

STANDARD OPERATING PROCEDURES

 <p>WASTEWATER DIVISION</p>	SOP#C-10 SPILL RESPONSE
	DATE ISSUED: 11/15/2013
	DATE REVISED:
	APPROVED BY: Robert Englent

1) PURPOSE:

The City responds to SSOs and other sewer emergencies according to the SSO Response Plan. This plan includes the Back-up Packet, the Overflow Packet, the Sewer Maintenance SOP, and this Spill Response SOP.

The purpose of this SOP is to provide specific guidelines for Sanitary Sewer Overflow (SSO) containment, clean-up, and spill volume estimation.

2) PROCEDURE:

When responding to an SSO Collection System Operators need to work quickly to contain the spill, relieve the stoppage, and clean the spill. DO NOT PANIC!

1. FIRST STEP – CONTAINMENT

The first step is containment, **if possible**. Containment is not always possible or practical, but if it is practical, the operator should attempt to contain the spill. Containment procedures include:

- a. Place rubber mats over catch basin or inlet
- b. Sandbag the gutter and/or catch basin, use sandbags and plastic sheeting
- c. Dig an earthen trench or build a berm
- d. Trace sewer flow within storm system. Follow sewer downstream until non-contaminated water is observed. Use sandbags or dirt to build berm in pipe to contain flow.
- e. If the spill has reached a storm detention basin or pump station, contact the pump crew and turn off pumps (if possible).

STANDARD OPERATING PROCEDURES

2. SECOND STEP – CLEAR THE STOPPAGE

Depending on the volume of flow and the expectation of containment, this might be your first step. Follow the procedures for clearing a stoppage contained within the Sewer Maintenance SOP.

3. THIRD STEP- ESTIMATE SPILL VOLUME

After the stoppage has been relieved and before the clean-up begins, the first responder needs to estimate the spill volume that has been contained. This is performed by considering each area where sewage is contained separately, then adding the estimated amounts for each area.

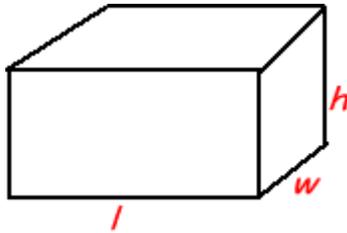
a. AREA ESTIMATION

- i. If the area is roughly square or rectangular estimate the volume by measuring the length and the width (in feet). Measure the depth in several places to obtain an average depth.

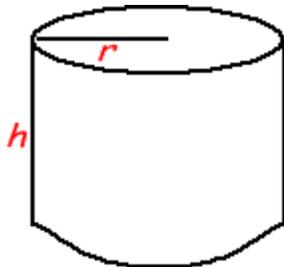
For example:

Depth Location	Depth Measurement (in feet)
Depth #1	.3
Depth #2	.5
Depth #3	.25
Depth #4	.75
Depth #5	.5
Average = Depth #1 + #2 + #3 + #4 + #5 Divided by the number of depth measurements (in this case 5)	Average depth = .46

Volume = **length X width X height**



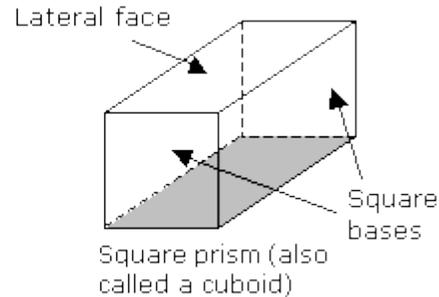
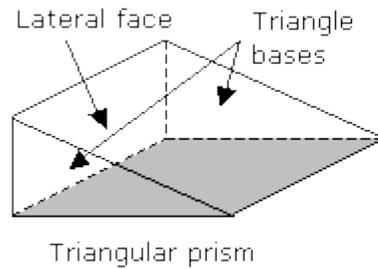
Volume of a circle = **diameter X diameter X .785 X depth**



Total spill volume in gallons = **volume in cubic feet X 7.48**

STANDARD OPERATING PROCEDURES

- ii. If the area where the spill is contained is in the curb and gutter, you determine the spill volume by using the following formula;
Volume = **length X width X average depth (obtained the same way as above) X 3.74**



