32501.032
03.07.32.0002
N00204.AR.000806
NAS PENSACOLA
5090.3a

DRAFT FINAL REMEDIAL INVESTIGATION REPORT

APPENDICES
VOLUME I
A - K

NAVAL AIR STATION PENSACOLA
OPERABLE UNIT 10 AND SITE 13

CONTRACT N62467-89-D-0318
CTO - 048

Submitted to:

SOUTHNAVFACENGCOM

Submitted by:

EnSafe/Allen & Hoshall
5720 Summer Trees Drive, Suite 8
Memphis, Tennessee 38134
(901) 383-9115

October 14, 1994

Release of this document requires prior notification!
of the Commanding Officer of the Naval Air Station,
Pensacola, FL

APPENDIX A

GROUNDWATER ANALYTICAL SUMMARY
FEBRUARY 1984 THROUGH JULY 1992

Table 1
Summary of Detected Concentrations of Sodium in Groundwater
NAS Pensacola Operable Unit 10
(All results are in mg/L)

Monitoring Well	Sampling Event (Month/Year)										
	8/84	10/84	9/85	1/87	12/87	2/88	6/88	8/88	11/88	3/89	5/89
GM-14	NR	NR	NR	NS	NR	NR	NR	NR	NR	200	184
GM-63	NS	NS	NA	NS	470	420	789	448	NR	515	604
GM-64	NS	NS	NA	NS	330	200	86	142	NR	55	3.8
GM-65	NS	NS	NA	NS	120	110	110	76	NR	100	1.78
GM-66	NS	NS	NA	NS	640	670	527	465	NR	662	6.83
GM-68	NS	NS	NA	88	61	67	72	79	NR	57	69
GM-69	NS	NS	NA	NS	510	500	561	598	NR	669	879
GM-71	NS	NS	NA	18	9.8	5.7	4	7	NR	3,201	258
GM-72	NS	NS	NA	NS	79	42	44	73	NR	2,793	288
GM-76	NS	NS	NA	NS	210	190	207	501	NR	22	39.1
GM-77	NS	NS	NA	NS	53	43	40	303	NR	117	1.48
GM-84	NS	NS	NR	NS	NA	NA	NA	NA	NR	4,450	10,200
PCS-1	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
PCI-1	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
PCD-1	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS

Table 1 (Continued)
Summary of Detected Concentrations of Sodium in Groundwater
NAS Pensacola Operable Unit 10
(All results are in mg/L)

Monitoring Well	Sampling Event (Month/Year)										
	8/89	11/89	3/90	5/90	8/90	11/90	3/91	7/91	10/91	1/92	7/92
OM-14	**180**	**164**	140	120	**NS**	130	56	25	31	NA	NA
OM63	**449**	**479**	**660**	**610**	**660**	**660**	**480**	**600**	**480**	**640**	**490**
OM-64	105	**241**	**320**	**210**	**310**	**290**	320	320	**380**	150	60
OM-65	**1,070**	88.9	120	**180**	**180**	92	93	96	92	100	89
GM-66	**160**	**842**	**820**	**670**	**680**	**730**	**670**	**680**	**640**	**660**	***660***
OM-68	**600**	**693**	77	81	90	84	81	89	84	91	84
OM-69	**618**	**693**	**690**	**600**	**620**	**670**	**680**	**610**	**670**	**600**	**680**
OM-71	NS	110	6.7	12	NS	160	6.2	3.2	4.6	NS	NS
GM-72	NS	27.4	17	13	NS	60	83	19	7.2	NS	NS
OM-76	NS	136	100	64	NS	110	110	110	110	NS	NS
GM-77	NS	46.6	44	28	NS	**1,100**	**200**	**150**	72	NS	NS
GM-84	**4.470**	**6,640**	**4,300**	**4,400**	NS	**4.700**	**14.000**	NS	**NS**	NS	NS
PCS-1	NS	NS	NS	19	7.4	**6.2**	**220**	6.7	16	29	12
PCI-1	NS	NS	NS	120	**310**	**370**	**360**	**270**	**260**	**180**	**290**
PCD-1	NS	NS	NS	130	160	**190**	**180**	**180**	**180**	**180**	**190**
FPDWS	160	160	160	160	160	160	160	160	160	160	160

KEY:

NS = Monitoring well did not exist, or existed and was not earnpled.
NA = Monitoring well earnpled but sample not analyzed for this parameter.
NR = No data reported.
Standard exceedances are in BOLD.

Source: E&E 1992a, 1992b, and 19924.

Table 2
Summary of Detected Concentrations of Cadmium
NAS Pensacola Operable Unit 10
(All results are in µg/L)

Sampling Event (Month/Year)	Monitoring Well GM-66	FPDWS (MCL)
7/84	NS	5 (5)
10/84	NS	5 (5)
9/85	NA	5 (5)
1187	NS	5 (5)
2/87	NA	5 (5)
5/87	NA	5 (5)
8/87	NA	5 (5)
12/87	NA	5 (5)
2/88	NA	5 (5)
6/88	NA	5 (5)
8/88	NA	5 (5)
11/88	NR	5 (5)
3/89	ND	5 (5)
5/89	NA	5 (5)
8/89	NA	5 (5)
11/89	NA	5 (5)
3/90	43	5 (5)
5/90	NA	5 (5)
8/90	31	5 (5)
11/90	NA	5 (5)
3/91	67	5 (5)
7/91	NA	5 (5)
10/91	NA	5 (5)
1/92	ND	5 (5)
7/92	36	5 (5)

Source: E&E 1992a, 1992b, and 1992d.

Table 3
Summary of Detected Concentrations of Chromium
NAS Pensacola Operable Unit 10
(All results are in µg/L)

Sampling Event (Month/Year)	Monitoring Well GM-66	FPDWS (MCL)
7/84	NS	100 (100)
10184	NS	100 (100)
9/85	NA	100 (100)
1/87	NS	100 (100)
2/87	NA	100 (100)
5/87	NA	100 (100)
8/87	NA	100 (100)
12/87	NA	100 (100)
2/88	NA	100 (100)
6/88	NA	100 (100)
8/88	NA	100 (100)
11188	NR	100 (100)
3/89	NA	100 (100)
5/89	NA	100 (100)
8/89	NA	100 (100)
11/89	NA	100 (100)
3/90	210	100 (100)
5/90	NA	100 (100)
8/90	240	100 (100)
11/90	NA	100 (100)
3/91	360	100 (100)
7/91	NA	100 (100)
10/91	NA	100 (100)
1/92	**340**	100 (100)
7/32	320	100 (100)

KEY:

NS = Monitoring well did not exist, or existed and was not sampled.
NA = Monitoring well sampled but sample not analyzed for this parameter.
NR No data reported.
Standard exceedences are **bold**.

Source: E&E 1992a, 1992b, and 19924.

Table 4 Summary of Detected Concentrations of Lead NAS Pensacola Operable Unit 10 (All results are in µg/L)		
Sampling Event (Month/Year)	Monitoring Well GM-66	FPDWS (MCL)
7/84	NS	15 (15)
10184	NS	15 (15)
9/85	NA	16 (15)
1/87	NS	16 (15)
2/87	NA	16 (15)
6/87	NA	16 (15)
8/87	NA	15 (15)
12/87	NA	16 (15)
2/88	NA	15 (15)
6/88	NA	15 (16)
8/88	NA	15 (16)
11/88	NR	16 (15)
3/89	NA	16 (15)
6/89	NA	16 (16)
8/89	NA	15 (15)
11/89	NA	15 (15)
3/90	2.6	15 (15)
5190	NA	15 (16)
8190	NA	16 (16)
11190	NA	15 (16)
3/91	400	16 (15)
7191	NA	16 (15)
10191	NA	15 (16)
1192	ND	16 (16)
7/92	ND	16 (16)

KEY:

NS = Monitoring well did not exist, or existed end was not sampled.
NA = Monitoring well eampled but sample not analyzed for this parameter.
NR = No data reported.
Standard exceedences ere **bold**.

Source: EBE 1992a, 1992b, and 1992d.

Table 5
Summary of Detected Concentrations of Arsenic
NAS Pensacola Operable Unit 10
(All results are in µg/L)

Sampling Event (Month/Year)	Monitoring Well UG-1	FPDWS (MCL)
7/84	NA	50 **(50)**
10/84	NA	50 (50)
9/85	NS	50 (50)
1/87	ND	50 (50)
12/87	NS	50 (50)
2/88	NA	50 (50)
6/88	NA	50 (50)
8/88	NA	50 (50)
11/88	NA	50 (50)
3/89	ND	50 (50)
5/89	ND	50 (50)
8/89	ND	50 (50)
		)
		)
		)
		)
11/90	2.6	50 (50)
3/91	ND	50 (50)
7/91	ND	50 **(50)**
10/91	NA	50 **(50)**
1/92	ND	50 **(50)**
7/92	ND	50 **(50)**

KEY:

NS = **Monitoring well did not exist, or existed and was not sampled.**
NA = **Monitoring well sampled but sample not analyzed for this parameter.**
ND = **Parameter not detected at or above the detection limit.**
Standard exceedances are bold.

Source: E&E 1992a, 1992b, **and** 19924.

Table 6 Summary of Detected Concentrations of Mercury NAS Pensacola Operable Unit 10 (All results are in µg/L)		
Sampling Event (Month/Year)	Monitoring Well	FPDWS (MCL)
	GM-11	
7/84	NS	2 (2)
10/84	NS	2 (2)
9/85	NS	2 (2)
1/87	NS	2 (2)
12/87	NS	2 (2)
2/88	NS	2 (2)
6/88	NS	2 (2)
8/88	NS	2 (2)
11/88	NS	2 (2)
3/89	ND	2 (2)
5/89	ND	2 (2)
8/89	0.22	2 (2)
11/89	4.4	2 (2)
3/90	ND	2 (2)
5/90	ND	2 (2)
8/90	NS	2 (2)
11/90	ND	2 (2)
3/91	ND	2 (2)
7/91	ND	2 (2)
10/91	NA	2 (2)
1/92	NA	2 (2)
7/92	NA	2 (2)

KEY:

NA = Monitoring well sampled but sample not analyzed for this parameter.
NS = Monitoring well did not exist, or existed and was not sampled.
ND = Parameter not detected at or above the detection limit.
Standard exceedances are bold.

Source: E&E 1992a, 1992b, and 1992d.

Table 7
Summary of Detected Concentrations of Vinyl Chloride
NAS Pensacola Operable Unit 10
(All results are in µg/L)

Monitoring Well	Sampling Event (Month/Year)													
	2/84	7/84	10/84	9/85	4/86	1/87	2/87	5/87	8/87	12/87	2/88	4/88	6/88	8/88
DO-1	NR	10	32	NS	NR	NS	NR	NR	NR	NS	ND	NS	NS	NS
DO-2	NR	NS	NS	1	NR	NS	NR	NR	NR	2(J)	ND	NS	NS	NS
DO-4	NR	20	16	NS	ND	ND	NR	NR	ND	2(J)	250(E)	ND	NS	ND
DG-5	NR	ND	9	NS	NR	NS	NR	NR	NR	NS	7(J)	NR	ND	ND
DG-6	ND	ND	13	NS	NR	ND	NR	NR	NR	NS	ND	NS	NS	NS
GM-8	NR	NR	NR	NA	NR	NS	NR	NR	NR	NS	NS	NR	NR	NR
'OM9	NR	NS	21	NA	NR	NS	NR	NR	NR	ND	ND	NR	NR	NR
GM-10	NR	NS	7	NA	NR	NS	NR	NR	NR	NS	NS	NR	NR	NR
GM-64	NS	NS	NS	ND	NR	NS	NR	NR	NR	2(J)	ND	NR	NR	NR
GM-66	NS	NS	NS	27	NR	NS	146	ND	ND	270	170	NR	NR	NR
GM-69	NS	NS	NS	3	NR	NS	17	ND	ND	22	13	NR	NR	NR
GM-75	NS	NS	NS	1	NR	NS	NR	NR	NR	3(J)	2(J)	NS	NS	NS
FPDWS (MCL)	1 (2)	1 (2)	1 (2)	1 (2)	1 (2)	1 (2)	1 (2)	1 (2)	1 (2)	1 (2)	1 (2)	1 (2)	1 (2)	1 (2)

Table 7 (continued)
Summary of Detected Concentrations of Vinyl Chloride
NAS Pensacola Operable Unit 10
(All results are in µg/L)

Monitoring Well	Sampling Event (Month/Year)													
	11/88	3/89	6/89	8/89	11/89	3/90	6/90	8/90	11/90	3/91	7/91	10/91	1/92	7/92
DG-1	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DG-2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DG-4	ND	NR	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DG-5	ND	NR	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DG-6	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
GM-8	NR	**7**	ND	ND	ND	**180**	(L)	**74**	ND	ND	ND	ND	(L)	ND
GM-9	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
GM-10	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
GM-64	NR	**4**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
GM-66	NR	**380**	ND	ND	**180(J)**	**240(D)**	ND	**180**	ND	ND	ND	ND	**200**	(L)
GM-69	NR	**14**	ND	**9(J)**	**11**	**12**	ND	(L)	(L)	(L)	ND	(L)	ND	(L)
GM-75	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
FPDWS (MCL)	1 (2)	1 (2)	1 (2)	1 (2)	1 (2)	1 (2)	1 (2)	1 (2)	1 (2)	1 (2)	1 (2)	1 (2)	1 (2)	1 (2)

KEY:

NS	=	Monitoring well did not exist, or existed and was not sampled.
NA	=	Monitoring well sampled but sample not analyzed for this parameter.
NR	=	No data reported.
ND	=	Parameter not detected at or above the detection limit.
(L)	=	Present below the detection limit.
(J)	=	Estimated value; compound present below the detection limit.
(E)	=	Concentration exceeded calibrated range of instrument.
(D)	=	Compound analyzed at a secondary dilution factor.

Standard sxceedences are **bold**.

Source: E&E 1992a, 1992b, and 1992d.

Table 8
Summary of Detected Concentrations of 1,1- Dichloroethene
NAS Pensacola Operable Unit 10
(All results are in µg/L)

Monitoring Well	Sampling Event (Month/Year)												
	2/84	5/84	7/84	10/84	9/85	1/87	2/87	5/877	8/87	12/87	2/88	6/88	8/88
DO-1	NS	NS	ND	800	NS	NS	NR	NR	NR	NS	ND	NA	NA
DO-6	8	<10	ND	26	NS	ND	NR	NR	NR	NS	ND	NS	NS
GM-8	NS	NS	ND	ND	NA	NS	NR	NR	NR	NR	NR	NR	NR
OM-9	NS	NS	126	(L)	NA	NS	11	NR	NR	ND	ND	NR	NR
OM-64	NS	NS	NS	NS	ND	NS	NR	NR	NR	ND	ND	9	NR
GM-66	NS	NS	NS	NS	1S0	NS	446	NR	NR	390	320(E)	600	NR
OM-67	NS	NS	NS	NS	ND	NS	ND	NR	NR	ND	ND	NR	NR
GM-69	NS	NS	NS	NS	ND	NS	NR	NR	NR	2(J)	ND	NR	NR
FPDWS (MCL)	7 (7)	7 (7)	7 (7)	7 (7)	7 (7)	7 (7)	7 (7)	7 (7)	7 (7)	7 (7)			

Table 8 (continued)
Summary of Detected Concentrations of 1,1-Dichloroethene
NAS Pensacola Operable Unit 10
(All results are in µg/L)

Monitoring Well	Sampling Event (Month/Year)													
	11/88	3/89	5/89	8/89	11/89	3/90	5/90	8/90	11/90	3/91	7/91	10/91	1/92	7/92
DG-1	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DO-6	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
GM-8	NR	**126**	**36**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
GM-9	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
GM-64	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
OM66	NR	**310**	**1,100**	**320(J)**	**320**	**350(E)**	**(L)**	**260**	(L)	(L)	ND	(L)	**240**	**190**
OM67	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
OM69	NR	ND	ND	ND	ND	ND	ND	98	ND	ND	ND	ND	ND	ND
(MCL)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)

KEY:

NS = Monitoring well did not exist, or existed and war not rampled.
NA = Monitoring well sampled but sample not analyzed for this parameter.
NR = No data reported.
ND = Paremeter not detected at or above the detection limit.
(L) = Present below the detection limit.
(J) = Estimated value; compound prerent below the detection limit.
(E) = Concentration exceeded calibrated range of inetrument.
Standard exceedances are **bold**.

Source: E&E 1992a, 1992b, and 1992d.

Table 9
Summary of Detected Concentrations of 1,2-Dichloroethane
NAS Pensacola Operable Unit 10
(All results are in µg/L)

Sampling Event (Month/Year)	Monitoring Well		FPDWS (MCL)
	GM-9	GM-64	
7/84	9,600	NS	3 (5)
10/84	<3	NS	3 (5)
9/85	NA	ND	3 (5)
1/87	NS	NS	3 (5)
2/87	ND	NR	3 (5)
5/87	ND	NR	3 (5)
8/87	ND	NR	3 (5)
12/87	ND	ND	3 (5)
2/88	ND	ND	3 (5)
6/88	ND	4	3 (5)
8/88	ND	ND	3 (5)
11/88	NR	NR	3 (5)
3/89	ND	ND	3 (5)
5/89	ND	ND	3 (5)
8/89	ND	ND	3 (5)
11/89	ND	ND	3 (5)
3/90	ND	ND	3 (5)
5/90	ND	ND	3 (5)
8/90	ND	ND	3 (5)
11/90	ND	ND	3 (5)
3/91	ND	ND	3 (5)
7/91	ND	ND	3 (5)
10191	ND	ND	3 (5)
1192	ND	ND	3 (5)
7/92	ND	ND	3 (5)

Source: E&E 1992a, 1992b, and 1992d.

Table 10 Summary of Detected Concentrations of Chloroform NAS Pensacola Operable Unit 10 (All results are in µg/L)		
Sampling Event (Month/Year)	Monitoring Well DG-1	MCL
7/84	NR	100
10/84	320	100
9/85	NS	100
1/87	NS	100
12/87	NS	100
2/88	ND	100
6/88	NS	100
8/88	NS	100
11/88	NS	100
3/89	NS	100
5/89	NS	100
8/89	NS	100
11/89	NS	100
3/90	NS	100
5/90	NS	100
8/90	NS	100
11/90	NS	100
3/91	NS	100
7/91	NS	100
10/91	NS	100
1/92	NS	100
7/92	NS	100

Sou7157E&E 1992a, 1992b, and 13924.

Table 11
Summary of Detected Concentrations of Carbon Tetrachloride
NAS Pensacola Operable Unit 10
(All results are in µg/L)

Sampling Event (Month/Year)	Monitoring Well		FPDWS (MCL)
	DG-1	DG-6	
2/84	NA	NR	3 (5)
7/84	NR	NR	3 (5)
10/84	425	**9**	3 (5)
9/85	NS	NS	3 (5)
1/87	NS	ND	3 (5)
12/87	NS	NS	3 (5)
2/88	ND	ND	3 (5)
6/88	NS	NS	3 (5)
8/88	NS	NS	3 (5)
11/88	NS	NS	3 (5)
3/89	NS	NS	3 (5)
5/89	NS	NS	3 (5)
8/89	NS	NS	3 (5)
11/89	NS	NS	3 (5)
3/90	NS	NS	3 (5)
5/90	NS	NS	3 (5)
8/90	NS	NS	3 (5)
11/90	NS	NS	3 (5)
3/91	NS	NS	3 (5)
7/91	NS	NS	3 (5)
10/91	NS	NS	3 (5)
1/92	NS	NS	3 (5)
7/92	NS	NS	3 (5)

KEY:

NS = Monitoring well did not exist, or existed and was not sampled.
NA = Monitoring well sampled but sample not analyzed for this parameter.
NR = No data reported.
ND = Parameter not detected at or above the detection limit.
Standard exceedances are bold.

Source: E&E 1992a, 1992b, and 1992d.

Table 12
Summary of Detected Concentrations of Trichloroethene
NAS Pensacola Operable Unit 10
(All results are in µg/L)

Monitoring Well	Sampling Event (Month/Year)											
	2/84	5/84	7/84	10/84	9/85	1/87	2/87	5/87	8/87	12/87	2/88	6/88
UG-1	NR	NR	ND	NR	NS	ND	NR	NR	NR	NS	ND	ND
DG-1	NR	NR	ND	20	NS	NS	NR	NR	NR	NS	ND	NS
DG-2	NR	NR	NS	NS	6	NS	NR	NR	NR	ND	ND	NS
DG-4	NR	NR	ND	13	NS	ND	NR	NR	NR	ND	1(J)	NS
DG-6	58	21	20	32	NS	ND	NR	NR	NR	NR	ND	NS
GM-8	NR	NR	ND	ND	NA	NS	NR	NR	NR	NS	NS	NR
GM-9	NR	NR	60	(L)	NA	NS	7	1	NR	ND	ND	ND
GM-12R	NR	NR	NR	NR	NA	ND	NR	NR	NR	NS	NR	NR
GM-65	NS	NS	NS	NS	4	NS	NR	NR	NR	50	ND	ND
GM-66	NS	NS	NS	NS	2,600	NS	15,907	24,750	13,600	10,000	4,200(E)	6,300
GM-67	NS	NS	NS	NS	50	NS	78	8	NR	ND	ND	ND
GM-68	NS	NS	NS	NS	10	ND	NR	NR	NR	ND	ND	ND
GM-69	NS	NS	NS	NS	3	NS	8	6	NR	ND	ND	ND
GM-70	NS	NS	NS	NS	7	NS	NS	NS	NS	NS	NS	NS
FPDWS (MCL)	3 (3)	3 (3)	3 (3)	3 (3)	3 (3)	3 (3)	3 (3)	3 (3)	3 (3)	3 (3)	3 (3)	3 (3)

Table 12 (continued)
Summary of Detected Concentrations of Trichloroethene
NAS Pensacola Operable Unit 10
(All results are in µg/L)

Monitoring Well	Sampling Event (Month/Year)														
	8/88	11/88	3/89	5/89	8/89	11/89	3/90	5/90	8/90	11/90	3/91	7/91	10/91	1/92	7/92
UG-1	ND	ND	ND	ND	ND	**6(B)**	ND	ND	ND	ND	ND	ND	ND	ND	NS
DG-1	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DG-2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DG-4	ND	ND	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DO-6	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
OM 8	NS	NS	**56**	**1(J)**	ND	1(J)	ND	ND	ND	ND	ND	ND	ND	ND	ND
OM-9	ND	NS	ND	ND	ND	**4(J,B)**	ND	ND	ND	ND	ND	ND	ND	ND	ND
GM-12R	NR	NS	NR	ND	ND	**6(B)**	ND	ND	NA	ND	ND	ND	ND	NA	NA
OM 66	ND	NS	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
GM-66	6,000	NA	**8.900**	6,600	**11,000**	**8,400(E)**	ND	ND	**7,300(E)**	**140**	**8,200**	**12,000**	**4.600**	**4,800**	**4,200**
OM-67	ND	NS	ND	ND	ND	**2(J,B)**	ND	ND	ND	ND	ND	ND	ND	ND	NA
OM-68	ND	NS	ND	ND	ND	**4(J,B)**	ND	ND	ND	ND	ND	ND	ND	ND	ND
GM-69	ND	NS	ND	ND	ND	**1(J)**	ND	ND	ND	ND	ND	ND	ND	ND	**(L)**
OM 70	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
FPDWS (MCL)	**3 (3)**	**3 (3)**	**3 (3)**	**3 (3)**	**3 (3)**	**3 (3)**	**3 (3)**	**3 (3)**	**3 (3)**	**3 (3)**	**3 (3)**	**3 (3)**	**3 (3)**	**3 (3)**	**3 (3)**

KEY:

NS = Monitoring well did not exist, or existed end was not sampled.
NA = Monitoring well sampled but rample not analyzed for this parameter.
NR = No data reported.
ND = Parameter not detected.
(L) = Present below the detection limit.
(J) = Estimated value; compound prerent below the detection limit.
(B) = Compound also present in method blank.
(E) = Exceeds calibration limit.
Standard exceedances ere **bold**.

Source: E&E 1992a, 1992b, and 1992d.

Table 13
Summary of Detected Concentrations of 1,1,1-Trichloroethane
NAS Pensacola Operable Unit 10
(All results are in µg/L)

Sampling Event (Month/Year)	Monitoring Well				FPDWS (MCL)
	DG-1	DG-6	GM-8	GM-9	
7/84	110	330	ND	11.600	200 (200)
10/84	5,900	103	ND	(L)	200 (200)
9/85	NS	NS	NA	NA	200 (200)
1/87	NS	ND	NS	NS	200 (200)
2/87	NR	NR	NR	366	200 (200)
5/87	NR	NR	NR	NR	200 (200)
8/87	NR	NR	NR	NR	200 (200)
12/87	NS	NS	NS	ND	200 (200)
2/88	ND	ND	NS	ND	200 (200)
6/88	NS	NS	NR	ND	200 (200)
8/88	NS	NS	NR	ND	200 (200)
11/88	NS	NS	NR	NR	200 (200)
3/89	NS	NS	1,200	ND	200 (200)
5/89	NS	NS	6	ND	200 (200)
8189	NS	NS	ND	ND	200 (200)
11/89	NS	NS	ND	ND	200 (200)
3/90	NS	NS	ND	ND	200 (200)
5/90	NS	NS	ND	ND	200 (200)
8/90	NS	NS	ND	ND	200 (200)
11/90	NS	NS	ND	ND	200 (200)
3/91	NS	NS	ND	ND	200 (200)
7/91	NS	NS	ND	ND	200 (200)
10191	NS	NS	ND	ND	200 (200)
1192	NS	NS	ND	ND	200 (200)
7/92	NS	NS	ND	ND	200 (200)

Table 14
Summary of Detected Concentrations of Tetrachloroethene
NAS Pensacola Operable Unit 10
(All results are in µg/L)

Monitoring Well	Sampling Event (Month/Year)												
	2/84	5/84	7/84	10/84	9/85	1/87	2/87	5/87	8/87	12/87	2/88	6/88	8/88
DO-1	NS	NS	ND	600	NS	NS	NR	NR	NR	NS	ND	NS	NS
DG-2	NS	NS	NS	NS	17	NS	NR	NR	NR	ND	ND	NS	NS
DG-3	NS	NS	NS	NS	10	NS	NS	NS	NS	NS	NS	NS	NS
DG-4	NS	NS	ND	11	NS	ND	NR	NR	NR	ND	ND	ND	ND
DG-6	6	<10	ND	38	NS	ND	NR	NR	NR	NS	ND	NS	NS
GM-8	NS	NS	ND	NR	NA	NS	NR	NR	NR	NS	NS	NR	NR
GM-9	NS	NS	675	4	NA	NS	42	23	NR	ND	ND	ND	ND
GM-62	NS	NS	NS	NS	6	NS	NR	NR	NR	ND	ND	ND	ND
GM-63	NS	NS	NS	NS	6	NS	NR	NR	NR	ND	ND	ND	ND
GM-64	NS	NS	NS	NS	9	NS	NR	NR	NR	ND	ND	ND	ND
GM-66	NS	NS	NS	NS	5	NS	8	ND	ND	4(J)	4(J)	ND	ND
GM-69	NS	NS	NS	NS	ND	NS	NR	NR	NR	ND	ND	ND	ND
GM-81	NS	NS	NS	NS	78	NS	NS	NS	NS	NS	NS	NS	NS
GM-82	NS	NS	NS	NS	19	NS	NS	NS	NS	NS	NS	NS	NS
GM83	NS	NS	NS	NS	26	NS	NR	NR	NR	NA	NA	NA	NA

Table 14 (continued)
Summary of Detected Concentrations of Tetrachloroethene
NAS Pensacola Operable Unit 10
(All results are in µg/L)

Monitoring Well	Sampling Event (Month/Year)													
	11/88	3/89	5/89	8/89	11/89	3/90	5/90	8/90	11/90	3/91	7/91	10/91	1/92	7/92
DG-1	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DG-2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DG-4	NR	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DG-6	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
GM-8	NR	**138**	**22**	**9**	1(J)	ND	ND	ND	ND	(L)	ND	ND	ND	ND
GM-9	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
GM-62	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
GM-63	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
GM-64	NR	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
GM-66	NR	ND	ND	ND	ND	4(J)	ND	ND	ND	ND	ND	ND	(L)	ND
GM-69	NR	4	**6**	7	7	(L)	(L)	ND	ND	ND	ND	ND	ND	ND
GM-81	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
OM-82	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
GM-83	NR	NS	NA	NS	NA	NA	NA	NS	NA	NA	NA	NA	NS	NS
FPDWS (MCL)	3 (5)	3 (5)	3 (5)	3 (5)	3 (5)	3 (5)	3 (5)	3 (5)	3 (5)	3 (5)	3 (5)	3 (5)	3 (5)	3 (5)

KEY:

NS = Monitoring well did not exist, or existed and was not sampled.
NA = Monitoring well sampled but sample not analyzed for thie parameter.
NR = No data reported.
ND = Parameter not detected et or above the detection limit.
(L) = Preeent below the detection limit.
(J) = Estimated value; compound present below the detection limit.
Standard exceedances are bold.

Source: E&E 1992a, 1992b, and 1992d.

Table 15
Summary of Detected Concentrations of Benzene
NAS Pensacola Operable Unit 10
(All results are in µg/L)

Sampling Event (Month/Year)	Monitoring Well							FPDWS (MCL)
	DG-4	DG-5	DG-6	GM-8	GM-66	GM-67	GM-69	
2/84	NS	NS	3.5	ND	NS	NS	NS	1 (5)
5/84	NS	NS	<10	ND	NS	NS	NS	1 (5)
7/84	NS	NS	ND	ND	NS	NS	NS	1 (5)
10/84	2	2	2	ND	NS	NS	NS	1 (5)
9/85	NS	NS	NS	NA	ND	NR	3	1 (5)
1/87	ND	NS	ND	NS	NS	NS	NS	1 (5)
2/87	NR	NR	NR	ND	ND	NR	9	1 (5)
5/87	NR	NR	NR	ND	ND	NR	3	1 (5)
8/87	NR	NR	NR	ND	ND	2	NR	1 (5)
12/87	3(J)	NS	NS	ND	ND	ND	6	1 (5)
2/88	0.4(J)	ND	ND	ND	ND	ND	5	1 (5)
6/88	NS	NR	NS	ND	ND	ND	ND	1 (5)
8/88	NR	NR	NS	ND	ND	ND	ND	1 (5)
11/88	NS	NR	NS	ND	NR	NA	NA	1 (5)
3/89	NS	NR	NS	ND	ND	ND	3	1 (5)
5/89	NS	NS	NS	ND	ND	ND	ND	1 (5)
8/89	NS	NS	NS	ND	ND	ND	3(J)	1 (5)
11/89	NS	NS	NS	ND	ND	ND	ND	1 (5)
3/90	NS	NS	NS	(L)	2(J)	ND	ND	1 (5)
5/90	NS	NS	NS	ND	ND	ND	ND	1 (5)
8/90	NS	NS	NS	(L)	ND	ND	(L)	1 (5)
11/90	NS	NS	NS	ND	ND	ND	ND	1 (5)
3/91	NS	NS	NS	ND	ND	ND	ND	1 (5)
7/91	NS	NS	NS	**750**	ND	ND	ND	1 (5)
10/91	NS	NS	NS	**350**	ND	ND	ND	1 (5)
1/92	NS	NS	NS	**300**	ND	ND	ND	1 (5)
7/92	NS	NS	NS	ND	ND	ND	ND	1 (5)

K N.

NS = Monitoring well did not exist, or existed and was not sampled.
NA = Monitoring well sampled but sample not analyzed for this parameter.
NR = No data reported.
ND = Parameter not detected at or above the detection limit.
(L) = Present below the detection limit.
(J) = Estimated valw; compound pment below the detection limit.
Standard exceedances am bold.

Source: E&E 1992a, 1992b, and 1992d.

Table 16
Summary of Detected Concentrations of 1,4-Dichlorobenzene
NAS Pensacola Operable Unit 10
(All results are in µg/L)

Monitoring Well	Sampling Event (Month/Year)													
	2/84	5/84	7/84	10/84	9/85	1/87	2/87	5/87	8/87	12/87	2/88	4/88	6/88	8/88
GM-69	NS	NS	NS	NS	1,350	NS	165	NA	473	880	710	NS	588	800
GM-8	NS	NS	NA	NA	30	NS	NS	NS	NS	NS	NS	NS	NS	NS
DG-1	NS	NS	200	387	NS	NS	NS	NS	NS	NS	15	NS	NS	NS
DG-6	37.6	77	120	182	NS	40	NS	NS	NS	NS	ND	NS	NS	NS
DG-4	NS	NS	ND	98	NS	30	NS	NS	NS	63	45	88	NS	ND
DG-5	NS	NS	6(J)	170	NS	NS	NS	NS	NS	NS	24	NS	ND	ND
DG-2	NS	NS	NS	NS	170	NS	NS	NS	NS	66	28	NS	NS	NS
GM-9	NS	NS	NA	NA	4,000	NS	127	NA	ND	ND	ND	NS	ND	ND
GM-10	NS	NS	NA	NA	120	NS	NS	NS	NS	NS	NS	NS	NS	NS
GM-66	NS	NS	NS	NS	ND	NS	ND	NV	ND	ND	ND	NV	ND	15
GM-67	NS	NS	NS	NS	200	NS	128	NA	45	ND	ND	NS	ND	ND
FPDWS (MCL)	75 (75)	75 (75)	75 (75)	75 (75)	75 (75)	75 (75)	75 (75)	75 (75)	75 (75)	75 (75)	75 (75)	75 (75)	75 (75)	75 (75)

Table 16 (Continued)
Summary of Detected Concentrations of 1,4-Dichlorobenzene
NAS Pensacola Operable Unit 10
(All results are in µg/L)

Monitoring Well	Sampling Event (Month/Year)													
	11/88	3/89	5/89	8/89	11/89	3/90	5/90	8/90	11/90	3/91	7/91	10/91	1/92	7/92
GM-69	NS	**1,510**	**410**	**560**	**250**	140	660	**330(E)**	200	390	390	**300(E)**	460	680
OM-8	NS	424	**130**	**66**	**25**	**2,800**	2,600	**860**	**190**	**3,800(E)**	**820**	260	**44**	**(L)**
DG-1	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DO-6	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DO-4	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DO-5	ND	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
DO-2	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS	NS
OM-9	NS	**7**	4(J)	ND	**ND**	ND	ND	ND	**(L)**	**(L)**	**(L)**	**(L)**	**(L)**	**(L)**
OM-10	NS	13	**11**	10	**5(J)**	**(L)**	**(L)**	**(L)**	**(L)**	**(L)**	**(L)**	ND	ND	ND
OM66	NS	NV	28	22	16	NS	28	11	ND	NS	**40**	NV	24	47
GM-67	NS	11	8(J)	4(J)	8(J)	**(L)**	**(L)**	**(L)**	**(L)**	**(L)**	12	10	**(L)**	**(L)**
FPDWS (MCL)	**75 (75)**	**75 (75)**	**7s (75)**	**75 (75)**	**75 (75)**	**75 (75)**	**75 (75)**	**75 (75)**	**75 (75)**	**75 (75)**	**75 (75)**	**75 (751**	**75 (75)**	**75 (75)**

KEY:

NS = Monitoring well did not exist, or existed and **was** not sampled.
NA = Monitoring well sampled but sample not analyzed for this paremeter.
ND = Parameter not detected at or above the detection limit.
NV = Data Not Available
(L) = Present below the detection limit.
(J) = Estimated value; compound present below the detection limit.
(El = Concentration exceeded celibrated range of instrument.
Standard exceedencee ere **bold**.

Source: E&E 1992a, 1992b, and 1992d.

APPENDIX B

SOIL GAS REPORT

SOIL GAS SURVEY

PENSACOLA NAVAL AIR STATION
PENSACOLA, FLORIDA

PREPARED FOR

ENSAFE/ALLEN & HOSHALL
5724 SUMMER TREES DRIVE
MEMPHIS, TENNESSEE 38134

PREPARED BY

TARGET ENVIRONMENTAL SERVICES, INC.
9180 RUMSEY ROAD
COLUMBIA, MARYLAND 21045
(410) 992-6622

DECEMBER 1992

TABLE OF CONTENTS

	Page
EXECUTIVE SUMMARY	iii
Introduction	1
Sample Collection and Analysis	1
Quality Assurance/Quality Control (QA/QC) Evaluation	3
SITE 33 (WASTEWATER **TREATMENT** PLANT PONDS)	
Results	5
Interpretation	6
Conclusions	8
SITE **39** (OAK GROVE CAMPGROUND)	
Results	9
Conclusions	9

FIGURES

Figure 1k Soil Gas Sample Locations - Site **33**

Figure 1B. Ground Water Sampling Locations - Site **33**

Figure 2 Total FID Volatiles in Soil Gas - Site **33**

Figure 3 Xylenes in Soil Gas - Site **33**

Figure 4. 1,1-Dichloroethene (1,1-DCE) in Soil Gas - Site 33

Figure 5. Analyte Concentrations in the Ground Water - Site 33

Figure 6k Soil Gas Sample Locations - Site **39**

Figure 6B. Ground Water Sampling Locations - Site **39**

Figure 7. Tetrachloroethene (PCE) in Soil Gas - Site **39**

TABLE OF CONTENTS (CONT.)

TABLES

Table 1. Analyte Concentrations in Soil Gas via GC/FID - Site 33

Table 2. Analyte Concentrations in Soil Gas via GCECD - Site 33

Table 3. Analyte Concentrations in Ground Water via GC/FID - Site 33

Table 4. Analyte Concentrations in Ground Water via GCECD - Site 33

Table 5. Analyte Concentrations in Soil Gas via GC/FID - Site 39

Table 6. Analyte Concentrations in Soil Gas via GCECD - Site 39

Table 7. Analyte Concentrations in Ground Water via GCFID - Site 39

Table 8. Analyte Concentrations in Ground Water via GC/ECD - Site 39

APPENDICES

APPENDIX A - Field Procedures

APPENDIX B - Laboratory Procedures

APPENDIX C - Detectability & Terminology

EXECUTIVE SUMMARY

On November 10-13 and 16-19, 1992, TARGET Environmental Services, Inc. (TARGET) collected soil gas and ground water samples at the Pensacola Naval Air Station in Pensamla, Florida. Two sites were surveyed, the Wastewater Treatment Plant Ponds (Site 33), which is part of Operable Unit 10 (OU-10) and Oak Grove Campground (Site 39). A total of 194 soil gas samples and 8 ground water samples were collected at Site 33. Fifteen (15) soil gas and 3 ground water samples were collected at Site 39. Sampling depths varied from 1 to 4 feet in response to the depth to ground water. The soil gas and the headspace of the ground water samples were analyzed on a gas chromatograph equipped with a flame ionization detector (GC/FID) for petroleum hydrocarbons and an electron capture detector (GC/ECD) for chlorinated hydrocarbons. The objective of the soil gas survey was to screen the sites for subsurface volatile organic compounds in order to guide placement of soil and ground water sampling points. Ground water samples were collected under the direction of the client to confirm the presence of ground water contamination at those locations.

Soil gas data from Site 33 revealed significant concentrations of 1,1-dichloroethene (1,1-DCE) in the soil gas samples collected from the central portion of the site. Elevated levels of petroleum hydrocarbons were observed in the soil gas and ground water at the southern boundary of Site 33. Chromatographic data suggests the contaminant may be kerosene or a weathered fuel product. Lower levels of petroleum hydrocarbons occurred at the northwestern corner of the eastern pond. The low levels of volatile hydrocarbons observed elsewhere on the site appear to be the result of naturally occurring terpenes and do not represent a contamination problem.

Soil gas data from Site 39 revealed only a low level of tetrachloroethene (PCE) in a sample from the northwestern site boundary. None of the remaining petroleum or chlorinated analytes were present above the 1 $\mu g/l$ reporting limit in any of the soil gas or ground water samples.

Introduction

Ensafe/Allen & Hoshall (E/AH) contracted TARGET Environmental Services, Inc. (TARGET) to perform a soil gas survey at the Pensacola Naval Air Station in Pensacola, Florida. Two sites were surveyed, the Wastewater Treatment Plant Ponds (Site 33), which is part of Operable Unit 10 (OU-10) and Oak Grove Campground (Site 39). The work was performed in support of the U.S. Navy Comprehensive Long-Term Environmental Action Navy (CLEAN) Program. The objective of the soil gas survey was to screen the sites for subsurface volatile organic compounds in order to guide placement of soil and ground water sampling points. Ground water samples were also collected at each site under the direction of E/AH in order to confirm the presence of dissolved contamination in the ground water at those locations.

The surveys were designed and the sampling points were surveyed in by E/AH. Samples were planned to be collected just above the ground water table, which varies from 1 to 20 feet below grade depending upon location. Near surface soils were reported to consist of poorly graded quartz sand, with a high permeability. Ground water velocity was reported to be generally high. The field phase of the soil gas surveys was conducted on November 10-13 and 16-19, 1992.

Sample Collection and Analysis

Soil gas samples were collected at a total of 195 locations and ground water at 8 locations at the Wastewater Treatment Plant Ponds (Site 33), as shown in Figures 1A and 1B. A total of 15 soil gas and 3 ground water samples were collected at the Oak Grove Campground (Site 39), as shown in Figures 2A and 2B. Sampling depths varied from 1 to 4 feet due to fluctuations in the depth to ground water. Six planned samples were not collected due to the presence of surface water. These locations are labelled "NS" on the maps. Duplicate samples were collected at

locations -2.4/11, -5.2/6.6, 1/-0.5, 2/7.5, 4/7, 9/7 and 13/6. The duplicate sample numbers are followed by a "D" in the data tables. A detailed explanation of the sampling procedure is provided in Appendix A.

All of the soil gas samples and the headspace of the ground water samples collected during the field phase of the survey were subjected to dual analyses on site in E/AH's field trailer. One analysis was conducted according to EPA Method 601 (modified) on a gas chromatograph equipped with an electron capture detector (ECD), and using direct injection. Specific analytes standardized for this analysis were:

1,1-dichloroethene (11DCE)
methylene chloride (CH_2Cl_2)
trans-1,2-dichloroethene (t12DCE)
1,1-dichloroethane (11DCA)
cis-1,2-dichloroethene (c12DCE)
chloroform (CHCI,)
1,1,1-trichloroethane (111TCA)
carbon tetrachloride (CCI,)
trichloroethene (TCE)
1,1,2-trichloroethane (112TCA)
tetrachloroethene (PCE)

The chlorinated hydrocarbons in this suite were chosen because of their common usage in industrial solvents, and/or their degradational relationship to commonly used compounds.

The second analysis was conducted according to EPA Method 602 (modified) on a gas chromatograph equipped with a flame ionization detector (FID), and using direct injection. The analytes selected €or standardization in this analysis were:

vinyl chloride
benzene
toluene
ethylbenzene
meta- and para- xylene
ortho- xylene

These compounds were chosen because of their utility in evaluating the presence of Euel products, or petroleum based solvents. *An* explanation of the laboratory procedures is provided in Appendix B.

The tabulated results of the laboratory analyses of the samples are reported in micrograms per liter (µg/l) in Tables 1 through 8. Although "micrograms per liter" is equivalent to "parts per billion (v/v)" in water analyses, they are not equivalent in gas analyses, due to the difference in the mass of equal volumes of water and gas matrices. The xylenes concentrations reported in the FID tables are the sum of the m- and p-xylene and the o-xylene concentrations for each sample.

Quality Assurance/Quality Control (QA/QC) Evaluation

Field QA/QC Samples

Field control samples were collected at the beginning and end of each day's field activities and after every twentieth soil gas sample. These *QNQC* samples were obtained by filtering ambient air through a dust and organic vapor filter cartridge and encapsulating as described in the "Field Procedures" in Appendix A. The laboratory results are reported in the data tables. Concentrations of all analytes were below the reporting limit in all field control samples, indicating that the *QNQC* measures employed were sufficient to prevent cross-contamination of the samples during collection.

Laboratory QA/QC Samples

To document analytical repeatability, a duplicate analysis was performed on every tenth field sample. Laboratory blanks of nitrogen gas were also analyzed after every tenth field sample. The results of these analyses are reported in the data tables. The duplicate analyses were within

acceptable limits. Concentrations of all analytes were below the reporting limit in all laboratory blanks.

WASTEWATER TREATMENT PLANT PONDS (Site 33)

Results

In order to provide graphic presentation of the results, selected individual data sets in Tables 1 through 4 have been mapped to produce Figures 2 through 5. The soil gas data has been contoured, however, the irregular and wide spacing of the ground water locations precluded meaningful contouring of the ground water data. Dashed contours are used where patterns are extrapolated into areas of less complete data, or as auxiliary contours. Map sample points with no data shown indicate that the analyte concentrations in the sample were below the reporting limit. An explanation of the terminology used in this report is provided in Appendix C.

The Total FID Volatiles map (Figure 3) reveals low levels in several areas of the site: at the southern survey boundary (Samples -5.2/6.6 and -5.4/4.5); in the west central portion of the site (Samples 9/3, 8/1.2, 5/2 and 3/3); in the east central portion of the site (Sample 7/9) and near the northwestern survey boundary (Samples 13/2 and 11/1.2). Very low levels (<100 µg/l) were observed throughout much of the northern half of the site, and in a few other widely scattered locations.

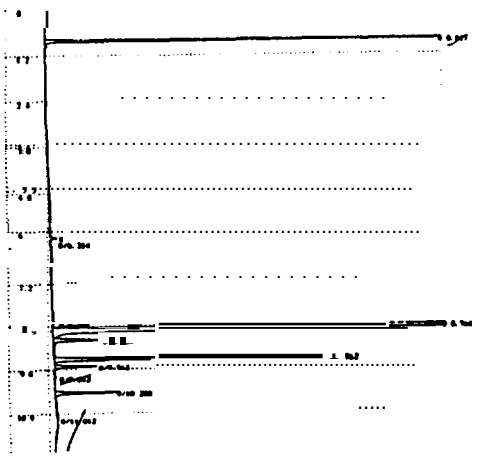
Very low levels of xylenes (Figure 4) occurred in several widely scattered samples. The occurrences of the remaining analytes were not mapped separately, as the concentrations were very low and the lateral extent was even less widespread than xylenes. Vinyl chloride was present above the reporting limit only in Samples 0.2/5.5 and 0.6/6.1. The identification of vinyl chloride is based purely on retention time and analysis by gas chromatography/mass spectroscopy is necessary to absolutely confirm its presence. Benzene occurred only in Sample 7/6. Toluene was present in Samples -4.4/3.9, -5.2/6.6, 0/2, 2/7.5, 3/4 and 15/4. Ethylbenzene occurred in Samples OD, 6/6 and 11/7.

GC/ECD analysis of the samples from Site 33 revealed elevated levels of 1,1-dichloroethene (1,1-DCE, Figure 5) in the central portion of the site. The highest level (641 µg/l) occurred in Sample 4/5.5. Chloroform ($CHCl_3$) occurred only in Sample 0/9.8, tetrachloroethene (PCE) only in Sample 4/55 and methylene chloride (CH_2Cl_2) only in Sample 7/5.5. None of the remaining chlorinated analytes were present above the 1 µg/l reporting limit in any of the samples.

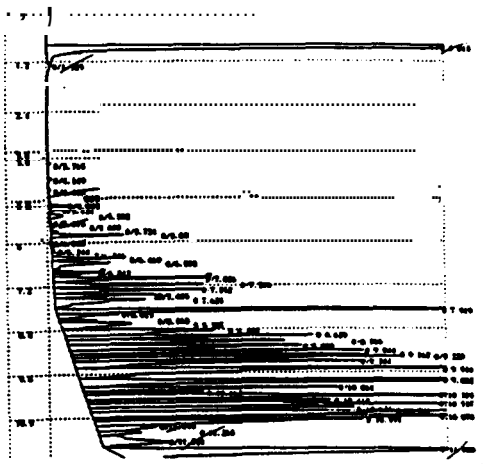
The results of the analysis of the headspace of the ground water samples are mapped in Figure 6. Significantly elevated levels of Total FID Volatiles were present in Samples -5.2/6.6W, from the southern survey boundary, and in Sample 6/6W, from the central portion of the site. Toluene, ethylbenzene and xylenes occurred in Sample -5.2/6.6W, benzene in Sample 6/5.5W and xylenes in Sample 6/6W. 1,1-DCE was present in Sample 6/5.5W and a low level of chloroform occurred in Sample 4/5.5W. None of the remaining chlorinated analytes were present above the 1 µg/l reporting limit in any of the samples.

Interpretation

The concentrations of volatile petroleum hydrocarbons observed in the soil gas samples from Site 33 are relatively low. The FID chromatogram signatures of the majority of the samples reveal 2 or 3 late-eluting peaks typical of terpenes, as exemplified by the signature of Sample 13/2 (next page, left). Terpenes are naturally occurring hydrocarbons exuded by plant roots and do not represent a contamination problem. A series of late-eluting peaks suggestive of a weathered fuel product or kerosene is depicted in the signatures of soil gas Samples -5.2/6.6 and ground water Samples -5.2/6.6W and 6/6W. The signature of Sample -5.2/6.6W is shown (next page, right) as an example. Chromatographic evidence suggests and the analytical order confirms that the volatile hydrocarbons reported for ground water Sample 15/4W are the result of carryover in the

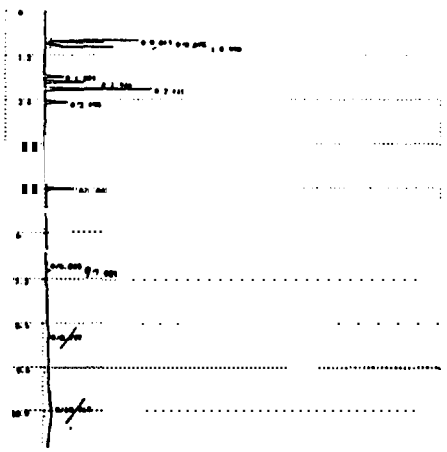


GC/FID Chromatogram
Signature of Sample 13/2



GC/FID Chromatogram
Signature of Sample -5.2/6.6W

chromatographic column following the analysis of "hot" Sample 6/6W. The signatures of the soil gas samples collected near the northwestern corner of the eastern pond reveal a series of early-eluting peaks suggestive of gasoline, shown by the signature of Sample 0.6/6.1 (left). One prominent early-eluting peak at a retention time of 1.2 minutes, representing an unidentified hydrocarbon is responsible for the volatile hydrocarbons reported for Samples 5/1 and 5/45 No chlorinated hydrocarbons were present above the 1 μg/l reporting limit in this sample.



GC/FID Chromatogram
Signature 'of Sample 0.6/6.1

Conclusions

- Elevated levels of petroleum hydrocarbons are present in the soil gas and ground water at the southern boundary of Site 33. Chromatographic data suggests the contaminant may be kerosene or a weathered fuel product.

- Lower levels of petroleum hydrocarbons are present at the northwestern corner of the eastern pond.

- Significant concentrations of 1,1-dichloroethene (1,1-DCE) are present in the soil gas in the central portion of the site.

- The low levels of volatile hydrocarbons observed elsewhere on the site appear to be the result of naturally occurring terpenes and do not represent a contamination problem.

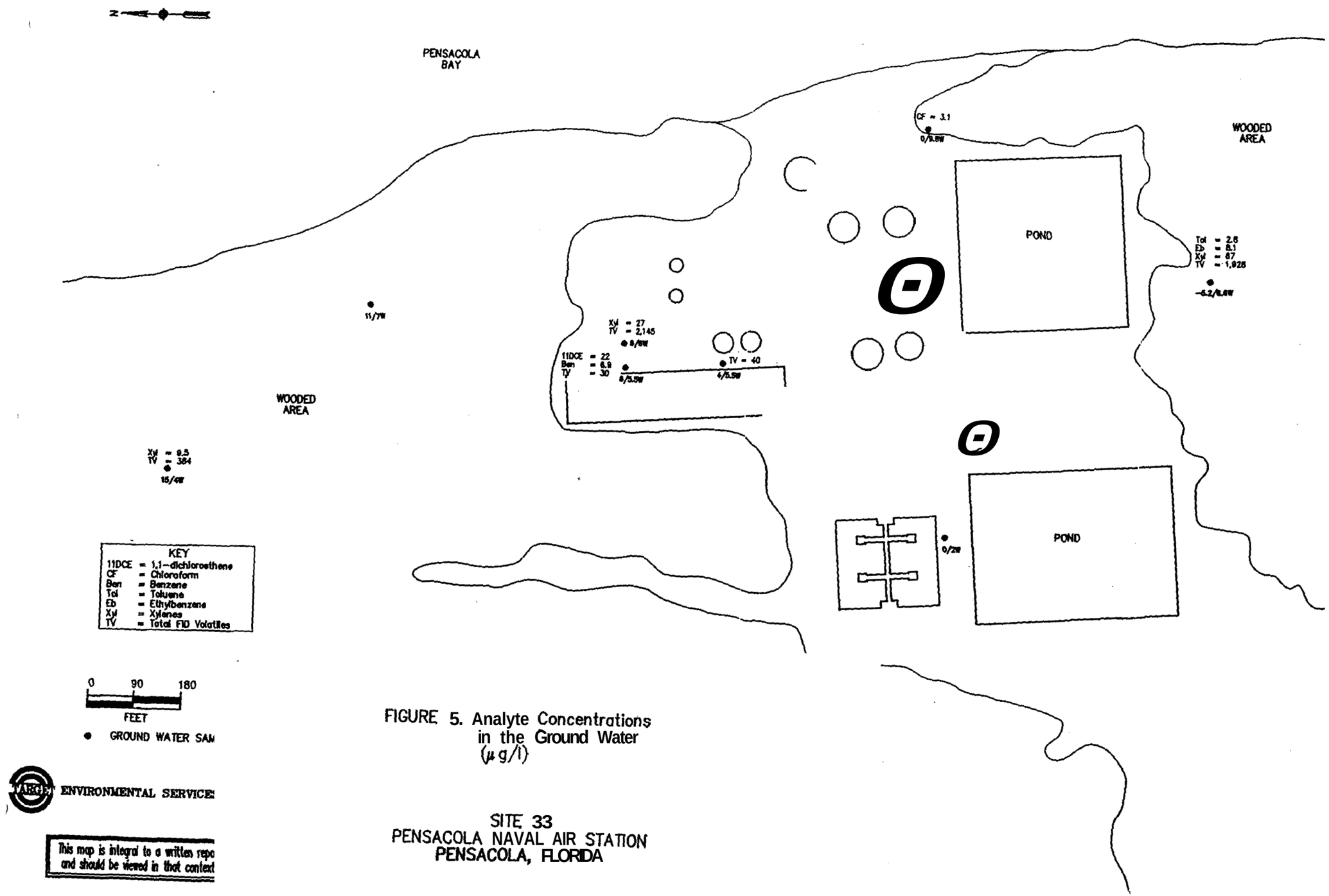


FIGURE 5. Analyte Concentrations in the Ground Water ($\mu g/l$)

SITE 33
PENSACOLA NAVAL AIR STATION
PENSACOLA, FLORIDA

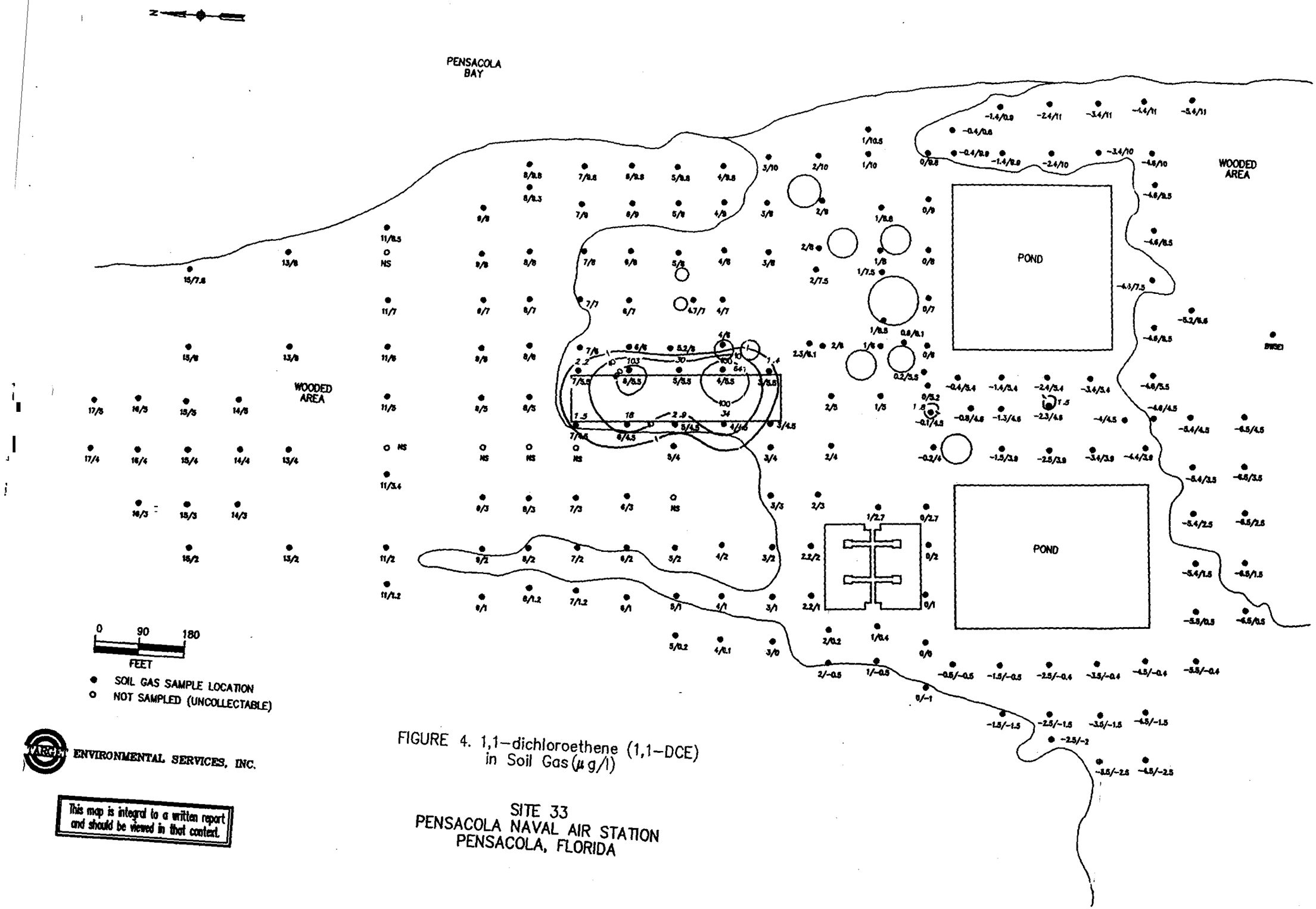
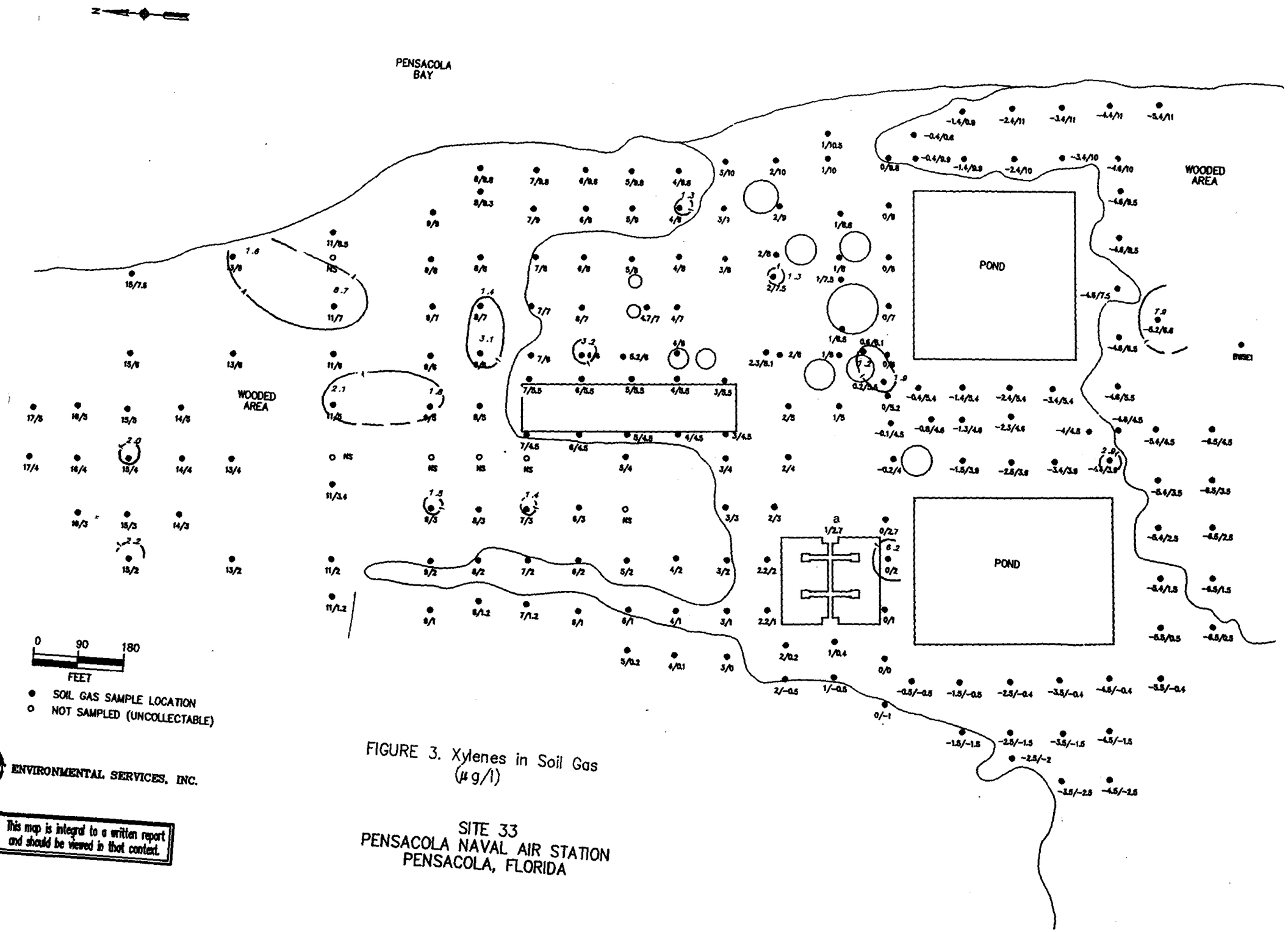


FIGURE 4. 1,1-dichloroethene (1,1-DCE) in Soil Gas ($\mu g/l$)

SITE 33
PENSACOLA NAVAL AIR STATION
PENSACOLA, FLORIDA

TARGET ENVIRONMENTAL SERVICES, INC.

