****** LIQUID SPILLS - VOLUME CALCULATIONS ******

Location of spill: COG Marauder Federal #001H   **Date of Spill:** 6-Jul-2019

If the leak/spill is associated with production equipment, i.e. - wellhead, stuffing box, flowline, tank battery, production vessel, transfer pump, or storage tank **place an "X" here:** X

Input Data:

If spill volumes from measurement, i.e. metering, tank volumes, etc. are known enter the volumes here:

	OIL:	WATER:
	0.0 BBL	0.0 BBL

If "known" spill volumes are given, input data for the following "Area Calculations" is optional. The above will override the calculated volumes.

Total Area Calculations

Total Surface Area	width	length		wet soil depth	oil (%)
Rectangle Area #1	30 ft	68 ft	X	0.75 in	1%
Rectangle Area #2	0 ft X	0 ft	X	0 in	0%
Rectangle Area #3	0 ft X	0 ft	X	0 in	0%
Rectangle Area #4	0 ft X	0 ft	X	0 in	0%
Rectangle Area #5	0 ft X	0 ft	X	0 in	0%
Rectangle Area #6	0 ft X	0 ft	X	0 in	0%
Rectangle Area #7	0 ft X	0 ft	X	0 in	0%
Rectangle Area #8	0 ft X	0 ft	X	0 in	0%

Standing Liquid Calculations

Standing Liquid Area	width	length	liquid depth	oil (%)
Rectangle Area #1	0 ft X	0 ft X	0 in	0%
Rectangle Area #2	0 ft X	0 ft X	0 in	0%
Rectangle Area #3	0 ft X	0 ft X	0 in	0%
Rectangle Area #4	0 ft X	0 ft X	0 in	0%
Rectangle Area #5	0 ft X	0 ft X	0 in	0%
Rectangle Area #6	0 ft X	0 ft X	0 in	0%
Rectangle Area #7	0 ft X	0 ft X	0 in	0%
Rectangle Area #8	0 ft X	0 ft X	0 in	0%

okay

production system leak - DAILY PRODUCTION DATA REQUIRED

Average Daily Production: Oil 0 BBL   Water 0 BBL   0 Gas (MCFD)

Did leak occur before the separator?: [ ]YES   [ ]N/A   *(place an "X")*

Amount of Free Liquid Recovered: 0 BBL   okay

Liquid holding factor *: 0.14 gal per gal

Total Hydrocarbon Content in gas: 0% (percentage)
H2S Content in Produced Gas: 0 PPM
H2S Content in Tank Vapors: 0 PPM

Percentage of Oil in Free Liquid Recovered: 0% (percentage)

Use the following when the spill wets the grains of the soil.
* Sand = **0.08** gallon (gal.) liquid per gal. volume of soil.
* Gravelly (caliche) loam = **0.14** gal. liquid per gal. volume of soil.
* Sandy clay loam soil = **0.14** gal liquid per gal. volume of soil.
* Clay loam = **0.16** gal. liquid per gal. volume of soil.

Use the following when the liquid completely fills the pore space of the soil:
Occurs when the spill soaked soil is contained by barriers, natural (or not).
* Clay loam = **0.20** gal. liquid per gal. volume of soil.
* Gravelly (caliche) loam = **0.25** gal. liquid per gal. volume of soil.
* Sandy loam = **0.5** gal. liquid per gal. volume of soil.

Total Solid/Liquid Volume: 2,040 sq. ft.   126 cu. ft.   1 cu. ft.
Total Free Liquid Volume: sq. ft.   cu. ft.   cu. ft.

Estimated Volumes Spilled

	H2O	OIL
Liquid in Soil:	3.1 BBL	0.0 BBL
Free Liquid:	0.0 BBL	0.0 BBL
Totals:	3.1 BBL	0.0 BBL

Total Liquid Spill Liquid: 3.1 BBL   0.03 BBL

Estimated Production Volumes Lost

	H2O	OIL
Estimated Production Spilled:	0.0 BBL	0.0 BBL

Estimated Surface Damage
Surface Area: 2,040 sq. ft.
Surface Area: .0468 acre

Recovered Volumes

Estimated oil recovered: BBL   check - okay
Estimated water recovered: BBL   check - okay

Estimated Weights, and Volumes

Saturated Soil = 14,280 lbs   128 cu. ft.   5 cu. yds.
Total Liquid = 3 BBL   134 gallon   1,111 lbs

Air Emission from flowline leaks:

Volume of oil spill:	-	BBL
Separator gas calculated:	-	MCF
Separator gas released:	-	MCF
Gas released from oil:	-	lb
H2S released:	-	lb
Total HC gas released:	-	lb
Total HC gas released:	-	MCF

Air Emission of Reporting Requirements:

	New Mexico	Texas
HC gas release reportable?	NO	NO
H2S release reportable?	NO	NO