Total spill gallons = **volume in cubic feet X 7.48**

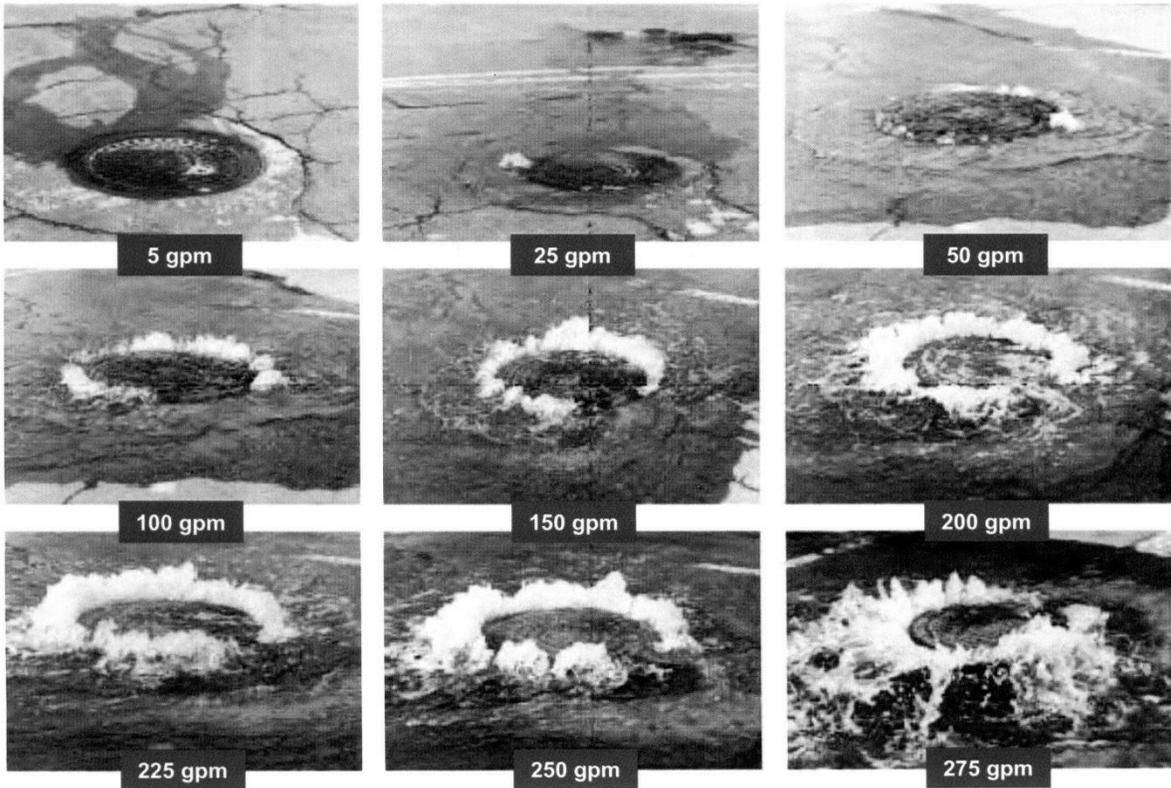
b. ESTIMATING SPILL VOLUME USING FLOW RATES

- i. Spill volumes can be calculated based on observed flow rates. By observing overflowing maintenance holes and comparing to known overflow reference charts, the first responder can establish an estimated Gallon per Minute (GPM) overflow rate. Once the overflow rate is established, the operator simply needs to estimate the length of time the overflow occurred.

STANDARD OPERATING PROCEDURES

Reference Sheet for Estimating Sewer Flow Rate From Overflowing Sewer Maintenance Holes

All estimates are calculated in gallons per minute (gpm)



All photos were taken during a demonstration using metered water from a hydrant in cooperation with the city of San Diego's Water Department

STANDARD OPERATING PROCEDURES

4. **FOURTH STEP – COMPLETE SSO REPORT FORMS**

Once the spill has been cleaned-up, the SSO event must be documented. Within the SSO Response Plan Packet, you will find several forms related to SSOs; including the OP2 Form, the Storm Drain SSO Response Form, and a Daily Maintenance Log. These forms need to be filled in as completely as possible.

