soil can hold (use 18% as a rough estimate or calculate the soil moisture) to determine the actual estimated amount of wastewater that has saturated the soil ($374 \text{ gal} \times .18 = 67.3$ gallons of wastewater contained in the soil for the area of the spill). Add the amount of wastewater estimated to be contained in the soil with the amount of surface wastewater that was removed to achieve an estimated total amount of the wastewater spill.

Simple method to calculate soil moisture content:

Equipment needed: One coffee filter; a funnel; a graduated measuring cup; a jar or bottle.

Place the coffee filter into the funnel. Place the funnel into the mouth of the jar or bottle.

Place one cup of clean dry soil from the spill site onto the coffee filter. Pour one cup (8 ounces) of water onto the soil and allow the water to drain into the jar. Once the water has stopped dripping from the funnel, remove the funnel and measure the amount of water in the jar. The difference between the amount of water in the jar and the 8 ounces originally poured over the soil is the amount of moisture the soil retained.

Example: If six and one half ounces (6.5) remained in the jar, one and one half ounce (1.5) or 18.75% remained in the soil. The soil moisture content would be 18.75%.

Combo Truck or Vacuum Truck Recovery

When the spill is contained to a specific area and recovered by a combo or vacuum truck, the amount recovered can be used in calculating the amount of the original spill. If the spill is contained on a hard surface, estimate the total spill volume by what was captured by the combo or vacuum truck plus the amount that could not be captured. To estimate the amount not captured by the combo or vacuum truck, use the Measured Volume Method. For wet spots on concrete, use a depth of 0.0013 ft. or 1/64 inch. For wet stains on asphalt, use a depth of

0.0026 ft. or 1/32 inch. If the spill is contained on soil, use the Saturated Soils Method to determine how much of the spill soaked into the soil and add to the amount captured by the combo or vacuum truck.

Conversion Factors

1.0 cfs = .6463 mgd

One cubic foot of water (cf) = 7.48 gallons

One cubic foot of water per second (cfs) = 448.8 gallons per minute

A cylinder 1 foot in diameter and one foot deep = 5.87 gallons

A 1 square foot triangle 1 foot deep = 3.25 gallons

One inch or 1/12 ft = .083 feet

Volumes Recovered with Trucks or Pumped to Tanks

Level gauge on truck or

Known volume of the full tank or

Number of full tank trucks used during large SSO events

Use your agency's approved conversion factors, if available.

References

California Environmental Protection Agency

<http://www.calepa.ca.gov/>

State Water Resources Control Board

<http://www.swrcb.ca.gov/>

Sanitary Sewer Overflow (SSO) Reduction Program

http://www.swrcb.ca.gov/water_issues/programs/sso/index.shtml

Sample Worksheet

(City or Agency Name)

SSO Volume Estimation Worksheet

SSO Address/Location: _____ Date: _____

SSO Volume Method of Estimation (check appropriate box and provide appropriate information for method used below)

Pictorial Reference Flow Rate Chart (San Diego Chart CWEA Ruler
Vent or Pick Holes Eyeball estimate

Measured volume Counting Connections Manhole Ring Partially Covered
Manhole Open Manhole

Bucket Method Pipe Size Method Gutter Flow Method Metered Flow
Rain Event Method

Saturated Soils Method Combo/Vacuum Truck Recovery Method

Spill Start Date: _____ Spill Start Time: _____

Spill End Date: _____ Spill End Time: _____ Total Est. Spill Volume (gal): _____

Provide a detailed description of the method(s) used to determine the SSO estimate. (Use additional sheets as needed)

Signed: _____

Date: _____

APPENDIX H

SEWAGE SPILL SAMPLE COLLECTION GUIDELINES

SEWAGE SPILL SAMPLE COLLECTION GUIDELINES

Use the following sample method if a discharge flows into a body of water, including seasonal drainage ways:

1. Collect one sample in a 100 milliliter (ml) sterilized plastic container upstream from the spill. Label this sample with the name of the stream, drainage, the approximate distance from the mixing zone, the date, the time and collectors name. Make sure the sample is taken far enough upstream that the spill does not impact the sample.
2. Collect one sample in a 100 ml sterilized plastic container from the mixing zone (i.e. the point where the spill and body of water combine). Label this sample with the location, date, time and collectors name.
3. Collect one sample in a 100 ml sterilized plastic container downstream from the spill point. Label this sample with the location, the approximate distance from the mixing zone, date, time and collectors name.

Samples should be collected in laboratory supplied containers, sealed, placed on ice for transport to a State Certified Laboratory, California Laboratory Services (CLS) of Rancho Cordova, California under strict chain of custody (COC) protocols. Grab samples as to be analyzed for fecal and total coliform by Standard Method 9221 and ammonia by United States Environmental Protection Agency (USEPA) 350.1.

APPENDIX I

STATION 16 EMERGENCY RESPONSE PROCEDURES FOR ON-CALL STAFF

**Auburn Lake Trails Onsite Wastewater Management Zone
Station 16
On-Call Procedures**

The following procedure is not intended to cover all possible emergencies nor does it cover procedures that may be dictated by future regulations. It is meant to guide the District's on-call personnel on what is expected in the event of a call-out due to an alarm or other emergency at Station 16. The on-call personnel are expected to respond appropriately to any alarm/page, assess the problem and remedy the situation, if possible. If the problem cannot be remedied or if there is sewage overflowing, then contact the Operations Manager. If the Operations Manager is unavailable, then contact the General Manager. Maintain records of actions taken, including phone calls made. **Every effort should be made to not expose yourself (ie. bodily contact) to wastewater.**

Alarms at Station 16:

1. "High Level at Station 16"

- a. Check to see if there is power. Contact PG&E. Assess the problem, if possible. See procedure below for power outage.
- b. Check pumps to ensure that they are working. Manually turn on each pump, one at a time and watch flow meter to determine if they are working. The pumps are duplex pumps and both would have to fail to create an emergency situation. There is a back-up pump at Station 16 in the event that a pump fails. Contact the Operations Manager if there is a pump failure.
- c. If there is sewage overflowing, contact the Operations Manager and/or General Manager. Complete the "Sewage Spill Report Form". Forms are available at Station 16. The Operations Manager will be responsible for notifying all the appropriate agencies and implementing the "Sanitary Sewer System Overflow Prevention and Response Plan. The on-call personnel may be asked to assist in implementing the "Response Plan".
- d. If it was a small spill or if it appears that the pump vault will overflow, every effort will be made to contain it and prevent it from flowing into the creek. Station 16 will be equipped with necessary emergency response items, such as waddles, caution tape, lime, report forms, emergency contact phone numbers, etc.

2. "Power Outage at Station 16"

- a. Contact PG&E. Assess the problem and remedy the problem, if possible.
- b. Check the generator and see if it is running. If it didn't turn on, manually turn the generator on. If it isn't working, contact the Operations Manager, General Manager or appropriate vendor from vendor list.
- c. If the transfer switch is not working, follow the instructions on the inside panel of the transfer switch at Station 16 to manually activate the switch.
- d. Contact the Operations Manager if you have any questions

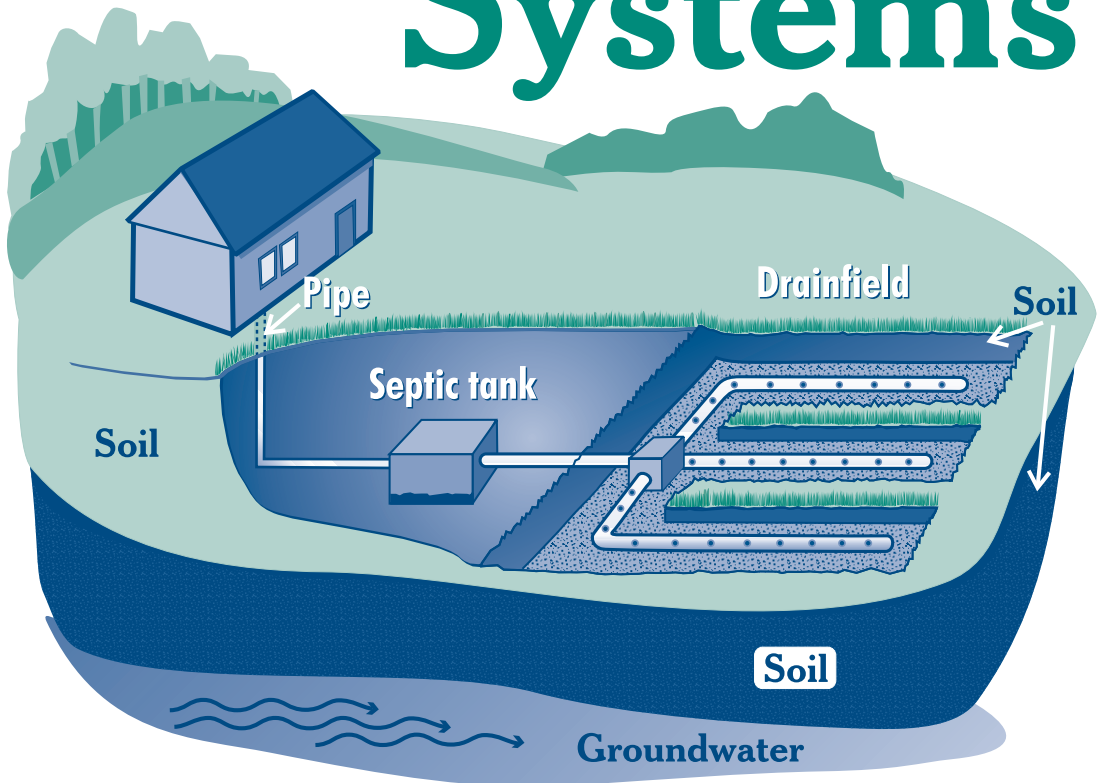
3. Other Emergencies

- a. If there is any other emergency not identified above, assess the problem as best you can and notify the Operations Manager.

APPENDIX G

SEPTIC SYSTEM INFORMATION

A Homeowner's Guide to Septic Systems



What's Inside

Your septic system is your responsibility	1
How does it work?	1
Why should I maintain my septic system?	4
How do I maintain my septic system?	5
What can make my system fail?	9
For more information	13

Your Septic System is your responsibility!

Did you know that as a homeowner you're responsible for maintaining your septic system? Did you know that maintaining your septic system protects your investment in your home? Did you know that you should periodically inspect your system and pump out your septic tank?

