2.6.7 Attachments

2.6.7.1 Sample Field Report

REPORTED BY

Call Address:
On Service Request _____ (SR #_____)

Caller Name: _____ Phone: _____ _____

Receipt of Call: Date: _____/_____/_____ Time: _____:_____ ☐ AM ☐ PM Call Received By: _____

Call Dispatch: _____/_____/_____ Time:_____:_____ ☐ AM ☐ PM Assigned To: _____

USD Arrival Time: Date: _____/_____/_____ Time:_____:_____ ☐ AM ☐ PM

SPILL START TIME NOTES

Caller Interview: Where did you see sewage spill from? From: Manhole ☐ Inside Building ☐ C/O ☐

☐ Wet well/Lift station ☐ Other_____

Time Caller noticed spill: _____:_____ ☐ AM ☐ PM Date: _____/_____/_____

Comments:

_____

_____

Last time Caller observed NO Spill occurring: _____:_____ ☐ AM ☐ PM Date: _____/_____/_____

Comments:

_____

_____

_____

_____

SSO End Time _____:_____ ☐ AM ☐ PM Date: _____/_____/_____

Other Comments regarding spill start time:

_____

_____

_____

_____ 

SPILL LOCATION

Observed: Spill from: ☐ Manhole ID_____ ☐ Lift Station ID _____

☐ Clean Out Address

_____

Comments:

_____

☐ Building Address

_____

Comments:

_____

Spill Destination: ☐Building ☐ Paved Surface ☐ Storm Sys ☐ Curb/Gutter ☐ Unpaved ☐ Surface

Answer these questions:

#1 – Was there a discharge to surface water or a drainage channel that is tributary to surface water? _____ Yes _____ No

#2 - Was there a discharge to a storm drain pipe that was "NOT" fully captured & returned to the sanitary sewer system? _____ Yes _____No

Water

If you answered no to both questions above, was it ≥ 1,000 gallons? _____ Yes _____ No

If yes, the SSO is a Category 2. If NO, the SSO is a Category 3.

SPILL VOLUME WORKSHEET

The purpose of this worksheet is to capture the data and method(s) used in estimating the volume of an SSO. Since there are many variables and often unknown values involved, this calculation is just an estimate. Additionally, it is useful to use more than one method, if possible, to validate your estimate.

The following methods and tools are the approved methods in the SOP CS-103 *SSO Response*. Check all methods and tools that you used:

- ☐ Eyeball Estimate Method
- ☐ Measured Volume Method
- ☐ Duration and Flow Rate Method (Account for diurnal flow pattern for long duration)
- ☐ USD SSO Flow Rate Estimating Tool
- ☐ Other (explain) i.e.; estimated daily use per capita upstream or meter @ Pump Station.

_____

_____

_____

<u>Eyeball Estimate Method</u>- Imagine a bucket(s) or barrel(s) of water tipped over.

Size of bucket(s) or barrel(s)	How many of this Size?	Multiplier	Total Volume Estimated
1 gal. water jug		X 1	
5 gal. bucket		X 5	
32 gal. trash can		X 32	
55 gal drum		X 55	
Total Volume Estimated Using Eyeball Method			

Measured Volume Method (this may take several calculation as may have to break down the odd shaped spill to rectangles, circles, and polygons) It is important when guessing depth to measure, if possible in several locations and use an average depth. Use the SSO Volume Estimate by Area Work Sheet , if necessary, to sketch the shapes and show your work.

1. Draw a sketch of the spill SSO Volume Estimate by Area Work Sheet, or use a photo copy of USD block book to draw on and attach it.
2. Draw shapes and dimensions used on your sketch
3. Use correct formula for various shapes

Rectangle	L x W x D
Circle	3.14 x R^2 x D
Polygons see reference chart	Show formula used

Duration and Flow Rate Method worksheet:

Start Date and Time	1.
End Date and time	2.
Total time elapsed of SSO event (subtract line 1 from line 2. Show time in minutes)	3.
Average flow rate GPM (account for diurnal pattern)	4.
Total volume estimate using duration and flow rate method (Line 3 x Line 4)	5.

