

## Attachment B

# **Boronda County Sanitation District**

**Monterey County Public Works**



## **Sanitary Sewer Spill Emergency Response Plan**

**WDID: 3SSO18092**

**November 2023**

State Water Resources Control Board (SWRCB)  
Waste Discharge Requirements  
Order No. WQ 2022-0103-DWQ

## **Table of Contents**

Introduction and Definitions .....	Page 3
Prohibitions & Notification Procedures.....	Page 5
Regulatory Agency Contacts .....	Page 8
BCSD Call Out List .....	Page 8
Spill Response Traffic Control .....	Page 9
Spill Containment and Cleanup .....	Page 10
Pump Station and Force Main Failure .....	Page 11
Contingency Contacts.....	Page 12
Force Main Spills .....	Page 12
Prolonged Spill Response .....	Page 12
Contractor Spill Response .....	Page 13
Lift Station Contingency Data .....	Page 13
Spill Volume Estimation .....	Page 15
Coordination with Storm Drain Agencies and Water Systems .....	Page 33
Receiving Water Monitoring .....	Page 34
Water Body Closures .....	Page 36
Water Body Beneficial Uses .....	Page 37
Reporting Procedures .....	Page 38
Detailed Reporting Requirements .....	Page 41
Post Spill Investigations .....	Page 50
Training .....	Page 52
Attachments	
○ Post Spill Investigation Form	
○ Spill Response Field Checklist	

## **PURPOSE**

The County of Monterey operates and maintains the Boronda County Sanitation District (BCSD) which is a diverse sanitary sewer collection system that consists of pump stations, gravity flow sewer mains and force mains. These facilities are well maintained and normally should not result in any sewage overflows or spills. However, the possibility of unforeseen accidents, equipment failure, or other events not controllable by the County could result in sewer system spills (spills). When enacted in response to spills, this plan will reduce or eliminate public health hazards and minimize service interruption.

This plan shall be reviewed and assessed annually and updated as appropriate. The LRO must certify this plan is up to date by April 1<sup>st</sup> annually in CIWQS.

## **GENERAL**

Normal and routine maintenance of the collection system allows the system to operate at its maximum design capacity. There may be a time however, when an spill occurs. This Sewer Spill Emergency Response Plan will help facilitate a rapid and effective response.

Staff must be able to accurately assess the level of response needed, know what potential liabilities there are for property damage and how to properly report an spill to the correct regulatory agencies. The following definitions shall be used to identify a spill category and WDR Terms in accordance with the State Water Resources Control Board (SWRCB):

Spill Category	Definition
Category 1 Spill	<p>A Category 1 spill is a spill of any volume of sewage from or caused by a sanitary sewer system regulated under this General Order that results in a discharge to:</p> <ul style="list-style-type: none"><li>○ A surface water, including a surface water body that contains no flow or volume of water; or</li><li>○ A drainage conveyance system that discharges to surface waters when the sewage is not fully captured and returned to the sanitary sewer system or disposed of properly.</li></ul> <p>Any spill volume not recovered from a drainage conveyance system is considered a discharge to surface water, unless the drainage conveyance system discharges to a dedicated stormwater infiltration basin or facility.</p> <p>A spill from an County-owned and/or operated lateral that discharges to a surface water is a Category 1 spill; the County shall report all Category 1 spills per section 3.1 of Attachment E1 (Notification, Monitoring, Reporting and Recordkeeping Requirements) of the General Order.</p>

Category 2 Spill	<p>A Category 2 spill is a spill of 1,000 gallons or greater, from or caused by a sanitary sewer system regulated under this General Order that does not discharge to a surface water.</p> <p>A spill of 1,000 gallons or greater that spills out of a lateral and is caused by a failure or blockage in the sanitary sewer system, is a Category 2 spill.</p>
Category 3 Spill	<p>A Category 3 spill is a spill of equal to or greater than 50 gallons and less than 1,000 gallons, from or caused by a sanitary sewer system regulated under this General Order that does not discharge to a surface water.</p> <p>A spill of equal to or greater than 50 gallons and less than 1,000 gallons, that spills out of a lateral and is caused by a failure or blockage in the sanitary sewer system is a Category 3 spill.</p>
Category 4 Spill	<p>A Category 4 spill is a spill of less than 50 gallons, from or caused by a sanitary sewer system regulated under this General Order that does not discharge to a surface water.</p> <p>A spill of less than 50 gallons that spills out of a lateral and is caused by a failure or blockage in the sanitary sewer system is a Category 4 spill.</p>
<b>Term</b>	<b>Definition</b>
Receiving Water	A receiving water is a water of the State that receives a discharge of waste.
Waters of the State	<p>Waters of the State are surface waters or groundwater within boundaries of the state as defined in Water Code section 13050(e), in which the State and Regional Water Boards have authority to protect beneficial uses. Waters of the State include, but are not limited to, groundwater aquifers, surface waters, saline waters, natural washes and pools, wetlands, sloughs, and estuaries, regardless of flow or whether water exists during dry conditions.</p> <p>Waters of the State include waters of the United States.</p>
Waters of the United States	Waters of the United States are surface waters or waterbodies that are subject to federal jurisdiction in accordance with the Clean Water Act.
Hydrologically Connected	Two waterbodies are hydrologically connected when one waterbody flows, or has the potential to flow, into the other waterbody. For the purpose of this General Order, groundwater is hydrologically connected to a surface water when the groundwater feeds into the surface water. (The surface waterbody in this example is termed a gaining stream as it gains flow from surrounding groundwater.)
Drainage Conveyance System	A drainage conveyance system is a publicly- or privately-owned separate storm sewer system, including but not limited to drainage canals, channels, pipelines, pump stations, detention basins, infiltration basins/facilities, or other facilities constructed to transport stormwater and non-stormwater flows.
Potential to Discharge, Potential Discharge	Potential to Discharge, or Potential Discharge, means any exiting of sewage from a sanitary sewer system which can reasonably be expected to discharge into a water of the State based on the size of the sewage spill, proximity to a drainage conveyance system, and the nature of the surrounding environment.

## **PROHIBITIONS**

The following are a list of Prohibitions listed in SWRCB Order No. 2022-0103-DWQ:

### **Discharge of Sewage from a Sanitary Sewer System**

Any discharge from a sanitary sewer system that has the potential to discharge to surface waters of the State is prohibited unless it is promptly cleaned up and reported as required in this General Order.

### **Discharge of Sewage to Waters of the State**

Any discharge from a sanitary sewer system, discharged directly or indirectly through a drainage conveyance system or other route, to waters of the State is prohibited.

### **Discharge of Sewage Creating a Nuisance**

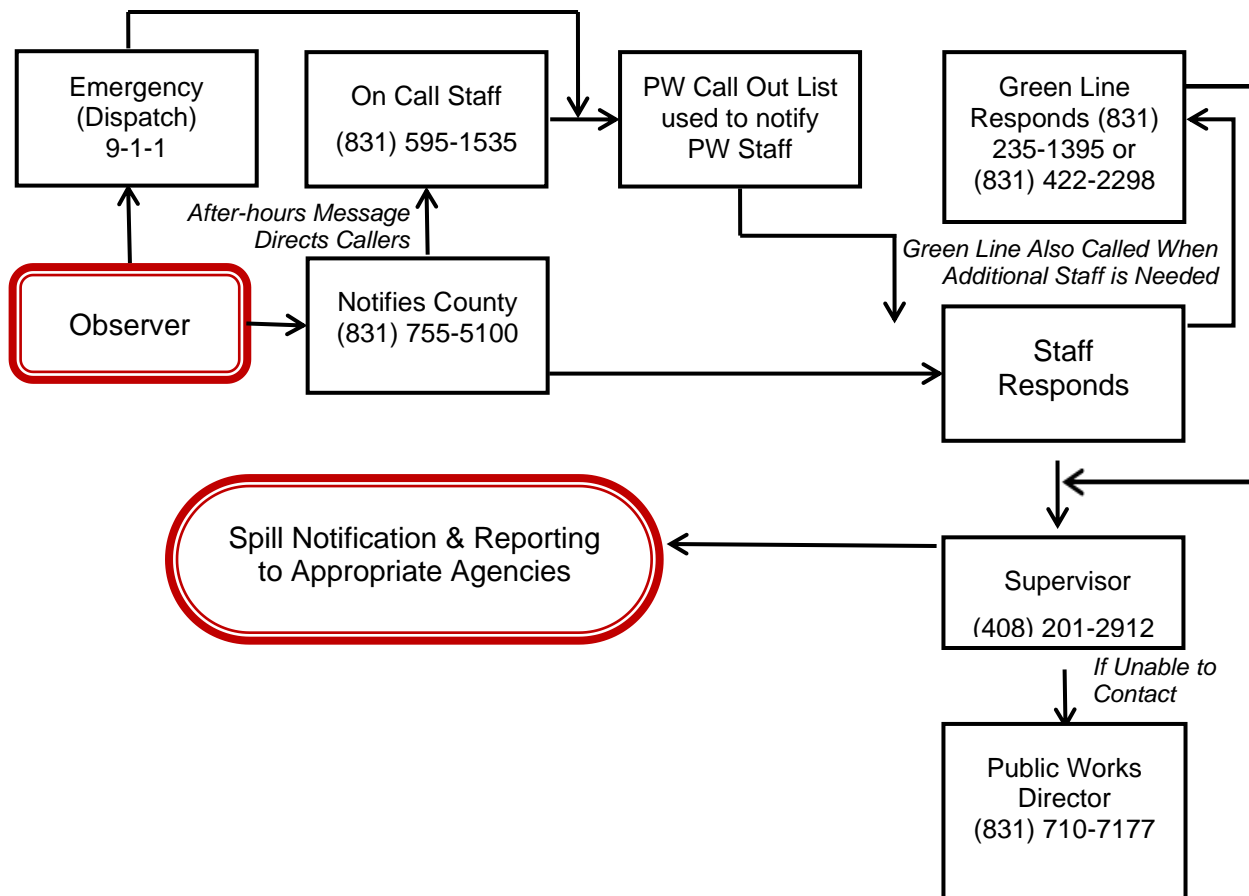
Any discharge from a sanitary sewer system that creates a nuisance or condition of pollution as defined in Water Code section 13050(m) is prohibited.

## **NOTIFICATION PROCEDURES**

### **Collections System:**

Notifications of possible spills are received via telephone calls. All telephone calls or complaints for actual or potential spills are routed directly to the County's main office and then to the Supervisor via County office personnel.

During non-business hours, the County's voicemail system will receive the call and notify the caller to contact the Emergency Dispatch (911 or Emergency # 831-595-1535). Public Works staff response to confirm the spill. Once the spill is confirmed, County On-Call staff is contacted to respond. If County staff requires assistance, Greenline (831) 422-2298 or (831) 235-1395 (sewer contractor) is available to assist with emergency response.



**Figure 1-2: Spill Response Chain of Command**

### Lift Stations:

County staff are responsible for responding to alarm notifications of lift station failure. The County operates and maintains five (5) lift stations which are monitored by level sensors which alert an auto dialer in the event of an emergency. If County staff requires assistance in responding to a lift station emergency, they will contact the Supervisor and/or other County Maintenance staff and/or approved contractors.

## **Notify Regulatory Agencies of the Spill**

The details of the required notifications are provided below:

### **a. Category 1 Spill**

- i. Within two (2) hours of the County's knowledge of a Category 1 spill of 1,000 gallons or greater, discharging or threatening to discharge to surface waters notify the California Office of Emergency Services and obtain a notification control number at (800) 852-7550.
- ii. The County shall provide the following spill information to the California Office of Emergency Services before receiving a Control Number, as applicable:
  - o Name and phone number of the person notifying the California Office of Emergency Services;
  - o Estimated spill volume (gallons);
  - o Estimated spill rate from the system (gallons per minute);
  - o Estimated discharge rate (gallons per minute) directly into waters of the State or indirectly into a drainage conveyance system;
  - o Spill incident description:
  - o Brief narrative of the spill event, and
  - o Spill incident location (address, city, and zip code) and closest cross streets and/or landmarks;
  - o Name and phone number of contact person on-scene;
  - o Date and time the County was informed of the spill event;
  - o Name of sanitary sewer system causing the spill;
  - o Spill cause or suspected cause (if known);
  - o Amount of spill contained;
  - o Name of receiving water body receiving or potentially receiving discharge; and
  - o Description of water body impact and/ or potential impact to beneficial uses.
- iii. Following the initial notification to the California Office of Emergency Services and until such time that the County certifies the spill report in the online CIWQS Sanitary Sewer System Database, the County shall provide updates to the California Office of Emergency Services regarding substantial changes to:
  - o Estimated spill volume (increase or decrease in gallons initially estimated);
  - o Estimated discharge volume discharged directly into waters of the State or indirectly into a drainage conveyance system (increase or decrease in gallons initially estimated); and
  - o Additional impact(s) to the receiving water(s) and beneficial uses

Additional Agency Information is provided below – may require contact by County in the event of a Category 1 Spill or Category 2 Spill if discharging to Surface Water. SWRCB only requires notification of OES for a Category 1 spill or a Category 2 Spill if discharging to Surface Water:



### Regulatory Agency Contacts

<b>California Office of Emergency Services (Cal OES)</b>	Within two (2) hours of the County's knowledge of a Category 1 spill of 1,000 gallons or greater, discharging or threatening to discharge to surface waters notify the California Office of Emergency Services and obtain a notification control number at (800) 852-7550
<b>Regional Water Quality Control Board (RWQCB)</b>	<i>Optional</i> - If spill is over 1,000 gallons, reaches waterway, or occurred in area with likely public contact, call (805) 549-3147.
<b>Monterey County Environmental Health</b>	<i>Optional</i> - If spill reaches waterway, call (800) 253-2687. Give the spill information.
<b>California Department of Fish and Wildlife</b>	<i>Optional</i> -If spill reaches waterway, call state office (831) 649-2817.

