

Container Storage Warehouse Section Bay 1 (consisting of areas DW-1, DW-2, DW-3, DW-4, DW-5 and DW-6)

a. Overall interior floor area: 1,836 SF

$$54 \text{ Ft.} \times 34 \text{ Ft.} = 1836 \text{ SF}$$

b. Incompatible storage room dimensions floor area: 132 SF

$$12 \text{ Ft.} \times 11 \text{ Ft.} = 132 \text{ SF}$$

c. Trench and sump dimensions floor area: 53 SF

Trench dimensions: 6" wide 94 Linear Ft. length (2" deep)

Sump dimensions: 12" x 12" (10" deep)

Note: there are 6 sumps within the Bay 1 area

$$\text{Trench area: } 94\text{Ft.} \times 6/12 \text{ Ft.} = 47 \text{ SF}$$

$$\text{Sump area: } 1 \times 1 \times 6 = 6 \text{ SF}$$

$$\text{Total Trench \& Sump area; } 47 \text{ SF} + 6 \text{ SF} = 53 \text{ SF}$$

d. Curb dividers area: 12 SF

There are two curb dividers within area: 12 Ft. x 6" wide

$$2 (12 \text{ Ft.} \times 6/12 \text{ Ft.}) = 12 \text{ SF}$$

e. Area available (contained storage): 1639 SF

$$e = a - (b + c + d)$$

$$e = 1836 - (132 + 53 + 12)$$

$$e = 1639 \text{ SF}$$

f. Number of drums¹:

PCB: 144 (55gal. drums on two levels)

72 (55gal. drums on floor level)

RCRA: 240 (55gal. drums on two levels)

120 (55gal. drums on floor level)

g. Number of pallets on floor level: 48 (4"high)

$$72 \text{ drums} + 120 \text{ drums} = 192 \text{ drums}$$

$$192 \text{ drums} / 4 \text{ drums per pallet} = 48 \text{ pallets}$$

¹ -For ease of calculation, anticipating worst case, area is described in drum equivalents.

h. Floor area occupied by drums 553 SF

$$\text{Area} = \pi R^2$$

$$\text{Drum area: } 3.14 \times (11.5 \text{ Ft.} / 12 \text{ Ft.})^2 = 2.88 \text{ SF/drum}$$

$$192 \text{ drums} \times 2.88 \text{ SF} = 553 \text{ SF}$$

i. Containment curb height: 6 inches

j. Volume occupied by pallets: 16 CF or 120 gal.

$$48 \text{ pallets} \times 0.33 \text{ CF/pallet} = 16 \text{ CF or } 120 \text{ gal.}$$

k. Volume occupied by 192 drums: 92 CF or 699 gal.

Height considered = containment curb height – pallet height

$$\text{Height considered} = 6'' - 4'' = 2'' \text{ drum in liquid}$$

$$553 \text{ SF} \times 2/12 \text{ Ft.} = 92 \text{ CF}$$

l. Net containment volume available: 725 CF or 5,423 gallons

Gross volume = contained storage area SF x containment curb height

$$\text{Gross volume} = 1,639 \text{ SF} \times 6/12 \text{ Ft.} = 820 \text{ CF or } 6,134 \text{ gallons}$$

$$\text{Less: Volume of Pallets: } 16 \text{ CF}$$

$$\text{Volume of drums in liquid: } 92 \text{ CF}$$

$$\text{Add: Volume of trenches: } 8 \text{ CF or } 60 \text{ gallons}$$

$$47 \text{ SF} \times 2/12 \text{ Ft.} = 8 \text{ CF}$$

$$\text{Volume of sumps: } 5 \text{ CF or } 37 \text{ gallons}$$

$$6 \text{ SF} \times 10/12 = 5 \text{ CF}$$

$$\text{Net volume available} = V \text{ Gross} - (V \text{ pallets} + V \text{ drums}) + (V \text{ trench} + V \text{ drums})$$

$$820 \text{ CF} - (16 \text{ CF} + 92 \text{ CF}) + (8 \text{ CF} + 5 \text{ CF}) = 725 \text{ CF or } 5,423 \text{ gallons}$$

$$\text{Net volume available} = \underline{725 \text{ CF}} \text{ or } (725 \text{ CF} \times 7.48) = \underline{5,423 \text{ gallons}}$$

m. Maximum liquid volume

Maximum liquid volume - PCB

$$144 \text{ drums} \times 55 \text{ gal/drum} = 7,920 \text{ gallons. or } 1,059 \text{ CF}$$

Maximum liquid volume – RCRA

$$240 \text{ drums} \times 55 \text{ gal/drum} = 13,200 \text{ gallons or } 1,765 \text{ CF}$$

n. Require containment volume

PCB requirement at 25%: 1,980 gallons or 265 CF
 $7920 \text{ gal.} \times 0.25 = 1,980 \text{ gallons}$

RCRA requirements at 25%²: 3,300 gallons or 441 CF
 $13,200 \text{ gal.} \times 0.25 = 3,300 \text{ gallons}^2$

Minimum containment volume required: 706 CF or 5,281 gallons

Bay 1 is constructed with a secondary containment capacity of 725 CF or 5,423 gallons which exceeds the minimum volume required of 706 CF of 5,241 gallons.

² -RCRA secondary containments are required at 10%. However 25% secondary containment was used in the event of catastrophic failure (e.g. earthquake or fire) assuming entire containment contents were to become comingled