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Item ID Number

03977



Not Scanned

Author

Corporate Author

Report/Article Title

Notes: Meeting at Flammability Research Center, Salt Lake City, Utah, September 11, 1978

Journal/Book Title

Year

1978

Month/Day

September 11

Color



Number of Images

39

Description Notes

Items filed together in folder labeled, "NCBC/JI Chemical Data". Oversized graph labeled, "Eglin FLT Line Orange" was not scanned

Flammability Research Center

Salt Lake City, UT

MEETING: 1330HR, 11 SEP 78

- Final Report - Methods, Corrected Data, Recovery, Replication, etc.
 - Contract Proposals
 - Technical Report - Preparation
 - Publications
- Slides of JI, GP
- SAFETY - Laboratory - laboratory has primarily used 4,3,3,4-TCDD
 - Human Monitoring - SMA-12 for McClelland
Prior to TCDD (2,3,7,8) Recoveries.

FY 79 Contract

PHASE I

FIXED PRICE CONTRACT

100 Samples x \$400/sample --- \$40,000

PER FY 78 Contract

PHASE II

Identification of Unknowns via GC-MS

10 Samples x \$1000/sample --- \$10,000

PHASE III

TCDD Decontamination Methods
via radiology & GC-MS

10 Samples x \$1,000/sample --- \$10,000

TOTAL CONTRACT \$60,000

DEGRADATION STUDIES - PPM HERBICIDES

NO NUMBER	<u>JUL 77</u>	<u>JAN 78</u>
GP 1	306	1
GP 2	21	<1
GP 4	38	2
GP 5	25,000	22,503
GP 9	52	3
GP 10	64,500	22,360
JI 3	42,780	30,000
JI 9	12	6
JI 12	46,150	43,496

PENETRATION STUDY - PPM HERBICIDES

	<u>DEPTH</u>	
JI 46	0-15 cm	29,770
JI 47	15-30	460
JI 48	30-45	42

SAMPLING

<u>CODE</u>	<u>DESCRIPTION</u>	<u>REPLICATES</u>
O/O	No odor / NO stain	14
L/L	Low odor / Light stain	14
H/H	Strong odor / Heavy stain	14
		<u>42</u>

NCBC

JUL 77 (12)
JAN 78 ~~12~~
NOV 78
AUG 79

JI

AUG 77 (12)
JAN 78
OCT 78
AUG 79

Mc Hugh

1 0.32 ✓
 5 < 0.001 ✓
 10 0.042 ✓
 16 0.50
 17 0.51
 19 0.13 ✓
 20 0.001 ✓
 22 0.002 ✓
 24 0.002 ✓
 26 0.011 ✓
 27 0.03 ✓
 30 0.24
 37 0.008 ✓
 41 0.23 ✓

.001
 .001
 .002
 .002
 .008
 .011
 .042
 0.13
 0.13
 0.23
 0.32
 0.32
 0.50
 0.51

H/H Soils
 GP = mean = 0.152

Range: ~~0.001~~ — 0.510
 Median — 0.13

J I
 5 0.034
 6 0.006 (4)
 9 0.022 (9)
 10 0.230
 12 0.081
 28 0.0002 (1)
 32 0.0007 (2)
 35 0.008 (5)
 36 0.015 (6)
 37 0.074
 38 0.006 (3)
 40 0.055
 41 0.085
 42 0.025 (8)

mean 0.046

Range 0.0002 — 0.23
 Median 0.025

HERBICIDE PROJECT

11 SEP 78

SAMPLE RERUN

J1 2, 3, 14, 35, 36

GP ①, 17, 20, 27, 28

} FY78

FOR UNKNOWNNS

GP 1

GP 10

GP 27

J1 3

J1 35

} FY79

HERBICIDE

GP # 1	COMPONENT	ANALYSES	
		PPM	PERCENT
	DCP	ND	
	TCP	635	1%
	2,4-D	5,220	8.5%
	2,4,5-T	6,010	9.8%
	n-butyl 2,4-D	13,000	21.2%
	n-butyl 2,4,5-T	28,000	47.1%
	Unidentified	7,520	12.3%

GP # 5	DCP	ND	
	TCP	379	1.4%
	2,4,5-T 2,4-D	5640	20.4%
	2,4,5-T	15,500	56.0%
	n-butyl 2,4-D	293	1.1%
	n-butyl 2,4,5-T	1,070	3.9%
	Unidentified	4,780	17.3%

JI # 7	DCP	6 55	0.1%
	TCP	11 55	0.2%
	2,4-D	1490	36.1%
	2,4,5-T	1340	32.5%
	n-butyl 2,4-D	19	0.3%
	n-butyl 2,4,5-T	151	3.7%
	Unidentified	1110	26.9%

NCBC

$$\text{Width} = 9 \times 50 = 450$$

$$24 \times 50 = 1,200$$

$$\therefore 450 \times 1,200 = \frac{540,000}{\cancel{493,000 \text{ ft}^2}}$$

$$\underline{12.4 \text{ Acres}} = \underline{5 \text{ ha}}$$

JI

$$16 \times 50 = 800$$

$$= 480,000 =$$

$$12 \times 50 = 600$$

$$\underline{11.02 \text{ Acres}} = \underline{4.5 \text{ ha}}$$

CONTROL = 1 Day =

PROJECT LOG

TCDD Research may want to be funded separately by AFLC/LO. An unsolicited Research proposal may be appropriate. Emphasize a developing technology and its potential application to an Air Force Problem. Mention experience in site monitoring program.