**b. Category 2 Spill:**

- iv. Within two (2) hours of the County's knowledge of a Category 2 spill of 1,000 gallons or greater, discharging or threatening to discharge to waters of the State, notify California Office of Emergency Services and obtain a notification control number.

**c. Category 3 Spill:**

- i. Not Applicable

**d. Category 4 Spill:**

- i. Not Applicable

**e. County Owned and/or Operated Lateral Spills**

- i. Within two (2) hours of the County's knowledge of a spill of 1,000 gallons or greater, from an County- owned and/or operated lateral, discharging or threatening to discharge to waters of the State:
- ii. Notify California Office of Emergency Services and obtain a notification control number.
- iii. Not applicable to a spill of less than 1,000 gallons.

### County Office Phone Number for Normal and After Working Hours

<b>Office During Business Hours</b> (831) 755 4925 or (831) 755-5100	<b>After Hours</b> (831) 595-1535
<b>Public Works Director</b> Randell Ishii (831) 710-7177	<b>Supervisor</b> Tom Moss (408) 201-2912

<b>Bridge Superintendent</b> Jesse Mercado (831) 262-8773	<b>Assistant Bridge Superintendent</b> Raul Carabajal (831) 595-2170
<b>On Call Personnel</b> (831) 595-1535	<b>Greenline (Emergency Response Contractor)</b> (831) 422-1395, (831) 422-2298

## **SAFETY**

Whenever County staff responds to a report of a spill, they may encounter an emergency situation that requires immediate action. The most critical aspect of resolving an incident of this nature is to safely and competently perform the actions necessary to return service as soon as possible and to keep public health and environmental impacts to a minimum.

Wastewater staff may be required to implement the following safety procedures:

- Lockout/Tag-out for equipment repair or maintenance
- Confined Space entry
- Traffic Control
- Equipment and/or vehicle operation
- Use of PPE

Communication during an emergency is critical. All County employees have cell phones, and most County vehicles are equipped with two-way radios.

## **PROCEDURES**

When an On-Call Staff receives notification of a potential spill they are required to respond to the call immediately. All first responder staff must assess the situation and extent of the emergency and determine whether there is a need for assistance from their Supervisor or other County staff or Contractors (i.e. generator use, confined space, electrical problems, etc.).

### **Traffic Control:**

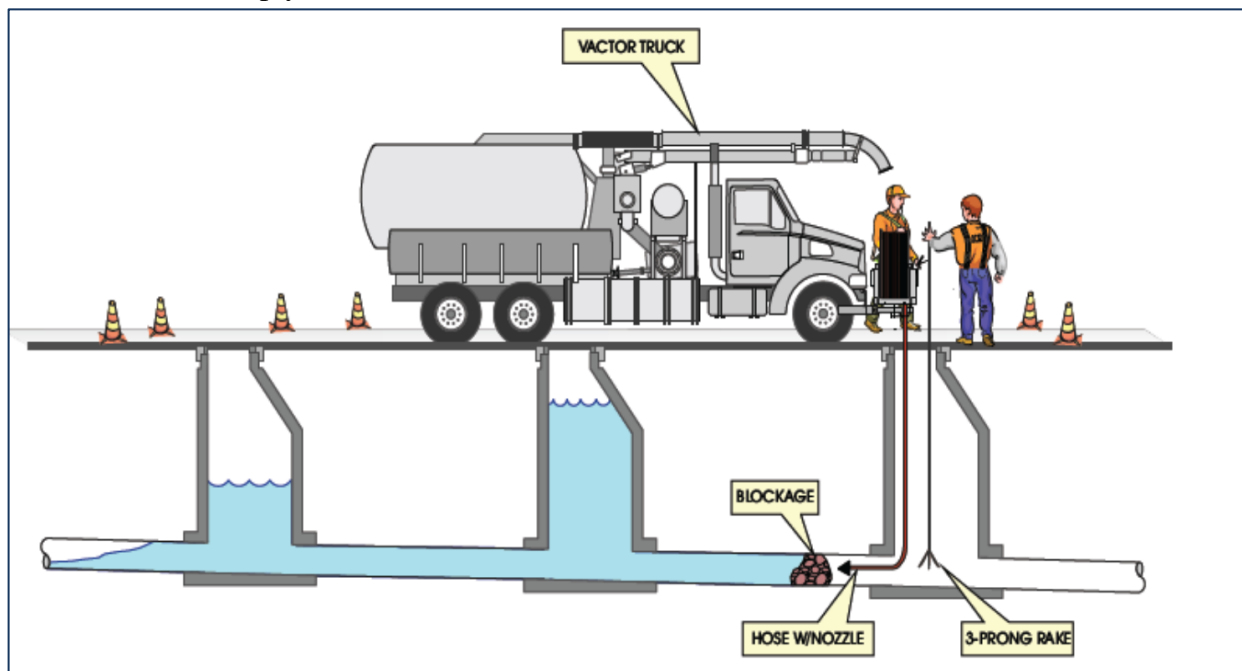
If it is determined that traffic control is necessary, the Operator should follow the methods below:

1. Use traffic cones, barricades, or warning tape to detour vehicles and/or pedestrians around the work area safely. The County utilizes the 2016 Field Guide for Temporary Traffic Control.
2. Use reflective vests when working in or around a roadway, regardless of day or night.
3. Use appropriate traffic control patterns and advanced warning signs.
4. If Crowd Control is required staff calls County Communications (831) 755-5100 for dispatch of Police or Fire Department to assist.

## Sewer Blockage/Spill Containment & Cleanup Guidelines:

### Use combination cleaner (Vac-Con)

1. **First priorities:** Take photos of spill. Contain spill and avoid any spill into storm drain, catch basin, or surface water. Make a dam using sandbags and other appropriate materials from the spill kit with dirt or sand piles over it to hold spill containment materials in place as necessary. Review County storm drain map to identify all potential drainage inlets and outlets that may be impacted by the spill. Staff must contact the Supervisor as soon as possible and contact other wastewater personnel if assistance is necessary. *All vehicles have spill response materials located inside of each truck. It is the Operators' responsibility to inform their Supervisor if spill response materials are needed or need to be replenished.*
2. Open downstream manholes first to determine which is empty.
3. Attach Jetter nozzle to leader hose.
4. Insert Jetter into empty manhole.



5. Let Jetter ramp up to 3000 RPM and ensure speed control dial is at the fastest setting before sending Jetter upstream (this will help create a ramming motion). **The Operator should pay close attention to the hose reel as he/she will feel the Jetter “bounce” back once the blockage is reached.**
6. Continue going back and forth using this same method, pulling back approximately 50 feet from where the blockage was felt each time until the nozzle had broken through the obstruction.

7. A crewmember should be staged on the downstream side of the Vac-Con to catch and dispose of any debris.
8. Once the Operator has broken through the blockage, immediately ramp down the RPM on Jetter and turn water valve to off position, this will help avoid hole sealing back up as the water pressure may cause debris to seal opening and potentially cause the nozzle and/or hose to get stuck.
9. For cleanup, vacuum puddled/dammed areas where sewage was contained, and then sweep down area. Spread HTH (chlorine) or other approved disinfectant over all contaminated areas. Using metered potable water, rinse down area and continue to vacuum as area is washed down until the entire spill zone is disinfected and any environmental impacts or health hazards have been minimized.
10. Clean up/collect Solids & polluted Soils and dispose of to landfill.

*Photos will be taken of all affected areas once the spill is contained.  
Photograph areas prior to and post cleanup.*

### **Force Main Failure:**

#### Use combination cleaner (Vac-Con)

Turn off pump station and use Vac-Con to vacuum sewage from lift station, if applicable or contact County contractors if Vac-Con cannot maintain lift station flow. Staff responding to a spill should determine possible problems to the best of their ability and notify their Supervisor as soon as possible.

### **Pump Station Failures:**

1. All County pump stations are equipped with and continuously monitored by level controls and auto dialers. Thresholds for High and Low water set points are set in place to notify County personnel in the event of pump station failure. In the event of failure, the County's auto dialer system will alert the response system remotely and a call will be made to On-Call staff.
2. When On-Call staff receives a call, they will mobilize to the site. The On-Call first responder will then acknowledge the alarm. If the first responder does not acknowledge the alarm, the call will then be forwarded to the next On-Call staff person.
3. Upon response, On-Call staff must determine which type of action should or can be taken to remedy the problem. If a remedy cannot be made by the On-Call staff, they are to notify the Field Supervisor as quickly as possible. In the event of a power outage, the On-Call first responder must obtain the assistance of additional staff if there is a need to use a County portable generator. Staff must follow County emergency backup generator operation procedures.
4. If there is a need for emergency by-pass pumping, and a bypass capabilities are accessible, the first responder staff must proceed with bypass.
5. Staff should utilize Lift Station and Storm Drain Map sheets for specific Storm Drain asset locations surrounding each Lift Station.

### **Emergency Equipment**

<b>Equipment Description &amp; Quantity</b>	<b>Model Number/Serial Number</b>
400 Gallon Vacuum Tank	
Portable Generator	2010 Cat XQ46-6
2016 Ford flatbed truck	

### **Emergency Contacts: Contractors and Vendors**

Contractors and Vendors are listed if necessary for Sewer related Emergencies.

### **Emergency Contractor and Equipment Phone Numbers**

<b>Lift Station Electrical Controls and Service</b>	
JM Electric	(831) 422-7819
Tough Automation	(805) 400-9015
<b>Sewer Bypass Pumps</b>	
Rain for Rent	(831) 422-7813
<b>Underground Excavation</b>	
Dig Alert (USA)	811
<b>Mutual Aid Agreements</b>	
None at this time	None at this time
<b>Sewer Spill Pumper Trucks and/or Vac Con</b>	
Greenline Services	(831) 422-2298 or (831) 235-1395
<b>Emergency Equipment and Excavation</b>	
West Valley Construction	(831) 758-9821
Granite Construction through Gordian	(831) 200-5163
Papich Construction through Gordian	(831) 200-5163
Teichert Construction through Gordian	(831) 200-5163
<b>Gravity Sewer Parts</b>	
Ferguson	(831) 899-4500, (831) 424-3330

### **Force Main Spills**

1. If a Spill resulting from a leak or break in a force main, containment and Spill response activities should proceed as described above.
2. The lift station connected to the leaking force main should be turned off and bypass procedures should be implemented until the leak can be repaired.
3. The Vac Con truck and bypass pump should be used to either begin removing wastewater from the Spill site, discharging the wastewater back into the sanitary sewer system, or assisting with lift station bypass procedures.

### **Prolonged Spill Response**

1. If normal mitigation efforts are unsuccessful and the source of the Spill cannot be cleared by standard Vac Con jetting, other methods may be necessary to stop the Spill.
2. If excavation is identified as the only method of clearing the blockage, Staff should contact the Supervisor to implement a plan to excavate and take additional steps as necessary.

3. Depending on the volume of the Spill, additional pumper trucks or portable bypass pumping may be necessary to keep the Spill containment area from breaching the contained area.

### **Contractor Response**

The following procedures are to be followed in the event that a contractor/plumber causes or witnesses a Sanitary Sewer Spill. If the contractor/plumber causes or witnesses an Spill they should:

1. Immediately notify the County Public Works Office.
2. Protect storm drains.
3. Protect the public.
4. Provide information to the First Responder or Supervisor such as start time, appearance point, suspected cause, weather conditions, etc.

## **CONTINGENCY DATA FOR INDIVIDUAL LIFT STATIONS**

General Emergency Response data for each Lift Station is provided below.

### **Boronda Lift Station #1**

- Monitored by Tesco Bubbler with Auto Dialer
- Power Outage: receptacle available for portable generator to support station during power outage.
- Pump Failure: Station is not outfitted with cam-lock in valve vault for bypass if necessary. Contact Supervisor, pumper truck may be required to bypass until pump can be repaired/replaced.
- Force Main Failure: Contact Supervisor: Pumper Trucks may be required to bypass until Force Main can be repaired.

### **Boronda Lift Station #2**

- Monitored by Ultrasonic Transducer with Auto Dialer
- Power Outage: receptacle available for portable generator to support station during power outage.
- Pump Failure: Station is not outfitted with cam-lock in valve vault for bypass if necessary. Contact Supervisor, pumper truck may be required to bypass until pump can be repaired/replaced.
- Force Main Failure: Contact Supervisor: Pumper Trucks may be required to bypass until Force Main can be repaired.

### **Boronda Lift Station #3**

- Monitored by Tesco Bubbler with Auto Dialer
- Power Outage: receptacle available for portable generator to support station during power outage.
- Pump Failure: Station is not outfitted with cam-lock in valve vault for bypass if necessary. Contact Supervisor, pumper truck may be required to bypass until pump can be repaired/replaced.

- Force Main Failure: Contact Supervisor: Pumper Trucks may be required to bypass until Force Main can be repaired.

#### **Boronda Lift Station #4**

- Monitored by Tesco Bubbler with Auto Dialer
- Power Outage: none – required pumper truck(s) during prolonged power outage.
- Pump Failure: Station is not outfitted with cam-lock in valve vault for bypass if necessary. Contact Supervisor, pumper truck may be required to bypass until pump can be repaired/replaced.
- Force Main Failure: Contact Supervisor: Pumper Trucks may be required to bypass until Force Main can be repaired.

#### **Boronda Oaks Lift Station**

- Monitored by Float System with Auto Dialer
- Power Outage: 75 kW Emergency Backup Generator with Transfer Switch
- Pump Failure: Station is not outfitted with cam-lock in valve vault for bypass if necessary. Contact Supervisor, pumper truck may be required to bypass until pump can be repaired/replaced.
- Force Main Failure: Contact Supervisor: Pumper Trucks may be required to bypass until Force Main can be repaired.