If properly designed, constructed and maintained, your septic system can provide long-term, effective treatment of household wastewater. If your septic system isn't maintained, you might need to replace it, costing you thousands of dollars. A malfunctioning system can contaminate groundwater that might be a source of drinking water. And if you sell your home, your septic system must be in good working order.

This guide will help you care for your septic system. It will help you understand how your system works and what steps you can take as a homeowner to ensure your system will work properly. To help you learn more, consult the resources listed at the back of this booklet. A helpful checklist is also included at the end of the booklet to help you keep track of your septic system maintenance.

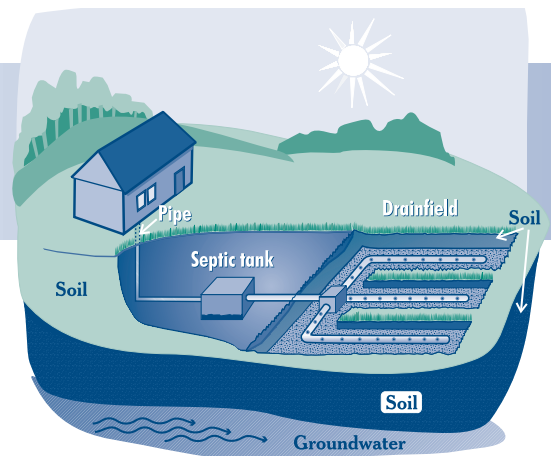
Top Four Things You Can Do to Protect Your Septic System

1. **Inspect your system (every 3 years) and pump your tank as necessary (generally every 3 to 5 years).**
2. **Use water efficiently.**
3. **Don't dispose of household hazardous wastes in sinks or toilets.**
4. **Care for your drainfield.**

How does it work?

Components

A typical septic system has four main components: a pipe from the home, a septic tank, a drainfield, and the soil. Microbes in the soil digest or remove most contaminants from wastewater before it eventually reaches groundwater.



Typical onsite wastewater treatment system

Septic system aliases:

- On-lot system
- Onsite system
- Individual sewage disposal system
- Onsite sewage disposal system
- Onsite wastewater treatment system

Pipe from the home

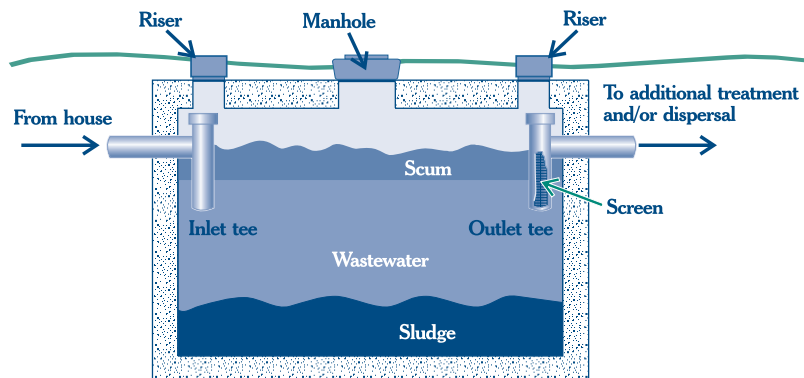
All of your household wastewater exits your home through a pipe to the septic tank.

Septic tank

The septic tank is a buried, watertight container typically made of concrete, fiberglass, or polyethylene. It holds the wastewater long enough to allow solids to settle out (forming sludge) and oil and grease to float to the surface (as scum). It also allows partial decomposition of the solid materials. Compartments and a T-shaped outlet in the septic tank prevent the sludge and scum from leaving the tank and traveling into the drainfield area. Screens are also recommended to keep solids from entering the drainfield.

Newer tanks generally have risers with lids at the ground surface to allow easy location, inspection, and pumping of the tank.

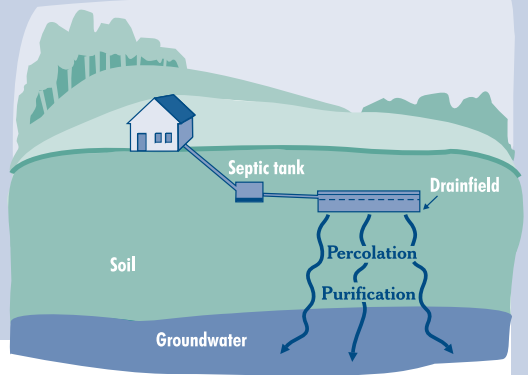
Typical single-compartment septic tank with ground-level inspection risers and screen



Tip To prevent buildup, sludge and floating scum need to be removed through periodic pumping of the septic tank. Regular inspections and pumping as necessary (generally every 3 to 5 years) are the best and cheapest way to keep your septic system in good working order.

Finding Your System

Your septic tank, drainfield, and reserve drainfield should be clearly designated on the “as-built” drawing for your home. (An “as-built” drawing is a line drawing that accurately portrays the buildings on your property and is usually filed in your local land records.) You might also see lids or manhole covers for your septic tank. Older tanks are often hard to find because there are no visible parts. An inspector/pumper can help you locate your septic system if your septic tank has no risers.



Drainfield

The wastewater exits the septic tank and is discharged into the drainfield for further treatment by the soil. The partially treated wastewater is pushed along into the drainfield for further treatment every time new wastewater enters the tank.

If the drainfield is overloaded with too much liquid, it will flood, causing sewage to flow to the ground surface or create backups in plumbing fixtures and prevent treatment of all wastewater.

A reserve drainfield, required by many states, is an area on your property suitable for a new drainfield system if your current drainfield fails. Treat this area with the same care as your septic system.

Soil

Septic tank wastewater flows to the drainfield, where it percolates into the soil, which provides final treatment by removing harmful bacteria, viruses, and nutrients. Suitable soil is necessary for successful wastewater treatment.

Alternative systems

Because many areas don't have soils suitable for typical septic systems, you might have or need an alternative system. You might also have or need an alternative system if there are too many typical septic systems in one area or the systems are too close to groundwater or surface waters. Alternative septic

systems use new technology to improve treatment processes and might need special care and maintenance. Some alternative systems use sand, peat, or plastic media instead of soil to promote wastewater treatment. Other systems might use wetlands, lagoons, aerators, or disinfection devices. Float switches, pumps, and other electrical or mechanical components are often used in alternative systems. Alternative systems should be inspected annually. Check with your local health department or installer for more information on operation and maintenance needs if you have or need an alternative system.

Why should I maintain my septic system?

When septic systems are properly designed, constructed, and maintained, they effectively reduce or eliminate most human health or environmental threats posed by pollutants in household wastewater. However, they require regular maintenance or they can fail. Septic systems need to be monitored to ensure that they work properly throughout their service lives.

Saving money

A key reason to maintain your septic system is to save money! Failing septic systems are expensive to repair or replace, and poor maintenance is often the culprit. Having your septic system inspected regularly (at least every 3 years) is a bargain when you consider the cost of replacing the entire system. Your system will need pumping (generally every 3 to 5 years), depending on how many people live in the house and the size of the system. An unusable septic system or one in disrepair will lower your property value and could pose a legal liability.

Protecting health and the environment

Other good reasons for safe treatment of sewage include preventing the spread of infection and disease and protecting water resources. Typical pollutants in household wastewater are nitrogen, phosphorus, and disease-

causing bacteria and viruses. If a septic system is working properly, it will effectively remove most of these pollutants.

With one-fourth of U.S. homes using septic systems, more than 4 billion gallons of wastewater per day is dispersed below the ground's surface. Inadequately treated sewage from septic systems can be a cause of groundwater contamination. It poses a significant threat to drinking water and human health because it can contaminate drinking water wells and cause diseases and infections in people and animals. Improperly treated sewage that contaminates nearby surface waters also increases the chance of swimmers contracting a variety of infectious diseases. These range from eye and ear infections to acute gastrointestinal illness and diseases like hepatitis.

How do I maintain my septic system?

Inspect and pump frequently

You should have your septic system inspected at least every 3 years by a professional and your tank pumped as recommended by the inspector (generally every 3 to 5 years). Systems with electrical float switches, pumps, or mechanical components need to be inspected more often. Your service provider should inspect for leaks and look at the scum and sludge layers in your septic tank. If the bottom of the scum layer is within 6 inches of the bottom of the outlet tee or the top of the sludge layer is within 12 inches of the outlet tee, your tank needs to be pumped. Remember to note the sludge and scum levels determined by your service provider in your operation and maintenance records. This information will help you decide how often pumping is necessary. (See the checklist included at the end of the booklet.)

What Does an Inspection Include?

- Locating the system.
- Uncovering access holes.
- Flushing the toilets.
- Checking for signs of backup.
- Measuring scum and sludge layers.
- Identifying any leaks.
- Inspecting mechanical components.
- Pumping the tank if necessary.

Four major factors influence the frequency of pumping: the number of people in your household, the amount of wastewater generated (based on the number of people in the household and the amount of water used), the volume of solids in the wastewater (for example, using a garbage disposal increases the amount of solids), and septic tank size.

Some makers of septic tank additives claim that their products break down the sludge in septic tanks so the tanks never need to be pumped. Not everyone agrees on the effectiveness of additives. In fact, septic tanks already contain the microbes they need for effective treatment. Periodic pumping is a much better way to ensure that septic systems work properly and provide many years of service. Regardless, every septic tank requires periodic pumping.

In the service report, the pumper should note any repairs completed and whether the tank is in good condition. If the pumper recommends additional repairs he or she can't perform, hire someone to make the repairs as soon as possible.

Use water efficiently

Average indoor water use in the typical single-family home is almost 70 gallons per person per day. Leaky toilets can waste as much as 200 gallons each day. The more water a household conserves, the less water enters the septic system. Efficient water use can improve the operation of the septic system and reduce the risk of failure.

High-efficiency toilets

Toilet use accounts for 25 to 30 percent of household water use. Do you know how many gallons of water your toilet uses to empty the bowl? Most older homes have toilets with 3.5- to 5-gallon reservoirs, while newer high-efficiency toilets use 1.6 gallons of water or less per flush. If you have problems with your septic system being flooded with household water, consider reducing the volume of water in the toilet tank if you don't have a high-efficiency model. Plastic containers (such as 1/2-gallon plastic milk jugs) can be filled with small rocks and placed in a toilet tank to reduce the



amount of water used per flush. (Be sure that the plastic containers do not interfere with the flushing mechanisms or the flow of water.) You'll save about ½ gallon of water per flush! You might also consider replacing your existing toilet with a high-efficiency model to achieve even more water savings.