USAF OENL can furnish H₂O of Support (?), small quantities of herbicide Orange and activated charcoal.

SEND DR Hughes copy of TR-AFATL-74-12, TR-AFATL-75-142, TR-USAFA-76-18, Dugway Documents, & TR-AFATL-75-49.

How much TCDD in each canister? }

How much Charcoal in each canister? }

Send Agent Chem. Inc. Report

Address for AFLC/LO

Address for Don Harrison

AFLC TEST RANGE Complex, UT
11 SEP 78

HERBICIDE ORANGE Biodegradation TEST Plots.

1. Vegetation was sparse and occurred only on the AREAS BETWEEN rows of plots.

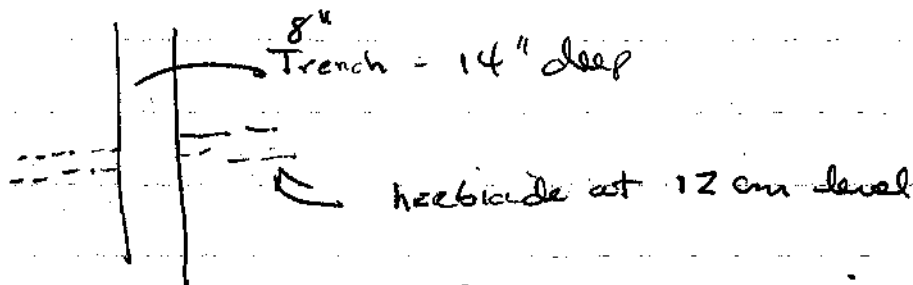
2. All the signs are still available and in good shape. Photographs were taken of all plots.

3. Four samples were collected from each plot.

2 from 0-15cm

2 from 15-30cm.

4 samples x 6 plots = 24



Using a snuff technique, the herbicide was located in each trench. A section (2" x 6" x 1") was removed from the wall, for each depth uniformly mixed and subsampled for

AFLC PERSONNEL CENTER, UT

11 SEP.

Chief of Security - JOE HOOD
Chief of Engineering Mr. Bingham
Commander of DET. 2

* LT Col ROBERT L. GRAETZEL
Range Commander
DET 2, 2849 ABG/CC
AFLC TEST RANGE
HILL AFB, UT 84406

* Send consult to Col Graetzel on use of Herbicide
Blue for Target maintenance - Palopton
and Kodak Control

Ltr of Appreciation to

LT Col Light

AV 458-5501

for assistance of:

Execut
Field Assistance

AIC Steven R. Allen

SSN 388-74-7320

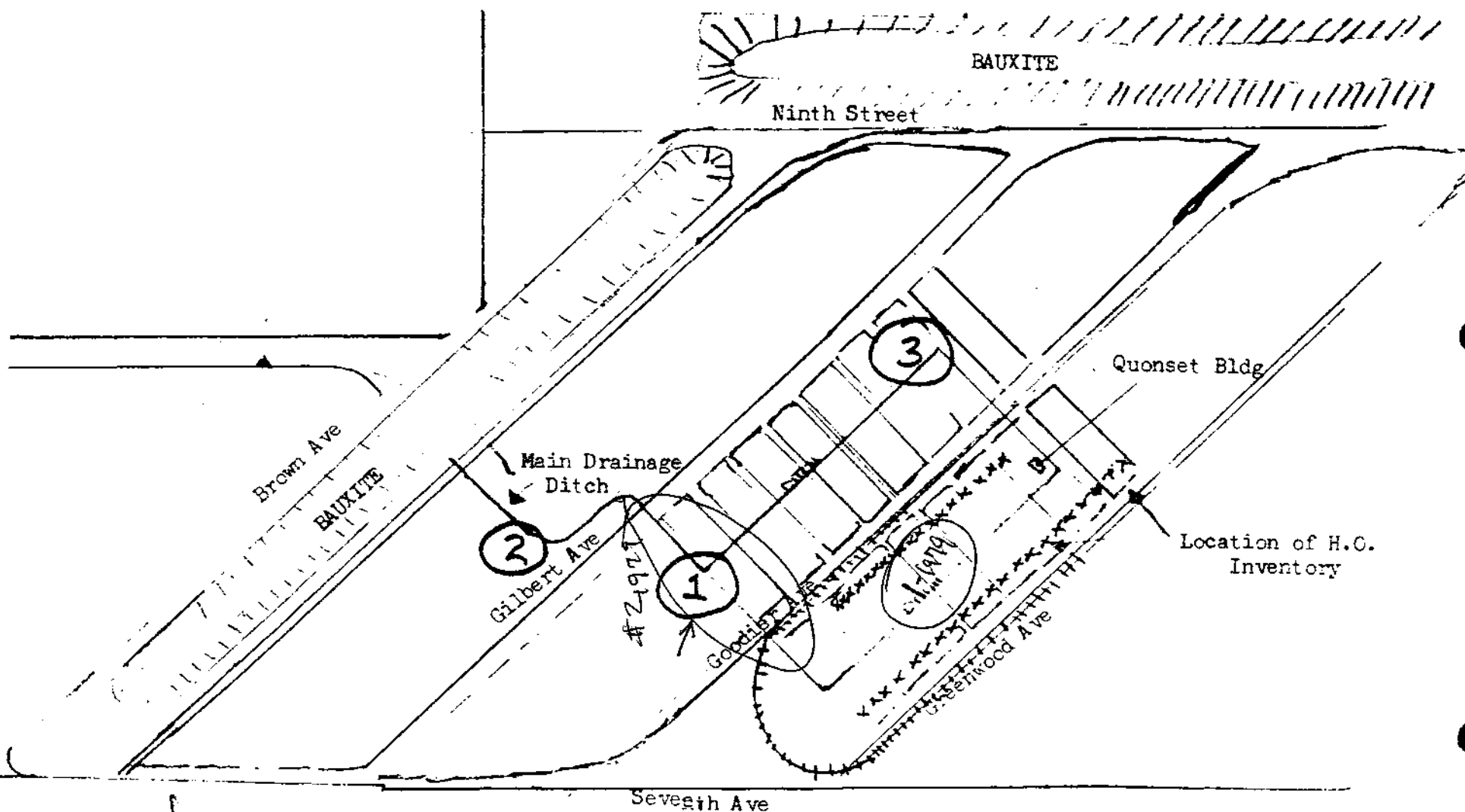
2601 ST EOD

HILL AFB, UT 84406

GULFPORT

H/H

ID*	2,4-D ESTER + ACID	2,4,5-T ESTER + ACID
1	18220.0	34810.0
5	5933.0	16570.0
10	12260.0	10100.0
11	13,200 7.7	31,260 21.0
14	5,750 1090.0	11,756.4 3153.8
17	42500.0	57500.0
20	18000.0	49440.0
24	17130.0	5040.0
27	3058.0	3986.0
30	5130.0	12640.0
31	208.9 5.1	780 4.9
33	2503 45.5	11,810 162.3
35	10,170 1079.0	33,150 5200.6
38		
41	11520.0	14220.0
	18,970 ± 28877	20,927 ± 17,464
Mean	9712.7	15203.4
Std. dev.	± 11738.1	± 18694.2



Jan 1976 BIOLOGICAL SAMPLES

	SITE 1	SITE 2	SITE 3
Snails	61.8 ppb	2.2	3.0
Tadpoles/fish	2.8	1.6	0.2
Crayfish	-	0.2	3.5

Herbicide Orange Storage Site
 Naval Construction Battalion Center
 Gulfport MS

Insects from Storage Site = 0.14 ppb

NCBC

SNIFF

Jan 78

Nov 78

1	117	(1000 77,000)	23
2	0	(10)	0
3	3	(10)	1
4	1	(11)	2
5	10	(33,900)	10
6	2	(22)	0
7	7	(3,240)	0
8	1	(7)	0
9	2	(5)	0
10 *	22	(8580)	17
11	2	(46)	1
12	3	(7)	2
13	2	(45)	1
14	9	(5960)	7
15	2	(22)	1
16	16	(63,900)	18
17	17	(137,000)	18
18	1	(142)	1
19	7	(24,200)	6
20	6	(90,000) <i>acc'd</i>	8
21	0	(16)	0
22	11	20,800	16

8 0 max 24
 1 min 0
 2
 3

TEST

JAN 78

NOV 78

23	1	(7)	3
24	20	125,000	22
25	1	(25)	1
26	13	(60,700)	16
27	15	9,740	9
28	0	(9)	0
29	0	(252)	1
30	13	28,200	17
31	14	1,250	18
32	0	(30)	0
33	1	(19)	0
34	12	880	0
35	10	423	6
36	1	(163)	1
37	17	20,800	9
38	4	10,100	12
39	7	187	1
40	10	272	2
41	17	46,400	22
42	0	(11)	0

Rating PPM (Total)

0 = 15
 1-4 = 40
 5-9 = 8700
 10-14 = 18,000
 15-19 = 59,000
 20-24 = 105,000

GULFPORT

L/L

ID #	2,4-D ESTER + ACID	2,4,5-T ESTER + ACID
3	0.0	0.6
7	437.5	944.7
8	0.2	0.5
9	0.3	0.21
13	6.0	7.3
16 (11)	7.7	21.0
(14)	13200.0	31260.0
19	1090.0	3154
(35)	5250.0	11256.4 *
22	46	162
(38)	2503.0	11810.0
26	1079	5201
	10170.0	33150.0 *
29	41.2	76.0
32	2.3	12.3
34	105.6	423.0
37	209	700
(31)	2260.0	8570.0
39	26.7	45.4