## SPILL VOLUME ESTIMATION

There are three (3) Spill volume estimation methods, which are described below. The person preparing the estimate should use the method most appropriate to the Spill using the best information available. *Photographs of the Spill at the time of arrival, during the Spill response, and after the Spill is stopped, and after the Spill is cleaned up must be taken as safety allows in order to assist County Staff with deriving a Spill volume estimate.* However, taking photographs should not interfere with the first priorities of the responder, such as safeguarding the area, containing the Spill, and clearing the cause of the Spill.

### Method 1: Eyeball Estimate

1. Applicability: For use on very small Spills up to 100 gallons.
2. Image the amount of water that would spill from a bucket or barrel and use that image to estimate the volume of the Spill.
  - a. A bucket contains 5 gallons.
  - b. A barrel contains 55 gallons.
3. For Spills greater than 55 gallons, divide the standing water into barrels and multiply the number of barrels by 55 gallons.

### Method 2: Measured Volume

1. Applicability: For use on most Spills.
2. Use the Measured Volume Spill Estimation Worksheet, to document the calculations.
3. Sketch the shape of the contained sewage.
4. Measure or pace off the dimensions in feet.
5. Measure the depth in feet.
6. Calculate the area using the following formulas:
  - a. Rectangle:  $\text{Area} = \text{length} \times \text{width}$
  - b. Circle:  $\text{Area} = 0.785 \times D^2$  where D is the circle diameter
  - c. Triangle:  $\text{Area} = \text{base} \times \text{height} \times 0.5$
7. Multiply the area calculated in the previous step times the depth of the Spill.
8. Multiply this number by 7.48 to convert it to gallons.
9. This number is the volume of the Spill in gallons.
10. The Volume Estimation Guide can be referenced for additional calculation methods.

### Method 3: Duration and Flow Rate

2. Applicability: For use on Spills where it is difficult or impossible to measure the area and depth.
3. Duration:
  - a. The duration is the elapsed time from the start time of the Spill to the time the Spill stopped.
  - b. Start Time:
    - i. Ask local residents about their observations of the Spills, including odors and sounds. This information can be used to estimate the start time.
  - c. End Time:
    - i. This is the time at which the Spill was stopped by the field crew.
4. Flow Rate:
  - a. The flow rate is the average flow that left the sewer system during the time of the Spill, which can be estimated the following two (2) ways:



- i. Manhole Flow Rate Chart
  - Use the (attached) Active Spill Estimation Worksheet, to document the flow rate calculation.
  - This chart illustrates the sewage flowing from a manhole cover for a variety of flow rates.
  - The observations of the field crew, which must be documented in photographs, are used to select the approximate flow rate from the chart.
- ii. Upstream Connections
  - Once the location of the Spill is known, the number of upstream connections can be determined.
  - Multiply the number of upstream connections by the average flow rate (gallons per hour) for that time of day.
    - a. The County Engineer should provide the flow rate based on the County's typical flow curve.
    - b. This number can be converted to gallons per hour if necessary:
      - i.  $\text{Flow Rate (gallons per hour)} \div 24 \text{ hours/day} = \text{Flow Rate (gallons per day)}$

5. Volume Estimate:

- a. Estimated Spill Volume = Duration (in hours) x Flow Rate (in gallons per hour);  
or
- b. Estimated Spill Volume = Duration (in days) x Flow Rate (in gallons per day).

# Areas and Volumes

## Spill Estimation Guide

### PURPOSE

The purpose of this guide is to assist with the estimation of the Volume of a Sewage Spill. It has limited application, as it can be used on dry surfaces where the limits of the spill footprint can be determined and in instances when the spill is contained. It does not require that the Spill Duration and Spill Flow Rate be known. However, any and all information available should be used if it helps to make a more accurate estimate.

### HOW IT WORKS

This guide contains formulas for determining the volume of some basic geometric shapes and some simple conversions that are necessary to determine volume (in gallons.) Any sewage spill will leave a 'wetted footprint' on the surfaces affected. This guide will help you to determine the area of the wetted footprint of the spill. The wetted footprint will not likely be a geometric shape that is easy to determine the area. You will have to be creative and find the familiar shapes within the shape. This will be demonstrated later in the guide. After determining the area contacted by the spill, the depth of the spilled sewage must be determined, which, combined with the area, will lead to the volume spilled.

### CONVERSIONS

\*\* To convert inches into feet: Divide the inches by 12.

Example:  $27'' / 12 = 2.25'$

Or Use Chart A

Example:  $1 \frac{3}{4}'' = ?$

$$1'' (0.08') + \frac{3}{4}'' (0.06') = \underline{0.14'}$$

\*\* One Cubic Foot can contain 7.48 gallons of liquid.

#### Chart A

Conversion:

<u>Inches</u>	to	<u>Feet</u>
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'

# **Areas and Volumes**

## **Spill Estimation Guide**

### **GEOMETRY**

For the purposes of this guide, the unit of measurement will be in feet for formula examples.

Area is two-dimensional - represented in square feet. (Length x Width)

Volume is three-dimensional - represented in cubic feet. (Length x Width x depth) or (Diameter Squared)  $D^2$  x 0.785 x depth.

#### **A Note about Depth**

Wet Stain on a Concrete Surface - For a stain on concrete, use 0.0026'. This number is 1/32" converted to feet. For a stain on asphalt use 0.0013' (1/64"). These were determined to be a reasonable depth to use on the respective surfaces through a process of trial and error. A known amount of water (one gallon) was poured onto both asphalt and concrete surfaces. Once the Area was determined as accurately as possible, different depths were used to determine the volume of the wetted footprint until the formula produced a result that (closely) matched the one gallon spilled. 1/32" was the most consistently accurate depth on concrete and 1/64" for asphalt. This process was repeated several times.

Sewage "Ponding" or Contained – Measure actual depth of standing sewage whenever possible. When depth varies, measure several (representative) points, determine the average and use that number in your formula to determine volume.

#### **Area/Volume Formulas**

Area is two dimensional and is represented as Square Feet (SQ/FT)

Volume is three dimensional and is represented as Cubic Feet (CU/FT)

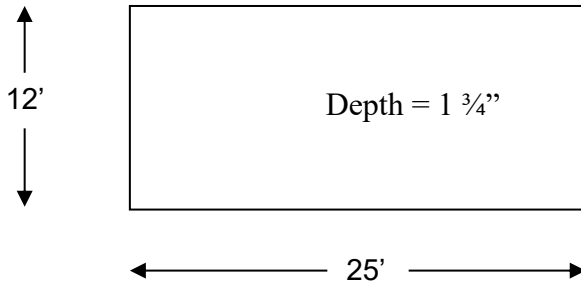
One Cubic Foot can hold 7.48 gallons

# Areas and Volumes

## Spill Estimation Guide

### AREA/VOLUME OF A RECTANGLE OR SQUARE

Formula: **Length x Width x Depth** = Volume in Cubic Feet



Length (25') x Width (12') x Depth (0.14')

25' x 12' x 0.14' = 42 Cubic Feet.

Now the Volume in Cubic Feet is known.

There are 7.48 Gallons in one Cubic Foot

So, 42 Cubic Feet x 7.48 gallons/cubic foot = **314 Gallons**

#### Chart A

Conversion:

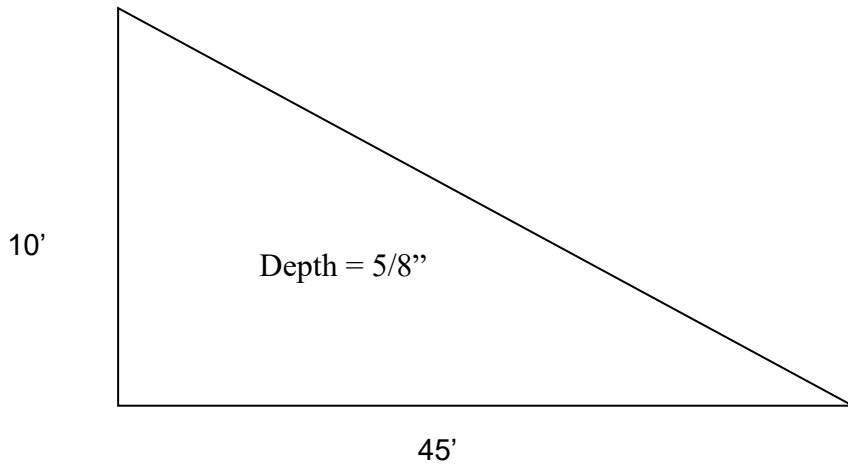
Inches	to
Feet	
1/8"	= 0.01'
1/4"	= 0.02'
3/8"	= 0.03'
1/2"	= 0.04'
5/8"	= 0.05'
3/4"	= 0.06'
7/8"	= 0.07'
1"	= 0.08'
2"	= 0.17'
3"	= 0.25'
4"	= 0.33'
5"	= 0.42'
6"	= 0.50'
7"	= 0.58'
8"	= 0.67'
9"	= 0.75'
10"	= 0.83'
11"	= 0.92'
12"	= 1.00'

# Areas and Volumes

## Spill Estimation Guide

### AREA/VOLUME OF A RIGHT TRIANGLE

Base x Height x 0.5 x Depth = Volume in Cubic Feet



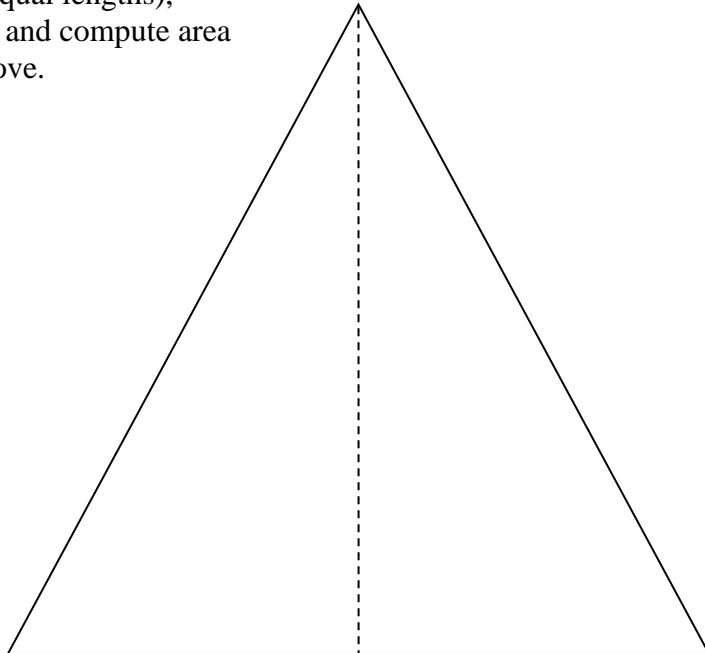
#### Chart A

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'

Base (45') x Height (10') x 0.5 x Depth (.05') x 7.48 gallons/cubic foot = **84 gallons**

For Isosceles Triangles (two sides are equal lengths),  
Break it down into two Right Triangles and compute area  
as you would for the Right Triangle above.



# Areas and Volumes

## Spill Estimation Guide

### AREA/VOLUME OF A CIRCLE/CYLINDER

Diameter Squared x 0.785 x Depth = Volume in cubic feet.

$$D^2 \times 0.785 \times d$$

Diameter = Any straight-line segment that passes through the center of a circle.

For our purposes, it is the measurement across the widest part of a circle.

$$D^2 \times 0.785 \times \text{depth} = \text{Volume in cubic feet}$$

Example:

$$27' \times 27' \times 0.785 \times 0.03 = 17.17 \text{ cubic feet}$$

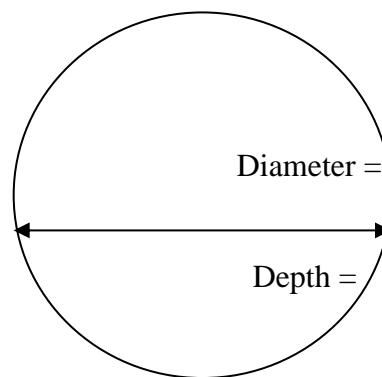
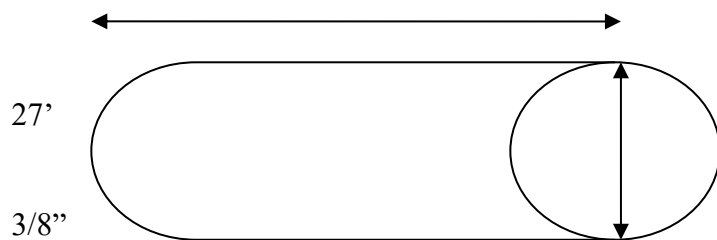
$$17.17 \text{ cubic feet} \times 7.48 \text{ gallons/cubic feet} = \underline{\underline{128 \text{ gallons}}}$$

#### Chart - A

Conversion:

Inches to Feet

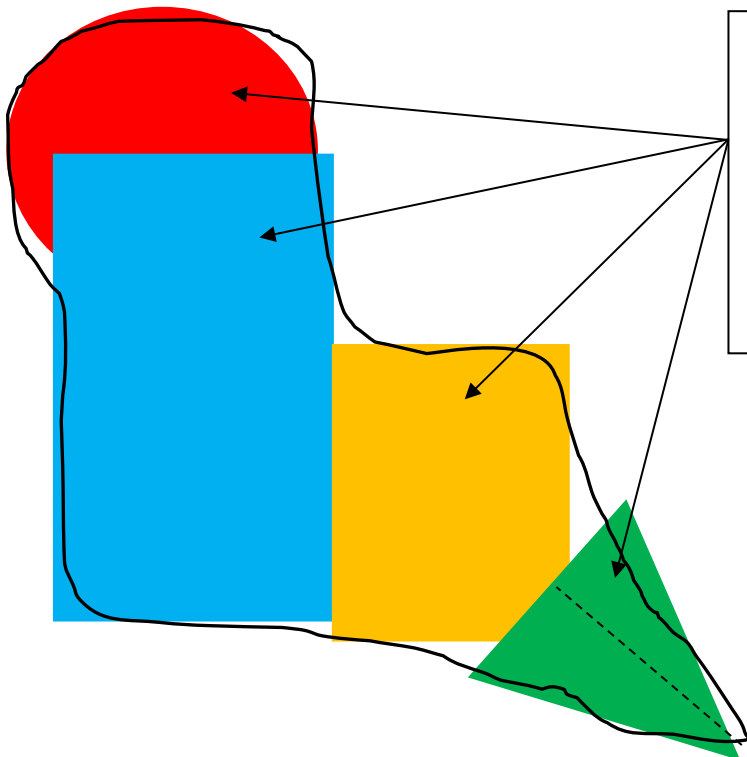
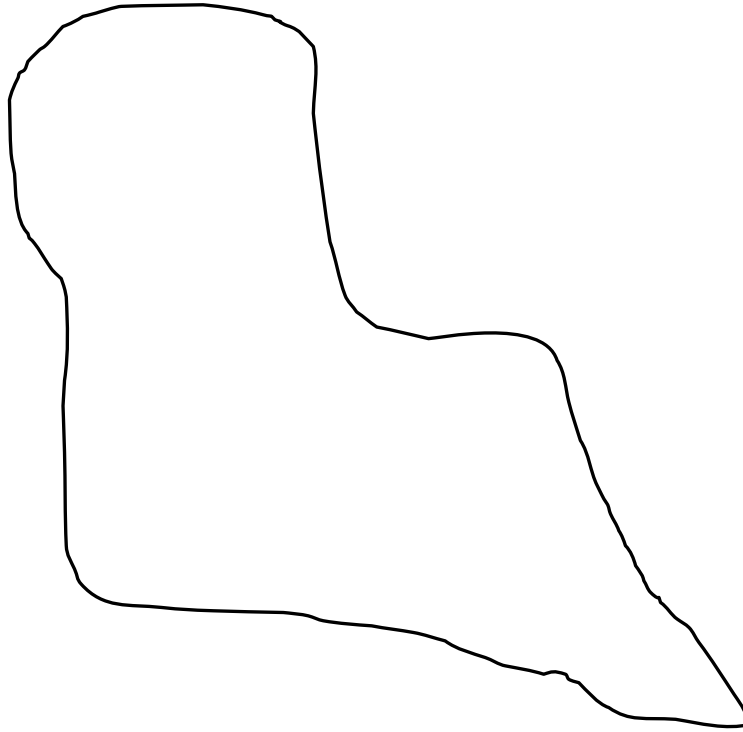
1/8"	=	0.01'
1/4"	=	0.02'
3/8"	=	0.03'
1/2"	=	0.04'
5/8"	=	0.05'
3/4"	=	0.06'
7/8"	=	0.07'
1"	=	0.08'
2"	=	0.17'
3"	=	0.25'
4"	=	0.33'
5"	=	0.42'
6"	=	0.50'
7"	=	0.58'
8"	=	0.67'
9"	=	0.75'
10"	=	0.83'
11"	=	0.92'
12"	=	1.00'



# Areas and Volumes

## Spill Estimation Guide

Find the geometric shapes within the shape. If this was the shape of your spill, break it down, as best you can, with the shapes we know.



1. Determine the volumes of each shape.

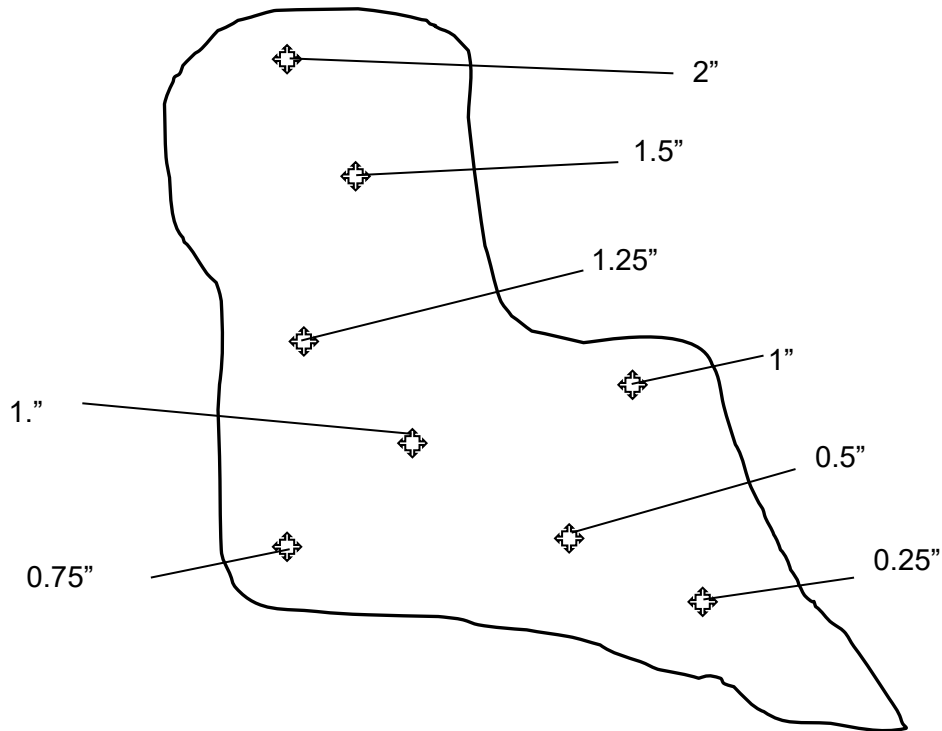
*In this example, after the volume of the circle is determined, multiply it by 55% (+/-) so that the overlap area won't be counted twice.*

2. Add all the volumes to determine total spill volume.

## Areas and Volumes

### Spill Estimation Guide

If the spill depth is of varying depths, take several measurements at different depths and find the average.



$$2'' + 1.5'' + 1.25'' + 1'' + 1'' + 0.75'' + 0.5'' + 0.25'' = 8.25''$$

$$8.25'' / 8 \text{ measurements} = 1.03''$$

$$\text{Average Depth} = 1.03''$$



# Areas and Volumes

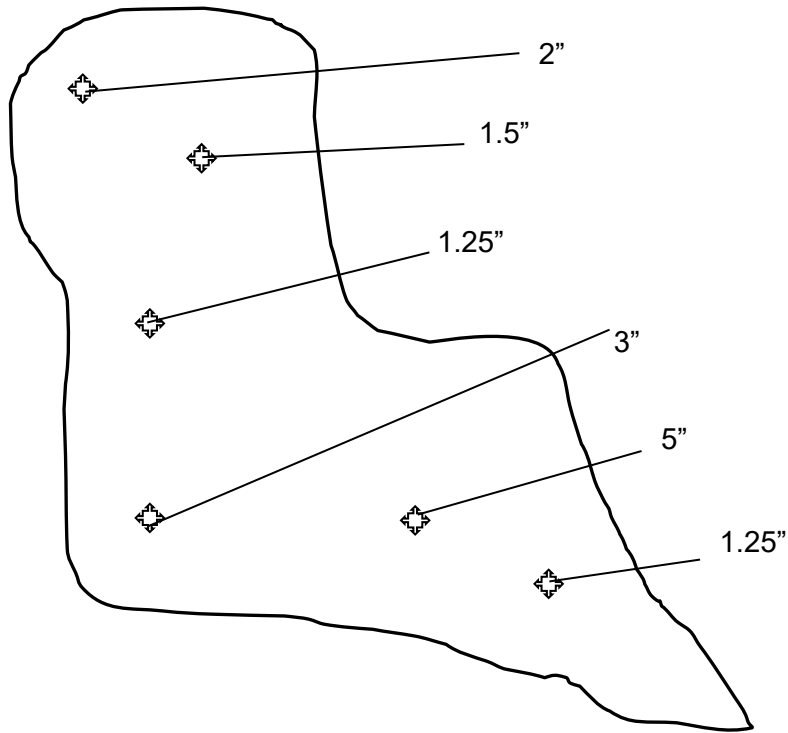
## Spill Estimation Guide

### Step 1

If the spill affects a dry, unimproved area such as a field or dirt parking lot, determine the Area of the wetted ground in the same manner as you would on a hard surface. Using a round-point shovel, dig down into the soil until you find dry soil. Do this in several locations within the wetted area and measure the depth of the wet soil. Average the measurement/thickness of the wet soil and determine the average depth of the wet soil.

**NOTE:** This can be used in a (Dry) dirt or grassy area that is not regularly irrigated like a field or a dirt parking lot.

Wet weather would make this method ineffective.



### Step 2

**Take a Test Sample**  
( See Next Page)

$$2'' + 1.5'' + 1.25'' + 3'' + 5'' + 1.25'' = \underline{14.0''}$$

$$14.0'' / 6 \text{ measurements} = 2.33''$$

$$\text{Average Depth} = 2.33'' (0.194')$$

#### EXAMPLE:

If the Area of the spill was determined to be 128 Sq/Ft and the average depth of the wet soil is 2.33 inches:

$$128 \text{ Sq/Ft} \times 0.194' = 24.83 \text{ Cu/Ft}$$

$$24.83 \text{ Cu/Ft} \times 7.48 \text{ Gals/Cu/Ft} = 185.74 \text{ gallons}$$

$$185.74 \times 18\% = \underline{33 \text{ Gallons}} \text{ (water in soil)}$$

## Areas and Volumes

### Spill Estimation Guide

#### (Test) SAMPLING SOIL FOR WATER CONTENT

Once you have determined the wetted footprint of the spill, you will want to determine the water (sewage) content in the soil.

1. Select an area of dry soil (near the wetted footprint of the spill) to sample.
2. Pour a known amount of water onto the soil and let it soak in for an adequate amount of time. If possible, use a form to keep the water contained to a geometric shape (circle, square, rectangle, etc.).
3. Determine the Area of the wetted footprint.
4. Using a small hand tool, dig down into the soil until dry soil is reached. Measure the depth of the wet soil. Do this in multiple locations and average the measurements.
5. Multiply the Area by the Average Depth of the wet soil to determine the volume of the wet soil.
6. Determine the water content in the soil
  - a. Since you started with a known amount, you know how much water is in the soil.
  - b. Divide that known amount by the volume determined in step 5 to arrive at the percent of water content in the soil.
  - c. Arrive at the water content of the soil (percent)

Example:

1. Place a 2-foot diameter form onto an area of dry soil.
2. Pour one gallon of water into the form and let it soak in for 15 minutes.
3. Pull the form and measure the Area of the wetted soil (it will likely be larger than the form). Let's say 26" diameter.
4. Dig into the soil in 3 locations and measure the depth of the wetted soil.
5. Average the 3 measurements. (Let's say 2.5", 1.5" & 3.75" = 7.75". divide by 3 = 2.58" or 0.215')
6. Determine the Area of the Circle ( $D^2 \times 0.785$ )  $2.16' \times 2.16' \times 0.785 = 3.66 \text{ Sq/Ft}$
7. Multiply the Area by the Average Depth to get the Volume ( $3.66 \times 0.215' = 0.79 \text{ Cu/Ft}$ )
8. Multiply 0.79 cubic feet by 7.48 gallons/Cu/ft = 5.9 gallons.
9. Divide 1 Gallon (known Amount) by 5.9 gallons = .17 or 17% is the water content in the soil.
10. Now you have determined that the water content in the soil is 17%. Apply this to your actual spill area.

## Measured Volume Spill Estimation Worksheet

Surface: ☐ Asphalt ☐ Concrete ☐ Dirt ☐ Landscape ☐ Inside Building Other \_\_\_\_\_  
(Draw / Sketch outline of Spill 'Footprint' and attach photos)

~~ Breakdown the 'Footprint' into Recognizable Shapes and Determine Dimensions of Each Shape ~~

Area #1 \_\_\_\_\_ % Wet \_\_\_\_\_

☐ Stain. Depth1 \_\_\_\_\_ Depth2 \_\_\_\_\_ Depth3 \_\_\_\_\_ Depth4 \_\_\_\_\_ Depth5 \_\_\_\_\_ Depth6 \_\_\_\_\_

Area #2 \_\_\_\_\_ % Wet \_\_\_\_\_

☐ Stain. Depth1 \_\_\_\_\_ Depth2 \_\_\_\_\_ Depth3 \_\_\_\_\_ Depth4 \_\_\_\_\_ Depth5 \_\_\_\_\_ Depth6 \_\_\_\_\_

Area #3 \_\_\_\_\_ % Wet \_\_\_\_\_

☐ Stain. Depth1 \_\_\_\_\_ Depth2 \_\_\_\_\_ Depth3 \_\_\_\_\_ Depth4 \_\_\_\_\_ Depth5 \_\_\_\_\_ Depth6 \_\_\_\_\_

Area #4 \_\_\_\_\_ % Wet \_\_\_\_\_

☐ Stain. Depth1 \_\_\_\_\_ Depth2 \_\_\_\_\_ Depth3 \_\_\_\_\_ Depth4 \_\_\_\_\_ Depth5 \_\_\_\_\_ Depth6 \_\_\_\_\_

Area #5 \_\_\_\_\_ % Wet \_\_\_\_\_

☐ Stain. Depth1 \_\_\_\_\_ Depth2 \_\_\_\_\_ Depth3 \_\_\_\_\_ Depth4 \_\_\_\_\_ Depth5 \_\_\_\_\_ Depth6 \_\_\_\_\_

Area #6 \_\_\_\_\_ % Wet \_\_\_\_\_

☐ Stain. Depth1 \_\_\_\_\_ Depth2 \_\_\_\_\_ Depth3 \_\_\_\_\_ Depth4 \_\_\_\_\_ Depth5 \_\_\_\_\_ Depth6 \_\_\_\_\_