CAUSE OF SPILL

Spill Cause: ☐ Roots ☐ Grease ☐Debris ☐Vandalism ☐ Lift Station Fail ☐ Other _____

☐ Spill cause to be determined by CCTV inspection (Attach TV Report to this form)

Final Cause Determination:

_____

_____

_____

Follow-up or Corrective Action Taken:

_____

_____

_____

_____

_____

SPILL CONTAINMENT

Containment Implemented:_____:_____ ☐ AM ☐ PM Date: _____/__  __

Containment Measures: ☐ Plugged Storm Drain ☐ Washed Down ☐ Vacuum Up Water/Sewage

☐ Other Measures: _____

_____

_____

_____

_____

_____

CLEAN UP

Clean Up Begin: _____:_____ ☐ AM ☐ PM Date: _____/_____/_____

Clean Up Complete: _____:_____ ☐ AM ☐ PM Date: _____/_____/_____

Describe Clean Up Operations:

_____

_____

_____

_____Gallons – Estimate Volume of Spill Recovered (do not count wash down water)

OTHER IMPORTANT MILESTONES

Contacted Supervisor: _____:_____ ☐ AM ☐ PM Date: _____/_____/_____

Requested Additional EE's/Equip:_____:_____ ☐ AM ☐ PM Date: _____/_____/_____

Requested Additional EE's/Equip:_____:_____ ☐ AM ☐ PM Date: _____/_____/_____

Requested Additional EE's/Equip:_____:_____ ☐ AM ☐ PM Date: _____/_____/_____

Departure Time: _____:_____ ☐ AM ☐ PM Date: _____/_____/_____

_____ _____:_____ ☐ AM ☐ PM Date: _____/_____/_____

_____ _____:_____ ☐ AM ☐ PM Date: _____/_____/_____

_____ _____:_____ ☐ AM ☐ PM Date: _____/_____/_____

REPORTING

Report to Cal-EMA: Date:_____ ___:___ ☐ AM ☐ PM (Cat.1 Only) **(800) 852-7550** By: _____

→ Control Number provided by Cal-OES: _____

→ Name of Person Contacted: _____ or Left Message: ☐

Report to _____ Date:_____ ____:_____ ☐ AM ☐ PM Phone: **668-4200** By: _____

→ Name of Person Contacted: _____ or Left Message: ☐

Notes: _____

Response Crew: _____, _____, _____

_____, _____, _____

2.6.7.2 SSO Volume by Area Estimation Work Sheet

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 _____

SSO Volume by Area Estimation Work Sheet

Area #6_____ % Wet _____

☐ Stain. Depth1_____ Depth2 _____ Depth3 _____ Depth4 _____ Depth5 _____ Depth6 _____

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.**

CONVERSIONS

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

Example: 27" / 12 = 2.25'

Or Use Chart A

Example: 1 ¾" = ?

1" (0.08') + ¾" (0.06') = 0.14'

** One Cubic Foot = 7.48 gallons of liquid.

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'

GEOMETRY

For the purposes of this work sheet, 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 by SPUD staff. 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

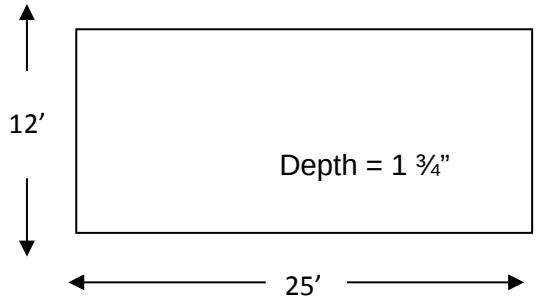
Area is two dimensional and is represented as Square Feet (Sq. Ft.)

Volume is three dimensional and is represented as Cubic Feet (Cu. Ft.)

One Cubic Foot = 7.48 gallons

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 feet = 314 Gallons

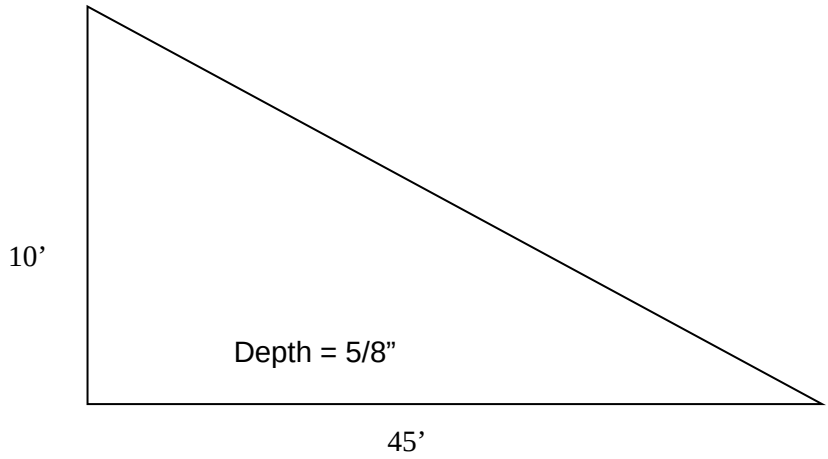
Chart A

Conversion:

Inches		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'

AREA/VOLUME OF A RIGHT TRIANGLE

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



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.