400 ± 781

1330 ± 2584

Mean

~~2500.2~~

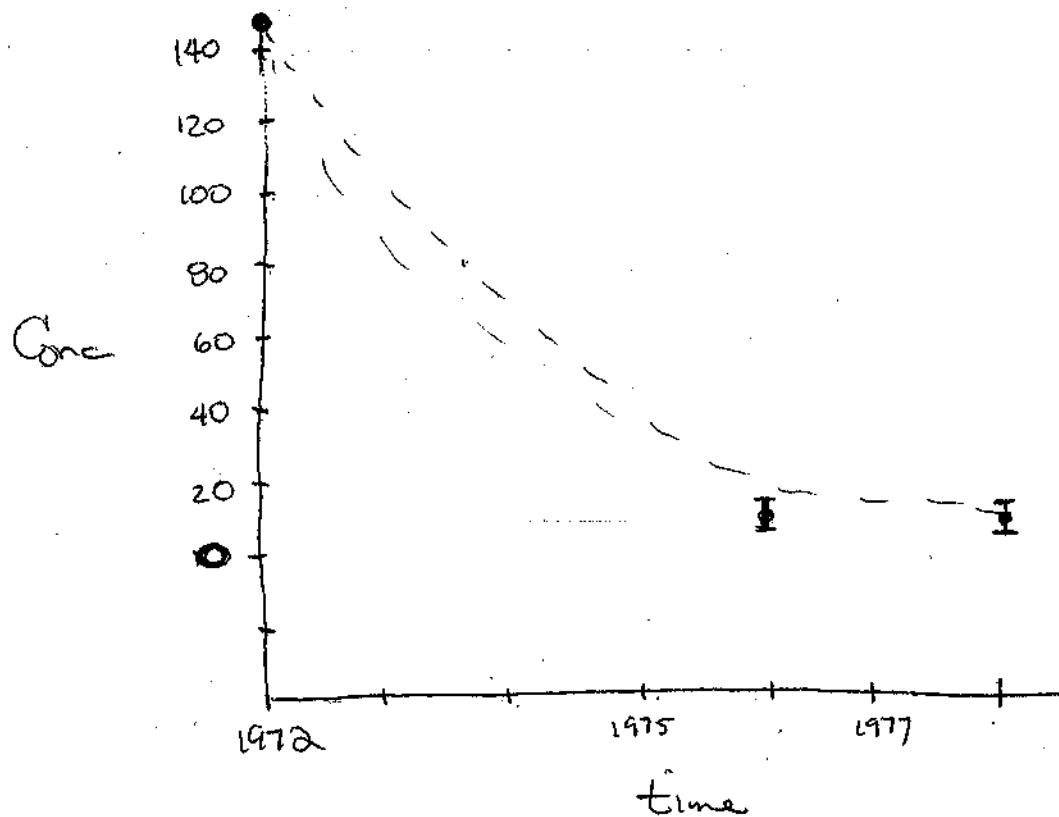
~~7004.0~~

Std. dev,

± 4272.5

± 11574.3

JI
5% H/H
30% L/L
65% O/O



GULF PORT

0/0

ID #	2,4 - D ESTER + ACID	2,4,5-T ESTER + ACID
2	0.6	0.4
4	0.1	0.8
6	2.5	6.6
12	0.6	0.3
15	0.7	4.4
18	83.6	0.5
21	0.9	5.9
23	0.2	0.12
25	10.4	0.5
28	0.4	0.51
31	5.1 208.9	4.4 700.0
36	20.2	49.4
40	37.2	108.3
42	0.7	2.1

→ 33

MEAN 26.2 (11.6) 62.8 (13.2)

Std. dev. ~~57.46~~ ± 23.2 ~~± 185.8~~ ± 30.2

Sample:

GP 1	DCP	ND			
	TCP	635	1%		
	2,4-D	5220	8.5%	635 / 6645 = 9.6%	635 / 600 = 10.6
	2,4,5-T	6010	9.8	6010 / 6645 = 90.4%	
n - 2,4-D		13,000	21.2		
n - 2,4,5-T		28,800	47.1		
Unident. find.		<u>7,520</u>	<u>12.3</u>		
		61,185	99.9		

GP 5	DCP	ND	PERCENT	
	TCP	379	1.4	
	2,4-D	5640	20.4	
	2,4,5-T	15,500	56.0	379 / 15,500 = 2.4
n - 2,4-D		293	1.1	
n - 2,4,5-T		1,070	3.9	
Unident.		<u>4,780</u>	<u>17.3</u>	
		27,662	100.1	

11. $0.8 \text{ - TCP} / 4.3 = 18.6\%$

4/27

- A-1
- A-6
- A-7
- 8
- 11
- 12
- 13
- 14
- 15
- 16
- 20
- 21

$\frac{25,34}{40}$
 $\frac{<4}{-50 \pm 20\%}$

1.5 ppb Turtle

500 ppb

80

Cover Ltr - Soil levels - }

1 Dec -

Det. 10, A

GAO -

AF/SG

201100 - Newcomer copy

OSD - 21 Dec with GAO

to present

Mr George Sobert

DEGRADATION STUDIES 2,4-D + 2,4,5-T

Johnston Island & Gulfport

#	28 Jul 77	#	15 Jan 78
GP # 43	21 ppm	#2	<1
GP # 44	37.6	#4	1.5
GP # 45	52	#9	2.5
GP # 46	306	#1	1.0
GP # 47	37,220		
GP # 48	43,970		
GP # 49	25,630		
GP # 50	117,800		
JI 46	29,940	↔	#9 42,780
JI 49	11.6		#3 5.8
JI 50	46,150		#12 43,496

Penetration Study - Johnson Island

JI 46	0-15 cm	29, 779 ppm
JI 47	15-30 cm	460 ppm
JI 48	30-45 cm	<2 ppm

SOIL SAMPLES
HERBICIDE ORANGE STORAGE SITE
NCBC, Gulfport, MS

28 JULY 1977

CAPT YOUNG
KELLY AFB, TX
Phone: 925-6157

KEY. 1 - 12: Sample number

000 - 360: COMPASS HEADING, DEGREES, TAKEN
AT storage site center point.