## Measured Volume Spill Estimation Worksheet



Area #1 Square Feet: \_\_\_\_\_ x % Wet \_\_\_\_\_ = \_\_\_\_\_ Sq/Ft  
Ave Depth: \_\_\_\_\_ ☐ Concrete 0.0026' ☐ Asphalt 0.0013'  
Volume: \_\_\_\_\_ Cu/Ft

Area #2 Square Feet: \_\_\_\_\_ x % Wet \_\_\_\_\_ = \_\_\_\_\_ Sq/Ft  
Ave Depth: \_\_\_\_\_ ☐ Concrete 0.0026' ☐ Asphalt 0.0013'  
Volume: \_\_\_\_\_ Cu/Ft

Area #3 Square Feet: \_\_\_\_\_ x % Wet \_\_\_\_\_ = \_\_\_\_\_ Sq/Ft  
Ave Depth: \_\_\_\_\_ ☐ Concrete 0.0026' ☐ Asphalt 0.0013'  
Volume: \_\_\_\_\_ Cu/Ft

Area #4 Square Feet: \_\_\_\_\_ x % Wet \_\_\_\_\_ = \_\_\_\_\_ Sq/Ft  
Ave Depth: \_\_\_\_\_ ☐ Concrete 0.0026' ☐ Asphalt 0.0013'  
Volume: \_\_\_\_\_ Cu/Ft

Area #5 Square Feet: \_\_\_\_\_ x % Wet \_\_\_\_\_ = \_\_\_\_\_ Sq/Ft  
Ave Depth: \_\_\_\_\_ ☐ Concrete 0.0026' ☐ Asphalt 0.0013'  
Volume: \_\_\_\_\_ Cu/Ft

Area #6 Square Feet: \_\_\_\_\_ x % Wet \_\_\_\_\_ = \_\_\_\_\_ Sq/Ft  
Ave Depth: \_\_\_\_\_ ☐ Concrete 0.0026' ☐ Asphalt 0.0013'  
Volume: \_\_\_\_\_ Cu/Ft

Total Volume:

#1 \_\_\_\_\_, #2 \_\_\_\_\_, #3 \_\_\_\_\_, #4 \_\_\_\_\_, #5 \_\_\_\_\_, #6 \_\_\_\_\_ = \_\_\_\_\_ \*cu ft

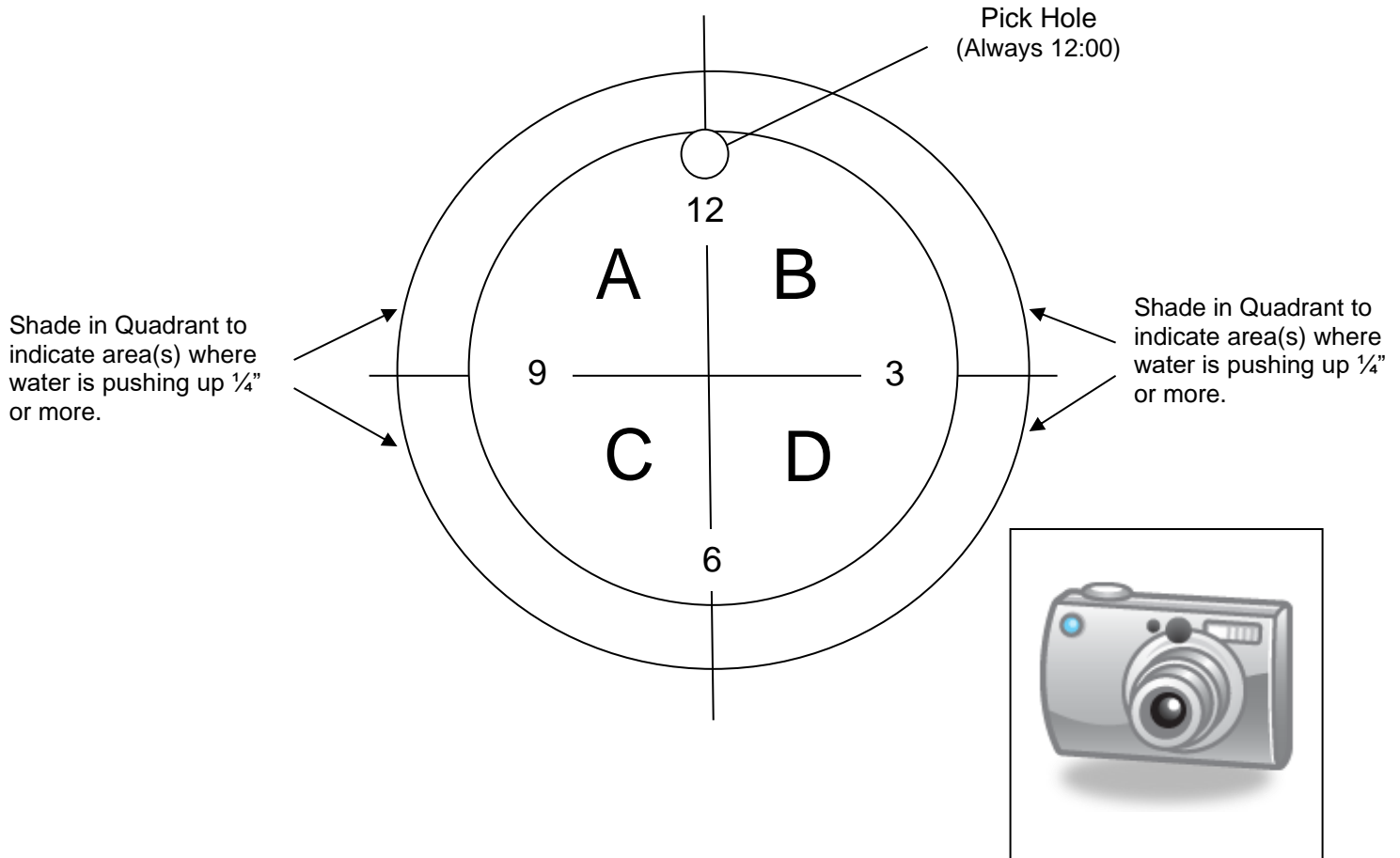
\_\_\_\_\_ \*cu ft x 7.48 gallons = \_\_\_\_\_ **gallons Spilled.**

## Active Spill Estimation Worksheet

Manhole ID: \_\_\_\_\_ Cleanout Address: \_\_\_\_\_

Photo(s) of Manhole ☐ Opening: 24-inch ☐ 36-inch Other: \_\_\_\_\_

Time Measurements were taken: \_\_\_\_:\_\_\_\_ ☐ AM ☐ PM



Pick Hole Measured Height: \_\_\_\_\_ inches

**Attach Photos**

Quadrant **A** Highest Measure: \_\_\_\_\_ inches. % of Quadrant Spilling \_\_\_\_\_

Quadrant **B** Highest Measure: \_\_\_\_\_ inches. % of Quadrant Spilling \_\_\_\_\_

Quadrant **C** Highest Measure: \_\_\_\_\_ inches. % of Quadrant Spilling \_\_\_\_\_

Quadrant **D** Highest Measure: \_\_\_\_\_ inches. % of Quadrant Spilling \_\_\_\_\_

-----

or

Measured Height from Clean Out: \_\_\_\_\_ inches (top of stack to top of water)

# Active Spill Estimation Worksheet

## Sample Templates for Spill Volume Estimation

**TABLE 'A'**  
**ESTIMATED SPILL FLOW OUT OF M/H WITH COVER IN PLACE**  
**AND WITH M/H COVER REMOVED**

24" Frame			36" Frame		
Height of spout above rim: inches	SSO Flow: GPM covered M/H	SSO Flow: GPM uncovered M/H	Height of spout above rim: inches	SSO Flow: GPM covered M/H	SSO Flow: GPM uncovered M/H
.25	1	62	.25	1	111
.5	3	160	.5	4	271
.75	6	354	.75	8	458
1.0	9	799	1.0	13	660
1.25	12	1340	1.25	18	1486
1.5	16	1986	1.5	24	2424
1.75	21	2799	1.75	31	3382
2.0	25	3444	2.0	37	4458
2.25	31	3986	2.25	45	5556
2.5	38	4437	2.5	55	6764
2.75	45	4687	2.75	66	7972
3.0	54	4910	3.0	78	9062
3.25	64	*	3.25	93	10139
3.5	75		3.5	109	11097
3.75	87		3.75	127	12035
4.0	100		4.0	147	12861
4.25	115		4.25	169	13285
4.5	131		4.5	192	*
4.75	148		4.75	217	
5.0	166		5.0	243	
5.25	185		5.25	270	
5.5	204		5.5	299	
5.75	224		5.75	327	
6.0	244		6.0	357	
6.25	265		6.25	387	
6.5	286		6.5	419	
6.75	308		6.75	451	
7.0	331		7.0	483	
7.25	354		7.25	517	
7.5	377		7.5	551	
7.75	401		7.75	587	
8.0	426		8.0	622	

*\*Uncovered GPM estimates for 24" and 36" Manholes stop at 3" and 4.25" respectively as they would require gravity sewer lines in excess of 24" and 36" to create conditions allowing for flow rates to exceed these estimates*

# Active Spill Estimation Worksheet

## Sample Templates for Spill Volume Estimation

**Table “B”**

### ESTIMATED SPILL FLOW FROM PICK HOLE

*Estimates for 7/8” Diameter Pick Hole*

Height of Spout Above M/H Cover in Inches	Spill Flow in GPM
.16 (1/8)	1.0
.25 (1/4)	1.4
.5 (1/2)	1.9
.75 (3/4)	2.4
1.0	2.7
1.25	3.1
1.5	3.4
1.75	3.6
2.0	3.9
2.25	4.1
2.5	4.3
2.75	4.5
3.0	4.7
3.25	4.9
3.5	5.1
3.75	5.3
4.0	5.5
4.25	5.6
4.5	5.8
4.75	6.0
5.0	6.1
5.25	6.3
5.5	6.4
5.75	6.6
6.0	6.7
6.25	6.8
6.5 (unrestrained M/H cover will start to lift)	7.0
6.75	7.1
7.0	7.2
7.25	7.4
7.5	7.5
7.75	7.6
8.0	7.7
8.25	7.9
8.5	8.0
8.75	8.1
9.0	8.2
9.25	8.3
9.5	8.4
9.75	8.5
10.0	8.7

## Spill Flow Rate Method Worksheet

Completed By: \_\_\_\_\_

Measuring Manhole: \_\_\_\_\_

How was Flow Rate Determined?

(Attach worksheets, reports, etc. used in determination)

☐ Flow Calculation Work Sheet; Determined Flow Rate: \_\_\_\_\_ GPM

☐ Active Spill Estimation Worksheet; Determined Flow Rate \_\_\_\_\_ GPM

☐ Flow Monitoring Equipment;

If Flow Monitoring Equipment:

Measuring Period: From \_\_\_\_/\_\_\_\_/\_\_\_\_ at \_\_\_\_:\_\_\_\_

To \_\_\_\_/\_\_\_\_/\_\_\_\_ at \_\_\_\_:\_\_\_\_

Average Flow Rate During Same Time of Day as Spill Occurred: \_\_\_\_\_ GPM

Flow Measured - Downstream Manhole ID: \_\_\_\_\_; Flow \_\_\_\_\_ GPM

(See SSO Response Field Check List for Downstream flow information)

(Attach Flow Calculation Worksheet)

Diurnal Flow Pattern applied: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Comments: \_\_\_\_\_

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Duration: \_\_\_\_\_ x Flow Rate (GPM) \_\_\_\_\_ = Spill Volume \_\_\_\_\_ Gallons

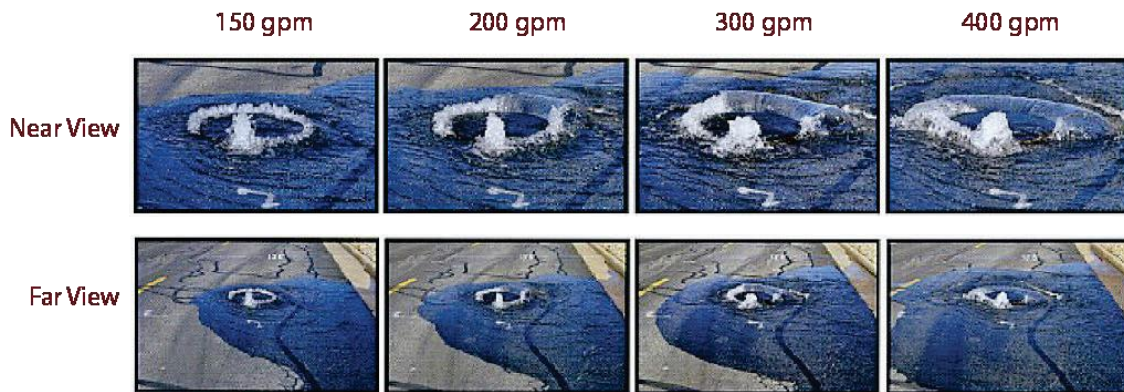
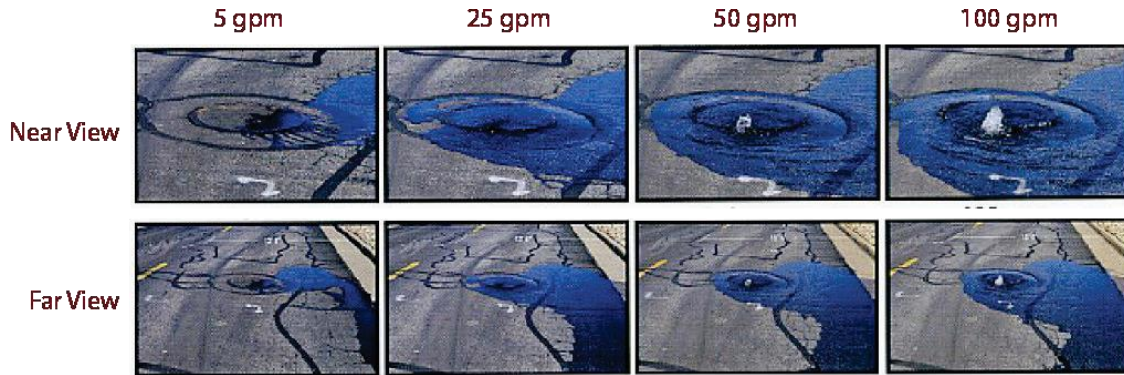


## Duration and Flow Rate Comparison

Compare the Spill to reference images below to estimate flow rate of the current overflow.