This map is integral to a written report and should be viewed in that context.



TARGET ENVIRONMENTAL SERVICES, INC.

This map is integral to a written report and should be viewed in that context.

FIGURE 3. Xylenes in Soil Gas
($\mu g/l$)

SITE 33
PENSACOLA NAVAL AIR STATION
PENSACOLA, FLORIDA

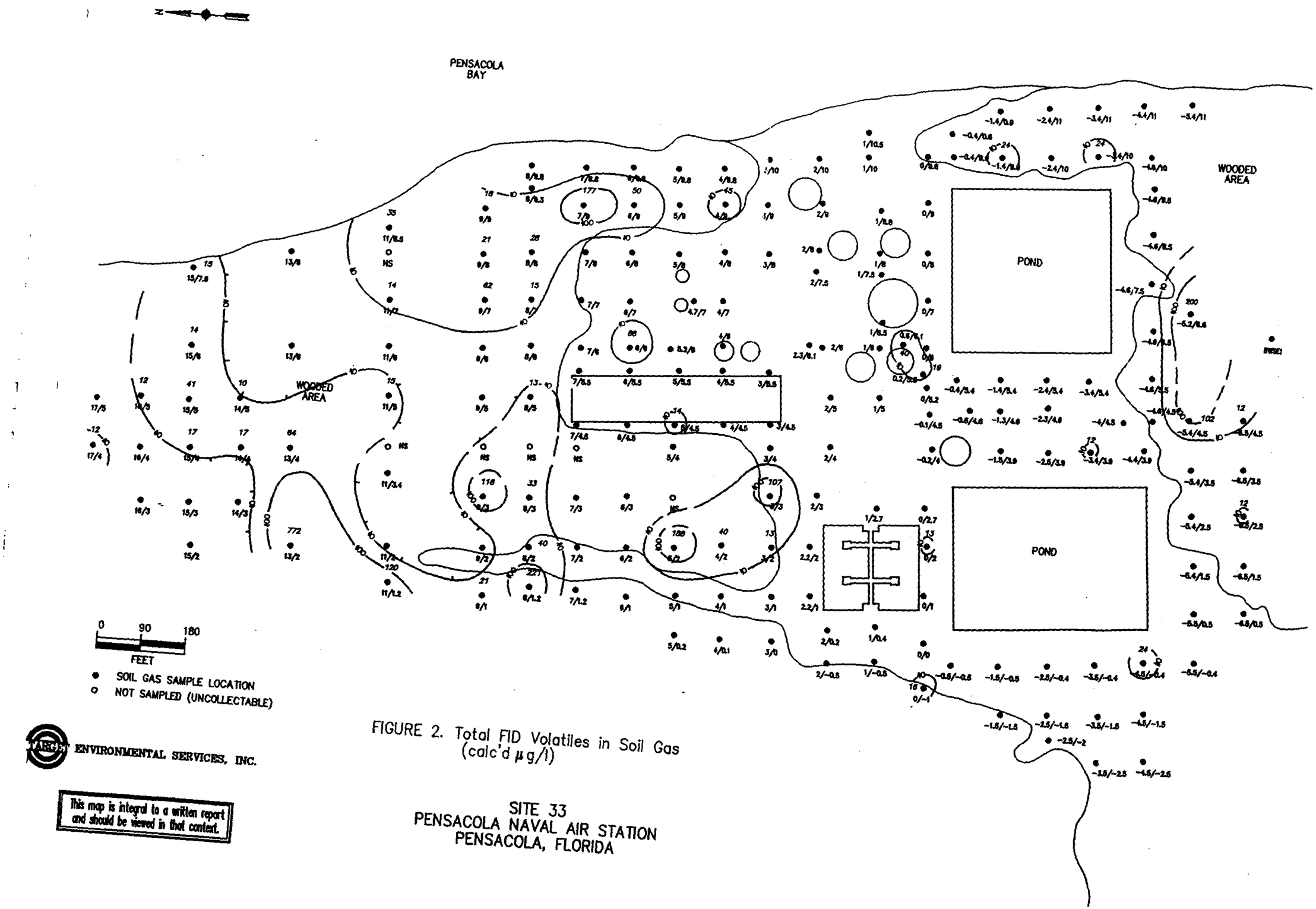


FIGURE 2. Total FID Volatiles in Soil Gas (calc'd µg/l)

SITE 33
PENSACOLA NAVAL AIR STATION
PENSACOLA, FLORIDA

TARGET ENVIRONMENTAL SERVICES, INC.

This map is integral to a written report and should be viewed in that context.

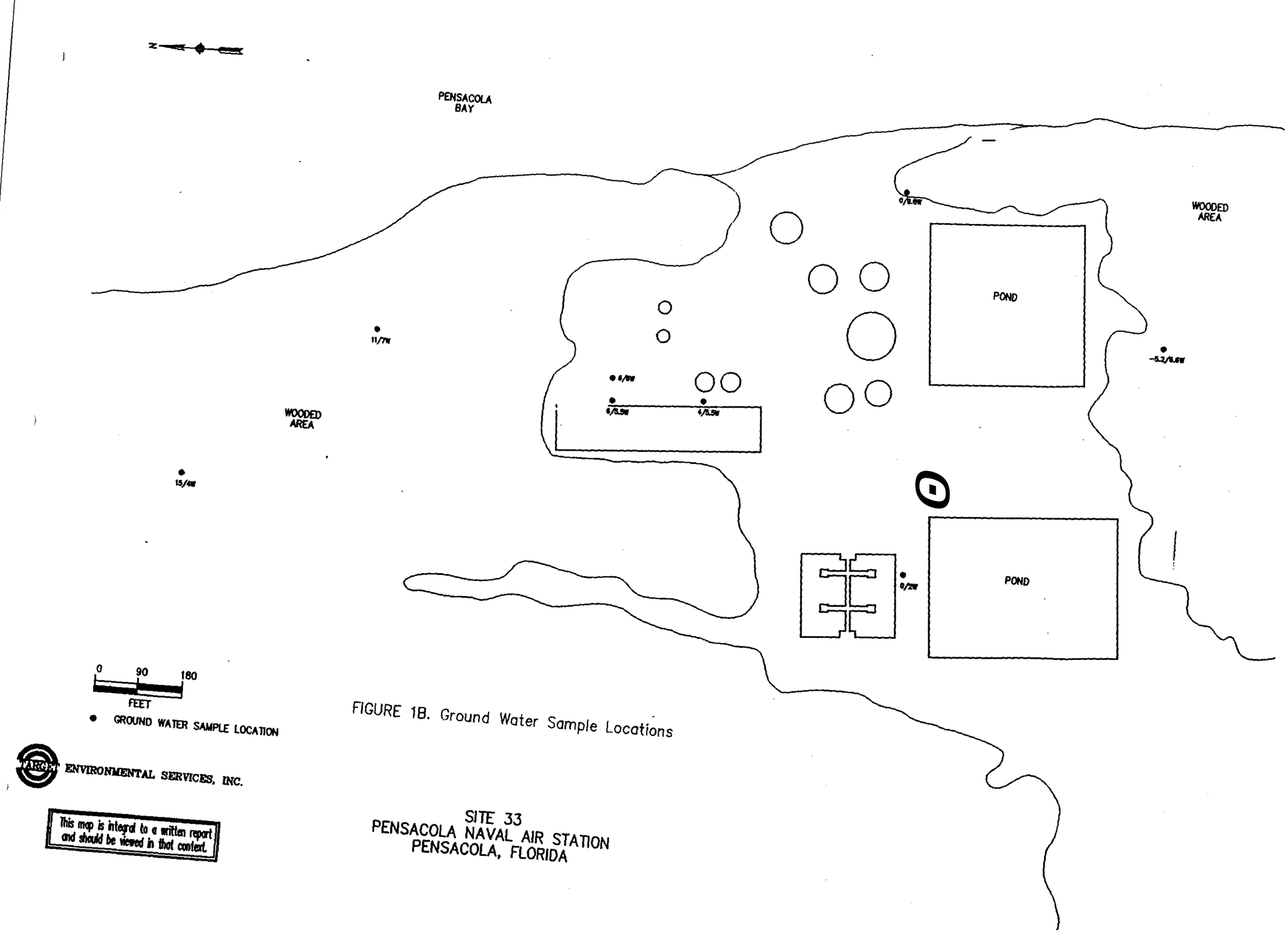


FIGURE 1B. Ground Water Sample Locations

SITE 33
PENSACOLA NAVAL AIR STATION
PENSACOLA, FLORIDA

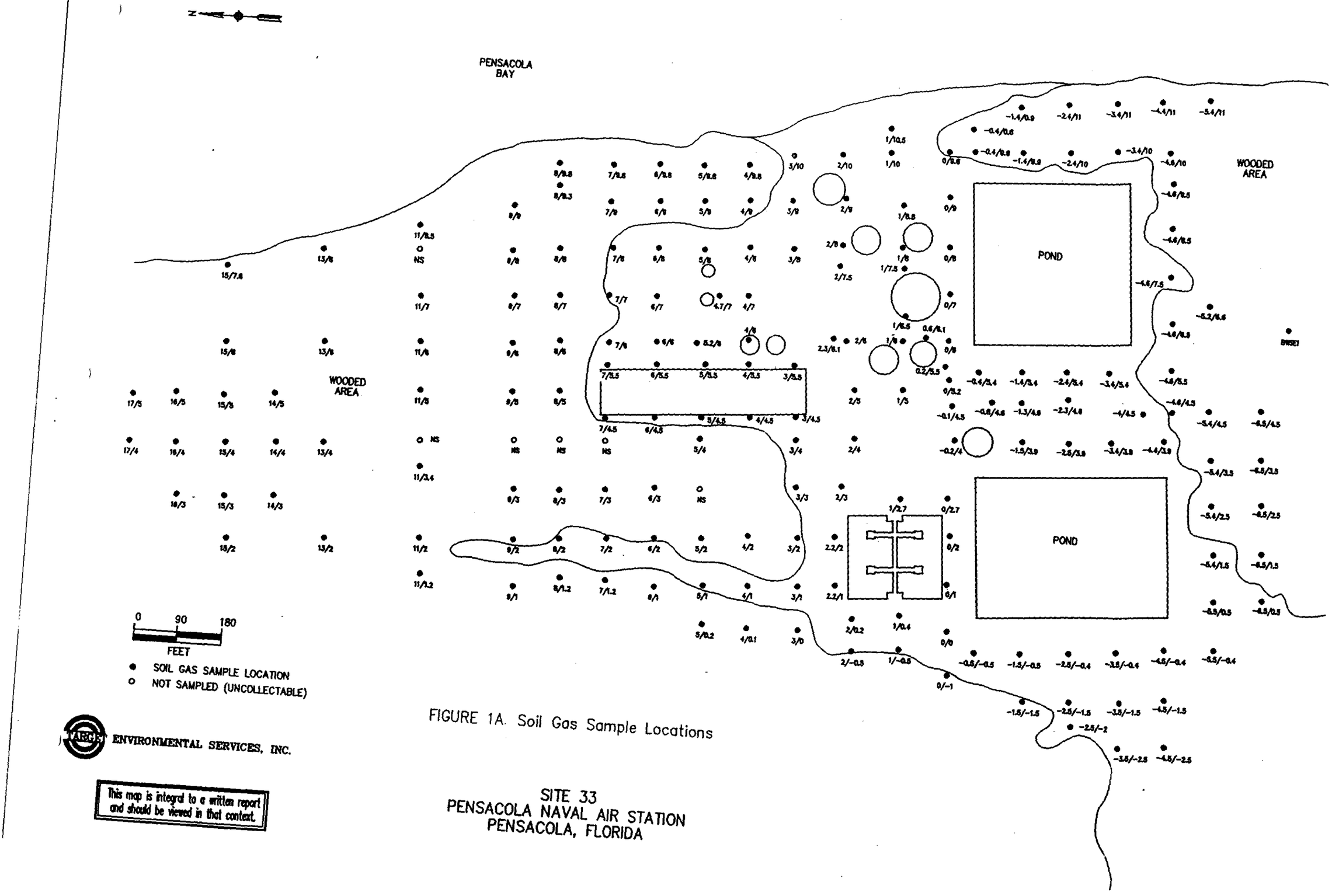


FIGURE 1A. Soil Gas Sample Locations

SITE 33
PENSACOLA NAVAL AIR STATION
PENSACOLA, FLORIDA

TABLE 2 (CONT)

ANALYTE CONCENTRATIONS IN SOIL G S VIO SC / CD (µg/l)

SAMPLE	11DCE	CH_2Cl_2	t12DCE	11DCA	c12DCE	$CHCl_3$	111TCA	CCl_4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
EQUIPMENT RINSEATE SAMPLES											
ER1	<0.0	<0.0	<1.0	<0.0	<0.0	<1.0	<0.0	<1.0	<1.0	<1.0	<0.0
ER2	<0.0	<0.0	<1.0	<0.0	<0.0	<1.0	<0.0	<1.0	<1.0	<1.0	<0.0
ER3	<0.0	<0.0	<1.0	<0.0	<0.0	<1.0	<0.0	<1.0	<1.0	<1.0	<0.0
ER4	<0.0	<0.0	<1.0	<0.0	<0.0	<1.0	<0.0	<1.0	<1.0	<1.0	<0.0
ER5	<0.0	<0.0	<1.0	<0.0	<0.0	<1.0	<0.0	<1.0	<1.0	<1.0	<0.0
SR6	<1.0	<1.0	<1.0	<1.0	<1.0	<0.0	<1.0	<0.0	<1.0	<1.0	<1.0
SR7	<1.0	<1.0	<1.0	<1.0	<1.0	<0.0	<1.0	<0.0	<1.0	<1.0	<1.0
SR8	<1.0	<1.0	<1.0	<1.0	<1.0	<0.0	<1.0	<0.0	<1.0	<1.0	<1.0
SR9	<1.0	<1.0	<1.0	<1.0	<1.0	<0.0	<1.0	<0.0	<1.0	<1.0	<1.0
LABORATORY DUPLICATE ANALYSIS											
-0.5/-0.5	<1.0	<1.0	<13	<1.0	<1.0	<16	<13	<1.0	<1.0	<1.0	<1.0
-0.5/-0.5R	<1.0	<1.0	<16	<1.0	<1.0	<16	<13	<1.0	<1.0	<1.0	<1.0
-1.5/-1.5	<1.0	<1.0	<1.0	<1.0	<16	<16	<1.0	<1.0	<1.0	<1.0	<1.0
-1.5/-1.5R	<1.0	<1.0	<1.0	<1.0	<16	<13	<1.0	<1.0	<1.0	<1.0	<1.0
-2.3/4.6	1.5	<1.0	<1.0	<1.0	<16	<16	<1.0	<1.0	<16	<13	<1.0
-2.3/4.6R	1.4	<1.0	<1.0	<1.0	<13	<16	<1.0	<1.0	<16	<16	<1.0
-3.4/11	<16	<1.0	<1.0	<1.0	<13	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-3.4/11R	<16	<1.0	<1.0	<1.0	<16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-4.4/3.9	<1.0	<1.0	<16	<1.0	<1.0	<16	<1.0	<1.0	<1.0	<1.0	<1.0
-4.4/3.9R	<1.0	<1.0	<16	<1.0	<1.0	<16	<1.0	<1.0	<1.0	<1.0	<1.0
-5.4/2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<16	<1.0	<1.0	<16	<1.0
-5.4/2.5R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<16	<1.0	<1.0	<16	<1.0
0/9	<1.0	<13	<16	<16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
0/9R	<1.0	<16	<16	<16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1/60	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1/60R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2/5	<1.0	<1.0	<16	852X1.0	<1.0	<16	<1.0	<1.0	<1.0	<1.0	<1.0
2/5R	<1.0	<1.0	<16	<1.0	<1.0	<13	<1.0	<1.0	<1.0	<1.0	<1.0
3/0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
3/0R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4/0.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4/0.1R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4/9	<16	<1.0	<16	<16	<1.0	<16	<1.0	<13	<1.0	<1.0	<1.0
4/9R	<16	<1.0	<16	<16	<1.0	<16	<1.0	<16	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene
t12DCE = trans-1,2-dichloroethene
c12DCE = cis-1,2-dichloroethene
111TCA = 1,1,1-trichloroethane
TCE = trichloroethene
PCE = tetrachloroethene

CH_2Cl_2 = methylene chloride
11DCA = 1,1-dichloroethane
$CHCl_3$ = chloroform
CCl_4 = carbon tetrachloride
112TCA = 1,1,2-trichloroethane

TABLE 2 (CONT)

ANALYTE CONCENTRATIONS IN SOIL GAS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH_2Cl_2	t12DCE	11DCA	c12DCE	$CHCl_3$	111TCA	CCl_4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	10	1.0	1.0	1.0	1.0	1.0	1.0	1.0
LABORATORY DUPLICATE ANALYSIS (CONT)											
5/5.5	30	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
5/5.5R	30	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
5/9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
5/9R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
6/3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
6/3R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
6/11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
6/8R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
7/3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
7/3R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
8/9.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
8/9.3R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
8/9.8	4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
8/9.8R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
11/6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
11/6R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
16/5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
16/5R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
BL21	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
BL21R	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
LABORATORY BLANKS											
-0.5/-0.5B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-1.5/-1.5B	4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-2.3/4.6B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-3.4/11B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-4.4/3.9B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-5.4/2.5B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
0/98	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1/60B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2/50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
3/08	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4/0.1B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4/98	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene
t12DCE = trans-1,2-dichloroethene
c12DCE = cis-1,2-dichloroethene
111TCA = 1,1,1-trichloroethane
TCE = trichloroethene
PCE = tetrachloroethene

CH_2Cl_2 = methylene chloride
11DCA = 1,1-dichloroethane
$CHCl_3$ = chloroform
CCl_4 = carbon tetrachloride
112TCA = 1,1,2-trichloroethane

TABLE 2 (CONT)

ANALYTE CONCENTRATIONS IN SOIL GAS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH_2Cl_2	t12DCE	11DCA	c12DCE	$CHCl_3$	111TCA	CCl_4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	10	1.0	1.0	1.0	1.0	1.0	1.0
LABORATORY BLANKS (CONT.)											
5/5.5B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
5/90	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
6/30	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
6/8B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
7/3B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
8/9.3B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
8/9.8B	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
11/60	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
16/50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene
t12DCE = trans-1,2-dichloroethene
c12DCE = cis-1,2-dichloroethene
111TCA = 1,1,1-trichloroethane
TCE = trichloroethene
PCE = tetrachloroethene

CH_2Cl_2 = methylene chloride
11DCA = 1,1-dichloroethane
$CHCl_3$ = chloroform
CCl_4 = carbon tetrachloride
112TCA = 1,1,2-trichloroethane

TABLE 3

ANALYTE CONCENTRATIONS IN HEAOSPACE OF GROUND WATER VIA GC/FID (µg/l)

SAMPLE	VINYL CHLORIDE	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FIO VOLATILES[1]
REPORTING LIMIT	10	1.0	1.0	1.0	1.0	10
-5.2/6.6W	<10	<1.0	28	8.1	67	1,928
0/2W	<10	<1.0	<1.0	<1.0	<1.0	<10
0/9.8W	<10	<1.0	<1.0	<1.0	<1.0	<10
4/5.5W	<10	<1.0	<1.0	<1.0	<1.0	40
6/5.5W	<10	6.9	<1.0	<1.0	<1.0	30
6/6W	<10	<1.0	<1.0	<1.0	27	2,145
11/7W	<10	<1.0	<1.0	<1.0	<1.0	<10
15/4W	<10	<1.0	<1.0	<1.0	9.5	386
EWIPUENT RINSEATE SAMPLES						
BLW1	<10	<1.0	<1.0	<1.0	<1.0	<10
BLW2	<10	<1.0	<1.0	<1.0	<1.0	<10
BLW3	<10	<1.0	<1.0	<1.0	<1.0	<10
BLW4	<10	<1.0	<1.0	<1.0	<1.0	<10
BLW5	<10	<1.0	<1.0	<1.0	<1.0	<10
BLW6	<10	<1.0	<1.0	<1.0	<1.0	<10
LABORATORY DUPLICATE ANALYSIS						
6/5.5W	<10	6.9	<1.0	<1.0	<1.0	30
6/5.5WR	<10	5.7	<1.0	<1.0	<1.0	24
LABORATORY BUNKS						
6/5.5WB	<10	<1.0	<1.0	<1.0	<1.0	<10

[1]CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE

TABLE 4

ANALYTE CONCENTRATIONS IN HEADSPACE OF GROUND UATER VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH_2Cl_2	t12DCE	11DCA	c12DCE	$CHCl_3$	111TCA	CCl_4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
-5.2/6.6W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
0/2W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
0/9.8W	<1.0	<1.0	<1.0	<1.0	<1.0	3.1	<1.0	<1.0	<1.0	<1.0	<1.0
4/5.5W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
6/5.5W	22	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
6/6W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
11/7W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
15/4W	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EQUIPMENT RINSEATE SAMPLES											
BLW1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
BLW2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
BLW3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
BLW4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
BLW5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
BLW6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
LABORATORY DUPLICATE ANALYSIS											
6/5.5W	22	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
6/5.5WR	22	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
LABORATORY BLANKS											
6/5.5WB	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene
t12DCE = trans-1,2-dichloroethene
c12DCE = cis-1,2-dichloroethene
111TCA = 1,1,1-trichloroethane
TCE = trichloroethene
PCE = tetrachloroethene

CH_2Cl_2 = methylene chloride
11DCA = 1,1-dichloroethane
$CHCl_3$ = chloroform
CCl_4 = carbon tetrachloride
112TCA = 1,1,2-trichloroethane

FIELD PROCEDURES

To collect the soil gas samples a 1/2 inch hole was produced to a depth of approximately 4 feet by using a drive rod. Where pavement was present, a rotary hammer was employed for penetration prior to using the drive rod. The entire sampling system was purged with ambient air drawn through an organic vapor filter cartridge, and a stainless steel probe was inserted to the full depth of the hole and sealed off from the atmosphere. A sample of in-situ soil gas was then withdrawn through the probe and used to purge atmospheric air from the sampling system. A second sample of soil gas was withdrawn through the probe and encapsulated in a pre-evacuated glass vial at two atmospheres of pressure (15 psig). The self-sealing vial was detached from the sampling system, packaged, labeled, and stored for laboratory analysis. All sampling holes were backfilled with bentonite and the surface repaired with like material upon completion of the sampling.

Prior to the day's field activities all sampling equipment, slide hammer rods and probes were decontaminated by washing with soapy water and rinsing thoroughly. Internal surfaces were flushed dry using pre-purified nitrogen or filtered ambient air, and external surfaces were wiped clean using clean paper towels.

On the first day of sampling, the probe was decontaminated by washing with soapy water and rinsing thoroughly after the collection of each sample. Following discussion of this procedure with the E/AH representative and TARGET project management, it was determined that normal dry decon procedures would be sufficient, unless water or soil was pulled into the probe, upon which the above wet decon procedures would be followed.

To collect the ground water samples, connected 3 foot sections of 1" diameter threaded steel casing were driven manually to the sampling depth. An electric hammer drill was used to

penetrate pavement where necessary. Once the steel casing was in place, water was allowed to fill the pipe. A teflon sampling tube was placed down the pipe and ground water was collected from just below the water surface. Samples were placed in bottles and acidified to pH 2 using a 50% hydrochloric acid-water mixture, sealed, labeled and shipped on ice to the laboratory.

Prior to the day's field activities and after collection of each sample, the steel casing and Teflon sampling tube were decontaminated by washing with Contrad (an inorganic laboratory grade cleaner for glassware and stainless steel), rinsing with distilled water and drying with nitrogen gas-

LABORATORY PROCEDURES

The ground water samples were prepared for analysis by pouring 15 ml of sample into a 30 ml EPA clean vial and sealing with a teflon-fad butyl rubber septum. The vial was heated for 10 minutes to volatilize hydrocarbons from the water. The headspace of the sample was then directly injected in the gas chromatograph.

The analytical equipment was calibrated using a 3-point instrument-response curve and injection of known concentrations of the target analytes. Retention times of the standards were used to identify the peaks in the chromatograms of the field samples, and their response factors were used to calculate the analyte concentrations.

Total FID Volatiles values were generated by summing the areas of all integrated chromatogram peaks and calculated using the instrument response factor for toluene. Injection peaks, which also contain the light hydrocarbon methane, were excluded to avoid the skewing of Total FID Volatiles values due to injection disturbances and biogenic methane. For samples with low hydrocarbon concentrations, the calculated Total FID Volatiles concentration is occasionally lower than the sum of the individual analytes. This is because the response factor used for the Total FID Volatiles calculation is a constant, whereas the individual analyte response factors are compound specific. It is important to understand that the Total FID Volatiles levels reported are relative, not absolute, values.

DETECTABILITY & TERMINOLOGY

Detectability

The soil gas survey data presented in this report are the result of precise sampling and measurement of contaminant concentrations in the vadose zone. Analyte detection at a particular location is representative of vapor, dissolved, and/or liquid phase contamination at that location. The presence of detectable levels of target analytes in the vadose zone is dependent upon several factors, including the presence of vapor-phase hydrocarbons or dissolved or liquid concentrations adequate to facilitate volatilization into the unsaturated zone.

Terminology

In order to prevent misunderstanding of certain terms used in TARGETs reports, the following clarifications are offered:

Analyte refers to any of the hydrocarbons standardized for quantification in the chromatographic analysis.

Anomaly refers to an area where hydrocarbons were measured in excess of what would normally be considered "natural" or "background" levels.

Elevated and significant are used to describe concentrations of analytes which indicate the existence of a potential problem in the soil or ground water.

Feature is used in reference to a discernible pattern in the contoured data. It denotes a contour form rather than a definite or separate chemical occurrence.

Indicates is used when evidence dictates a unique conclusion. **Suggests** is used when several explanations of certain evidence are possible, but one in particular seems more likely. As a result, "indicates" carries a higher degree of confidence in a conclusion than does "suggests."

Occurrence is used to indicate an area where chemical compounds are present in sufficient concentrations to be detected by the analysis of soil vapors. The term is not indicative of any specific mode of occurrence (vapor, dissolved, etc.), and does not necessarily indicate or suggest the presence of "free product" or "phase-separated hydrocarbons."

Reporting Limit refers to the minimum concentration reported for each analyte.

Vadose zone represents the unsaturated zone between the ground water table and the ground surface.

TABLE 1

ANALYTE CONCENTRATIONS IN SOIL GAS VIA GC/FID (µg/l)

SAMPLE	VINYL CHLORIDE	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID VOLATILES[1]
REPORTING LIMIT	10	1.0	1.0	1.0	1.0	10
-0.1/4.5	<10	<1.0	<1.0	<1.0	<1.0	<10
-0.2/4	<10	<1.0	<1.0	<1.0	<1.0	<10
-0.4/5.4	<10	<1.0	<1.0	<1.0	<1.0	<10
-0.4/9.9	<10	<1.0	<1.0	<1.0	<1.0	<10
-0.4/10.6	<10	<1.0	<1.0	<1.0	<1.0	<10
-0.5/-0.5	<10	<1.0	<1.0	<1.0	<1.0	<10
-0.8/4.6	<10	<1.0	<1.0	<1.0	<1.0	<10
-1.3/4.6	<10	<1.0	<1.0	<1.0	<1.0	<10
-1.4/5.4	<10	<1.0	<1.0	<1.0	<1.0	<10
-1.4/9.9	<10	<1.0	<1.0	<1.0	<1.0	24
-1.4/10.9	<10	<1.0	<1.0	<1.0	<1.0	<10
-1.5/-0.5	<10	<1.0	<1.0	<1.0	<1.0	<10
-1.5/-1.5	<10	<1.0	<1.0	<1.0	<1.0	<10
-1.5/3.9	<10	<1.0	<1.0	<1.0	<1.0	<10
-2.3/4.6	<10	<1.0	<1.0	<1.0	<1.0	<10
-2.4/5.4	<10	<1.0	<1.0	<1.0	<1.0	<10
-2.4/10	<10	<1.0	<1.0	<1.0	<1.0	<10
-2.4/11	<10	<1.0	<1.0	<1.0	<1.0	<10
-2.411 1D	<10	<1.0	<1.0	<1.0	<1.0	<10
-2.5;-0.4	<10	<1.0	<1.0	<1.0	<1.0	<10
-2.5/-1.5	<10	<1.0	<1.0	<1.0	<1.0	<10
-2.5/-2	<10	<1.0	<1.0	<1.0	<1.0	<10
-2.5/3.9	<10	<1.0	<1.0	<1.0	<1.0	<10
-3.4/3.9	<10	<1.0	<1.0	<1.0	<1.0	12
-3.4/5.4	<10	<1.0	<1.0	<1.0	<1.0	<10
-3.4/10	<10	<1.0	<1.0	<1.0	<1.0	24
-3.4/11	<10	<1.0	<1.0	<1.0	<1.0	<10
-3.5/-0.4	<10	<1.0	<1.0	<1.0	<1.0	<10
-3.5/-1.5	<10	<1.0	<1.0	<1.0	<1.0	<10
-3.5/-2.5	<10	<1.0	<1.0	<1.0	<1.0	<10
-4/4.5	<10	<1.0	<1.0	<1.0	<1.0	<10
-4.4/3.9	<10	<1.0	1.5	<1.0	29	<10
-4.4/11	<10	<1.0	<1.0	<1.0	<1.0	<10
-&.SI-0.4	<10	<1.0	<1.0	<1.0	<1.0	24
-4.5/-1.5	<10	4.0	<1.0	<1.0	<1.0	<10
-4.5/-2.5	<10	<1.0	<1.0	<1.0	<1.0	<10
-4.6/4.5	<10	<1.0	<1.0	<1.0	<1.0	<10
-4.6/5.5	<10	<1.0	<1.0	<1.0	<1.0	<10
-4.6/6.5	<10	<1.0	<1.0	<1.0	<1.0	<10
-4.6/7.5	<10	<1.0	<1.0	<1.0	<1.0	<10
-4.6/8.5	<10	<1.0	<1.0	<1.0	<1.0	<10
-4.6/9.5	<10	<1.0	<1.0	<1.0	<1.0	<10
-4.6/10	<10	<1.0	<1.0	<1.0	<1.0	<10
-5.2/6.6	<10	<1.0	1.0	<1.0	7.9	200
-5.2/6.6D	<10	<1.0	<1.0	<1.0	18	118
-5.4/1.5	<10	<1.0	<1.0	<1.0	<1.0	<10
-5.4/2.5	<10	<1.0	<1.0	<1.0	<1.0	<10
-5.4/3.5	<10	<1.0	<1.0	<1.0	<1.0	<10
-5.4/4.5	<10	<1.0	<1.0	<1.0	<1.0	102
-5.4/11	<10	<1.0	<1.0	<1.0	<1.0	<10

[1] CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE

TABLE 1 (CONT)

ANALYTE CONCENTRATIONS IN SOIL GAS VIA GC/FID (µg/l)

SAMPLE	VINYL CHLORIDE	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID VOLATILES[1]
REPORTING LIMIT	10	1.0	10	1.0	1.0	10
-5.5/-0.4	<10	<1.0	<1.0	<1.0	<1.0	<10
-5.5/0.5	<10	<1.0	<1.0	<1.0	<1.0	<10
-6.5/0.5	<10	<1.0	4.0	<1.0	<1.0	<10
-6.5/1.5	<10	<1.0	<1.0	<1.0	<1.0	<10
-6.5/2.5	<10	<1.0	<1.0	<1.0	<1.0	12
-6.5/3.5	<10	<1.0	<1.0	<1.0	<1.0	<10
-6.5/4.5	<10	<1.0	<1.0	<1.0	<1.0	12
0/-1	<10	<1.0	<1.0	<1.0	<1.0	16
0/0	<10	<1.0	<1.0	<1.0	<1.0	<10
0/1	<10	<1.0	1.0	<1.0	<1.0	<10
0/2	<10	<1.0	6.6	1.4	6.2	13
0/2.7	<10	<1.0	<1.0	<1.0	<1.0	<10
0/5.2	<10	<1.0	<1.0	<1.0	<1.0	<10
0/6	<10	<1.0	<1.0	<1.0	<1.0	<10
0/7	<10	<1.0	<1.0	<1.0	<1.0	<10
0/8	<10	<1.0	<1.0	<1.0	<1.0	<10
0/9	<10	<1.0	<1.0	<1.0	<1.0	<10
0/9.8	<10	<1.0	<1.0	<1.0	<1.0	<10
0.2/5.5	11	<1.0	<1.0	<1.0	1.9	19
0.6/6.1	16	<1.0	<1.0	<1.0	1.2	60
1/-0.5	<10	<1.0	<1.0	<1.0	<1.0	<10
1/-0.5D	<10	<1.0	<1.0	<1.0	<1.0	<10
1/0.4	<10	<1.0	<1.0	<1.0	<1.0	<10
1/2.7	<10	<1.0	<1.0	<1.0	<1.0	<10
1/5	<10	<1.0	<1.0	<1.0	<1.0	<10
1/6	<10	<1.0	<1.0	<1.0	<1.0	<10
1/6D	<10	<1.0	<1.0	<1.0	<1.0	<10
1/6.5	<10	<1.0	<1.0	<1.0	<1.0	<10
1/7.5	<10	<1.0	<1.0	<1.0	<1.0	<10
1/8	<10	<1.0	<1.0	<1.0	<1.0	<10
1/8.8	<10	<1.0	<1.0	<1.0	<1.0	<10
1/10	<10	<1.0	<1.0	<1.0	<1.0	<10
1/10.5	<10	<1.0	<1.0	<1.0	<1.0	<10
2/-0.5	<10	<1.0	<1.0	<1.0	<1.0	<10
2/0.2	<10	<1.0	<1.0	<1.0	<1.0	<10
2/3	<10	<1.0	<1.0	<1.0	<1.0	<10
2/4	<10	<1.0	<1.0	<1.0	<1.0	<10
2/5	<10	<1.0	<1.0	<1.0	<1.0	<10
2/6	<10	<1.0	<1.0	<1.0	<1.0	<10
2/7.5	<10	<1.0	14	<1.0	13	<10
2/7.5D	<10	<1.0	<1.0	<1.0	<1.0	<10
2/8	<10	<1.0	<1.0	<1.0	<1.0	<10
2/9	<10	<1.0	<1.0	<1.0	<1.0	<10
2/10	<10	<1.0	<1.0	<1.0	<1.0	<10
2.2/1	<10	<1.0	<1.0	<1.0	<1.0	<10
2.2/2	<10	<1.0	<1.0	<1.0	<1.0	<10
2.3/6.1	<10	<1.0	<1.0	<1.0	<1.0	<10
3/0	<10	<1.0	<1.0	<1.0	<1.0	<10
3/1	<10	<1.0	<1.0	<1.0	<1.0	<10

[1] CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE

TABLE 1 (CONT)

ANALYTE CONCENTRATIONS IN SOIL GAS VIA GC/FID (µg/l)

SAMPLE	VINYL CHLORIDE	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FIO VOLATILES[1]
REPORTING LIMIT	10	1.0	1.0	1.0	1.0	10
3/2	<10	<1.0	<1.0	<1.0	<1.0	13
3/3	<10	<1.0	<1.0	<1.0	<1.0	107
3/4	<10	<1.0	1.1	<1.0	<1.0	<10
3/4.5	<10	<1.0	<1.0	<1.0	<1.0	<10
3/5.5	<10	<1.0	<1.0	<1.0	<1.0	<10
3/7	<10	<1.0	<1.0	<1.0	<1.0	<10
3/8	<10	<1.0	<1.0	<1.0	<1.0	<10
3/9	<10	<1.0	<1.0	<1.0	<1.0	<10
3/10	<10	<1.0	<1.0	<1.0	<1.0	<10
4/0.1	<10	<1.0	<1.0	<1.0	<1.0	<10
4/1	<10	<1.0	<1.0	<1.0	<1.0	<10
4/2	<10	<1.0	<1.0	<1.0	<1.0	40
4/4.5	<10	<1.0	<1.0	<1.0	<1.0	<10
4/5.5	<10	<1.0	<1.0	<1.0	<1.0	<10
4/6	<10	<1.0	<1.0	<1.0	<1.0	<10
4/7	<10	<1.0	<1.0	<1.0	<1.0	<10
4/7D	<10	<1.0	<1.0	<1.0	<1.0	<10
4/8	<10	<1.0	<1.0	<1.0	<1.0	<10
4/9	<10	<1.0	<1.0	<1.0	1.3	45
4/9.8	<10	<1.0	<1.0	<1.0	<1.0	<10
4.7/7	<10	<1.0	<1.0	<1.0	<1.0	<10
5/0.2	<10	<1.0	<1.0	<1.0	<1.0	<10
5/1	<10	<1.0	<1.0	<1.0	<1.0	<10
5/2	<10	<1.0	<1.0	<1.0	<1.0	188
5/4	<10	<1.0	<1.0	<1.0	<1.0	<10
5/4.5	<10	<1.0	<1.0	<1.0	<1.0	14
5/5.5	<10	<1.0	<1.0	<1.0	<1.0	<10
5/8	<10	<1.0	<1.0	<1.0	<1.0	<10
5/9	<10	<1.0	<1.0	<1.0	<1.0	<10
5/9.8	<10	<1.0	<1.0	<1.0	<1.0	<10
5.2/6	<10	<1.0	<1.0	<1.0	<1.0	<10
6/1	<10	<1.0	<1.0	<1.0	<1.0	<10
6/2	<10	<1.0	<1.0	<1.0	<1.0	<10
6/3	<10	<1.0	<1.0	<1.0	<1.0	<10
6/4.5	<10	<1.0	<1.0	<1.0	<1.0	<10
6/5.5	<10	<1.0	<1.0	<1.0	<1.0	<10
6/6	<10	<1.0	<1.0	16	3.2	88
6/7	<10	<1.0	<1.0	<1.0	<1.0	<10
6/8	<10	<1.0	<1.0	<1.0	<1.0	<10
6/9	<10	<1.0	<1.0	<1.0	<1.0	50
6/9.a	<10	<1.0	<1.0	<1.0	<1.0	<10
7/1.2	<10	<1.0	<1.0	<1.0	<1.0	<10
7/2	<10	<1.0	<1.0	<1.0	<1.0	<10
7/3	<10	<1.0	<1.0	<1.0	1.4	<10
7/4.5	<10	<1.0	<1.0	<1.0	<1.0	<10
7/5.5	<10	<1.0	<1.0	<1.0	<1.0	<10
7/6	<10	1.3	<1.0	<1.0	<1.0	<10
7/7	<10	<1.0	<1.0	<1.0	<1.0	<10
7/8	<10	<1.0	<1.0	<1.0	<1.0	<10
7/9	<10	<1.0	<1.0	<1.0	<1.0	177
7/9.8	<10	<1.0	<1.0	<1.0	<1.0	<10

[1] CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE

TABLE 1 (CONT)

ANALYTE CONCENTRATIONS IN SOIL GAS VIA GC/FID (μg/l)

SAMPLE	VINYL CHLORIDE	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID VOLATILES[1]
REPORTING LIMIT	10	1.0	1.0	1.0	1.0	10
8/1.2	<10	<1.0	<1.0	<1.0	<1.0	221
8/2	<10	<1.0	<1.0	<1.0	<1.0	40
8/3	<10	<1.0	<1.0	<1.0	<1.0	33
8/5	<10	<1.0	<1.0	<1.0	<1.0	13
816	<10	<1.0	<1.0	<1.0	3.1	<10
8/7	<10	<1.0	<1.0	<1.0	14	15
8/8	<10	<1.0	<1.0	<1.0	<1.0	28
8/9.3	<10	<1.0	<1.0	<1.0	<1.0	<10
8/9.8	<10	<1.0	<1.0	<1.0	<1.0	<10
9/1	<10	<1.0	<1.0	<1.0	<1.0	21
9/2	<10	<1.0	<1.0	<1.0	<1.0	<10
9/3	<10	<1.0	<1.0	<1.0	1.5	118
9/5	<10	<1.0	<1.0	<1.0	1.8	<10
9/6	<10	<1.0	<1.0	<1.0	<1.0	<10
9/7	<10	<1.0	<1.0	<1.0	<1.0	62
9/7D	<10	<1.0	<1.0	<1.0	<1.0	52
9/8	<10	<1.0	<1.0	<1.0	<1.0	21
9/9	<10	<1.0	<1.0	<1.0	<1.0	18
11/1.2	<10	<1.0	<1.0	<1.0	<1.0	120
11/2	<10	<1.0	<1.0	<1.0	<1.0	<10
11/3.4	<10	<1.0	<1.0	<1.0	<1.0	<10
11/5	<10	<1.0	<1.0	<1.0	21	15
11/6	<10	<1.0	<1.0	<1.0	<1.0	<10
11/7	<10	<1.0	<1.0	1.4	8.7	14
11/8.5	<10	<1.0	<1.0	<1.0	<1.0	35
13/2	<10	<1.0	<1.0	<1.0	<1.0	772
13/4	<10	<1.0	<1.0	<1.0	<1.0	64
13/6	<10	<1.0	<1.0	<1.0	<1.0	<10
13/60	<10	<1.0	<1.0	<1.0	<1.0	35
13/8	<10	<1.0	<1.0	<1.0	1.6	<10
14/3	<10	<1.0	<1.0	<1.0	<1.0	<10
14/4	<10	<1.0	<1.0	<1.0	<1.0	17
14/5	<10	<1.0	<1.0	<1.0	<1.0	10
15/2	<10	<1.0	<1.0	<1.0	2.2	<10
15/3	<10	<1.0	<1.0	<1.0	<1.0	<10
15/4	<10	<1.0	1.8	<1.0	2.0	17
15/5	<10	<1.0	<1.0	<1.0	<1.0	41
15/6	<10	<1.0	<1.0	<1.0	<1.0	14
15/7.6	<10	<1.0	<1.0	<1.0	<1.0	15
16/3	<10	<1.0	<1.0	<1.0	<1.0	<10
16/4	<10	<1.0	<1.0	<1.0	<1.0	<10
16/5	<10	<1.0	<1.0	<1.0	<1.0	12
17/4	<10	<1.0	<1.0	<1.0	<1.0	12
17/5	<10	<1.0	<1.0	<1.0	<1.0	<10
BWSE1	<10	<1.0	<1.0	<1.0	<1.0	<10

[1] CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE

TABLE 1 (CONT)

ANALYTE CONCENTRATIONS IN SOIL GAS VIA GC/FID (µg/l)

SAMPLE	VINYL CHLORIDE	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FIO VOLATILES[1]
REPORTING LIMIT	10	1.0	1.0	1.0	1.0	10
FIELD CONTROL SAMPLES						
BL1	<10	<1.0	<1.0	<1.0	<1.0	<10
BL2	<10	<1.0	<1.0	<1.0	<1.0	<10
BL3	<10	<1.0	<1.0	<1.0	<1.0	<10
BL4	<10	<1.0	<1.0	<1.0	<1.0	<10
BL5	<10	<1.0	<1.0	<1.0	<1.0	<10
BL6	<10	<1.0	<1.0	<1.0	<1.0	<10
OL7	<10	<1.0	<1.0	<1.0	<1.0	<10
BL8	<10	<1.0	<1.0	<1.0	<1.0	<10
OL9	<10	<1.0	<1.0	<1.0	<1.0	<10
BL10	<10	<1.0	<1.0	<1.0	<1.0	<10
BL11	<10	<1.0	<1.0	<1.0	<1.0	<10
BL12	<10	<1.0	<1.0	<1.0	<1.0	<10
BL13	<10	<1.0	<1.0	<1.0	<1.0	<10
BL14	<10	<1.0	<1.0	<1.0	<1.0	<10
BL15	<10	<1.0	<1.0	<1.0	<1.0	<10
BL16	<10	<1.0	<1.0	<1.0	<1.0	<10
BL17	<10	<1.0	<1.0	<1.0	<1.0	<10
BL18	<10	<1.0	<1.0	<1.0	<1.0	<10
BL19	<10	<1.0	<1.0	<1.0	<1.0	<10
BL20	<10	<1.0	<1.0	<1.0	<1.0	<10
BL21	<10	<1.0	<1.0	<1.0	<1.0	<10
EQUIPMENT RINSEATE SAMPLES						
ER1	<10	<1.0	<1.0	<1.0	<1.0	<10
ER2	<10	<1.0	<1.0	<1.0	<1.0	<10
ER3	<10	<1.0	<1.0	<1.0	<1.0	<10
ER4	<10	<1.0	<1.0	<1.0	<1.0	<10
ERS	<10	<1.0	<1.0	<1.0	<1.0	<10
ER6	<10	<1.0	<1.0	<1.0	<1.0	<10
ER7	<10	<1.0	<1.0	<1.0	<1.0	<10
ER8	<10	<1.0	<1.0	<1.0	<1.0	<10
ER9	<10	<1.0	<1.0	<1.0	<1.0	<10
LABORATORY DUPLICATE ANALYSIS						
-0.5/-0.5	<10	<1.0	<1.0	<1.0	<1.0	<10
-0.5/-0.5R	<10	<1.0	<1.0	<1.0	<1.0	<10
-1.5/-1.5	<10	<1.0	<1.0	<1.0	<1.0	<10
-1.5/-1.5R	<10	<1.0	<1.0	<1.0	<1.0	<10
-2.3/4.6	<10	<1.0	<1.0	<1.0	<1.0	<10
-2.3/4.6R	<10	<1.0	<1.0	<1.0	<1.0	<10
-3.4/11	<10	<1.0	<1.0	<1.0	<1.0	<10
3.4/11R	<10	<1.0	<1.0	<1.0	<1.0	<10
-4.4/3.9	<10	<1.0	1.5	<1.0	29	<10
-4.4/3.9R	<10	<1.0	1.6	<1.0	3.3	<10

[1]CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE

TABLE 1 (CONT)

ANALYTE CONCENTRATIONS IN SOIL GAS VIA GC/FID (µg/l)

SAMPLE	VINYL CHLORIDE	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID VOLATILES[1]
REPORTING LIMIT	10	1.0	1.0	1.0	1.0	10
LABORATORY DUPLICATE ANALYSIS (CONT)						
-5.4/2.5	<10	<1.0	<1.0	<1.0	<1.0	<10
-5.4/2.5R	<10	<1.0	<1.0	<1.0	<1.0	<10
0/9	<10	<1.0	<1.0	<1.0	<1.0	<10
0/9R	<10	<1.0	<1.0	<1.0	<1.0	<10
1/6D	<10	<1.0	<1.0	<1.0	<1.0	<10
1/6DR	<10	<1.0	<1.0	<1.0	<1.0	<10
2/5	<10	<1.0	<1.0	<1.0	<1.0	<10
2/5R	<10	<1.0	<1.0	<1.0	<1.0	<10
3/0	<10	<1.0	<1.0	<1.0	<1.0	<10
3/0R	<10	<1.0	<1.0	<1.0	<1.0	<10
4/0.1	<10	<1.0	<1.0	<1.0	<1.0	<10
4/0.1R	<10	<1.0	<1.0	<1.0	<1.0	<10
4/9	<10	<1.0	<1.0	<1.0	1.3	45
4/9R	<10	<1.0	11	<1.0	<1.0	43
5/5.5	<10	<1.0	<1.0	<1.0	<1.0	<10
5/5.SR	<10	<1.0	<1.0	<1.0	<1.0	<10
5/9	<10	<1.0	<1.0	<1.0	<1.0	<10
5/9R	<10	<1.0	<1.0	<1.0	<1.0	<10
6/3	<10	<1.0	<1.0	<1.0	<1.0	<10
6/3R	<10	<1.0	<1.0	<1.0	<1.0	<10
6/8	<10	<1.0	<1.0	<1.0	<1.0	<10
6/8R	<10	<1.0	<1.0	<1.0	<1.0	<10
7/3	<10	<1.0	<1.0	<1.0	1.4	<10
7/3R	<10	<1.0	<1.0	<1.0	<1.0	<10
8/9.3	<10	<1.0	<1.0	<1.0	<1.0	<10
8/9.3R	<10	<1.0	<1.0	<1.0	<1.0	<10
8/9.8	<10	<1.0	<1.0	<1.0	<1.0	<10
8/9.8R	<10	<1.0	<1.0	<1.0	<1.0	<10
11/6	<10	<1.0	<1.0	<1.0	<1.0	<10
11/6R	<10	<1.0	<1.0	<1.0	<1.0	<10
16/5	<10	<1.0	<1.0	<1.0	<1.0	12
16/5R	<10	<1.0	<1.0	<1.0	<1.0	12
BL21	<10	<1.0	<1.0	<1.0	<1.0	<10
BL21R	<10	<1.0	<1.0	<1.0	<1.0	<10

'CALCULATED USING THE SUM Of THE AREAS Of ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE

TABLE 1 (CONT)

ANALYTE CONCENTRATIONS IN SOIL GAS VIA GC/FID (µg/l)

SAMPLE	VINYL CHLORIDE	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID VOLATILES[1]
REPORTING LIMIT	10	1.0	1.0	1.0	1.0	10
LABORATORY BLANKS						
-0.5/-0.5B	<10	<1.0	<1.0	<1.0	<1.0	<10
-1.5/-1.5B	<10	<1.0	<1.0	<1.0	<1.0	<10
-2.3/4.6B	<10	<1.0	<1.0	<1.0	<1.0	<10
-3.4/11B	<10	<1.0	<1.0	<1.0	<1.0	<10
-4.4/3.9B	<10	<1.0	<1.0	<1.0	<1.0	<10
-5.4/2.5B	<10	<1.0	<1.0	<1.0	<1.0	<10
0/9B	<10	<1.0	<1.0	<1.0	<1.0	<10
1/6DB	<10	<1.0	<1.0	<1.0	<1.0	<10
2/5B	<10	<1.0	<1.0	<1.0	<1.0	<10
3/0B	<10	<1.0	<1.0	<1.0	<1.0	<10
4/0.1B	<10	<1.0	<1.0	<1.0	<1.0	<10
4/9B	<10	<1.0	<1.0	<1.0	<1.0	<10
5/5.5B	<10	<1.0	<1.0	<1.0	<1.0	<10
5/9B	<10	<1.0	<1.0	<1.0	<1.0	<10
6/3B	<10	<1.0	<1.0	<1.0	<1.0	<10
6/0B	<10	<1.0	<1.0	<1.0	<1.0	<10
7/3B	<10	<1.0	<1.0	<1.0	<1.0	<10
8/9.3B	<10	<1.0	<1.0	<1.0	<1.0	<10
8/9.8B	<10	<1.0	<1.0	<1.0	<1.0	<10
11/6B	<10	<1.0	<1.0	<1.0	<1.0	<10
16/5B	<10	<1.0	<1.0	<1.0	<1.0	<10
BL21B	<10	<1.0	<1.0	<1.0	<1.0	<10

[1] CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHROMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE

TABLE 2

ANALYTE CONCENTRATIONS IN SOIL GAS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH_2Cl_2	t12DCE	11DCA	c12DCE	$CHCl_3$	111TCA	CCl_4	TCE	112TCA	PCE
REPORTING LIMIT	10	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
-0.1/4.5	1.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-0.2/4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-0.4/5.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-0.4/9.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-0.4/10.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-0.5/-0.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-0.8/4.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-1.3/4.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-1.4/5.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-1.4/9.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-1.4/10.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-1.5/-0.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-1.5/-1.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-1.5/3.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-2.3/4.6	1.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-2.4/5.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-2.4/10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-2.4/11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-2.4/11D	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-2.5/-0.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-2.5/-1.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-2.5/-2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-2.5/3.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-3.5/-0.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-3.5/-1.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-3.5/-2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-3.4/3.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-3.4/5.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-3.4/10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-3.4/11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-4.4/3.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-4/4.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-4.4/11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-4.5/-0.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-4.5/-1.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-4.5/-2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-4.6/4.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-4.6/5.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-4.6/6.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-4.6/7.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-4.6/8.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-4.6/9.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-4.6/10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-5.2/6.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-5.2/6.6D	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene
t12DCE = trans-1,2-dichloroethene
c12DCE = cis-1,2-dichloroethene
111TCA = 1,1,1-trichloroethane
TCE = trichloroethene
PCE = tetrachloroethene

CH_2Cl_2 = methylene chloride
11DCA = 1,1-dichloroethane
$CHCl_3$ = chloroform
CCl_4 = carbon tetrachloride
112TCA = 1,1,2-trichloroethane

TABLE 2 (CONT)

ANALYTE CONCENTRATIONS IN SOIL GAS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH_2Cl_2	t12DCE	11DCA	c12DCE	$CHCl_3$	111TCA	CCl_4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
-5.4/1.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-5.4/2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-5.4/3.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-5.4/4.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-5.4/11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-5.5/-0.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-5.5/-0.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-6.5/0.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-6.5/1.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-6.5/2.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-6.5/3.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
-6.5/4.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
o/-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
0/0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
0/1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
0/2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
0/2.7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
0/5.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
0/6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
0/7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
0/8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
0/9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
0/9.8	<1.0	<1.0	<1.0	<1.0	<1.0	3.7	<1.0	<1.0	<1.0	<1.0	<1.0
0.2/5.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
0.6/6.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1/-0.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1/-0.50	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1/0.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1/2.7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1/5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1/6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1/6.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1/60	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1/7.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1/8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1/8.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1/10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1110.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2/-0.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2/0.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2/3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2/4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2/5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2/6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2/7.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2/7.5D	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene
t12DCE = trans-1,2-dichloroethene
c12DCE = cis-1,2-dichloroethene
111TCA = 1,1,1-trichloroethane
TCE = trichloroethene
PCE = tetrachloroethene

CH_2Cl_2 = methylene chloride
11DCA = 1,1-dichloroethane
$CHCl_3$ = chloroform
CCl_4 = carbon tetrachloride
112TCA = 1,1,2-trichloroethane

TABLE 2 (CONT)

ANALYTE CONCENTRATIONS IN SOIL GAS VIA GC/ECD (μg/l)

SAMPLE	11DCE	CH_2Cl_2	t12DCE	11DCA	c12DCE	$CHCl_3$	111TCA	CCl_4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
2/8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2/9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
2/10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
≥2/1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
≥2/2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
≥3/6.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
3/0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
3/1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
3/2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
3/3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
3/4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
3/4.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
3/5.5	1.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
3/7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
3/8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
3/9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
3/10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4/0.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4/1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4/2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4/4.5	34	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4/5.5	641	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3.0
4/6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4/7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4/7D	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4/8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4/9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4/9.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4.7/7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
5/0.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
5/1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
5/2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
5/4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
5/4.5	2.9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
5/5.5	30	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
5/8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
5/9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
5/9.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
5.2/6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
6/1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
6/2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
6/3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
6/4.5	18	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
6/5.5	103	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
6/6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
6/7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene
t12DCE = trans-1,2-dichloroethene
c12DCE = cis-1,2-dichloroethene
111TCA = 1,1,1-trichloroethane
TCE = trichloroethene
PCE = tetrachloroethene

CH_2Cl_2 = methylene chloride
11DCA = 1,1-dichloroethane
$CHCl_3$ = chloroform
CCl_4 = carbon tetrachloride
112TCA = 1,1,2-trichloroethane

TABLE 2 (CONT)

ANALYTE CONCENTRATIONS IN SOIL CAS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH_2Cl_2	t12DCE	11DCA	c12DCE	$CHCl_3$	111TCA	CCl_4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
6/8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
6/9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
6/9.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
7/1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
7/2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
7/3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
7/4.5	1.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
7/5.5	2.2	3.1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
7/6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
7/7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
7/8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
7/9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
7/9.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
8/1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
8/2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
8/3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
8/5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
8/6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
8/7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
8/8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
8/9.3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
8/9.8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
9/1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
9/2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
9/3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
9/5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
9/6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
9/7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
9/7D	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
9/8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
9/9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
11/1.2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
11/2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
11/3.4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
11/5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
11/6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
11/7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
11/8.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
13/2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
13/4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
13/6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
13/60	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
13/8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene
t12DCE = trans-1,2-dichloroethene
c12DCE = cis-1,2-dichloroethene
111TCA = 11 1-trichloroethane
TCE = trichloroethene
PCE = tetrachloroethene

CH_2Cl_2 = methylene chloride
11DCA = 1,1-dichloroethane
$CHCl_3$ = chloroform
CCl_4 = carbon tetrachloride
112TCA = 1,1,2-trichloroethane

TABLE 2 (CONT)

ANALYTE CONCENTRATIONS IN SOIL GAS VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH_2Cl_2	t12DCE	11DCA	c12DCE	$CHCl_3$	111TCA	CCl_4	TCE	112TCA	PCE
REPORTING LIMIT	1.0	1.0	1.0	1.0	1.0	1.0	10	1.0	1.0	1.0	1.0
14/3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
14/4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
14/5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
15/2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
15/3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
15/4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
15/5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
15/6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
15/7.6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
16/3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
16/4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
16/5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
17/4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
17/5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
BWSE1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
FIELD CONTROL SAMPLES											
BL1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
BL2	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
BL3	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
BL4	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EL5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EL6	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EL7	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EL8	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EL9	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
BL10	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EL11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
BL12	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EL13	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EL14	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EL15	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EL16	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
BL17	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EL18	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EL19	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
BL20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
EL21	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

11DCE = 1,1-dichloroethene
t12DCE = trans-1,2-dichloroethene
c12DCE = cis-1,2-dichloroethene
111TCA = 1,1,1-trichloroethane
TCE = trichloroethene
PCE = tetrachloroethene

CH_2Cl_2 = methylene chloride
11DCA = 1,1-dichloroethane
$CHCl_3$ = chloroform
CCl_4 = carbon tetrachloride
112TCA = 1,1,2-trichloroethane

APPENDIX C

HEADSPACE SCREENING SURVEY

Soil borings initially accomplished in the swale/fill area east-northeast of the former industrial sludge drying beds (locations 33S01-33S04) indicated an extensive persistence of elevated OVA readings or visually suspect soil. Hence additional soil borings were planned to better define the area of contamination. To aid in their placement, a soil headspace screening survey was conducted on soils across the swale/fill area on January 11 and 15, 1993, following FDEP procedure 1 guidelines. Figure 5-1 shows the locations of 26 borings completed during the survey, and non-methane headspace values measured. Twenty-six borings for the headspace survey were completed to water table across the swale/fill in a loose 25-foot grid pattern. Soils retrieved from each boring were composited using a stainless steel bowl and spoon, placed into two 16-ounce jars and sealed with headspace volume of approximately 50%, and then stored in an ice chest. After the samples had equilibrated to a temperature between approximately 20°C and 30°C, an OVA was used to analyze soil vapors in the headspaces of the jars. One sample aliquot from each boring was screened for total organic vapor concentration, while the second was screened for methane using an activated carbon filter. The difference between the two readings was considered to be attributable to non-methane VOC contamination. Soils collected primarily in the central and eastern portion of the survey area exhibited non-methane VOC readings ranging from 2 ppm to 250 ppm. Most of the elevated readings were from soils collected along the drainage swale feature which trends roughly southwest to northeast down the center of the survey area. Based on these results, soil borings 33332 through 33839 were completed across the swale/fill area for contamination assessment sampling.