O/O, L/L, H/H: Refers to a subjective evaluation
of the stain and herbicide
odor ~~was~~ present at the
SITE where each sample was
collected. (O/O = no stain
and no odor; L/L = light stain
and slight odor; H/H = dark
stain and heavy odor.

SITE DESCRIPTION: Sample site characteristics

- A = Asphalt
- B = Ditch Bottom
- C = Oyster Shells
- D = Ditch bank
- H = HARAPAN
- G = GRAVELLY
- S = SANDY
- V = VEGETATION

117 - 750: Number of Feet in the ^{specified} direction
to the area where the sample
was collected.

28 JULY 1977

SAMPLE
NUMBER

CODE

DEPTH OF
SAMPLE (cm)

1	1, 010, H/H, C, 160	0-5
2	2, 042, O/O, S, B, 117	0-5
3	3, 074, L/L, S, H, 160	0-2
4	4, 135, O/O, C, 117	0-5
5	5, 158, H/H, S, H, 216	0-5
6	6, 164, O/O, S, H, 180	0-5
7	7, 180, L/L, C, 255	0-5
8	8, 194, L/L, S, G, 294	0-2 —
9	9, 240, L/L, S, B, 435	0-5
10	10, 340, H/H, S, G, 210	0-5
11	11, 033, H/H, S, H, 168	0-1.5 —
12	12, 050, O/O, S, V, 750	0-5

Control
→

HERBICIDE STORAGE SITE RECLAMATION PROJECT

NCBC, GULFPORT, MS

28 July 1977

on 23 July 1977

The ~~following~~ ^{Twelve} soil samples were collected from the site previously used for the storage of Herbicide Orange. The herbicide was removed in late Jun 1977. Those portions of the site where ^{obvious} herbicide spills had occurred received an approximate 5-cm layer of oyster shells. In general, the site was characterized by a thin-layer (2-15cm) of sandy to sandy-gravel soil on a synthetic hardpan (constructed during world war II). The ^{banks of the} drainage ditches used to channel rain water from the storage site had been stabilized by thin asphalt coating.

SOIL SAMPLE

HERBICIDE ORANGE STORAGE SITE

NCBC, Gulfport, MS

28 JULY 1977

CAPT YOUNG

KELLY AFB, TX

Phone: 935-6157

KEY. 1 - 12: Sample number

000 - 360: Composite hand-dug cores, taken
AT storage site center point.

O/O, L/L, H/H: Refers to a subjective evaluation
of the stain and herbicide
odor ~~was~~ present at the
site where each sample was
collected (O/O = no stain
and no odor; L/L = light stain
and slight odor; H/H = dark
stain and heavy odor).

SITE DESCRIPTION: Sample site characteristics

A = Asphalt

B = Ditch Bottom

C = Oyster Shells

D = Ditch bank

H = Hardpan

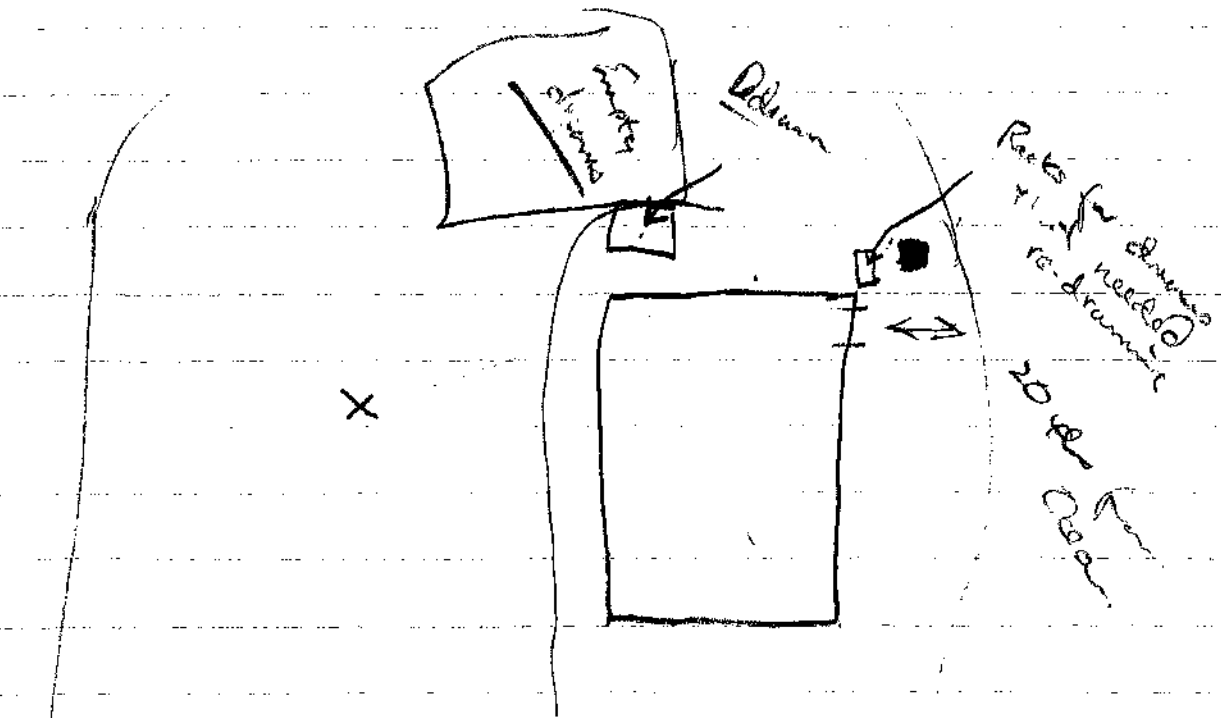
G = Gravelly

S = SANDY

V = Vegetation

117 - 750: Number of feet in the ^{specified} direction
to the area where the sample
was collected.