**NOTE:** If the manhole cover in your picture has vent holes or more than one pry hole, do not use these pictures for comparison.

Describe which reference photo(s) were used and any additional factors that influenced applying the reference photo data to the actual Spill:



Manhole Overflow Gauge: CWEA Southern Section Collections Systems  
Committee Overflow Simulation

Flow Rate Based on Photo Comparison: \_\_\_\_\_ gallons per minute (gpm)

<b>Start Date and Time</b>	1.
<b>End Date and Time</b>	2.
<b>Spill Event Total Time Elapsed</b> (subtract Line 1 from Line 2. Show in minutes.)	3.
<b>Average Flow Rate GPM (Account for diurnal flow pattern)</b>	4.
<b>Total Volume Estimated Using Duration and Flow Method (Line 3 x Line 4)</b>	5.

## COORDINATION WITH STORM DRAIN AGENCIES & LOCAL UTILITY AGENCIES

### Storm Water System

The County of Monterey owns the stormwater system in the District service area and is responsible for operating and managing the Municipal Separate Storm Sewer System (MS4).

The County maintains copies of the MS4 System Storm Drain Collection and Conveyance System maps which are utilized by County staff in the event of a sewer spill that occurs in the vicinity of a storm drain inlet, drainage conveyance and/or drainage channel. Maps are utilized to identify inlets, outlets and intermediate manholes that may be used to isolate any wastewater that may enter the system.

The goals of County operations staff are:

- Proactively restrict any wastewater from entering the storm drain utilizing damming and diking techniques in areas around storm drain inlets or drainage channels,
- Isolate and contain any wastewater that enters the storm drain system,
- Recover wastewater that enters any portion of the storm drain system,
- Clean the impacted storm drain system utilizing methods that will not impact water quality in downstream water bodies,
- Return all wastewater and wash water recovered from storm drain system to the sanitary sewer system.

### Water Systems

Coordination with any public water system that experiences a sewer spill within 1,000 feet of a municipal surface water intake is required to establish if the local water supply has been contaminated due to the sewer spill.

CSA	Water Service	Contact	Phone	E-mail	Address
Boronda CSD	Cal Water Service, Salinas Valley Region	Albert Sanchez, Operations Manager	(831) 901-6437	asanchez@calwater.com	254 Commission St., Salinas Ca 93901
		Brenda Granillo, District Manager	(831) 901-6665	N/A	
		24 hr Line	(831) 757-3644	infosln@calwater.com	

## **RECEIVING WATER MONITORING AND RECEIVING WATER CLOSURE**

An important element of any water quality monitoring activities is the proper and thorough understanding of the service area and the various challenges the geography and sewer infrastructure in the service area with the potential of wastewater reaching surface waters or storm water facilities. By evaluating the areas of concern in a service area such as creeks, aerial pipeline crossings over water ways and all storm water related infrastructure, the County can be better prepared to timely respond to any Spill reaching surface waters and to minimize the impacts of an Spill in or around local surface waters and storm water infrastructure.

Surface waters of concern are those surface waters within the County's service area that may be impacted by a sanitary sewer spill from the County's sanitary sewer collection system. Prior planning, review and evaluation of potential failure points can help minimize any potential impacts to surface waters or storm water infrastructure when and if the water quality monitoring must be implemented. Any review of these areas of potential surface water contamination in advance of a Spill should allow the County to be better prepared to respond to an Spill with the proper equipment and a better understanding of the procedures that may need to be invoked during the Spill such as flow rate of a creek or stream, and potential areas of significant environmental concern.

## **MONITORING**

### **Visual Observation**

In the event of a spill to a Receiving Water/Surface Water, the County must gather and document the following information:

- Estimated spill travel time to the receiving water;
- For spills entering a drainage conveyance system, estimated spill travel time from the point of entry into the drainage conveyance system to the point of discharge into the receiving water;
- Estimated spill volume entering the receiving water; and
- Photography of:
  - Waterbody bank erosion,
  - Floating matter,
  - Water surface sheen (potentially from oil and grease),
  - Discoloration of receiving water, and
  - Impact to the receiving water.

## Receiving Water – Water Quality Sampling & Analysis

For sewage spills in which an estimated 50,000 gallons or greater are discharged into a surface water, the County shall conduct the following water quality sampling no later than 18 hours after the County's knowledge of a potential discharge to a surface water and follow the monitoring requirements identified in the currently effective Statewide Waste Discharge Requirements General Order for Sanitary Sewer Systems and are highlighted below:

:

- Collect one water sample, each day of the duration of the spill, at:
  - Stormwater Conveyance System: A point in a drainage conveyance system before the drainage conveyance system flow discharges into a receiving water,
  - Point of Discharge: A point in the receiving water where sewage initially enters the receiving water,
  - Upstream of Discharge Point: A point in the receiving water, upstream of the point of sewage discharge, to capture ambient conditions absent of sewage discharge impacts. For reference attempt to sample ~ 100 ft “upstream” (North) of spill entry point. Sample should represent a full mixing of wastewater and water body.
  - Downstream of Discharge Point: A point in the receiving water, downstream of the point of sewage discharge, where the spill material is fully mixed with the receiving water. For reference attempt to sample ~ 100 ft “downstream” (South) of spill entry point. Sample should represent a full mixing of wastewater and water body.
- Sampling Procedures:
  - Collect samples away from bank of stream/creek or ocean,
  - Collect samples against the direction of stream/creek or ocean flow ,
  - Avoid sampling scum or debris in stream/creek or ocean flow,
  - Bacterial Samples: - make sure to leave chemical additive in sample bottle while taking sample, avoid touching sample bottle cap form touching anything before screwing cap on bottle after sample is complete, make sure sample is collected at least 2” below surface of water,
  - Complete chain of custody and make sure sample bottle is labeled appropriately,
  - Store sample bottles in cooler and deliver to lab for analysis.
- If the receiving water has no flow during the duration of the spill, the County must report “No Sampling Due To No Flow” for its receiving water sampling locations.
- The County must use its best professional judgment to determine the upstream and downstream distances based on receiving water flow, accessibility to upstream/downstream waterbody banks, and size of visible sewage plume.
- Public Works Director or their designee shall contact one of their two State Certified Laboratories in Monterey County to analyze samples collected by County staff. One of the two State Certified Laboratories is private, and one is public.

- Monterey Bay Analytical Services  
Address: 4 Justin Court, Suite D, Monterey, CA 93940  
Phone Number: (831) 641-0734
  - County of Monterey Environmental Health Laboratory  
Address: 1270 Natividad Road, Salinas, CA 93906  
Phone Number: (831) 755-4516
- Samples for one of the following constituents must be collected and analyzed by an Environmental Laboratory Accreditation Program (ELAP) Certified Laboratory:
    - Ammonia, and
      - *Fecal Coliform Bacteria*
      - *Total Coliform*

*Fecal Coliform and Total Coliform* are the appropriate bacterial indicator identified for the 2019 California Ocean Plan.

Document all sample points discussed above on a map for submittal as part of the Technical Report submitted to the RWQCB. Document sample conditions in creeks/rivers and any impacts to wildlife with photos. All sampling procedures and methods will adhere to the currently effective Monterey County 303(d)/TMDL Water Quality Monitoring Program Quality Assurance Project Plan.

**Safety:** If staff encounters access restrictions or unsafe conditions that prevents compliance with spill response requirements or monitoring requirements in the General Order, the County shall provide documentation of access restrictions and/or safety hazards in the corresponding required report.

## **WATER BODY CLOSURE**

### **Creeks/Rivers Warnings and Closures**

1. County Staff is responsible for posting the surface water warning or closure signs when there is a surface water advisory or closure due to a Spill. Monterey County Environmental Health may conduct these postings. Make sure to coordinate.
2. The surface water advisory or closure pertains to the area where the Spill discharged into the surface water and 1000 yards in each direction from spill entry point.
3. The signs are posted at all public access points within this 2000-yard area.
4. When County Staff determines that the surface water is no longer under an advisory or closure, County Staff is responsible for removing the signs and barricades.

## **Beneficial Uses: Tembladero Slough Tributaries**

The following are Beneficial Uses for the Tributaries to Tembladero Slough. Evaluation of the water quality samples taken after a Spill of 50,000 gallons or greater and comparison of these sample results against the designations below and the constituent base line developed through Central Coast Ambient Water Quality Monitoring Program ([www.ccamp.org](http://www.ccamp.org)) may be required.

<b>Tembladero Slough</b>
Commercial and Sport Fishing
Shellfish Harvesting
Estuarian Habitat
Rare Threatened or Endangered Species
Water Contact Recreation
Non-Contact Recreation
Spawning, Reproduction and/or Early Development
Warm Freshwater Habitat
Wildlife Habitat

Source: [https://www.waterboards.ca.gov/resources/data\\_databases/basin\\_plan\\_portal.html](https://www.waterboards.ca.gov/resources/data_databases/basin_plan_portal.html)

The majority of stormwater drainage conveyance systems flow to the Tembladero Slough. While it is unlikely the County will have a sewer spill that will impact this water body in a manner that would degrade the beneficial uses, the County should be prepared to analyze potential impacts in the event of a Category 1 Spill that is 50,000 gallons or greater which requires the development of a Technical Report.

## REPORTING PROCEDURES

### Summary Tables Notification, Monitoring, Reporting

#### Cat 1 Spill: Spills to Surface Waters

Spill Requirement	Action
Notification	<p><b>Within two (2) hours</b> of the County's knowledge of a Category 1 spill of 1,000 gallons or greater, discharging or threatening to discharge to surface waters:</p> <p>Notify the California Office of Emergency Services and obtain a notification control number. (800) 852-7550</p>
Monitoring	<ul style="list-style-type: none"><li>• Conduct visual monitoring;</li><li>• Conduct water quality sampling of the receiving water within <b>18 hours</b> of initial knowledge of spill of 50,000 gallons or greater to surface waters.</li></ul>
Reporting	<ul style="list-style-type: none"><li>• Submit Draft Spill Report <b>within three (3) business days</b> of the County's knowledge of the spill;</li><li>• Submit Certified Spill Report <b>within 15 calendar days</b> of the spill end date;</li><li>• Submit Technical Report <b>within 45 calendar days</b> after the spill end date for a Category 1 spill in which <b>50,000 gallons or greater</b> discharged to surface waters; and</li><li>• Submit Amended Spill Report <b>within 90 calendar days</b> after the spill end date.</li></ul>

### Spill Category 2: Spills of 1,000 Gallons or Greater That Do Not Discharge to Surface Waters

Spill Requirements	Action
Notification	<b>Within two (2) hours</b> of the Enrollee's knowledge of a Category 2 spill of 1,000 gallons or greater, discharging or threatening to discharge to waters of the State: Notify California Office of Emergency Services and obtain a notification control number. (800) 852-7550
Monitoring	Conduct Visual Monitoring
Reporting	<ul style="list-style-type: none"> <li>• Submit Draft Spill Report <b>within three (3) business days</b> of the County's knowledge of the spill;</li> <li>• Submit Certified Spill Report <b>within 15 calendar days</b> of the spill end date; and</li> <li>• Submit Amended Spill Report <b>within 90 calendar days</b> after the spill end date.</li> </ul>

### Spill Category 3: Spills of Equal or Greater than 50 Gallons and Less than 1,000 Gallons That Does Not Discharge to Surface Waters

Spill Requirements	Action
Notification	Not Applicable
Monitoring	Conduct visual monitoring.
Reporting	<ul style="list-style-type: none"> <li>• Submit monthly Certified Spill Report to the online CIWQS Sanitary Sewer System Database within <b>30 calendars days</b> after the end of the month in which the spills occur; and</li> <li>• Submit Amended Spill Reports <b>within 90 calendar days</b> after the Certified Spill Report due date.</li> </ul>



#### Spill Category 4: Spills Less Than 50 Gallons That Do Not Discharge to Surface Waters

Spill Requirements	Action
Notification	Not Applicable
Monitoring	Conduct visual monitoring.
Reporting	<ul style="list-style-type: none"> <li>If, during any calendar month, Category 4 spills occur, certify monthly, the estimated total spill volume exiting the sanitary sewer system, and the total number of all Category 4 spills into the online CIWQS Sanitary Sewer System Database, within 30 days after the end of the calendar month in which the spills occurred.</li> <li>Upload and certify a report, in an acceptable digital format, of all Category 4 spills to the online CIWQS Sanitary Sewer System Database, by February 1<sup>st</sup> after the end of the calendar year in which the spills occur.</li> </ul>

#### Enrollee Owned and/or Operated Lateral Spills That Do Not Discharge to Surface Waters

Spill Requirements	Action
Notification	<p><b>Within two (2) hours</b> of the County's knowledge of a spill of 1,000 gallons or greater, from an enrollee- owned and/or operated lateral, discharging or threatening to discharge to waters of the State:</p> <p>Notify California Office of Emergency Services and obtain a notification control number. (800) 852-7550</p> <p>Not applicable to a spill of less than 1,000 gallons.</p>
Monitoring	Conduct visual monitoring.
Reporting	<ul style="list-style-type: none"> <li>Upload and certify a report, in an acceptable digital format, of all lateral spills (that do not discharge to a surface water) to the online CIWQS Sanitary Sewer System Database, by February 1<sup>st</sup> after the end of the calendar year in which the spills occur.</li> <li>Report a lateral spill of any volume that discharges to a surface water as a Category 1 spill.</li> </ul>

## Detailed Reporting Requirements

### Category 1 Spills

#### Draft Category 1 Spill Report

The Draft Category 1 Spill Report must be completed in CIWQS as soon as possible, but no later than three (3) business days after the County is made aware of the Spill.