Faucet aerators and high-efficiency showerheads

Faucet aerators help reduce water use and the volume of water entering your septic system. High-efficiency showerheads or shower flow restrictors also reduce water use.

Water fixtures

Check to make sure your toilet's reservoir isn't leaking into the bowl. Add five drops of liquid food coloring to the reservoir before bed. If the dye is in the bowl the next morning, the reservoir is leaking and repairs are needed.

A small drip from a faucet adds many gallons of unnecessary water to your system every day. To see how much a leak adds to your water usage, place a cup under the drip for 10 minutes. Multiply the amount of water in the cup by 144 (the number of minutes in 24 hours, divided by 10). This is the total amount of clean water traveling to your septic system each day from that little leak.

Use Water Efficiently!

- **Install high-efficiency showerheads**
- **Fill the bathtub with only as much water as you need**
- **Turn off faucets while shaving or brushing your teeth**
- **Run the dishwasher and clothes washer only when they're full**
- **Use toilets to flush sanitary waste only (not kitty litter, diapers, or other trash)**
- **Make sure all faucets are completely turned off when not in use**
- **Maintain your plumbing to eliminate leaks**
- **Install aerators in the faucets in your kitchen and bathroom**
- **Replace old dishwashers, toilets, and clothes washers with new, high-efficiency models.**

For more information on water conservation, please visit www.epa.gov/owm/water-efficiency/index.htm



Watch your drains

What goes down the drain can have a major impact on how well your septic system works.

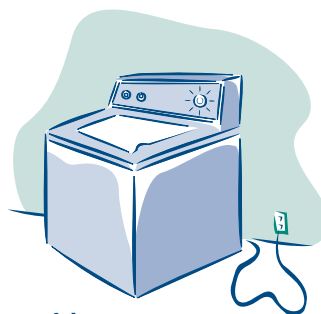
Waste disposal

What shouldn't you flush down your toilet? Dental floss, feminine hygiene products, condoms, diapers, cotton swabs, cigarette butts, coffee grounds, cat litter, paper towels, and other kitchen and bathroom items that can clog and potentially damage septic system components if they become trapped. Flushing household chemicals, gasoline, oil, pesticides, antifreeze, and paint can stress or destroy the biological treatment taking place in the system or might contaminate surface waters and groundwater. If your septic tank pumper is concerned about quickly accumulating scum layers, reduce the flow of floatable materials like fats, oils, and grease into your tank or be prepared to pay for more frequent inspections and pumping.

Washing machines

By selecting the proper load size, you'll reduce water waste. Washing small loads of laundry on the large-load cycle wastes precious water and energy. If you can't select load size, run only full loads of laundry.

Doing all the household laundry in one day might seem like a time-saver, but it could be harmful to your septic system. Doing load after load does not allow your septic tank time to adequately treat wastes. You could be flooding your drainfield without allowing sufficient recovery time. Try to spread water usage throughout the week. A new Energy Star clothes washer uses 35 percent less energy and 50 percent less water than a standard model.



Care for your drainfield

Your drainfield is an important part of your septic system. Here are a few things you should do to maintain it:

- Plant only grass over and near your septic system. Roots from nearby trees or shrubs might clog and damage the drainfield.
- Don't drive or park vehicles on any part of your septic system. Doing so can compact the soil in your drainfield or damage the pipes, tank, or other septic system components.
- Keep roof drains, basement sump pump drains, and other rainwater or surface water drainage systems away from the drainfield. Flooding the drainfield with excessive water slows down or stops treatment processes and can cause plumbing fixtures to back up.

What can make my system fail?

If the amount of wastewater entering the system is more than the system can handle, the wastewater backs up into the house or yard and creates a health hazard.

You can suspect a system failure not only when a foul odor is emitted but also when partially treated wastewater flows up to the ground surface. By the time you can smell or see a problem, however, the damage might already be done.

By limiting your water use, you can reduce the amount of wastewater your system must treat. When you have your system inspected and pumped as needed, you reduce the chance of system failure.

A system installed in unsuitable soils can also fail. Other failure risks include tanks that are inaccessible for maintenance, drainfields that are paved or parked on, and tree roots or defective components that interfere with the treatment process.

Failure symptoms

The most obvious septic system failures are easy to spot. Check for pooling water or muddy soil around your septic system or in your basement. Notice whether your toilet or sink backs up when you flush or do laundry. You might also notice strips of bright green grass over the drainfield. Septic systems also fail when partially treated wastewater comes into contact with groundwater. This type of failure is not easy to detect, but it can result in the pollution of wells, nearby streams, or other bodies of water. Check with a

septic system professional and the local health department if you suspect such a failure, and remember to have your septic system inspected by a professional at least every 3 years.

Stop, look, and smell!

Failure causes

Household toxics

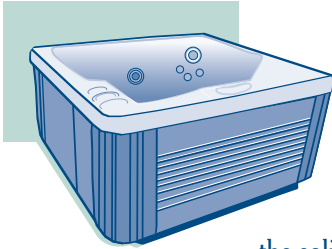
Does someone in your house use the utility sink to clean out paint rollers or flush toxic cleaners? Oil-based paints, solvents, and large volumes of toxic cleaners should not enter your septic system. Even latex paint cleanup waste should be minimized. Squeeze all excess paint and stain from brushes and rollers on several layers of newspaper before rinsing. Leftover paints and wood stains should be taken to your local household hazardous waste collection center. Remember that your septic system contains a living collection of organisms that digest and treat waste.

Household cleaners

For the most part, your septic system's bacteria should recover quickly after small amounts of household cleaning products have entered the system. Of course, some cleaning products are less toxic to your system than others. Labels can help key you into the potential toxicity of various products. The word "Danger" or "Poison" on a label indicates that the product is highly hazardous. "Warning" tells you the product is moderately hazardous. "Caution" means the product is slightly hazardous. ("Nontoxic" and "Septic Safe"



are terms created by advertisers to sell products.) Regardless of the type of product, use it only in the amounts shown on the label instructions and minimize the amount discharged into your septic system.



Hot tubs

Hot tubs are a great way to relax. Unfortunately, your septic system was not designed to handle large quantities of water from your hot tub. Emptying hot tub water into your septic system stirs the solids in the tank and pushes them out into the drainfield, causing it to clog and fail. Draining your hot tub into a septic system or over the drainfield can overload the system. Instead, drain cooled hot tub water onto turf or landscaped areas well away from the septic tank and drainfield, and in accordance with local regulations. Use the same caution when draining your swimming pool.

Water Purification Systems

Some freshwater purification systems, including water softeners, unnecessarily pump water into the septic system. This can contribute hundreds of gallons of water to the septic tank, causing agitation of solids and excess flow to the drainfield. Check with your licensed plumbing professional about alternative routing for such freshwater treatment systems.

Garbage disposals

Eliminating the use of a garbage disposal can reduce the amount of grease and solids entering the septic tank and possibly clogging the drainfield. A garbage disposal grinds up kitchen scraps, suspends them in water, and sends the mixture to the septic tank. Once in the septic tank, some of the materials are broken down by bacterial action, but most of the grindings have to be pumped out of the tank. Using a garbage disposal frequently can significantly increase the accumulation of sludge and scum in your septic tank, resulting in the need for more frequent pumping.



Improper design or installation

Some soils provide excellent wastewater treatment; others don't. For this reason, the design of the drainfield of a septic system is based on the results of soil analysis. Homeowners and system designers sometimes underestimate the significance of good soils or believe soils can handle any volume of wastewater applied to them. Many failures can be attributed to having an undersized drainfield or high seasonal groundwater table. Undersized septic tanks—another design failure—allow solids to clog the drainfield and result in system failure.

If a septic tank isn't watertight, water can leak into and out of the system. Usually, water from the environment leaking into the system causes hydraulic overloading, taxing the system beyond its capabilities and causing inadequate treatment and sometimes sewage to flow up to the ground surface. Water leaking out of the septic tank is a significant health hazard because the leaking wastewater has not yet been treated.

Even when systems are properly designed, failures due to poor installation practices can occur. If the drainfield is not properly leveled, wastewater can overload the system. Heavy equipment can damage the drainfield during installation which can lead to soil compaction and reduce the wastewater infiltration rate. And if surface drainage isn't diverted away from the field, it can flow into and saturate the drainfield.

For more information

Local Health Department

EPA Onsite/Decentralized Management Homepage

www.epa.gov/owm/onsite

EPA developed this Web site to provide tools for communities investigating and implementing onsite/decentralized management programs. The Web site contains fact sheets, program summaries, case studies, links to design and other manuals, and a list of state health department contacts that can put you in touch with your local health department.

National Small Flows Clearinghouse

www.nesc.wvu.edu

Funded by grants from EPA, the NSFC helps America's small communities and individuals solve their wastewater problems. Its activities include a Web site, online discussion groups, a toll-free assistance line (800-624-8301), informative publications, and a free quarterly newsletter and magazine.

Rural Community Assistance Program

www.rcap.org

RCAP is a resource for community leaders and others looking for technical assistance services and training related to rural drinking water supply and wastewater treatment needs, rural solid waste programs, housing, economic development, comprehensive community assessment and planning, and environmental regulations.

National Onsite Wastewater Recycling Association, Inc.

www.nowra.org

NOWRA is a national professional organization to advance and promote the onsite wastewater industry. The association promotes the need for regular service and educates the public on the need for properly designed and maintained septic systems.

Septic Yellow Pages

www.septicyellowpages.com

The Septic Yellow Pages provides listings by state for professional septic pumpers, installers, inspectors, and tank manufacturers throughout the United States. This Web site is designed to answer simple septic system questions and put homeowners in contact with local septic system professionals.

National Association of Wastewater Transporters

www.nawt.org

NAWT offers a forum for the wastewater industry to exchange ideas and concerns. The NAWT Web site lists state associations and local inspectors and pumpers.



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Office of Water

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Septic System Dos and Don'ts

(adapted from National Small Flows Clearinghouse)

Dos

- Check with the local regulatory agency or inspector/pumper if you have a garbage disposal unit to make sure that your septic system can handle this additional waste.
- Check with your local health department before using additives. Commercial septic tank additives do not eliminate the need for periodic pumping and can be harmful to the system.
- Use water efficiently to avoid overloading the septic system. Be sure to repair leaky faucets or toilets. Use high-efficiency fixtures.
- Use commercial bathroom cleaners and laundry detergents in moderation. Many people prefer to clean their toilets, sinks, showers, and tubs with a mild detergent or baking soda.
- Check with your local regulatory agency or inspector/pumper before allowing water softener backwash to enter your septic tank.
- Keep records of repairs, pumpings, inspections, permits issued, and other system maintenance activities.
- Learn the location of your septic system. Keep a sketch of it with your maintenance record for service visits.
- Have your septic system inspected at least every 3 years and pumped periodically (generally every 3 to 5 years) by a licensed inspector/contractor.
- Plant only grass over and near your septic system. Roots from nearby trees or shrubs might clog and damage the drainfield.