SAMPLING JOHNSTON ISLAND FOR RESIDUE STUDY



- 1 control
- 2 Samples near dehumidifier operation
- 9 Samples from muck bag area

- 4 O/O (includes 1 control)
 - 4 L/L
 - 4 H/H
- Zog Jar

- 2,4-D, 2,4,5-T (acid & esters)
 - Di- & Tri-chlorophenol
 - Microbial Analysis — (separate - send to William J. Cairney USAF/DICM)
 - TCDD Analysis
- AV 259-2720

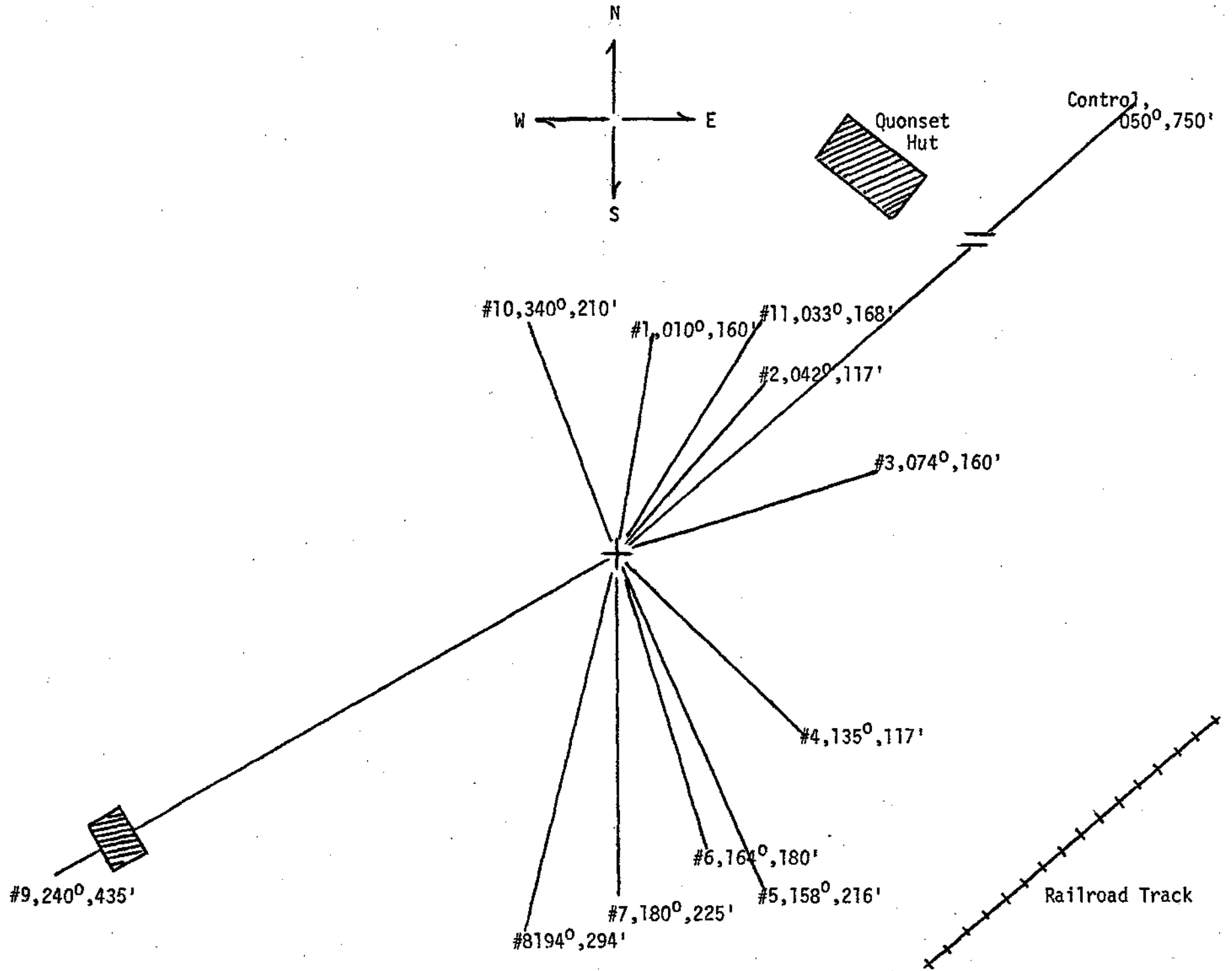


Figure 1. Soil Sampling Sites for Study of Herbicide Orange and TCDD Degradation, NCBC, Gulfport MS, 28 July 1977.