The Draft Category 1 Spill Report must include all of the following information:

1. Contact information: Name and telephone number of County contact person to respond to spill-specific questions;
2. Spill location name;
3. Date and time the County was notified of, or self-discovered, the spill;
4. Operator arrival time;
5. Estimated spill start date and time;
6. Date and time the County notified the California Office of Emergency Services, and the assigned control number;
7. Description, photographs, and GPS coordinates of the system location where the spill originated. If a single spill 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 spill appearance point explanation field;
8. Estimated total spill volume exiting the system;
9. Description and photographs of the extent of the spill and spill boundaries;
10. Did the spill reach a drainage conveyance system? If Yes:
  - a. Description of the drainage conveyance system transporting the spill;
  - b. Photographs of the drainage conveyance system entry location(s);
  - c. Estimated spill volume fully recovered from the drainage conveyance system;
  - d. Estimated spill volume remaining within the drainage conveyance system;
11. Description and photographs of all discharge point(s) into the surface water;
12. Estimated spill volume that discharged to surface waters; and
13. Estimated total spill volume recovered.

If CIWQS is not available, the aforementioned information must be faxed to RWQCB at (805) 543-0397.

#### Final (Certified) Category 1 Spill Report

Within 15 calendar days of the spill end date, the County shall submit a Certified Spill Report for Category 1 spills, to the online CIWQS Sanitary Sewer System Database. Upon completion of the Certified Spill Report, the online CIWQS Sanitary Sewer System Database will issue a final spill event identification number.

The Certified Spill Report must, at minimum, include the following mandatory information in addition to all information in the Draft Spill Report per section 3.1.1 (Draft Spill Report for Category 1 Spills) above:

- Description of the spill event destination(s), including GPS coordinates if available, that represent the full spread and reach of the spill;
- Spill end date and time;

- Description of how the spill volume estimations were calculated, including at a minimum:
  - a. The methodology, assumptions and type of data relied upon, such as supervisory control and data acquisition (SCADA) records, flow monitoring or other telemetry information used to estimate the volume of the spill discharged, and the volume of the spill recovered (if any volume of the spill was recovered), and
  - b. The methodology(ies), assumptions and type of data relied upon for estimations of the spill start time and the spill end time;
- Spill cause(s) (for example, root intrusion, grease deposition, etc.);
- System failure location (for example, main, lateral, pump station, etc.);
- Description of the pipe material, and estimated age of the pipe material, at the failure location;
- Description of the impact of the spill;
- Whether or not the spill was associated with a storm event;
- Description of spill response activities including description of immediate spill containment and cleanup efforts;
- Description of spill corrective action, including steps planned or taken to reduce, eliminate, and prevent reoccurrence of the spill, and a schedule of major milestones for those steps;
- Spill response completion date;
- Detailed narrative of investigation and investigation findings of cause of spill;
- Reasons for an ongoing investigation (as applicable) and the expected date of completion;
- Name and type of receiving water body(s);
- Description of the water body(s), including but not limited to:
  - a. Observed impacts on aquatic life,
  - b. Public closure, restricted public access, temporary restricted use, and/or posted health warnings due to spill,
  - c. Responsible entity for closing/restricting use of water body, and
  - d. Number of days closed/restricted as a result of the spill.
  - e. Whether or not the spill was located within 1,000 feet of a municipal surface water intake; and
- If water quality samples were collected, identify sample locations and the parameters the water quality samples were analyzed for. If no samples were taken, Not Applicable shall be selected.
- If CIWQS is not available, the aforementioned information must be faxed to RWQCB at (805) 543-0397.

### **Spill Technical Report**

The County shall submit a Spill Technical Report in CIWQS within forty-five (45) calendar days of the Spill end date for any Spill in which 50,000 gallons or greater are spilled to surface waters.

The Spill Technical Report shall include:

For any spill in which 50,000 gallons or greater discharged into a surface water, within 45 calendar days of the spill end date, the County shall submit a Spill Technical Report to the online CIWQS Sanitary Sewer System Database. The Spill Technical Report, at minimum, must include the following information:

- Spill causes and circumstances, including at minimum:
- Complete and detailed explanation of how and when the spill was discovered;
- Photographs illustrating the spill origin, the extent and reach of the spill, drainage conveyance system entrance and exit, receiving water, and post-cleanup site conditions;
- Diagram showing the spill failure point, appearance point(s), the spill flow path, and ultimate destinations;
- Detailed description of the methodology employed, and available data used to calculate the discharge volume and, if applicable, the recovered spill volume;
- Detailed description of the spill cause(s);
- Description of the pipe material, and estimated age of the pipe material, at the failure location;
- Description of the impact of the spill;
- Copy of original field crew records used to document the spill; and
- Historical maintenance records for the failure location.

County's response to the spill:

- Chronological narrative description of all actions taken by the County to terminate the spill;
- Explanation of how the Sewer System Management Plan Spill Emergency Response Plan was implemented to respond to and mitigate the spill; and
- Final corrective action(s) completed and a schedule for planned corrective actions, including:
- Local regulatory enforcement action taken against an illicit discharge in response to this spill, as applicable,
- Identifiable system modifications, and operation and maintenance program modifications needed to prevent repeated spill occurrences, and
- Necessary modifications to the Emergency Spill Response Plan to incorporate lessons learned in responding to and mitigating the spill.

Water Quality Monitoring, including at minimum:

- Description of all water quality sampling activities conducted;
- List of pollutant and parameters monitored, sampled and analyzed; as required in section 2.3 (Receiving Water Monitoring) of the Notification, Monitoring, Reporting and Recordkeeping Requirements;
- Laboratory results, including laboratory reports;
- Detailed location map illustrating all water quality sampling points; and
- Other regulatory agencies receiving sample results (if applicable).

Evaluation of spill impact(s), including a description of short-term and long-term impact(s) to beneficial uses of the surface water.

If CIWQS is not available, the aforementioned information must be faxed to RWQCB at (805) 543-0397.

### **Amended Certified Spill Reports for Individual Category 1 Spills**

The County shall update or add additional information to a Certified Spill Report within 90 calendar days of the spill end date by amending the report or by adding an attachment to the Spill Report in the online CIWQS

Sanitary Sewer System Database. The County shall certify the amended report.

After 90 calendar days, the County shall contact the State Water Board at [SanitarySewer@waterboards.ca.gov](mailto:SanitarySewer@waterboards.ca.gov) to request to amend a Spill Report. The Legally Responsible Official shall submit justification for why the additional information was not reported within the Amended Spill Report due date.

## **Category 2 Spills**

### **Draft Category 2 Spill Report**

Within three (3) business days of the County's knowledge of a Category 2 spill, the County shall submit a Draft Spill Report to the online CIWQS Sanitary Sewer System Database. The Draft Spill Report must, at minimum, include the following items:

- i. Contact information: Name and telephone number of County contact person to respond to spill-specific questions;
- ii. Spill location name;
- iii. Date and time the County was notified of, or self-discovered, the spill;
- iv. Operator arrival time;
- v. Estimated spill start date and time;
- vi. Date and time the County notified the California Office of Emergency Services, and the assigned control number;
- vii. Description, photographs, and GPS coordinates of the system location where the spill originated;
- viii. If a single spill 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 spill appearance point explanation field;
- ix. Estimated total spill volume exiting the system;
- x. Description and photographs of the extent of the spill and spill boundaries;
- xi. Did the spill reach a drainage conveyance system? If Yes:
  - o Description of the drainage conveyance system transporting the spill;
  - o Photographs of the drainage conveyance system entry location(s);
  - o Estimated spill volume fully recovered from the drainage conveyance system;
  - o Estimated spill volume remaining within the drainage conveyance system;
  - o Estimated spill volume discharged to a groundwater infiltration basin or facility, if applicable; and
- xii. Estimated total spill volume recovered.

If CIWQS is not available, the aforementioned information must be faxed to RWQCB at (805) 543-0397.

### **Final (Certified) Category 2 Spill Report**

Within 15 calendar days of the spill end date, the County shall submit a Certified Spill Report for the Category 2 spill, to the online CIWQS Sanitary Sewer System Database (<https://ciwqs.waterboards.ca.gov>). Upon completion of the Certified Spill Report, the online CIWQS Sanitary Sewer System Database will issue a final spill event identification number. The Certified Spill Report must, at minimum, include the following mandatory information in addition to all information in the Draft Spill Report per section 3.2.1 (Draft Spill Report for Category 2 Spills) above:

- Description of the spill event destination(s), including GPS coordinates if available, that represent the full spread and reach of the spill;
- Spill end date and time;

- Description of how the spill volume estimations were calculated, including at a minimum:
  - a. The methodology, assumptions and type of data relied upon, such as supervisory control and data acquisition (SCADA) records, flow monitoring or other telemetry information used to estimate the volume of the spill discharged, and the volume of the spill recovered (if any volume of the spill was recovered), and
  - b. The methodology(ies), assumptions and type of data relied upon for estimations of the spill start time and the spill end time;
- Spill cause(s) (for example, root intrusion, grease deposition, etc.);
- System failure location (for example, main, pump station, etc.);
- Description of the pipe/infrastructure material, and estimated age of the pipe material, at the failure location;
- Description of the impact of the spill;
- Whether or not the spill was associated with a storm event;
- Description of spill response activities including description of immediate spill containment and cleanup efforts;
- Description of spill corrective action, including steps planned or taken to reduce, eliminate, and prevent reoccurrence of the spill, and a schedule of major milestones for those steps;
- Spill response completion date;
- Detailed narrative of investigation and investigation findings of cause of spill;
- Reasons for an ongoing investigation (as applicable) and the expected date of completion; and
- Whether or not the spill was located within 1,000 feet of a municipal surface water intake.

If CIWQS is not available, the aforementioned information must be faxed to RWQCB at (805) 543-0397.

#### **Amended Certified Spill Reports for Individual Category 2 Spills**

The County shall update or add additional information to a Certified Spill Report within 90 calendar days of the spill end date by amending the report or by adding an attachment to the Spill Report in the online CIWQS Sanitary Sewer System Database. The County shall certify the amended report.

After 90 calendar days, the County shall contact the State Water Board at [SanitarySewer@waterboards.ca.gov](mailto:SanitarySewer@waterboards.ca.gov) to request to amend a Spill Report. The Legally Responsible Official shall submit justification for why the additional information was not reported within the Amended Spill Report due date.

#### **Category 3 Spills – Monthly Certified Spill Reporting**

1. The County shall report and certify all Category 3 spills to the online CIWQS Sanitary Sewer System Database within 30 calendar days after the end of the month in which the spills occurred. (For example, all Category 3 spills occurring in the month of February shall be reported and certified by March 30th). After the Legally Responsible Official certifies the spills, the online CIWQS Sanitary Sewer System Database will issue a spill event identification number for each spill.
2. The monthly reporting of all Category 3 spills must include the following items for each spill:
  - a. Contact information: Name and telephone number of County contact person to respond to spill-specific questions;
  - b. Spill location name;
  - c. Date and time the County was notified of, or self-discovered, the spill;

- d. Operator arrival time;
- e. Estimated spill start date and time;
- f. Description, photographs, and GPS coordinates where the spill originated:
  - i. If a single spill 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 spill appearance point explanation field;
- g. Estimated total spill volume exiting the system;
- h. Description and photographs of the extent of the spill and spill boundaries;
- i. Did the spill reach a drainage conveyance system? If Yes:
  - i. Description of the drainage conveyance system transporting the spill;
  - ii. Photographs of the drainage conveyance system entry location(s);
  - iii. Estimated spill volume fully recovered from the drainage conveyance system; and
  - iv. Estimated spill volume discharged to a groundwater infiltration basis or facility, if applicable.
- j. Estimated total spill volume recovered;
- k. Description of the spill event destination(s), including GPS coordinates, if available, that represent the full spread and reaches of the spill;
- l. Spill end date and time;
- m. Description of how the spill volume estimations were calculated, including, at minimum:
  - i. The methodology and type of data relied upon, including supervisory control and data acquisition (SCADA) records, flow monitoring or other telemetry information used to estimate the volume of the spill discharged, and the volume of the spill recovered (if any volume of the spill was recovered), and
  - ii. The methodology and type of data relied upon to estimate the spill start time, on-going spill rate at time of arrival (if applicable), and the spill end time;
- n. Spill cause(s) (for example, root intrusion, grease deposition, etc.);
- o. System failure location (for example, main, pump station, etc.);
- p. Description of the pipe/infrastructure material, and estimated age of the pipe/infrastructure material, at the failure location;
- q. Description of the impact of the spill;
- r. Whether or not the spill was associated with a storm event;
- s. Description of spill response activities including description of immediate spill containment and cleanup efforts;
- t. Description of spill corrective actions, including steps planned or taken to reduce, eliminate, and prevent reoccurrence of the spill, and a schedule of the major milestones for those steps; including, at minimum:
  - i. Local regulatory enforcement action taken against an illicit discharge in response to this spill, as applicable, and
  - ii. Identifiable system modifications, and operation and maintenance program modifications needed to prevent repeated spill occurrences at the same spill event location, including:
    1. Adjusted schedule/method of preventive maintenance,
    2. Planned rehabilitation or replacement of sanitary sewer asset,
    3. Inspected, repaired asset(s), or replaced defective asset(s),
    4. Capital improvements,
    5. Documentation verifying immediately implemented system modifications and operating/maintenance modifications,
    6. Description of spill response activities,
    7. Spill response completion date, and
    8. Ongoing investigation efforts, and expected completion date of investigation to determine the full cause of spill;
- u. Detailed narrative of investigation and investigation findings of cause of spill.