Don'ts

- Your septic system is not a trash can. Don't put dental floss, feminine hygiene products, condoms, diapers, cotton swabs, cigarette butts, coffee grounds, cat litter, paper towels, latex paint, pesticides, or other hazardous chemicals into your system.
- Don't use caustic drain openers for a clogged drain. Instead, use boiling water or a drain snake to open clogs.
- Don't drive or park vehicles on any part of your septic system. Doing so can compact the soil in your drainfield or damage the pipes, tank, or other septic system components.

Homeowner Septic System Checklist

Septic System Description

Contact your local authority if you don't have this information.

Date system installed _____

Installer _____

Phone _____

Tank size _____ gallons


Capacity _____ bedrooms

Type conventional

alternative (type) _____

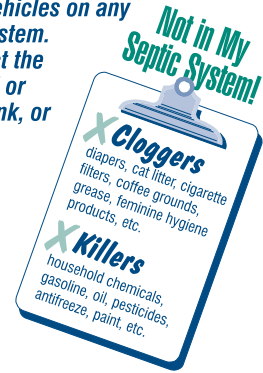
Things to keep in mind:

- ✓ *Inspect your system (every 1 to 3 years) and pump your tank (as necessary, generally every 3 to 5 years).*
- ✓ *Use water efficiently.*
- ✓ *Don't dispose of household hazardous wastes in sinks and toilets.*
- ✓ *Plant only grass over and near your septic system. Roots from nearby trees or shrubs might clog and damage the drainfield.*
- ✓ *Don't drive or park vehicles on any part of your septic system. Doing so can compact the soil in your drainfield or damage the pipes, tank, or other septic system components.*



For more information about septic systems, contact:

U.S. Environmental Protection Agency
www.epa.gov/owm/onsite/



Septic System Maintenance Record

Next Service	Scheduled Activity	Pumping Co./ Phone	Activities Completed	Comments
Jan. 2003	inspection	Joe Pumper 555-1234	inspection	sludge layer okay-may need pumping next year

Place on electrical box (fuse box) or other convenient location.

An official website of the United States government.



How to Care for Your Septic System

Septic system maintenance is not complicated, and it does not need to be expensive. Upkeep comes down to four key elements:

- [Inspect and Pump Frequently](#)
- [Use Water Efficiently](#)
- [Properly Dispose of Waste](#)
- [Maintain Your Drainfield](#)

Inspect and Pump Frequently

The average household septic system should be inspected at least every three years by a septic service professional. Household septic tanks are typically pumped every three to five years. Alternative systems with electrical float switches, pumps, or mechanical components should be inspected more often, generally once a year. A service contract is important since alternative systems have mechanized parts.

Four major factors influence the frequency of septic pumping:

- Household size
- Total wastewater generated
- Volume of solids in wastewater
- Septic tank size

Service provider coming? Here is what you need to know.

When you call a septic service provider, he or she will inspect for leaks and examine the scum and sludge layers in your septic tank.

Keep maintenance records on work performed on your septic system.

Your septic tank includes a T-shaped outlet which prevents sludge and scum from leaving the tank and traveling to the drainfield area. If the bottom of the scum layer is within six inches of the bottom of the outlet, or if the top of the sludge layer is within 12 inches of the outlet, your tank needs to be pumped.

To keep track of when to pump out your tank, write down the sludge and scum levels found by the septic professional.

The service provider should note repairs completed and the tank condition in your system's service report. If other repairs are recommended, hire a repair person soon.

The National Onsite Wastewater Recycling Association (NOWRA) has a septic locator that makes it easy to find service professionals in your area.

Use Water Efficiently

The average indoor water use in a typical single-family home is nearly 70 gallons per individual, per day. Just a single leaky or running toilet can waste as much as 200 gallons of water per day.

All of the water a household sends down its pipes winds up in its septic system. The more water a household conserves, the less water enters the septic system. Efficient water use improves the operation of a septic system and reduces the risk of failure.

[EPA's WaterSense program](#) has many simple ways to save water and water-efficient products.

- **High-efficiency toilets.**

Toilet use accounts for 25 to 30 percent of household water use. Many older homes have toilets with 3.5- to 5-gallon reservoirs, while newer, high-efficiency toilets use 1.6 gallons of water or less per flush. Replacing existing toilets with high-efficiency models is an easy way to reduce the amount of household water entering your septic system.

- **Faucet aerators and high-efficiency showerheads.**

Faucet aerators, high-efficiency showerheads, and shower flow restrictors help reduce water use and the volume of water entering your septic system.

- **Washing machines.**

Washing small loads of laundry on your washing machine's large-load cycle wastes water and energy. By selecting the proper load size, you will reduce water waste. If you are unable to select a load size, run only full loads of laundry.

Try to spread washing machine use throughout the week. Doing all household laundry in one day might seem like a time-saver; but it can harm your septic system, not allow your septic tank enough time to treat waste, and could flood your drainfield

Clothes washers that bear the [ENERGY STAR](#) label use 35 percent less energy and 50 percent less water than standard models. Other Energy Star appliances provide significant energy and water savings.

Properly Dispose of Waste

Whether you flush it down the toilet, grind it in the garbage disposal, or pour it down the sink, shower, or bath, everything that goes down your drains ends up in your septic system. What goes down the drain affects how well your septic system

works.

Toilets aren't trash cans!

Your septic system is not a trash can. An easy rule of thumb: Do not flush anything besides human waste and toilet paper. Never flush:

- Cooking grease or oil
- Flushable wipes
- Photographic solutions
- Feminine hygiene products
- Condoms
- Dental floss
- Diapers
- Cigarette butts
- Coffee grounds
- Cat litter
- Paper towels
- Pharmaceuticals
- Household chemicals like gasoline, oil, pesticides, antifreeze, and paint or paint thinners

Think at the sink!

Your septic system contains a collection of living organisms that digest and treat household waste. Pouring toxins down your drain can kill these organisms and harm your septic system. Whether you are at the kitchen sink, bathtub, or utility sink:

- Avoid chemical drain openers for a clogged drain. Instead, use boiling water or a drain snake.
- Never pour cooking oil or grease down the drain.
- Never pour oil-based paints, solvents, or large volumes of toxic cleaners down the drain. Even latex paint waste should be minimized.
- Eliminate or limit the use of a garbage disposal. This will significantly reduce the amount of fats, grease, and solids that enter your septic tank and ultimately clog its drainfield.

Own a recreational vehicle (RV), boat or mobile home?

If you spend any time in an RV or boat, you probably know about the problem of odors from sewage holding tanks.

- Factsheet on [Safe Wastewater Disposal for RV, Boat and Mobile Home Owners and Operators](#)
- National Small Flows Clearinghouse's Septic System Care hotline toll-free at 800-624-8301

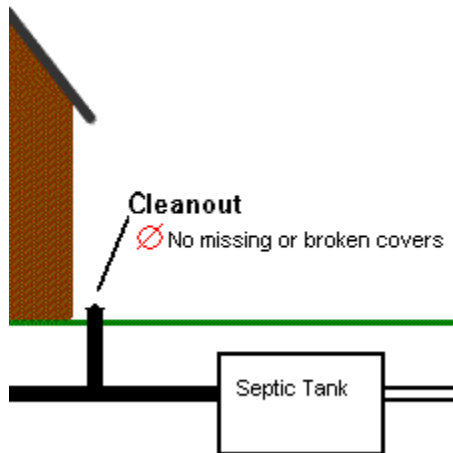
Maintain Your Drainfield

Your drainfield—a component of your septic system that removes contaminants from the liquid that emerges from your septic tank—is an important part of your septic system. Here are a few things you should do to maintain it:

- **Parking:** Never park or drive on your drainfield.
- **Planting:** Plant trees the appropriate distance from your drainfield to keep roots from growing into your septic system. A septic service professional can advise you of the proper distance, depending on your septic tank and landscape.
- **Placing:** Keep roof drains, sump pumps, and other rainwater drainage systems away from your drainfield area. Excess water slows down or stops the wastewater treatment process.

LAST UPDATED ON APRIL 6, 2017

Septic Components:
Cleanout



"Cleanouts" are pipes running from a septic system up to ground surface, to facilitate "snaking," jet cleaning and other maintenance and trouble-shooting tasks. Usually this above-ground access pipe is found at the beginning of a septic system - in between the house and the septic tank.

Cleanouts are usually located near the house, and can give you a general idea on which side of the house your septic tank is located if you do not have that information.

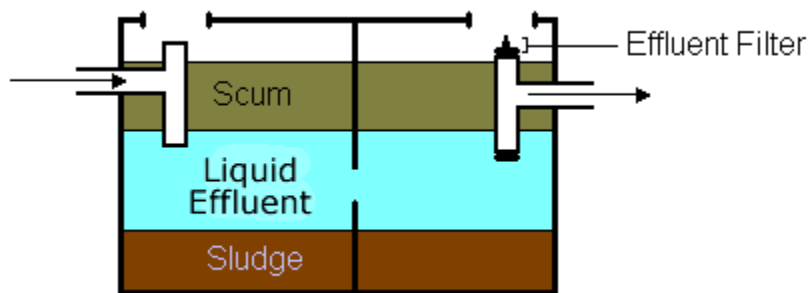
Problem: Sewage is backing up out of the cleanout.

Solution: This usually indicates a blockage somewhere between the house plumbing fixtures and the tank. The tank inlet sanitary "T" could also be blocked with solids, not allowing sewage to flow into the tank.