APPENDIX D

BORING LOGS

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: CONCRETE DEBRIS AREA
				0.0	SP: TAN BROW, FINE–MEDIUM SAND, MOIST – HAND AUGER REFUSAL AT –0.75'
5					
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
13S01

DATE:05/10/93 | DWG NAME 0413S01

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: SANDY/SIDE OF DIRT ROAD
				0.0	SP: BROWN AND BLACK, FINE – MED. SAND W/ORGANICS AND SOME WELL ROUNDED QUARTZ PEA GRAVEL – MOIST (13S02002 COLLECTED FROM 1.5'–2.0') BOREHOLE (HNV 0.2ppm)
				0.8	SP: BROWN & BLACK, FINE TO MED. SAND W/ORGANICS, MOIST TO WET [13S02003 COLLECTED FROM 2.5' – 3.0'] (HNV 7.2ppm)
5				0.0	SP DARK BROWN – BLACK. FINE TO MED. SAND W/ORGANIC STAINING. V. MOIST TO WET [13S02004
				0.0	COLLECTED FROM 3.5 ' 4.01 GRAB SAMPLE 0.2 PPM HVN
					SM: BROWN (ORANGE), SILTY FINE TO MEDIUM SAND MOIST TO WET
					SM: TAN BROW TO BROWN, SILTY FINE TO MEDIUM SAND, MOIST TO WET
					SP WHITE. FINE MED SAND (CLEAN), MOIST TO WET
					BORING TERMINATED AT 7.0' IN (CLEAN) SP: WHITE FINE TO MED SAND
10					GROUNDWATER AT 7.0 [TIDE OUT]
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
13S02

DATE: 05/10/93

DWG NAME 0415802

DEPTH (FEET)	SAMPLE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: SAND/EDGE OF ROAD
					SM: BROWN BLACK, FINE TO MEDIUM - SAND W/SOME SILT, ORGANICS, MOIST
					REFERENCE SOIL DESCRIPTION ABOVE 132003002 COLLECTED 2.0-2.5' 13S003003 COLLECTED 2.5-3.C
					SP: DARK BROWN TO BLACK, FINE TO MEDIUM SAND. MOIST
5					NO SAMPLE RETURN
					SM: DK BROWN FINE-MED SAND W/SILT MOIST 138003004 FROM 4.5-5.0' 13S003005 FROM 5.0-5.5'
					SM: BROWN, FINE TO MED. SAND W/SILT, MOIST TO WET
					BORING TERMINATED -6.0 FT. IN FINE TO MED. SAND, WET
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10-SITE 13
NAS PENSACOLA

SOIL BORING
13S03

DATE: 05/10/93

DWG NAME 0413S03

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: SAND
				0.0 0.0	SP: BLACK – BROWN, MED. FINE TO MED SAND, SOME ORGANICS, MOIST [ORGANIC (SHELLS) AND BLOCKS OF ASPHALT ON THE SURFACE] (V. HARD)
5					SP: **BLACK** BROWN, FINE TO MED. SAND W/SEMI-CONSOLIDATED SAND NODULES, MOIST (V.HARD) [13S04002 COLLECTED FROM 1.0' – 1.5']
					HAND AUGER REFUSAL 1.5'
10					SP:(~V. HARD FINE TO MED SAND W/MAN DEPOSITED DEBRIS (ASPHALT, ETC.
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
13S04

DATE:05/10/93 | DWG NAME0413S04

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: SAND/EDGE OF GULF
				0.0	SM: TAN AND WHITE FINE MEDIUM SAND WITH SILT, MOIST ("CLEAN)
				0.0	(13S05002 COLLECTED 1.0'–1.5')
				0.0	2.5' SP– WHITE AND BLACK, FINE–MED SAND, MOIST TO WET 13S05004 COLLECTED 2.5'–3.0'
				0.0	BLACK SAND CONTACT 2.5'–3.7'
5				0.0	3.7' SM– WHITE GRAY, FINE MEDIUM SAND AND SILT, MOIST
10					BORING TERMINATED 4.0' IN FINE MEDIUM SAND
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
13S05

DATE: 05/10/93

DWG NAME 0413305

DEPTH (FEET)	SA MLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: SANDY/GRASSY
				0.0	NO HIT 0.0 – 0.5 ROOTS, SP: FGD. BROWN – WHITE SAND, DRY
					NO HIT 0.5 – 1.5 SP: BROWN, FINE-MED. GD. SAND W/TRACE PEBBLES
5					NO HIT 1.5 – 2.0 SP: BROWN. FINE – MED. GD. SAND W/SHELL HASH TRACE PEBBLES
					2.0 – 2.75 SP BROWN FINE – MED. GRAINED SAND, SOME COARSE, TRACE PEBBLES & SHELLS
					2.75 – 3.25 SP: WHITE SOME BROWN FGD SAND, SOME MED. & COURSE MOIST
10					25 – 3.5 ' SP FINE – MED – COARSE WHITE SAND – WET
					SAMPLES TIME
					13S06002 1330
15					13S06D02 1345
					13806004 1400
					SCRATCHING RUBBLE CHUNK WHILE HAND AUGERING
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
13S06

DATE: 05/10/93 | DWG NAME

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: SANDY
					0–2 FT. BLS. SP– LIGHT & TAN TO BROWN, FINE TO MED. GRAINED QTZ SAND
				1.0	COMPOSITE SAMPLE COLLECTED
					2–4 FT. BLS, SP– SAME AS ABOVE, COMPOSITE SAMPLE COLLECTED
5				0.0	4–6 FT. BLS, SP- SAME AS ABOVE. HOWEVER AT 5 FT BLS SAND COLOR CHANGES TO A MIXTURE OF BUFF WHITE AND LIGHT TAN, COMPOSITE SAMPLE COLLECTED
				0.0	6–7 FT.BLS SP – SAME AS 4–6 FT. BLS WET AT APPROXIMATELY 7 FT. BLS
				0.0	COMPOSITE SAMPLE COLLECTED, B.O.H.
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
13S61

DATE: 05/10/93

DWG NAME 0413S61

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOW /FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: **SANDY**
				3.0	0–2 FT. BLS. SP– LIGHTER TAN TO BROWN, FINE TO MED. GRAINED QTZ SAND COMPOSITE SAMPLE COLLECTED
					2–4 FT.BLS SP– SAME AS ABOM, COMPOSITE SAMPLE COLLECTED
5				0.0	4–6 FT. BLS, SP–SAME LT. TAN QTZ SAND AS ABOM WHICH LIGHTENS TO BUFF WHITE AT APPROX. 5 FT. BLS, COMPOSITE SAMPLE COLLECTED
				0.0	6–7 FT BLS, SP–SAME LT COLORED SAND AS ABOVE WHICH TURNS LT GRAY WITH MINOR DARK
				0.0	GRAY FINE GRAINED SILTY MATERIAL AT APPROX. 7 FT. BLS. WET APPROX. 7 FT BLS COMPLETE SAMPLE COLLECTED
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOIA

SOIL BORING
13S62

DATE:05/10/93 | DWG NAME 0413S62

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: SANDY
					0–2 FT. BLS SP–BUFF WHITE TO LIGHT TAN. FINE TO MED GRAINED QTZ SAND.
				0.0	COMPOSITE SAMPLE COLLECTED
					2–4 FT. BLS SP–SAME AS ABOVE COMPOSITE SAMPLE COLLECTED
5				0.0	4–6 FT BLS SC– LT. TAN QTZ SAND MOTTLED WITH ORANGISH BROWN CLAYAND BLACK ORGANIC SILT MATERIAL CLAY CONTENT INCREASING WITH DEPTH AND BECOMING PREDOMINATE AT APROX. 6 FT BL
				0.0	HAVE LIKELY PENETRATED THROUGH DREDGE SPOILS AND INTO UNDERLYING SOILS/ROAD BED AT APPROX 6 FT BLS.
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
13S63

DATE: 05/10/93

DWG NAME 0413363

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: SANDY
					0–2 FT. BLS, SP BUFF WHITE FINE TO MED GRAINED QTZ SAND COMPOSITE SAMPLE COLLECTED
				1	2–4 FT. BLS, SP–SAME AS **ABOVE** COMPOSITE SAMPLE COLLECTED
5				1	4–6 FT. BLS. SP–SAME AS ABOVE TO APPROX 4.5 BLS MEN CHANGES TO SC–ORANGISH BROWN CLAYEY SAND, SIGNIFICANT CLAY CONTENT APPEAR TO BE ROAD BED MATERIAL HEAVY FUEL ODOR. COMPOSITE SAMPLE COLLECTED
				1	6–8 BLS. SC–SAME ORANGISH COLORED SANDY CLAY/CLAYEY SAND AS ABOVE SAND IS FINE TO MED GRAINED QTZ. LESS FUEL ODOR W/DEPTH. MOIST/WET SOIL AT APPROX. 8 FT COMPOSITE SAMPLE COLLECTED B.O.H.
10				1	
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
13S64

DATE: 05/10/93

DWG NAME: 0413S64

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: SANDY
					0–2 FT. BLS SP–BUFF WHITE, FINE TO MED GRAINED QTZ SAND COMPOSITE SAMPLE COLLECTED
				0.0	2–4 FT. BLS SP–SAME AS ABOVE COMPOSITE SAMPLE COLLECTED
5				0.0	4–6 FT. BLS SP/SC–ORANGISH TO LT. TAN QTZ SAND, FINE TO MED GRAINED WITH MINOR CLAY CONTENT COMPOSITE SAMPLE COLLECTED
				0.0	6–7 FT. BLS SC–SAME AS ABOVE BUT CHANGING TO ORANGE CLAY STAINED, CLAYEY QTZ SAND
				0.0	AT APPROX 6.5 FT. BLS SIGNIFICANT CLAY CONTENT. WET AT APPROX 7 FT. BLS
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
13S65

DATE:05/10/93 | DWG NAME 0413S65

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: SANDY
					0–2 FT. BLS SP–BUFF WHITE TO LT. TAN FINE TO MED. GRAINED QTZ SAND
				0.0	COMPOSITE SAMPLE COLLECTED
					2–4 FT. BLS, SP–SAME AS ABOVE COMPOSITE SAMPLE COLLECTED
5				0.0	4–6 FT. BLS. SP–SAME AS ABOVE COMPOSITE SAMPLE COLLECTED
				0.0	6–8 FT. BLS, SP/SC–SAME LT TAN QTZ SAND SAME AS ABOVE W/MINOR AMOUNTS OF MED GRAY SANDY CLAY. WET AT APPROX. 8' BLS
				0.0	COMPOSITE SAMPLE COLLECTED, B.O.H.
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
13S66

DATE: 05/10/93 | DWG NAME 0413866

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLO /FT.	VAPO CON C. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: SANDY
				0.0	0–2 FT BLS SP/SC–BUFF WHITE TO LT TAN FINE TO MED GRAINED QTZ SAND W/MINOR AMOUNTS OF (SC)YELLOWISH ORANGE CLAYEY SAND & ROCK FRAGMENTS INTERMIXED COMPOSITE SAMPLE COLLECTED
					2–4 FT BLS SP/SC–SAME AS ABOVE COMPOSITE SAMPLE COLLECTED
5				0.0	4–6 FT BLS SP–BUFF WHITE TO LT TAN FINE TO MED GRAINED QTZ SAND NO GRAVEL OR CLAY COMPOSITE SAMPLE COLLECTED
				0.0	6–7.5 FT BLS SP/SC–SAME LIGHT COLORED SAND AS ABOVE W/MINOR AMOUNTS OF DARK BROWN TO GRAY CLAY AND OCCASIONAL SHELL/ROCK FRAGMENTS MOIST SAND AT 7' BLS AUGER REFUSED AT 7.5 BLS COMPOSITE SAMPLE COLLECTED
				0.0	
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
13S67

DATE: 05/10/93 | DWG NAME 0413567

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: **SANDY**
				0.(	0–2 FT. BLS SP–BUFF WHITE, FINE TO MED. GRAINED QTZ SAND. COMPOSITE SAMPLE COLLECTED 2–4 FT. BLS SP– SAME AS ABOVE COMPOSITE SAMPLE COLLECTED
5				0.(	4–5 FT. BLS SP–SAME AS ABOVE
				0.(	WET APPROX 5 FT BLS COMPOSITE SAMPLE COLLECTED.
0					
5					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
13S68

DATE: 05/10/93

DWG NAME: 0413S68

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: **SANDY**
				7	0-2 FT. BLS, SP-BUFF WHITE FINE TO MED GRAINED QTZ SAND COMPOSITE SAMPLE COLLECTED 2-4 FT BLS SP/SM-SAME SAND AS ABOVE BUT WA .5 FT. THICK INTERVAL OF DARK GRAY SILTY SAND OCCURRING FROM 3.5 TO 4 FT. BLS. BACK TO SP-LT. TAN QTZ SAND AT APPROX 4 FT
5				0.0	COMPOSITE SAMPLES COLLECTED WET AT 4' BLS.
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10-SITE 13
NAS PENSACOLA

SOIL BORING
13S69

DATE: 05/10/93 | DWG NAME 0413S69

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: SANDY SCRUB VEGETATION
				0.0	0–2 FT BLS SM/SC–0 TO .2 FT BLS ORGANISH BROW CLAYEY SILTY FINE TO MED GRAINED QTZ SAN SP–.2 FT TO 2 FT BLS BUFF WHITE FINE TO MED. GRAINED QTZ SAND COMPOSITE SAMPLE COLLOECTEI
5				0.0	2–4 FT. BLS. SP–SAME BUFF WHITE QTZ SAND AS ABOM WET AT APPROX 4 FT BLS COMPOSITE SAMPLE COLLECTED, B.O.H
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
13S70

DATE: 05/10/93 | DWG NAME 0413S70

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: GRASSY
				0.0	SM: BROWN, FINE TO MED SAND W/SILT, MOIST
					SM: BROWN, FINE TO MED. SAND W/SILT, MOIST TO WET AT 1.7'
5					1.7 SM: BLACK, SANDY SILT (SLUDGE/CLAY), MOIST TO WET. STRONG PETROLEUM ODOR [33S01001 COLLECTED FROM 1.0' – 2.0'1
					SM: BLACK, SANDY SILT (SLUDGE) MOIST TO WET TO AT 2.4'
					2.4' SM: WHITE, FINE MED SAND W/SOME SILT AND ORGANICS (ROOTS) WET [33S01002 COLLECTED FROM 2.0' – 2.5'1
10					BORING TERMINATED –2.5' IN SP: WHITE FINE TO MED. SAND GROUNDWATER –1.8'
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33S01

DATE: 05/10/93

DWG NAME 0433S01

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS /FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: GRASSY/EDGE OF PAVEMENT
				0.0	**SP:** BROWN TO TAN BR., FINE - MED SAND W/SOME ORGANICS, DRY
					SM: TAN AND **WHITE,** FINE - MED SAND W/SOME SILT, DRY TO MOIST (BLACK ORGANIC STAINED SOIL) [33S02001 COLLECTED FROM 1.0 - 2.0'BGS]
5					SP: WHITE, FINE - MED SAND ('CLEAN') MOIST CONTACT AT -2.2' BGS
					REFERENCE DESCRIPTION TO -3.3'
					3.3 SM: BLACK, FINE SAND AND SILT (PEAT LIKE) W/ORGANICS V. MOIST TO WET TO -3.6' [33S02002 COLLECTED FROM 3.0 - **4.0'** BGS]
10					**3.6 SM:** TAN BR. & TAN, FINE - MED. SAND W/SOME SILT, WET
15					BORING TERMINATED AT 4.0' IN SP: FINE - MED SAND, SATURATED
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10-SITE 13
NAS PENSACOLA

SOIL BORING
33S02

DATE. 05/10/93 | DWG NAME **0433302**

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE
				0.0	SP: DARK BROWN, FINE – MED SAND W/ORGANICS, MOIST
					SP: DARK BROWN, FINE – MED SAND, MOIST TO AT 1.3'
5					1.3' SM: GREEN BROWN, FINE SAND, SILT AND CLAY, MOIST (PLASTIC–SOFT) PETROLEUM ODOR [33S03001 COLLECTED FROM 1.0 – 2.0']
					STRONG PETROLEUM ODOR/SLUDGE/CLAY
					REFERENCE SOIL DESCRIPTION ABOVE (MOIST TO WET)
					3.3' CONTACT B/W SLUDGE/CLAY SATURATED
10					
					BORING TERMINATED AT 3.5' IN SP BLACK BROWN. FINE – MED. SAND – SAT
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33S03

DATE:05/10/93 | DWG NAME 0433S03

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS

SURFACE: GRASSY/EDGE OF FENCE

SP: DARK BROWN. FINE - MED SAND W/SOME ORGANICS, DRY TO MOIST

SM: DARK BROWN, FINE - MED. SAND W/SILT, MOIST [33S04001 COLLECTED FROM 1.0 - 2.0' BGS]

5 SM: GRAY W/BLACK, FINE - MED SAND W/SILT, MOIST TO WET

REF. ABOM DESCRIPTION
[33S04002 COLLECTED FROM 3.0 - 4.0]
MOIST TO WET

10

BORING TERMINATED ~4.0' IN SM: GRAY FINE - MED SAND W/SOME SILT. WET

15

20

25

30

35

40

45

50

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10-SITE 13
NAS PENSACOLA

SOIL BORING
33S04

DATE.05/10/93 | DWG NAME 0433S04

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: GRASSY/SANDY/EDGE OF ASPHALT PAD
				0.0	SM: DARK BROWN, FINE - MED SAND W/SOME SILT, V. MOIST ORGANICS (ROOTS) [33S05002 COLLECTED FROM 0.5 - 1.0'1 (2 READINGS 9.8 & 1.4 PPM) RETURNED TO BORING AND COLLECTED SAMPLE ~10:00 AM FOR LAB ANALYSIS
5					SM: TAN BROWN. FINE TO MED. SAND W/SOME SILT, MOIST TO WET NOT SUBMITTED FOR ANALYSIS FROM THIS DEPTH QGM DUE TO 0.5' - 1.0 INTERVAL HAVING HIGHER HNV READING
10					SM: BROWN, FINE TO MED SAND W/SOME SILT, WET [33S05004 COLLECTED FROM 3.0' - 4.0'1 +NOT SUBMITTED FOR ANALYSIS.
					BORING TERMINATED AT 4.0' IN SP: FINE TO MED SAND SATURATED
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10—SITE 13
NAS PENSACOLA

SOIL BORING
33S05

DATE: 05/10/93 | DWG NAME: 0433S05

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CON C. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: GRASS/SAND
				0.0	SM: BROWN FINE TO MED. SAND W/SILT, SHELL FRAGMENTS PRESENT, ORGANICS, V. MOIST
				0.0	SM: BROWN FINE TO MED. SAND W/SILT, SOME SHELL FRAGMENTS , V. MOIST (33506002 COLLECTED FROM 1.0 –1.5 BGS)
					TERMINATED BORING 2.0' SP: FINE–MED. SAND SATURATED
5					
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33S06

DATE: 05/10/93 | DWG NAME 0433S06

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: GRASS/SAND
				0.0	SM: BROWN, FINE–MED SAND WITH SOME SILT, WELL ROUNDED GRAVEL AND SEASHELLS MOIST ORGANIC
				0.3	SP: TAN BROWN, FINE–MED SAND, MOIST (33S07002 COLLECTED FROM 1.0' TO 1.5')
				0.0	GROUNDWATER –2.2' BORING TERMINATED ~2.2' IN FINE–MED WET SAND
5					
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33S07

DATE: 05/10/93

DWG NAME 0435307

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: GRASS
				1.0	SM: BROWN FINE- MED SAND W/ SILT (SOME ORGANICS)
				1.0	SP: TAN BROWN FINE-MED SAND, SILT, DRY [illegible] COLLECTED FROM [illegible] 2.5] MOIST -2.5
					DRY [
				0.0	REF ABOVE SOIL DESCRIPTION WET -3.7' BGS
				0.0	BORING TERMINATED ~ 4.0' IN FINE-MED SANDS. WET
5					
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10-SITE 13
NAS PENSACOIA

SOIL BORING
33S08

DATE:05/10/93

DWG NAME 0433S08

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: GRASS
				10	SP: BROWN, FINE TO MED SAND ORGANIC, MOIST
				10	REF ABOVE SOIL DESCRIPTION V. 'MOIST [33S09002 COLLECTED FROM 1.0'–1.5']
				10	SM: TAN BROWN–BROWN, FINE TO MED W/SILT, V MOIST–WET CONCRETE PIC RECOVERED.
					REF ABOVE SOIL DESCRIPTION
					BORING TERMINATED ~ 3.5' IN FINE–MED SAND, WET
5					
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33S09

DATE:05/10/93 | DWG NAME:0433S09

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	V. VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: GRASS/SAND
				3.5	SP: BROWN, FINE–MED SAND, MOIST
				0.0	REF. SOIL DESCRIPTION ABOVE (DUPLICATE SAMPLE COLLECTED AT SAME INTERVAL AT A BORING INSTALLED IMMEDIATELY ADJACENT TO 33S0)[33S10002 COLLECTED FROM 1.0–1.5]
				0.0	REF. ABOVE SOIL DESCRIPTION V. MOIST TO WET [33S10004 COLLECTED FROM 2.0'–2.5']
					BORING TERMINATED –2.5' IN SP: FINE–MED SAND WET
5					
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33S10

DATE: 05/10/93

DWG NAME 0433S10

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: SAND/GRASS
					0.0'–0.2' SW: BROWN FINE GRAINED SAND; 0.2'–0.5' SW: WHITE FGD. SAND NO HITS
				0.0	0.5'–1.5' SW: WHITE FGD. SAND NO HITS; 1.5'–2.0' SW: WHITE FDG SAND W/BROWN STREAKS NO HITS
					SAMPLE 33S11002–1635 2.0'–2.50' SW: WHITE FINE GD. SAND DRY, NO HITS; 2.5'–2.75' SC: SAME AS
					ABOVE W/BROWN CLAYEY SAND STREAKS 2.75'–3.0' SC: RED BROW CLAYEY SAND NO HITS
5				0.0	3.0'–3.5' SW: RED BROWN DRY SAND GRADING TO TAN FGD. MOIST SAND AT BOTTOM. OVA
					BATTERY AT MINIMUM LINE NEEDS RECHARGE. SAMPLE 3.5'–4.0' 33S11004–1655
					4.0'–4.2' SC: DKGY CLAYEY FGD SAND CHANGES TO WHITE FGD. SAND MOIST WET
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33S11

DATE: 05/10/93 | DWG NAME 0433S11

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS

SURFACE: **GRASSY**

SM: BROWN ORGANIC SILT & SAND (CEMENT SURFACE O 6' MOVED BORING 3' EAST PAST EXTENT)
SP: BROWN SAND AND SILT
WET AT 2'; SP: BROWN MEDIUM QTZ SAND, UTTLE SILT. WET

SP: BROWN MEDIUM TO FINE QTZ SAND LITTLE SILT MOIST

SM: BROWN MEDIUM TO FINE QTZ SAND LITTLE SILT

SM: BROWN SAND, SOME SILT
SM: GRAY/BROWN SILTY SAND, WATER AT 9.5 FT
END OF BORING AT 10 FT.

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33S12

DATE: 05/10/93 | DWG NAME: 0433S12

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONCENTRATIONS (PPM)	DESCRIPTION OF SUBSURFACE MATERIALS
					BORING DATE: 04/19/93
SURFACE CONDITIONS–					
				0	SP: BROWN MEDIUM TO FINE SOIL W/ORGANICS SMALL CHUNKS OF RED CLAY
				0	CH: DARK BROWN SILTY CLAY. BROWN TO LIGHT SILTY CLAY LIGHT BROWN MEDIUM TO FINE SAND (SP) WATER AT APPROX. 4.75 FT.
10					
20					
30					
40					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

BORING
33S13

DATE 11/08/93 | DWG NAME 4810S13

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: **GRASSY**
				0.0	0–2' SP: DARK GRAY/BLACK FINE TO COURSE SAND, DRY NO ODOR, BDL
					0.2'–0.5' SW BROWN FINE SAND. SLIGHTLY MOIST. BDL
5					0.5'–1.2' SAME AS ABOVE
					1.3 CHANGED TO LIGHT BROWN
					1ST SAMPLE AT 1.5'–2.0'
10					2.0'–2.5 SW: BROWN FINE SAND MOIST
					2.5–2.75' SW: WHITE CREAMY FINE SAND MOIST
					2.8–3.5' SW BROWN FINE SAND, MOIST
15					3.5'–4.0 2ND SAMPLE
					4.0' SAMPLE SW: BROWN FINE SAND BLACK FLAKES WITH SMALL PEBBLES. BLACK RAKES LOOK LIKE COAL OR ORGANICS. WATER AT 4.0'–4.1'
20					SAMPLE TIMES 33S14002 1050 33S14004 1105
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOIA

SOIL BORING
33S14

DATE:05/10/93 | **DWG NAME: 0453314**

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: GRASS/ WEEDS
				0.0	0.0–0.5' SM: DARK BROWN CLAYEYSILTY SAND FGD W/ROOTS, ORGANIC MATTER. DRY NO HITS
					0.5'–1.0' 0.5'–0.7' SM: DARK BROWN SILTY SAND, ORGANICS GRADING TO WHITE FINE–ME0 CD. SAND, MOIST, 0.1PP
5					1.0'–1.5' S P WHITE FINE–MED GD. SAND MOIST–WET
					SAMPLE 33815002 0.5'–1.0' DEPTH TIME 1350
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33S15

DATE:05/10/93

DWG NAME 0433S15

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: SANDY
				0.0	SW: BROWN FINE GRAIN SAND 2'–5' BLACK PETROLEUM ODOR. WATER AT .5' 32 PPM D.H.
					TERM
5					SAMPLE TIME 33S16002 1015
0					
5					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33S16

DATE:05/10/93 | DWG NAME:0433S16

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: FOREST/SWAMP
				0.0	*0–0.5'* PT: BROWN–BLACK ORGANIC LOAM WITH ROOTS, PINE NEEDLES
					0.5'–2.0' SW: WHITE GRAY FINE GD. SAND MOIST AT 1.7 WET AT 2.0
5					2.0–2.25 SW WHITE GRAY FINE GRAINED SAND WET ADDED & PUSHED SAMPLE IN SLEEVE MANUALLY. SAMPLE FROM 1.5'–2.0'
					TERMINATED AT 2.25'
10					RESAMPLED ON 12/15/92
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33S17

DATE: 05/10/93

DWG NAME 0433S17

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: SWAMP/TREES
					3-0.3" SW BLACK-DARK BROW W/FINE GD. RED SAND
					0.3"-0.5" SW RED-WHITE FINE GRAINED SAND
5					0.5"-1.5' SW: WHITE FINE GRAINED SAND MIXED W/DARK GRAY ORGANIC MATTER, ROOT HOLES
					1.5'-2.0' SW MOIST, WHITE FINE GD SAND POSSIBLE WET AT END
					2.0'-2.4' SW WHITE FINE GD. SAND WET.
10					RESAMPLED FROM 1.5'-2.0' ON 12/15/92 DUE TO LABEL ERROR
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10-SITE 13
NAS PENSACOLA

SOIL BORING
33S18

DATE: 05/10/93

DWG NAME 0433316

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: PINE NEEDLES
				0.0	0–.5' DARK GRAY–BLACK ORGANIC MATTER MIXED WITH SW: FINE GD. WHITE SAND–4ppm ON FID 0.5'–2.0' DARK GRAY ORGANIC MATTER AND FINE GRAINED WHITE SAND GRADING TO MOSTLY SW: WHITE SAND MOIST AT 1.5' NO HIT ON FID TERMINATE AT 2.0' READ 10–15 ppm IN BOREHOLE LEFT FROM BORING TIME 1115 FOR SAMPLE
5					
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33S19

DATE: 05/10/93

DWG NAME 0433319

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: PINE NEEDLES/FOREST
				0.0	*0.0–0.5'* SW: DARK GRAY ORGANIC FINE BITS OF WHITE SAND 6ppm ON FID 0.5'–1.0' SWRED–ORANGE FINE GD. SAND, NO DETECTION ON FID 1.0'–1.5' SWORANGE–RED SAND GRADES TO SW: FINE GRAINED WHITE SAND SW: WHITE FINE GRAINED SAND SLIGHTLY MOIST 2.0'–2.0' WHITE–GRAY FINE GD. SAND MOIST WET AT BOTTOM
5					
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33S20

DATE: 05/10/93 | DWG NAME 0433S20

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: PINE NEEDLES/ROSE BUSHES
				1.5 55	0.0–.5' ORGANIC BLACK MATERIAL FIRST 0.1' THEN ORGANICS AND SW: RED FGD SAND TO 0.4' GRADING TO SW: WHITE FGD. SAND AND ORGANICS, MOIST 1.5 PPM ON PID 62PPM ON OVA 0.5'–1.0 55 PPM DARK BROWN–BLACK ORGANIC MIXED W/FINE GRAINED WHITE SAND PINE RESIN ODORR 1.0'–1.8' SW: FINE GRAINED WHITE SAND BECOMING MOIST TO WET BY 1.8' NO FID READING FID READING WILL TAKE SAMPLE 33521002 FROM 0.5'–1.INTERVAL, 2 SLEEMS
5					
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33S21

DATE: 05/10/93 | DWG NAME 0433821L

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE:
				0.0	DARK ORGANIC MIXED WITH SW:FINE WHITE SAND. NO ODOR
					0.5'–0.75' SAME AS ABOVE 0.1 OVA **ppm**
					1.0'–1.5' WHITE SAND MIXED WITH DARK SAND 0.4 ppm
5					SAMPLED FROM 1.3'–2.0', TWO SLEEVES
					1.5'–2.0' SW:WHITE–GRAY FGD SAND W/ORGANIC MATTER BLACK–GRAY, MOIST
					2.0'–2.5' SW:WHITE–GRAY FGD SAND, MOIST–WET NO HITS
					2.5'–3.0' SW:WHITE–GRAY FGD SAND, MOIST–WET NO HITS
					3.0'–3.5' SW:WHITE–GRAY FGD SAND, WET
10					TOOK SAMPLE AT 2.5'–3.0' TWO SLEEVES
15					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOIA

SOIL BORING
33S22

DATE:05/10/93 | **DWG NAME 0433S22**

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: **GRASSY**
				0.0	**0.0'–0.5'** SCBROWN CLAYEY SILTY FGD. SAND, **2.0** ppm ON FID, GRADING TO SCDARK BROWN–BLACK CLAYEY SILTY FINE GD SAND, DRY **0.5'–1.0'** SCBROWN–CLAYEY SILTY SAND GRADING TO SC: RED–BROWN CLAYEY SILTY FINE GD SAND NO HITS **1.0'–1.5'** SC: BROWN–RED CLAYEY SILTY SAND NO HITS W/SHARP CONTACT AT **1.75'** TO SW: FDG WHITE SAND, MOIST, NO HITS **1.5'–2.5'** SW: WHITE–GRAY FGD. SAND DRY–MOIST NO HITS **2.5'–3.0'** SW WHITE–GRAY FGD SAND, MOIST–WET NO HITS SAMPLE **3.0'–3.5'**
5					
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33S23

DATE: 05/10/93

DWG NAME 0435823

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: ASPHALT
				0.0	0.3' OF ASPHALT 0.3' OF SHELL CALL BASE OF SHELL GROUND 0.0'–3.0' SP: BROWN–TAN FGD SAND. HITS DRY 3.25' BROWN SAND QUICKLY GRADES TO SP: BLACK SAND, MOIST FINE GD. FID 650ppm THIS INTERVAL EXTENDS TO 3.75' WHERE SAND BECOMES MORE GRAY AND MAX FID IS 350ppm BECOMES SP: WHITE FGD MEDIUM GRAINED BY 4.1' WET AT 4.1' 2 SAMPLES
5					
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33S24

DATE: 05/10/93 | DWG NAME 0435324

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: ASPHALT
				0.0	0.3' ASPHALT 0.3' SHELL 0.0'–0.5' SP: BROWN–TAN FINE GD. SAND 0.5'–1.0' BLACK SP: GRAYISH FGD. SAND, MOIST – 2ppm FID SAMPLE 1.5–2.0 1.5'–1.8' GOES FROM BLACK GRAYISH TO WHITISH FGD SAND MOIST 1.8'–2.5' SP: WHITE FINE–MED GD. SAND 2.5'–3.5' SP: WHITE FINE GD. SAND PROGRESSIVELY MOISTER 3.6' WATER SAMPLE 2 FROM 3.0'–3.5'
5					
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33S25

DATE: 05/10/93

DWG NAME: 0433S25

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: GRASSY/SANDY
				0.0	0-1 FT. BLS, SP-BUFF WHITE TO TAN, FINE TO MED GRAINED QTZ SAND
5					
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10-SITE 13
NAS PENSACOLA

SOIL BORING
33S26

DATE 05/10/93 | DWG NAME 0433S26

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: GRASSY/SANDY
				0.0	0–1 FT. BLS, SM–LT. GRAY TO LT. BROWN SILTY TO FINE GRAINED SANDY SOIL B.O.H
5					
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33S27

DATE: 05/10/93 | DWG NAME 0433827

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS /FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: GRASSY/SANDY
				0.0	0-1 FT. BLS, SM-LT GRAY TO BROWN SILTYFINE GRAINED SANDY SOIL, B.O.H
5					
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10-SITE 13
NAS PENSACOLA

SOIL BORING
33S28

DATE 05/10/93

DWG NAME: 0433S28

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: GRASSY/SANDY
				0.0	0–1 FT. SP–LT TAN TO BROWN , FINE TO MED GRAINED QTZ SAND. B.O.H.
5					
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33S29

DATE. 05/10/93

DWG NAME 0433S29

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR IONIC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: GRASSY/SANDY
				0.0	0–1 FT. BLS, SP–LT TO MED GRAY, FINE TO MED GRAINED QTZ SAND–SANDY SOIL. B.O.H
5					
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33S30

DATE: 05/10/93

DWG NAME 0433S30

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: GRASSY
				0.0	0-2 FT. BLS, SM/OH-REDDISH BROWN TO DARK GRAY SILTY, SANDY SOIL. SAND FINE TO MED GRAINED. SILTY MATERIAL APPEARS ORGANIC. COMPOSITE SAMPLE COLLECTED
				200	2-3 FT. BLS, SP-TAN QTZ SAND FINE TO MED GRAINED WET AT APPROX 3' BLS COMPOSITE SAMPLE COLLECTED
5					
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10-SITE 13
NAS PENSACOIA

SOIL BORING
33S32

DATE: 05/10/93

DWG NAME 0433S32

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: GRASSY
				220	0–2 FT BLS SM/PT–DARK BROWN TO GRAY(SM) SILTY SANDY SOIL CHANGING TO (PT) BLACK ORGANIC RICH CLAYEY SLUDGE MATERIAL AT **1.5'** BLS WET AT APPROX. 2' BLS COMPOSITE SAMPLE COLLECTED
5					
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33S33

DATE: 05/10/93 | DWG NAME: 0433333

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: **GRASSY**
				0.(	0–2 FT BLS SM/PT–DARK BROWN SILTY FINE GRAINED SANDY SOILS (SM) WITH MINOR AMOUNTS OF (PT) DARK GRAY CLAYEY ORGANIC SLUDGE MATERIAL COMPOSITE SAMPLE COLLECTED B.O.H. AUGER REFUSED DUE TO ASPHALTIC DEBRIS
5					
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33S34

DATE: 05/10/93

DWG NAME 0433S34

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	APOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: GRASSY
				90	0–2 FT BLS SM/PT–DARK BROWN TO GRAY SILTY SANDY (SM) SOIL CHANGING TO DARK GRAY CLAYEY ORGANIC (PT) SLUDGE AT APPROX. 1' BLS COMPOSITE SAMPLE COLLECTED
5				>100X	2'–3.5' FT BLS PT/SP – DARK BROW TO GRAY SILTY CLAYEY SLUDGE MATERIAL (PT) CHANGES TO (SP) LIGHT TAN TO GRAY FINE TO MED GRAINED QTZ SAND AT 3' BLS. WET AT 3.5' BLS COMPOSITE SAMPLE COLLECTED
0					
5					
0					
5					
0					
5					
0					
5					
0					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOIA

SOIL BORING
33S35

DATE: 05/10/93 DWG NAME 0433S35

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
				0.0	0-2 FT BLS SM/PT-BROWNISH RED TO DARK BROW SILTY SANDY SOIL W/ROCK FRAGMENTS & (PT) DARK GRAY ORGANIC CLAY/SLUDGE IN LOWER PORTION OF INTERVAL COMPOSITE SAMPLE COLLECTED 2-3 FT BLS PT/SM-DARK GRAY ORGANIC RICH CLAYEY SLUDGE UNDERLAIN BY LT. GRAY TO MED BROWN SILTY QTZ SAND W/WOOD FRAGMENTS. WET AT 3' BLS COMPOSITE SAMPLE COLLECTED
5					
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10-SITE 13
NAS PENSACOLA

SOIL BORING
33S36

DATE: 05/10/93

DWG NAME **0433836**

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: GRASSY
				0.a	0-2 FT BLS - SM. REDDISH TO MED. BROWN SILTY FINE GRAINED SANDY SOIL W/FREQUENT ROCK AND GRAVEL FRAGMENTS COMPOSITE SAMPLE COLLECTED
				0.0	2-3.5 FT BLS SM/SP - SAME SILTY SAND AS ABOVE CHANGING TO (SP) LT. GRAY, FINE TO MED. GRAINED QTZ SAND AT APPROX. 3' BLS WET AT APPROX 3.5'BLS COMPOSITE SAMPLE COLLECTED
5					
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10-SITE 13
NAS PENSACOLA

SOIL BORING
33S37

DATE05/10/93 | DWG NAME: 0433S37

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS	VAPOR C.
5				
10				
15				
20				
25				
30				
35				
40				
45				
50				

DESCRIPTION OF SUBSURFACE MATERIALS

1.0 0–2 FT BLS – SP/SM/PT – LT TAN FINE TO MED. GRAINED QTZ SAND (SP) FROM 0 TO .5' BLS, MEDIUM TO DARK BROWN SILTY SAND (SM) FINE TO MED. GRAINED WITH MINOR AMOUNTS OF DARK GRAY SILTY CLAYEY ORGANIC RICH MATERIAL (PT) AND WOOD FRAGMENTS FROM .5 TO 2' BLS COMPOSITE SAMPLE COLLECTED

2–4 FT BLS – SM/PT – SAME BROWN SILTY SOIL AS ABOVE (SM) GRADING INTO SILTY CLAYEY ORGANIC RICH SLUDGE MATERIAL AT APPROXIMATELY 2.5' BLS W/ DISTINCT FUEL/SOLVENT ODOR AT 3' BLS BACK TO (SP) LT. GRAY FINE TO MED. GRAINED QTZ SAND WET AT 4' BLS COMPOSITE SAMPLE COLLECTED B.O.H.

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33S38

DATE: 05/10/93 | DWG NAME 0433S38

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: **GRASSY**
				0.0	0–2' BLS SP/PT – FROM 0 TO 1 FT BLS LT. TO MED. BROW FINE TO MEDIUM GRAINED QTZ SAND (SP). QUICKLY CHANGING TO DARK GRAY SILTY CLAYEY ORGANIC SLUDGE MATERIAL W/ORGANIC ODOR. WET AT 2'BLS COMPOSITE SAMPLE COLLECTED
5					
10					
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOIA

SOIL BORING
33S39

DATE: 05/10/93 | DWG NAME 0433S39

DESCRIPTION OF SUBSURFACE MATERIALS

BORING DATE: 04/19/93

SURFACE CONDITIONS– SANDY,SPARSE VEGETATION

DEPTH (FEE	SAMPLE TYI	% RECOVER	BLOWS/FT	VAPOR CONCENTRAT (PPM)
				0
				0
				15
				0.8
				60
				50
				150
10				
20				
30				
40				
50				

SP: LIGHT BROWN MEDIUM TO FINE SAND. SOME GRAVEL, OLD ELECTRICAL WIRE.
TRACE BRICK
SW LIGHT GRAY MEDIUM TO FINE
SAND SPARSE BLACK ORGANIC MODULES.
WATER AT **6.5** FEET
SP: LIGHT GRAY TO DARK GRAY MEDIUM TO
FINE QUARTZ SAND. MOTTLED WITH BLACK PATCHES.
4 TO 6 **FEET** DEEP
SP: BLACK MEDIUM **T0** FINE SAND 6 FT TO **6.5 FT.**
SP: DARK GRAY TO LIGHT GRAY MEDIUM TO FINE SAND 6.5 FT TO **7** FEET DEEP.
OVA READING AT **7** FT IS **250 ppm.**

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

BORING
33S45

DATE: 11/08/93 | DWG NAME: **4810845**

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONCENTRATIONS (PPM)	DESCRIPTION OF SUBSURFACE MATERIALS
					BORING DATE: 04/19/93
SURFACE CONDITIONS–					SANDY. GRASSY
				0.0	SP: BROWN MEDIUM TO FINE SAND, W/ORGANICS & MOLTED W/BLACK PATCHES, LIGHT BROWN MEDIUM SAND, SP, FRAGMENT OF FABRIC
					SP: LIGHT BROWN MEDIUM TO FINE SAND
					SM: DARK GRAY TO BLACK MEDIUM TO FINE SAND
				220	BLACK MOLTED PATCHES
				800	SM: DARK GRAY TO BLACK MEDIUM TO FINE SAND AND SILT
				1,000	WATER TABLE AT 7 FT, SP BLACK SAND MEDIUM TO FINE
10					
20					
30					
40					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE **UNIT 10–SITE 13**
NAS PENSACOLA

BORING
33S46

DATE: 11/08/93 | DWG NAME **481OS46**

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONCENTRATIONS (PPM)	DESCRIPTION OF SUBSURFACE MATERIALS
					BORING DATE: **04/14/93**

SURFACE CONDITIONS–

				0.0	0–0.2 FT GRAY HARDENED SLUDGE CTR ST CALICHE LIKE
				0.0	DARK BROWN MEDIUM TO FINE SAND LITTLE SALT
					DARK BROWN MEDIUM TO FINE SAND
					LITTLE SILT. RUSTY SCREW FOUND AT 3 FT.
				4.0	LIGHT BROWN MEDIUM TO FINE QUARTZ SAND
					WATER REACHED AT 5 FT.
10					
20					
30					
40					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

BORING
33S47

DATE: 11/08/93 | DWG NAME: 481OS47

DESCRIPTION OF SUBSURFACE MATERIALS

BORING DATE: **04/14/93**

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONCENTRATIONS (PPM)	
SURFACE CONDITIONS–					
				(1.0	SM: BROWN MEDIUM TO FINE SAND, LITTLE SILT & ORGANICS
				0.0	BROWN MEDIUM TO FINE SAND W/LITTLE BRICK & CONCRETE.
				0.0	BECOMING LIGHT BROWN MEDIUM TO FINE SAND
				0.0	BECOMING GRAY MEDIUM TO FINE SAND
				(1.0	W/DARK BROWN, BLACK, MOTTLING
				2.0	LIGHT BROWN MED–TO FINE SAND W/LITTLE BLACK MOTTLING
					WATER REACHED AT APPROX 4.25 FT.
10					
20					
30					
40					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

BORING
33S48

DATE: 11/08/93

DWG NAME 481OS48

DESCRIPTION OF SUBSURFACE MATERIALS

BORING DATE: 04/20/93

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONCENTRATIONS (PPM)	
					SP: DARK GRAY MED-FINE SAND (OIL-STAINED)
					SM: BROWN SAND AND SILT
				1	SP: BECOMING LIGHT BROWN MED TO FINE SAND WITH SOME BLACK MOTTLED PATCHES
				2	BECOMING LIGHT BROWN-MED. TO FINE SAND, SP
					WATER TABLE AT 4 FT.
					END OF BORING 4 FT.
10					
20					
30					
40					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10-SITE 13
NAS PENSACOLA

BORING
33S49

DATE: 11/08/93

DWG NAME: 4810S49

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONTRA (PPM)	DESCRIPTION OF SUBSURFACE MATERIALS
					BORING DATE: 04/20/93

SURFACE CONDITIONS— GRASSY, SANDY

DEPTH (FEET)	VAPOR CONTRA (PPM)	DESCRIPTION
	1	SM: REDDISH BROWN SAND AND SILT MINOR GRAVEL
	2	SP: GRAY TO BLACK MEDIUM TO FINE QUARTZ SAND
		SOME MINOR BRICK & CLAY FILL 1/4–1.5 FT. OLD OIL ODOR
	4.0	SP: GRAY MEDIUM TO FINE QUARTZ SAND W/LITTLE SILT 2.0 FT.
	1000	SM: BLACK OILY SAND AND SILT 0 4 FT.
		WATER REACHED 0 4 FT.
		END OF BORING AT 4.25 FT.
10		
20		
30		
40		
50		

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOIA

BORING
33S50

DATE: 11/08/93

DWG NAME 4810350

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONCENTRATIONS (PPM)	DESCRIPTION OF SUBSURFACE MATERIALS
					BORING DATE: 04/20/93

SURFACE CONDITIONS– SANDY, GRASSY

DEPTH (FEET)	VAPOR CONCENTRATIONS (PPM)	DESCRIPTION
		SM: ORANGE BROWN SAND & SILT. ANT COLONY
	0	SM: BROWN MEDIUM TO FINE SAND AND SILT
		CH: ORANGE/BROWN CLAY BECOMING DARK GRAY/GREEN CLAY
	4	SM: BROWN MEDIUM TO FINE SAND AND SILT WITH SPARSE BLACK MOTTLING
	10	SM: BLACK SAND AND SILT
		SP: BECOMING LIGHT BROWN MEDIUM TO FINE SAND
		WATER TABLE AT 4 FT.
		END OF BORING 4 FT.
10		
20		
30		
40		
50		

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOIA

BORING
33S51

DATE: 11/08/93

DWG NAME: 4810S51

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONCENTRATIONS (PPM)	DESCRIPTION OF SUBSURFACE MATERIALS
SURFACE					BORING DATE: 04/20/93
				0	SM: LIGHT BROWN TO BROWN MEDIUM TO FINE SAND WITH SILT
				2	SP: LIGHT BROWN TO BROWN MEDIUM TO FINE SAND W/ SPARSE BLACK MOTTLING
				4	SM: DARK BROWN MEDIUM TO FINE SAND W/ BLACK SILTY PATCHES & BLACK CONCRETIONS. WATER AT 4FT.
10					
20					
30					
40					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10-SITE 13
NAS PENSACOLA

BORING
33S52

DATE:11/08/93

DWG NAME 4810352

DESCRIPTION OF SUBSURFACE MATERIALS

BORING DATE: 04/20/93

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONCENTRATIONS (PPM)	
SURFACE CONDITIONS– GRASSY, SANDY					
				15	SM: UGHT BROWN SAND AND ORGANICS,
				25	GP: GRAVEL & LIGHT BROWN SAND, GRAVEL SIZE INCREASE WITH DEPTH,
				30	GRAVEL IS VESICULAR BASALTIC IGNEOUS ROCK.
				5	1.5 FT GRAVEL ENDS
					SP: LIGHT BROWN SAND
					2–4' SP: LIGHT BROWN SAND WITH SPARSE BLACK MOTTLING
					WATER AT 4'
					END OF BORING AT 4'
10					
20					
30					
40					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

BORING
33S53

DATE: 11/08/93 | DWG NAME 4810S53

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONCENTRATIONS (PPM)	DESCRIPTION OF SUBSURFACE MATERIALS

BORING DATE: 04/20/93

SURFACE CONDITIONS— GRASSY, SANDY

DEPTH (FEET)	VAPOR CONCENTRATIONS (PPM)	DESCRIPTION
	10	SM: LIGHT BROWN SAND AND ORGANICS
	30	GP: GRAVEL AND LIGHT BROWN SAND
	10	GRAVEL SIZE INCREASE WITH DEPTH
	5	GRAVEL IS VESICULAR BASALTIC IGNEOUS ROCK
		1.5' GRAVEL ENDS
		SP: LIGHT BROWN SAND
		2–4' SP: LIGHT BROWN/WHITE SAND WITH SPARSE BLACK MOTTLING
		WATER AT 4'
		END OF BORING AT 4'
10		
20		
30		
40		
50		

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

BORING
33S54

DATE: 11/08/93

DWG NAME: 4810S54

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONCENTRATIONS (PPM)	DESCRIPTION OF SUBSURFACE MATERIALS

BORING DATE: 04/20/93

SURFACE CONDITIONS— GRASSY, SANDY

				10	SM: UGHT BROWN SAND AND ORGANICS
				30	GP: GRAVEL & LIGHT BROWN SAND, GRAVEL SIZE INCREASE W/ DEPTH
				10	GRAVEL IS VESICULAR IGNEOUS BASALTIC ROCK
				5	1.5' GRAVEL ENDS
					SP: LIGHT BROWN SAND
					2–4' SP: LIGHT BROWN/WHITE SAND WITH SPARSE BLACK MOTTLING
					WATER AT 4'
10					
20					
30					
40					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

BORING
33S55

DATE: 11/08/93

DWG NAME: 4810S55

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONCENTRATIONS (PPM)	DESCRIPTION OF SUBSURFACE MATERIALS
					BORING DATE: 04/20/93

SURFACE CONDITIONS–

SM: DARK BROWN ORGANIC GRAY SAND AND SILT
SP: LIGHT BROWN MEDIUM TO FINE SAND W/ BRICK & CLAY FILL MATERIAL
BECOMING BROWN MEDIUM TO FINE SAND WITH ORANGE AND BROWN MOTTLING
SP: GRAY TO DARK BROWN SAND 1.8'
2' SP: GRAY TO DARK BROWN MEDIUM TO FINE SAND
WATER REACHED AT 2'
SP: LIGHT BROWN MEDIUM TO FINE SAND
END OF BORING AT 2'

10
20
30
40
50

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOIA

BORING
33S56

DATE: 11/08/93 ! WG IE: S5

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONCENTRATIONS (PPM)	DESCRIPTION OF SUBSURFACE MATERIALS

BORING DATE: 04/21 /93

SURFACE CONDITIONS– SOIL, SPARSE VEGETATION

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONCENTRATIONS (PPM)	DESCRIPTION OF SUBSURFACE MATERIALS
				0	**OL:** DARK BROWN **TO** BLACK HIGHLY ORGANIC SILT
					0.5'–0.7' **SW:** BROWN **MEDIUM SAND**
					CONCRETE BASE **AT** 0.7'
					END OF **BORING**
10					
20					
30					
40					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT **10–SITE** 13
NAS PENSACOLA

BORING
33S57

DATE: 11/08/93 | DWG NAME: 4810S57

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	CONCENTRATIONS (PPM)	DESCRIPTION OF SUBSURFACE MATERIALS
					BORING DATE: 04/21 /93
SURFACE					
					0–0.5' GRAY MEDIUM TO FINE SAND AND SILT. SM
				0	0.5–2.5' BROWN MEDIUM TO FINE SAND **SP**
				0	2.5–4' LIGHT BROWN, MEDIUM TO FINE SAND SP SOME **BLACK** ORGANIC MATERIAL AT 4'
					REFUSAL AT **4'**, POSSIBLE TREE ROOT OR WOOD
					WATER AT 4'
					END **OF** BORING AT **4'**
10					
20					
30					
40					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

BORING
33S57B

DATE: 11/08/**93**

DWG NAME **4810S57B**

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
				1000	0–3' SM: DARK BROWN ORGANIC–RICH, MED QTZ SAND
					(2.5') BLACK WITH CHEMICAL ODOR
5				1000	WATER AT 4 FT SM: DARK GRAY MED QTZ SAND, ORGANIC–RICH BECOMING SP: LIGHT GRAY MED QTZ SAND SLIGHT CHEMICAL ODOR
10				350 700	SP: GRAY MEDIUM SAND SLIGHT ODOR
15					END OF BORING AT 15 FT MONITORING WELL INSTALLED AT 15 FT
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33G01

DATE: 05/10/93 | DWG NAME 048ES1

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: SANDY/THIN GRASS
					SM: BROWN SAND AND SILT, LITTLE ORGANICS
					SP: LIGHT BROWN TO BROWN SAND
					WATER AT 3 FT
5				0.	SP: DARK BROWN MED OR SAND
					—BECOMING— SP: BROWN TO LIGHT BROWN MED QTZ SAND
10				4	SP: LIGHT BROWN MED QTZ SAND
15				30	END OF BORING AT 15 FT MONITORING WELL INSTALLED AT 15 FT
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10—SITE 13
NAS PENSACOIA

SOIL BORING
33G02

DATE: 5

DWG NAME 2

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: SANDY/GRASSY
					0–0.5' SP: RED CLAYEY MED QTZ. SAND SP: LIGHT GRAY TO LIGHT BROWN MED QTZ. SAND
5				4	
10				3	
15					END OF BORING AT 15 FT MONITORING WELL INSTALLED
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33G03

DATE: 05/10/93 | DWG NAME 04ES3

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: BARE GROUND/RUBBLE
					SP: DARK BROWN, ORGANIC RICH SILTY SAND AND DEBRIS (ROCK, SLAG)
					—BECOMING— SP: LIGHT GRAY/BROWN MED QTZ. SAND
5				0.(	SP: LIGHT GRAY/BROWN MED QTZ. SAND
10				0.(	
15				0.(	END OF BORING AT 15 FT MONITORING WELL INSTALLED
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33GG4

DATE: 05/10/93 | DWG NAME: 04ES4

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CON C. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: HIGHLY VEGETATED
					SM: DARK BROWN, ORGANIC –RICH SAND, SOME SILT
					–BECOMING–
					SP: LIGHT GRAY MED QTZ SAND
5				I.0	SP: BROWN, MEDIUM QTZ SAND. WET
					–BECOMING– UGHT BROWN
10				1.0	SP: LIGHT BROWN MED QTZ SAND
15				I.4	END OF BORING AT 15 FT MONITORING WELL INSTALLED
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33G05

DATE: 05/10/93

DWG NAME 04ES5

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: SANDY/SOME BEACH GRASS
					SP: LIGHT BROWN, MEDIUM QTZ SAND
5				3.0	-BECOMING (~5 FT)- SP: BROWN TO DARK BROWN/RED MED QTZ SAND W/SHELL FRAGMENTS
10				3.0	-BECOMING (~10 FT)- SP: LIGHT BROWN MED QTZ SAND
15				1.0	END OF BORING AT 15 FT MONITORING WELL INSTALLED
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10-SITE 13
NAS PENSACOIA

SOIL BORING
13G06

DATE: 05/10/93 | DWG NAME: 04ES6

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS /FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: **SANDY**
					SP: LIGHT BRIWB NED. QTZ SAND
5				0.0	SP: LIGHT BRWON MED QTZ SAND
					-- BECOMING UGHT GRAY
10				.0	SP: LIGHT BRWON/GRAY MED. QTZ SAND.
15				10	END OF BORING AT 15 FT. MONITORING WELL INSTALLED AT 15 FT.
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOIA

SOIL BORING
13BO-7

DATE:05/10/93 | DWG NAME:04ES7

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: SANDY/SPARSE GRASS
					SM: LIGHT RED/BROWN MED. QTZ. SILTY SAND
					– BECOMING SP: LIGHT BROWN/GRAY MED. QTZ. SAND
5					WATER AT 4 FT.
					SP: LIGHT BROWN/GRAY MED. QTZ. SAND
10				0.0	SP: LIGHT GRAY MED. QTZ. SAND
15				0.0	SP: GRAY SAND (MED,QTZ) SWAMP ODOR (H2S)
20				0.0	SP: GRAY SAND (MED. QTZ) SWAMP ODOR (H2S?)
					SWITCH TO MUD ROTARY AT 23 FT.
25				0.0	SP: LIGHT BROWN SAND, (MED QTZ)
					SP: LIGHT BROWN, MED QTZ SAND
30					
					SP: LIGHT BROWN. MED QTZ SAND
35					
					SP: LIGHT BROWN, MED QTZ SAND
40					
					42 FT GL:DARK BLUE/GRAY CLAY W/SMALL SHELL FRAGMENTS SILTY 1/9/93
					END OF BORING AT 42.5 FT.
45					FAILED MONITORING WELL ES8. ATTEMPTED, ABANDONED 12/14/92
					ABANDONED DUE TO OVER BENTONITE GROUT
					MONITORING WELL INSTALLED 1/13/93
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33G08

DATE: 05/10/93 | DWG NAME 04ES8

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: GRASSY/SANDY
					SP: LIGHT BROWN, MEDIUM QUARTZ SAND
5					
					SP: LIGHT BROWN, MEDIUM QUARTZ SAND
10					
					SM: GRAY TO DARK GRAY SALTY SAND, DARK BROWN PORE WATER SWAMP ODOR (H2S?)
15					
					SM: GRAY/BROWN SAND. SAND. SOME SALT. MED QTZ. DARK BROWN PORE WATER SWAMP ODOR
20					
					CONVERT TO MUD ROTARY SP: LIGHT BROWN MEDIUM QTZ SAND
25					
30					
35					
40					
					CL: 43.5 FT. DK. BLUE/GRAY CLAY (SILTY /9/93)
45					END OF BORING 43.5 FT.
					MONITORING WELL INSTALLED AT 43 FT.
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33G09

DATE: 05/10/93 | DWG NAME: 04ES9

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: BARE GROUND/GRAVEL
				0.0	**SM:** BROWN SAND AND SILT CL: RED/BROWN CLAY AND SILT (ROAD BASE)
					SP: LIGHT GRAY/BROWN SAND, (MEDIUM, QTZ)
5					**SP:** LIGHT GRAY/BROWN SAND, MEDIUM QUARTZ SAND
10					SP: BROWN MEDIUM QUARTZ SAND, LITTLE SILT
					–BECOMING– DARK BROWN, SAME
15					
20					SP: DARK BROWN MEDIUM QTZ SAND
					–SWITCH TO MUD ROTARY–
25					**SP:** LIGHT BROWN MEDIUM QTZ SAND
					SP: LIGHT BROWN MEDIUM QTZ SAND
30					
					SP: LIGHT BROWN MEDIUM QTZ SAND
35					
					SP: UGHT BROWN MEDIUM QTZ SAND
40					
					SP: LIGHT BROWN MEDIUM QTZ SAND
45					
					46.5 CL: BLUE/GRAY CLAY (SILTY 1/9/93)
					END OF BORING AT 47 FT.
					MONITORING WELL INSTALLED AT 46 FT.
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT IO–SITE 13
NAS PENSACOLA

SOIL BORING
38G10.