STANDARD OPERATING PROCEDURES

a. OP2 Form

Use this area for multiple spill locations

Fill-in location information

Be sure to note if a spill that was not fully recovered went to retention basin

List only the "PRIMARY" cause of the stoppage

Complete as much information as possible. Most important items here are "Spill response activities" and completed date

City of Modesto		SSO/Spill Response Plan	OP-2
SSO Packet: Sanitary Sewer Overflow Report			Side A
This Report is (check one): <input type="checkbox"/> Preliminary <input type="checkbox"/> Final <input type="checkbox"/> Revised Final			
A. SPILL LOCATION			
Spill Location Name:			
Street Name and Number:		Street Direction (e.g., N, S, W, NE, SW, etc.):	
Nearest Cross Street		City:	
County: Stanislaus		Spill Location Description:	
Location 2: Street Name and Number:			
Location 3: Street Name and Number:			
Use separate sheet for more than three locations			
B. SPILL DESCRIPTION			
Spill Appearance Point: <input type="checkbox"/> Building/Structure <input type="checkbox"/> Force Main <input type="checkbox"/> Gravity Sewer <input type="checkbox"/> Other Sewer System Structure <input type="checkbox"/> Pump Station			
<input type="checkbox"/> Manhole- Structure ID#: <input type="checkbox"/> Other (specify):			
Did the spill reach a gravity storm drain? <input type="checkbox"/> Yes <input type="checkbox"/> No			
If the spill reached a gravity storm drain, was it fully captured and returned to the Sanitary Sewer? <input type="checkbox"/> Yes <input type="checkbox"/> No			
If spill was NOT fully captured and returned to sanitary sewer, does gravity storm drain discharge to a dedicated storm water or ground water infiltration basin (i.e. Rockwell or retention basin)? <input type="checkbox"/> Yes <input type="checkbox"/> No			
Was this spill from a private service lateral? <input type="checkbox"/> Yes <input type="checkbox"/> No If YES, name of responsible party:			
Final Spill Destination: <input type="checkbox"/> Beach <input type="checkbox"/> Building structure <input type="checkbox"/> Other paved surface <input type="checkbox"/> Storm drain <input type="checkbox"/> Street/curb& gutter			
<input type="checkbox"/> Surface water <input type="checkbox"/> Unpaved surface <input type="checkbox"/> Other (specify):			
Estimated spill volume (in gallons): Method calculated:			
Est. volume of SSO recovered (gal): Were photos taken? <input type="checkbox"/> No <input type="checkbox"/> Yes – how many?			
Estimated volume of spill reaching surface water, drainage channel, or not recovered from a storm drain (gal):			
Note: Notify Supervisor immediately if the spill reached a gravity storm drainage system			
C. SPILL OCCURRING TIME			
SSO Reported to (who received call):		SSO Reported by (who called):	
Phone:		Estimated spill start date and time:	
Date and time spill reported to sewer crew:		Date and time sewer crew arrived:	
Estimated spill end date and time:			
Weather conditions prior 72 hours: <input type="checkbox"/> Sunny Weather <input type="checkbox"/> Cloudy Weather <input type="checkbox"/> Measurable Rain <input type="checkbox"/> Rain for Several Days			
D. CAUSE OF SPILL – PLEASE CHECK "PRIMARY" CAUSE OF SSO			
SSO cause (check "Primary" cause): <input type="checkbox"/> Debris/Blockage <input type="checkbox"/> Flow exceeded capacity <input type="checkbox"/> Grease <input type="checkbox"/> Operator error <input type="checkbox"/> Roots			
<input type="checkbox"/> Pipe problem/failure <input type="checkbox"/> Pump station failure <input type="checkbox"/> Rainfall exceeded design <input type="checkbox"/> Vandalism <input type="checkbox"/> Inflow/infiltration			
<input type="checkbox"/> Animal carcass <input type="checkbox"/> Electrical power failure <input type="checkbox"/> Bypass <input type="checkbox"/> Debris from laterals <input type="checkbox"/> Construction Debris			
<input type="checkbox"/> Other (specify):			
If SSO is caused by a private service lateral, please specify: This is the <input type="checkbox"/> Owner <input type="checkbox"/> Tenant <input type="checkbox"/> Manager			
Property contact: Contact telephone:			
If SSO is caused by wet weather, choose size of storm: <input type="checkbox"/> 1-yr <input type="checkbox"/> 2-yr <input type="checkbox"/> 5-yr <input type="checkbox"/> 10-yr <input type="checkbox"/> 50-yr <input type="checkbox"/> 100-yr <input type="checkbox"/> >100-yr <input type="checkbox"/> Unknown			
Diameter (in inches) of pipe at point of blockage/spill cause (if applicable):			
Sewer pipe material at point of blockage/spill cause (if applicable):			
Description of terrain surrounding point of blockage/spill cause: <input type="checkbox"/> Flat <input type="checkbox"/> Mixed <input type="checkbox"/> Steep			
E. SPILL RESPONSE			
Spill response activities (check all that apply): <input type="checkbox"/> Cleaned up <input type="checkbox"/> Contained all/portion of spill <input type="checkbox"/> TV inspection <input type="checkbox"/> Restored flow			
<input type="checkbox"/> Returned all/portion of spill to sanitary sewer <input type="checkbox"/> Other (specify):			
Spill response completed (date & time):		Name of impacted waters (if applicable):	
Visual inspection result of impacted waters (if applicable):			
Any fish killed? <input type="checkbox"/> Yes <input type="checkbox"/> No		Any ongoing investigation? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Name of impacted beach (if applicable):		Were health warnings posted? <input type="checkbox"/> Yes <input type="checkbox"/> No	
Health warning/beach closure posting/details:			
Were samples of impacted waters collected? <input type="checkbox"/> Yes <input type="checkbox"/> No If YES, select the analyses: <input type="checkbox"/> DO <input type="checkbox"/> Ammonia <input type="checkbox"/> Bacti <input type="checkbox"/> Other			
Spill Volume Estimated by:		Report Completed by:	
		Report Verified by:	