3. If CIWQS is not available, the aforementioned information must be faxed to RWQCB at (805) 543-0397.

### **Amended Certified Spill Reports for Category 3 Spills**

Within 90 calendar days of the certified Spill Report due date, the County may update or add additional information to a certified Spill Report by amending the report or by adding an attachment to the Spill Report in the online CIWQS Sanitary Sewer System Database. The County shall certify the amended report.

After 90 calendar days, the Legally Responsible Official shall contact the State Water Board at [SanitarySewer@waterboards.ca.gov](mailto:SanitarySewer@waterboards.ca.gov) to request to amend a certified Spill Report. The Legally Responsible Official shall submit justification for why the additional information was not reported within the 90-day timeframe for amending the certified Spill Report, as provided above.

## **ADDITIONAL REPORTING**

### **Annual Certified Spill Reporting of Category 4 and/or Lateral Spills**

For all Category 4 spills and spills from its owned and/or operated laterals that are caused by a failure or blockage in the lateral and that do not discharge to a surface water, the County shall:

- Maintain records per section 4.4. of the Notification, Monitoring, Reporting and Recordkeeping Requirements;
- The County must maintain the following records for each individual Category 4 spill and for each individual non-Category 1 Enrollee-owned and/or operated lateral spill.  
Recordkeeping required - Individual Category 4 Spill Information:
  1. Contact information: Name and telephone number of Enrollee contact person to respond to spill-specific questions;
  2. Spill location name;
  3. Description and GPS coordinates for the system location where the spill originated;
  4. Did the spill reach a drainage conveyance system? If **Yes**:
    - Description of drainage conveyance system location,
    - Estimated spill volume fully recovered within the drainage conveyance system, and
    - Estimated spill volume remaining within the drainage conveyance system;
  5. Estimated total spill volume exiting the sanitary sewer system;
  6. Spill date and start time;
  7. Spill cause(s) (for example, root intrusion, grease deposition, etc.);
  8. System failure location (for example, main, pump station, etc.);
  9. Description of spill response activities including description of immediate spill containment and cleanup efforts;
  10. Description of how the volume estimation was calculated, including, at minimum:
    - The methodology and type of data relied upon, including supervisory control and data acquisition (SCADA) records, flow monitoring or other telemetry information used to estimate the volume of the spill discharged, and the volume of the spill recovered (if any volume of the spill was recovered), and
    - The methodology and type of data relied upon to estimate the spill start time, on- going spill rate at time of arrival (if applicable), and the spill end time;
  11. Description of implemented system modifications and operating/maintenance modifications.
- County Owned Laterals:
  1. Date and time the County was notified of, or self-discovered, the spill;
  2. Location of individual spill;
  3. Estimated individual spill volume;
  4. Spill cause(s) (for example, root intrusion, grease deposition, etc.); and



5. Description of how the volume estimations were calculated.

**Total Annual Spill Information:**

1. Estimated total annual spill volume;
2. Description of spill corrective actions, including at minimum:
  - Local regulatory enforcement action taken against the sewer lateral owner in response to a spill, as applicable, and
  - System operation, maintenance and program modifications implemented to prevent repeated spill occurrences at the same spill location

The County shall provide records upon request by State Water Board or Regional Water Board staff.

Annually upload and certify a report, in an appropriate digital format, of all recordkeeping of spills to the online CIWQS Sanitary Sewer System Database, by February 1st after the end of the calendar year in which the spills occurred.

A spill from an County-owned and/or operated lateral that discharges to a surface water is a Category 1 spill; the County shall report all Category 1 spills per section 3.1 of Notification, Monitoring, Reporting and Recordkeeping Requirements of the General Order.

**Monthly Certification of “No-Spills” or “Category 4 Spills” and/or “Non-Category 1 Lateral Spills”**

If either (1) no spills occur during a calendar month or (2) only Category 4, and/or County-owned and/or operated lateral spills (that do not discharge to a surface water) occur during a calendar month, the County shall certify, within 30 calendar days after the end of each calendar month, either a “No-Spill” certification statement, or a “Category 4 Spills” and/or “Non-Category 1 Lateral Spills” certification statement, in the online CIWQS Sanitary Sewer System Database, certifying that there were either no spills, or Category 4 and/or Non-Category 1 Lateral Spills that will be reported annually (per section 3.6 of the MRP) for the designated month.

If a spill starts in one calendar month and ends in a subsequent calendar month, and the County has no further spills of any category, in the subsequent calendar month, the County shall certify “no-spills” for the subsequent calendar month.

If the County has no spills from its systems during a calendar month, but the County voluntarily reported a spill from a private lateral or a private system, the County shall certify “no-spills” for that calendar month.

If the County has spills from its owned and/or operated laterals during a calendar month, the County shall not certify “no spills” for that calendar month.

Collection System Questionnaire

**Annual Report (Previously termed as Collection System Questionnaire in General Order 2006-0003-DWQ)**

The County shall update their previous year’s Annual Report, by April 1 of each year after the Effective Date of this General Order, for each calendar year (January 1 through December 31).

The Annual Report must be entered directly into the online CIWQS Sanitary Sewer System Database. The County’s Legally Responsible Official shall certify the Annual Report as instructed in CIWQS;

The Annual Report must address, and update as applicable, the following items:

- Population served;

- Updated sewer system service area boundary map, if service area boundary has changed from original map submitted per section 5.14 (Electronic Sanitary Sewer System Service Area Boundary Map) of this General Order;
- Number of system operation and maintenance staff:
  - Entry level (less than two years of experience),
  - Journey level (greater than two years of experience),
  - Supervisory level, and
  - Managerial level;
- Number of operation and maintenance staff certified as a certified collection system operator by the California Water Environmental Association (CWEA), with:
  - Corresponding number of certified collection system operator grade levels (Grade I, II, III, IV, and V);
- System information:
  - Miles of system gravity and force mains,
  - Number of upper and lower service laterals connected to system,
  - Estimated number of upper and lower laterals owned and/or operated by the County,
  - Portion of laterals that is County's responsibility,
  - Average age the major components of system infrastructure,
  - Number and age of pump stations, and
  - Estimated total miles of the system pipeline not accessible for maintenance;
- Name and location of the treatment plant(s) receiving sanitary sewer system's waste;
- Name of satellite sewer system tributaries;
- Number of system's gravity sewer above or underground crossings of water bodies throughout system;
- Number of force main (pressurized pipe) above or underground crossings of water bodies throughout system;
- Number of siphons used to convey waste throughout the sewer system;
- Miles of sewer system cleaned;
- Miles of sewer system video inspected, or comparable (i.e., video closed-circuit television or alternative inspection methods);
- System Performance Evaluation as specified in section 5.11 (System Performance Analysis) of the General Order;
- Major spill causes (for example, root intrusion, grease deposition);
- System infrastructure failure points (for example, main, pump station, lateral, etc.);
- Ongoing spill investigations; and
- Actions taken to address system deficiencies.

## **POST SPILL INVESTIGATIONS**

## **Post Spill Investigations & Assessment**

### **Post Spill Failure Analysis Investigation**

The objective of the failure analysis investigation is to determine the “root cause” of the Spill and to identify corrective action(s) needed that will reduce or eliminate future potential for the Spill to recur.

The investigation should include reviewing all relevant data to determine appropriate corrective action(s) for the line segment and failure point.

The investigation should include the following as applicable and or appropriate:

- Review of and completion of the Spill Field Response Report and associated information,
- Review of the incident timeline and other documentation regarding the incident,
- Review of communications with the reporting party and witness.
- Review of volume estimate, volume recovered estimate, volume estimation assumptions and associated drawings,
- Review of materials removed from sewer line,
- Review of available photographs,
- Interviews with staff that responded to the spill.
- Review of past maintenance records,
- Review of past CCTV records,
- Conducting a CCTV inspection to determine the condition of the line segment immediately following the Spill and reviewing the video and logs,
- Review of any FOG related information or results

The result of the failure analysis investigation should lead to a determination of the root cause of the Spill and identification of future corrective actions. The Spill Follow up Investigation Form should be used to document the investigation.

### **Post Spill CCTV Condition Assessment**

County staff shall investigate the cause of the Spill (Category 1 & 2, & 3) and may employ the following measures to prevent future overflows:

- Conduct visual observations during sewer line cleaning during Spill and determine if a CCTV analysis is warranted.
- As soon as practicable, the County will conduct a CCTV Conditional Assessment of the sewer line where the Spill originated and determine the nature of the defect;
- If the defect is identified as having a significant obstruction or as structurally deficient, the County will take action as soon as practicable to repair or replace the defect, or take other action necessary to protect water quality (e.g., divert the flow until the repair or replacement can occur); or
- If the defect is non-structural, such as a grease blockage or vandalism to a manhole cover, the County will implement appropriate measures (e.g., additional maintenance or cleaning), to address the cause.

### **Post Spill Debriefing**

Every Spill event is an opportunity to evaluate the response and reporting procedures. Each overflow event is unique, with its own elements and challenges including volume, cause, location, terrain, and other parameters.

As soon as possible after Category 1, Category 2, or Category 3 Spill events, all of the participants, from the person who received the call to the last person to leave the site, should meet to review the procedures used and to discuss what worked and where improvements could be made in responding to and mitigating future Spill events. If structural repairs or maintenance tasks are identified as a result of the Post Spill Condition Assessment, these repairs or maintenance tasks should be scheduled and assigned to appropriate staff. The results of the debriefing should be recorded and tracked to ensure the action items are completed.

## **SERP TRAINING**

## **County Staff**

The following are minimum training requirements:

- The requirements of the 2022 General Order & Notification, Monitoring, Reporting and Recordkeeping Requirements;
- The County's Spill Emergency Response Plan procedures and practice drills;
- Skilled estimation of spill volume for operations staff; and
- Electronic CIWQS reporting procedures for staff submitting data.

Training should be conducted annually at a minimum and when new staff is hired and has responsibilities for sewer spill response activities.

## **Contractors**

Contractors are required to submit a spill response plan in the event of a sewer spill associated with the execution of a project for the County.

The following procedures are to be followed in the event that a contractor/plumber causes or witnesses a Sanitary Sewer Spill. If the contractor/plumber causes or witnesses an Spill they should:

1. Immediately notify the County
2. Protect storm drains.
3. Protect the public.
4. Provide Information to the County Wastewater Staff such as start time, appearance point, suspected cause, weather conditions, etc.

## Boronda CSD: Sewer Spill Follow Up Investigation Assessment Form

**Staff Conducting Investigation:** \_\_\_\_\_

**Date:** \_\_\_\_\_

**Location of Spill:** \_\_\_\_\_

Answer all questions provided below as applicable:

Question	Response
<b>Date and time the County was first notified of the Spill?</b>  <b>How was County notified?</b>	
<b>Date and time of Spill response?</b>	
<b>What action was taken when notified, and when?</b>	
<b>What was the apparent cause of the backup/spill?</b>	
<b>What methods of investigation were used (visual, videos, etc.)?</b>	

<b>Summary of investigation results?</b>	
<b>Were communications with the reporting party and witness conducted?</b>	
<b>Were volume estimate methodologies used in Spill volume estimate reviewed?</b>	
<b>Were photos taken of the Spill and Spill mitigation activities?</b>	
<b>What is the estimated age of the sewer main?</b>	
<b>Sewer Main type and or material?</b>	
<b>What is the record of frequency of inspection/cleaning at the site?</b>	
<b>Last date of inspection/ cleaning prior to the incident?</b>	
<b>Method of cleaning/inspection on that last date (flushed, jetted, rodded, etc.)</b>	
<b>Was this problem found to be in the main or the lateral? Both?</b>	

Have there been prior problems with blockage in the main? When? What were the causes of prior problems?																															
Are there major industries, schools, restaurants on this sewer main? How close?																															
Was the County doing any work in the area prior to the backup? If so, what was being done?																															
Any other private construction going on in the area. If so, what was being done?																															
Water Body Impacted? Location? Posting? Follow Up Actions?																															
Assessment of SERP Implementation and Effectiveness.	<table> <tr> <td>Notification Procedures followed?</td> <td>Y</td> <td>N</td> </tr> <tr> <td>Notification Procedures effective?</td> <td>Y</td> <td>N</td> </tr> <tr> <td>Spill response completed safely?</td> <td>Y</td> <td>N</td> </tr> <tr> <td>Were response procedures adhered to?</td> <td>Y</td> <td>N</td> </tr> <tr> <td>Were response procedures effective?</td> <td>Y</td> <td>N</td> </tr> <tr> <td>Were containment procedures adhered to?</td> <td>Y</td> <td>N</td> </tr> <tr> <td>Were containment procedures effective?</td> <td>Y</td> <td>N</td> </tr> <tr> <td>Were cleanup and recovery procedures adhered to?</td> <td>Y</td> <td>N</td> </tr> <tr> <td>Were cleanup and recovery procedures effective?</td> <td>Y</td> <td>N</td> </tr> <tr> <td colspan="3">Other observations:</td> </tr> </table>	Notification Procedures followed?	Y	N	Notification Procedures effective?	Y	N	Spill response completed safely?	Y	N	Were response procedures adhered to?	Y	N	Were response procedures effective?	Y	N	Were containment procedures adhered to?	Y	N	Were containment procedures effective?	Y	N	Were cleanup and recovery procedures adhered to?	Y	N	Were cleanup and recovery procedures effective?	Y	N	Other observations:		
Notification Procedures followed?	Y	N																													
Notification Procedures effective?	Y	N																													
Spill response completed safely?	Y	N																													
Were response procedures adhered to?	Y	N																													
Were response procedures effective?	Y	N																													
Were containment procedures adhered to?	Y	N																													
Were containment procedures effective?	Y	N																													
Were cleanup and recovery procedures adhered to?	Y	N																													
Were cleanup and recovery procedures effective?	Y	N																													
Other observations:																															



<b>Identify required SERP changes as a result of sewer spill response?</b>	
<b>Other observations or Notes?</b>	