DATE:05/10/93 | DWG NAME04ES10

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: SANDY/SPARCE WILD GRASS
					SP: BROWN, LIGHT BROWN MEDIUM QTZ. SAND
5				0.0	SP: LIGHT BROWN MEDIUM QTZ. SAND
10				0.0	
15				0.0	SP: LIGHT BROWN MEDIUM QTZ. SAND
20				0.0	SP: LIGHT BROWN MEDIUM QTZ. SAND
					-SWITCH TO MUD ROTARY-
25					SP: LIGHT BROWN MEDIUM QTZ SAND
					SP: LIGHT BROWN MEDIUM TO FINE QTZ. SAND
30					
					SP: LIGHT BROWN MEDIUM TO FINE QTZ. SAND
35					
					SP: LIGHT BROWN TO FINE QTZ. SAND
40					
					42.5 FT CL: DARK BLUE/GRAY CLAY (SILTY 1/9/93)
					END OF BORING AT 43 FT MONITORING WELL INSTALLED
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT IO-SITE 13
NAS PENSACOLA

SOIL BORING
33G11

DATE: 05/10/93 | DWG NAME 04ES11

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE
					SM: BROWN/RED SAND, SOME SILT
					–BECOMING– SP: BROWN MEDIUM TO FINE SAND LITTLE SILT
5				1	–BECOMING– SM: DARK BROWN TO BLACK MEDIUM TO FINE SAND SOME SILT
					–BECOMING– SP: LIGHT BROWN MEDIUM QTZ SAND
10					SP: LIGHT BROWN/GRAY MEDIUM QTZ SAND
15				2	SP: LIGHT BROWN/GRAY MEDIUM QTZ SAND
20				60	SP: BROWN/GRAY MEDIUM TO FINE QTZ SAND SP: BROWN/GRAY MEDIUM TO FINE QTZ SAND
					–SUSPEND DRILLING 12/18. COMR AND SECURE HOLE, SWITCH TO MUD ROTARY 12/21
25					SP: LIGHT BROW MEDIUM TO FINE QTZ SAND
				0.0	SP: LIGHT BROWN MEDIUM TO FINE QTZ SAND
30					
				0.0	
					SP: LIGHT BROWN MEDIUM TO FINE QTZ SAND
35					
					CL: (LIGHT BROWN 1/10) CLAY W/SOME FINE SAND (APPROX 37 FT)–BECOMING–CL: DARK GRAY SANDY (SILTY 1/9/92). CLAY
40					END OF BORING AT 38 FT. MONITORING WELL INSTALLED AT 36.5 FT.
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33G12

DATE: 05/10/93 | DWG NAME 04ES12

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE
					SM: ORANGE/BROWN SAND AND SILT
					–BECOMING– SP: BLACK SAND. SILT AND ASPHALT
					SM: DARK BROWN SAND AND SILT
5					–BECOMING– SP UGHT BROWN/GRAY MEDIUM QTZ SAND
					UGHT BROWN/GRAY MEDIUM QTZ SAND
					–BECOMING– SM: DARK BROWN SAND, SOME SILT
					WATER AT 8 FT., WOOD DEBRIS
10					SP: LIGHT TO DARK RAY MED TO FINE QTZ SAND
15				0.0	SP: LIGHT BROWN MEDIUM QTZ SAND
20				1	
					SP: LIGHT BROWN MED TO FINE QTZ SAND
					SWTCH TO MUD ROTARY SP: MED TO FINE QTZ SAND
25				0.0	
30					
35					
40					TAN SANDY CLAY
					CL: DARK GRAY SANDY CLAY WITH DECAYED WOOD FRAGMENTS
					END OF BORING AT 42 FT MONITORING WELL INSTALLED AT 39 FT.
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33G13

DATE:05/10/93 | DWG NAME 04ES13

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE
					ASPHALT RUBBLE WITH SAND
					CL: MED TO FINE, CLAYEY SILTY SAND, DARK BROWN TO BLACK, ORGANIC RICH
5				1.2	
					SP: GRAY MEDIUM SAND –BECOMING MOIST–
10				0.0	SP LIGHT BROWN TO GRAY SAND, MEDIUM GRAINED
					WATER AT 10 FT.
15				0.4	SP: LIGHT BROWN/GRAY MED TO FINE SAND
20				0.9	
25					
					SP: GRAY FINE SAND
30					
35					
					SP GRAY FINE SAND WITH MINOR BLACK SANDY CLAY
40					SP GRAY FINE SAND
					CL: GRAY SANDY CLAY 43 FT.
					END OF BORING AT 43 FT.
45					MONITORING WELL INSTALLED
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOIA

SOIL BORING
33G14

DATE:05/10/93 | DWG NAME 04ES14

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: GRASSY/BUSHY
				0.0	OL: DARK BROWN SILTY, CLAYEY SAND WITH ORGANIC RICH MATRIX H20 ODOR SP: LIGHT GRAY MED–FINE SAND
5					SP: LIGHT GRAY MEDIUM SAND
0				12	SP: LIGHT BROWN MED–FINE SAND WITH 3–4% HEAW MINERALS
5				1800	
0				38	SP: GRAY TO LIGHT BROWN MED–FINE SAND WITH 3–5% HEAW MINERALS
5				82	
0				0.0	
5				0.0	
0					OL: BLUE/GRAY SANDY CLAY, WITH SHELL FRAGMENTS END OF BORING AT 38 FT MONITORING WELL INSTALLED
5					
0					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33G15

DATE:05/10/93 | DWG NAME 04ES15

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: THIN **GRASS, SANDY**
					SP: GRAY – BROWN MED QTZ SAND TO 5 BLS
5					SP DARK GRAY BROWN MED QTZ SAND TO 7.5 BLS
					SP: DARK GRAY – BROWN MED QTZ SAND TO 10 BLS
10					SP: SAME LIGHT BROWN MED QTZ SAND
15				30(	
20				20(	SP: SAME LIGHT BROWN MED QTZ SAND AS ABOVE
					SWITCH TO MUD ROTARY
25				10	SP: SAME LIGHT BROWN QTZ SAND (MED GRAINED BUT FINER SIDE OF MED RANGE) TO 39.5' BLS
30				9	
				3.5	
35				2.5	
40					AA 39.5 BLS Cl DARK BLUE TO GRAY SILTY CLAY ENCOUNTERED
45					
50				-	

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33G16

DATE: 05/10/93 | DWG NAME: 04ES16

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: SANDY/THIN GRASS
					SM: BROWN SILM SAND, ORGANIC RICH
					2.5' SM: DARK BROWN SILTY SAND ORGANIC RICH
5					**5.0'–10'** SM: BLACK TO VERY DARK BROWN SILTY SAND
10					**10'–15'** SP: BROWN MED QUARTZ SAND BECOMING SP: LIGHT BROWN MED. QUARTZ SAND
15					**15'–20'** SP: LIGHT BROW MED QUARTZ SAND BECOMING SP: BROWN MED QUARTZ SAND
20					**20'–24'** SP: BROWN MED QUARTZ SAND BECOMING SAME WITH HORIZON OF BLACK FINE MED GRAINED QUARTZ SAND SWAMP ODOR **17 FT.**
25					**24'–30'** SP: BROWN MED QUARTZ SAND TO DARK BROWN W/BROWN PORE WATER BEGIN MUD ROTARY
30					**30'–35'** SP: LIGHT BROWN MED QUARTZ SAND
35					**35'–38.9'** SP: LIGHT BROWN MED QUARTZ SAND
					SP: BROWN MED QUARTZ SAND
40					**38.5–39.5** CL: DARK GRAY/BLUE SILM CLAY END OF BOREHOLE AT 39.5' INSTALLED AT **37** FT.
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
33G17

DATE: 05/10/93 | DWG NAME: 04ES17

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: SANDY/CLAYEY/ASPHALT CHUNKS
					CL: RED/BROWN CLAYEY SILT 0-0.5 FT WEATHERED ASPHALT 0.5-0.7 FT
					!SP: BROWN SILM SAND 0.7-0.9 FT WEATHERED ASPHALT 0.9-3 FT
				0.0	CL: LIGHT RED/BROWN CLAYEY SILM MED SAND 3-3.25 FT
					SP: LIGHT GRAY/WHITE MED TO FINE QTZ. SAND
5				0.0	
				0.0	
					WATER AT 8 FT SP: LIGHT GRAY MED TO fINE QTZ. SAND MOIST
0				0.0	
				(1.0	
					SP: LIGHT BROWN/GRAY MED TO FINE QTZ. SAND
				0.0	
					SP: LIGHT BROWN MED TO FINE QTZ. SAND WITH SPARSE MICA
5				(1.0	
					SP: LIGHT BROWN MED TO fINE QTZ. SAND
				0.0	
20				0.0	
				0.0	SP: BROWN fINE QTZ. SAND. WITH SPARCE. SMALL VEGETATION DETRITUS
					SP: BROWN FINE QTZ. SAND
				0.0	
25					-SWITCH TO 10' REAMER/MUD ROTARY AT 24' SP: LIGHT BROWN MED TO FINE QTZ. SAND
					SP: LIGHT GRAY/BROWN MED QTZ. SAND
					SP/MH: LIGHT GRAY MICACEOUS MED TO FINE QTZ. SAND TIGHT
30				0.0	
					SP/MH: LIGHT GRAY/BROWN MICACEOUS MED TO FINE QTZ. SAND TIGHT
				N/A	
					SP: LIGHT GRAY/BROWN MED TO fINE QTZ. SAND -BECOMING GRAY
					SP: BROWN MED TO FINE QTZ SAND 33-33.5 FT
					SP: DARK BROWN MED-FINE QTZ SAND 33.5-33.8' SP: GRAY/BROWN SILM MED-FINE SAND 33.8-34'
35				(4)	SP: LIGHT GRAY MED-FINE QTZ. SAND 34'
				(4)	
					-ALTERNATE GRADATIONS WITH SM: GREEN/BROWN MED TO fINE SILM QTZ. SAND
40				0.0	
					SP: LIGHT GRAY MED-FINE QTZ. SAND
				0.0	SP: ORANGE/BROWN MED-FINE SILTY QTZ. SAND
					SP: LIGHT GRAY MED-FINE QTZ. SAND
				0.0	SP: GRAY MED-FINE QTZ.SAND BECOMING SM: GRAY GRAY SILTY MED-FINE QTZ. SAND 42.5'
					BECOMING ML: DARK GRAY SILT, SOME MED -FINE SAND 43'
45				0.0	ML: DARK BLUE/GRAY SILT, SOME MED-FINE SAND BECOMING CL: DARK BLUE/GRAY CLAY W/SOME SHELL FRAGMENTS SOME SMALL SAND DOMAINS 44.5'
					DARK CL: BLUE/GRAY CLAY 45' (CLAY SWELLS APPRECIABLY IN SPOON)
					6' CASING SET AT 48'. 6' MUD ROTARY FROM 48' TO BOTTOM
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10-SITE 13
NAS PENSACOLA

SOIL BORING 33S31 /33G18
PAGE 1

DATE: 05/10/93 | DWG NAME 04ES18

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: SANDY/CLAYEY/ASPHALT CHUNKS
50					CL: DARK BLUE/GRAY CLAY WITH FEW SCATTERED SHELL FRAGMENTS
				).C	CL: DARK BLUE/GRAY CLAY
				).C	CL: DARK BLUE/GREEN/GRAY CLAY, SILTY CLAY WITH SHELL FRAGMENTS. LITTLE SAND
55				).C	CL: DARK GREEN/GRAY SILTY CLAY WITH ABUNDANT SHELL FRAGMENTS, LITTLE SAND
					SAME, WITH THIN VERTICAL SAND WEDGE *(0–0.3* IN)
				).C	CL: DARK BROWN/ORANGE LAMINATED IRON DEPOSITE **(57.5–57.6')**
					CLDARK BROWN SILTY CLAY WITH THIN IRON DEPOSIT LAYERS
60				).C	CLDARK BROWN DENSE CLAY FINELY LAMINATED (' IMONITE LAYER SCATTERED THROUGHOUT TWO THIN SAND HORIZONS ● **58')**
					BECOMING CL: GREEN/GRAY SILTY CLAY WITH LIMONITE LAMINAE **61'**
				).C	BECOMING ML: GREEN/GRAY SILT WITH MINOR VEGETATION DETRITUS **61.5–62'**
					QUICKLY GRADING TO CL: DARKBROWN LAMINATED CLAY W/THIN SCATTERED LIMONITE LAMINAE **62–63.3**
				).C	QUICKLY GRADING TO SP: GREEN/GRAY FINE SAND **63–64'**
65					SPGRAY MED TO FINE SAND
				).C	
				).C	
					● **68' 1/2"** THICK WOOD FRAGMENT
70				).C	SPUGHT GRAY/BRON FINE SAND **68.6'**
					SP: GRAY MED TO FINE SAND, LITTLE COARSE SAND
				).C	
					SPGRAY MED TO FINE SAND
				).C	
75					SP: GRAY MED TO FINE QTZ. SAND, WITH MINOR MICA
					SP: GRAY MED TO FINE QTZ SAND WITH MINOR MICA
					END OF BORING AT 78 FT MONITORING WELL . INSTALLED
80					
85					
90					
95					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING 33831 /33G18
PAGE 2

DATE: 05/10/93 | DWG NAME 04ES18_2

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONC. (ppm)	DESCRIPTION OF SUBSURFACE MATERIALS
					SURFACE: SANDY, SPARSELY VEGETATED
					SM:BROWN LIGHT BROWN MED TO FINE QTZ. SAND **SOME** SILT AND ROOTS 1–12.5' SP:LIGHT BROWN TO WHITE MEDIUM QTZ. SAND HAND AUGER TO 6.5'
5					WATER AT **4'**
					SP:LIGHT BROWN MEDIUM QTZ. SAND
10					
					END OF BORING AT 12.5 FT MONITORING WELL INSTALLED
15					
20					
25					
30					
35					
40					
45					
50					

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10–SITE 13
NAS PENSACOLA

SOIL BORING
13G19

DATE: 05/10/93 | DWG NAME 04ES19

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	BLOWS/FT.	VAPOR CONCENTRATIONS (PPM)	DESCRIPTION OF SUBSURFACE MATERIALS
					BORING DATE: 04/22/93

SURFACE CONDITIONS— GRASSY WETLAND

BLACK ORGANIC-RICH SILT
1-5 SP GRAY MEDIUM TO FINE QTZ. SAND

5-18' LIGHT GRAY TO LIGHT BROWN MEDIUM TO FINE QTZ. SAND SP

10

18' SP: GRAY MEDIUM TO FINE QTZ. SAND WITH DARK BROWN PORE WATER.
SWAMPY H20 ODOR
BOTTOM OF HORIZON UNDETERMINED

20

23 FT LIGHT GRAY MEDIUM TO FINE QTZ. SAND SP
LIGHT GRAY MEDIUM TO FINE QTZ SAND SP

30

35-37' ML-CH BLUE/GRAY SILT, SILTY/CLAY

37' BLUE/GRAY SILTY CLAY CH

40

END OF BORING AT 42'
WELL INSTALLED AT 35'

50

REMEDIAL INVESTIGATION REPORT
OPERABLE UNIT 10-SITE 13
NAS PENSACOLA

BORING
33G20

DATE: 11/08/93

DWG NAME: 4810ES20

APPENDIX E

AUXILIARY DATA — SURFACE WATER SAMPLE COLLECTION

Sample Location/ Identification	Collection Time	Water Depth (feet)	Temperature (°C)	pH	Specific Conductance (μmhos/cms)
33W01002	1340	1.0	17.9	6.68	133
33W02002	1315	2.5	16.0	6.91	238
33W03002	1300	2.0	15.5	7.06	219
33W04002	1220	2.5	15.2	7.38	230

APPENDIX F

PHYSICAL ANALYSES

SL *SAVANNAH LABORATORIES*
& ENVIRONMENTAL SERVICES. INC.

900 Lakeside Drive • Mobile, Alabama 36693-5118 • (205)666-6633 • Fax (205)666-6696

LOG NO: M3-10180

Received: 18 JAN 93

Mr. Henry Biero
EnSafe/Allen & Hoshall
P.O. Box 341315
Memphis, TN 38134

Purchase Order: E-0161/93,CTO-0048

Project: Pensacola Navy RI/FS
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE SAMPLED
10180-1	33S31048 (01.08.93)	01-08-93
10180-2	33S31050 (01.08.93)	01-08-93

PARAMETER	10180-1	10180-2
Grain Size (ASTM D421/422/1140)		
% Passing sieve No.4	*	*
% Passing sieve No.10	*	*
% Passing sieve No.20	*	*
% Passing sieve No.40	*	*
% Passing sieve No.60	*	*
% Passing sieve No.100	*	*
% Passing sieve No.200	*	*
% <0.062mm	*	*
% <0.004mm	*	*
% <0.001mm	*	*
Permeability (Average), cm/sec	7.285e-9	6.224e-7
Porosity, %	66.98	68.39
Specific Gravity	2.6137	2.6120
Moisture (Loss on drying - 105 C), %	45	45
Bulk Density, lb/ft3	97.36	94.12

REFERENCE: American Society of Testing Materials,
ASTM D-422, D-854, D-243415084
*See attached reports and gradation curves.

Michele H. Lersch
Michele H. Lersch

1993

THOMPSON ENGINEERING TESTING, INC.

CHEMICAL, MATERIALS AND GEOTECHNICAL
LABORATORIES

3707 COTTAGE HILL ROAD
MOBILE, ALABAMA 36609
TELEPHONE: 205/666-2443

MARCH 12, 1993

REPORT #: 1
JOB #: P93005

CLIENT: SAVANNAH LABORATORIES
PROJECT: SAVANNAH #: M3-10180

REPORT OF: PARTICLE SIZE ANALYSIS ASTM D-422

SAMPLE IDENTIFICATION: 33531048 33531048 DEPTH (FT): 46.0-48.0
..... SPECIFIC GRAVITY OF SOLIDS (g/ml).. 2.62

DATES	TECHNICIAN
SAMPLED: 01/08/93	SAMPLED: CLIENT
TESTED: 02/16/93	TESTED: L. BAXLEY

I. ..... GRAIN SIZE ANALYSIS

U.S. STANDARD SIEVE SIZE	U.S. SIEVE SIZE (mm)	WEIGHT RETAINED (GRAMS)	PERCENT COARSER (%)	PERCENT FINER (%)
3/8"	9.50	.00	.00	100.00
NO.4	4.75	.00	.00	100.00
NO.10	2.00	.00	.00	100.00
NO.20	.850	.03	.06	99.94
NO.40	.425	.06	.12	99.88
NO.60	.250	.20	.39	99.61
NO.100	.149	.70	1.38	98.62
NO.200	.075	1.28	2.52	97.48

TOTAL WEIGHT (GRAMS):..... 50.87

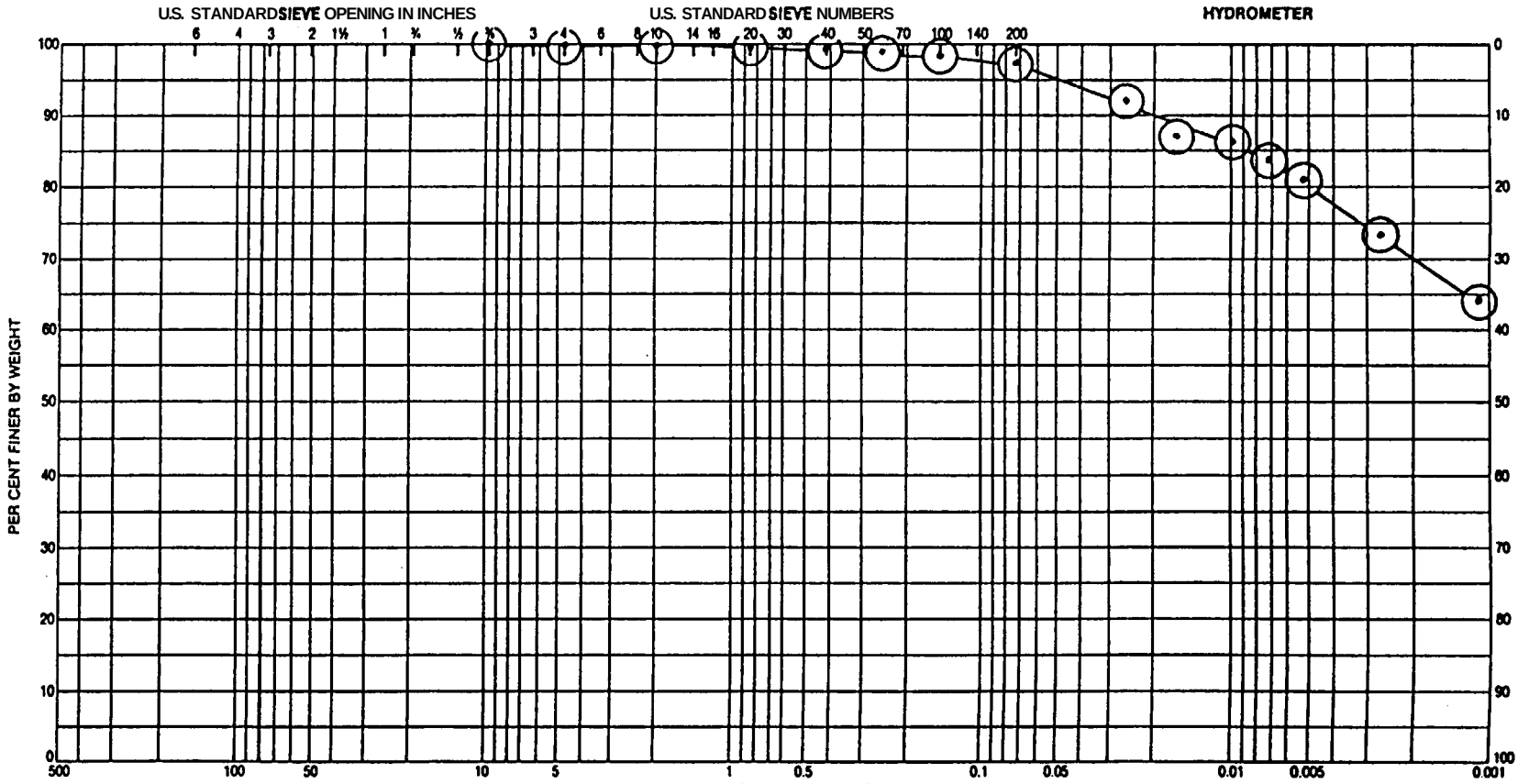
11. ..... HYDROMETER ANALYSIS

ELAPSED TIME (MINUTES)	TEMPERATURE DEGREE (CELCIUS)	HYDROMETER READING CORRECTION	HYDROMETER READING (g/l)	PARTICLE SIZE (mm)	PERCENT FINER (%)
2	22.50	5.00	54.00	.0259352	96.32
5	22.50	5.00	52.00	.0167608	92.39
15	22.60	5.00	49.00	.0099675	86.49
30	22.60	5.00	48.06	.0071178	84.53
60	22.60	5.00	46.00	.0051301	80.60
250	23.20	5.00	42.50	.0025767	73.72
1440	21.10	5.00	38.00	.0011419	64.87

U.S.C.S. SOIL CLASSIFICATION: FAT CLAY, TRACE FINE SAND (CH)

Douglas E. Fuch

THOMPSON ENGINEERING TESTING, INC.
MATERIALS ENGINEERING LABORATORY



Sample No.	Elev or Depth	Classification	Net w %	LL	PL	PI
ONE	46.0-48.0	FAT CLAY, TRACE FINE SAND (CH)	80.5	---	---	---

Project SAVANNAH #:M3-10180

Job No. P93005

Area SAVANNAH LABORATORIES

Boring No. 33531048 33531048

Date 03/12/93

GRADATION CURVES

Thompson

THOMPSON ENGINEERING TESTING, INC.

CHEMICAL, MATERIALS AND GEOTECHNICAL LABORATORIES

MOBILE, ALABAMA

THOMPSON ENGINEERING TESTING, INC.

CHEMICAL, MATERIALS AND GEOTECHNICAL
LABORATORIES

3707 COTTAGE HILL ROAD
MOBILE, ALABAMA 36609
TELEPHONE: 205/666-2443

MARCH 12, 1993

REPORT #: 4
JOB #: P93005

CLIENT: SAVANNAH LABORATORIES
PROJECT: SAVANNAH #: M3-10180

REPORT OF: PARTICLE SIZE ANALYSIS ASTM D-422

SAMPLE IDENTIFICATION: 33531050 33531050 DEPTH (FT): 48.0-50.0
..... SPECIFIC GRAVITY OF SOLIDS (g/ml):. 2.62

DATES	TECHNICIAN
SAMPLED: 01/08/93	SAMPLED: CLIENT
TESTED: 02/16/93	TESTED: L. BAXLEY

I. ..... GRAIN SIZE ANALYSIS

U.S. STANDARD SIEVE SIZE	U.S. SIEVE SIZE (mm)	WEIGHT RETAINED (GRAMS)	PERCENT COARSER (%)	PERCENT FINER (%)
3/8"	9.50	.00	.00	100.00
N0.4	4.7s	.00	.00	100.00
NO.10	2.00	.05	.10	99.90
NO.20	.850	.21	.41	99.59
NO.40	.425	.30	.59	99.41
NO.60	.250	.40	.79	99.21
NO.100	.149	.72	1.42	98.58
NO.200	.075	1.92	3.77	96.23

TOTAL WEIGHT (GRAMS):..... 50.88

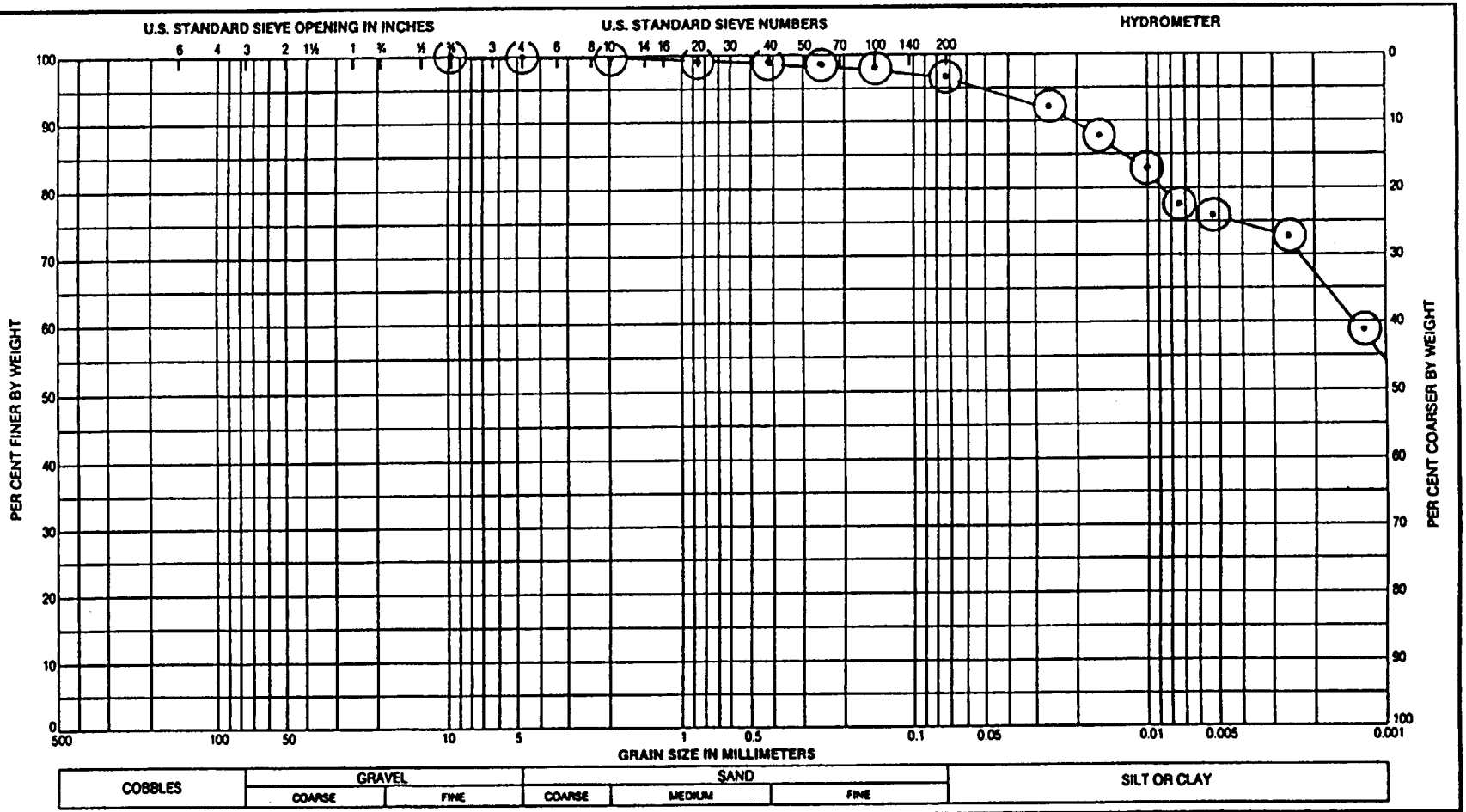
II. ..... HYDROMETER ANALYSIS

ELAPSED TIME (MINUTES)	TEMPERATURE DEGREE (CELCIUS)	HYDROMETER READING CORRECTION	HYDROMETER READING (g/l)	PARTICLE SIZE (mm)	PERCENT FINER (%)
2	22.50	5.00	52.00	.0265012	92.37
5	22.50	5.00	50.00	.0171113	88.44
15	22.60	5.00	47.00	.0101636	82.55
30	22.60	5.00	45.50	.0072891	79.60
60	22.60	5.00	43.50	.0052490	75.67
250	23.20	5.00	42.00	.0025880	72.72
1440	21.10	5.00	35.00	.0011695	58.96

U.S.C.S. SOIL CLASSIFICATION: FAT CLAY, TRACE FINE SAND (CH)

Douglas E. Lach

THOMPSON ENGINEERING TESTING, INC.
MATERIALS ENGINEERING LABORATORY



Sample No.	Elev or Depth	Classification	Net w %	LL	PL	PI
TWO	48.0-50.0	FAT CLAY, TRACE FINE SAND (CH)	82.3	—	—	—

Project SAVANNAH #: M3-10180

Job No. P93005

Area SAVANNAH LABORATORIES

Boring No. 33531050 33S31050

Date 03/12/93

GRADATION CURVES

Thompson

THOMPSON ENGINEERING TESTING, INC.

CHEMICAL, MATERIALS AND GEOTECHNICAL LABORATORIES

MOBILE, ALABAMA

SL *SAVANNAH LABORATORIES*
& ENVIRONMENTAL SERVICES. INC.

900 Lakeside Drive • Mobile, Alabama 36693-5118 • (205)666-6633 • Fax (205)666-6696

LOG NO: M3-10261

Received: 22 JAN 93

Mr. Henry Biero
EnSafe/Allen & Hoshall
P.O. Box 341315
Memphis, TN 38134

Purchase Order: E-0161/93,CTO-0048

Project: Pensacola NAVY RI/FS
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
10261-1	33W02002 (01.20-01.21.93)	01-21-93

PARAMETER	10261-1
5 Day BOD (SM 507), mg/l	1.4
TSS (EPA 160.2), mg/l	8.2
Alkalinity as CaCO3, mg/l	43
Nitrate-N, mg/l	<0.10
Chemical Oxygen Demand, mg/l	73
Phosphorus, Total, mg/l	0.16
Kjeldahl Nitrogen-N, mg/l	1.6
Hardness, as CaCO3, mg/l	56
Standard Plate Count, NO/ml	660

REFERENCE: EPA-600/4-79-020, 1983;
Standard Methods 17th ed., 1989

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES. INC.

900 Lakeside Drive • Mobile, Alabama 36693-5118 • (205)666-6633 • Fax (205)666-6696

LOG NO: M3-10261

Received: 22 JAN 93

Mr. Henry Biero
EnSafe/Allen & Hoshall
P.O. Box 341315
Memphis, TN 38134

Purchase Order: E-0161/93,CTO-0048

Project: Pensacola NAVY RI/FS
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE SAMPLED
10261-2	33M01001 (01.20-01.21.93)	01-21-93
10261-3	33M02001 (01.20-01.21.93)	01-21-93
10261-4	33S40003 (01.19.93)	01-19-93
10261-5	33S41002 (01.19.93)	01-19-93
10261-6	33342003 (01.19.93)	01-19-93

PARAMETER	10261-2	10261-3	10261-4	10261-5	10261-6
Standard Plate Count, NO/g	98000000	62000000	50000	30000000	5000000
Phosphorus, Total, mg/kg dw	97	88	7.9	10	61
Nitrate-N, mglkg dw	<1.0	1.4	<1.0	<1.0	10
Kjeldahl Nitrogen-N, mg/kg dw	260	500	28	75	77
Organic Carbon, mglkg dw	1100	1100	150	580	470
Moisture (Loss on drying - 105 C), %	31	35	5	10	7
Specific Gravity	1.6335	1.6647	2.4478	2.2010	2.0902
Grain Size (ASTM D421/422/1140)					
% Passing sieve No.4	*	*	*	*	*
% Passing sieve No.10	*	*	*	*	*
4 Passing sieve No.20	*	*	*	*	*
% Passing sieve No.40	*	*	*	*	*
% Passing sieve No.60	*	*	*	*	*
% Passing sieve No.100	*	*	*	*	*
% Passing sieve No.200	*	*	*	*	*
% <0.062mm	*	*	*	*	*
4 <0.004mm	*	*	*	*	*
% <0.001mm	*	*	*	*	*
Porosity, %	65.80	47.55	34.95	40.60	44.85
Permeability (Average), cm/sec	2.435e-4	4.712e-2	4.154e-4	8.280e-4	3.399e-2
Bulk Density, lb/ft3	99.73	112.01	131.67	117.69	106.80
Cation Exchange Capacity, meq/100g	4.2	6.4	0.24	0.75	3.9

REFERENCE: Standard Methods 17th ed., 1989:
ASTM D-854, D-422, D-2434/5084;
AOAC 18th ed., 1992
*See attached reports and gradation curves.

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES. INC.

900 Lakeside Drive • Mobile, Alabama 36693-5118 • (205)666-6633 • Fax (205)666-6696

LOG NO: M3-10261

Received: 22 JAN 93

Mr. Henry Biero
EnSafe/Allen & Hoshall
P.O. Box 341315
Memphis, TN 38134

Purchase Order: E-0161/93,CTO-0048

Project: Pensacola NAVY RI/FS
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE SAMPLED
10261-7	33S43003 (01.19.93)	01-19-93
10261-8	33S44002 (01.19.93)	01-19-93

PARAMETER	10261-7	10261-8
Standard Plate Count, NO/g	176000000	99000000
Phosphorus, Total, mg/kg dw	11	3.3
Nitrate-N, mg/kg dw	13	<1.0
Kjeldahl Nitrogen-N, mg/kg dw	420	80
Organic Carbon, mg/kg dw	480	180
Moisture (Loss on drying - 105 C), %	8	6
Specific Gravity	2.0949	1.7021
Grain Size (ASTM D421/422/1140)		
% Passing sieve No.4	*	*
% Passing sieve No.10	*	*
% Passing sieve No.20	*	*
% Passing sieve No.40	*	*
% Passing sieve No.60	*	*
% Passing sieve No.100	*	*
% Passing sieve No.200	*	*
% <0.062mm	*	*
% <0.004mm	*	*
% <0.001mm	*	*
Porosity, %	40.89	44.72
Permeability (Average), cm/sec	1.577e-3	4.375e-2
Bulk Density, lb/ft3	108.42	100.85
Cation Exchange Capacity, meq/100g	5.2	3.5

REFERENCE: Standard Methods 17th ed., 1989;
ASTM D-854, D-422, D-2434/5084;
AOAC 18th ed., 1992
*See attached reports and gradation curves.

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES. INC.

900 Lakeside Drive • Mobile, Alabama 36693-5118 • (205)666-6633 • Fax (205)666-6696

LOG NO: M3-10261

Received: 22 JAN 93

Mr. Henry Biero
EnSafe/Allen & Hoshall
P.O. Box 341315
Memphis, TN 38134

Purchase Order: E-0161/93,CTO-0048

Project: Pensacola NAVY RI/FS
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
10261-9	Laboratory Blank
10261-10	Accuracy (% Recovery)
10261-11	Precision (Relative % Difference)

PARAMETER	10261-9	10261-10	10261-11
5 Day BOD (SM 507), mg/l	<1.0	88 %	1.1 %
TSS (EPA 160.2), mg/l	<1.0	98 %	1.0 %
Alkalinity as CaCO3, mg/l	<1.0	107 %	0 %
Nitrate-N, mg/l	<0.10	106 %	0 %
Chemical Oxygen Demand, mg/l	<20	99 %	4.0 %
Phosphorus, Total, mg/1	<0.050	96 %	9.4 %
Kjeldahl Nitrogen-N, mg/l	<0.10	96 %	1.0 %
Hardness, as CaCO3, mg/l	<0.50	96 %	1.0 %
Standard Plate Count, NO/ml	<1	---	---

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES. INC.

900 Lakeside Drive • Mobile, Alabama 36693-5118 • (205)666-6633 • Fax (205)666-6696

LOG NO: M3-10261

Received: 22 JAN 93

Mr. Henry Biero
EnSafe/Allen & Hoshall
P.O. Box 341315
Memphis, TN 38134

Purchase Order: E-0161/93,CTO-0048

Project: Pensacola NAVY RI/FS
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID
10261-12	Laboratory Blank
10261-13	Accuracy (% Recovery)
10261-14	Precision (Relative % Difference)

PARAMETER	10261-12	10261-13	10261-14
Phosphorus, Total, mglkg	<1.0	96 %	9.4 %
Nitrate-N, mglkg	<1.0	106 %	0 X
Kjeldahl Nitrogen-N, mglkg	<1.0	96 %	1.0 %
Organic Carbon. mglkg	<30	73 %	5.5 %
Standard Plate Count, NO/g	<1	---	---

Michele H. Lersch

Michele H. Lersch

THOMPSON ENGINEERING TESTING, INC.

CHEMICAL, MATERIALS AND GEOTECHNICAL
LABORATORIES

3707 COTTAGE HILL ROAD
MOBILE. ALABAMA 36609
TELEPHONE. 205/666-2443

MARCH 8, 1993

REPORT #: 1
JOB #: P93008

CLIENT: SAVANNAH LABORATORIES
PROJECT: SAVANNAH #: M3-10261

REPORT OF: PARTICLE SIZE ANALYSIS ASTM D-422

SAMPLE IDENTIFICATION: 33M01001 DEPTH (FT): N/A
ASSUMED SPECIFIC GRAVITY OF SOLIDS (g/ml):. 2.62

DATES	TECHNICIAN
SAMPLED: 01/29/93	SAMPLED: CLIENT
TESTED: 03/04/93	TESTED: L. BAXLEY

I. ..... GRAIN SIZE ANALYSIS

U.S. STANDARD SIEVE SIZE	U.S. SIEVE SIZE (mm)	WEIGHT RETAINED (GRAMS)	PERCENT COARSER (%)	PERCENT FINER (%)
3/8"	9.50	.00	.00	100.00
NO.4	4.75	.57	.95	99.05
NO.10	2.00	1.29	2.15	97.85
NO.20	.850	2.77	4.61	95.39
NO. 40	.425	17.9';	24.84	70.16
NO.60	.250	45.11	75.08	24.92
NO.100	.149	55.81	92.89	7.11
NO.200	.075	56.91	94.72	5.28

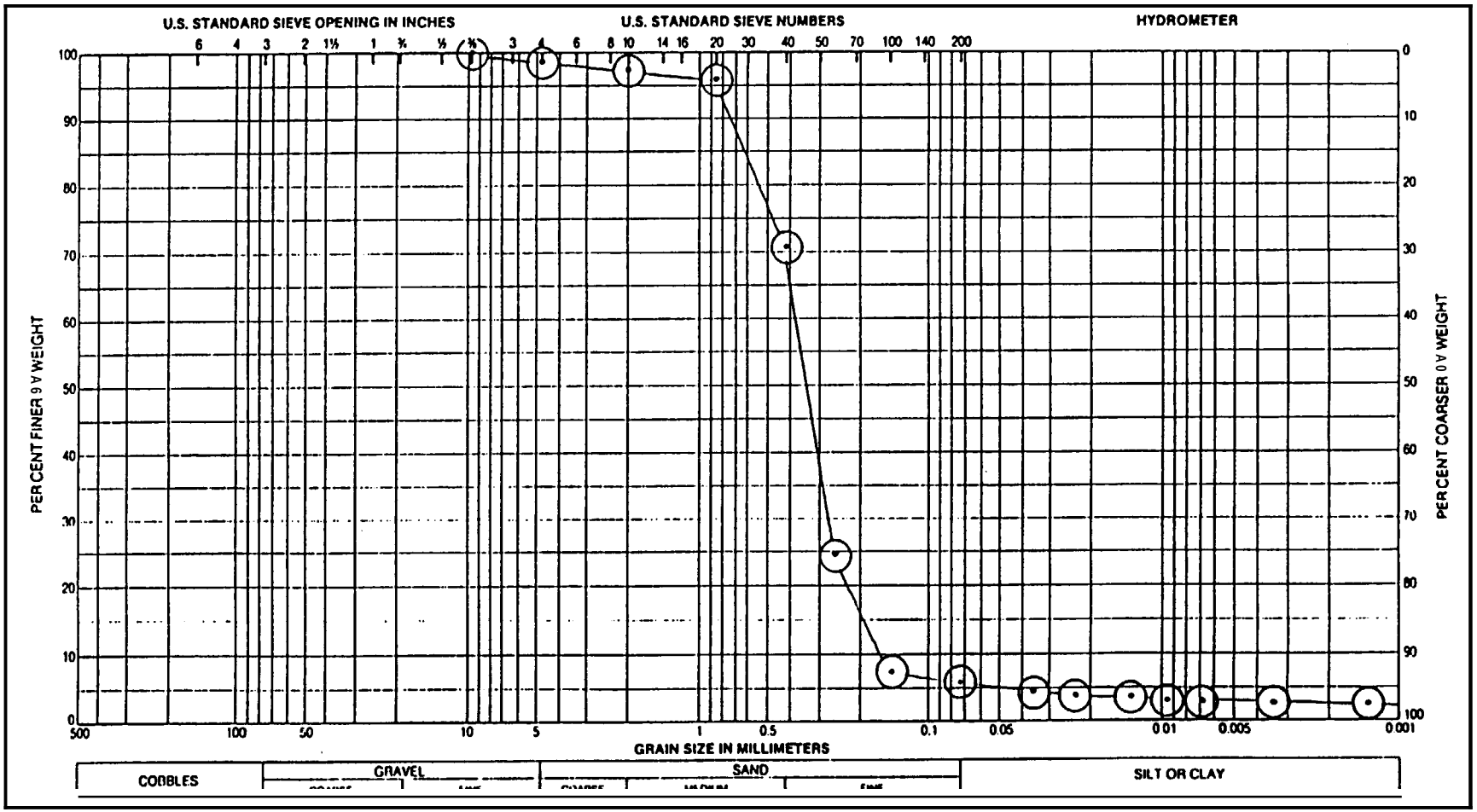
TOTAL WEIGHT (GRAMS):..... 60.08

11. ..... HYDROMETER ANALYSIS

ELAPSED TIME (MINUTES)	TEMPERATURE DEGREE (CELCIUS)	HYDROMETER READING CORRECTION	HYDROMETER READING (g/l)	PARTICLE SIZE (mm)	PERCENT FINER (%)
2	22.40	5.00	8.00	.0368209	4.99
5	22.30	5.00	7.70	.0233521	4.49
15	22.30	5.00	7.40	.0135044	3.99
30	22.30	5.00	7.10	.0095646	3.50
60	22.30	5.00	6.70	.0067779	2.83
250	22.30	5.00	6.60	.0033223	2.66
1440	22.10	5.00	6.50	.0013881	2.50

U.S.C.S. SOIL CLASSIFICATION: MEDIUM-FINE SAND, TRACE ORGANICS (SP-SM)

THOMPSON ENGINEERING TESTING, INC.
MATERIALS ENGINEERING LABORATORY



Sample No.	Elev or Depth	Classification	Net w %	LL	PL	PI
ONE	N/A	MEDIUM-FINE SAND, TRACE ORGANICS (SP-SM)	78.2	---	---	---

Project SAVANNAH #: M3-10261

Job No. P93008

Area SAVANNAH LABORATORIES

Boring No. 33M01001

Date 03/08/93

GRADATION CURVES

Thompson

THOMPSON ENGINEERING TESTING, INC.

CHEMICAL, MATERIALS AND GEOTECHNICAL LABORATORIES

MOBILE, ALABAMA

THOMPSON ENGINEERING TESTING, INC.

CHEMICAL, MATERIALS AND GEOTECHNICAL LABORATORIES

3707 COTTAGE HILL ROAD
MOBILE. ALABAMA 36609
TELEPWONE. 205/666-2443

MARCH 8, 1993

REPORT #: 8
JOB #: P93008

CLIENT: SAVANNAH LABORATORIES
PROJECT: SAVANNAH #: M3-10261

REPORT OF: FARTICLE SIZE ANALYSIS ASTM **D-422**

SAMPLE IDENTIFICATION: 33M02001 DEPTH (FT): N/A
ASSUMED SPECIFIC GRAVITY OF SOLIDS (g/ml):. 2.64

PATES
SAMPLED: 01/21/93
TESTED: *02/12/93*

TECHNICIAN
SAMPLED: CLIENT
TESTED: L. BAXLEY

I. ..... GRAIN SIZE ANALYSIS

U.S. STANDARD SIEVE SIZE	U.S. SIEVE SIZE (mm)	WEIGHT RETAINED (GRAMS)	PERCENT COARSER (%)	PERCENT FINER (%)
3/8"	9.50	.00	.00	100.00
NO.4	4.75	.00	.00	100.00
NO.10	2.00	.04	.04	99.96
NO.20	.850	1.46	1.43	98.57
NO.40	.425	24.84	24.37	75.63
NO.60	.250	80.77	79.25	20.75
NO.100	.149	100.61	98.71	1.29
NO.200	.075	101.08	99.18	.82

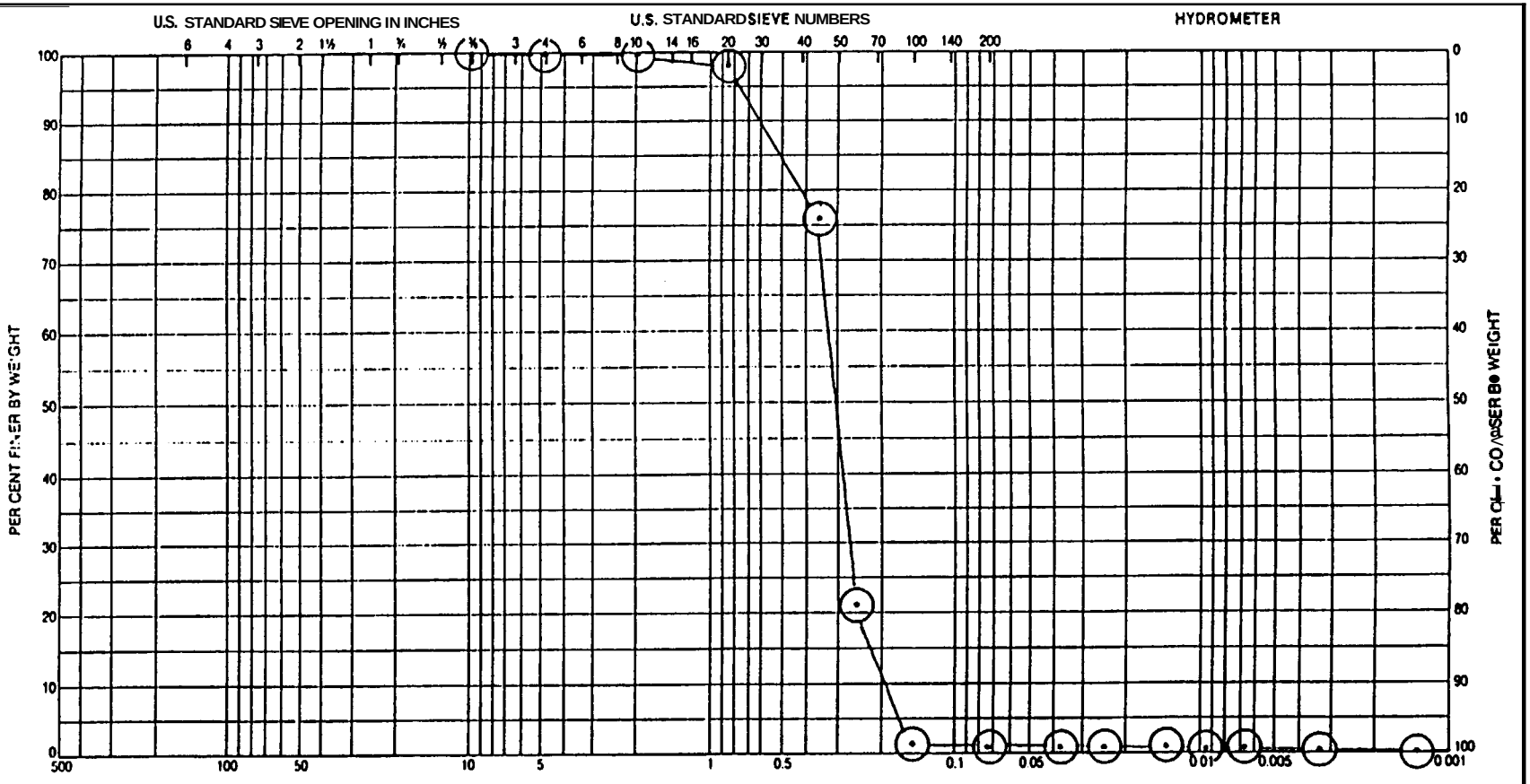
TOTAL WEIGHT (GRAMS):..... 101.92

11. ..... HYDROMETER ANALYSIS

ELAPSED TIME (MINUTES)	TEMPERATURE DEGREE (CELCIUS)	HYDROMETER READING CORRECTION	HYDROMETER READING (g/l)	PARTICLE SIZE (mm)	FERCENT FINER (%)
2	22.40	5.00	5.80	.0369887	*.70*
5	22.40	5.00	5.70	.0234062	.69
15	22.50	5.00	5.60	.0135055	.59
30	22.60	5.00	5.40	.0095492	*.39*
60	22.60	5.00	5.30	.0067559	.29
250	23.20	5.00	5.20	.0032888	.20
1440	21.10	5.00	5.10	.0014038	.10

U.S.C.S. SOIL CLASSIFICATION: MEDIUM-FINE SAND (SP)

THOMPSON ENGINEERING ESTING, INC.
MATERIALS ENGINEERING LABORATORY



Sample No.	Elev or Depth	Classification	Net w %	LL	PL	PI
THREE	N/A	MEDIUM-FINE SAND (SP)	30.6	—	—	—

Project SAVANNAH #: M3 10261

Job No. P93008

Area SAVANNAH LABORATORIES

Boring NO. 33M02001

Date 03/08/93

GRADATION CURVES

Thompson

THOMPSON ENGINEERING TESTING, INC.

CHEMICAL, MATERIALS AND GEOTECHNICAL LABORATORIES

MOBILE, ALABAMA

THOMPSON ENGINEERING TESTING, INC.

CHEMICAL, MATERIALS AND GEOTECHNICAL
LABORATORIES

3707 COTTAGE HILL ROAD
MOBILE. ALABAMA 36609
TELEPHONE. 205/666-2443

MARCH 8, 1993

REPORT #: 11
JOB #: P93008

CLIENT: SAVANNAH LABORATORIES
PROJECT: SAVANNAH #: M3-10261

REPORT OF: PARTICLE SIZE ANALYSIS ASTM D-422

SAMFLE IPENT IF ICAT ION: 33540003 33540003 DEPTH (FT): N/A
ASSUMED SPEC IF IC GRAV ITY OF SOL IDS (g/m1):. 2.63

DATES	TECHNICIAN
SAMPLED: 01/19/93	SAMPLED: CLIENT
TESTED: 02/12/93	TESTED: L. BAXLEY

I. ..... GRAIN SIZE ANALYSIS

U.S. STANDARD SIEVE SIZE	U.S. SIEVE SIZE (mm)	WEIGHT RETAINED (GRAMS)	PERCENT COARSER (%)	PERCENT FINER (%)
3/8"	9.50	.00	.00	100.00
NO.4	4.75	.00	.00	100.00
NO.10	2.00	.01	.01	99.99
NO.20	.850	.61	.61	99.39
NO.40	.425	17.04	17.01	82.99
NO.60	.250	46.18	46.10	53.90
NO.100	.149	69.71	69.59	30.41
NO.200	.075	82.68	82.54	17.46

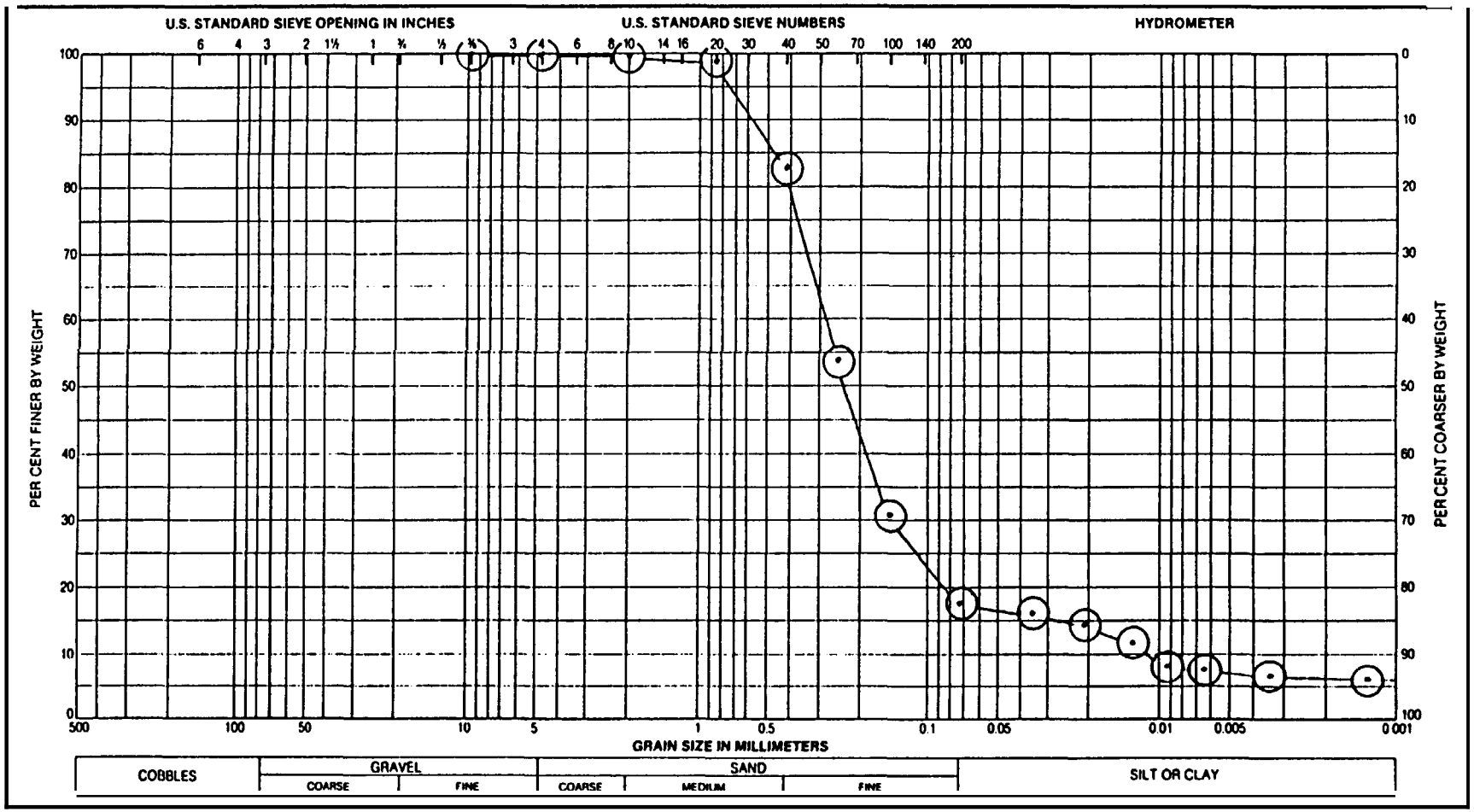
TOTAL WEIGHT (GRAMS):..... 100.17

II. ..... HYPROMETER ANALYSIS

ELAPSED TIME (MINUTES)	TEMPERATURE DEGREE (CELCIUS)	HYDROMETER READING CORRECTION	HYDROMETER READING (g/l)	PARTICLE SIZE (mm)	FERCENT FINER (%)
2	22.40	5.00	21.00	.0340263	15.97
5	22.40	5.00	20.00	.0216570	14.97
15	22.50	5.00	16.50	.0127621	11.48
30	22.60	5.00	13.40	.0091811	3.39
60	22.60	5.00	11.80	.0065522	6.79
250	23.20	5.00	11.50	.0031934	6.49
1440	21.10	5.00	11.00	.0013662	5.99

U.S.C.S. SOIL CLASSIFICATION: SILTY MEDIUM-FINE SAND (SM)

THOMPSON ENGINEERING TESTING, INC.
MATERIALS ENGINEERING LABORATORY



Sample No.	Elev or Depth	Classification	Nat w %	LL	PL	PI
FOUR	N/A	SILTY MEDIUM-FINE SAND (SM)	18.8	—	—	—

Project SAVANNAH #: M3-10261

Job No. P93008

Area SAVANNAH LABORATORIES

Boring No. 33540003 33540003

Date 03/08/93

GRADATION CURVES

THOMPSON ENGINEERING TESTING, INC.

CHEMICAL, MATERIALS AND GEOTECHNICAL LABORATORIES

MOBILE, ALABAMA

THOMPSON ENGINEERING TESTING, INC.

CHEMICAL, MATERIALS AND GEOTECHNICAL LABORATORIES

3707 COTTAGE HILL ROAD
MOBILE. ALABAMA 36609
TELEPHONE. 205/666-2443

MARCH 8, 1993

REPORT #: 14
JOB #: P93008

CLIENT: SAVANNAH LAEORATORIES
PROJECT: SAVANNAH #: M3-10261

REPORT OF: PARTICLE SIZE ANALYSIS ASTM D-422

SAMPLE IDENTIFICATION: 33541002 33541002 DEPTH (FT): N/A
ASSUMED SPECIFIC GRAVITY OF SOLIDS (g/ml):. 2.64

DATES	TECHNICIAN
SAMPLED: 01/19/93	SAMPLED: CLIENT
TESTED: 02/12/93	TESTED: L. BAXLEY

I. ..... GRAIN SIZE ANALYSIS

U.S. STANDARD SIEVE SIZE	U.S. SIEVE SIZE (mm)	WEIGHT RETAINED (GRAMS)	PERCENT COARSER (%)	PERCENT FINER (%)
3/8"	9.50	.00	.00	100.00
NO.4	4.75	.00	.00	100.00
NO.10	2.00	.13	.13	99.87
NO.20	.850	.76	.78	99.22
NO.40	.425	16.22	16.56	83.44
NO.60	.250	68.45	69.88	30.12
NO.100	.149	93.50	95.45	4.55
NO.200	.075	95.32	97.31	2.69

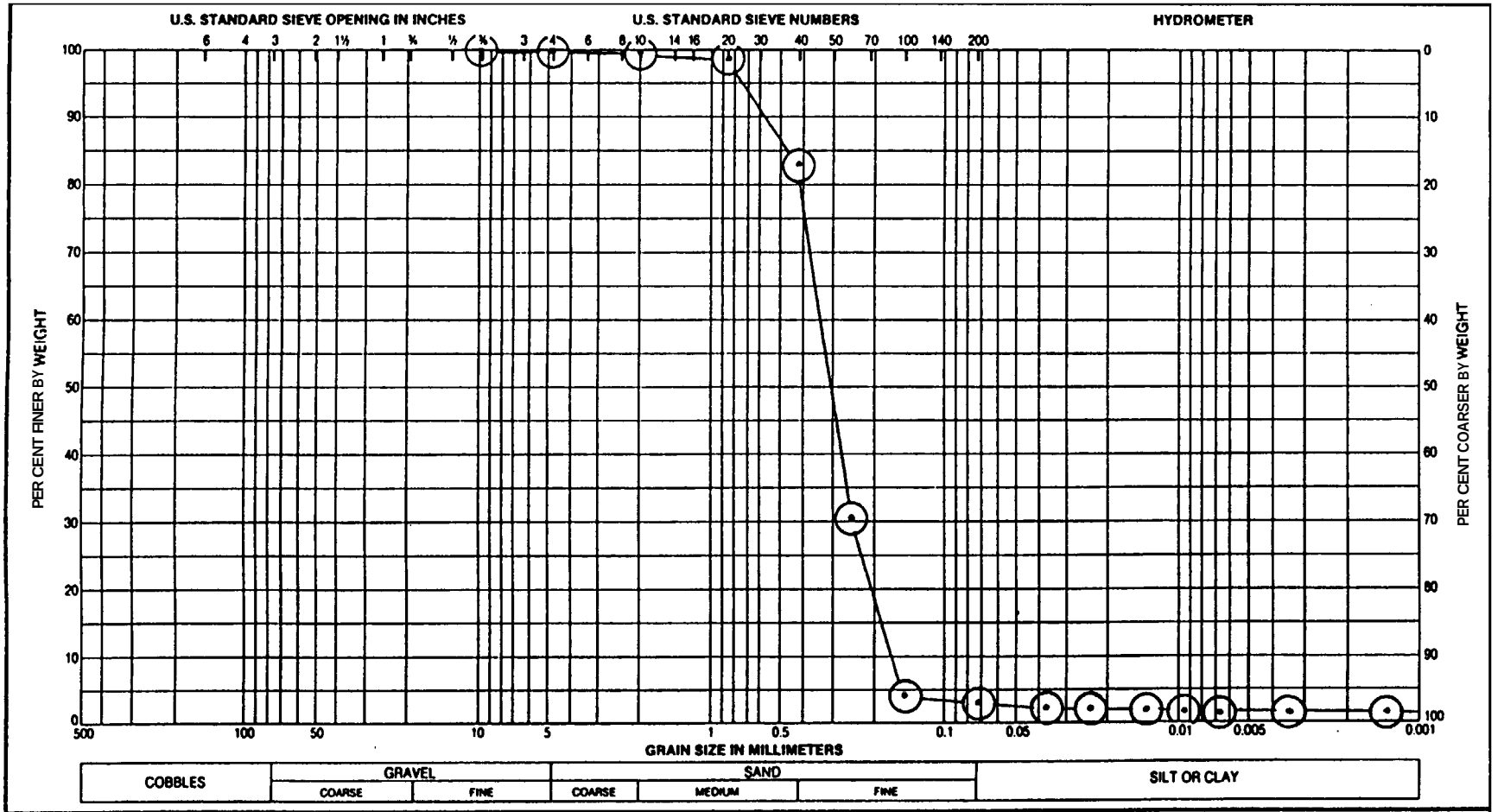
TOTAL WEIGHT (GRAMS):..... 97.96

II. ..... HYDROMETER ANALYSIS

ELAPSED TIME (MINUTES)	TEMPERATURE DEGREE (CELCIUS)	HYDROMETER READING CORRECTION	HYDROMETER READING (g/l)	PARTICLE SIZE (mm)	PERCENT FINER (%)
2	22.40	5.00	7.50	.0367181	2.55
5	22.40	5.00	7.30	.0232478	2.35
15	22.50	5.00	7.10	.0134215	2.14
30	22.50	5.00	6.80	.0095059	1.84
60	22.60	5.00	6.70	.0067177	1.74
250	23.10	5.00	6.60	.0032740	1.63
1440	21.00	5.00	6.50	.0013974	1.53

U.S.C.S. SOIL- CLASSIFICATION: MEDIUM-FINE SAND (SP)

THOMPSON ENGINEERING TESTING, INC.
MATERIALS ENGINEERING LABORATORY



Sample No.	Elev or Depth	Classification	Net w %	LL	PL	PI
FIVE	N/A	MEDIUM-FINE SAND (SP)	16.3	—	—	—

Project SAVANNAH #: M3-10261

Job No. P93008

Area SAVANNAH LABORATORIES

Boring No. 33541002 33S41002

Date 03/08/93

GRADATION CURVES

THOMPSON ENGINEERING TESTING, INC.