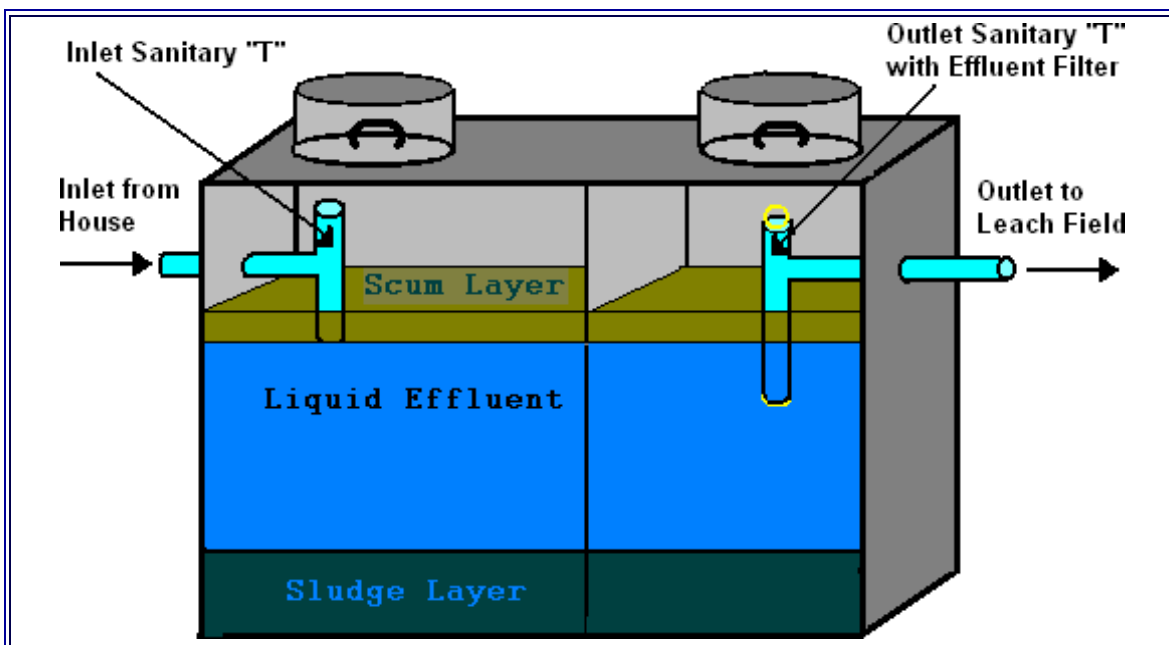
Septic Components: Septic Tanks

The septic tank is a watertight structure that is the main collection point for human waste by-products. It is at this tank that the solid waste is separated from the liquid waste, and the biological digestion of the waste matter takes place. A septic tank provides anaerobic treatment - it

does a good job of settling out the solids, but not such a good job of removing nutrients and breaking down organic matter. [Septic tanks are sized](#) according to the amount of liquid waste they must process - this is based on the number of bedrooms.



Tank Components:



Inlet Sanitary "T" = All septic tanks have an opening for the waste to enter the tank and another one for the waste to exit the tank. The entrance is called the inlet. Inside the tank there will be a PVC, "T"-shaped fitting, consisting of a short section of horizontal piping leading into a slightly longer, vertical section of piping that is open on both the top and the bottom.

Outlet Sanitary "T" = All septic tanks have an opening for the waste to exit the tank. The exit is called the outlet. Inside the tank, there will be a PVC "T"-shaped fitting, consisting of a short section of horizontal piping leading into a slightly longer vertical section of piping that is open on both the top and the bottom. The top of the vertical section must extend above the level of the scum layer, and the bottom of the vertical section must extend below the bottom level of the scum layer. The outlet tee is usually several inches below the level of the inlet tee.

Effluent Filter = Excessive discharge of solids to the drain field can cause it to plug and lose efficiency in treatment and dispersal of the normal liquid flow. If the problem persists, the drain field may need to be replaced. Septic tank effluent filters provide a relatively inexpensive means of preventing solids discharge. In new septic installation, effluent filters are required at the outlet of the septic tank, in the outlet sanitary "T", collecting solids that may be discharged from the tank. Solid accumulation in the filter will cause poor performance of the septic tank, but creates a problem that is far easier and less expensive to clean and maintain than solids accumulation in the drain field.

Scum Layer = This is buoyant waste made up of greases and soaps. When a septic tank is opened, this is usually the first thing that is seen floating on top. If periodic maintenance is not performed (i.e. pumping the tank), this waste can build up to the point of going above the top of the inlet and outlet tees and clogging the inlet into the tank, as well as possibly clogging the soils in the absorption area.

Liquid Effluent Layer = The liquid effluent is made up of the remaining liquids and semi-buoyant waste particles after the sludge and scum waste have separated. A normally operating septic tank maintains a constant effluent level at the height of the bottom of the outlet tee opening. Consequently, when new waste enters the tank, the liquid effluent level rises and the effluent is forced out of the tank through the outlet into the distribution box and into the absorption area for dispersment and continued treatment. Septic tank effluent is usually cloudy and contains suspended solids and pathogens, including disease-causing bacteria and viruses. This condition requires more bacterial action for treatment than can occur in the tank alone.

Sludge Layer = The sludge layer consists of the heavier waste solids that separate and settle to the bottom. The sludge layer is where the decomposition process continues by means of bacteriological interaction. These bacteria live and grow without the presence of air in what is called an anaerobic treatment. Although decomposition is a continual process, the breakdown is not complete, which can eventually result in waste residue build-up if not pumped out on a regular basis. This residue can build up to the bottom of the inlet or outlet tee and block flow into and/or out of the tank.

Tank Maintenance

The septic tank removes solids by holding wastewater in the tank, which allows the solids to settle and scum to rise to the top. To accomplish this, wastewater should be held in the tank for at least 24 hours. Up to 50 percent of the solids retained in the tank decompose. The remaining solids accumulate in the tank. *Biological and chemical additives are not needed to aid or accelerate decomposition.*

As the septic system is used, sludge continues to accumulate in the bottom of the septic tank. Properly designed tanks have enough space for up to three years safe accumulation of sludge. When the sludge level increases beyond this point, sewage has less time to settle properly before leaving the tank. As the sludge level increases, more solids escape into the absorption area. If sludge accumulates too long, no settling occurs before the sewage escapes directly to the soil absorption area. To prevent this, the tank must be pumped periodically. The material pumped out of the tank is known as "septage."

The frequency of pumping depends on several factors:

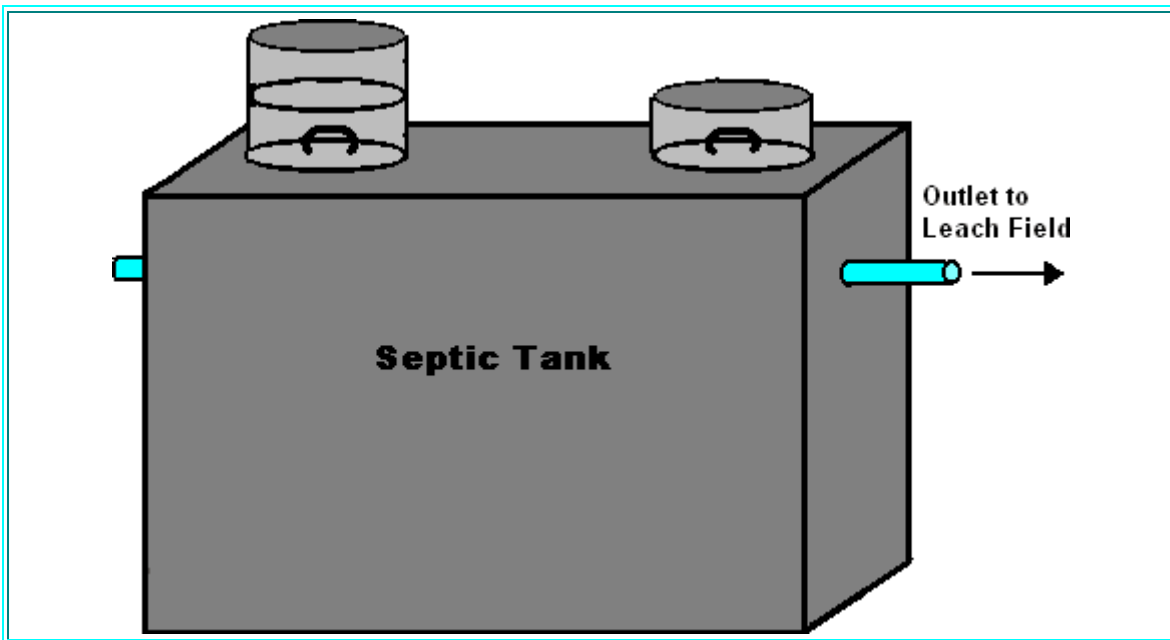
- (1) Capacity of septic tank.
- (2) Flow of wastewater (related to size of household).
- (3) Volume of solids in wastewater (more solids if garbage disposal is used).

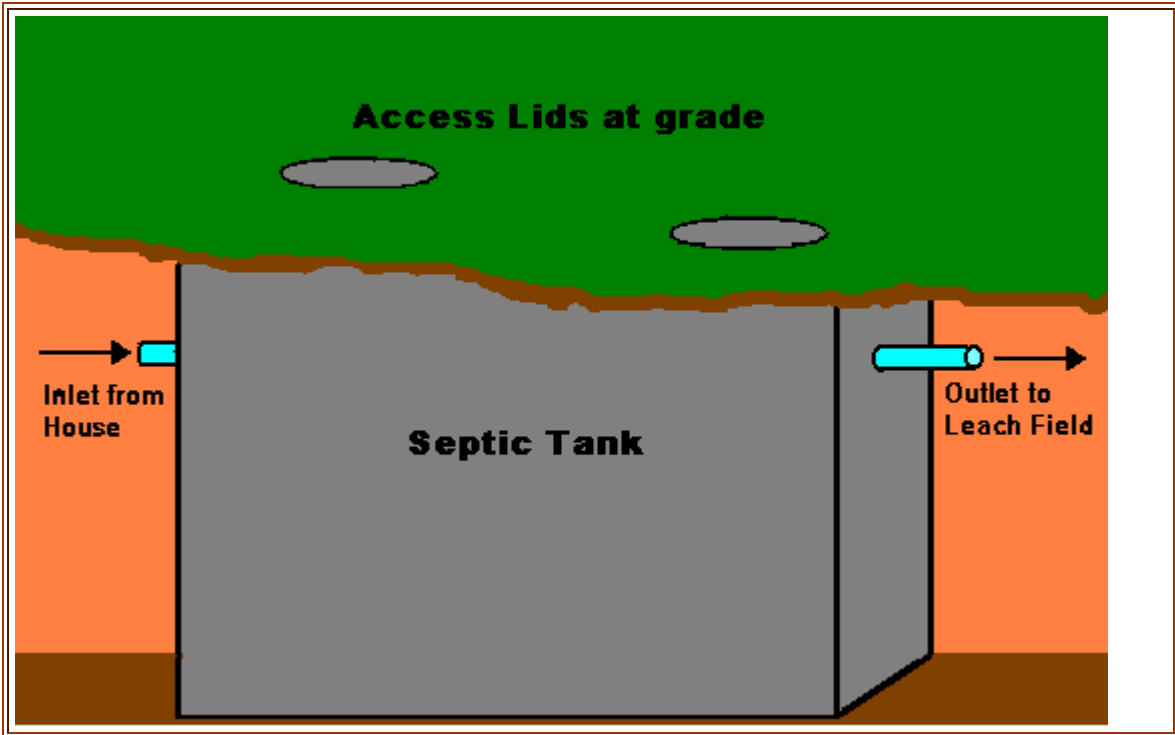
Septic Components: Septic Tank Access Lids

In order to make repairs or perform regular maintenance or cleaning/pumping of the tank, access must be provided. There are usually two lids located at the top of the septic tank-one located over the inlet "T" and one located over the outlet "T". On new construction, when septic tank lids are buried more than 12 inches below finished grade, risers or access tunnels are installed on top of the tank lids, and are extended up to a point that is less than 12 inches from the ground surface or to grade.