2 Aug 78
 Univ of
 Nebraska

PPB

50% 5.20%

#1
 2
 3
 4
 5
 6
 7
 8
 9
 10
 #12
 #13

1.6 ppb	1.1	20%
87 ppt	26	80%
104 ppt	<120	50%
57 ppt	8.8	40%
<240 ppt	39	50%
<100	-	-
<50 (ND)	9.4	75%
<250 (ND)	25.3	65%
<76	21	50%
440 ppt	207	65 11.
610 ppt	750 ppt	65
110 ppt	150 ppt	85%

20%
 necessary
 Biological
 Samples

David Miller
 Jack Lay
 David Hilker

Phil
 De Lyon
 Natural

0.9
 1.6

UTAH Data

5 NOV 76.

	Plots 1/2	Plots 3/4	Plots 5/6
0-6	650	1600	6600
6-12	11	90	200
12-18			14

23 JUN 75

	1/2		
0-6	4400/5100 (5100)	5000/5800 (5400)	11000/9200 (10,100)
6-12			
12-18			

Eglin data

19/20 280
 350
 630 = mean = 315 ppt Plots 5/6 0-6
18 ND (8) ppt 6-12

} 18 NOO
76

22/24 = $\frac{380}{350}$ = 365 ppt. Plots 9/10
 730
23 ND (9) 0-6
 6-12

} NOO
76

#21 Plots 7
 120 ppt

1972

20 NOV 1976

1000 lb/A

2400 lb/A

4,000 lb/A

CDO

HILL

650 ppt

1600 ppt

6,600 ppt 0-6

11 ppt

90 ppt

200 ppt 6-12

14 ppt 12-18

EGLIN

280 0-6

n.d. (8 ppt)

n.d. (6 ppt)

WSU ANALYSIS		NOV. 15 - 1975	Feb '76
PLOT 5	0-6", 24 NOV	74	- 3,304
PLOT 5	0-6", 23 JAN	75	- 1,078 (?)
PLOT 5	0-6", 24 NOV	75	- 3492

ROUTING AND TRANSMITTAL SLIP		ACTION	
1 TO (Name, office symbol or location)	INITIALS	CIRCULATE	
	DATE	COORDINATION	
2	INITIALS	FILE	
	DATE	INFORMATION	
3	INITIALS	NOTE AND RETURN	
	DATE	PER CONVERSATION	
4	INITIALS	SEE ME	
	DATE	SIGNATURE	
REMARKS AV			
Do NOT use this form as a RECORD of approvals, concurrences, disapprovals, clearances, and similar actions.			
FROM (Name, office symbol or location)		DATE	
		PHONE	