CHEMICAL, MATERIALS AND GEOTECHNICAL LABORATORIES

MOBILE, ALABAMA

Thompson

THOMPSON ENGINEERING TESTING, INC.

CHEMICAL, MATERIALS AND GEOTECHNICAL LABORATORIES

3707 COTTAGE HILL ROAD
MOBILE. ALABAMA 36609
TELEPHONE 205/666-2443

MARCH 8. 1993

REPORT #: 17
JOB #: F93008

CLIENT: SAVANNAH LABORATORIES
PROJECT: SAVANNAH #: M3-10261

REPORT OF: PARTICLE SIZE ANALYSIS ASTM D-422

SAMPLE IDENTIFICATION: 33542003 33542003 DEPTH (FT): N/A
ASSUMED SPECIFIC GRAVITY OF SOLIDS (g/ml):. 2.64

DATES	TECHNICIAN
SAMPLED: 01/19/93	SAMPLED: CLIENT
TESTED: 02/14/93	TESTED: L. BAXLEY

I. ..... GRAIN SIZE ANALYSIS

U.S. STANDARD SIEVE SIZE	U.S. SIEVE SIZE (mm)	WEIGHT RETAINED (GRAMS)	PERCENT COARSER (%)	PERCENT FINER (%)
3/8"	4.50	.00	.00	100.00
NO.4	4.75	1.50	1.27	98.73
NO.10	2.00	1.70	1.44	98.56
NO.20	.850	2.10	1.78	98.22
NO.40	.425	27.07	22.44	77.06
NO.60	.250	91.30	77.37	22.63
NO. 100	.149	113.33	96.03	3.97
NO.200	.075	114.73	97.22	2.78

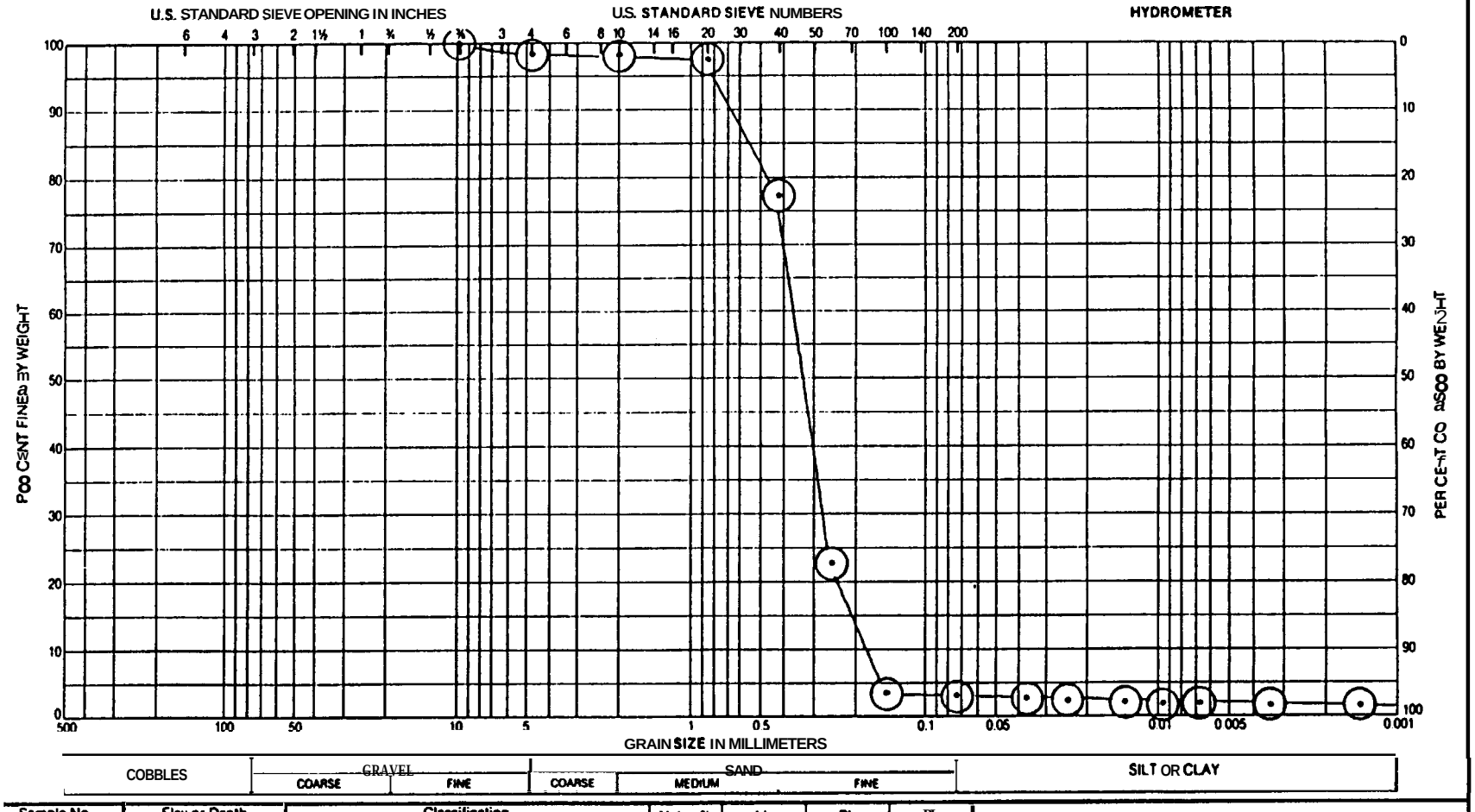
TOTAL WEIGHT (GRAMS):..... 118.01

II. ..... HYDROMETER ANALYSIS

ELAPSED TIME (MINUTES)	TEMPERATURE DEGREE (CELCIUS)	HYDROMETER READING CORRECTION	HYDROMETER READING (g/l)	PARTICLE SIZE (mm)	PERCENT FINER (%)
2	22.40	5.00	8.10	.0365979	2.63
5	22.40	5.00	8.00	.0231592	2.54
15	22.40	5.00	7.80	.0133856	2.37
30	22.50	5.00	7.70	.0094595	2.29
60	22.60	5.00	7.60	.0066850	2.20
250	23.20	5.00	6.80	.0032667	1.53
1440	21.00	5.00	6.30	.0013989	1.10

U.S.C.S. SOIL CLASSIFICATION: MEDIUM-FINE SAND. TRACE SHELL FRAGMENTS (SP)

THOMPSON ENGINEERING TESTING, INC.
MATERIALS ENGINEERING LABORATORY



Sample No	Elev or Depth	Classification	Net w %	LL	PL	PI
SIX	N/A	MEDIUM-FINE SAND, TRACE SHELL FRAGMENTS (SP)	6.7	---	---	---

Project SAVANNAH #: M3-10261

Job No. P93008

Area SAVANNAH LABORATORIES

Boring No. 33542003 33S42003

Date 03/08/93

GRADATION CURVES

THOMPSON ENGINEERING TESTING, INC.

CHEMICAL, MATERIALS AND GEOTECHNICAL LABORATORIES

MOBILE ALABAMA

THOMPSON ENGINEERING TESTING, INC.

CHEMICAL, MATERIALS AND GEOTECHNICAL
LABORATORIES

3707 COTTAGE HILL ROAD
MOBILE. ALABAMA 36609
TELEPHONE. 205/666-2443

MARCH 0. 1943

REPORT #: 20
JOB #: P93008

CLIENT: SAVANNAH LABORATORIES
PROJECT: SAVANNAH #: M3-10261

REPORT OF: PARTICLE SIZE ANALYSIS ASTM D-422

SAMPLE IDENTIFICATION: 33543003 DEPTH (FT): N/A
ASSUMED SPECIFIC GRAVITY OF SOLIDS (g/ml):. 2.64

DATES	TECHNICIAN
SAMPLED: 01/14/93	SAMPLED: CLIENT
TESTED: 02/12/93	TESTED: L. BAXLEY

I. ..... GRAIN SIZE ANALYSIS

U.S. STANDARD SIEVE SIZE	U.S. SIEVE SIZE (mm)	WEIGHT RETAINED (GRAMS)	PERCENT COARSER (%)	PERCENT FINER (%)
3/8"	9.50	.00	.00	100.00
N0.4	4.75	.00	.00	100.00
NO. 10	2.00	4.4s	5.92	94.08
NO .20	.850	21.05	27.98	72.02
NO .40	.425	44.39	59.01	40.99
N0 .60	.250	59.38	78.94	21.06
NO. 100	.149	65.48	87.05	12.95
NO .200	.075	67.97	90.36	9.64

TOTAL WEIGHT (GRAMS):..... 75.22

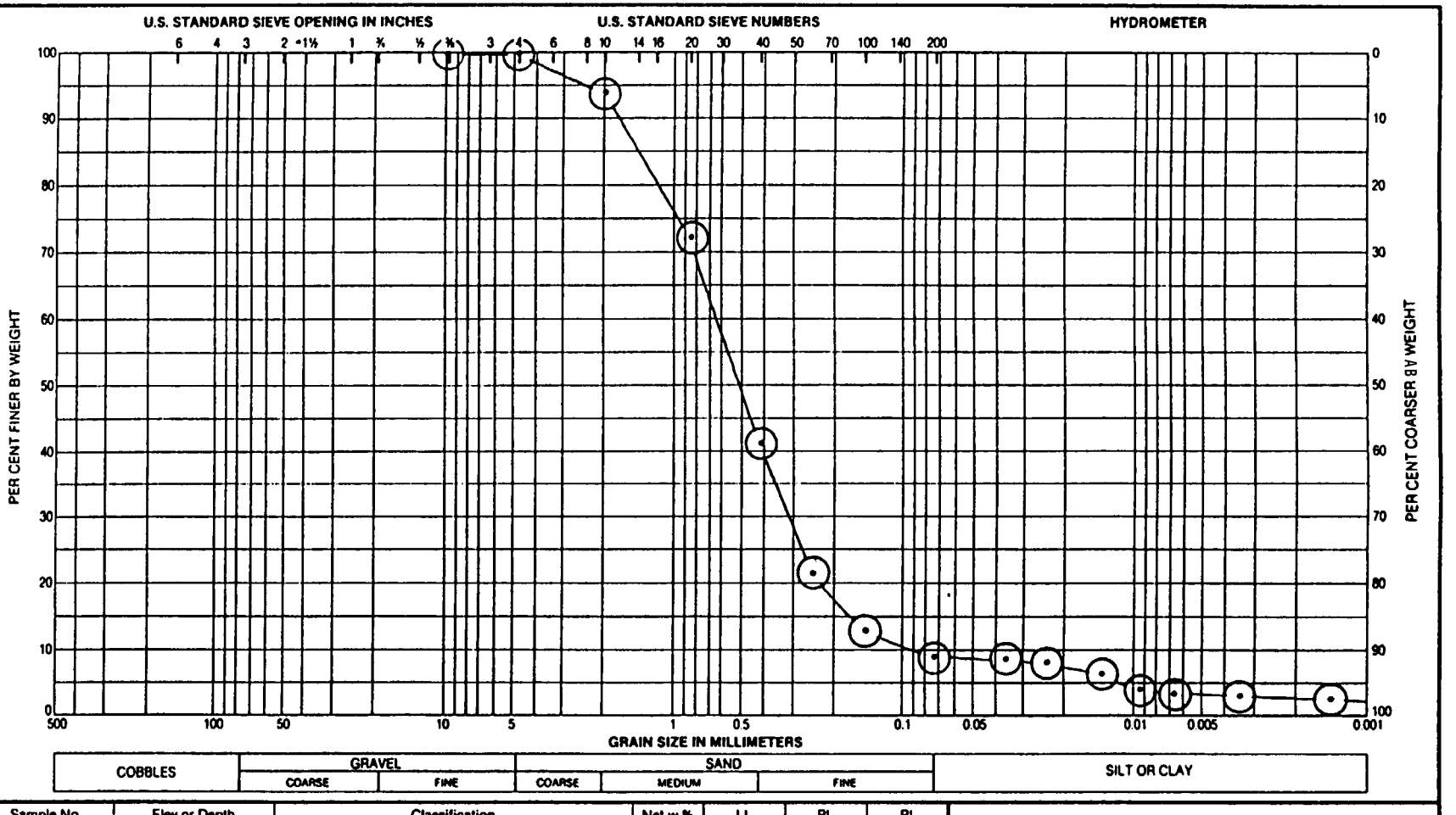
II. ..... HYDROMETER ANALYSIS

ELAPSED TIME (MINUTES)	TEMPERATURE DEGREE (CELCIUS)	HYDROMETER READING CORRECTION	HYDROMETER READING (g/l)	PARTICLE SIZE (mm)	PERCENT FINER (%)
2	22.40	5.00	12.20	.0357443	9.57
5	22.40	5.00	11.30	.0227231	8.38
15	22.40	5.00	9.40	.0132600	5.85
30	22.50	5.00	8.40	.0094176	4.52
60	22.60	5.00	7.70	.0066772	3.59
250	23.10	5.00	6.60	.0032720	2.13
1440	21.10	5.00	6.50	.0013950	1.99

U.S.C.S. SOIL CLASSIFICATION: MEDIUM-FINE SAND (SP-SM)

Douglas E. Finch

THOMPSON ENGINEERING TESTING, INC.
MATERIALS ENGINEERING LABORATORY



Sample No.	Elev or Depth	Classification	Net w %	LL	PL	PI
SEVEN	N/A	MEDIUM-FINE SAND (SP-SM)	72.2	---	---	---

Project SAVANNAH #: M3-10261

Job No. P93008

Area SAVANNAH LABORATORIES

Boring No. 33543003

Date 03/08/93

GRADATION CURVES

THOMPSON ENGINEERING TESTING, INC.

CHEMICAL, MATERIALS AND GEOTECHNICAL LABORATORIES

MOBILE, ALABAMA

THOMPSON ENGINEERING TESTING, INC.

CHEMICAL, MATERIALS AND GEOTECHNICAL LABORATORIES

3707 COTTAGE HILL ROAD
MOBILE. ALABAMA 36609
TELEPHONE: 205/666-2443

MARCH 8, 1993

REPORT #: 23
JOB #: P93008

CLIENT: SAVANNAH LABORATORIES
PROJECT: SAVANNAH #: M3-10261

REPORT OF: PARTICLE SIZE ANALYSIS ASTM D-422

SAMPLE IDENTIFICATION: 33544002 33S44002 DEPTH (FT): N/A
ASSUMED SPECIFIC GRAVITY OF SOLIDS (g/ml):. 2.65

DATES	TECHNICIAN
SAMPLED: 01/19/93	SAMPLED: CLIENT
TESTED: 02/12/93	TESTED: L. BAXLEY

I. ..... GRAIN SIZE ANALYSIS

U.S. STANDARD SIEVE SIZE	U.S. SIEVE SIZE (mm)	WEIGHT RETAINED (GRAMS)	PERCENT COARSER (%)	PERCENT FINER (%)
3/8"	9.50	.00	.00	100.00
NO.4	4.75	.00	.00	100.00
NO.10	2.00	.00	.00	100.00
NO.20	.850	.00	.00	100.00
NO.40	.425	13.81	13.13	86.87
NO.60	.250	86.60	82.35	17.65
NO.100	.149	104.34	99.22	.78
NO.200	.075	104.62	99.49	.51

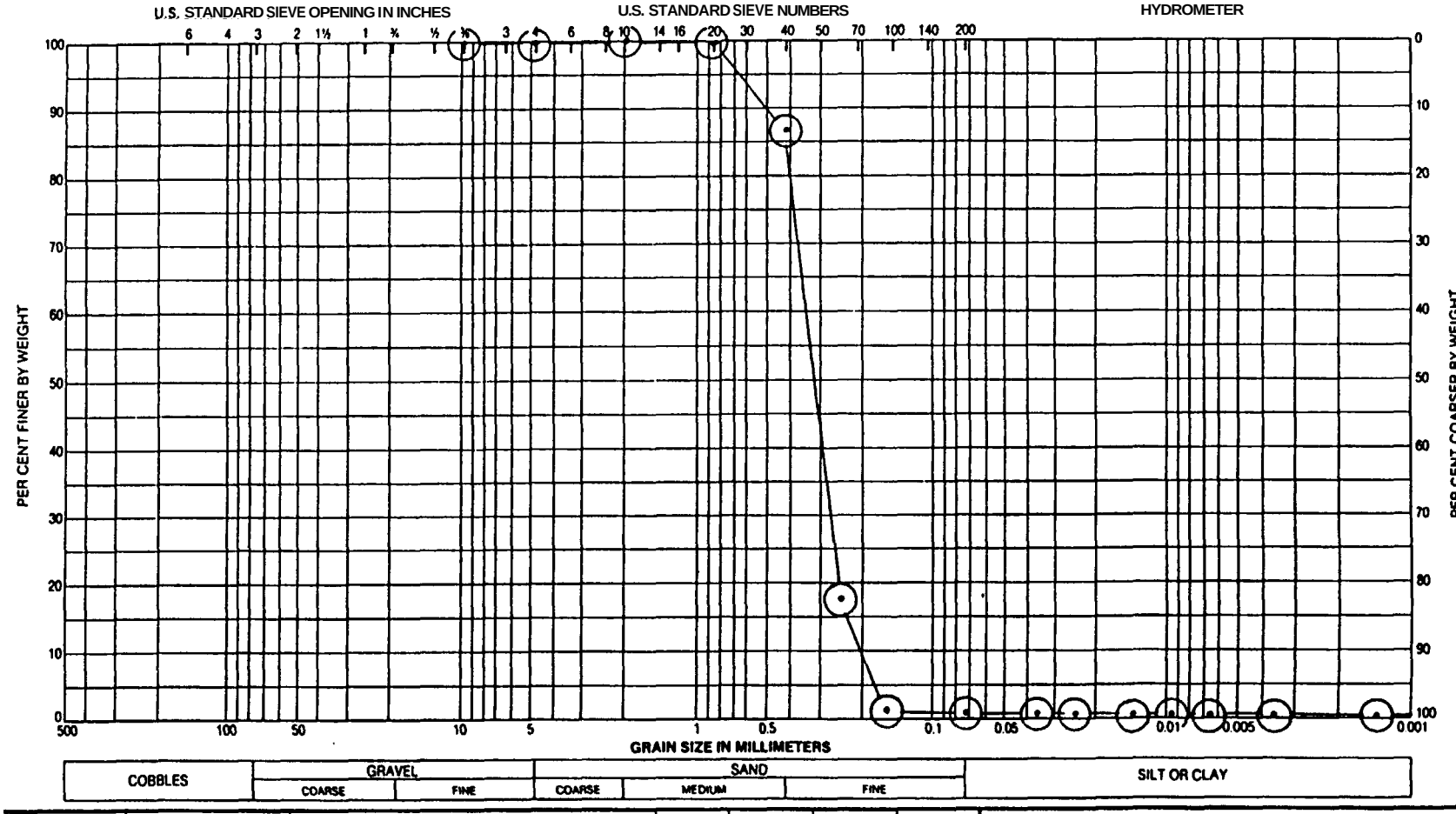
TOTAL WEIGHT (GRAMS):.,.... 105.16

XI, ... HYDROMETER ANALYSIS

ELAPSED TIME (MINUTES)	TEMPERATURE DEGREE (CELCIUS)	HYDROMETER READING CORRECTION	HYDROMETER READING (g/l)	PARTICLE SIZE (mm)	PERCENT FINER (%)
2	22.40	5.00	5.50	.0369358	.48
5	22.40	5.00	5.50	.0233603	.48
15	22.40	5.00	5.50	.0134871	.48
30	22.50	5.00	5.50	.0095260	.48
60	22.60	5.00	5.50	.0067283	.48
250	23.10	5.00	5.40	.0032792	.38
1440	21.00	5.00	5.30	.0013996	.29

U.S.C.S. SOIL CLASSIFICATION: MEDIUM-FINE SAND (SP)

THOMPSON ENGINEERING TESTING, INC.
MATERIALS ENGINEERING LABORATORY



Sample No.	Elev or Depth	Classification	Net w %	LL	PL	PI
EIGHT	N/A	MEDIUM-FINE SAND (SP)	4.6	---	---	---

Project SAVANNAH #: M3-10261

Job No. P93008

Area SAVANNAH LABORATORIES

Boring No. 33544002 33544002

Date 03/08/93

GRADATION CURVES

THOMPSON ENGINEERING TESTING, INC.

CHEMICAL, MATERIALS AND GEOTECHNICAL LABORATORIES

MOBILE, ALABAMA

Thompson

SL *SAVANNAH LABORATORIES*
& ENVIRONMENTAL SERVICES. INC.

900 Lakeside Drive • Mobile, Alabama 36693-5118 • (205)666-6633 • Fax (205)666-6696

LOG NO: M3-10353

Received: 29 JAN 93

Mr. Henry Biero
EnSafe/Allen & Hoshall
P.O. Box 341315
Memphis, TN 38134

Purchase Order: E-0161/93.CTO-0048

Project: Pensacola NAVY RI/FS
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
10353-1	33676001	01-27-93
10353-2	33603001	01-27-93
10353-3	33601001	01-27-93

PARAMETER	10353-1	10353-2	10353-3
5 Day BOD (SM 507), mgll	5.5	5.7	2.8
TSS (EPA 160.2), mg/1	18	850	42
Alkalinity as CaCO3, mgll	130	17	200
Nitrate-N, mgll	<0.10	<0.10	<0.10
Chemical Oxygen Demand, mg/1	43	270	32
Phosphorus, Total, mgll	0.46	0.16	0.13
Kjeldahl Nitrogen-N, mg/1	13	4.6	1.2
Hardness, as CaCO3, mg/1	88	68	205
Standard Plate Count, NO/ml	170	3100	540

REFERENCE: EPA-600/4-79-020, 1983; Standard Methods 17th ed., 1989

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES. INC.

900 Lakeside Drive • Mobile, Alabama 36693-5118 • (205)666-6633 • Fax (205)666-6696

LOG NO: M3-10353

Received: 29 JAN 93

Mr. Henry Biero
EnSafe/Allen & Hoshall
P.O. Box 341315
Memphis, TN 38134

Purchase Order: E-0161/93.CTO-0048

Project: Pensacola NAVY RI/FS
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES	DATE SAMPLED
10353-4	Laboratory Blank	01-27-93
10353-5	Accuracy (% Recovery)	01-27-93
10353-6	Precision (Relative % Difference)	01-27-93

PARAMETER	10353-4	10353-5	10353-6
5 Day BOD (SM 507), mg/l	<1.0	86 %	3.5 %
TSS (EPA 160.2), mg/l	<1.0	100 %	3.0 %
Alkalinity as CaCO3, mg/l	<1.0	100 %	2.0 %
Nitrate-N, mg/l	<0.10	96 %	0 %
Chemical Oxygen Demand, mg/l	<20	96 %	5.2 %
Phosphorus, Total, mg/l	<0.050	94 %	3.2 %
Kjeldahl Nitrogen-N, mg/l	0.17	116 %	0.9 %
Hardness, as CaCO3, mg/l	<0.50	98 %	3.1 %
Standard Plate Count, NO/ml	<1	---	---

Michele H. Lersch

Michele H. Lersch

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES. INC.

900 Lakeside Drive • Mobile, Alabama 36693-5118 • (205)666-6633 • Fax (205)666-6696

LOG NO: M3-10435

Received: 03 FEB 93

Mr. Henry Biero
EnSafe/Allen & Hoshall
P.O. Box 341315
Memphis, TN 38134

Purchase Order: E-0161/93,CTO-0048

Project: Pensacola Navy RI/FS
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
10435-1	33G18001	02-01-93
10435-2	33G17001	02-01-93
10435-3	33G16001	02-02-93

PARAMETER	10435-1	10435-2	10435-3
5 Day BOD (SM 507), mg/l	3.8	27	120
TSS (EPA 160.2), mg/l	330	22	88
Alkalinity as CaCO3, mgll	38	180	210
Qitrate-N, mgll	0.10	<0.10	<0.10
Chemical Oxygen Demand, mgll	42	95	180
Phosphorus, Total, mgll	0.12	0.14	0.19
Kjeldahl Nitrogen-N, mgll	0.48	7.1	11
Hardness, as CaCO3, mgll	110	180	420
Standard Plate Count, NO/ml	20,000	2800	620

REFERENCE: EPA-600/4-79-020, 1983; Standard Methods 17th ed., 1989.

SL *SAVANNAH LABORATORIES*
& ENVIRONMENTAL SERVICES. INC.

900 Lakeside Drive • Mobile, Alabama 36693-5118 • (205)666-6633 • Fax (205)666-6696

LOG NO: M3-10435

Received: 03 FEB 93

Mr. Henry Biero
EnSafe/Allen & Hoshall
P.O. Box 341315
Memphis, TN 38134

Purchase Order: E-0161/93,CTO-0048

Project: Pensacola Navy RI/FS
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
10435-4	Laboratory Blank
10435-5	Accuracy (% Recovery)
10435-6	Precision (Relative % Difference)

PARAMETER	10435-4	10435-5	10435-6
5 Day BOD (SM 507), mgll	<1.0	99 4	9.6 %
TSS (EPA 160.2). mgll	<1.0	99 %	2.0 %
Alkalinity as CaCO3, mgll	<1.0	101 %	0 X
Nitrate-N, mgll	<0.10	107 %	0 %
Chemical Oxygen Demand, mgll	<20	98 %	1.0 %
Phosphorus, Total, mgll	<0.050	96 %	3.2 %
Kjeldahl Nitrogen-N, mgll	0.11	101 %	4.0 %
Hardness, as CaCO3, mgll	<0.50	98 %	0 %
Standard Plate Count, NO/ml	<1	---	---

Michele H. Lersch

Michele H. Lersch

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES. INC.

900 Lakeside Drive • Mobile, Alabama 36693-5118 • (205)666-6633 • Fax (205)666-6696

LOG NO: M3-10381

Received: 30 JAN 93

Mr. Henry Biero
EnSafe/Allen & Hoshall
P.O. Box 341315
Memphis, TN 38134

Purchase Order: E-0161/93,CTO-0048

Project: Pensacola Navy RI/FS
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
10381-1	33G09001	01-29-93
10381-2	33G13001	01-29-93

PARAMETER	10381-1	10381-2
5 Day BOD (SM 507), mg/l	1.5	<1.0
TSS (EPA 160.2). mgll	200	82
Alkalinity as CaCO3, mgll	86	140
Nitrate-N, mg/l	0.39	0.10
Chemical Oxygen Demand, mg/l	72	35
Phosphorus Total, mgll	0.14	0.10
Kjeldahl Nitrogen-N, mgll	1.8	1.6
Hardness, as CaCO3, mgll	60	520
Standard Plate Count, NO/ml	530	670

REFERENCE: EPA-600/4-79-020, 1983; Standard Methods 17th ed., 1989.

SL *SAVANNAH LABORATORIES*
& ENVIRONMENTAL SERVICES. INC.

900 Lakeside Drive • Mobile, Alabama 36693-5118 • (205)666-6633 • Fax (205)666-6696

LOG NO: M3-10381

Received: 30 JAN 93

Mr. Henry Biero
EnSafe/Allen & Hoshall
P.O. Box 341315
Memphis, TN 38134

Purchase Order: E-0161/93,CTO-0048

Project: Pensacola Navy RI/FS
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
10381-3	Laboratory Blank
10381-4	Accuracy (% Recovery)
10381-5	Precision (Relative % Difference)

PARAMETER	10381-3	10381-4	10381-5
5 Day BOD (SM 507), mg/l	<1.0	87 4	4.6 %
TSS (EPA 160.2), mg/l	<1.0	100 X	4.0 %
Alkalinity as CaCO3, mgll	<1.0	99 %	3.0 %
Nitrate-N, mgll	**<0.10**	96 %	**0 X**
hemical Oxygen Demand, mgll	**<20**	97 %	2.1 %
Phosphorus, Total, mg/l	<0.050	96 %	3.2 %
Kjeldahl Nitrogen-N, mgll	0.17	116 %	0.9 %
Hardness, as CaCO3, mg/l	<0.50	98 %	3.1 %
Standard Plate Count, NO/ml	<1	---	---

Michele H. Lersch

Michele H. Lersch

SL *SAVANNAH LABORATORIES*
& ENVIRONMENTAL SERVICES. INC.

900 Lakeside Drive • Mobile, Alabama 36693-5118 • (205)666-6633 • Fax (205)666-6696

LOG NO: M3-10306

Received: 27 JAN 93

Mr. Henry Biero
EnSafe/Allen & Hoshall
P.O. Box 341315
Memphis, TN 38134

Purchase Order: E-0161/93,CTO-0048

Project: Pensacola, NAVY RI/FS
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
10306-1	13G19001	01-26-93

PARAMETER	10306-1
5 Day BOD (SM 507), mgll	1.8
TSS (EPA 160.2), mgll	36
Alkalinity as CaCO3, mg/l	85
Nitrate-N, mgll	4.3
Chemical Oxygen Demand, mg/l	44
'hosphorus, Total, mgll	0.12
Kjeldahl Nitrogen-N, mgll	1.1
Hardness, as CaCO3, mg/l	700
Standard Plate Count, No/ml	200

REFERENCE: EPA-600/4-79-020, 1983: Standard Methods 17th ed., 1989

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES. INC.

900 Lakeside Drive • Mobile, Alabama 36693-5118 • (205)666-6633 • Fax (205)666-6696

LOG NO: M3-10306

Received: 27 JAN 93

Mr. Henry Biero
EnSafe/Allen & Hoshall
P.O. Box 341315
Memphis, TN 38134

Purchase Order: E-0161/93,CTO-0048

Project: Pensacola, NAVY RI/FS
Sampled By: Client

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES
10306-2	Laboratory Blank
10306-3	Accuracy (% Recovery)
10306-4	Precision (Relative % Difference)

PARAMETER	10306-2	10306-3	10306-4
5 Day BOD (SM 507), mg/l	<1.0	86 %	3.4 %
TSS (EPA 160.2), mg/l	<1.0	100 %	1.0 %
Alkalinity as CaCO3, mg/l	<1.0	101 %	0 %
Nitrate-N, mg/l	<0.10	96 %	0 %
Chemical Oxygen Demand, mg/l	<20	99 %	4.0 %
Phosphorus, Total, mg/l	<0.050	96 %	9.4 %
Kjeldahl Nitrogen-N, mg/l	<0.10	96 %	1.0 %
Hardness, as CaCO3, mg/l	<0.50	98 %	1.0 %
Standard Plate Count, No/ml	<1	---	---

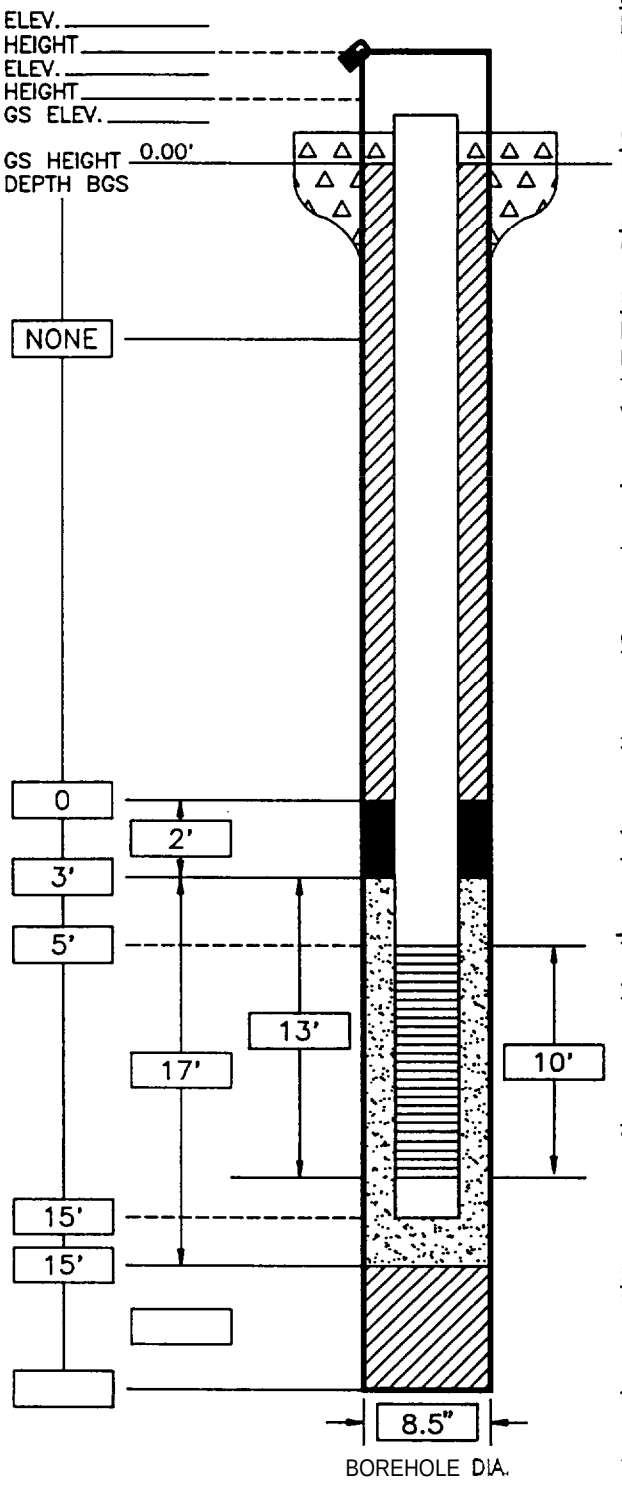
Michele H. Lersch

Michele H. Lersch

APPENDIX *G*

MONITORING WELL CONSTRUCTION LOGS

WELL NO.: 33G01	INSTALLATION:	SITE: IWTP/O.U.10
PROJECT NO.: N0048	CLIENT/PROJECT: NAS PENSACOLA	
CLEAN CONTRACTOR: ENSAFE/A&H	DRIG. CONTRACTOR: CB DRILLING	
COMP. START: 12-8-92 (____ m)	COMP. END: 12-8-92 (____ m)	



PROTECTIVE CSG
MATERIAL/TYPE STEEL BOX
DIAMETER 3"
DEPTH BGS 2' WEEP HOLE (Y/N)

GUARD POSTS (Y/N)
NO. 4 TYPE

SURFACE PAD
COMPOSITION & SIZE CEMENT 3'x3'x6"

RISER PIPE
MPE PVC
DIAMETER 2"
TOTAL LENGTH(TOC to TOS) 7.5'
VENTILATED CAP (Y/N)

GROUT
COMPOSITION & PROPORTIONS
TREMIED (Y/N)
INTERVAL BGS

CENTRALIZERS (Y/N)
DEPTH(s)

SEAL
TYPE BENTONITE
SOURCE BENTONITE PELLETS VOLCLAY
SETUP/HYDRATION TIME DAYS
VOL. FLUID ADDED ONE 5-GALLON BUCKET
TREMIED (Y/N) 3-5 GALLONS DI WATER

FILTER PACK
TYPE SAND 20/40
AMT. USED 10 50-LB. BAGS
TREMIED (Y/N)
SOURCE PEARL BRAND
GR. SIZE DIST.

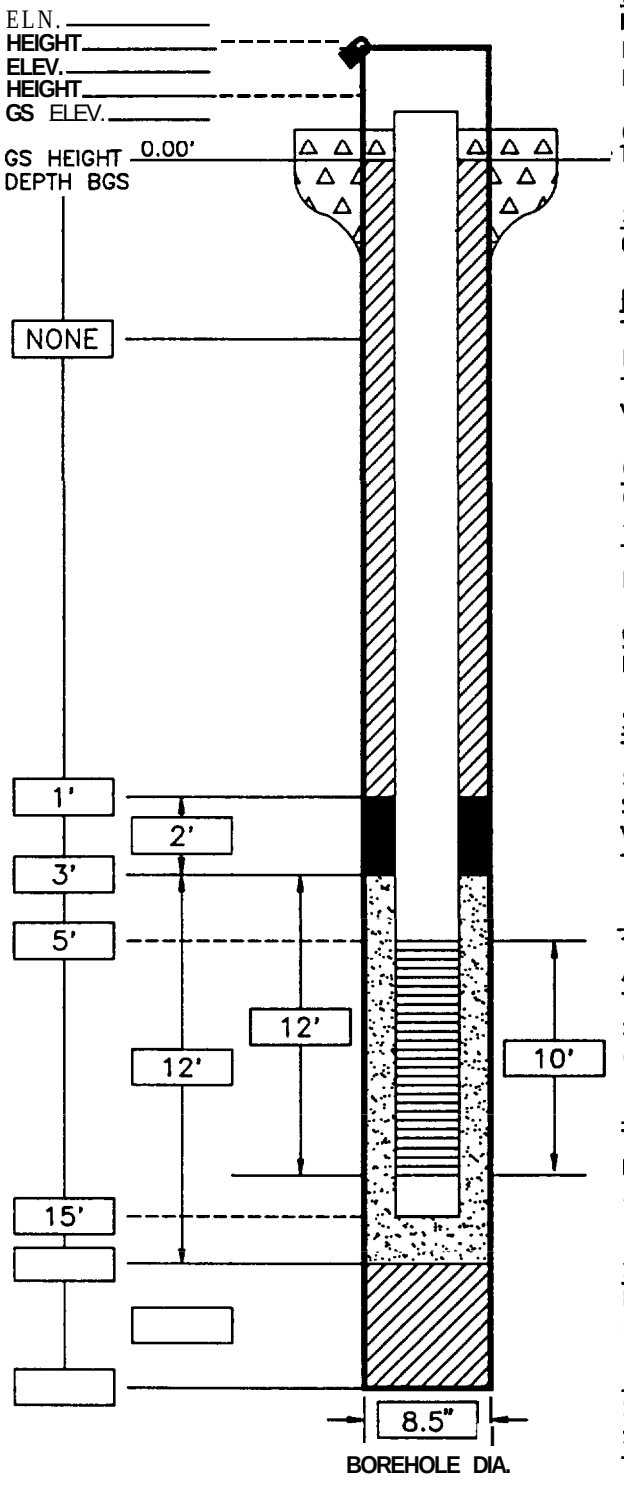
SCREEN
TYPE PVC
DIAMETER 2"
SLOT SIZE & TYPE 0.01"
INTERVAL BGS 5-15'

SUMP (Y/N)
INTERVAL BGS LENGTH
BOTTOM CAP (Y/N)

BACKFILL PLUG
MATERIAL
SETUP/HYDRATION TIME
TREMIED (Y/N)

48MWC17

MONITORING WELL CONSTRUCTION LOG – STANDARD		
WELL NO.: 33G02	INSTALLATION:	SITE: IWTP/O.U.10
PROJECT NO.: N0048	CLIENT/PROJECT: NAS PENSACOLA	
CLEAN CONTRACTOR: ENSAFE/A&H	DRIG. CONTRACTOR: CB DRILLING	
COMP. START: 12/10/92 (____ m)	COMP. END: 12/10/92 (____ m)	
BUILT BY: C B DRILLING / S. RYAN	WELL COORD.:	



PROTECTIVE CSG
MATERIAL/TYPE STEEL BOX
DIAMETER
DEPTH BGS 2" WEEP HOLE (Y/N)

GUARD POSTS (Y/N)
NO. 4 TYPE

SURFACE PAD
COMPOSITION & SIZE CEMENT 3'x3'x6"

RISER PIPE
TYPE PVC
DIAMETER?'
TOTAL LENGTH(TOC to TOS) 7.5'
VENTILATED CAP (Y/N)

GROUT
COMPOSITION & PROPORTIONS
TREMIED (Y/N)
INTERVAL BGS

CENTRALIZERS (Y/N)
DEPTH(s)

SEAL
TYPE BENTONITE
SOURCE BENTONITE PELLETS VOLCLAY
SETUP/HYDRATION TIME DAYS
VOL. FLUID ADDED ONE 5-GALLON BUCKET
TREMIED (Y/N) 3-5 GALLONS DI WATER

FILTER PACK
TYPE SAND 20/40
AMT. USED 9 50-LB. BAGS
TREMIED (Y/N)
SOURCE PEARL BRAND
GR. SIZE DIST.

SCREEN
TYPE PVC
DIAMETER
SLOT SIZE & TYPE 0.01"
INTERVAL BGS 5-15'

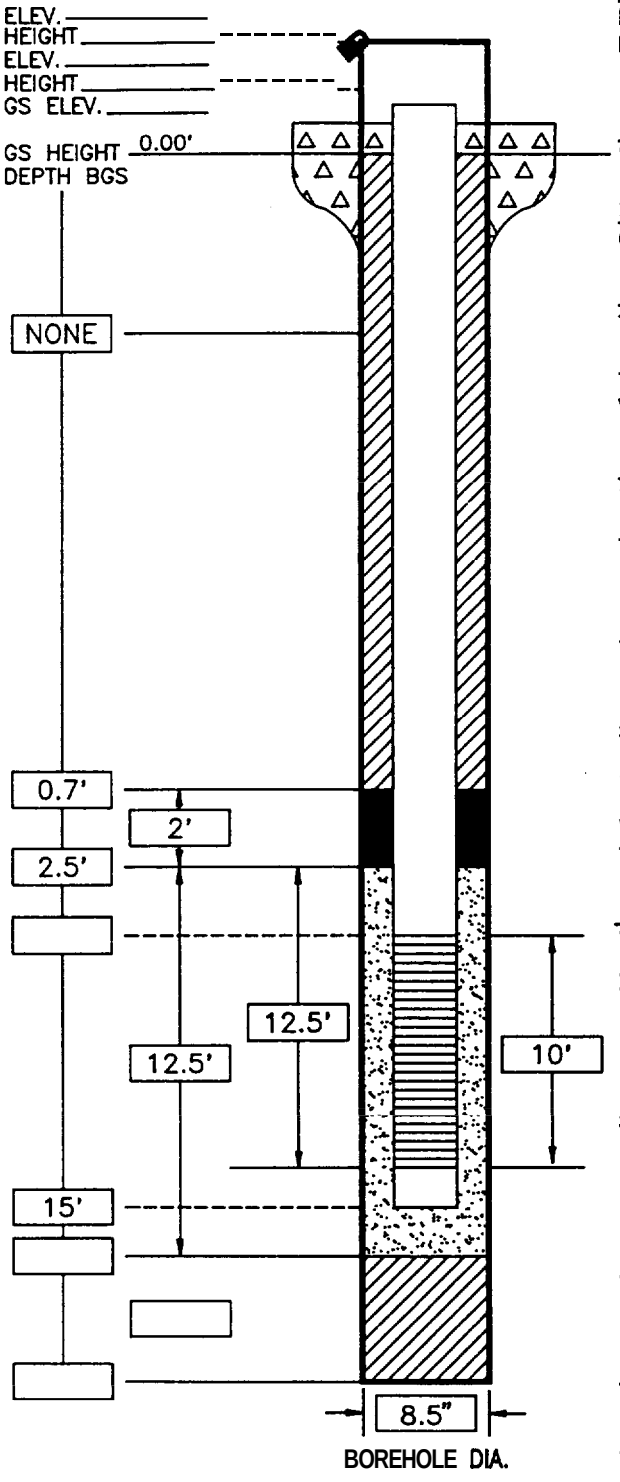
SUMP (Y/N)
INTERVAL BGS LENGTH
BOTTOM CAP (Y/N)

BACKFILL PLUG
MATERIAL
SETUP/HYDRATION TIME
TREMIED (Y/N)

48MWC18

MONITORING WELL CONSTRUCTION LOG - STANDARD

WELL NO.: 33G03	INSTALLATION:	SITE: IWTP/O.U.10
PROJECT NO.: N0048	CLIENT/PROJECT: NAS PENSACOLA	
COMP. START: 12/09/92 (10:18 ____ m)	COMP. END: 12/09/92 (10:40 ____ m)	
BUILT BY: C B DRILLING / S. RYAN	WELL COORD.:	



PROTECTIVE CSG
MATERIAL/TYPE STEEL BOX
DIAMETER
DEPTH BGS 2' WEEP HOLE (Y/N)

GUARD POSTS (Y/N)
NO. 4 TYPE

SURFACE ?AD
COMPOSITION & SIZE CEMENT 3'x3'x6"

RISER PIPE
TYPE PVC
DIAMETER 2"
TOTAL LENGTH(TOC to TOS) 7.5'
VENTILATED CAP (Y/N)

GROUT
COMPOSITION & PROPORTIONS
TREMIED (Y/N)
INTERVAL BGS

CENTRALIZERS (Y/N)
DEPTH(s)

SEAL
TYPE BENTONITE
SOURCE BENTONITE PELLETS VOLCLAY
SETUP/HYDRATION TIME DAYS
VOL FLUID ADDED
TREMIED (Y/N)

FILTER PACK
TYPE SAND 20/40
AMT. USED 7 50-LB. BAGS
TREMIED (Y/N)
SOURCE PEARL BRAND
GR. SIZE DIST.

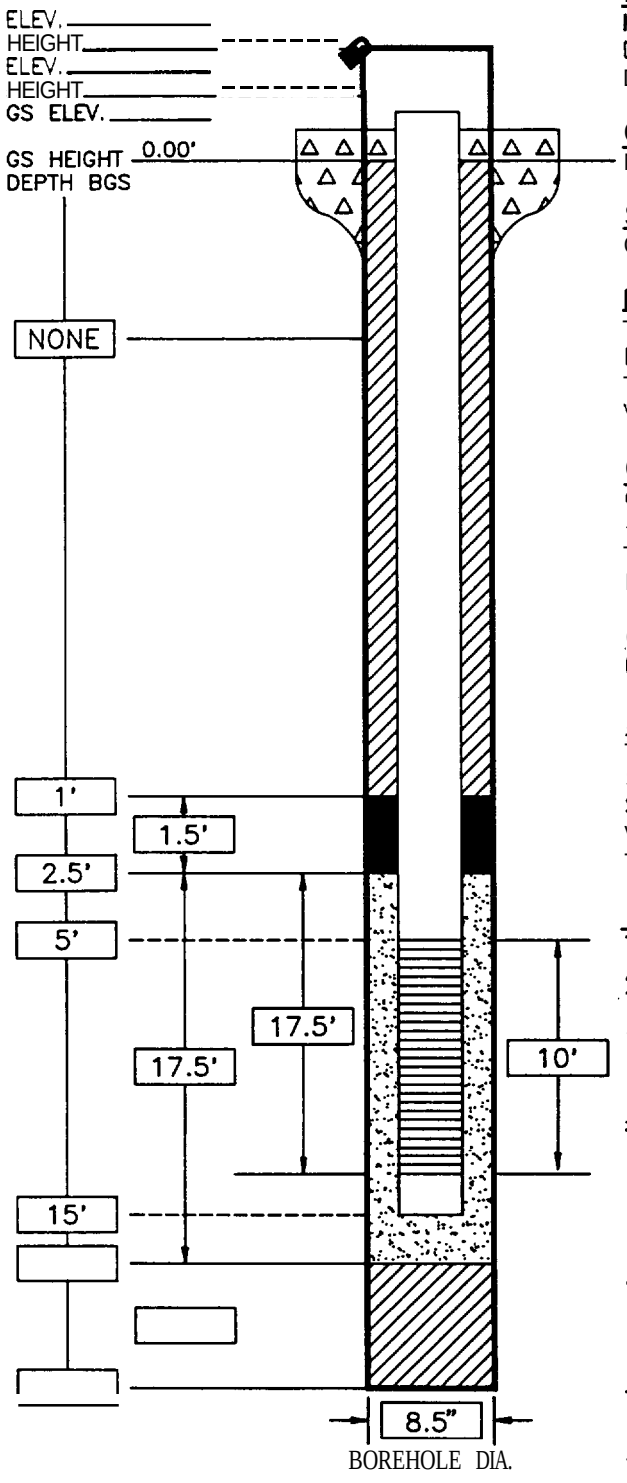
SCREEN
TYPE PVC
DIAMETER 2"
SLOT SIZE & TYPE 0.01"
INTERVAL BGS 5-15'

SUMP (Y/N)
INTERVAL BGS LENGTH
BOTTOM CAP (Y/N)

BACKFILL PLUG
MATERIAL
SETUP/HYDRATION TIME
TREMIED (Y/N)

48MWC19

WELL NO.: 43G04	INSTALLATION:	SITE: IWTP/O.U.10
PROJECT NO.: N0048	CLIENT/ PROJECT NAS PENSACOLA	
CLEAN CONTRACTOR: ENSAFE/A&H	DRIG. CONTRACTOR: CB DRILLING	
COMP. START: 12/09/92 (11:55 ____m)	COMP. END: 12/09/92 (12:15 ____m)	



PROTECTIVE CSG
MATERIAL/TYPE STEEL BOX
DIAMETER 3"
DEPTH BGS ____ WEEP HOLE (Y/N)

GUARD POSTS (Y/N)
NO. 4 TYPE

SURFACE PAD
COMPOSITION & SIZE CEMENT 3'x3'x6"

RISER PIPE
TYPE PVC
DIAMETER 2"
TOTAL LENGTH(TOC to TOS) 7.5'
VENTILATED CAP (Y/N)

GROUT
COMPOSITION & PROPORTIONS
TREMIED (Y/N)
INTERVAL BGS

CENTRALIZERS (Y/N)
DEPTH(s)

SEAL
TYPE BENTONITE
SOURCE BENTONITE PELLETS VOLCLAY
SETUP/HYDRATION TIME DAYS
VOL FLUID ADDED ONE 5-GALLON BUCKET
TREMIED (Y/N) 3-5 GALLONS DI WATER

FILTER PACK
TYPE SAND 20/40
AMT. USED 10 50-LB. BAGS
TREMIED (Y/N)
SOURCE PEARL BRAND
GR. SIZE DIST.

SCREEN
TYPE PVC
DIAMETER 2"
SLOT SIZE & TYPE 0.01"
INTERVAL BGS 5-15'

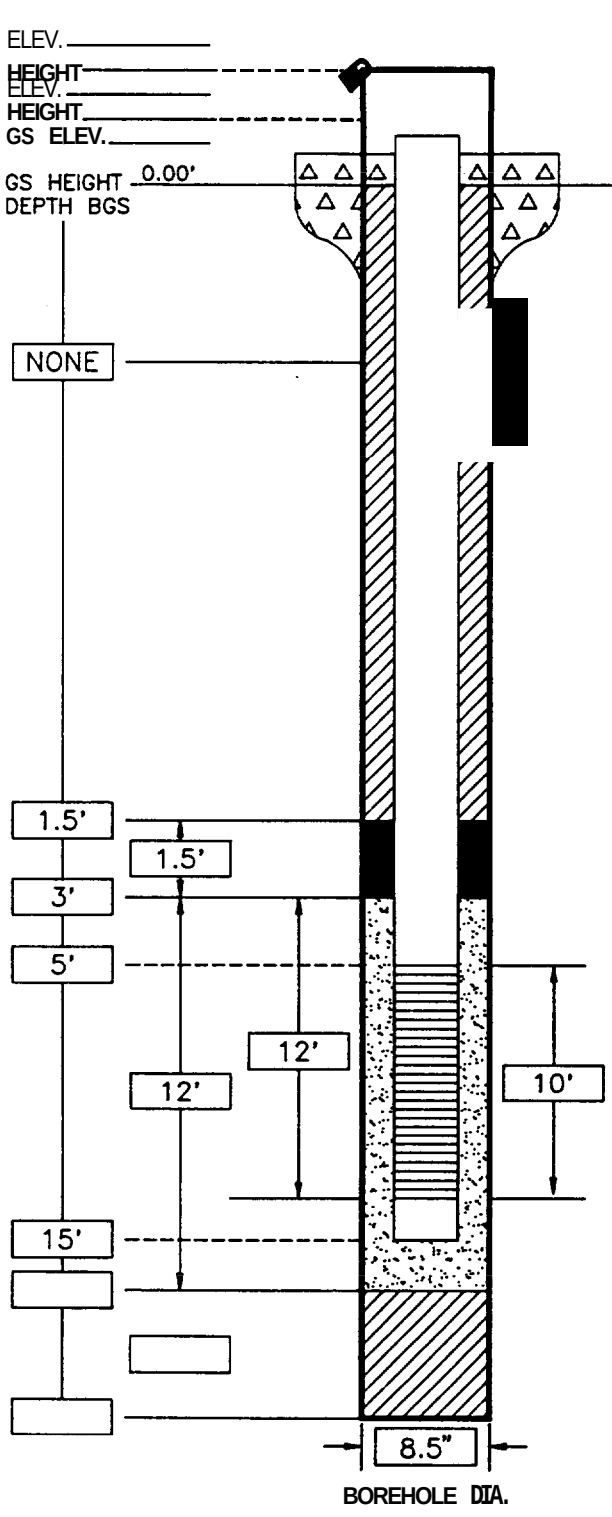
SUMP (Y/N)
INTERVAL BGS ____ LENGTH
BOTTOM CAP (Y/N)

BACKFILL PLUG
MATERIAL
SETUP/HYDRATION TIME
TREMIED (Y/N)

48MWC20

MONITORING WELL CONSTRUCTION LOG – STANDARD

WELL NO.: 33G05	INSTALLATION:	SITE: IWTP/O.U.10
PROJECT NO.: N0048	CLIENT/PROJECT: NAS PENSACOIA	
CLEAN CONTRACTOR: ENSAFE/A&H	DRIG. CONTRACTOR: CB DRILLING	
COMP. START: 12/09/92 (14:55 ____ m)	COMP. END: 12/09/92 (15:15 ____ m)	
BUILT BY: C B DRILLING / S. RYAN	WELL COORD.:	



PROTECTIVE CSG
MATERIAL/TYPE STEEL BOX
DIAMETER 3"
DEPTH BGS ____ WEEP HOLE (Y/N) ____

GUARD POSTS (Y/N)
NO. 4 TYPE

SURFACE PAD
COMPOSITION & SIZE CEMENT 3'x3'x6"

RISER PIPE
TYPE PVC
DIAMETER 2"
TOTAL LENGTH(TOC to TOS) 7.5'
VENTILATED CAP (Y/N)

GROUT
COMPOSITION & PROPORTIONS ____
TREMIED (Y/N)
INTERVAL BGS ____

CENTRALIZERS (Y/N)
DEPTH(s) ____

SEAL
TYPE BENTONITE
SOURCE BENTONITE PELLETS VOLCLAY
SETUP/HYDRATION TIME DAYS
VOL. FLUID ADDED ONE 5-GALLON BUCKET
TREMIED (Y/N) 3-5 GALLONS DI WATER

FILTER PACK
TYPE SAND 20/40
AMT. USED 10 50-LB. BAGS
TREMIED (Y/N)
SOURCE PEARL BRAND
GR. SIZE DIST. ____

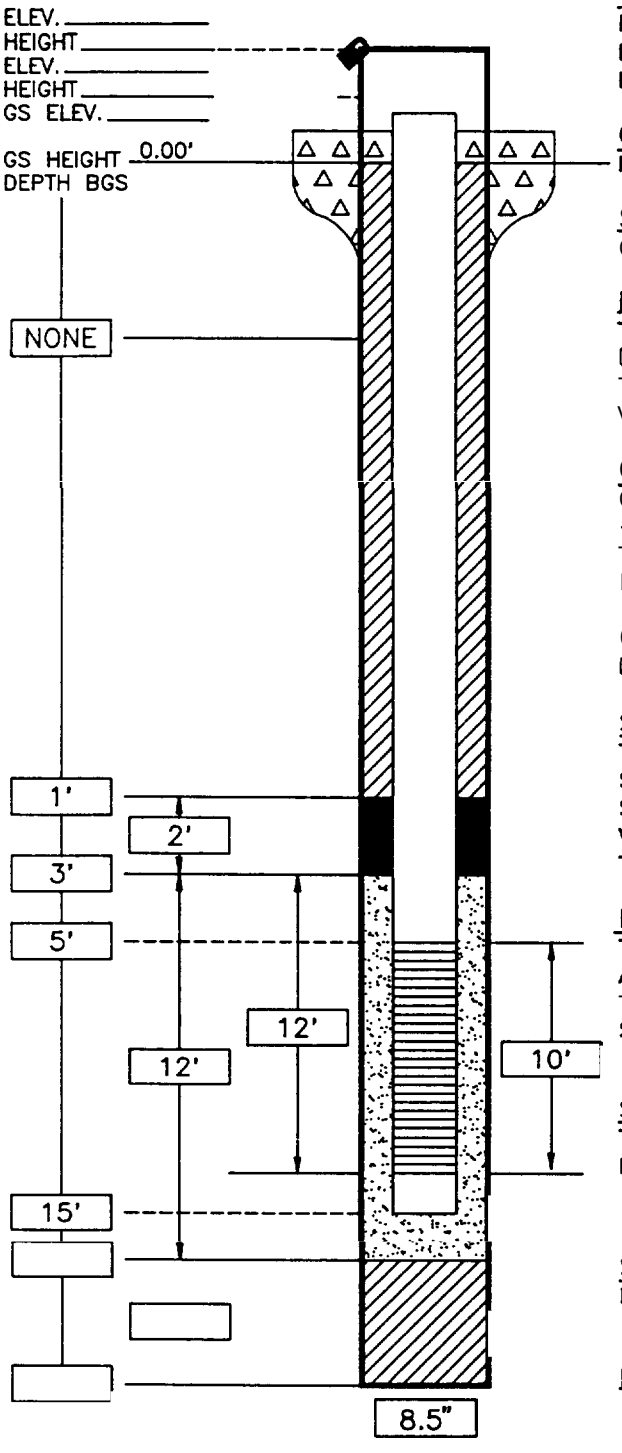
SCREEN
TYPE PVC
DIAMETER 2"
SLOT SIZE & TYPE 0.01"
INTERVAL BGS 5-15'

SUMP (Y/N)
INTERVAL BGS ____ LENGTH ____
BOTTOM CAP (Y/N)

BACKFILL PLUG
MATERIAL ____
SETUP/HYDRATION TIME ____
TREMIED (Y/N)

48MWC2

WELL NO.: f3G06	INSTALLATION:	SITE: IWTP/O.U.10
PROJECT NO.: N0048	CLIENT/PROJECT: NAS PENSACOLA	
CLEAN CONTRACTOR: ENSAFE/A&H	DRIG. CONTRACTOR: CB DRILLING	
BUILT BY: C B DRILLING / S. RYAN	WELL COORD.:	



MATERIAL/TYPE STEEL BOX
DIAMETER 3"
DEPTH BGS _____ WEEP HOLE (Y/N)

GUARD POSTS (Y/N)
NO. 4 TYPE STEEL PIPE , 3"

SURFACE PAD
COMPOSITION & SIZE CEMENT 3'x3'x6"

RISER PIPE
TYPE PVC
DIAMETER 2"
TOTAL LENGTH(TOC to TOS) 7.5'
VENTILATED CAP (Y/N)

GROUT
COMPOSITION & PROPORTIONS _____

TREMIED (Y/N)
INTERVAL BGS _____

CENTRALIZERS (Y/N)
DEPTH(s) _____

SEAL
TYPE BENTONITE
SOURCE BENTONITE PELLETS VOLCLAY
SETUP/HYDRATION TIME DAYS
VOL. FLUID ADDED ONE 5-GALLON BUCKET
TREMIED (Y/N) 3-5 GALLONS DI WATER

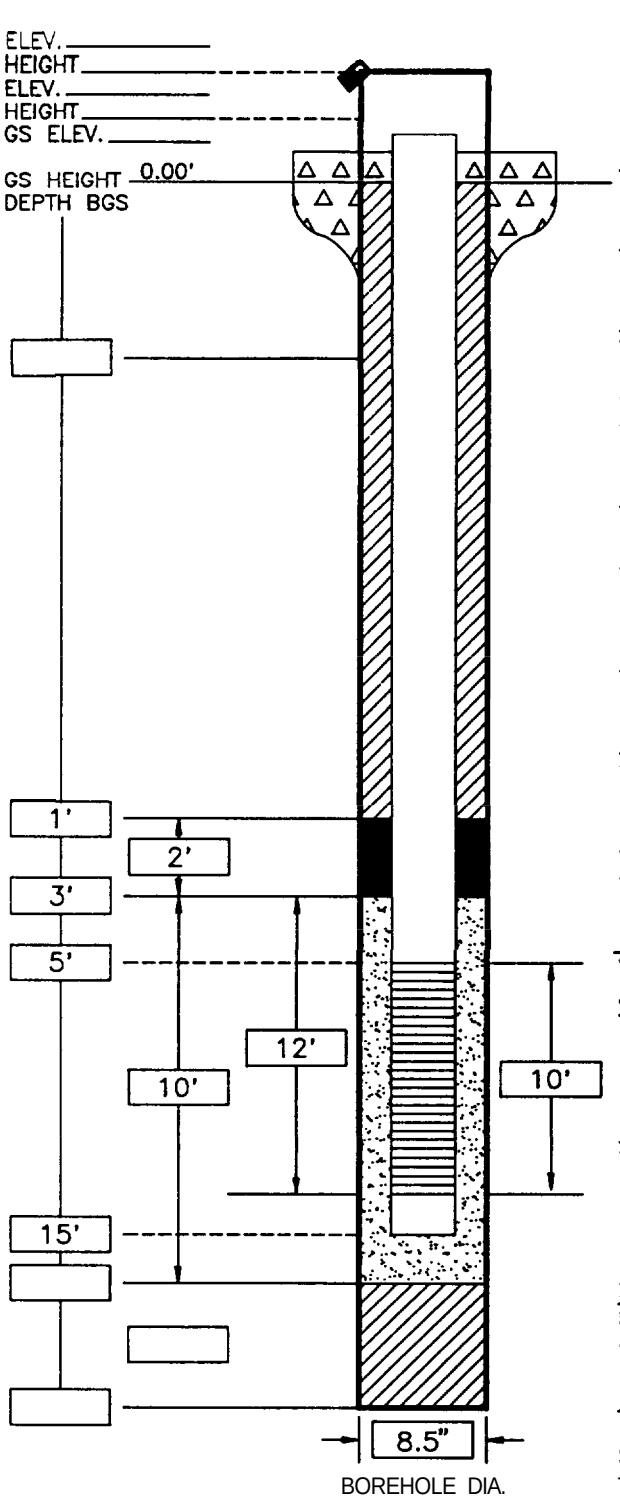
FILTER PACK
TYPE SAND 20/40
AMT. USED 10 50-LB. BAGS
TREMIED (Y/N)
SOURCE PEARL BRAND

SCREEN
TYPE PVC
DIAMETER 2"

SUMP (Y/N)
INTERVAL BGS _____ LENGTH _____

BACKFILL PLUG

WELL NO.: f3G07	INSTALLATION:	SITE: IWTP/O.U.10
PROJECT NO.: N0048	CLIENT/PROJECT: NAS PENSACOIA	
CLEAN CONTRACTOR: ENSAFE/A&H	DRIG. CONTRACTOR: CB DRILLING	
COMP. START: 12/10/92 (15:00 ____m)	COMP. END: 12/10/92 (15:15 ____m)	



PROTECTIVE CSG
MATERIAL/TYPE STEEL BOX
DIAMETER 3"
DEPTH BGS 2' WEEP HOLE (Y/N)

GUARD POSTS (Y/N)
NO. 4 TYPE

SURFACE PAD
COMPOSITION & SIZE CEMENT 3'x3'x6"

RISER PIPE
TYPE PVC
DIAMETER 2"
TOTAL LENGTH(TOC to TOS) 7.5'
VENTILATED CAP (Y/N)

GROUT
COMPOSITION & PROPORTIONS
TREMIED (Y/N)
INTERVAL BGS

CENTRALIZERS (Y/N)
DEPTH(s)

SEAL
TYPE BENTONITE
SOURCE BENTONITE PELLETS VOLCLAY
SETUP/HYDRATION TIME DAYS
VOL FLUID ADDED ONE 5-GALLON BUCKET
TREMIED (Y/N) ...LLONS DI WATER

FILTER PACK
TYPE SAND 20/40
AMT. USED 13 50-LB. BAGS
TREMIED (Y/N)
SOURCE PEARL BRAND
GR. SIZE DIST.