STANDARD OPERATING PROCEDURES

b. STORM DRAIN SSO RESPONSE FORM

**CITY OF MODESTO
COLLECTIONS SYSTEM
STORM DRAIN S.S.O. RESPONSE FORM**

VEHICLE #	CREW : /	DATE :												
LOCATION / ADDRESS	SERVICE REQUEST NUMBER	MAP REFERENCE PAGE/GRID	TOTAL ROCKWELLS	CATCH BASINS CLEANED	ROCKWELLS CORED	MODESTO WELLS CLEANED	TURLOCK WELLS CLEANED	COUNTY / B-HOE WELLS CLEANED	SANITIZER APPLIED (see note)	LINE FOOTAGE	PICK-UP WATER	POSITIVE STORM	C.B. Debris 1=light/2=heavy	TIME :
1.														RECEIVED : AM/PM ARRIVED : AM/PM DEPARTED : AM/PM
ENVIRONMENTAL SERVICES COMPLIANCE OFFICER:		LOADS RECOVERED:												
		NARRATIVE REPORT OF WORK DONE:												
ESTIMATED OVERFLOW _____ GAL.		Amount of sewage recovered: _____ Gals.				Amount of rinse water recovered: _____ Gal.								
2.														RECEIVED : AM/PM ARRIVED : AM/PM DEPARTED : AM/PM
ENVIRONMENTAL SERVICES COMPLIANCE OFFICER:		LOADS RECOVERED												
		NARRATIVE REPORT OF WORK DONE:												
ESTIMATED OVERFLOW _____ GAL.		Amount of sewage recovered: _____ Gals.				Amount of rinse water recovered: _____ Gal.								

NOTE Sanitization of Porous Non-Food Contact Surfaces: Spray/FOG Method - After cleaning, sanitize non-food contact surfaces using a solution containing 200 ppm of available chlorine by thoroughly mixing 1 oz. of this with 5 gallons of water in a bucket. Only use spray or fog equipment which can resist sodium hypochlorite solutions. Thoroughly spray or fog all surfaces until wet, allowing excess sanitizer to drain or dry. Vacate area for at least two hours. Always empty and rinse the spray or fog equipment used with potable water.

c. DAILY MAINTENANCE LOG

Crews responding to SSOs will note the Stoppage by indicating the line segment of the stoppage and the "Primary" cause of the stoppage. On separate lines of the Daily Maintenance Log, crews will indicate the SSO clean-up by indicating the address of surface clean-up and/or indicating the storm maintenance hole numbers and storm line segments where clean-up activities were performed.

Crews responding during normal work hours, will indicate work performed on the same Daily Maintenance Log used for other maintenance activities. Crews responding after-hours will use the Daily Maintenance Log provided in the SSO Response Packet or if a Daily Maintenance Log was used on a previous call, then that Log should be continued on additional calls on the same day.