The riser(s) needs to be completely sealed to the tank to prevent ground water from entering the riser cavity, which may cause a flooding of the tank and the whole system. If the riser lid is located at grade, it shall be locked to prevent entry.

Note: The inlet and outlet sanitary "T"s need to be located directly below the tank access lid for easy access.

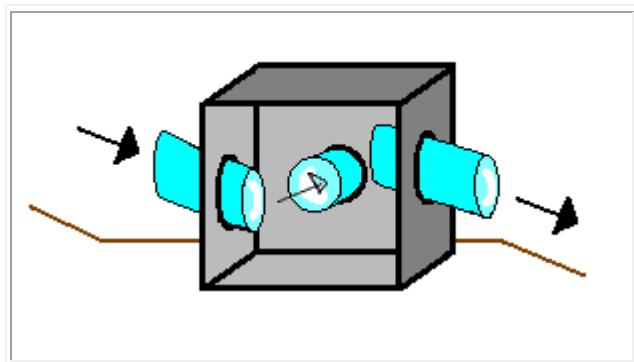




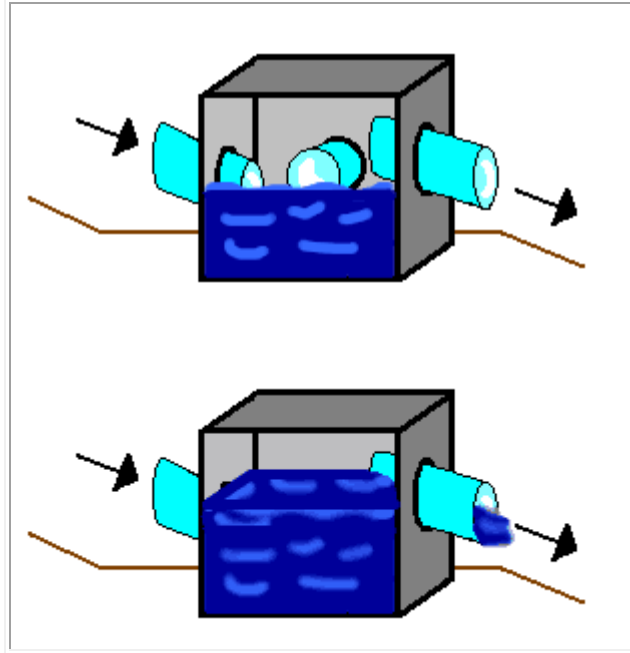
**Septic Components:
Distribution**

Gravity Distribution: Gravity distribution of sewage in septic systems has been the most common design for a long time. Gravity distribution systems take advantage of a natural phenomenon: water flows downhill. Wastewater flows down from its sources to the septic tank, then to the leach lines or absorption area.

Gravity distribution systems have a series of trenches. The trenches are sometimes long (max. 100') and are filled with rock and topped with a fairly shallow layer of topsoil. Each trench is connected to the septic tank (usually through a distribution box) so that wastewater leaving the tank flows into the trench - the most typical arrangement of this flow is called "serial distribution".



Serial Distribution: Serial distribution is a type of gravity distribution where wastewater from the septic tank flows into the first trench until the trench is full. Then the water flows into the second trench until it, too, is full, then into the third and so on. The first trench will tend to be full all the time. When the water level in that trench drops, it will receive wastewater immediately. But aside from the order in which water reaches them, the trenches function independently, each receiving wastewater at the rate it is treated in that trench. If one is draining more slowly than the others, perhaps because it's located in less permeable soil, it will receive less wastewater. If one tends to drain quickly, perhaps because it receives more sunlight and more water is lost through evaporation, it will receive more wastewater. Since the trenches are not directly connected, there is no hydraulic head from trench to trench - water does not move more quickly into or through the second or third trenches because they are downhill from the first one.



Serial distribution allows for flexibility. If one of the trenches fails, another trench can be dug and connected to the septic tank without any alterations to the existing trenches or their distribution lines. Serial distribution also allows for quick inspections - check only the ends of the trenches

When the effluent leaves the septic tank, it is sent to the distribution box (D-box). The D-box usually has a single inlet (from the tank) and outlets leading to an individual leach line in the absorption area and another leading to the next D-box.



Distribution Box



Diverter Caps used to alter flow of effluent.

Septic Components: Leach Line Trenches

Trenches are long, narrow systems that allow the soil to treat the effluent. The method of distribution is usually gravity. The materials used in trenches have changed over the years. Typically, systems have been constructed out of 4" pipe and rock. A number of plastic products have become available recently to replace the rock and gravel-less trenches are becoming more common. It is important that the bottom of the leach line trench is a minimum of 5 feet from groundwater to prevent contamination.

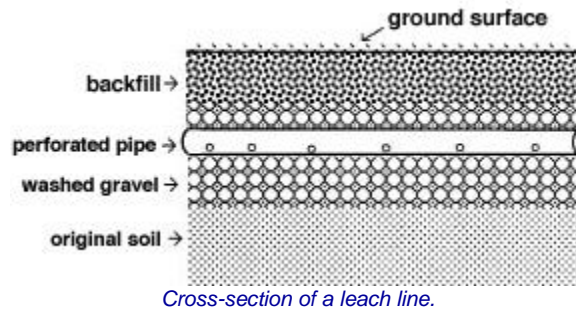
It is also important that the bottom of the trench is level, allowing for an even flow of effluent.



To determine the level of the trench bottom, this contractor is shooting the grade.

Septic Components: Leach Lines

Leach Lines with Perforated Pipe: Leach lines are trenches that are filled with washed rock/gravel to flow level. Perforated pipe lays on top of the rock at a level grade. More rock is added to cover the pipe, and paper or other approved filter material is used to keep soil from filtering down into the rock. The paper does deteriorate, but by the time it does the soil is compacted enough to prevent it from dropping into the rock. Perforated leach lines are usually the first choice for a standard individual sewage disposal system design. The pipes of an approved material and are pre-drilled to allow the effluent to trickle through the gravel for treatment. The lines are also shallow enough (12" to grade) for some aerobic bacteria breakdown and some evapo-transpiration.



The area of an individual sewage disposal system's disposal field is sized based on the proposed sewage flow and the soil's percolation rate.

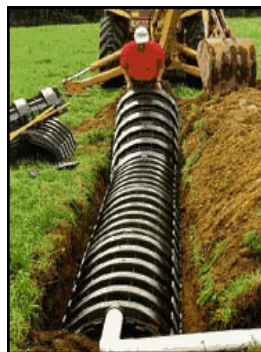
Individual sewage disposal systems are designed to accommodate a sewage flow of 350 gallons per day plus 150 gallons for each additional bedroom.

A standard leach line is considered to be three (3) feet wide and three (3) feet deep with a length as required. A non-standard leach line is wider, narrower, and/or deeper than three (3) feet with a length as required.

Some El Dorado County requirements for standard leach line installation:

- Maximum length of each line 100 ft.
- Minimum spacing of lines, center-to-center = 10 ft.
- Minimum depth of natural earth over all lines as measured from the lowest point of natural grade 12 in.
- Maximum "drop" in leach line (bottom of trench and drain pipe) 3 in./100'
- Drain line pipe ends must be capped, holes in pipe must face downward
- A minimum of one observation/inspection riser shall be installed at the, end of each trench.
- Drain rock/gravel shall be clean, sound gravel or crushed rock ranging in size from 3/4 to 1 1/2inch diameter, with <5% outside this range.

Gravel-less Leach Lines:



Gravel-less trench construction (e.g., Infiltrator® systems) may be utilized instead of drain rock in the disposal trench. The design, manufacturing, and materials used shall be durable and acceptable to the Department.

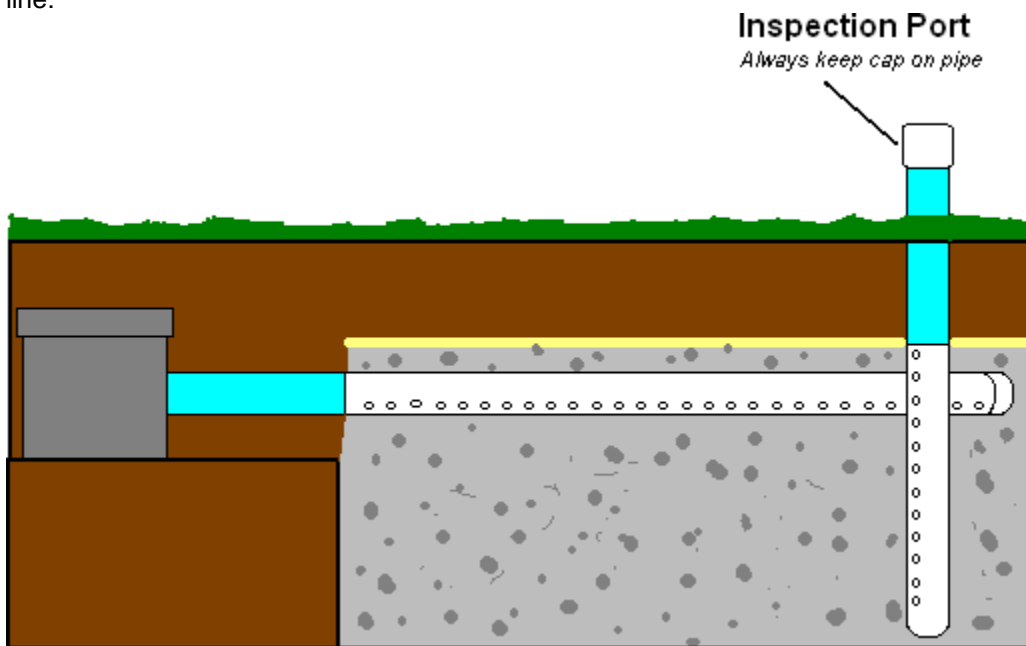
Septic Components: Inspection Risers/Ports

Inspection ports, or inspection risers, are vertical pipes that terminate at the bottom of a leach trench, and can be opened at the ground surface for inspection. They are found at the end of leach lines, and are required to be installed with all new septic systems.