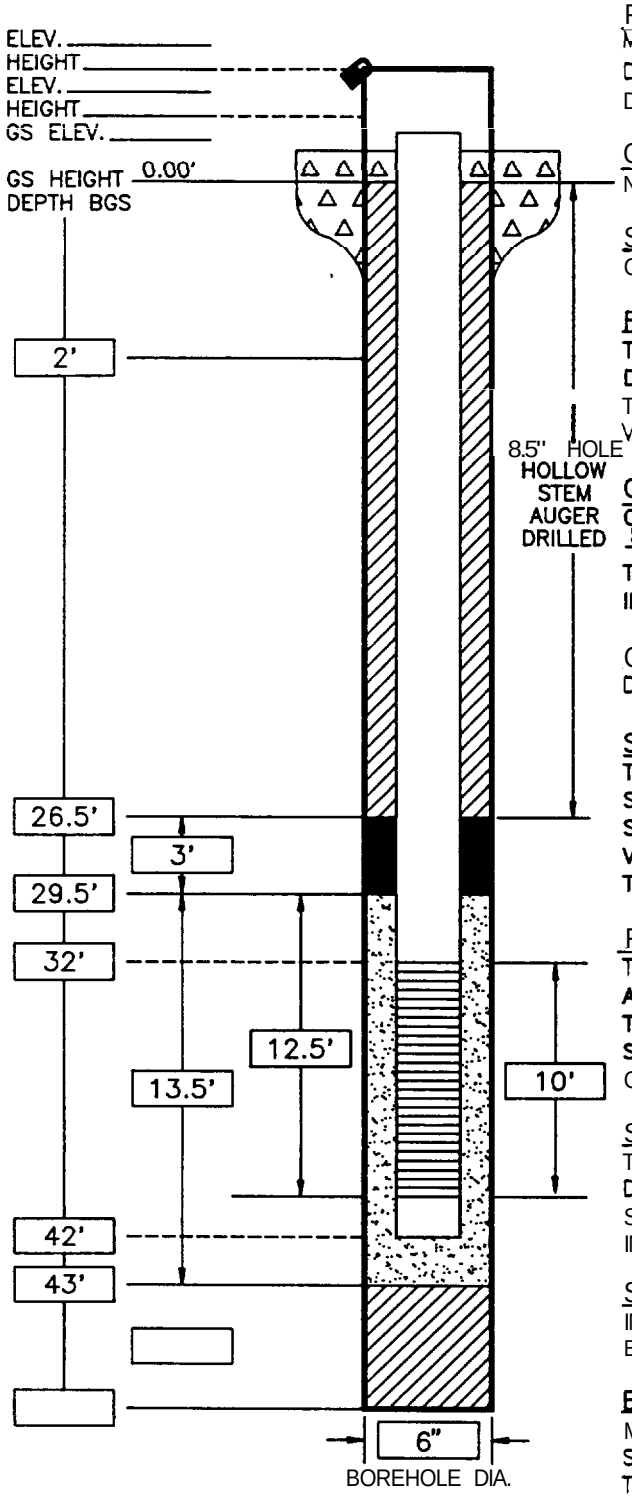
SCREEN
TYPE PVC
DIAMETER 2"
SLOT SIZE & TYPE 0.01"
INTERVAL BGS 5-15'

SUMP (Y/N)
INTERVAL BGS LENGTH
BOTTOM CAP (Y/N)

BACKFILL PLUG
MATERIAL
SETUP/HYDRATION TIME
TREMIED (Y/N)

48MWC4

WELL NO.: 33G08	INSTALLATION:	SITE: IWTP/O.U.10
PROJECT NO.: N0048	CLIENT/PROJECT: NAS PENSACOIA	
CLEAN CONTRACTOR: ENSAFE/A&H	DRIG. CONTRACTOR: CB DRILLING	
COMP. START: 01/13/93 (13:23 ____ m)	COMP. END: 01/13/93 (15:00 ____ m)	



PROTECTIVE CSG
MATERIAL/TYPE STEEL BOX
DIAMETER 3"
DEPTH BGS 2' WEEP HOLE (Y/N)

GUARD POSTS (Y/N)
NO. 4 TYPE

SURFACE PAD
COMPOSITION & SIZE CEMENT 3'x3'x6"

RISER PIPE
TYPE PVC
DIAMETER 2"
TOTAL LENGTH(TOC to TOS) 7.5'
VENTILATED CAP (Y/N)

GROUT
COMPOSITION & PROPORTIONS 95% CEMENT 5% BENTONITE
TREMIED (Y/N)
INTERVAL BGS 2' – 26.5'

CENTRALIZERS (Y/N)
DEPTH(s)

SEAL
TYPE BENTONITE
SOURCE BENTONITE PELLETS VOLCLAY
SETUP/HYDRATION TIME 22 MIN.
VOL. FLUID ADDED 1/3 5-GALLON BUCKET PELLETS
TREMIED (Y/N)

FILTER PACK
TYPE SAND 20/40
AMT. USED 4 50-LB. BAGS
TREMIED (Y/N)
SOURCE PEARL BRAND
GR. SIZE DIST.

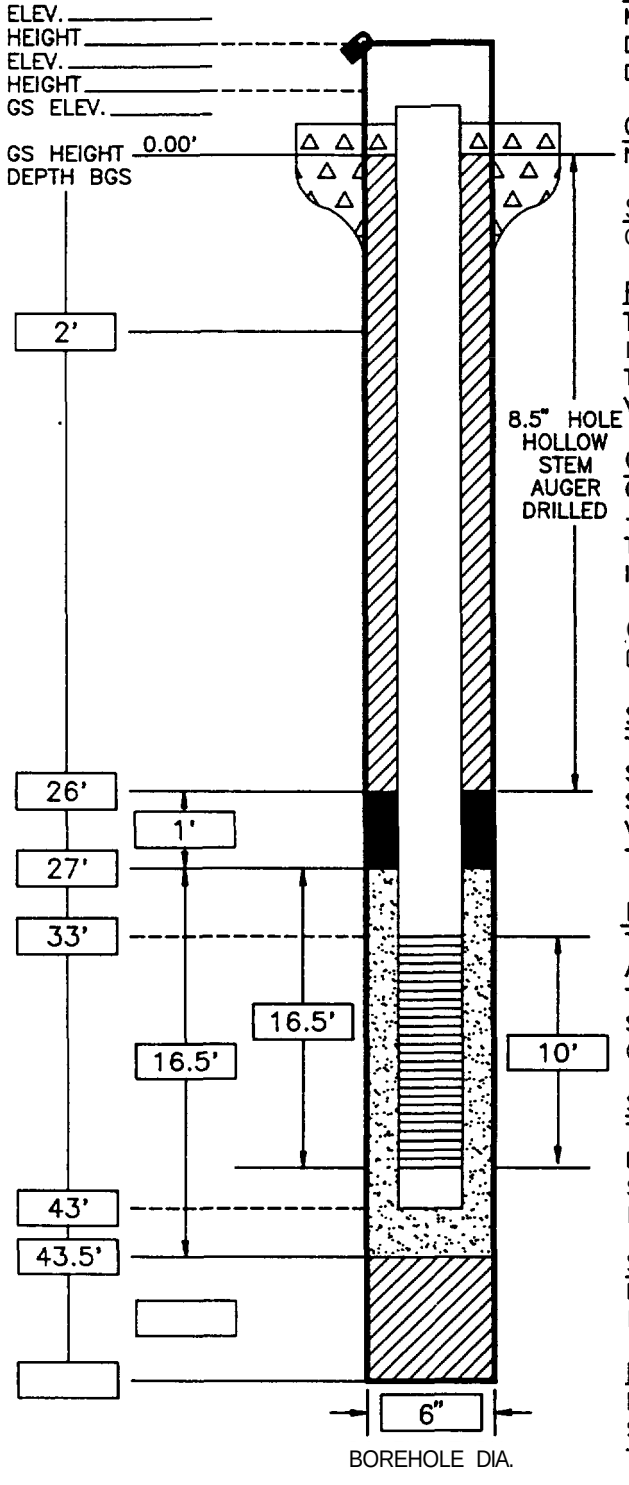
SCREEN
TYPE PVC
DIAMETER
SLOT SIZE & TYPE 0.01"
INTERVAL BGS 42' -32'

SUMP (Y/N)
INTERVAL BGS ____ LENGTH ____
BOTTOM CAP (Y/N)

BACKFILL PLUG
MATERIAL
SETUP/HYDRATION TIME
TREMIED (Y/N)

48MWC5

WELL NO.: **33G09**	INSTALLATION:	SITE: IWTP/O.U.10
PROJECT NO.: N0048	CLIENT/PROJECT: NAS PENSACOIA	
CLEAN CONTRACTOR: ENSAFE/A&H	DRIG. CONTRACTOR: CB DRILLING	
COMP. START: **12/15/92** (10:11 ____m)	COMP. END: **12/16/92** (10:50 ____m)	



PROTECTIVE CSG
MATERIAL/TYPE STEEL BOX
DIAMETER 3"
DEPTH BGS 2' WEEP HOLE (Y/N)

GUARD POSTS (Y/N)
NO. 4 TYPE STEEL PIPE . 3"

SURFACE PAD
COMPOSITION & SIZE CEMENT 3'x3'x6"

RISER PIPE
TYPE PVC
DIAMETER 2"
TOTAL LENGTH(TOC to TOS) 35.5'
VENTILATED CAP (Y/N)

GROUT
COMPOSITION & PROPORTIONS 95% CEMENT 5% BENTONITE
TREMIED (Y/N)
INTERVAL BGS 2' -26'

CENTRALIZERS (Y/N)
DEPTH(s)

SEAL
TYPE BENTONITE
SOURCE BENTONITE PELLETS VOLCLAY
SETUP/HYDRATION TIME 16 HOURS
VOL. FLUID ADDED 1/5 5-GALLON BUCKET
TREMIED (Y/N)

FILTER PACK
TYPE SAND 20/40
AMT. USED UNRECORDED
TREMIED (Y/N)
SOURCE PEARL BRAND
GR. SIZE DIST.

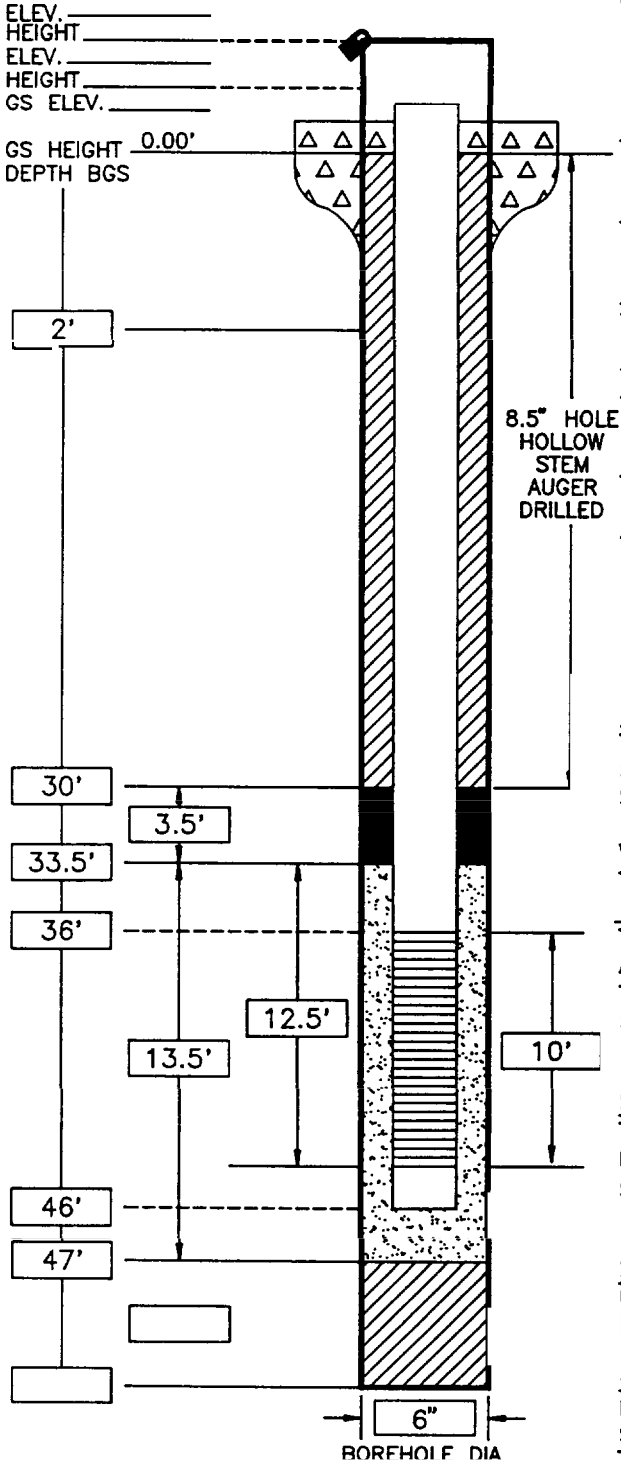
SCREEN
TYPE PVC
DIAMETER 2"
SLOT SIZE & TYPE 0.01"
INTERVAL BGS 43' - 33'

SUMP (Y/N)
INTERVAL BGS ____ LENGTH ____
BOTTOM CAP (Y/N)

BACKFILL PLUG
MATERIAL
SETUP/HYDRATION TIME
TREMIED (Y/N)

48MWC6

WELL NO.: 33G10	INSTALLATION:	SITE: IWTP/O.U.10
PROJECT NO.: N0048	CLIENT/PROJECT: NAS PENSACOLA	
CLEAN CONTRACTOR: ENSAFE/A&H	DRIG. CONTRACTOR: CB DRILLING	
BUILT BY: C B DRILLING / S. RYAN	WELL COORD.:	



PROTECTIVE CSG
MATERIAL/TYPE STEEL BOX
DIAMETER 3"
DEPTH BGS 2' WEEP HOLE (Y/N)

GUARD POSTS (Y/N)
NO. 4 TYPE STEEL PIPE , 3"

SURFACE PAD
COMPOSITION & SIZE CEMENT 3'x3'x6"

RISER PIPE
TYPE PVC
DIAMETER 2"
TOTAL LENGTH(TOC to TOS) 38.5'
VENTILATED CAP (Y/N)

GROUT
COMPOSITION & PROPORTIONS 95% CEMENT 5% BENTONITE
TREMIED (Y/N)
INTERVAL BGS 2' - 30'

CENTRALIZERS (Y/N)
DEPTH(s)

SEAL
TYPE BENTONITE
SOURCE BENTONITE PELLETS VOLCLAY
SETUP/HYDRATION TIME 30 MIN.
VOL. FLUID ADDED 1/4 5-GALLON BUCKR
TREMIED (Y/N)

FILTER PACK
TYPE SAND 20/40
AMT. USED 2.5 50-LB. BAGS
TREMIED (Y/N)
SOURCE PEARL BRAND
GR. SIZE DIST.

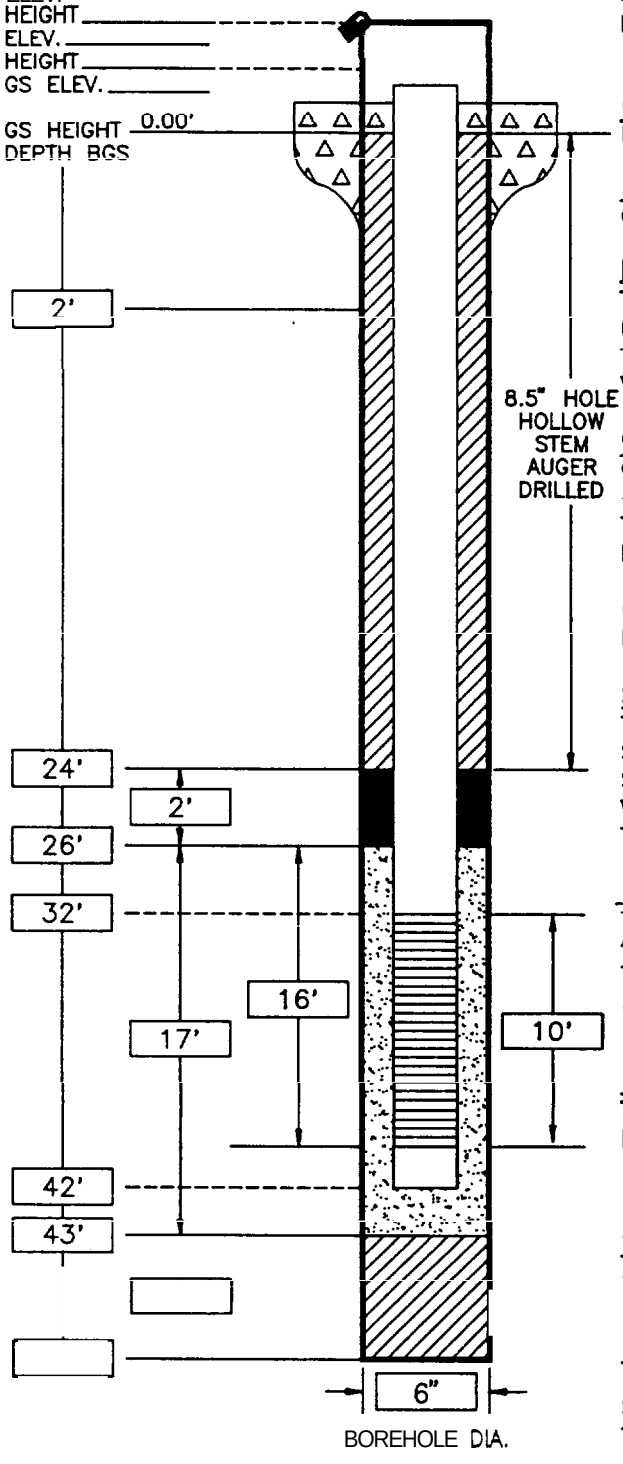
SCREEN
TYPE PVC
DIAMETER 2"
SLOT SIZE & TYPE 0.01"
INTERVAL BGS 46' - 36'

SUMP (Y/N)
INTERVAL BGS LENGTH
BOTTOM CAP (Y/N)

BACKFILL PLUG
MATERIAL
SETUP/HYDRATION TIME
TREMIED (Y/N)

48MWC7

WELL NO.: 33G11	INSTALLATION:	SITE: IWTP/O.U.10
PROJECT NO.: N0048	CLIENT/PROJECT: NAS PENSACOLA	
CLEAN CONTRACTOR: ENSAFE/A&H	DRIG. CONTRACTOR: CB DRILLING	
COMP. START: 12/17/92 (14:25 ____ m)	COMP. END: 12/17/92 (16:38 ____ m)	



PROTECTIVE CSG
MATERIAL/TYPE STEEL BOX
DIAMETER 3"
DEPTH BGS 2' WEEP HOLE (Y/N)

GUARD POSTS (Y/N)
NO. 4 TYPE

SURFACE PAD
COMPOSITION & SIZE CEMENT 3'x3'x6"

RISER PIPE
TYPE PVC
DIAMETER 2"
TOTAL LENGTH(TOC to TOS) 34.5'
VENTILATED CAP (Y/N)

GROUT
COMPOSITION & PROPORTIONS 95% CEMENT 5% BENTONITE
TREMIED (Y/N)
INTERVAL BGS 2' - 24'

CENTRALIZERS (Y/N)
DEPTH(s)

SEAL
TYPE BENTONITE
SOURCE BENTONITE PELLETS VOLCLAY
SETUP/HYDRATION TIME 30 MIN.
VOL. FLUID ADDED 1/5 5-GALLON BUCKET
TREMIED (Y/N)

FILTER PACK
TYPE SAND 20/40
AMT. USED 3.5 50 LB. BAGS
TREMIED (Y/N)
SOURCE PEARI BRAND
GR. SIZE DIST.

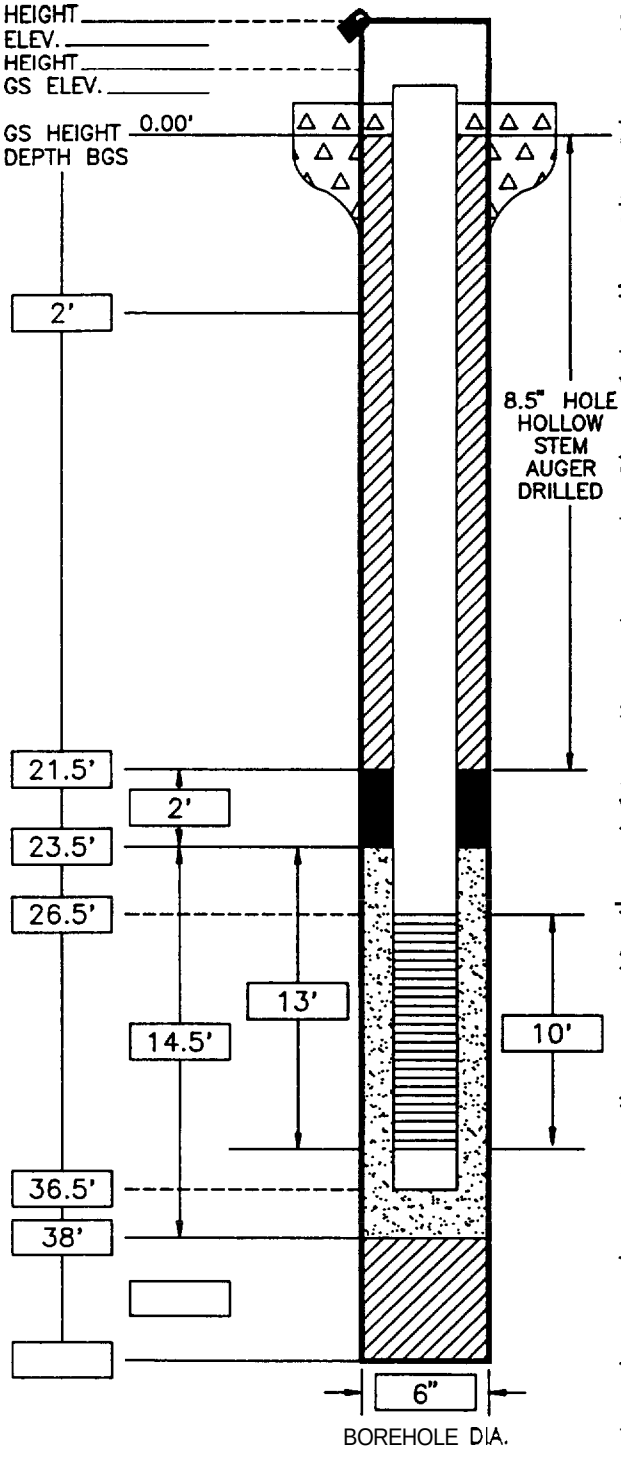
SCREEN
TYPE PVC
DIAMETER 2"
SLOT SIZE & TYPE 0.01"
INTERVAL BGS 42' -32'

SUMP (Y/N)
INTERVAL BGS ____ LENGTH ____
BOTTOM CAP (Y/N)

BACKFILL PLUG
MATERIAL
SETUP/HYDRATION TIME
TREMIED (Y/N)

48MWC8

MONITORING WELL CONSTRUCTION LOG - STANDARD		
WELL NO.: 33G12	INSTALLATION:	SITE: IWTP/O.U.10
PROJECT NO.: N0048	CLIENT/PROJECT: NAS PENSACOLA	
CLEAN CONTRACTOR: ENSAFE/A&H	DRIG. CONTRACTOR: CB DRILLING	
COMP. START: 12/21/92 (09:22 ____m)	COMP. END: 12/21/92 (11:55 ____m)	



PROTECTIVE CSG
MATERIAL/TYPE STEEL BOX
DIAMETER 3"
DEPTH BGS 2 WEEP HOLE (Y/N)

GUARD POSTS (Y/N)
NO. 4 TYPE STEEL PIPE , 3"

SURFACE PAD
COMPOSITION & SIZE CEMENT 3'x3'x6"

RISER PIPE
TYPE PVC
DIAMETER? ____
TOTAL LENGTH(TOC to TOS) 29'
VENTILATED CAP (Y/N)

GROUT
COMPOSITION & PROPORTIONS 95% CEMENT 5% BENTONITE
TREMIED (Y/N)
INTERVAL BGS 2' - 21.5'

CENTRALIZERS (Y/N)
DEPTH(s) ____

SEAL
TYPE BENTONITE
SOURCE BENTONITE PELLETS VOLCLAY
SETUP/HYDRATION TIME 20 MIN
VOL. FLUID ADDED 5- BUCKET
TREMIED (Y/N)

FILTER PACK
TYPE SAND 20/40
AMT. USED 3.5 50-LB. BAGS
TREMIED (Y/N)
SOURCE PEARL BRAND
GR. SIZE DIST. ____

SCREEN
TYPE PVC
DIAMETER 2"
SLOT SIZE & TYPE 0.01"
INTERVAL BGS 36.5' - 26.5'

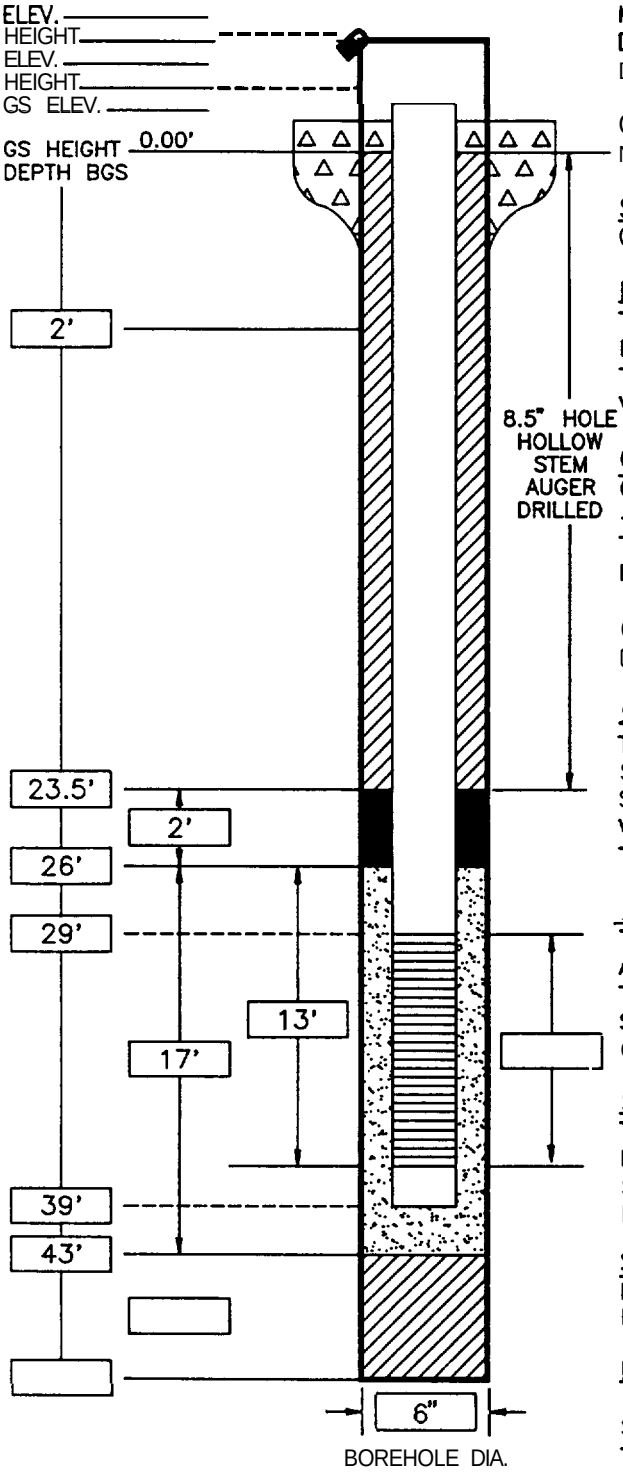
SUMP (Y/N)
INTERVAL BGS ____ LENGTH ____
BOTTOM CAP (Y/N)

BACKFILL PLUG
MATERIAL ____
SETUP/HYDRATION TIME ____
TREMIED (Y/N)

48MWC9

MONITORING WELL CONSTRUCTION LOG - STANDARD

WELL NO.: 33G13	INSTALLATION:	SITE: IWTP/O.U.10
PROJECT NO.: N0048	CLIENT/PROJECT: NAS PENSACOLA	
CLEAN CONTRACTOR: ENSAFE/A&H	DRIG. CONTRACTOR: CB DRILLING	
COMP. START: 12/22/92 (09:37 ____m)	COMP. END: 12/22/92 (11:15 ____m)	
BUILT BY: C B DRILLING / J. LUNCEFORD	WELL COORD.:	



PROTECTIVE CSG
MATERIAL/TYPE STEEL BOX
DIAMETER 3"
DEPTH BGS 2' WEEP HOLE (Y/N)

GUARD POSTS (Y/N)
NO. 4 TYPE STEEL PIPE . 3"

SURFACE PAD
COMPOSITION & SIZE CEMENT 3'x3'x6"

RISER PIPE
TYPE PVC
DIAMETER 2"
TOTAL LENGTH(TOC to TOS) 31.5'
VENTILATED CAP (Y/N)

GROUT
COMPOSITION & PROPORTIONS 95% CEMENT 5% BENTONITE
TREMIED (Y/N)
INTERVAL BGS 2' - 24'

CENTRALIZERS (Y/N)
DEPTH(s)

SEAL
TYPE BENTONITE
SOURCE BENTONITE PELLETS VOLCLAY
SETUP/HYDRATION TIME 20 MIN.
VOL. FLUID ADDED 1/2 5-GALLON BUCKET
TREMIED (Y/N)

FILTER PACK
TYPE SAND 20/40
AMT. USED 2 1/2 50-LB. BAGS
TREMIED (Y/N)
SOURCE PEARL BRAND
GR. SIZE DIST.

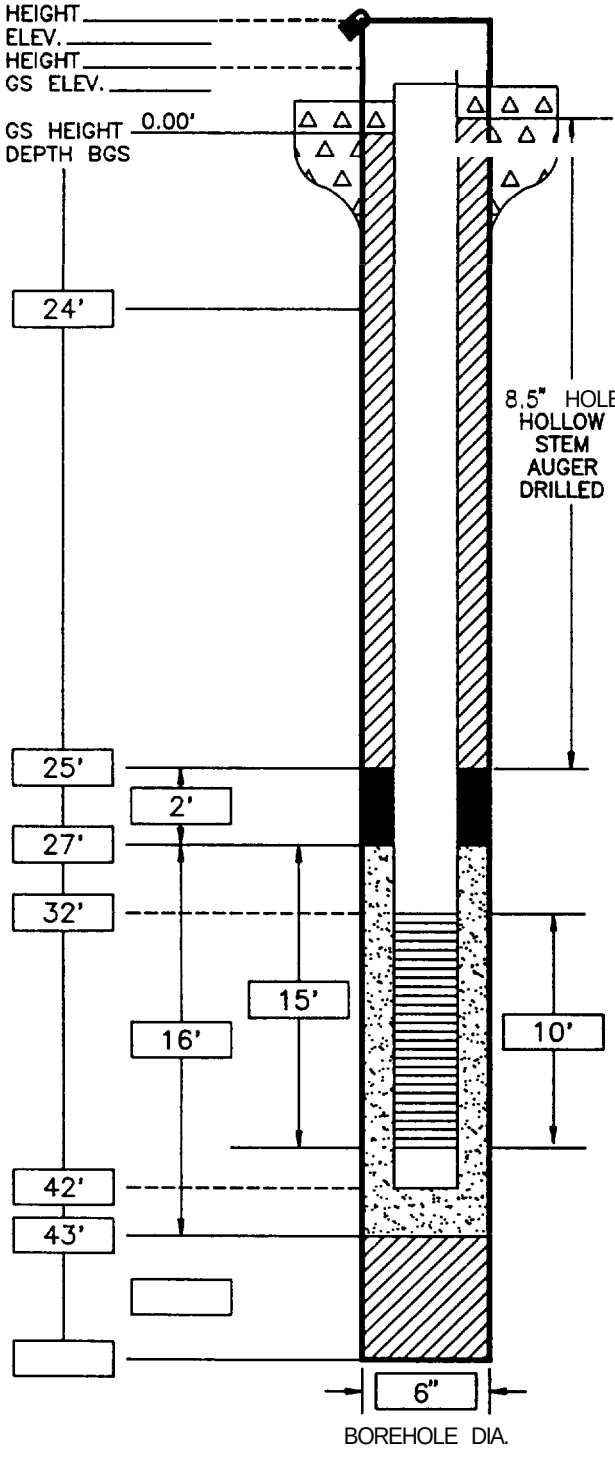
SCREEN
TYPE PVC
DIAMETER 2"
SLOT SIZE & TYPE 0.01"
INTERVAL BGS 39' - 29'

SUMP (Y/N)
INTERVAL BGS ____ LENGTH ____
BOTTOM CAP (Y/N)

BACKFILL PLUG
SETUP/HYDRATION TIME
TREMIED (Y/N)

48MWC10

MONITORING WELL CONSTRUCTION LOG – STANDARD		
WELL NO.: **33G14**	INSTALLATION:	SITE: IWTP/O.U.10
PROJECT NO.: N0048	CLIENT/PROJECT: NAS PENSACOIA	
CLEAN CONTRACTOR: ENSAFE/A&H	DRIG. CONTRACTOR: CB DRILLING	
COMP. START: 12/28/92 (11:30 ____m)	COMP. END: 12/28/92 (13:24 ____m)	
BUILT BY: C B DRILLING / B. CALDWELL	WELL COORD.:	



PROTECTIVE CSG
MATERIAL/TYPE STEEL BOX
DIAMETER 3"
DEPTH BGS 7' WEEP HOLE (Y/N)

GUARD POSTS (Y/N)
NO. 4 TYPE

SURFACE PAD
COMPOSITION & SIZE CEMENT 3x3x6"

RISER PIPE
TYPE PVC
DIAMETER 2"
TOTAL LENGTH(TOC to TOS) 34.5'
VENTILATED CAP (Y/N)

GROUT
COMPOSITION & PROPORTIONS 95% CEMENT 5% BENTONITE
TREMIED (Y/N)
INTERVAL BGS 1' – 25'

CENTRALIZERS (Y/N)
DEPTH(s)

SEAL
TYPE BENTONITE
SOURCE BENTONITE PELLETS VOLCLAY
SETUP/HYDRATION TIME 25 MIN.
VOL FLUID ADDED
TREMIED (Y/N)

FILTER PACK
TYPE SAND 20/40
AMT. USED 3 50-LB. BAGS
TREMIED (Y/N)
SOURCE PEARL BRAND
GR. SIZE DIST.

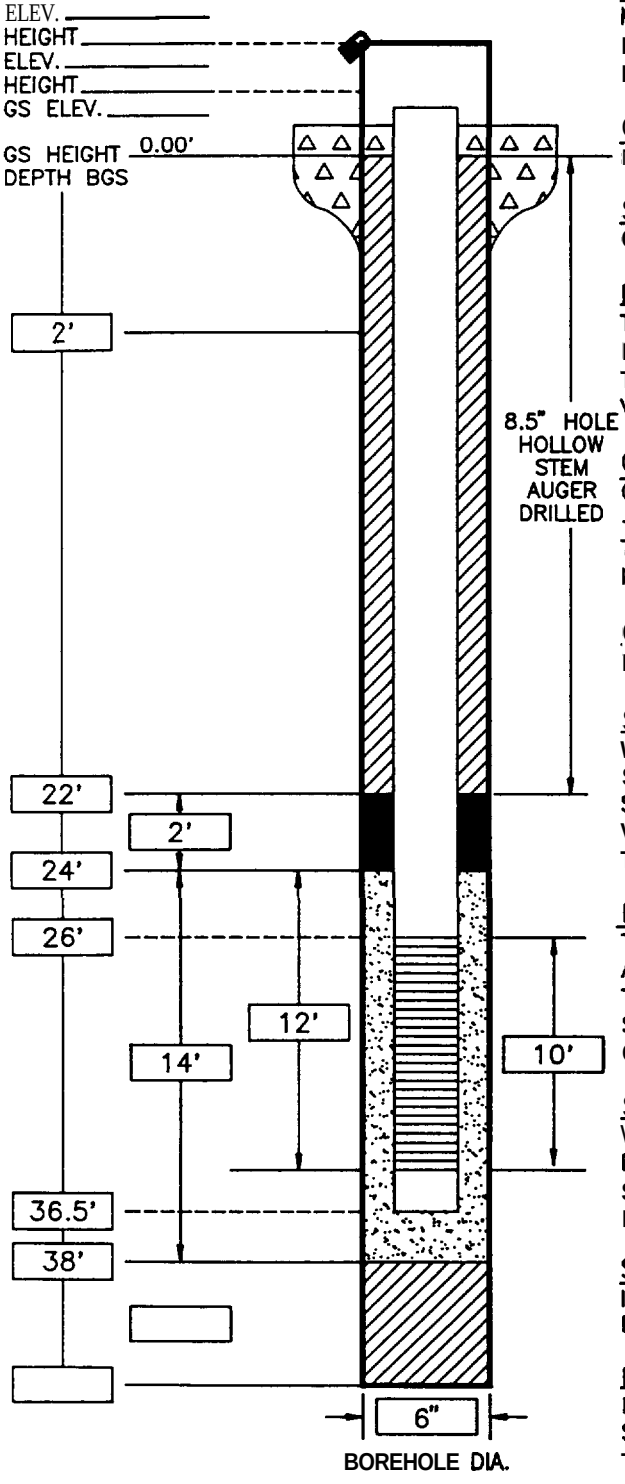
SCREEN
TYPE PVC
DIAMETER 2"
SLOT SIZE & TYPE 0.01"
INTERVAL BGS

SUMP (Y/N)
INTERVAL BGS LENGTH
BOTTOM CAP (Y/N)

BACKFILL PLUG
MATERIAL
SETUP/HYDRATION TIME
TREMIED (Y/N)

48MWC11

WELL NO.: 33G15	INSTALLATION:	SITE: IWTP/O.U.10
PROJECT NO.: N0048	CLIENT/PROJECT: NAS PENSACOLA	
CLEAN CONTRACTOR: ENSAFE/A&H	DRIG. CONTRACTOR: CB DRILLING	
COMP. START: 12/29/92 (11:26 ____ m)	COMP. END: 12/29/92 (14:12 ____ m)	
BUILT BY: C B DRILLING / B. CALDWELL	WELL COORD.:	



PROTECTIVE CSG
MATERIAL/TYPE STEEL BOX
DIAMETER
DEPTH BGS 2' WEEP HOLE (Y/N)

GUARD POSTS (Y/N)
NO. 4 TYPE

SURFACE PAD
COMPOSITION & SIZE CEMENT 3'x3'x6"

RISER PIPE
TYPE PVC
DIAMETER 2"
TOTAL LENGTH(TOC to TOS) 28.5'
VENTILATED CAP (Y/N)

GROUT
COMPOSITION & PROPORTIONS
5% BENTONITE
TREMIED (Y/N)
INTERVAL BGS 2' - 22'

CENTRALIZERS (Y/N)
DEPTH(s)

SEAL
W E BENTONITE
SOURCE BENTONITE PELLETS VOLCLAY
SETUP/HYDRATION TIME 5 MIN.
VOL FLUID ADDED
TREMIED (Y/N)

FILTER PACK
TYPE SAND 20/40
AMT. USED 4 3/4 50-LB. BAGS
TREMIED (Y/N)
SOURCE PEARL BRAND
GR. SIZE DIST.

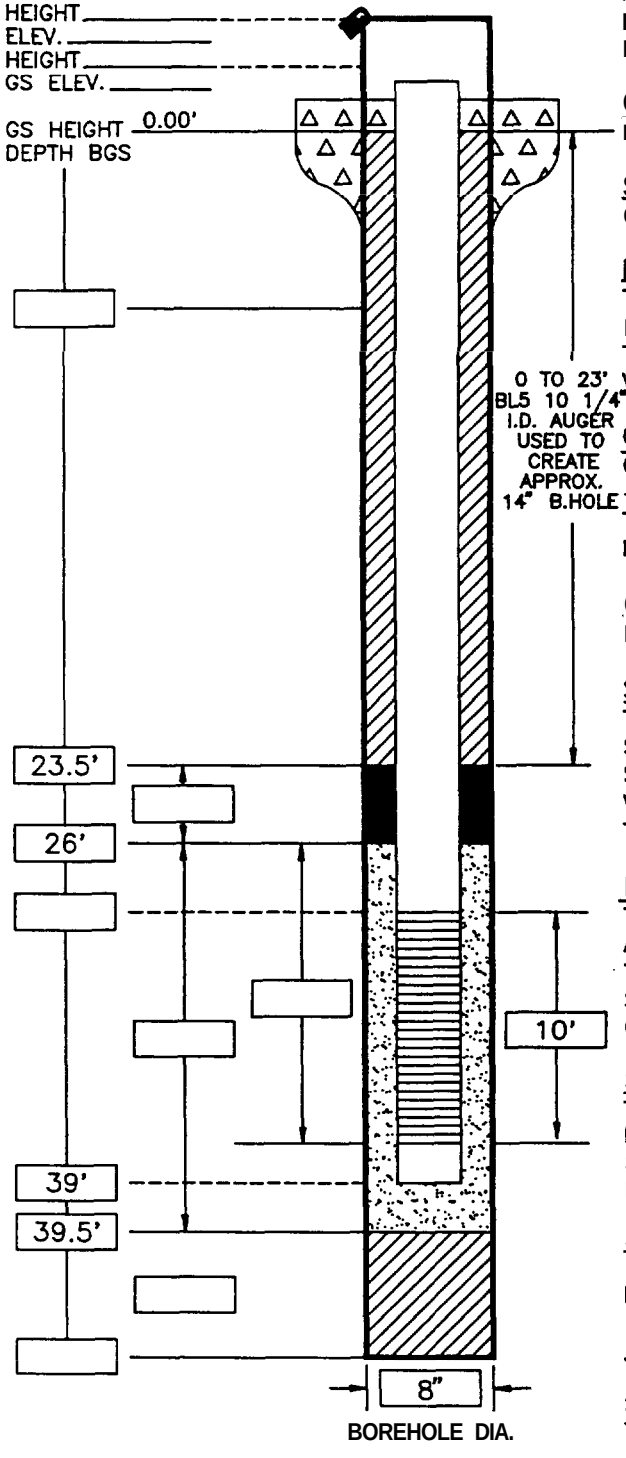
SCREEN
W E PVC
DIAMETER 2"
SLOT SIZE & TYPE 0.01"
INTERVAL BGS

SUMP (Y/N)
INTERVAL BGS ____ LENGTH ____
BOTTOM CAP (Y/N)

BACKFILL PLUG
MATERIAL
SETUP/HYDRATION TIME
TREMIED (Y/N)

48MWC12

WELL NO.: 33G16	INSTALLATION: 01/05/93	SITE: IWTP/O.U.10
PROJECT NO.: N0048	CLIENT/PROJECT: NAS PENSACOLA	
CLEAN CONTRACTOR: ENSAFE/A&H	DRIG. CONTRACTOR: CB DRILLING	
COMP. START: 01/05/93 (12:00 ____m)	COMP. END: (____m)	



PROTECTIVE CSG
MATERIAL/TYPE STEEL BOX
DIAMETER 6"
DEPTH BGS ____ WEEP HOLE (Y/N)

GUARD POSTS (Y/N)
NO. 4 TYPE

SURFACE PAD
COMPOSITION & SIZE CEMENT 3'x3'x6"

RISER PIPE
TYPE PVC
DIAMETER 4"
TOTAL LENGTH(TOC to TOS) 31.5'
VENTILATED CAP (Y/N)

GROUT
COMPOSITION & PROPORTIONS 95% CEMENT 5% BENTONITE
TREMIED (Y/N)
INTERVAL BGS 2' - 23.5'

CENTRALIZERS (Y/N)
DEPTH(s)

SEAL
TYPE BENTONITE
SOURCE BENTONITE PELLETS VOLCLAY
SETUP/HYDRATION TIME 1 HR.
VOL. FLUID ADDED NONE-BELOW WATER TABLE
TREMIED (Y/N)

FILTER PACK
TYPE CLEAN QTZ. FILTER SAND
AMT. USED 2 50-LB. BAGS
TREMIED (Y/N)
SOURCE CAVE-IN NATURAL SAND FROM 39.5 TO 35 FT
GR. SIZE DIST. SAND PACK INSTALLED TO 26' BLS

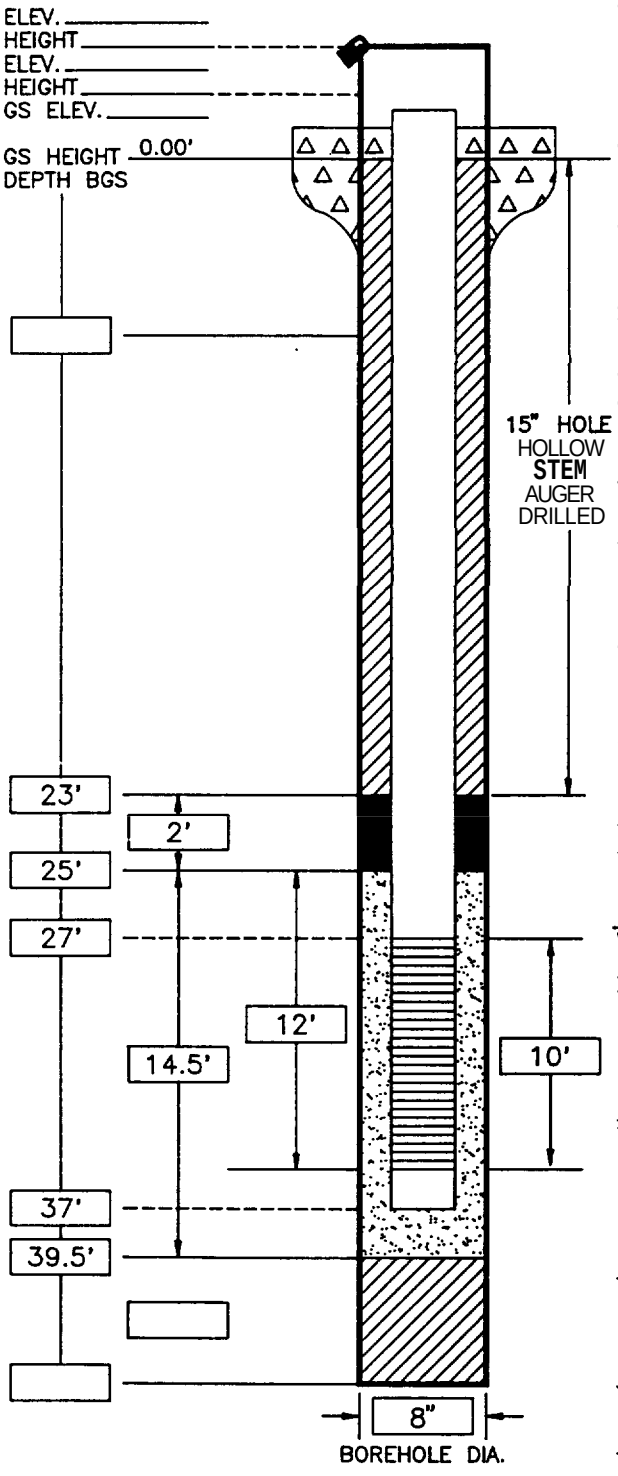
SCREEN
TYPE PVC
DIAMETER 4"
SLOT SIZE & TYPE 0.01"
INTERVAL BGS 39' - 29'

SUMP (Y/N)
INTERVAL BGS ____ LENGTH ____
BOTTOM CAP (Y/N)

BACKFILL PLUG
MATERIAL
SETUP/HYDRATION TIME
TREMIED (Y/N)

48MWC13

WELL NO.: 33G17	INSTALLATION:	SITE: IWTP/O.U.10
PROJECT NO.: N0048	CLIENT/PROJECT: NAS PENSACOLA	
COMP. START: 01/06/93 (12:15 ____ m)	COMP. END: 01/06/93 (____ m)	
BUILT BY: C B DRILLING	WELL COORD.:	



PROTECTIVE CSG
MATERIAL/TYPE STEEL BOX
DIAMETER 6"
DEPTH BGS _____ WEEP HOLE(Y/N) _____

GUARD POSTS (Y/N)
NO. 4 TYPE STEEL PIPE . 3"

SURFACE PAD
COMPOSITION & SIZE CEMENT 3'x3'x6"

RISER PIPE
TYPE PVC
DIAMETER 4"
TOTAL LENGTH(TOC to TOS) 30'
VENTILATED CAP (Y/N)

GROUT
COMPOSITION & PROPORTIONS 95% CEMENT 5% BENTONITE
TREMIED (Y/N)
INTERVAL BGS - 73'

CENTRALIZERS (Y/N)
DEPTH(s) _____

SEAL
TYPE BENTONITE
SOURCE BENTONITE PELLETS VOLCLAY
SETUP/HYDRATION TIME 30 MIN.
VOL. FLUID ADDED NONE. BELOW WATER TABLE
TREMIED (Y/N)

FILTER PACK
TYPE SAND 20/40. CAVE-IN FORMATION SAND
AMT. USED 1 50-LB. BAGS
TREMIED (Y/N)
SOURCE PEARL BRAND. NATURAL FORMATION
GR. SIZE DIST. _____

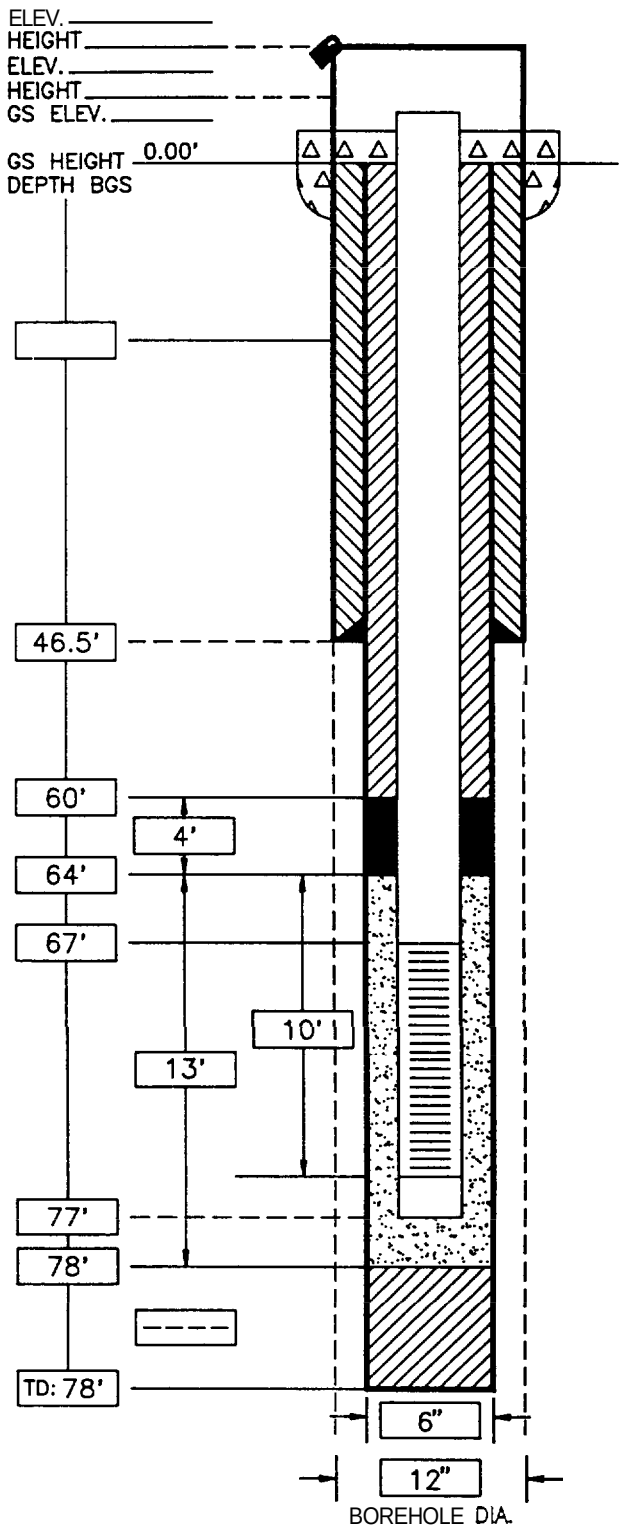
SCREEN
TYPE PVC
DIAMETER 4"
SLOT SIZE & TYPE 0.01"
INTERVAL BGS 37' - 27'

SUMP (Y/N)
INTERVAL BGS _____ LENGTH _____
BOTTOM CAP (Y/N)

BACKFILL PLUG
MATERIAL _____
SETUP/HYDRATION TIME _____
TREMIED (Y/N)

48MWC14

MONITORING WELL CONSTRUCTION LOG – CONFINED AQUIFER	
WELL NO.: 33G18	INSTALLATION: COMPLETED 01/18/93 | SITE: O.U.10/SITE 13
PROJECT NO.: N0048	CLIENT/PROJECT NAS PENSACOLA
DRILLER: CB DRILLING	
GEOLOGIST: S. RYAN	



PROTECTIVE CSG
MATERIAL/TYPE STEEL BOX
DIAMETER 3"
DEPTH BGS 2' WEEP HOLE(Y/N)

GUARD POSTS (Y/N)
NO. 4 TYPE

SURFACE PAD
COMPOSITION & SIZE CEMENT 3'x3'x6"

SURFACE CSG
TYPE PVC
DIAMETER 6" TOTAL LENGTH 46.5'

RISER PIPE
TYPE PVC
DIAMETER 2"
TOTAL LENGTH(TOC to TOS) 70'
VENTILATED CAP (Y/N)

GROUT SETUP/HYDRATION TIME 48 HRS.
AMOUNT
TREMIED (Y/N)
INTERVAL BGS 46.5'–0'

CENTRALIZERS (Y/N)
DEPTH(s)

SEAL
TYPE BENTONITE PELLETS
MFR. VOLCLAY
SETUP/HYDRATION TIME 18 MINUTES
VOL. FLUID ADDED ----------
TREMIED (Y/N)

FILTER PACK
TYPE SAND
AMT. USED 5 50-LB. BAGS
TREMIED (Y/N)
MFR. PEARL
GR. SIZE DIST. 20/40

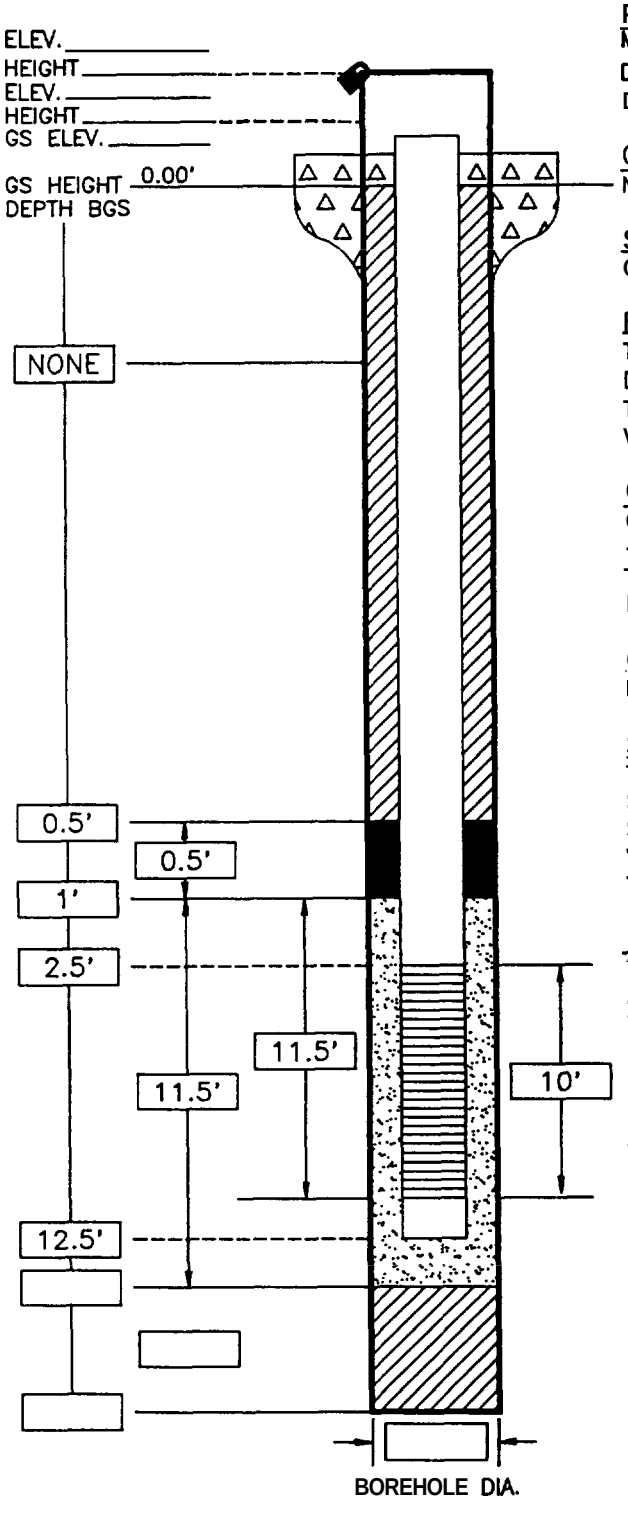
SCREEN
TYPE PVC
DIAMETER 2"
SLOT SIZE & TYPE 0.01"

SUMP (Y/N)
INTERVAL BGS LENGTH
BOTTOM CAP (Y/N)

BACKFILL PLUG
MATERIAL N/A
SETUP/HYDRATION TIME
TREMIED (Y/N)

48MWC1

MONITORING WELL CONSTRUCTION LOG – STANDARD		
WELL NO.: 13G19	INSTALLATION:	SITE: SITE 13
PROJECT NO.: N0048	CLIENT/PROJECT: NAS PENSACOLA	
CLEAN CONTRACTOR: ENSAFE/A&H	DRIG. CONTRACTOR: CB DRILLING	
COMP. START: 01/19/93 (10:20 ____m)	COMP. END: 01/19/93 (11:35 ____m)	
BUILT BY: C B DRILLING / S. RYAN	WELL COORD.:	



PROTECTIVE CSG
MATERIAL/TYPE STEEL BOX
DIAMETER 3"
DEPTH BGS 1' WEEP HOLE (Y/N)

GUARD POSTS (Y/N)
NO. 4 TYPE

SURFACE PAD
COMPOSITION & SIZE CEMENT 3'x3'x6"

RISER PIPE
TYPE PVC
DIAMETER 2"
TOTAL LENGTH(TOC to TOS) 7.5'
VENTILATED CAP (Y/N)

GROUT
COMPOSITION & PROPORTIONS
TREMIED (Y/N)
INTERVAL BGS

CENTRALIZERS (Y/N)
DEPTH(s)

SEAL
TYPE BENTONITE
SOURCE BENTONITE PELLETS VOLCLAY
SETUP/HYDRATION TIME 1 HR.
VOL. FLUID ADDED 1/4 5-GALLON BUCKET
TREMIED (Y/N) 3-5 GALLONS DI WATER

FILTER PACK
TYPE SAND 20/40
AMT. USED 1 50-LB BAGS
TREMIED (Y/N)
SOURCE PEARL BRAND
GR. SIZE DIST.

