Sanitary Sewer Overflow (SSO) Incident Report Form

Submit completed form to EHS.

Date of SSO spill: ____________________ Identify the SSO category (check one):

☐ Category 1 SSO – Spills of any volume that reach surface water
☐ Category 2 SSO – Spills greater than or equal to 1,000 gallons that do not reach surface water
☐ Category 3 SSO – Spills less than 1,000 gallons that do not reach surface water

Name (person completing this form): ____________________________ Phone: __________________

Exact spill location: __________________________________________

Latitude: ___________________________ Longitude: ___________________________

Spill location description: ________________________________________

Date/time spill was first discovered or reported to Facilities Management:

Date: ______________________ Time: ______ am/pm

Estimated spill start date/time: Date: _______________ Time: ______ am/pm

Estimated first responder arrival date/time: Date: _______________ Time: ______ am/pm

Estimated spill end date/time: Date: _______________ Time: ______ am/pm

Final spill destination (Check all that apply):

☐ Building/Structure ☐ Street Curb/Gutter ☐ Paved Surface ☐ Unpaved Surface
☐ Storm Drain ☐ Surface Water ☐ Drainage Channel
☐ Storm Water Infiltration/Retention Structure/Field ☐ Other (specify): ___________________________

Number of spill appearance points: ___________

Spill appearance point (Check all that apply. See page 3 complete list):

☐ Gravity Mainline ☐ Inside Building or Structure ☐ Manhole
☐ Other Sewer System Structure (specify): ___________________________

Spill cause (Check all that apply. See page 3 complete list of options):

☐ Debris - General ☐ Debris – Rags ☐ Root Intrusion ☐ Debris from Construction
☐ Construction Diversion Failure ☐ Collection System Maintenance Caused Spill/Damage
☐ Damage by Others Not Related to Collection System ☐ Other (specify) ___________________________

Where did failure occur? (Check all that apply. See page 3 complete list of options):

☐ Gravity Mainline ☐ Manhole ☐ Inside Building or Structure ☐ Other (specify): ___________________________

Was this spill associated with a storm event? ☐ Yes ☐ No

Diameter of sewer pipe at the point of blockage or failure: ________ inches

Material of sewer pipe at the point of blockage or failure: ___________________________

Estimated age of sewer asset at the point of blockage or failure: ________ years
### Spill Volume Estimation

<table>
<thead>
<tr>
<th>Did spill discharge to land? (Includes discharges directly to land and discharges to a storm drain system or drainage channel that flows to a storm water infiltration/retention structure, field, or other non-surface water location)</th>
<th>If Yes, estimated spill volume discharged to land:</th>
<th>gallons</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimated spill volume recovered from discharge to land: (Do not include water used for clean-up)</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Total discharge to land:</td>
<td>=</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Did spill reach storm drain?</th>
<th>If Yes, estimated spill volume that reached storm drain:</th>
<th>gallons</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimated spill volume recovered from storm drain:</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Total discharge to storm drain:</td>
<td>=</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Did spill reach drainage channel?</th>
<th>If Yes, estimated spill volume that reached discharge channel:</th>
<th>gallons</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimated spill volume recovered from drainage channel:</td>
<td>-</td>
</tr>
<tr>
<td></td>
<td>Total discharge to drainage channel:</td>
<td>=</td>
</tr>
</tbody>
</table>

**Total SSO Discharge** = **gallons**

Methods used to estimate spill volumes *(Check all that apply. Use attached Volume Estimation Forms to document spill dimensions, shapes and other volume estimation information)*:

- [ ] Eyeball Method
- [ ] Calculations from Spill Dimensions
- [ ] Duration and Flow Rate
- [ ] Open Channel Spill Estimation
- [ ] Drop Bucket Method
- [ ] Calculations Based on Pipe Size
- [ ] Flow from Vent or Pick Holes
- [ ] Flow around Manhole Cover
- [ ] Flow from Manhole w/o a Cover

Spill response activities *(Check all that apply)*:

- [ ] Cleaned-up
- [ ] Contained All or Portion of Spill
- [ ] Mitigated Effects of Spill
- [ ] Restored Flow
- [ ] Returned All of Spill to Sanitary Sewer System
- [ ] Other Enforcement Agency Notified
- [ ] Other (specify): ____________________________

Spill response completion date: ________________

Spill corrective action taken *(Check all that apply. See page 3 complete list of options)*:

- [ ] Added Sewer to Preventive Maintenance Program
- [ ] Adjusted Schedule/Method of Preventive Maintenance
- [ ] Inspected Sewer Using CCTV to Determine Cause
- [ ] Plan Rehabilitation or Replacement of Sewer
- [ ] Repaired Facilities or Replaced Defect
- [ ] Other (specify): ____________________________

Cal OES notification information *(required for Category 1 SSOs over 1,000 gallons)*:

Control Number: ____________________________ Date: ________________ Time: ________________ am/pm
CIWQS SSO Online Database Dropdown Lists:

**Spill Appearance Point**
- Force Main
- Gravity Mainline
- Inside Building or Structure
- Lateral Clean-Out
- Lower Lateral
- Manhole
- Other Sewer System Structure
- Pump Station
- Upper Lateral

**Spill Cause**
- Air relief valve (ARV) Failure
- Blow-off Valve (BOV) Failure
- Construction Diversion Failure
- CS Maintenance Caused Spill/ Damage
- Damage by Others Not Related to CS Construction/ Maintenance (specify type below)
- Debris from Construction
- Debris from Lateral
- Debris-General
- Debris- Rags
- Flow Exceeded Capacity (Separate CS only)
- Grease Deposition (FOG)
- Inappropriate Discharge to CS
- Natural Disaster
- Non-Dispersible Operator Error
- Other (specify)
- Pipe Structural Problem/ Failure Installation
- Pump Station Failure- Controls
- Pump Station Failure- Mechanical
- Pump station Failure- Lower
- Rainfall Exceeded Design, Inflow and Infiltration (Separate CS Only)
- Root Intrusion
- Siphon Failure
- Surcharged Pipe (Combined CS Only)
- Vandalism

**Where Did Failure Occur**
- Air Relief Valve (ARV)
- Blow- off Valve (BOV)
- Force Main
- Gravity Mainline
- Lower Lateral (Public)
- Manhole
- Other (specify below)
- Pump Station- Controls
- Pump Station- Mechanical
- Pump Station- Power
- Siphon
- Upper Lateral (public)

**Spill Response Activities**
- Cleaned-Up
- Mitigated Effects of Spill
- Contained All or Portion of Spill
- Other (specify below)
- Restored Flow
- Returned All of Spill to Sanitary Sewer System
- Property Owner Notified
- Other Enforcement Agency Notified

**Spill Corrective Action Taken**
- Added Sewer to Preventative Maintenance Program
- Adjusted Schedule/ Method of Preventative Maintenance
- Enforcement Action Against FOG Source
- Inspected Sewer Using CCTV to Determine Cause
- Other (specify below)
- Plan Rehabilitation or Replacement of Sewer Repaired Facilities or Replaced Defect
**Method 1: Eyeball Estimate**

- Imagine amount of water that would spill from a 1-gallon jug, 5-gallon bucket or 50-gallon barrel
- Method can be used to estimate the volume of spills on asphalt, concrete, sloped surfaces, and flat surfaces
- Only useful for spills up to 200 gal

One gallon spill on a sloped surface
(with a point of reference)  
Two gallon vs. one gallon spill on a slope
(Two gallons left, one gallon right).

Two gallon spill on a very slight slope  
Five gallon spill-forty feet in length.
Method 1: Eyeball Method Volume Measurement Worksheet

Manhole/ Pipe Number: __________________
Date: __________________

Name of Estimator: __________________ Telephone: __________________

Exact Location of Spill (address): ________________________________________________
Exact Latitude: __________________________ Exact Longitude: __________________________

Picture taken? YES NO

Dimensions of spill (in ft. or paces): Length ________ Width ________ Depth ________

Shape of spill: RECTANGLE TRIANGLE CIRCLE

Estimated spill volume: ________ gal

One gallon on sloped surface Two gallon spill on sloped surface Five gallon spill on sloped surface

Estimated volume of spill recovered: ________ gal

Please sketch spill with dimensions:

Was a reference image used? YES NO

Additional Notes and Documentation (please describe how the spill volume was calculated/measured):__________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
________________________________________________________________________
Method 2: Duration and Flow Rate

If area/ depth are impossible to measure, use duration and flow rate estimate

**Duration**: time elapsed from start to end of SSO

- To estimate **start time**, use one of the following methods:
  1. Compare hourly data on a downstream flow meter to find changes in flow.
  2. Local residents can be used to establish start time. Observations like odors or sounds (e.g. water running in a normally dry creek bed) can be used to estimate the start time.
  3. Observe conditions at the SSO site. Initially there will be limited deposits of sewage solids and toilet paper. After a few days to a week, the quantity of toilet paper and other materials of sewage origin increase in amount. These changes with time can be used to estimate the start time in the absence of other information. Taking photographs to document the observations can be helpful if questions arise later in the process.

- To estimate **end time**, field crews observe and record time of the “blow down” that occurs when blockage is removed or observe “blow down” on flow meters.

**Flow Rate**: The flow rate is the average flow that left the sewer system during the time of the spill. There are three common ways to estimate the flow rate.