Inspection ports are helpful in monitoring the activity of your septic system. You can monitor the use of each leach line and whether a line is full or not.

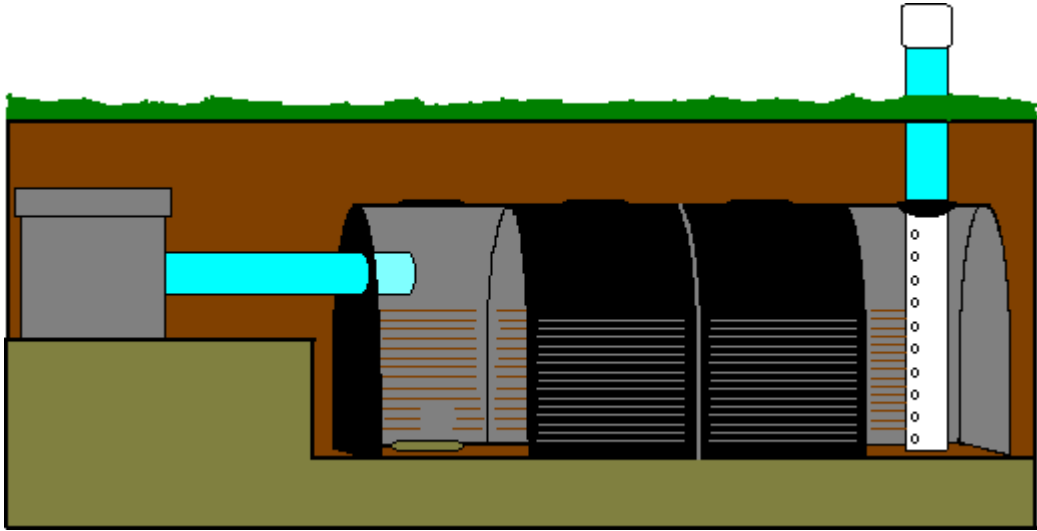
It is important to protect your system from surface water, so always keep your inspection port cap on. Also, the pipe extending to the surface should be solid and not perforated.

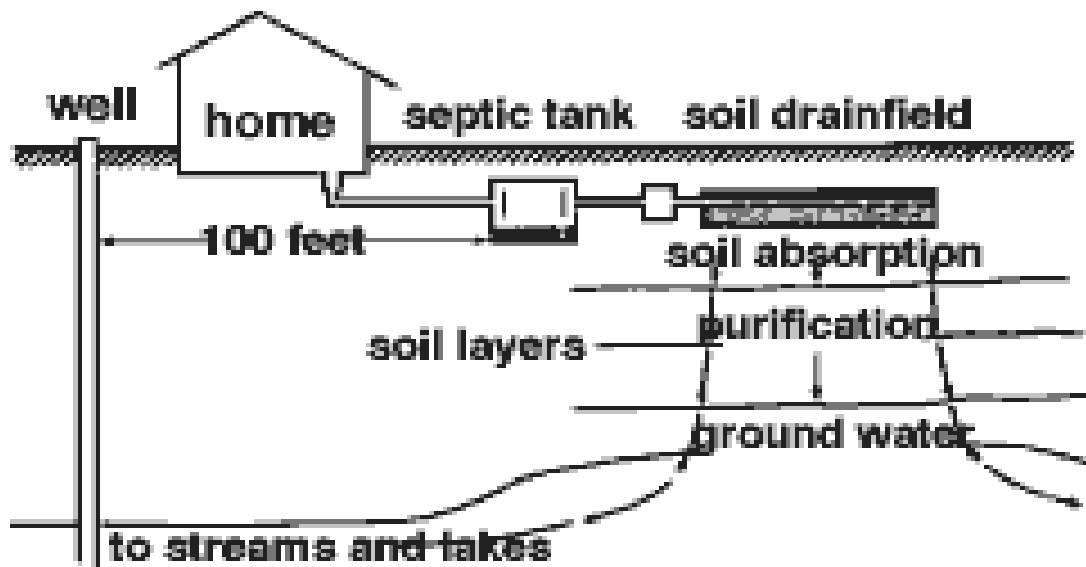
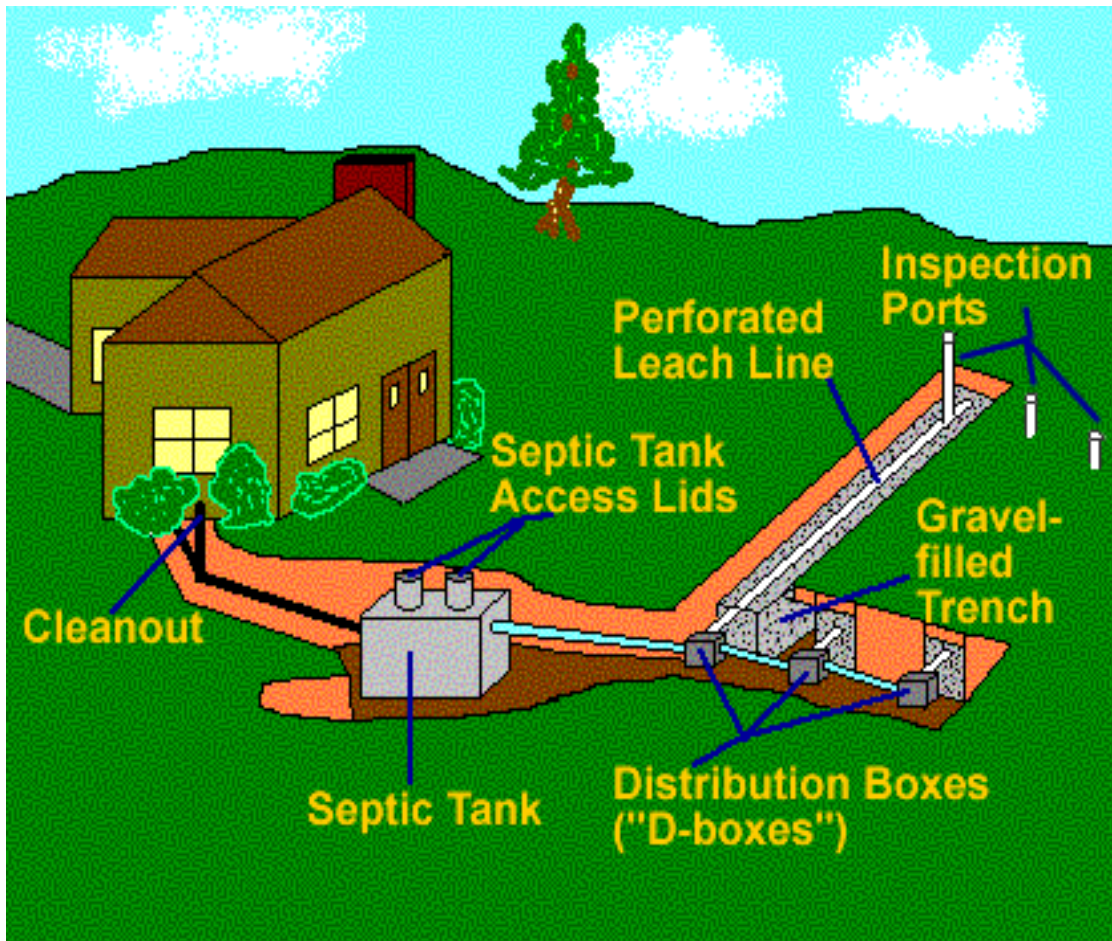
This illustration shows an inspection port / inspection riser installed in a typical gravel-filled leach line:



Inspection ports do not have to be visible in your yard. You can have the port "hidden" in a plumbing box, and it can still be easily accessible for inspection.

The illustration below shows an inspection port / inspection riser installed in a typical gravel-less/infiltrator leach line:





APPENDIX H

SEWER COLLECTION SYSTEM CAPACITY ANALYSIS

Sewer Collection System Capacity Analysis
Georgetown Divide Publid Utility District - Auburn Lake Trails Zone

Basin	#Lots	Avg. Flow (gpd)	Peak Flow (gpd)	I/I (gpd)	Mac Flow (cfs)	Diam (in)	Elev. Change (ft)	Length (ft)	Min. slope	Capacity Flowing Full (cfs)	Capacity at 0.8d/D	in-diam-ft of pipe of Contrib. area	Contributes Flow at MH	Sufficient Capacity?
E2	14	2,772	10533.6										MH17	
E1	11	2,178	8276.4										MH17	
E	7	1,386	5266.8	11265	0.06								MH11	
D	12	2,376	9028.8	1163	0.02								MH11	
MH11 to MH10					0.08	6	7.77	223	0.0348	1.36	1.33			Yes
Clipp Ct.	21	4,158	15800.4	3852	0.03									
F3	4	792	3009.6										MH30	
F2	4	792	3009.6										MH30	
F1	3	594	2257.2										MH30	
F	23	4,554	17305.2										MH36	
MH10 to MH36				763	0.11	6	5.43	242	0.0224	1.09	1.07		MH36	Yes
MH36 to MH7	6	1,188	4514.4	1635	0.18	8	11.47	398	0.0228	2.67	2.61		MH7	Yes
C	5	990	3762											
C1	3	594	2257.2											
MH8 to MH7				1853	0.01	6	15.1	290	0.0521	1.67	1.63		MH7	Yes
MH7 to LS	4	792	3009.6	1,526	0.2	8	11.46	377	0.0304	2.74	2.68		LS	Yes
A1	5	990	3762										MH3	
A	4	792	3009.6										MH1	
B	13	2574	9781.2										MH1	
MH1 to LS	139			5196	0.04	6	38.1	235	0.1621	2.94	2.88		LS	Yes