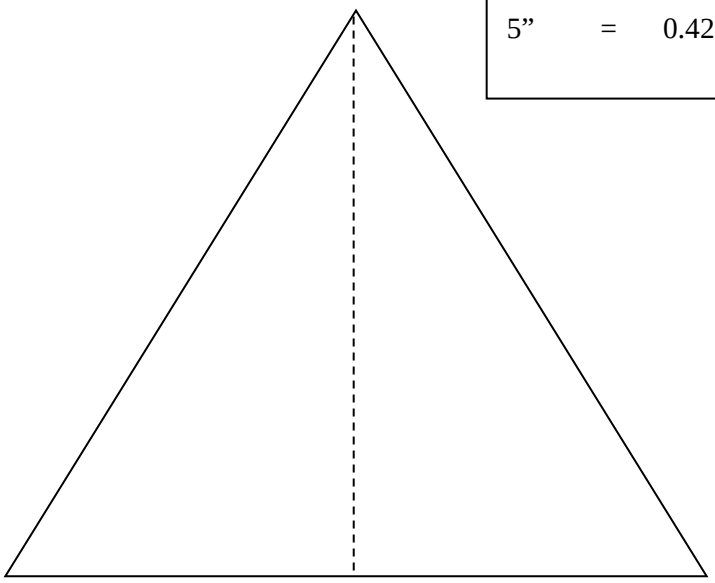


Chart A

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’

AREA/VOLUME OF A CIRCLE/CYLINDER

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’

$D^2 \times 0.785 \times d$

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

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

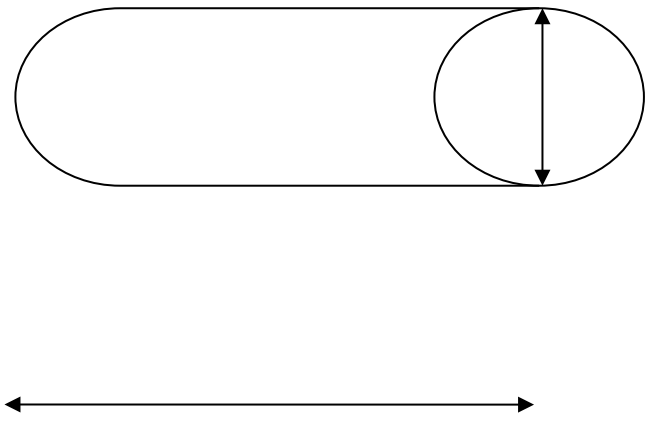
For our purposes, it is the measurement across the widest part of a circle.

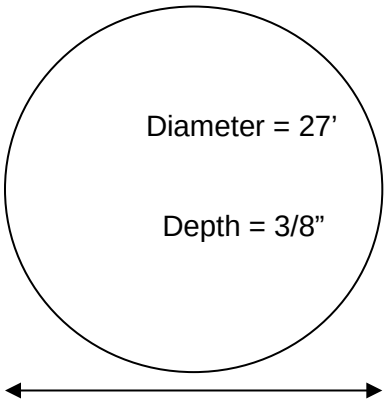
D2 x 0.785 x depth = Volume in cubic feet

Example:

27’ x 27’ x 0.785 x 0.03 = 17.17 cubic feet

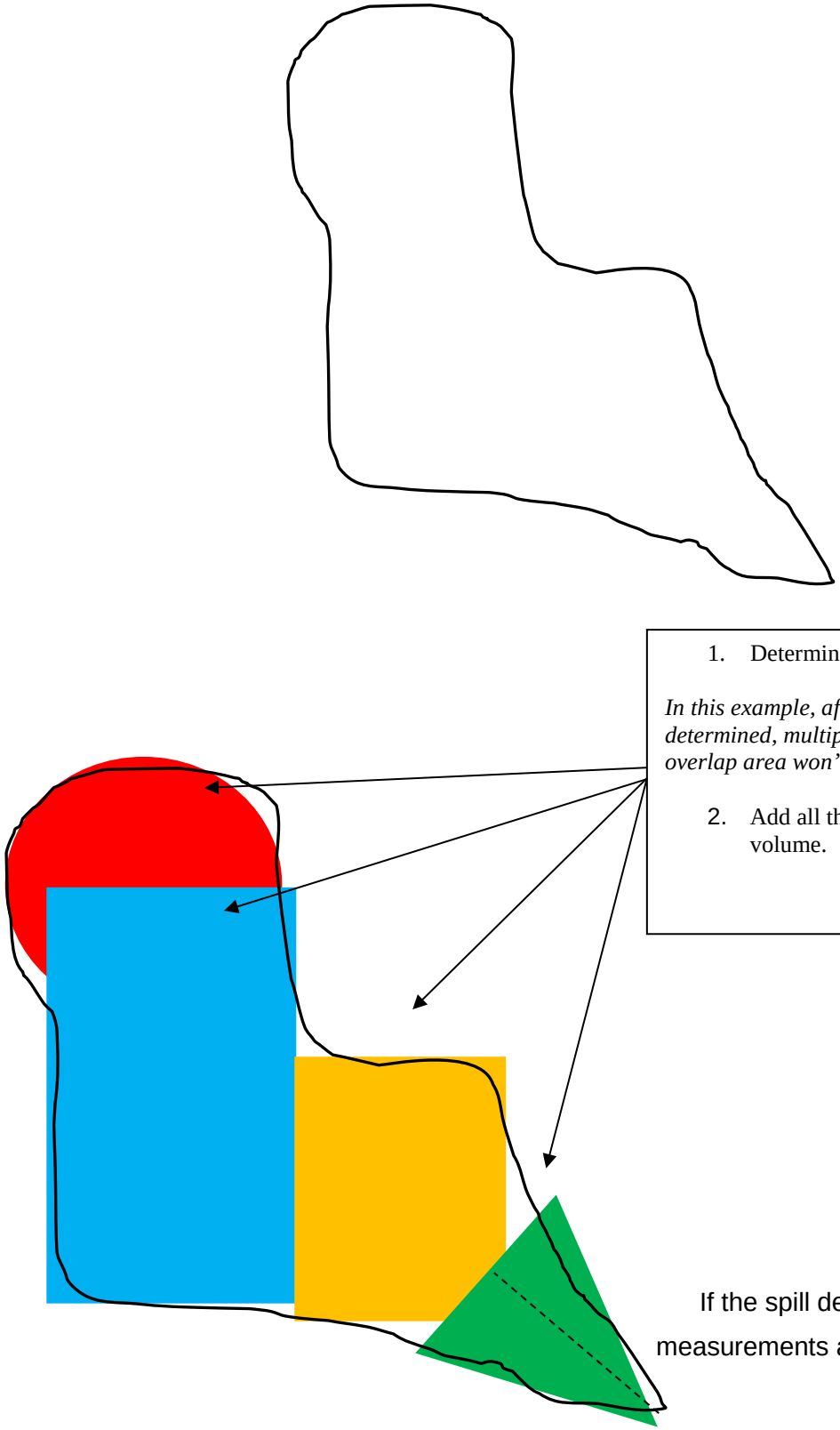
17.17 cubic feet x 7.48 gallons/cubic feet = 128 gallons





SSO Volume by Area Estimation Work Sheet

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.