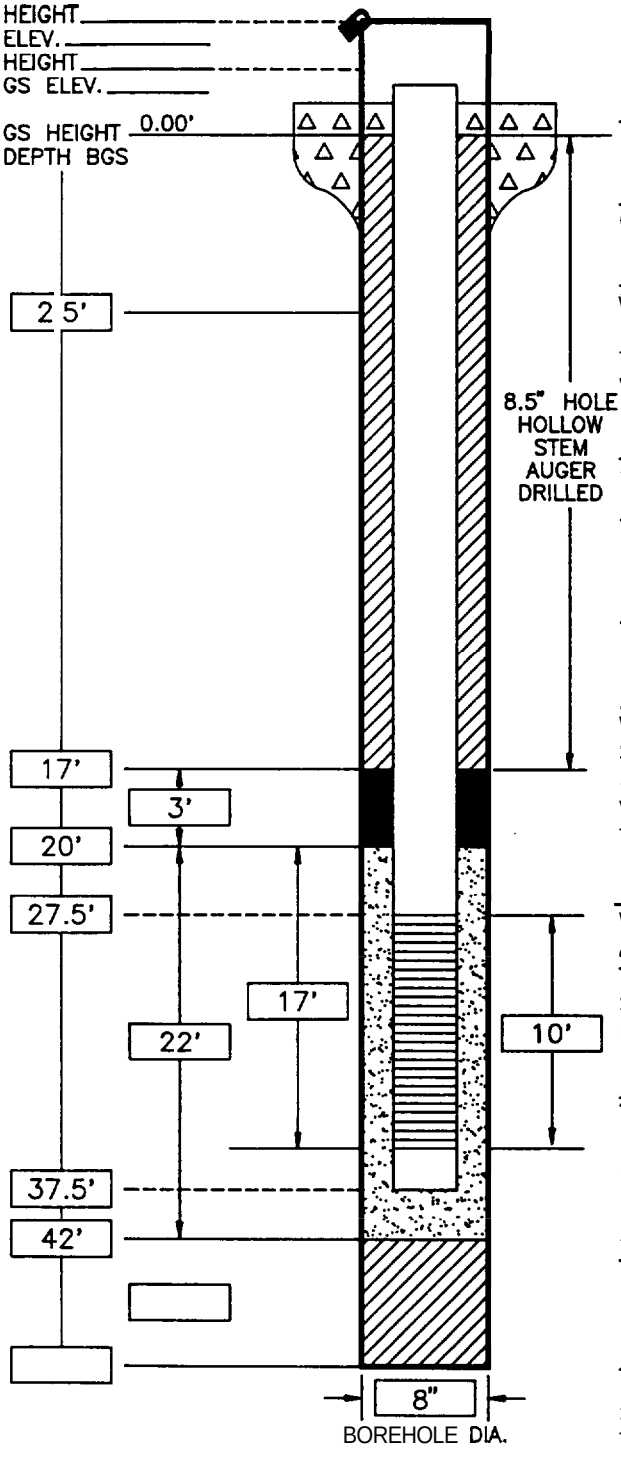
SCREEN
TYPE PVC
DIAMETER 2"
SLOT SIZE & TYPE 0.01"
INTERVAL BGS 2.5' – 12.5'

SUMP (Y/N)
INTERVAL BGS LENGTH
BOTTOM CAP (Y/N)

BACKFILL PLUG
MATERIAL
SETUP/HYDRATION TIME
TREMIED (Y/N)

48MWC15

WELL NO.: 88G20	INSTALLATION:	SITE: IWTP/O.U.10
PROJECT NO.: N0048	CLIENT/PROJECT: NAS PENSACOLA	
CLEAN CONTRACTOR: ENSAFE/A&H	DRIG. CONTRACTOR: LAYNE ENVIRONMENTAL	
COMP. START: (08:10 ____ m)	COMP. END: (____ m)	



PROTECTIVE CSG
MATERIAL/TYPE STEEL BOX
DIAMETER 3"
DEPTH BGS 2.5' WEEP HOLE(Y/N)

GUARD POSTS (Y/N)
NO. 4 TYPE STEEL PIPE , 3"

SURFACE PAD
COMPOSITION & SIZE CEMENT 3'x3'x6"

RISER PIPE
W E PVC
DIAMETER 2"
TOTAL LENGTH(TOC to TOS) 30'
VENTILATED CAP (Y/N)

GROUT
COMPOSITION & PROPORTIONS
5% BENTONITE
TREMIED (Y/N)
INTERVAL BGS 0' - 17'

CENTRALIZERS (Y/N)
DEPTH(s)

SEAL
W E BENTONITE
SOURCE BAROID QUICK GEL
SETUP/HYDRATION TIME
VOL FLUID ADDED 1.5 CU. FT.
TREMIED (Y/N)

FILTER PACK
W E SAND 20/40
AMT. USED 8 50-LB BAGS
TREMIED (Y/N)
SOURCE PEARL BRAND
GR. SIZE DIST.

SCREEN
TYPE PVC
DIAMETER 2"
SLOT SIZE & W E 0.01"
INTERVAL BGS

SUMP (Y/N)
INTERVAL BGS ____ LENGTH ____
BOTTOM CAP (Y/N)

BACKFILL PLUG
MATERIAL
SETUP/HYDRATION TIME
TREMIED (Y/N)

48MWC16

APPENDIX H

TIDAL INFLUENCE DATA

Predicted High and Low Tide Levels for Pensacola Bay at Wamngton				
Date	High Tide		Low Tide	
	Time	Level (feet)	Time	Level (feet)
1/22	10:30 PM	1.0	8:48 AM	-0.5
1/23	10:14 PM	0.9	9:12 AM	-0.4
1124	11:38 PM	0.8	9:42 AM	-0.2
1/25	11:38 PM	0.8	9:46 AM	-0.1
1/26	12:10 AM	0.8	9:19 AM	0.0
1/27	3:30 PM	0.3	8:25 AM	0.1
1/28	3:21 PM	0.5	6:44 AM	0.2
1/29	3:42 PM	0.6	3:06 AM	0.1
1/30	2:18 PM	0.8	3:07 AM	-0.1
1/31	5:04 PM	0.9	3:42 AM	-0.3
211	5:52 PM	1.1	4:24 AM	-0.4
212	6:43 PM	1.2	5:10 AM	-0.6
213	7:38 PM	1.3	5:56 AM	-0.6

Upload TerraLoggerII S/N 01114, Channel # 01
Zero offset A/D calibration count = 0xA237 (hex)
Run StartTime = 22-JAN-93 16:03:01
StartTime = 96566581 seconds since 01 JAN 1990 12:00:00 midnight
StartTime (Lotus.v3 format) @DATE = 33991, @TIME = 0.668762
Transducer ID = , S/N = GM-73
A/D conversion factor = 0.00070406 FTH2O per count
Min parameter units = 0 FTH2O
Max parameter units = 23.07 FTH2O
Min sensor calibr pt = 0 MV
Max sensor calibr pt = 100 MV

Hex TS	Hex Data	DecodedTimeStamp	Elapsed Secs	Data FTH2O
0C6D00C1,	A22D,	22-JAN-93, 16:03:01,	0,	-0.0070406
0C6D0841,	A249,	22-JAN-93, 16:33:01,	1800,	0.012673
0C6D10C1,	A25D,	22-JAN-93, 17:03:01,	3.600,	0.026754
0C6D1841,	A275,	22-JAN-93, 17:33:01,	5400,	0.043652
0C6D20C1,	A28D,	22-JAN-93, 18:03:01,	7200,	0.060549
0C6D2841,	A2A8,	22-JAN-93, 18:33:01,	9000,	0.079559
0C6D30C1,	A2C7,	22-JAN-93, 19:03:01,	10800,	0.10138
0C6D3841,	A2E3,	22-JAN-93, 19:33:01,	12600,	0.12110
0C6D40C1,	A304,	22-JAN-93, 20:03:01,	14400,	0.14433
0C6D4841,	A323,	22-JAN-93, 20:33:01,	16200,	0.16616
0C6D50C1,	A343,	22-JAN-93, 21:03:01,	18000,	0.18869
0C6D5841,	A361,	22-JAN-93, 21:33:01,	19800,	0.20981
0C6D60C1,	A380,	22-JAN-93, 22:03:01,	21600,	0.23164
0C6D6841,	A39D,	22-JAN-93, 22:33:01,	23400,	0.25205
0C6D70C1,	A3B4,	22-JAN-93, 23:03:01,	25200,	0.26825
0C6D7841,	A3CD,	22-JAN-93, 23:33:01,	27000,	0.28585
0C6E00C1,	A3E1,	23-JAN-93, 00:03:01,	28800,	0.29993
0C6E0841,	A3EF,	23-JAN-93, 00:33:01,	30600,	0.30979
0C6E10C1,	A3FC,	23-JAN-93, 01:03:01,	32400,	0.31894
0C6E1841,	A3FF,	23-JAN-93, 01:33:01,	34200,	0.32105
0C6E20C1,	A3FF,	23-JAN-93, 02:03:01,	36000,	0.32105
0C6E2841,	A3F9,	23-JAN-93, 02:33:01,	37800,	0.31683
0C6E30C1,	A3E9,	23-JAN-93, 03:03:01,	39600,	0.30556
0C6E3841,	A3D9,	23-JAN-93, 03:33:01,	41400,	0.29430
0C6E40C1,	A3C2,	23-JAN-93, 04:03:01,	43200,	0.27810
0C6E4841,	A3A8,	23-JAN-93, 04:33:01,	45000,	0.25980
0C6E50C1,	A386,	23-JAN-93, 05:03:01,	46800,	0.23586
0C6E5841,	A364,	23-JAN-93, 05:33:01,	48600,	0,21192
0C6E60C1,	A343,	23-JAN-93, 06:03:01,	50400,	0.18869
0C6E6841,	A31E,	23-JAN-93, 06:33:01,	52200,	0.16264
0C6E70C1,	A2FB,	23-JAN-93, 07:03:01,	54000,	0.13800
0C6E7841,	A2DD,	23-JAN-93, 07:33:01,	55800,	0.11687
0C6E80C1,	A2BE,	23-JAN-93, 08:03:01,	57600,	0.095048
0C6E8841,	A2A2,	23-JAN-93, 08:33:01,	59400,	0.075335
0C6E90C1,	A285,	23-JAN-93, 09:03:01,	61200,	0.054917
0C6E9841,	A26B,	23-JAN-93, 09:33:01,	63000,	0.036611
0C6EA0C1,	A253,	23-JAN-93, 10:03:01,	64800,	0.019714
0C6EA841,	A23E,	23-JAN-93, 10:33:01,	66600,	0.0049284
0C6EB0C1,	A22E,	23-JAN-93, 11:03:01,	68400,	-0.0063366
0C6EB841,	A21F,	23-JAN-93, 11:33:01,	70200,	-0.016997
0C6EC0C1,	A212,	23-JAN-93, 12:03:01,	72000,	-0.026050
0C6EC841,	A20C,	23-JAN-93, 12:33:01,	73800,	-0.030275
0C6ED0C1,	A205,	23-JAN-93, 13:03:01,	75600,	-0.035203
0C6ED841,	A1FF,	23-JAN-93, 13:33:01,	77400,	-0.039427
0C6EE0C1,	A1FC,	23-JAN-93, 14:03:01,	79200,	-0.041540

0C6EE841,	A1FA,	23-JAN-93,	14:33:01,	81000,	-0.042948
0C6EF0C1,	A200,	23-JAN-93,	15:03:01,	82800,	-0.038723
0C6EF841,	A207,	23-JAN-93,	15:33:01,	84600,	-0.033795
0C6F00C1,	A217,	23-JAN-93,	16:03:01,	86400,	-0.022530
0C6F0841,	A228,	23-JAN-93,	16:33:01,	88200,	-0.010561
0C6F10C1,	A23D,	23-JAN-93,	17:03:01,	90000,	0.0042244
0C6F1841,	A252,	23-JAN-93,	17:33:01,	91800,	0.019010
0C6F20C1,	A26B,	23-JAN-93,	18:03:01,	93600,	0.036611
0C6F2841,	A288,	23-JAN-93,	18:33:01,	95400,	0.057029
0C6F30C1,	A2A2,	23-JAN-93,	19:03:01,	97200,	0.075335
0C6F3841,	A2C0,	23-JAN-93,	19:33:01,	99000,	0.096456
0C6F40C1,	A2DD,	23-JAN-93,	20:03:01,	100800,	0.11687
0C6F4841,	A2FB,	23-JAN-93,	20:33:01,	102600,	0.13800
0C6F50C1,	A319,	23-JAN-93,	21:03:01,	104400,	0.15912
0C6F5841,	A339,	23-JAN-93,	21:33:01,	106200,	0.18165
0C6F60C1,	A357,	23-JAN-93,	22:03:01,	108000,	0.20277
0C6F6841,	A375,	23-JAN-93,	22:33:01,	109800,	0.22389
0C6F70C1,	A392,	23-JAN-93,	23:03:01,	111600,	0.24431
0C6F7841,	A3AD,	23-JAN-93,	23:33:01,	113400,	0.26332
0C7000C1,	A3CA,	24-JAN-93,	00:03:01,	115200,	0.28374
0C700841,	A3E4,	24-JAN-93,	00:33:01,	117000,	0.30204
0C7010C1,	A3F9,	24-JAN-93,	01:03:01,	118800,	0.31683
0C701841,	A40C,	24-JAN-93,	01:33:01,	120600,	0.33021
0C7020C1,	A41C,	24-JAN-93,	02:03:01,	122400,	0.34147
0C702841,	A427,	24-JAN-93,	02:33:01,	124200,	0.34921
0C7030C1,	A42B,	24-JAN-93,	03:03:01,	126000,	0.35203
0C703841,	A426,	24-JAN-93,	03:33:01,	127800,	0.34851
0C7040C1,	A41C,	24-JAN-93,	04:03:01,	129600,	0.34147
0C704841,	A40D,	24-JAN-93,	04:33:01,	131400,	0.33091
0C7050C1,	A3FC,	24-JAN-93,	05:03:01,	133200,	0.31894
0C705841,	A3E7,	24-JAN-93,	05:33:01,	135000,	0.30415
0C7060C1,	A3D2,	24-JAN-93,	06:03:01,	136800,	0.28937
0C706841,	A3B8,	24-JAN-93,	06:33:01,	138600,	0.27106
0C7070C1,	A39B,	24-JAN-93,	07:03:01,	140400,	0.25065
0C707841,	A384,	24-JAN-93,	07:33:01,	142200,	0.23445
0C7080C1,	A36D,	24-JAN-93,	08:03:01,	144000,	0.21826
0C708841,	A354,	24-JAN-93,	08:33:01,	145800,	0.20066
0C7090C1,	A337,	24-JAN-93,	09:03:01,	147600,	0.18024
0C709841,	A320,	24-JAN-93,	09:33:01,	149400,	0.16405
0C70A0C1,	A309,	24-JAN-93,	10:03:01,	151200,	0.14785
0C70A841,	A2F2,	24-JAN-93,	10:33:01,	153000,	0.13166
0C70B0C1,	A2DC,	24-JAN-93,	11:03:01,	154800,	0.11617
0C70B841,	A2D7,	24-JAN-93,	11:33:01,	156600,	0.11265
0C70C0C1,	A2D9,	24-JAN-93,	12:03:01,	158400,	0.11406
0C70C841,	A2DB,	24-JAN-93,	12:33:01,	160200,	0.11547
0C70D0C1,	A2DC,	24-JAN-93,	13:03:01,	162000,	0.11617
0C70D841,	A2DD,	24-JAN-93,	13:33:01,	163800,	0.11687
0C70E0C1,	A2D2,	24-JAN-93,	14:03:01,	165600,	0.10913
0C70E841,	A2C5,	24-JAN-93,	14:33:01,	167400,	0.099977
0C70F0C1,	A2BD,	24-JAN-93,	15:03:01,	169200,	0.094344
0C70F841,	A2B8,	24-JAN-93,	15:33:01,	171000,	0.090824
0C7100C1,	A2B9,	24-JAN-93,	16:03:01,	172800,	0.091528
0C710841,	A2B3,	24-JAN-93,	16:33:01,	174600,	0.087304
0C7110C1,	A2AF,	24-JAN-93,	17:03:01,	176400,	0.084487
0C711841,	A2A2,	24-JAN-93,	17:33:01,	178200,	0.075335
0C7120C1,	A298,	24-JAN-93,	18:03:01,	180000,	0.068294
0C712841,	A299,	24-JAN-93,	18:33:01,	181800,	0.068998
0C7130C1,	A2A2,	24-JAN-93,	19:03:01,	183600,	0.075335
0C713841,	FEDE,	24-JAN-93,	19:33:01,	185400,	16.700
0C7140C1,	FEDE,	24-JAN-93,	20:03:01,	187200,	16.700

0C714841,	FEDE,	24-JAN-93,	20:33:01,	189000,	16.700
0C7150C1,	FEDE,	24-JAN-93,	21:03:01,	190800,	16.700
0C715841,	FEDE,	24-JAN-93,	21:33:01,	192600,	16.700
7160C1,	FEDE,	24-JAN-93,	22:03:01,	194400,	16.700
716841,	FEDE,	24-JAN-93,	22:33:01,	196200,	16.700
0C7170C1,	FEDE,	24-JAN-93,	23:03:01,	198000,	16.700
0C717841,	FEDE,	24-JAN-93,	23:33:01,	199800,	16.700
0C7200C1,	FEDE,	25-JAN-93,	00:03:01,	201600,	16.700
0C720841,	FEDE,	25-JAN-93,	00:33:01,	203400,	16.700
0C7210C1,	FEDE,	25-JAN-93,	01:03:01,	205200,	16.700
0C721841,	FEDE,	25-JAN-93,	01:33:01,	207000,	16.700
0C7220C1,	FEDE,	25-JAN-93,	02:03:01,	208800,	16.700
0C722841,	FEDE,	25-JAN-93,	02:33:01,	210600,	16.700
0C7230C1,	FEDE,	25-JAN-93,	03:03:01,	212400,	16.700
0C723841,	FEDE,	25-JAN-93,	03:33:01,	214200,	16.700
0C7240C1,	FEDE,	25-JAN-93,	04:03:01,	216000,	16.700
0C724841,	FEDE,	25-JAN-93,	04:33:01,	217800,	16.700
0C7250C1,	FEDE,	25-JAN-93,	05:03:01,	219600,	16.700
0C725841,	FEDE,	25-JAN-93,	05:33:01,	221400,	16.700
0C7260C1,	FEDE,	25-JAN-93,	06:03:01,	223200,	16.700
0C726841,	FEDE,	25-JAN-93,	06:33:01,	225000,	16.700
0C7270C1,	FEDE,	25-JAN-93,	07:03:01,	226800,	16.700
0C727841,	FEDE,	25-JAN-93,	07:33:01,	228600,	16.700
0C7280C1,	FEDE,	25-JAN-93,	08:03:01,	230400,	16.700
0C728841,	FEDE,	25-JAN-93,	08:33:01,	232200,	16.700
0C7290C1,	FEDE,	25-JAN-93,	09:03:01,	234000,	16.700
0C729841,	FEDE,	25-JAN-93,	09:33:01,	235800,	16.700
0C72A0C1,	FEDE,	25-JAN-93,	10:03:01,	237600,	16.700
72A841,	FEDE,	25-JAN-93,	10:33:01,	239400,	16.700
72B0C1,	FEDE,	25-JAN-93,	11:03:01,	241200,	16.700
0C72B841,	A20F,	25-JAN-93,	11:33:01,	243000,	-0.028162
0C72C0C1,	A201,	25-JAN-93,	12:03:01,	244800,	-0.038019
0C72C841,	A1F5,	25-JAN-93,	12:33:01,	246600,	-0.046468
0C72D0C1,	A1ED,	25-JAN-93,	13:03:01,	248400,	-0.052101
0C72D841,	A1E7,	25-JAN-93,	13:33:01,	250200,	-0.056325
0C72E0C1,	A1DE,	25-JAN-93,	14:03:01,	252000,	-0.062662
0C72E841,	A1DF,	25-JAN-93,	14:33:01,	253800,	-0.061957
0C72F0C1,	A1DE,	25-JAN-93,	15:03:01,	255600,	-0.062662
0C72F841,	A1E4,	25-JAN-93,	15:33:01,	257400,	-0.058437
0C7300C1,	A1E9,	25-JAN-93,	16:03:01,	259200,	-0.054917
0C730841,	A1EF,	25-JAN-93,	16:33:01,	261000,	-0.050692
0C7310C1,	A1F8,	25-JAN-93,	17:03:01,	262800,	-0.044356
0C731841,	A1FE,	25-JAN-93,	17:33:01,	264600,	-0.040132
0C7320C1,	A206,	25-JAN-93,	18:03:01,	266400,	-0.034499
0C732841,	A20E,	25-JAN-93,	18:33:01,	268200,	-0.028867
0C7330C1,	A21B,	25-JAN-93,	19:03:01,	270000,	-0.019714
0C733841,	A220,	25-JAN-93,	19:33:01,	271800,	-0.016193
0C7340C1,	A228,	25-JAN-93,	20:03:01,	273600,	-0.010561
0C734841,	A234,	25-JAN-93,	20:33:01,	275400,	-0.0021122
0C7350C1,	A241,	25-JAN-93,	21:03:01,	277200,	0.0070406
0C735841,	A24A,	25-JAN-93,	21:33:01,	279000,	0.013377
0C7360C1,	A266,	25-JAN-93,	22:03:01,	280800,	0.033091
0C736841,	A275,	25-JAN-93,	22:33:01,	282600,	0.043652
0C7370C1,	FEDE,	25-JAN-93,	23:03:01,	284400,	16.700
737841,	A2B4,	25-JAN-93,	23:33:01,	286200,	0.088008
7400C1,	A2D1,	26-JAN-93,	00:03:01,	288000,	0.10843
0C740841,	FEDE,	26-JAN-93,	00:33:01,	289800,	16.700
0C7410C1,	FEDE,	26-JAN-93,	01:03:01,	291600,	16.700
0C741841,	FEDE,	26-JAN-93,	01:33:01,	293400,	16.700
0C7420C1,	FEDE,	26-JAN-93,	02:03:01,	295200,	16.700

0C742841,	FEDE,	26-JAN-93,	02:33:01,	297000,	16.700
0C7430C1,	FEDE,	26-JAN-93,	03:03:01,	298800,	16.700
0C743841,	FEDE,	26-JAN-93,	03:33:01,	300600,	16.700
7440C1,	FEDE,	26-JAN-93,	04:03:01,	302400,	16.700
744841,	FEDE,	26-JAN-93,	04:33:01,	304200,	16.700
0C7450C1,	FEDE,	26-JAN-93,	05:03:01,	306000,	16.700
0C745841,	FEDE,	26-JAN-93,	05:33:01,	307800,	16.700
0C7460C1,	FEDE,	26-JAN-93,	06:03:01,	309600,	16.700
0C746841,	FEDE,	26-JAN-93,	06:33:01,	311400,	16.700
0C7470C1,	FEDE,	26-JAN-93,	07:03:01,	313200,	16.700
0C747841,	FEDE,	26-JAN-93,	07:33:01,	315000,	16.700
0C7480C1,	FEDE,	26-JAN-93,	08:03:01,	316800,	16.700
0C748841,	FEDE,	26-JAN-93,	08:33:01,	318600,	16.700
0C7490C1,	FEDE,	26-JAN-93,	09:03:01,	320400,	16.700
0C749841,	FEDE,	26-JAN-93,	09:33:01,	322200,	16.700
0C74A0C1,	FEDE,	26-JAN-93,	10:03:01,	324000,	16.700
0C74A841,	FEDE,	26-JAN-93,	10:33:01,	325800,	16.700
0C74B0C1,	FEDE,	26-JAN-93,	11:03:01,	327600,	16.700
0C74B841,	FEDE,	26-JAN-93,	11:33:01,	329400,	16.700
0C74C0C1,	FEDE,	26-JAN-93,	12:03:01,	331200,	16.700
0C74C841,	FEDE,	26-JAN-93,	12:33:01,	333000,	16.700
0C74D0C1,	FEDE,	26-JAN-93,	13:03:01,	334800,	16.700
0C74D841,	FEDE,	26-JAN-93,	13:33:01,	336600,	16.700
0C74E0C1,	FEDE,	26-JAN-93,	14:03:01,	338400,	16.700
0C74E841,	FEDE,	26-JAN-93,	14:33:01,	340200,	16.700
0C74F0C1,	FEDE,	26-JAN-93,	15:03:01,	342000,	16.700
0C74F841,	FEDE,	26-JAN-93,	15:33:01,	343800,	16.700
0C7500C1,	FEDE,	26-JAN-93,	16:03:01,	345600,	16.700
750841,	A1CF,	26-JAN-93,	16:33:01,	347400,	-0.073222
7510C1,	FEDE,	26-JAN-93,	17:03:01,	349200,	16.700
751841,	FEDE,	26-JAN-93,	17:33:01,	351000,	16.700
0C7520C1,	FEDE,	26-JAN-93,	18:03:01,	352800,	16.700
0C752841,	FEDE,	26-JAN-93,	18:33:01,	354600,	16.700
0C7530C1,	FEDE,	26-JAN-93,	19:03:01,	356400,	16.700
0C753841,	FEDE,	26-JAN-93,	19:33:01,	358200,	16.700
0C7540C1,	FEDE,	26-JAN-93,	20:03:01,	360000,	16.700
0C754841,	FEDE,	26-JAN-93,	20:33:01,	361800,	16.700
0C7550C1,	FEDE,	26-JAN-93,	21:03:01,	363600,	16.700
0C755841,	FEDE,	26-JAN-93,	21:33:01,	365400,	16.700
0C7560C1,	FEDE,	26-JAN-93,	22:03:01,	367200,	16.700
0C756841,	FEDE,	26-JAN-93,	22:33:01,	369000,	16.700
0C7570C1,	FEDE,	26-JAN-93,	23:03:01,	370800,	16.700
0C757841,	FEDE,	26-JAN-93,	23:33:01,	372600,	16.700
0C7600C1,	FEDE,	27-JAN-93,	00:03:01,	374400,	16.700
0C760841,	FEDE,	27-JAN-93,	00:33:01,	376200,	16.700
0C7610C1,	FEDE,	27-JAN-93,	01:03:01,	378000,	16.700
0C761841,	FEDE,	27-JAN-93,	01:33:01,	379800,	16.700
0C7620C1,	FEDE,	27-JAN-93,	02:03:01,	381600,	16.700
0C762841,	FEDE,	27-JAN-93,	02:33:01,	383400,	16.700
0C7630C1,	FEDE,	27-JAN-93,	03:03:01,	385200,	16.700
0C763841,	FEDE,	27-JAN-93,	03:33:01,	387000,	16.700
0C7640C1,	FEDE,	27-JAN-93,	04:03:01,	388800,	16.700
0C764841,	FEDE,	27-JAN-93,	04:33:01,	390600,	16.700
0C7650C1,	FEDE,	27-JAN-93,	05:03:01,	392400,	16.700
765841,	FEDE,	27-JAN-93,	05:33:01,	394200,	16.700
7660C1,	FEDE,	27-JAN-93,	06:03:01,	396000,	16.700
0C766841,	FEDE,	27-JAN-93,	06:33:01,	397800,	16.700
0C7670C1,	FEDE,	27-JAN-93,	07:03:01,	399600,	16.700
0C767841,	FEDE,	27-JAN-93,	07:33:01,	401400,	16.700
0C7680C1,	FEDE,	27-JAN-93,	08:03:01,	403200,	16.700

0C768841,	FEDE,	27-JAN-93,	08:33:01,	405000,	16.700
0C7690C1,	FEDE,	27-JAN-93,	09:03:01,	406800,	16.700
0C769841,	A0EF,	27-JAN-93,	09:33:01,	408600,	-0.23093
0C76A0C1,	A0E5,	27-JAN-93,	10:03:01,	410400,	-0.23797
0C76A841,	A0D9,	27-JAN-93,	10:33:01,	412200,	-0.24642
0C76B0C1,	A0D4,	27-JAN-93,	11:03:01,	414000,	-0.24994
0C76B841,	A0C9,	27-JAN-93,	11:33:01,	415800,	-0.25769
0C76C0C1,	A0C6,	27-JAN-93,	12:03:01,	417600,	-0.25980
0C76C841,	A0BE,	27-JAN-93,	12:33:01,	419400,	-0.26543
0C76D0C1,	A0B9,	27-JAN-93,	13:03:01,	421200,	-0.26995
0C76D841,	A0B6,	27-JAN-93,	13:33:01,	423000,	-0.27106
0C76E0C1,	A0B0,	27-JAN-93,	14:03:01,	424800,	-0.27529
0C76E841,	A0AE,	27-JAN-93,	14:33:01,	426600,	-0.27670
0C76F0C1,	A0AC,	27-JAN-93,	15:03:01,	428400,	-0.27810
0C76F841,	A0AC,	27-JAN-93,	15:33:01,	430200,	-0.27810
0C7700C1,	A0AB,	27-JAN-93,	16:03:01,	432000,	-0.27881
0C770841,	A0A7,	27-JAN-93,	16:33:01,	433800,	-0.28162
0C7710C1,	A0A2,	27-JAN-93,	17:03:01,	435600,	-0.28515
0C771841,	A09F,	27-JAN-93,	17:33:01,	437400,	-0.28726
0C7720C1,	A098,	27-JAN-93,	18:03:01,	439200,	-0.29219
0C772841,	A095,	27-JAN-93,	18:33:01,	441000,	-0.29430
0C7730C1,	A090,	27-JAN-93,	19:03:01,	442800,	-0.29782
0C773841,	FEDE,	27-JAN-93,	19:33:01,	444600,	16.700
0C7740C1,	FEDE,	27-JAN-93,	20:03:01,	446400,	16.700
0C774841,	FEDE,	27-JAN-93,	20:33:01,	448200,	16.700
0C7750C1,	FEDE,	27-JAN-93,	21:03:01,	450000,	16.700
0C775841,	FEDE,	27-JAN-93,	21:33:01,	451800,	16.700
0C7760C1,	FEDE,	27-JAN-93,	22:03:01,	453600,	16.700
0C776841,	FEDE,	27-JAN-93,	22:33:01,	455400,	16.700
0C7770C1,	FEDE,	27-JAN-93,	23:03:01,	457200,	16.700
0C777841,	FEDE,	27-JAN-93,	23:33:01,	459000,	16.700
0C7800C1,	FEDE,	28-JAN-93,	00:03:01,	460800,	16.700
0C780841,	FEDE,	28-JAN-93,	00:33:01,	462600,	16.700
0C7810C1,	FEDE,	28-JAN-93,	01:03:01,	464400,	16.700
0C781841,	FEDE,	28-JAN-93,	01:33:01,	466200,	16.700
0C7820C1,	FEDE,	28-JAN-93,	02:03:01,	468000,	16.700
0C782841,	FEDE,	28-JAN-93,	02:33:01,	469800,	16.700
0C7830C1,	FEDE,	28-JAN-93,	03:03:01,	471600,	16.700
0C783841,	FEDE,	28-JAN-93,	03:33:01,	473400,	16.700
0C7840C1,	FEDE,	28-JAN-93,	04:03:01,	475200,	16.700
0C784841,	FEDE,	28-JAN-93,	04:33:01,	477000,	16.700
0C7850C1,	FEDE,	28-JAN-93,	05:03:01,	478800,	16.700
0C785841,	FEDE,	28-JAN-93,	05:33:01,	480600,	16.700
0C7860C1,	FEDE,	28-JAN-93,	06:03:01,	482400,	16.700
0C786841,	FEDE,	28-JAN-93,	06:33:01,	484200,	16.700
0C7870C1,	FEDE,	28-JAN-93,	07:03:01,	486000,	16.700
0C787841,	FEDE,	28-JAN-93,	07:33:01,	487800,	16.700
0C7880C1,	FEDE,	28-JAN-93,	08:03:01,	489600,	16.700
0C788841,	FEDE,	28-JAN-93,	08:33:01,	491400,	16.700
0C7890C1,	9FCC,	28-JAN-93,	09:03:01,	493200,	-0.43581
0C789841,	9FC7,	28-JAN-93,	09:33:01,	495000,	-0.43933
0C78A0C1,	9FC4,	28-JAN-93,	10:03:01,	496800,	-0.44145
0C78A841,	9FC2,	28-JAN-93,	10:33:01,	498600,	-0.44286
0C78B0C1,	9FC1,	28-JAN-93,	11:03:01,	500400,	-0.44356
0C78B841,	9FC5,	28-JAN-93,	11:33:01,	502200,	-0.44074
0C78C0C1,	9FC7,	28-JAN-93,	12:03:01,	504000,	-0.43933
0C78C841,	9FD8,	28-JAN-93,	12:33:01,	505800,	-0.42737
0C78D0C1,	9FE3,	28-JAN-93,	13:03:01,	507600,	-0.41962
0C78D841,	9FF1,	28-JAN-93,	13:33:01,	509400,	-0.40976
0C78E0C1,	A002,	28-JAN-93,	14:03:01,	511200,	-0.39780

0C78E841,	A012,	28-JAN-93,	14:33:01,	513000,	-0.38653
0C78F0C1,	A026,	28-JAN-93,	15:03:01,	514800,	-0.37245
8F841,	A035,	28-JAN-93,	15:33:01,	516600,	-0.36189
900C1,	A044,	28-JAN-93,	16:03:01,	518400,	-0.35133
490841,	A053,	28-JAN-93,	16:33:01,	520200,	-0.34077
0C7910C1,	A05F,	28-JAN-93,	17:03:01,	522000,	-0.33232
0C791841,	A066,	28-JAN-93,	17:33:01,	523800,	-0.32739
0C7920C1,	A06A,	28-JAN-93,	18:03:01,	525600,	-0.32457
0C792841,	A06B,	28-JAN-93,	18:33:01,	527400,	-0.32387
0C7930C1,	A06C,	28-JAN-93,	19:03:01,	529200,	-0.32316
0C793841,	A06D,	28-JAN-93,	19:33:01,	531000,	-0.32246
0C7940C1,	A06B,	28-JAN-93,	20:03:01,	532800,	-0.32387
0C794841,	A066,	28-JAN-93,	20:33:01,	534600,	-0.32739
0C7950C1,	A05F,	28-JAN-93,	21:03:01,	536400,	-0.33232
0C795841,	A057,	28-JAN-93,	21:33:01,	538200,	-0.33795
0C7960C1,	A054,	28-JAN-93,	22:03:01,	540000,	-0.34006
0C796841,	A04F,	28-JAN-93,	22:33:01,	541800,	-0.34358
0C7970C1,	A04B,	28-JAN-93,	23:03:01,	543600,	-0.34640
0C797841,	A046,	28-JAN-93,	23:33:01,	545400,	-0.34992
0C7A00C1,	A03B,	29-JAN-93,	00:03:01,	547200,	-0.35766
0C7A0841,	A033,	29-JAN-93,	00:33:01,	549000,	-0.36330
0C7A10C1,	A02E,	29-JAN-93,	01:03:01,	550800,	-0.36682
0C7A1841,	A02C,	29-JAN-93,	01:33:01,	552600,	-0.36822
0C7A20C1,	A02D,	29-JAN-93,	02:03:01,	554400,	-0.36752
0C7A2841,	A030,	29-JAN-93,	02:33:01,	556200,	-0.36541
0C7A30C1,	A031,	29-JAN-93,	03:03:01,	558000,	-0.36470
0C7A3841,	A02F,	29-JAN-93,	03:33:01,	559800,	-0.36611
0C7A40C1,	A02B,	29-JAN-93,	04:03:01,	561600,	-0.36893
7A4841,	A02F,	29-JAN-93,	04:33:01,	563400,	-0.36611
7A50C1,	A02F,	29-JAN-93,	05:03:01,	565200,	-0.36611
0C7A5841,	A033,	29-JAN-93,	05:33:01,	567000,	-0.36330
0C7A60C1,	A033,	29-JAN-93,	06:03:01,	568800,	-0.36330
0C7A6841,	A035,	29-JAN-93,	06:33:01,	570600,	-0.36189
0C7A70C1,	A039,	29-JAN-93,	07:03:01,	572400,	-0.35907
0C7A7841,	A03C,	29-JAN-93,	07:33:01,	574200,	-0.35696
0C7A80C1,	A040,	29-JAN-93,	08:03:01,	576000,	-0.35414
0C7A8841,	A047,	29-JAN-93,	08:33:01,	577800,	-0.34921
0C7A90C1,	A062,	29-JAN-93,	09:03:01,	579600,	-0.33021
0C7A9841,	A065,	29-JAN-93,	09:33:01,	581400,	-0.32809
0C7AA0C1,	A06D,	29-JAN-93,	10:03:01,	583200,	-0.32246
0C7AA841,	A079,	29-JAN-93,	10:33:01,	585000,	-0.31401
0C7AB0C1,	A082,	29-JAN-93,	11:03:01,	586800,	-0.30768
0C7AB841,	A08D,	29-JAN-93,	11:33:01,	588600,	-0.29993
0C7AC0C1,	A09B,	29-JAN-93,	12:03:01,	590400,	-0.29007
0C7AC841,	AOAC,	29-JAN-93,	12:33:01,	592200,	-0.27810
0C7AD0C1,	AOBE,	29-JAN-93,	13:03:01,	594000,	-0.26543
0C7AD841,	A0CE,	29-JAN-93,	13:33:01,	595800,	-0.25417
0C7AE0C1,	AODF,	29-JAN-93,	14:03:01,	597600,	-0.24220
0C7AE841,	A0F0,	29-JAN-93,	14:33:01,	599400,	-0.23023
0C7AF0C1,	A102,	29-JAN-93,	15:03:01,	601200,	-0.21756
0C7AF841,	A113,	29-JAN-93,	15:33:01,	603000,	-0.20559
0C7B00C1,	A121,	29-JAN-93,	16:03:01,	604800,	-0.19573
0C7B0841,	A132,	29-JAN-93,	16:33:01,	606600,	-0.18376
0C7B10C1,	A140,	29-JAN-93,	17:03:01,	608400,	-0.17390
C7B1841,	A14A,	29-JAN-93,	17:33:01,	610200,	-0.16686
0C7B20C1,	A155,	29-JAN-93,	18:03:01,	612000,	-0.15912
0C7B2841,	A15B,	29-JAN-93,	18:33:01,	613800,	-0.15489
0C7B30C1,	A162,	29-JAN-93,	19:03:01,	615600,	-0.14997
0C7B3841,	A163,	29-JAN-93,	19:33:01,	617400,	-0.14926
0C7B40C1,	A163,	29-JAN-93,	20:03:01,	619200,	-0.14926

0C7B4841,	A160,	29-JAN-93,	20:33:01,	621000,	-0.15137
0C7B50C1,	A158,	29-JAN-93,	21:03:01,	622800,	-0.15701
0C7B5841,	A151,	29-JAN-93,	21:33:01,	624600,	-0.16193
7B60C1,	A146,	29-JAN-93,	22:03:01,	626400,	-0.16968
7B6841,	A13B,	29-JAN-93,	22:33:01,	628200,	-0.17742
0C7B70C1,	A12C,	29-JAN-93,	23:03:01,	630000,	-0.18798
0C7B7841,	A11B,	29-JAN-93,	23:33:01,	631800,	-0.19995
0C7C00C1,	A108,	30-JAN-93,	00:03:01,	633600,	-0.21333
0C7C0841,	A0F7,	30-JAN-93,	00:33:01,	635400,	-0.22530
0C7C10C1,	A0E6,	30-JAN-93,	01:03:01,	637200,	-0.23727
0C7C1841,	A0D5,	30-JAN-93,	01:33:01,	639000,	-0.24924
0C7C20C1,	A0C9,	30-JAN-93,	02:03:01,	640800,	-0.25769
0C7C2841,	AOBB,	30-JAN-93,	02:33:01,	642600,	-0.26754
0C7C30C1,	AOAC,	30-JAN-93,	03:03:01,	644400,	-0.27810
0C7C3841,	A0A3,	30-JAN-93,	03:33:01,	646200,	-0.28444
0C7C40C1,	A098,	30-JAN-93,	04:03:01,	648000,	-0.29219
0C7C4841,	A08B,	30-JAN-93,	04:33:01,	649800,	-0.30134
0C7C50C1,	A081,	30-JAN-93,	05:03:01,	651600,	-0.30838
0C7C5841,	A073,	30-JAN-93,	05:33:01,	653400,	-0.31824
0C7C60C1,	A069,	30-JAN-93,	06:03:01,	655200,	-0.32528
0C7C6841,	FEDE,	30-JAN-93,	06:33:01,	657000,	16.700
0C7C70C1,	FEDE,	30-JAN-93,	07:03:01,	658800,	16.700
0C7C7841,	A053,	30-JAN-93,	07:33:01,	660600,	-0.34077
0C7C80C1,	A04A,	30-JAN-93,	08:03:01,	662400,	-0.34710
0C7C8841,	A044,	30-JAN-93,	08:33:01,	664200,	-0.35133
0C7C90C1,	A03C,	30-JAN-93,	09:03:01,	666000,	-0.35696
0C7C9841,	A03B,	30-JAN-93,	09:33:01,	667800,	-0.35766
0C7CA0C1,	A042,	30-JAN-93,	10:03:01,	669600,	-0.35274
C7CA841,	A04F,	30-JAN-93,	10:33:01,	671400,	-0.34358
C7CB0C1,	A05A,	30-JAN-93,	11:03:01,	673200,	-0.33584
0C7CB841,	A069,	30-JAN-93,	11:33:01,	675000,	-0.32528
0C7CC0C1,	A075,	30-JAN-93,	12:03:01,	676800,	-0.31683
0C7CC841,	A083,	30-JAN-93,	12:33:01,	678600,	-0.30697
0C7CD0C1,	A091,	30-JAN-93,	13:03:01,	680400,	-0.29711
0C7CD841,	A0A1,	30-JAN-93,	13:33:01,	682200,	-0.28585
0C7CE0C1,	A0B6,	30-JAN-93,	14:03:01,	684000,	-0.27106
0C7CE841,	A0C9,	30-JAN-93,	14:33:01,	685800,	-0.25769
0C7CF0C1,	AODC,	30-JAN-93,	15:03:01,	687600,	-0.24431
0C7CF841,	A0F1,	30-JAN-93,	15:33:01,	689400,	-0.22952
0C7D00C1,	A101,	30-JAN-93,	16:03:01,	691200,	-0.21826
0C7D0841,	A114,	30-JAN-93,	16:33:01,	693000,	-0.20488
0C7D10C1,	A124,	30-JAN-93,	17:03:01,	694800,	-0.19362
0C7D1841,	A12F,	30-JAN-93,	17:33:01,	696600,	-0.18587
0C7D20C1,	A137,	30-JAN-93,	18:03:01,	698400,	-0.18024
0C7D2841,	A13B,	30-JAN-93,	18:33:01,	700200,	-0.17742
0C7D30C1,	A13A,	30-JAN-93,	19:03:01,	702000,	-0.17813
0C7D3841,	A138,	30-JAN-93,	19:33:01,	703800,	-0.17954
0C7D40C1,	A132,	30-JAN-93,	20:03:01,	705600,	-0.18376
0C7D4841,	A125,	30-JAN-93,	20:33:01,	707400,	-0.19291
0C7D50C1,	A115,	30-JAN-93,	21:03:01,	709200,	-0.20418
0C7D5841,	A105,	30-JAN-93,	21:33:01,	711000,	-0.21544
0C7D60C1,	AOEF,	30-JAN-93,	22:03:01,	712800,	-0.23093
0C7D6841,	AODB,	30-JAN-93,	22:33:01,	714600,	-0.24501
0C7D70C1,	A0C5,	30-JAN-93,	23:03:01,	716400,	-0.26050
C7D7841,	FEDE,	30-JAN-93,	23:33:01,	718200,	16.700
0C7E00C1,	FEDE,	31-JAN-93,	00:03:01,	720000,	16.700
0C7E0841,	FEDE,	31-JAN-93,	00:33:01,	721800,	16.700
0C7E10C1,	FEDE,	31-JAN-93,	01:03:01,	723600,	16.700
0C7E1841,	FEDE,	31-JAN-93,	01:33:01,	725400,	16.700
0C7E20C1,	FEDE,	31-JAN-93,	02:03:01,	727200,	16.700

0C828841,	9FB8,	01-FEB-93,	08:33:01,	837000,	-0.44990
0C8290C1,	9FA6,	01-FEB-93,	09:03:01,	838800,	-0.46257
0C829841,	9F9D,	01-FEB-93,	09:33:01,	840600,	-0.46891
0C82A0C1,	9F98,	01-FEB-93,	10:03:01,	842400,	-0.47243
0C82A841,	9F93,	01-FEB-93,	10:33:01,	844200,	-0.47595
0C82B0C1,	9F94,	01-FEB-93,	11:03:01,	846000,	-0.47524
0C82B841,	9F9B,	01-FEB-93,	11:33:01,	847800,	-0.47031
0C82C0C1,	9FA8,	01-FEB-93,	12:03:01,	849600,	-0.46116
0C82C841,	9FBA,	01-FEB-93,	12:33:01,	851400,	-0.44849
0C82D0C1,	9FCF,	01-FEB-93,	13:03:01,	853200,	-0.43370
0C82D841,	9FE4,	01-FEB-93,	13:33:01,	855000,	-0.41892
0C82E0C1,	9FF9,	01-FEB-93,	14:03:01,	856800,	-0.40413
0C82E841,	A014,	01-FEB-93,	14:33:01,	858600,	-0.38512
0C82F0C1,	A02C,	01-FEB-93,	15:03:01,	860400,	-0.36822
0C82F841,	A045,	01-FEB-93,	15:33:01,	862200,	-0.35062
0C8300C1,	A062,	01-FEB-93,	16:03:01,	864000,	-0.33021
0C830841,	A078,	01-FEB-93,	16:33:01,	865800,	-0.31472
0C8310C1,	A095,	01-FEB-93,	17:03:01,	867600,	-0.29430
0C831841,	AOAC,	01-FEB-93,	17:33:01,	869400,	-0.27810
0C8320C1,	A0C3,	01-FEB-93,	18:03:01,	871200,	-0.26191
0C832841,	AODB,	01-FEB-93,	18:33:01,	873000,	-0.24501
0C8330C1,	A0F2,	01-FEB-93,	19:03:01,	874800,	-0.22882
0C833841,	A108,	01-FEB-93,	19:33:01,	876600,	-0.21333
0C8340C1,	A118,	01-FEB-93,	20:03:01,	878400,	-0.20207
0C834841,	A128,	01-FEB-93,	20:33:01,	880200,	-0.19080
0C8350C1,	A136,	01-FEB-93,	21:03:01,	882000,	-0.18094
0C835841,	A141,	01-FEB-93,	21:33:01,	883800,	-0.17320
0C8360C1,	A141,	01-FEB-93,	22:03:01,	885600,	-0.17320
0C836841,	A13E,	01-FEB-93,	22:33:01,	887400,	-0.17531
0C8370C1,	A137,	01-FEB-93,	23:03:01,	889200,	-0.18024
0C837841,	A12A,	01-FEB-93,	23:33:01,	891000,	-0.18939
0C8400C1,	A11A,	02-FEB-93,	00:03:01,	892800,	-0.20066
0C840841,	A102,	02-FEB-93,	00:33:01,	894600,	-0.21756
0C8410C1,	FEDE,	02-FEB-93,	01:03:01,	896400,	16.700
0C841841,	FEDE,	02-FEB-93,	01:33:01,	898200,	16.700
0C8420C1,	FEDE,	02-FEB-93,	02:03:01,	900000,	16.700
0C842841,	FEDE,	02-FEB-93,	02:33:01,	901800,	16.700
0C8430C1,	FEDE,	02-FEB-93,	03:03:01,	903600,	16.700
0C843841,	FEDE,	02-FEB-93,	03:33:01,	905400,	16.700
0C8440C1,	FEDE,	02-FEB-93,	04:03:01,	907200,	16.700
0C844841,	FEDE,	02-FEB-93,	04:33:01,	909000,	16.700
0C8450C1,	FEDE,	02-FEB-93,	05:03:01,	910800,	16.700
0C845841,	FEDE,	02-FEB-93,	05:33:01,	912600,	16.700
0C8460C1,	FEDE,	02-FEB-93,	06:03:01,	914400,	16.700
0C846841,	FEDE,	02-FEB-93,	06:33:01,	916200,	16.700
0C8470C1,	FEDE,	02-FEB-93,	07:03:01,	918000,	16.700
0C847841,	FEDE,	02-FEB-93,	07:33:01,	919800,	16.700
0C8480C1,	9F7C,	02-FEB-93,	08:03:01,	921600,	-0.49214
0C848841,	9F72,	02-FEB-93,	08:33:01,	923400,	-0.49918
0C8490C1,	9F70,	02-FEB-93,	09:03:01,	925200,	-0.50059
0C849841,	9F71,	02-FEB-93,	09:33:01,	927000,	-0.49988
0C84A0C1,	9F71,	02-FEB-93,	10:03:01,	928800,	-0.49988
0C84A841,	9F7A,	02-FEB-93,	10:33:01,	930600,	-0.49355
0C84B0C1,	9F85,	02-FEB-93,	11:03:01,	932400,	-0.48580
0C84B841,	9F99,	02-FEB-93,	11:33:01,	934200,	-0.47172
0C84C0C1,	9FE7,	02-FEB-93,	12:03:01,	936000,	-0.41680
0C84C841,	9FF6,	02-FEB-93,	12:33:01,	937800,	-0.40624
0C84D0C1,	A00A,	02-FEB-93,	13:03:01,	939600,	-0.39216
0C84D841,	A021,	02-FEB-93,	13:33:01,	941400,	-0.37597
0C84E0C1,	A039,	02-FEB-93,	14:03:01,	943200,	-0.35907

0C84E841,	A051,	02-FEB-93,	14:33:01,	945000,	-0.34217
0C84F0C1,	A06C,	02-FEB-93,	15:03:01,	946800,	-0.32316
0C84F841,	A086,	02-FEB-93,	15:33:01,	948600,	-0.30486
0C8500C1,	A0A4,	02-FEB-93,	16:03:01,	950400,	-0.28374
0C850841,	A0C2,	02-FEB-93,	16:33:01,	952200,	-0.26262
0C8510C1,	A0DE,	02-FEB-93,	17:03:01,	954000,	-0.24290
0C851841,	A0F8,	02-FEB-93,	17:33:01,	955800,	-0.22460
0C8520C1,	A115,	02-FEB-93,	18:03:01,	957600,	-0.20418
0C852841,	A12F,	02-FEB-93,	18:33:01,	959400,	-0.18587
0C8530C1,	A147,	02-FEB-93,	19:03:01,	961200,	-0.16897
0C853841,	A15C,	02-FEB-93,	19:33:01,	963000,	-0.15419
0C8540C1,	A172,	02-FEB-93,	20:03:01,	964800,	-0.13870
0C854841,	A184,	02-FEB-93,	20:33:01,	966600,	-0.12603
0C8550C1,	A197,	02-FEB-93,	21:03:01,	968400,	-0.11265
0C855841,	A1A7,	02-FEB-93,	21:33:01,	970200,	-0.10138
0C8560C1,	A1B5,	02-FEB-93,	22:03:01,	972000,	-0.091528
0C856841,	A1C6,	02-FEB-93,	22:33:01,	973800,	-0.079559
0C8570C1,	A1CF,	02-FEB-93,	23:03:01,	975600,	-0.073222
0C857841,	A1D2,	02-FEB-93,	23:33:01,	977400,	-0.071110
0C8600C1,	A1D1,	03-FEB-93,	00:03:01,	979200,	-0.071814
0C860841,	A1CB,	03-FEB-93,	00:33:01,	981000,	-0.076039
0C8610C1,	A1BC,	03-FEB-93,	01:03:01,	982800,	-0.086600
0C861841,	A1A6,	03-FEB-93,	01:33:01,	984600,	-0.10209
0C8620C1,	A18E,	03-FEB-93,	02:03:01,	986400,	-0.11899
0C862841,	FEDE,	03-FEB-93,	02:33:01,	988200,	16.700
0C8630C1,	A152,	03-FEB-93,	03:03:01,	990000,	-0.16123
0C863841,	FEDE,	03-FEB-93,	03:33:01,	991800,	16.700
0C8640C1,	FEDE,	03-FEB-93,	04:03:01,	993600,	16.700
0C864841,	FEDE,	03-FEB-93,	04:33:01,	995400,	16.700
0C8650C1,	FEDE,	03-FEB-93,	05:03:01,	997200,	16.700
0C865841,	FEDE,	03-FEB-93,	05:33:01,	999000,	16.700
0C8660C1,	FEDE,	03-FEB-93,	06:03:01,	1000800,	16.700
0C866841,	FEDE,	03-FEB-93,	06:33:01,	1002600,	16.700
0C8670C1,	FEDE,	03-FEB-93,	07:03:01,	1004400,	16.700
0C867841,	A056,	03-FEB-93,	07:33:01,	1006200,	-0.33865
0C8680C1,	A045,	03-FEB-93,	08:03:01,	1008000,	-0.35062
0C868841,	A031,	03-FEB-93,	08:33:01,	1009800,	-0.36470
0C8690C1,	A026,	03-FEB-93,	09:03:01,	1011600,	-0.37245
0C869841,	A01A,	03-FEB-93,	09:33:01,	1013400,	-0.38090
0C86A0C1,	A013,	03-FEB-93,	10:03:01,	1015200,	-0.38583
0C86A841,	A00C,	03-FEB-93,	10:33:01,	1017000,	-0.39075
0C86B0C1,	A009,	03-FEB-93,	11:03:01,	1018800,	-0.39287
0C86B841,	A00D,	03-FEB-93,	11:33:01,	1020600,	-0.39005
0C86C0C1,	A019,	03-FEB-93,	12:03:01,	1022400,	-0.38160
0C86C841,	A023,	03-FEB-93,	12:33:01,	1024200,	-0.37456
0C86D0C1,	A033,	03-FEB-93,	13:03:01,	1026000,	-0.36330
0C86D841,	A047,	03-FEB-93,	13:33:01,	1027800,	-0.34921
0C86E0C1,	A05D,	03-FEB-93,	14:03:01,	1029600,	-0.33373
0C86E841,	A076,	03-FEB-93,	14:33:01,	1031400,	-0.31612
0C86F0C1,	A092,	03-FEB-93,	15:03:01,	1033200,	-0.29641
0C86F841,	811B,	03-FEB-93,	15:33:01,	1035000,	-5.9676
0C8700C1,	807B,	03-FEB-93,	16:03:01,	1036800,	-6.0803
0C870841,	8075,	03-FEB-93,	16:33:01,	1038600,	-6.0845
0C8710C1,	808B,	03-FEB-93,	17:03:01,	1040400,	-6.0690
0C871841,	80FC,	03-FEB-93,	17:33:01,	1042200,	-5.9895
0C8720C1,	80FF,	03-FEB-93,	18:03:01,	1044000,	-5.9873
0C872841,	80FA,	03-FEB-93,	18:33:01,	1045800,	-5.9909
0C8730C1,	8106,	03-FEB-93,	19:03:01,	1047600,	-5.9824
0C873841,	8104,	03-FEB-93,	19:33:01,	1049400,	-5.9838
0C8740C1,	810B,	03-FEB-93,	20:03:01,	1051200,	-5.9789

APPENDIX I

SPECIFIC CAPACITY TESTS

****
DETERMINATION OF AQUIFER PROPERTIES BASED ON ANALYSIS OF
SPECIFIC CAPACITY TESTS
****

Copied from: Bradbury, K. R. and Rothschild, E. R., 1985. A computerized technique for estimating the hydraulic conductivity of aquifers from specific capacity data, Ground Water, 23(2), pp. 240-246.

