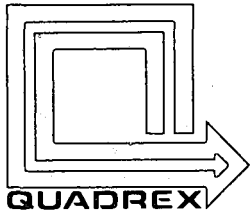


*BBB  
JLM*



Quadrex HPS Inc.

1940 N.W. 67th Place, Gainesville, Florida 32606-1649  
904-373-6066 TELEX 53-5429 TELECOPY 904-373-0040

NORTHEAST DISTRICT  
**RECEIVED**  
MAR 21 1988  
**RECEIVED**  
DER-JACKSONVILLE

March 16, 1988

Mr. Ashwin Patel  
Hazardous Waste Section  
Department of Environmental Regulation  
3426 Bills Road  
Jacksonville, Florida 32207

Dear Mr. Patel:

This is regarding our recent conversation as to Quadrex HPS providing the Department information to fulfill part of our implementation plan on our TOP application. Attached are the detailed drawings, calculations and description of zone 3 as described in our permit application. This area is for temporary storage of flammable waste materials.

Please contact Jack Flaacke or me as to any additional information you may require.

Sincerely,

*Bernhardt C. Warren*

Bernhardt C. Warren, CHMM  
Manager, Quadrex Waste Management Services

BCW/mc2-5

cc: F. Darabi

Enclosures

NORTHEAST DISTRICT  
**RECEIVED**  
MAR 21 1988  
**RECEIVED**  
DER-JACKSONVILLE

**DOCKET # 10**

*Copied to Tally on 3/24/88*

DEMONSTRATION TO DETERMINE  
RETENTION CAPACITY OF BERM IN ZONE 3

PROCEDURE

1. Clean & evacuate storage area.
2. Convirm empty sump.
3. Place empty 55 gallon drum within area.
4. Hookup hose to city water supply and stretch to area (DO NOT TURN ON YET).
5. Have timing device available.
6. Take photos of area.

NOW READY TO BEGIN

1. Start hose running outside area for uniform flow.
2. Crimp and take hose inside and put into 55 gallon drum. Release and start time.
3. Record start time.
4. Record time when drum is full. (DETERMINE FLOW RATE).
5. Continue water running into area & dump drum into area.
6. Observe as filling.
7. Note time when water overflows berm.
8. Calculate actual capacity.

OBSERVATION NUMBER	TIME	ELAPSED TIME	REMARKS
1	1:30 PM	0	STARTED TO Fill drum
2	1:40:31	10 min 31 sec	55 gal drum Full & dumped into AREA
3	2:32	1 hr 02 min	Filling/ NO problems
4	3:15	1 hr 45 min	Filling OK; However, appears one area of berm top is low.
5.	3:25	1 hr 55 min	OVERFLOW AT LOW AREA of Berm. Berm need To be rebuilt for A Length of 6'-8' Jf

Test observed by: Jf

CALCULATIONS

①. 
$$\frac{55 \text{ gal}}{10 \text{ min } 31 \text{ sec}} = \frac{55}{631} \text{ gal/sec} = .087 \quad .087 \frac{\text{gal}}{\text{sec}} \times 60 = \frac{5.23 \text{ gal}}{\text{min}}$$

②. 
$$1 \text{ hr } 55 \text{ min} = 115 \text{ min} @ 5.23 \text{ gal/min} = 601.45 \text{ gal TOTAL}$$

$$\frac{601.45 \text{ gal}}{55 \text{ gal/drum}} = 10.93 \text{ drums} @ 10\% \text{ Factor} = 109 \text{ drums}$$
  
Allowed in STORAGE AREA.

Note. UPON closer inspection, it was found That much of The berm was 1" below spec AND should be redone Jf. 2/11

OBSERVATION NUMBER	TIME	ELAPSED TIME	REMARKS
1	9:00 AM	0	STARTED TO FILL SS GAL drum.
2	9:12:40	12 MIN 40 sec	DRUM FULL & dumped into Area
3	11:00	2 hrs	LOOKING GOOD
4	12:00	3 hrs	EVERYTHING OK
5	1:00	4 hrs	GETTING CLOSE
6	1:40	4:40	VERY CLOSE NEAR SUMP
7	1:50:37	4:50:37	OVER NEAR SUMP.
8	1:53:00	0	re fill SS GAL drum
	2:05:02	12 MIN 02 sec	drum FULL

Test observed by: *J. H. ...*

CALCULATIONS

① Before.  $\frac{55 \text{ GAL}}{12 \text{ MIN } 40 \text{ SEC}} = \frac{55 \text{ GAL}}{760 \text{ SEC}} = .0723 \times 60 \frac{\text{SEC}}{\text{MIN}} = 4.34 \text{ GAL/MIN}$

AFTER  $\frac{55 \text{ GAL}}{12 \text{ MIN } 02 \text{ SEC}} = \frac{55 \text{ GAL}}{722 \text{ SEC}} = .076 \times 60 \frac{\text{SEC}}{\text{MIN}} = 4.57 \text{ GAL/MIN}$

AVERAGE =  $8.91/2 = 4.45 \frac{\text{GAL}}{\text{MIN}}$

② 4 hr 50 min 37 sec = 290.6 min @ 4.45 gal/min = 1294.6 gal

$\frac{1294.6 \text{ gal}}{55 \text{ gal/drum}} = 23.54 \text{ drums @ } 10\% \text{ FACTOR} = 235 \text{ drums allowed in STORAGE AREA}$

# STORAGE BLDG - ZONE 3.

BY: J. FLAACKE

*J Flaacke*

1/22/88

## Theoretical Calculation of Spill Capacity

PRISMOIDAL FORMULA for Volume

$$V = \frac{1}{6} H \times (\text{Area of UPPER BASE} + \text{AREA Lower BASE} + 4 \times \text{AREA MID SECTION}) + \text{Sump}$$

$$\therefore V = \frac{1}{6} 960'' \times \left[ \left( \frac{1}{2} \times 25 \times 180'' \right) + \left( \frac{1}{2} \times 3 \times 270 \right) + 4 \left( \frac{1}{2} \times 2.75 \times 225 \right) \right] + 24^3$$

$$V = 160 \left[ 225 + 405 + 4(309.4) \right] + 18,824$$

$$= 160(1867.6) + 18,824 = 317640 \text{ IN}^3 / 231 \text{ IN}^3/\text{GAL} = 1375 \text{ GAL}$$