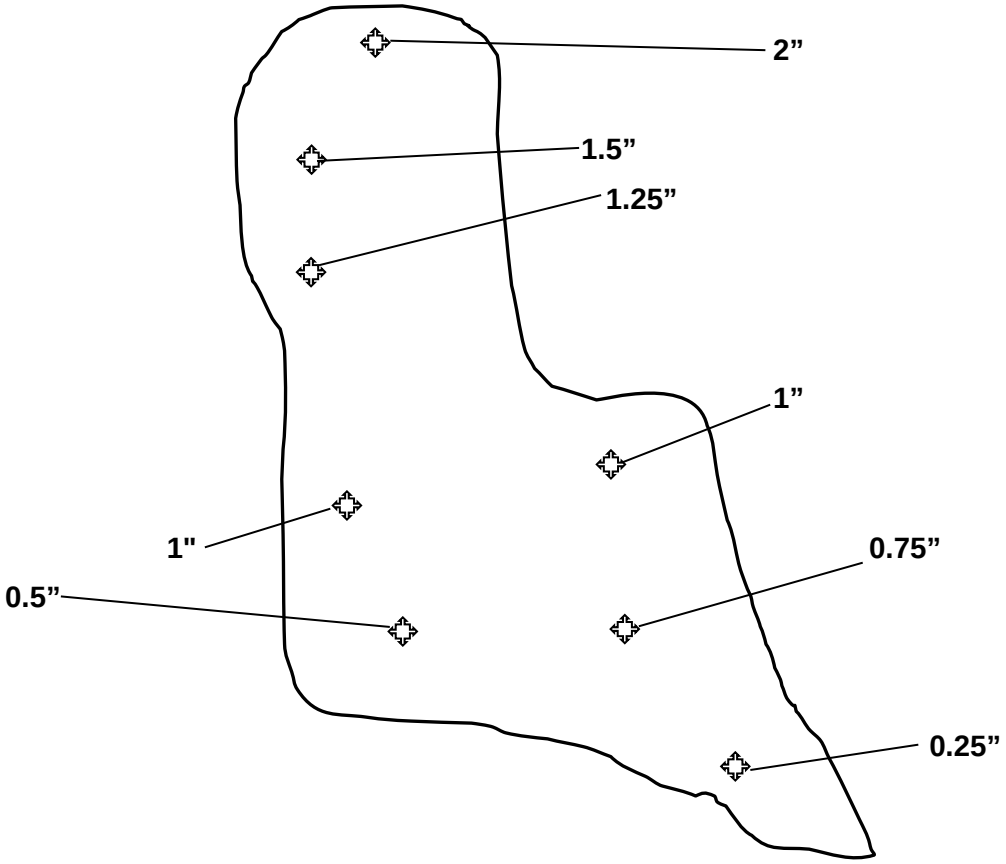


1. Determine the volumes of each shape.

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.

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 measurements = 1.03”

Average Depth = 1.03”

SSO Volume by Area Estimation Work Sheet

Step 1

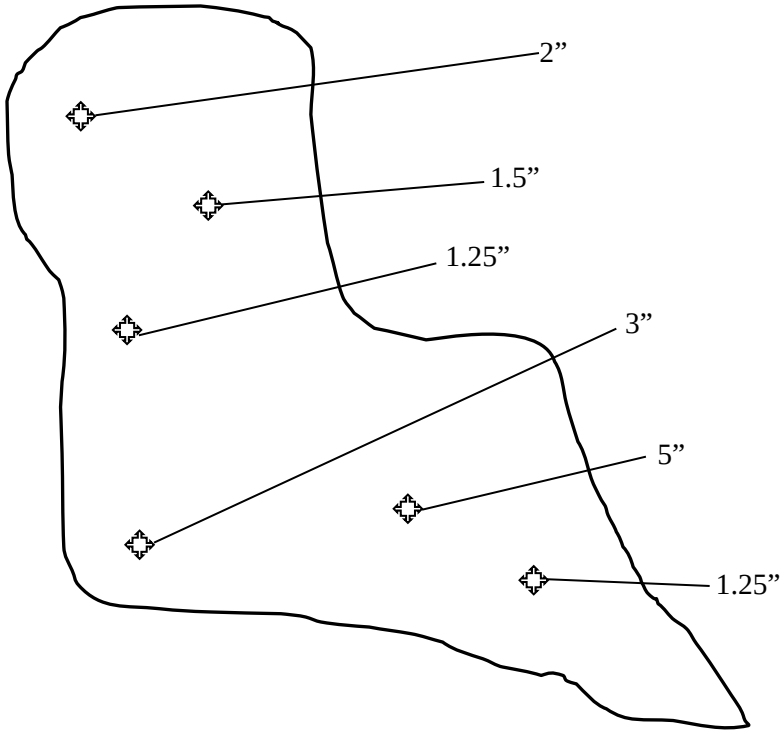
If the spill affects a dry, unimproved area such as a field or dirt parking lot, determine the Area of the wetted ground in the same manner as you would on a hard surface. Using a round-point shovel, dig down into the soil until you find dry soil. Do this in several locations within the wetted area and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



2” + 1.5” + 1.25” + 3” + 5” + 1.25” = 14.0”

14.0” / 6 measurements = 2.33”

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 Sq/Ft x 0.194’ = 24.83 Cu/Ft

24.83 Cu/Ft x 7.48 Gals/Cu/Ft = 185.74 gallons

185.74 x 18% = 33 Gallons (water in soil)