1. Use data from **flow meter** to estimate flow rate for the spill (better for large SSOs). Changes in flows in downstream flow meters can be used to estimate the flow rate during the spill
2. Estimate based on **up-stream connections**. Once the location of the SSO is known, the number of upstream connections can be determined from system maps. Multiply the number of connections by average hourly or daily water use per connection.
3. Refer to the **Flow Rate Charts for Estimating Sewer Spills** to estimate flow rate based on images of sewage flowing from manholes at varying flow rates.

**Volume of SSO** is the product of the duration (in hours or days) x flow rate (in gallons per hour or gallons per day). (ft³ = 7.48 gal)
Method 2: Spill Volume Estimation Based on Duration and Flow Rate

Manhole/ Pipe Number: _______________
Date: ______________________________

Name of Estimator: ________________ Telephone: ______________________________

Exact Location of Spill (address): _____________________________________________
Exact Latitude: ____________________ Exact Longitude: _________________________

Estimated spill start date/time: __________ (MM/DD/YY) ________ (HR:MIN)
Estimated spill end date/time: __________ (MM/DD/YY) ________ (HR:MIN)
Spill duration: ____ min
Flow rate: ____________ gal/min

How was flow rate determined? Flow Meter Upstream Connections Reference Sheet

Estimated spill volume (duration x flow rate): ________________ gal
Estimated volume of spill recovered: ________________ gal

Picture taken? YES NO

Dimensions of spill (in ft. or paces): Length ________ Width ________ Depth ________
Shape of spill: RECTANGLE TRIANGLE CIRCLE

Please Sketch Spill with Dimensions:

Additional Notes and Documentation (please describe how the spill volume was calculated/measured. Please show calculations.):

_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
_________________________________________________________________________
Method 3: Estimating Volume Based on Spill Dimensions

If not raining, the shape, dimensions, and depth of spill may be used to estimate volume

1. Sketch shape of spill
2. Measure/pace off dimensions
3. Measure depth in several locations; take average
4. Convert all dimensions to feet
5. Calculate area of spill based on approximate shape:
   - Rectangle: Area = length x width
   - Circle: Area = diameter x diameter x 0.785
   - Triangle: Area = base x height x 0.5
6. Multiply area x depth to get volume
7. Multiply volume x 7.5 to convert into gallons

- Using a spill footprint to get surface area and sample sketch

- Calculate average depth to get a depth measurement
Method 3: Spill Volume Estimation Worksheet Based on Spill Dimensions

Manhole/ Pipe Number: ________________
Date: ________________________________

Name of Estimator: ____________________ Telephone: ________________________________

Exact Location of Spill (address): ________________________________________________
Exact Latitude: ____________________ Exact Longitude: ________________________________

Picture taken? YES NO
Shape of spill: RECTANGLE TRIANGLE CIRCLE

Please sketch spill in zones with dimensions:

<table>
<thead>
<tr>
<th>Area #</th>
<th>% Wet</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
</tr>
</tbody>
</table>

Please Calculate Average Depth:

Estimated Spill Surface Area ________________ square feet
Number of Depth Measurements Used ____________ Average Depth _______ inches
Estimated Spill Volume: ________________ gal
Estimated volume of spill recovered: ____________ gal

Additional Notes and Documentation (please describe how the spill volume was calculated/measured. Please show calculations.):

___________________________________________________________________________
___________________________________________________________________________
Method 4: Open Channel Spill Estimation

- For ditches, channels, gutters, etc.

1. Measure the cross sectional dimensions (to determine the area) of the channel and determine the velocity of the flow.
2. Velocity can be measured by dropping a floating object into the flow and timing the object over a measured distance.
3. Flow (Q), ft³/sec = Velocity (V), ft/sec X Area (A), ft²
4. Flow times duration equals amount of spill
5. Multiply by 7.48 (number of gallons in one cubic foot) to convert to gallons
Method 4: Spill Volume Estimation Based on Open Channel Spills

Manhole/ Pipe Number: ________________
Date: ________________________________

Name of Estimator: ____________________ Telephone: ________________________________

Exact Location of Spill (address): ________________________________________________
Exact Latitude: ____________________ Exact Longitude: ________________________________

Estimated spill start date/time: __________ (MM/DD/YY) ________ (HR:MIN)
Estimated spill end date/time: __________ (MM/DD/YY) ________ (HR:MIN)
Spill duration: _____ min Velocity: __________ ft./min

Cross Sectional Area of Ditch, Channel, or Gutter:
Depth: __________ ft. Width: _______ ft. Area: __________ ft2
Flow rate (velocity x Area): __________ ft3/min

Estimated spill volume (duration x flow rate x 7.48): ____________ gal
Estimated volume of spill recovered: ______________ gal

Picture taken? YES NO
Dimensions of spill (in ft. or paces): Length __________ Width _______ Depth __________
Shape of spill: RECTANGLE TRIANGLE CIRCLE

Please Sketch Spill with Dimensions:

Additional Notes and Documentation (please describe how the spill volume was calculated/measured. Please show calculations.):