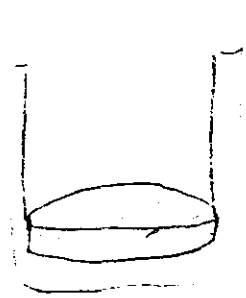
REFERENCE 19

Silver Concentration Calculations
(J. Fedder, 3/18/93)

Sump



1) Assume 6 inches of sludge in sump.
2) Assume all silver remained in sludge in sump.
3) Assume sludge density $\rho = 1.5\ g/mL$

Sump diameter = 6 ft

$V_{sludge} = \pi(3ft)^2(.5ft) = 14.1 ft^3 = 400,319.99 mL$

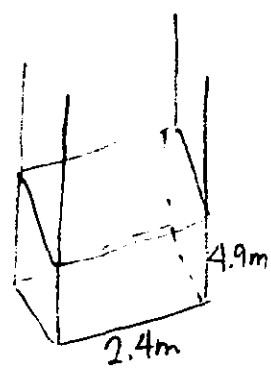
therefore $m_{sludge} = \rho V = 1.5 \frac{g}{mL} \times 400319.99 mL$

$m_{sludge} = 600,479.99\ g$

actual mass of silver diverted to SWLS sump = 1.32 troy oz. = 41.1g (see Kodac note)

$\therefore \frac{41.1g \text{ of silver}}{600,479.99g \text{ of sludge}} = 6.84 \times 10^{-5} =$ **68 ppm by weight**

Soil



1) Assume volume of soil is $(2.4m)^2(4.9m) = 28.2 m^3$
$= 28224000 mL$

$\rho_{soil} = 1.5 g/mL$

therefore $m_{soil} = \rho V = (1.5g)(28224000 mL)$

$m_{soil} = 42,336,000g$

and $\frac{41.1g \text{ of silver}}{42,336,000g \text{ of soil}} = 9.7 \times 10^{-7} =$ **.9 ppm by weight**

⇒ Based on risk calculations for silver, calculated by Bob Nitschke, the minimum soil concentration would have to be 1350 ppm to be of any concern. Both of the above calculated concentrations are much less.

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has been very [illegible]

in arriving at a figure

of 3.7 Troy oz of Hg. per

1000 sq. ft of plates.

We have developed 2565

4x5 in plates ∴ about

1.32 Troy oz. were probably

poured into the sanitary

sewer between 1976-84.