#27 Plot 1 0-6 23 Jun 75 ✓ 4,400

#6 0-6 5 Nov 76 650 PPT

#29 Plot 2 0-6 23 Jun 75 5,800

#6 0-6 5 Nov 76 650 PPT

#31 Plot 3 0-6 - 23 June 75 5,000

#6 5 Nov 76 1,600

5,400
- 1,600

#33 Plot 4 0-6 - 23 Jun 75 5,800

1,600

#35 Plot 5 0-6 23 Jun 75 11,000 PPT

#37 Plot 6 0-6 23 Jun 75 9,200

5 Nov 76

11,600 ← 1975
7,000 → 1976

1975

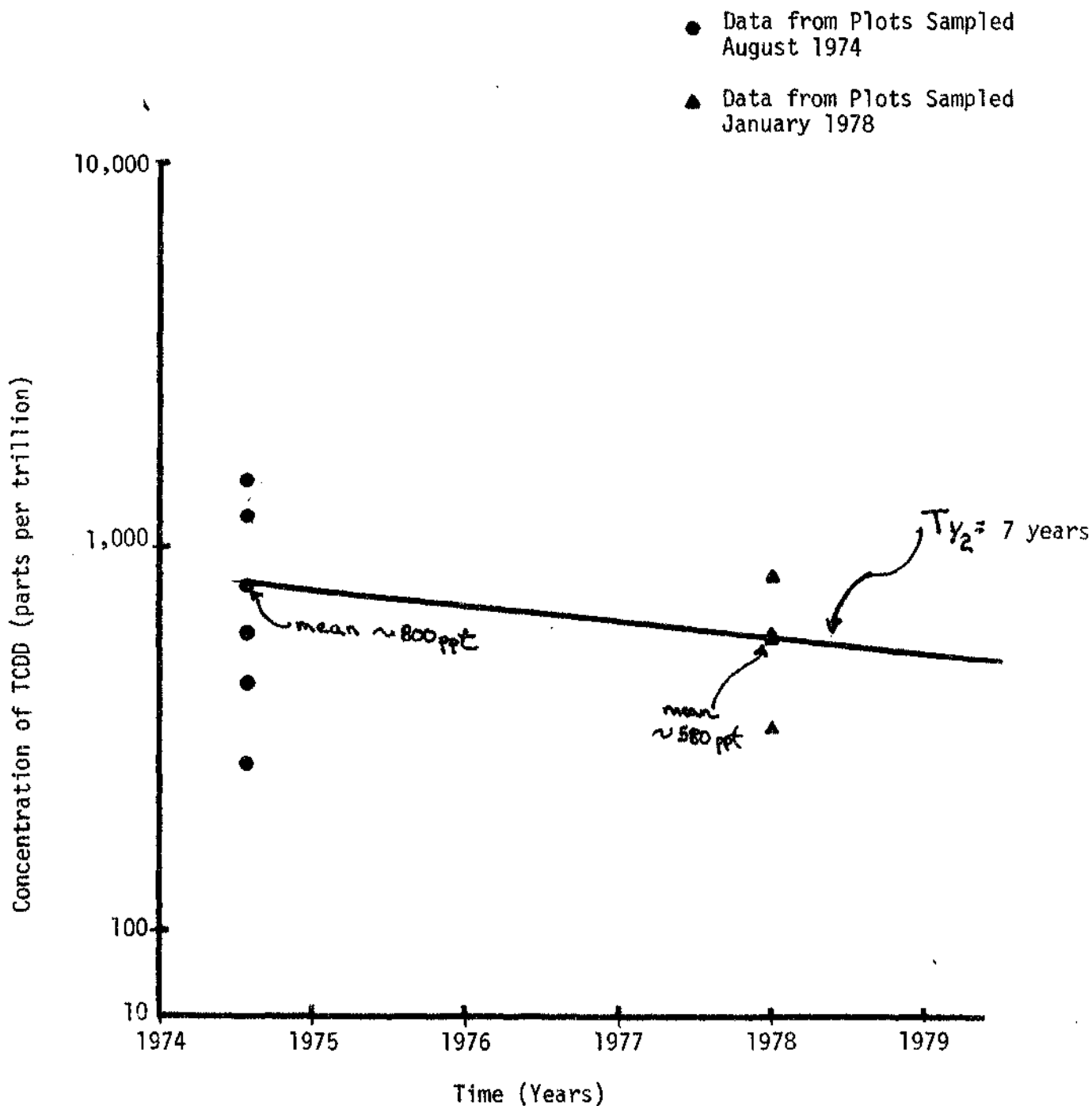


FIGURE 1. Semi-logarithmic Plot of Soil Concentration (0-15 cm) of TCDD in a Field Site Aerially-treated with 40,000 Kg 2,4,5-T, 1962-1964. Data for Each Date Represent Analysis of Five 1m² Plots Established August 1974. (Unpublished Data, A. L. Young, USAF Occupational and Environmental Health Laboratory, Brooks AFB, Texas 78235.)

		<u>Net/Dow</u>	<u>NEB</u>
1	1500	420 N	340
2	610	300 D	590
3	1200	300 580 N	580
4	270	100 D	570
5	440	480 D	840
	<u>804</u>	<u>360</u>	<u>2920</u>
	1975	1978	= 584

~~100%~~
 Aug 1974 Jan 78
 4

40 months = $\frac{804}{362}$

75 = 12
 76 = 12
 77 = 12

$\frac{40}{48}$ months = $\frac{45}{x}$ %

Single analysis ^{44%}
~~75%~~

$\frac{40}{48} = \frac{45}{x}$

$x = \frac{(45)(48)}{40}$

54

PLOT	AUG 1974	JAN 1978
1	1500	420 ± 50
2	610	300
3	1200	580
4	270	100
5	440	400 ± 150
mean	804	360

mg/kg
 480

mean std deviate
 ± 50 ppt

The value reported is 2.5 times the noise level and should be taken as the detection limit

3 1
 257 / 845
 572
 581
 731
 980

624

PPT

245
 346
 446
 501
 894

↓
 210
 440
 610
 1200
 1500

mean

~~1114~~
 1. 21 1500
 2. 610
 3. 1200
 4. 270
 5. 440

~~2714 / 1020~~
 502

5 | 3121
 30
 12
 10
 21

5 100

804

840
 890

Nov 1974

JAN 1978

3 years.

~~1114~~
 1 957
 944
 629
 2530
 280
 2 357
 391

1 137
 71
 208

889

1 189
 168
 357

2 66
 86
 239
 391

4 | 3558
 32

35
 32
 38
 36/20



MEMO

DATE:

Dow



2 0.3 ppb 0.59 = NE

4 1 ppb / 0.57 ppb

5 ND 0.03 ppb = DL

Some w/e 322 = 2 ppb

22 0.4 ppb } NE = 0.84
0.05 ppb }

33 < 0.2 ppb NE = 3.6 ppb

35 — 3.0 ppb Dow 5.8 = NE

6 ppb = 1.6

Dec. 75

{	957	pp ¹⁰	0-2	<u>60m</u> <u>depth</u> <u>0-4</u>
	944		2-4	
{	960		4-6	
	<u>266</u>		—	mound soil

5

Mice - whole body 4x 10-day 100 pups

Biol. 17

18

19

20

24

38

100

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Biol 1 Toad

2 Insects

3 Snake - whole

4 T. Snake

5 T. Snake

6 T. Snake

7 C. Snake

8 C. Snake

9 C. Snake

10 Spiders

12 } Mice Livers

13 } Mice skins

Biol 14 - Mice whole (4-10 day old pups)

15 - Mice pups - Body - four months old

16 - Mice pups skin " " "

24

23
 38

 61
 39

 17
 (22)

7 - 0-6
 3 - TURTLE
 2 - HARDSTAND
 1 - whole body
 Mice
 Feinnee } 5

Johnston Island

L/L	Sniff	<u>2.4-D</u>	<u>2.4,5-T</u>	<u>Bacteria</u>	<u>Fungi</u>
7	(12)	1,509	1,491	5.0×10^8	6.5×10^7
18	(8)	560	2,424	6.2×10^7	7.6×10^7
34	(10)	1,782	2,115	5.5×10^8	ND
39	(5)	6,310	9,100	<u>5.2×10^8</u>	<u>6.4×10^7</u>
				4.1×10^8	7.0×10^7