Notes:

gpd - gallons per day

cfs - cubic feet per second

d/D - depth to diameter

in - inch

ft - feet

Average Daily Flow based on 198 gpd/lot

Peak Flow based on 3.8 x Average Daily Flow

I/I based on approximately 2,600 gpd/in-diam-mile of collection system piping

Collection system totals approximately 13.97 in-diam-miles of piping



LEGEND

- SUB-BASINS A1
- MANHOLE MH-1
- PIPE DIAMETER 6"
- LOT # 1888
- CLEANOUT ◦

GEORGETOWN DIVIDE PUBLIC
UTILITY DISTRICT

AUBURN LAKE TRAILS
COMMUNITY DISPOSAL SYSTEM

JUNE 2010

APPENDIX I

SSMP AUDIT FORMS

Sewer System Management Plan Annual Audit Report

Sewer System Management Plan Annual Audit Report

Name of agency:	
Reporting Period:	
Date of Audit:	
Audit Team:	
System Overview	
Miles of force mains	
Number of pump stations	
Miles of private sewer laterals	
Current average monthly single family	
Miles of gravity sewer mains	
Total miles of all sewer lines	
Miles of private sewer mains, excl. laterals	
Population served	
Residential sewer rate	

This audit includes information regarding the status and implementation of the SSMP as of the end of _____. Annual SSO statistics through calendar year _____ are presented in Table 1. Recommendations from the previous audit are shown in dotted underline, with follow-up action indicated where applicable. The audit team's recommendations/action items resulting from the current audit are shown in solid underline.

Note: The Order of headings below is based on Statewide Order 2006-003-DWQ.

1. GOALS

1. Are the goals stated in the SSMP still appropriate and accurate? (check one) **YES / NO**
2. If you answered NO to question 1, describe content and schedule for updates, or provide additional comments for YES response.

2. ORGANIZATION

REFERENCE MATERIAL

- Organization chart**
- Phone list**

3. Is the SSMP up-to-date with agency organization and staffing contact information? **YES / NO**

4. If you answered NO to question 3, describe content and schedule for updates, or provide additional comments for YES response.

3. LEGAL AUTHORITY

REFERENCE MATERIAL

- Ordinances**
- Enforcement actions**

5. Does the SSMP contain up-to-date information about your agency's legal authority? **YES / NO**

6. Does your agency have sufficient legal authority to control sewer use and maintenance?
YES / NO

7. If you answered NO to questions 5 and/or 6, describe content and schedule for necessary changes, or provide additional comments for YES response.

4. OPERATIONS AND MAINTENANCE

COLLECTION SYSTEM MAPS

REFERENCE MATERIAL

- Summary of information included in mapping system**

8. Does the SSMP contain up-to-date information about your agency's maps? **YES / NO**

9. Are your agency's collection system maps complete, up-to-date, and sufficiently detailed? **YES / NO**

10. If you answered NO to questions 8 and/or 9, describe content and schedule for necessary changes, or provide additional comments for YES response.

b. RESOURCES AND BUDGET

REFERENCE MATERIAL

- Current Capital Improvement Plan (CIP)**
- Current operating budget**

11. Does the SSMP contain up-to-date information about your agency's resources and budget?
YES / NO

12. Are your agency's resources and budget sufficient to support effective sewer system management? **YES / NO**

13. Do your agency's planning efforts support long-term goals? **YES / NO**

14. If you answered NO to questions 11, 12, and/or 13, describe content and schedule for necessary changes, or provide additional comments for YES response.

c. PRIORITIZED PREVENTIVE MAINTENANCE

REFERENCE MATERIAL

- Cleaning schedules**
- List or map of hotspots**
- Work orders**
- Service call data**
- Customer feedback**

15. Does the SSMP contain up-to-date information about your agency's preventive maintenance activities?
YES / NO

16. Considering the information in Tables 1 – 3, are your agency's preventive maintenance activities sufficient and effective in reducing and preventing SSOs and blockages? **YES / NO**

17. If you answered NO to questions 15 and/or 16, describe content and schedule for necessary improvements or provide additional comments for YES.

d. SCHEDULED INSPECTIONS AND CONDITION ASSESSMENT

REFERENCE MATERIAL

- Inspection reports**
- Infiltration and Inflow (I/I) monitoring studies and reports**
- Pipe and manhole condition data**

Note: Statewide Order 2006-003-DWQ describes this sub-element as a Rehabilitation and Replacement Plan.

18. Does the SSMP contain up-to-date information about your agency's inspections and condition assessment?
YES / NO

19. Are your agency's scheduled inspections and condition assessment system effective in locating, identifying, and addressing deficiencies? **YES / NO**

20. If you answered NO to questions 18 and/or 19, describe content and schedule for necessary changes, or provide additional comments for YES.

e. CONTINGENCY EQUIPMENT AND REPLACEMENT INVENTORIES

REFERENCE MATERIAL

- Funds spent on equipment and materials**
- Equipment and parts inventory**

21. Does the SSMP contain up-to-date information about equipment and replacement inventories? **YES / NO**
22. Are contingency equipment and replacement parts sufficient to respond to emergencies and properly conduct regular maintenance? **YES / NO**
23. If you answered NO to questions 21 and/or 22, describe content and schedule for necessary arrangements, or provide additional comments for YES response.

f. TRAINING

REFERENCE MATERIAL

- Employee training records**

24. Does the SSMP contain up-to-date information about your agency's training expectations and programs?
YES / NO
25. Do supervisors believe that their staff is sufficiently trained? **YES / NO**
26. Are staff satisfied with the training opportunities and support offered to them? **YES / NO**
27. If you answered NO to questions 24, 25, and/or 26, describe content and schedule for necessary improvements, or provide additional comments for YES response.

5. DESIGN AND CONSTRUCTION STANDARDS

REFERENCE MATERIAL

- Design and construction standards**
- Ordinances**

31. Does the SSMP contain up-to-date information about your agency's design and construction standards?
YES / NO

32. Are design and construction standards, as well as standards for inspection and testing of new and rehabilitated facilities sufficiently comprehensive and up-to-date? **YES / NO**

33. If you answered NO to questions 31 and/or 32, describe content and schedule for necessary revisions, or provide additional comments for YES response.

6. OVERFLOW EMERGENCY RESPONSE PLAN

REFERENCE MATERIAL

Data submitted to CIWQS

Service call data

34. Does the SSMP contain an up-to-date version of your agency's Overflow Emergency Response Plan?
YES / NO

35. Considering the information in Table 1, is the Overflow Emergency Response Plan effective in handling SSOs? **YES / NO**

36. If you answered NO to questions 34 and/or 35, describe content and schedule for necessary revisions and implementation, or provide additional comments for YES response.

38. Considering the information in Table 2, is the current FOG program effective in documenting and controlling FOG sources? **YES / NO**

39. If you answered NO to questions 37 and/or 38, describe content and schedule for necessary changes, or provide additional comments for YES response.

7. CAPACITY ASSURANCE PLAN

REFERENCE MATERIAL

- Capacity assessment reports**
- CIP**
- SSO data**

Number of SSOs caused by capacity limitations:

40. Does the SSMP contain up-to-date information about your agency's capacity assessment? **YES / NO**
41. Has your agency completed a capacity assessment and identified and addressed any hydraulic deficiencies in the system? **YES / NO**
42. If you answered NO to questions 40 and/or 41, describe content and schedule for necessary activities, or provide additional comments for YES response.

8. MONITORING, MEASUREMENT, AND PROGRAM MODIFICATIONS

43. Does the SSMP contain up-to-date information about your agency's data collection and organization? **YES / NO**
44. Is your agency's data collection and organization sufficient to evaluate the effectiveness of your SSMP? **YES / NO**
45. If you answered NO to questions 43 and/or 44, describe content and schedule for necessary improvements, or provide additional comments for YES response.

9. SSMP AUDITS

45. Will this SSMP Audit be submitted with the Annual Report to the Regional Water Board by February 1? **YES / NO**

10. COMMUNICATION PROGRAM

REFERENCE MATERIAL

- Mailings and mailing lists**
- Website**

- Other communication records such as newspaper ads, site postings, or other outreach**
- Customer feedback**

46. Does the SSMP contain up-to-date information about your agency's public outreach activities? **YES / NO**

47. Has your agency effectively communicated with the public and other agencies about the SSMP, and addressed feedback? **YES / NO**

48. If you answered NO to questions 46, 47, and/or 48, describe content and schedule for necessary improvements, or provide additional comments for YES response.

Table 1 SSO Statistics

Type of Work/spill	Unit Measurement	Measurement	Date
Total number of spills per year (all spills)	Category I SSOs-count		
	Category 2 SSOs-count		
	Private Lateral SSOs-count		
Total volume of spills per year (all spills)	Gallons min/max		
Total number of wet weather spills per year	Spills		
Total volume of wet weather spills per year	Gallons		
% Spills caused by FOG and volume	%		
% Spills Caused by Roots and volume	%		
% Spills Caused by Vandalism and volume	%		
Customer service requests per year, actionable/responsible for	Total # SR		
Total number of sewer caused odor complaints	Complaints		
Total # of Pump/Lift Station SSOs per year (cause overflow)	# SSOs		
	Volume in gallons		
Total number of pipe failures per year (cause overflow)	Breaks		
Average response time, goal verses actual	Minutes		
Number of claims per year, flooding	Claims		
Total cost of claims per year	\$		
Total work orders performed per year	Word orders		
% of work orders completed, emergency or corrective	% Emergency		
	% corrective		
% of work orders completed that are preventable	%		
Total lineal feet of sewer pipe repaired	Lineal feet		
Total lineal feet of sewer pipe lined	Lineal feet		
Total lineal feet of sewer pipe bursted	Lineal feet		

Metrics to Assess Preventative Maintenance Program

Activity	Unit of measurement	Measurement	Year
Total feet cleaned per year	feet		
Total feet visually inspected per year (not CCTV)	feet		
Manhole inspections	Each manhole/annually		
Total lineal feet CCTV inspected per year	Lineal feet		
Total feet smoke tested	Lineal feet		
Total lineal feet of sewer roots treated	Lineal feet		
Vault and distribution vault pump-outs	annually		
Number of CDS septic tanks pumped	#		
Number of CDS septic tanks replaced	#		

APPENDIX J

SSMP ADOPTION RESOLUTION