WELL NUMBER 33G03 DEVELOPMENT

WELL DIAMETER (IN) = 2
STATIC WATER LEVEL (FT) = 0
DEPTH TO WATER DURING TEST (FT) = 1.41
THE LENGTH OF THE TEST (HR) = .12
PUMPING RATE (GPM) = 5.5
THICKNESS OF AQUIFER (FT) = 40
OPEN INTERVAL (FT) = 10
STORAGE COEFFICIENT = .25
WELL-LOSS COEFFICIENT = .75

SPECIFIC CAPACITY (GPM/FT) = 3.901021

TRANSMISSIVITY: (FT*FT/SEC) = 2.495184E-02
(FT*FT/DAY) = 2155.839
(GAL/DAY/FT) = 16126.75
USING A STORAGE COEFFICIENT = .25
NUMBER OF ITERATIONS = 3

HYDRAULIC CONDUCTIVITY: (FT/SEC) = 6.23796E-04
(FT/DAY) = 53.89598
(GAL/DAY/FT*FT) = 358.0589

WELL NUMBER 33G04 DEVELOPMENT

WELL DIAMETER (IN) = 2
STATIC WATER LEVEL (FT) = 0
DEPTH TO WATER DURING TEST (FT) = .42
THE LENGTH OF THE TEST (HR) = .16
PUMPING RATE (GPM) = 4.32
THICKNESS OF AQUIFER (FT) = 40
OPEN INTERVAL (FT) = 10
STORAGE COEFFICIENT = .25
L-LOSS COEFFICIENT = .75

SPECIFIC CAPACITY (GPM/FT) = 10.28742

TRANSMISSIVITY: (FT*FT/SEC) = 6.815735E-02
(FT*FT/DAY) = 5888.795
(GAL/DAY/FT) = 44051.13
USING A STORAGE COEFFICIENT = .25
NUMBER OF ITERATIONS = 3

HYDRAULIC CONDUCTIVITY: (FT/SEC) = 1.703934E-03
(FT/DAY) = 147.2199
(GAL/DAY/FT*FT) = 978.0579

WELL NUMBER 33G07 DEVELOPMENT

WELL DIAMETER (IN) = 2
STATIC WATER LEVEL (FT) = 0
DEPTH TO WATER DURING TEST (FT) = .37
THE LENGTH OF THE TEST (HR) = .15
PUMPING RATE (GPM) = 1.76
THICKNESS OF AQUIFER (FT) = 40
OPEN INTERVAL (FT) = 10
STORAGE COEFFICIENT = .25
WELL-LOSS COEFFICIENT = .75

SPECIFIC CAPACITY (GPM/FT) = 4.756905

TRANSMISSIVITY: (FT*FT/SEC) = .0307917
(FT*FT/DAY) = 2660.403
(GAL/DAY/FT) = 19901.14
USING A STORAGE COEFFICIENT = .25
NUMBER OF ITERATIONS = 3

HYDRAULIC CONDUCTIVITY: (FT/SEC) = 7.697925E-04
(FT/DAY) = 66.51007
(GAL/DAY/FT*FT) = 441.8609

WELL NUMBER 33G07. PURGING

WELL DIAMETER (IN) = 2
STATIC WATER LEVEL (FT) = 0
DEPTH TO WATER DURING TEST (FT) = .35
THE LENGTH OF THE TEST (HR) = .23
PUMPING RATE (GPM) = 1.6
THICKNESS OF AQUIFER (FT) = 40
OPEN INTERVAL (FT) = 10
STORAGE COEFFICIENT = .25
WELL-LOSS COEFFICIENT = .75

SPECIFIC CAPACITY (GPM/FT) = 4.571553

TRANSMISSIVITY: (FT*FT/SEC) = 2.991483E-02
(FT*FT/DAY) = 2584.641
(GAL/DAY/FT) = 19334.41
USING A STORAGE COEFFICIENT = .25

NUMBER OF ITERATIONS = 3

HYDRAULIC CONDUCTIVITY: (FT/SEC) = 7.478707E-04
(FT/DAY) = 64.61603
(GAL/DAY/FT*FT) = 429.2778

WELL NUMBER 33G15 DEVELOPMENT

WELL DIAMETER (IN) = 2
STATIC WATER LEVEL (FT) = 0
DEPTH TO WATER DURING TEST (FT) = 6.87
THE LENGTH OF THE TEST (HR) = .2
PUMPING RATE (GPM) = 4.23
THICKNESS OF AQUIFER (FT) = 40
OPEN INTERVAL (FT) = 10
STORAGE COEFFICIENT = .25
WELL-LOSS COEFFICIENT = .75

SPECIFIC CAPACITY (GPM/FT) = .6157265

TRANSMISSIVITY: (FT*FT/SEC) = 3.788376E-03
(FT*FT/DAY) = 327.3157
(GAL/DAY/FT) = 2448.485
USING A STORAGE COEFFICIENT = .25
NUMBER OF ITERATIONS = 3

HYDRAULIC CONDUCTIVITY: (FT/SEC) = 9.470939E-05
(FT/DAY) = 8.182891
(GAL/DAY/FT*FT) = 54.36319

WELL NUMBER 33G15 PURGING

WELL DIAMETER (IN) = 2
STATIC WATER LEVEL (FT) = 0
DEPTH TO WATER DURING TEST (FT) = 4.98
THE LENGTH OF THE TEST (HR) = 9.000001E-02
PUMPING RATE (GPM) = 2.6
THICKNESS OF AQUIFER (FT) = 40
OPEN INTERVAL (FT) = 10
STORAGE COEFFICIENT = .25
WELL-LOSS COEFFICIENT = .75

SPECIFIC CAPACITY (GPM/FT) = .522091

TRANSMISSIVITY: (FT*FT/SEC) = 3.120431E-03
(FT*FT/DAY) = 269.6053
(GAL/DAY/FT) = 2016.782
USING A STORAGE COEFFICIENT = .25
NUMBER OF ITERATIONS = 3

HYDRAULIC CONDUCTIVITY: (FT/SEC) = 7.8010783-05
(FT/DAY) = 6.740132

(GAL/DAY/FT*FT) = 44.77819

WELL NUMBER 33G18

WELL DIAMETER (IN) = 2
STATIC WATER LEVEL (FT) = 0
DEPTH TO WATER DURING TEST (FT) = 1.79
THE LENGTH OF THE TEST (HR) = .06
PUMPING RATE (GPM) = 2.83
THICKNESS OF AQUIFER (FT) = 300
OPEN INTERVAL (FT) = 10
STORAGE COEFFICIENT = .001
WELL-LOSS COEFFICIENT = .75

SPECIFIC CAPACITY (GPM/FT) = 1.581032

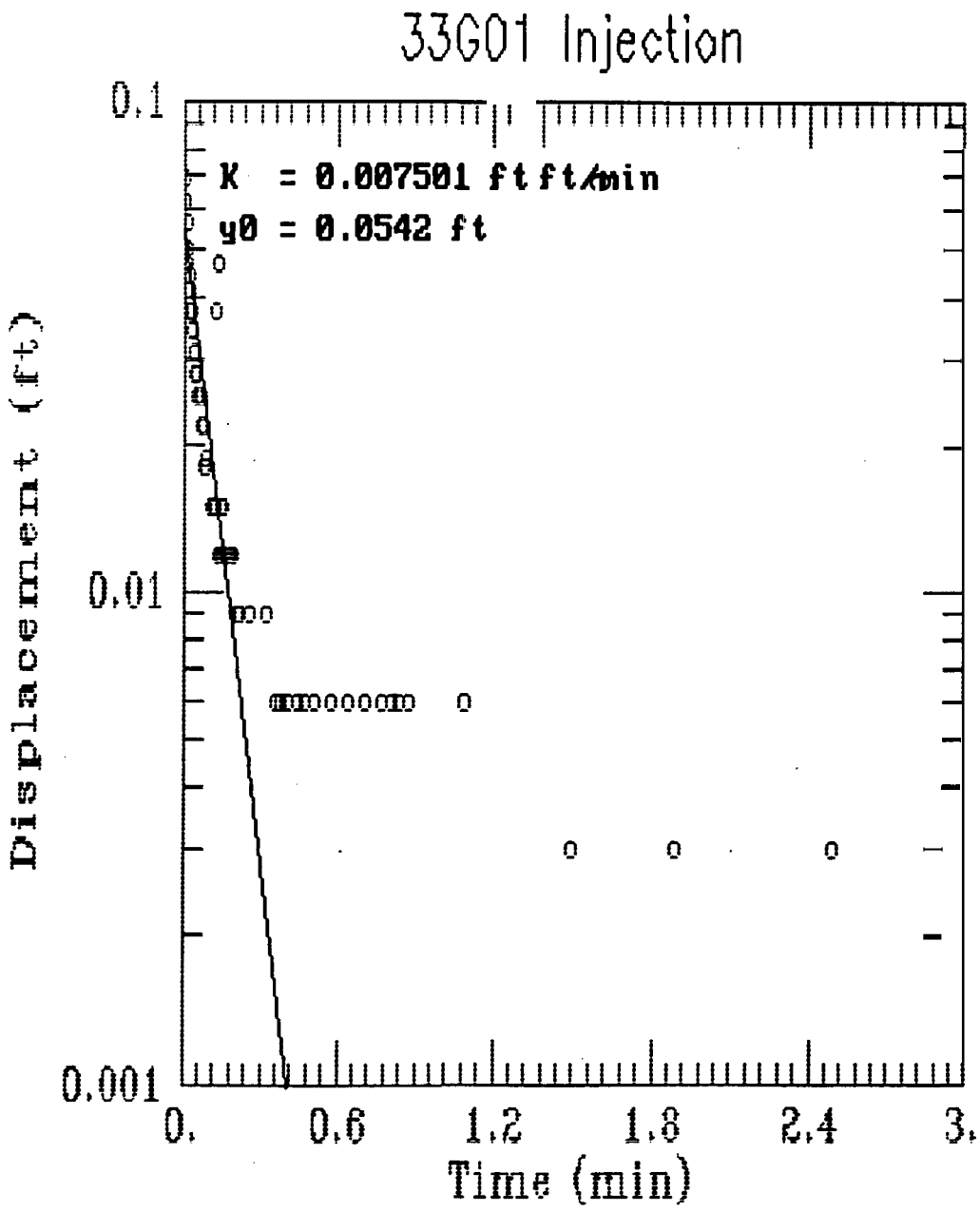
TRANSMISSIVITY: (FT*FT/SEC) = 9.335465E-02
(FT*FT/DAY) = 8065.842
(GAL/DAY/FT) = 60336.53
USING A STORAGE COEFFICIENT = .001
NUMBER OF ITERATIONS = 2

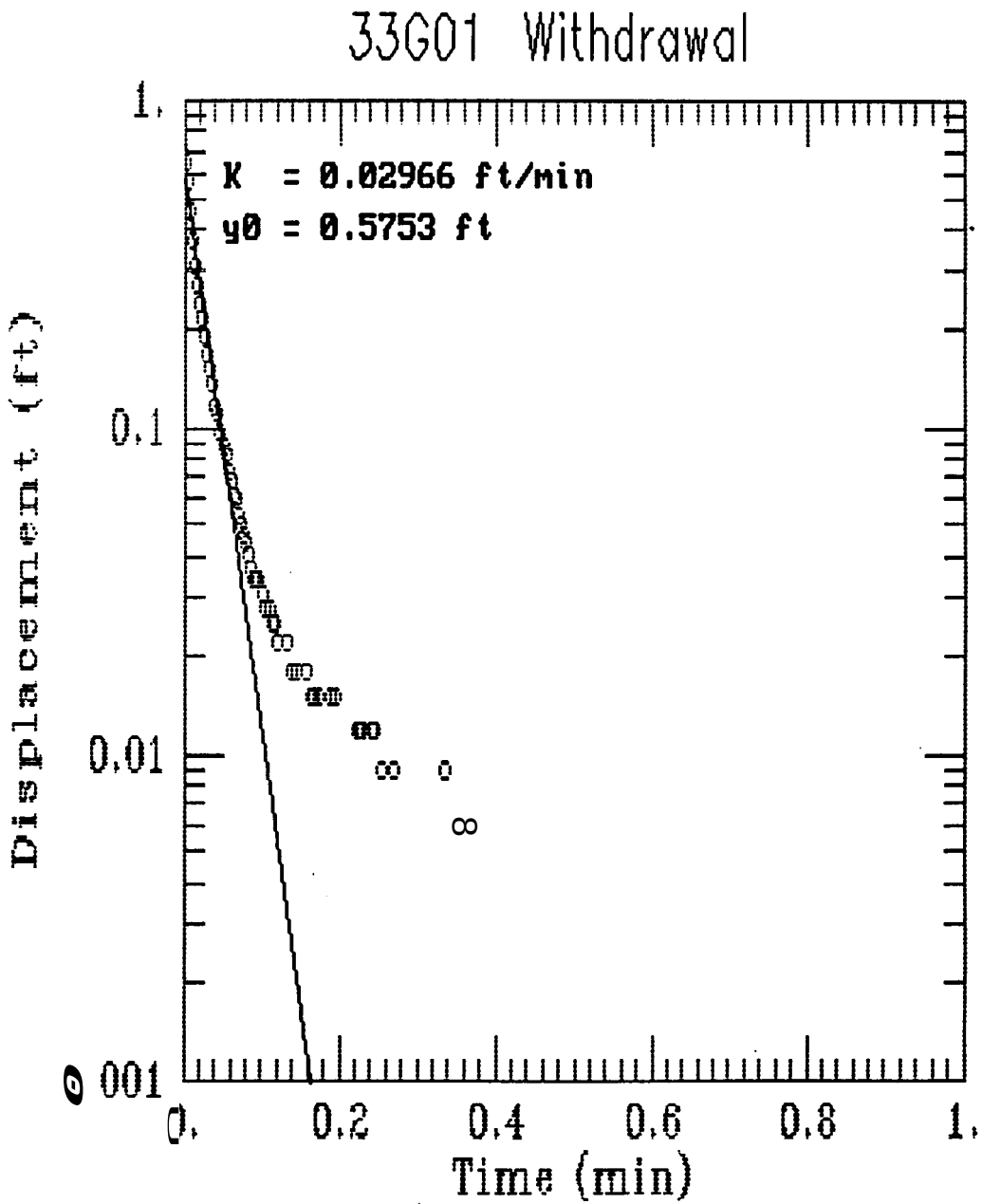
HYDRAULIC CONDUCTIVITY: (FT/SEC) = 3.111822E-04
(FT/DAY) = 26.88614
(GAL/DAY/FT*FT) = 178.6186

THE NUMBER OF WELLS IN THIS RECORD IS 7

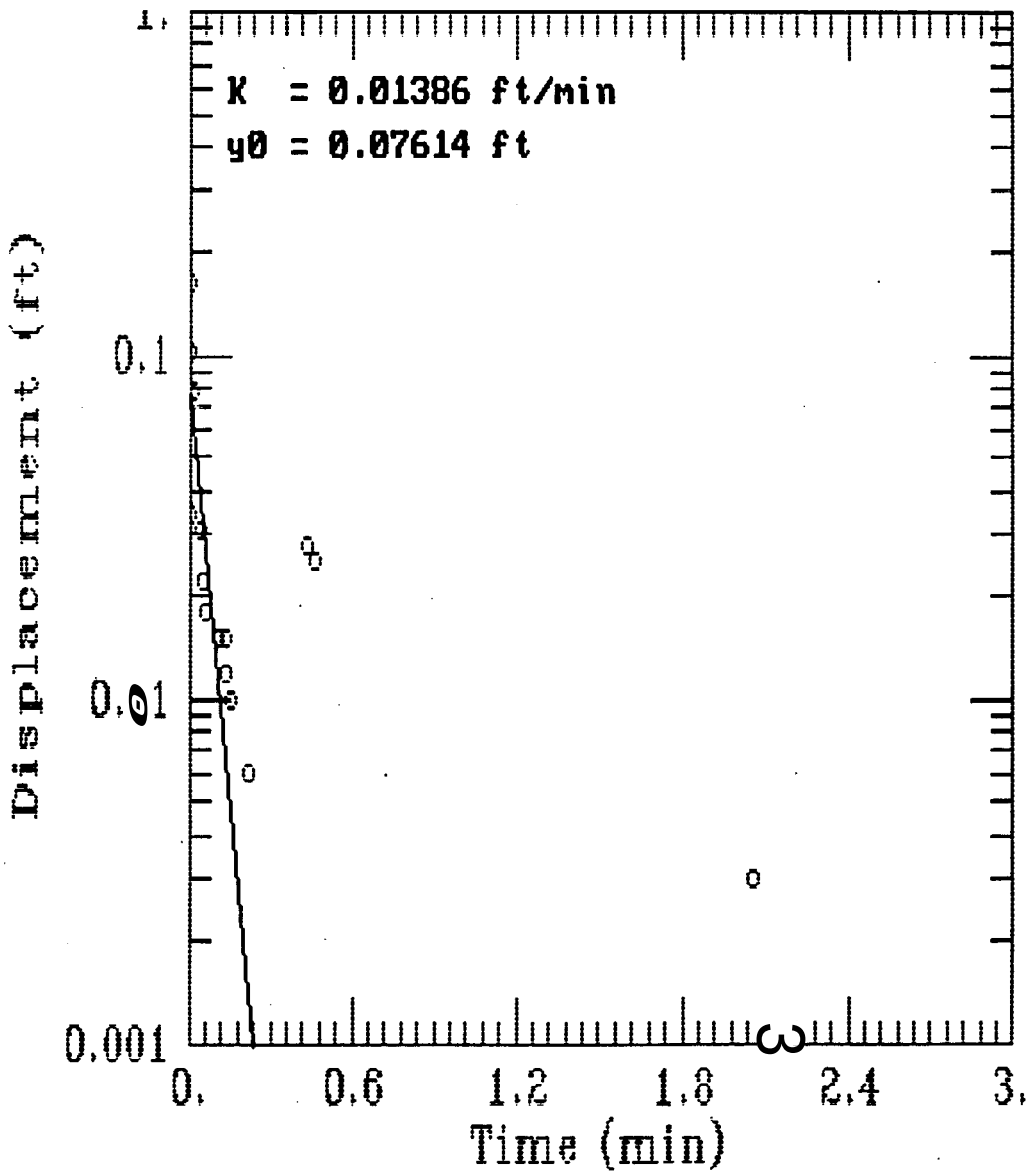
APPENDJX J

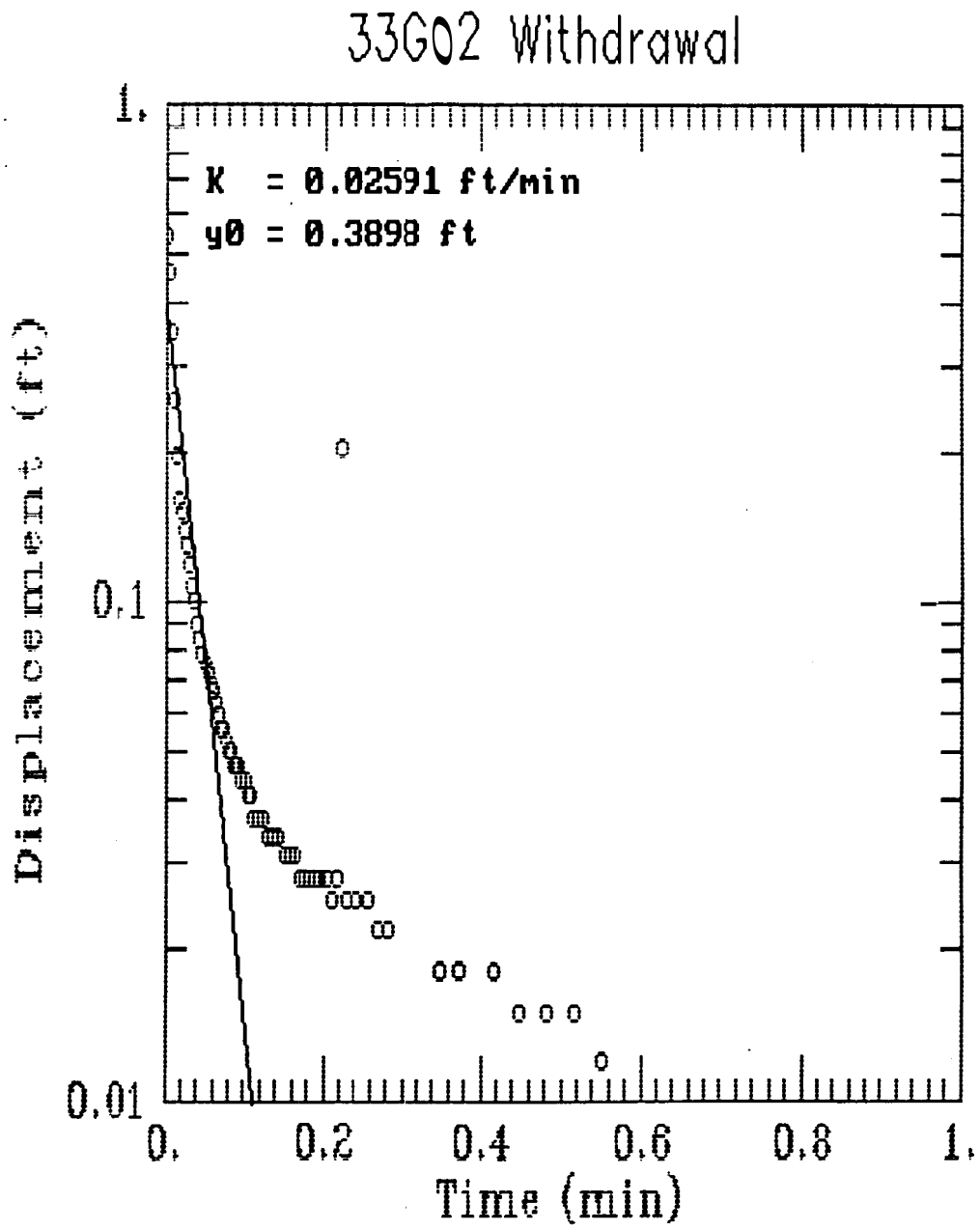
SLUG TESTS

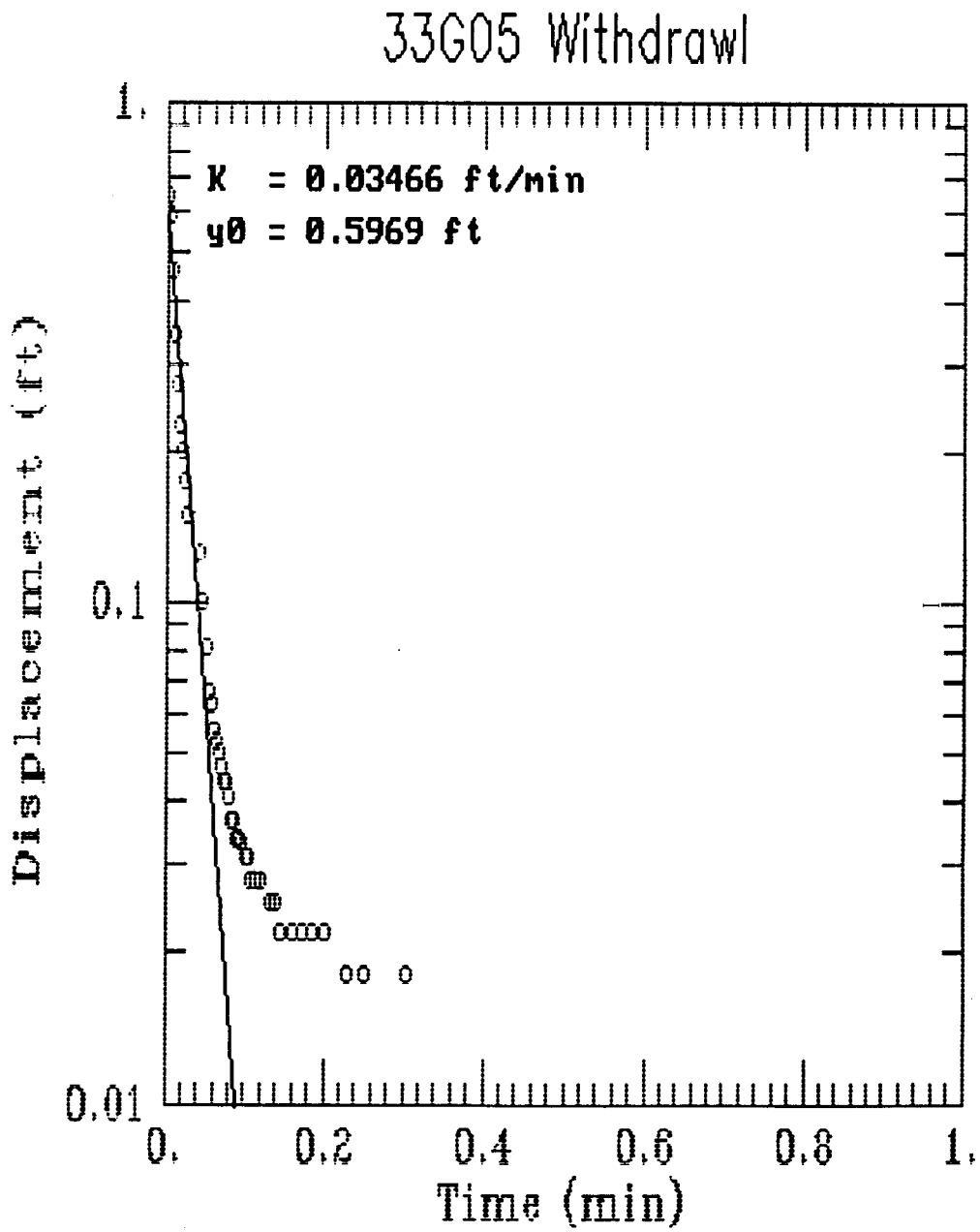

33G01 Injection
K = 0.007501 ft ft/min
y0 = 0.0542 ft
Displacement (ft)
0.1
0.01
0.001
0.
0.6
1.2
1.8
2.4
3.
Time (min)

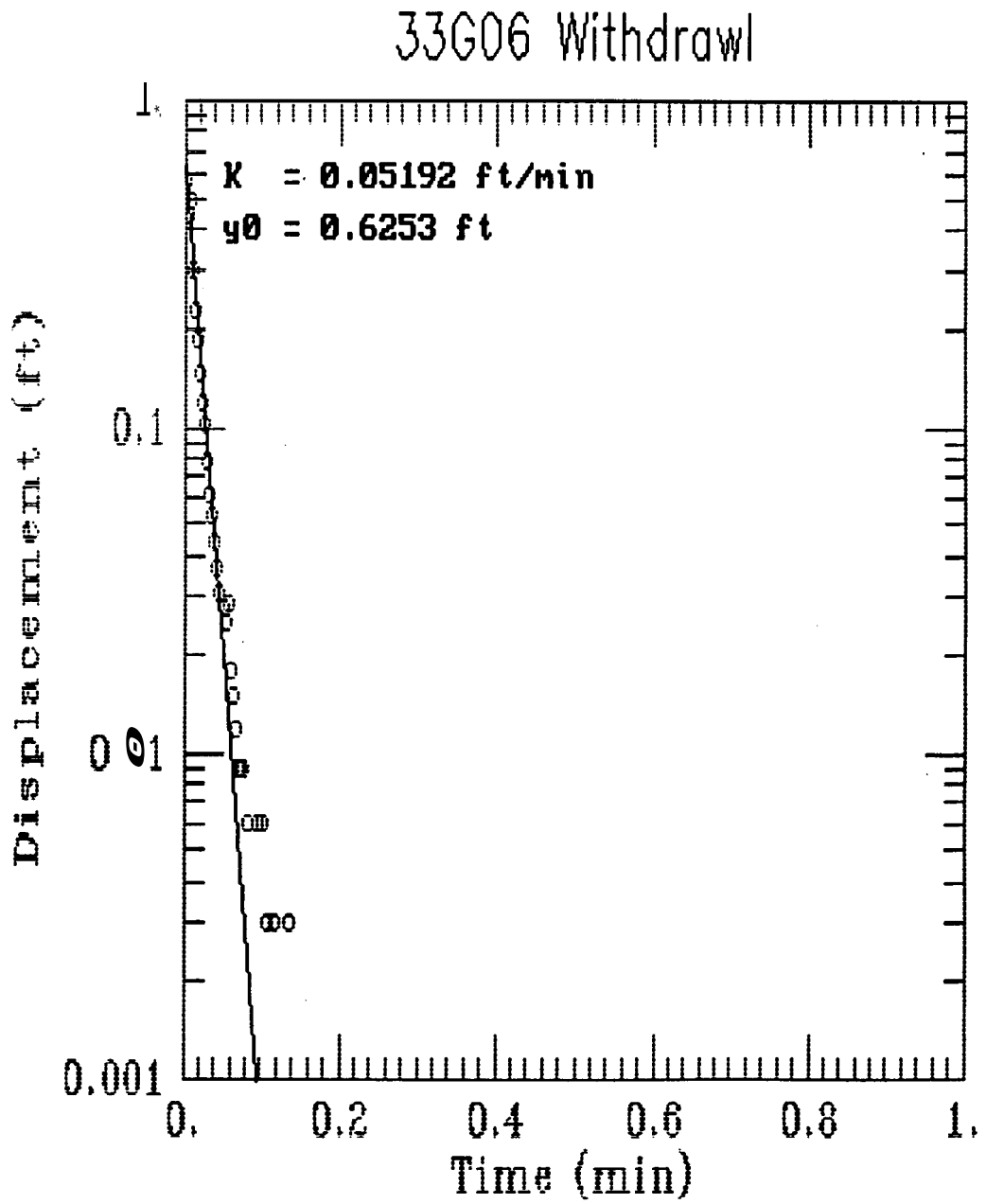

33G01 Withdrawal
K = 0.02966 ft/min
y0 = 0.5753 ft
Displacement (ft)
1.
0.1
0.01
0.001
0.
0.2
0.4
0.6
0.8
1.
Time (min)

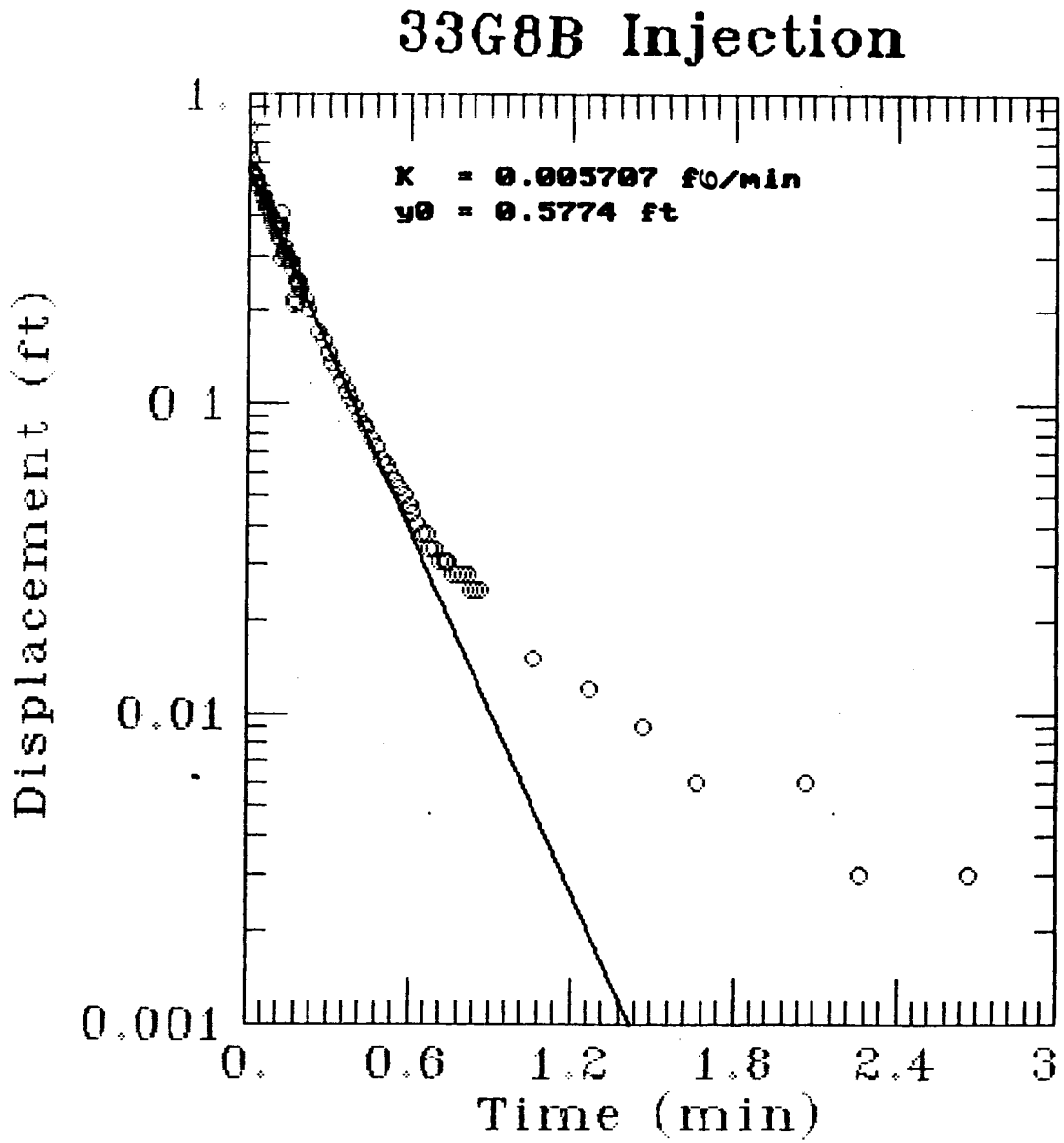
33G02 Injection



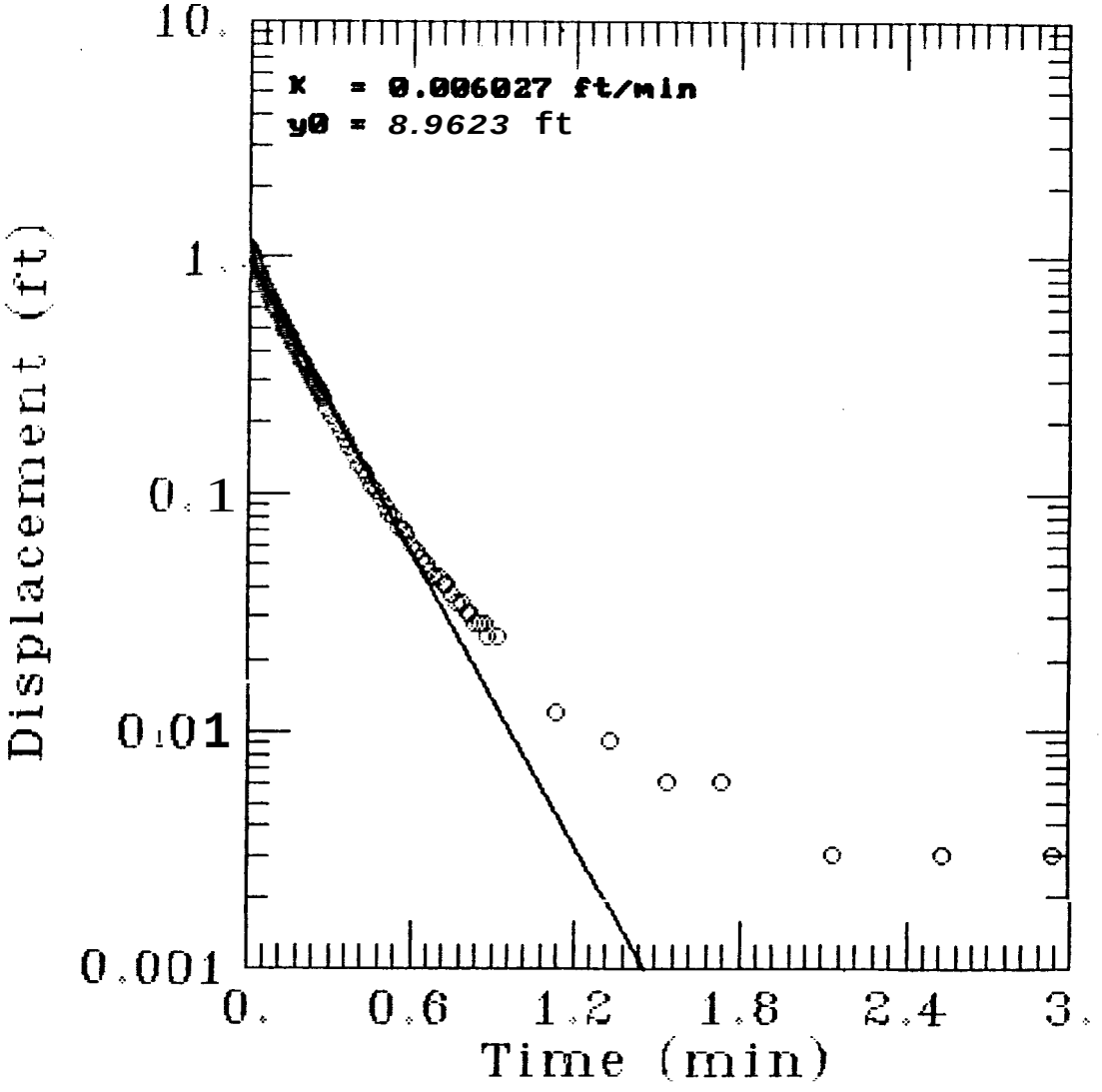

33G02 Withdrawal
K = 0.02591 ft/min
y0 = 0.3898 ft
Displacement (ft)
1.
0.1
0.01
0.
0.2
0.4
0.6
0.8
1.
Time (min)


33G05 Withdrawl
K = 0.03466 ft/min
y0 = 0.5969 ft
Displacement (ft)
1.
0.1
0.01
0.
0.2
0.4
0.6
0.8
1.
Time (min)

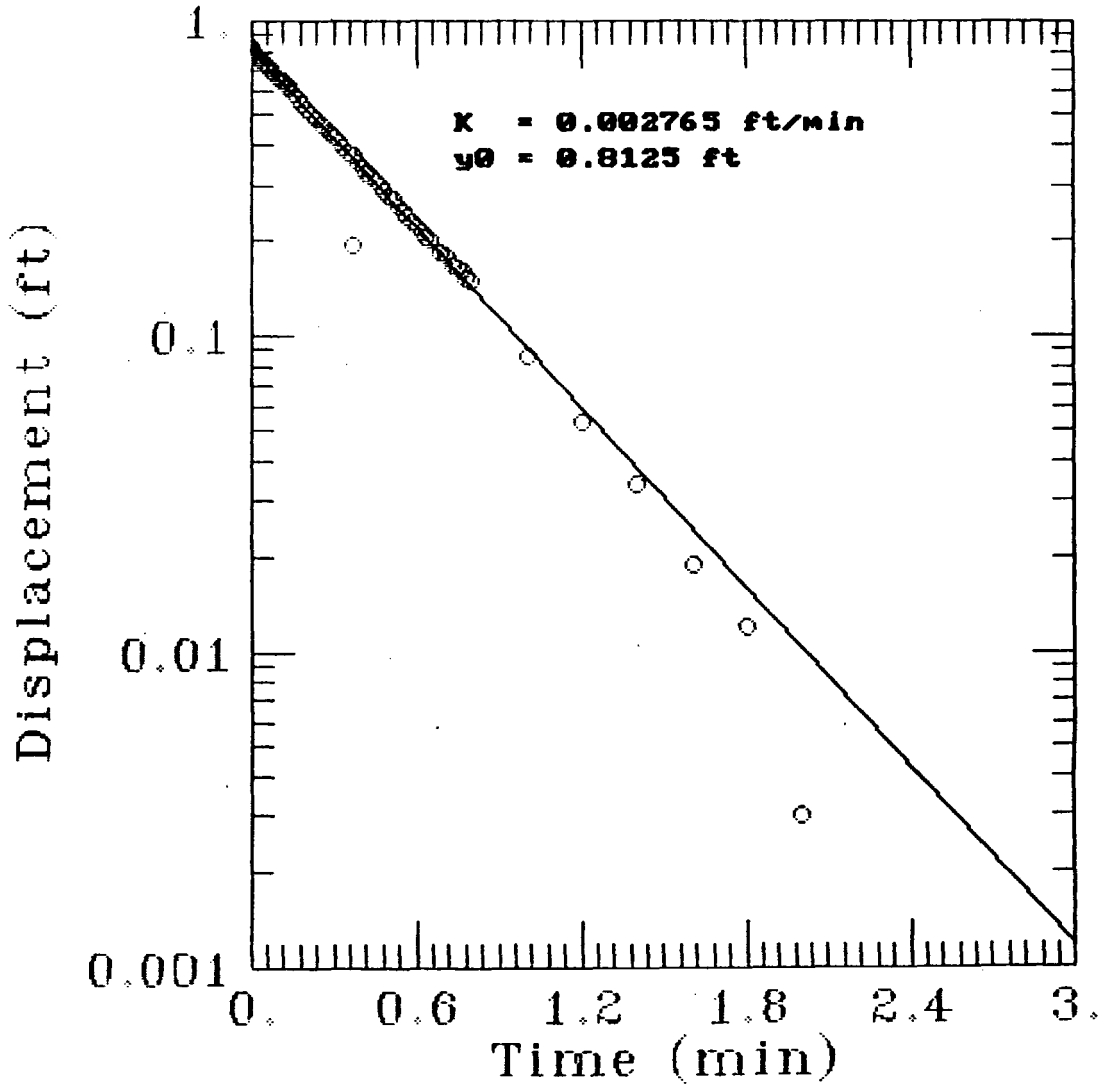

33G06 Withdrawl
K = 0.05192 ft/min
y0 = 0.6253 ft
Displacement (ft)
1.
0.1
0.01
0.001
0.
0.2
0.4
0.6
0.8
1.
Time (min)


33G8B Injection
K = 0.005707 ft/min
y0 = 0.5774 ft
Displacement (ft)
1.
0.1
0.01
0.001
0.
0.6
1.2
1.8
2.4
3
Time (min)

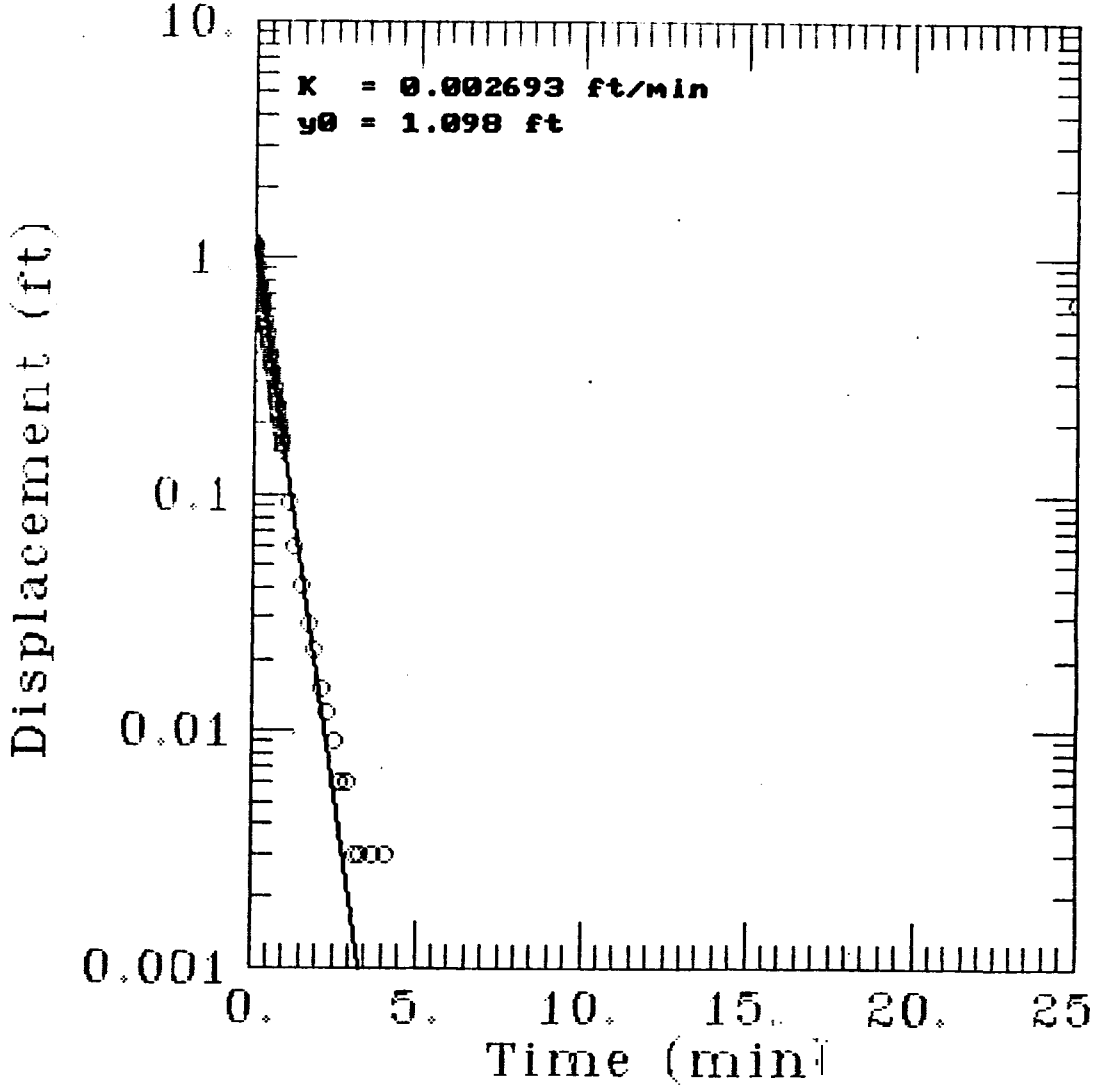
33G8B Withdrawal



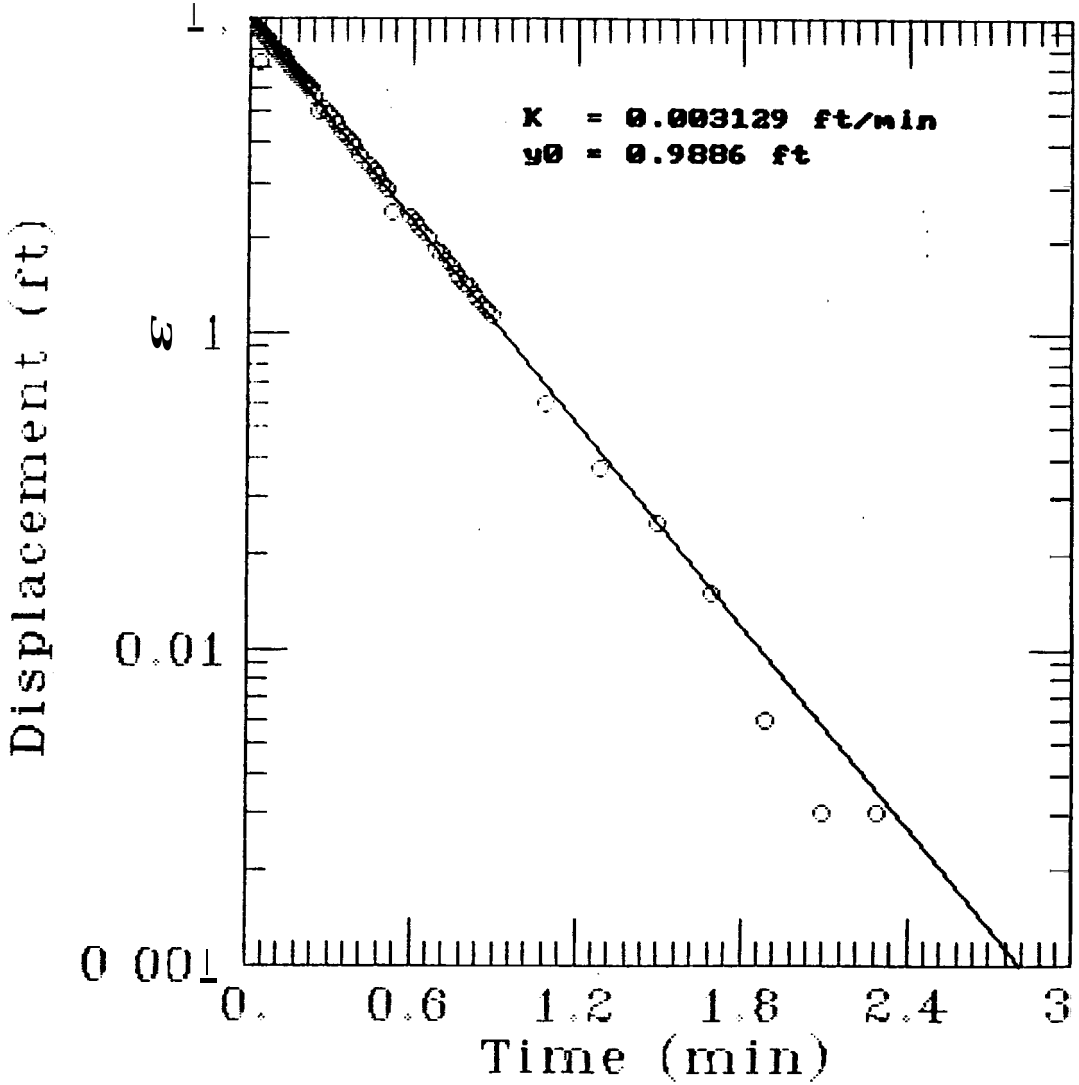
33G09 Injection



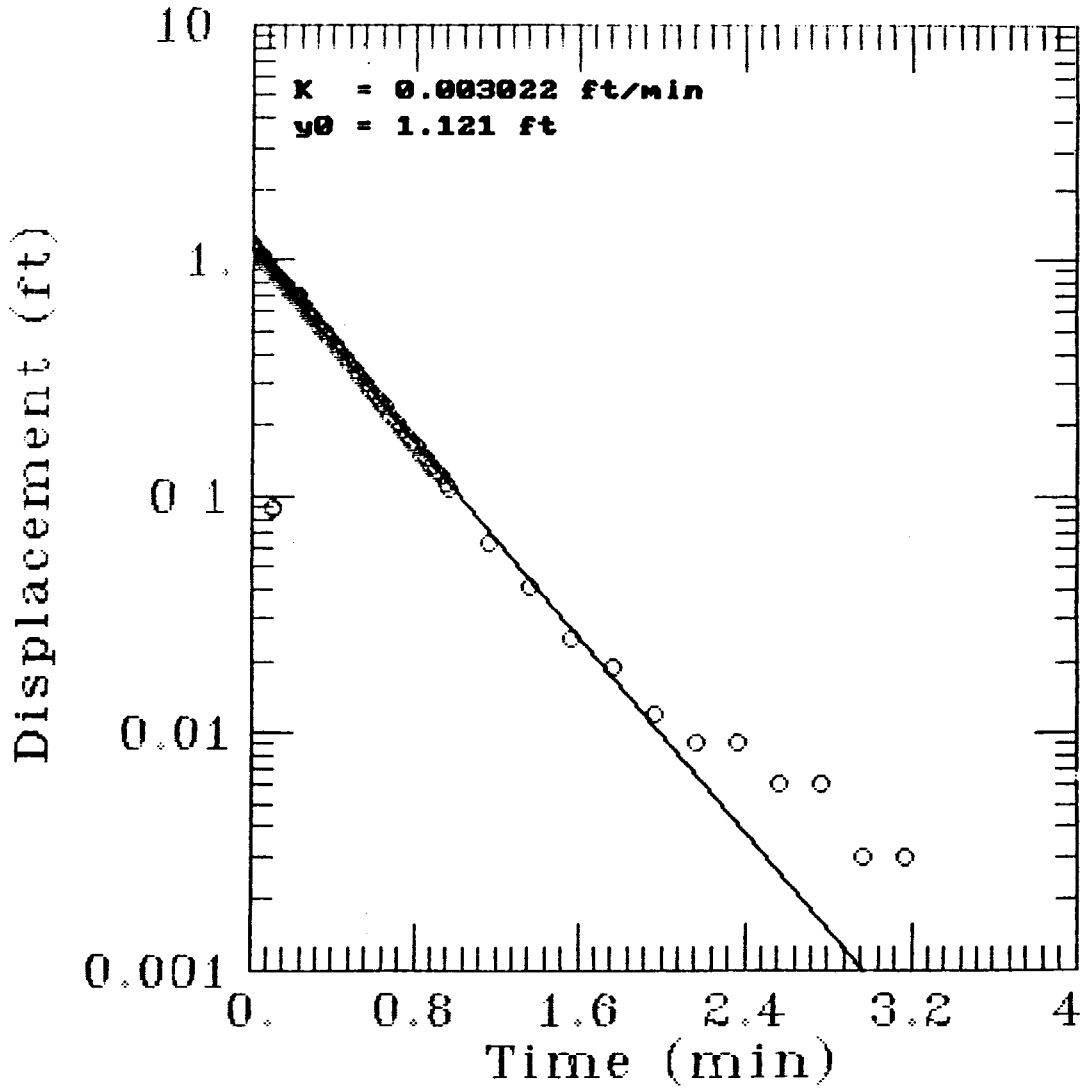
3G09 Withdrawal



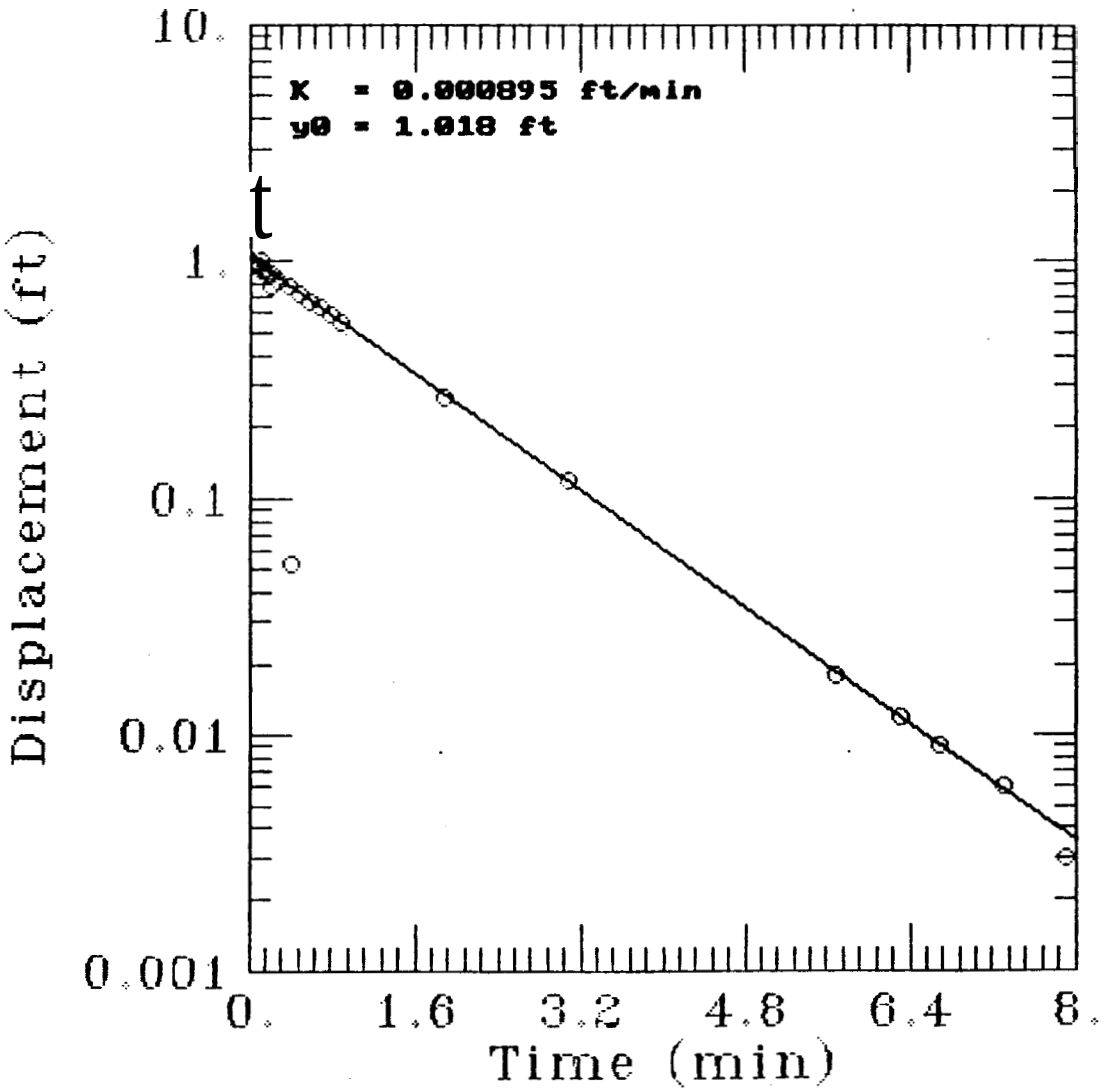
33G10 Injection



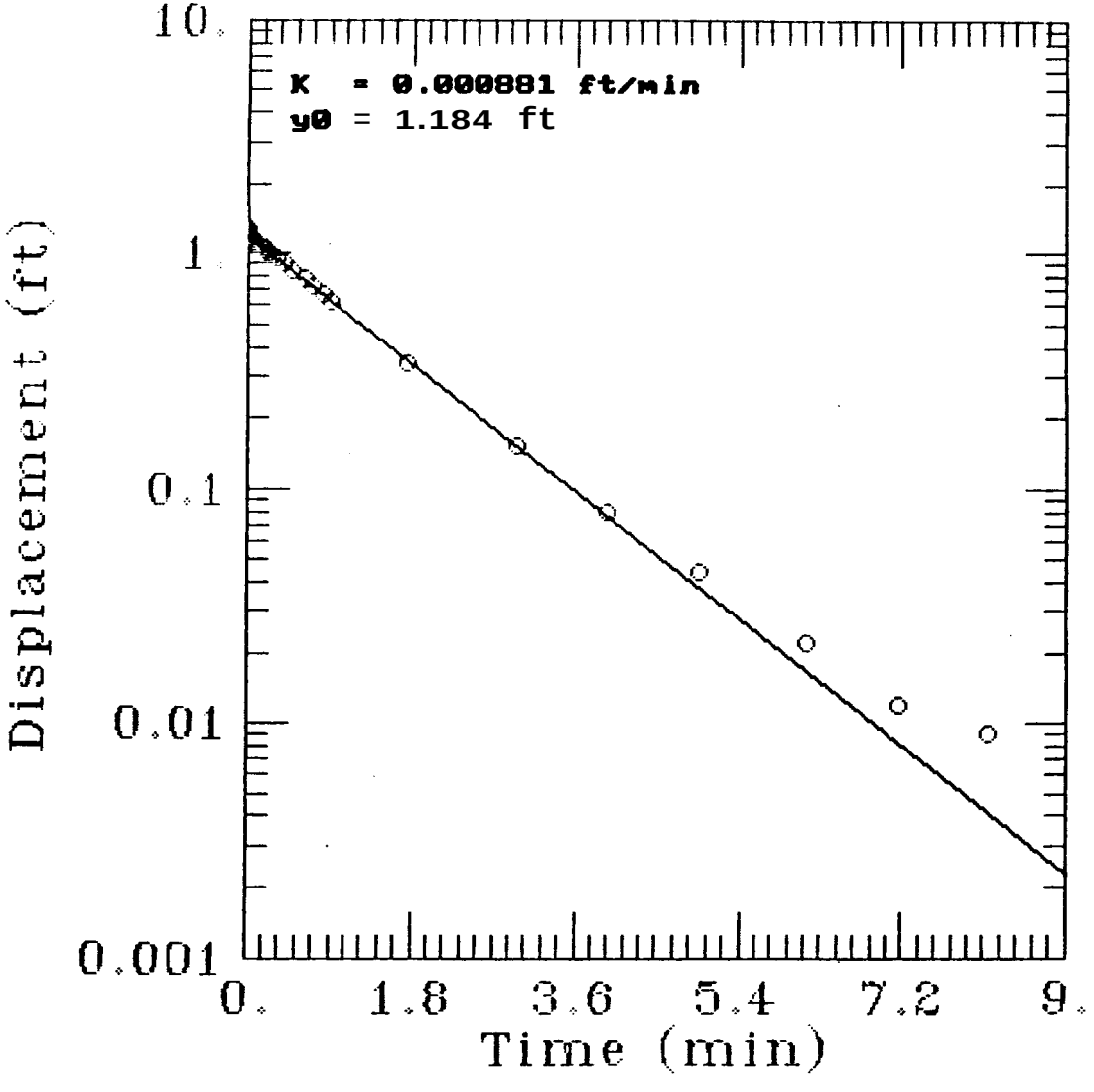
33G10 Withdrawal



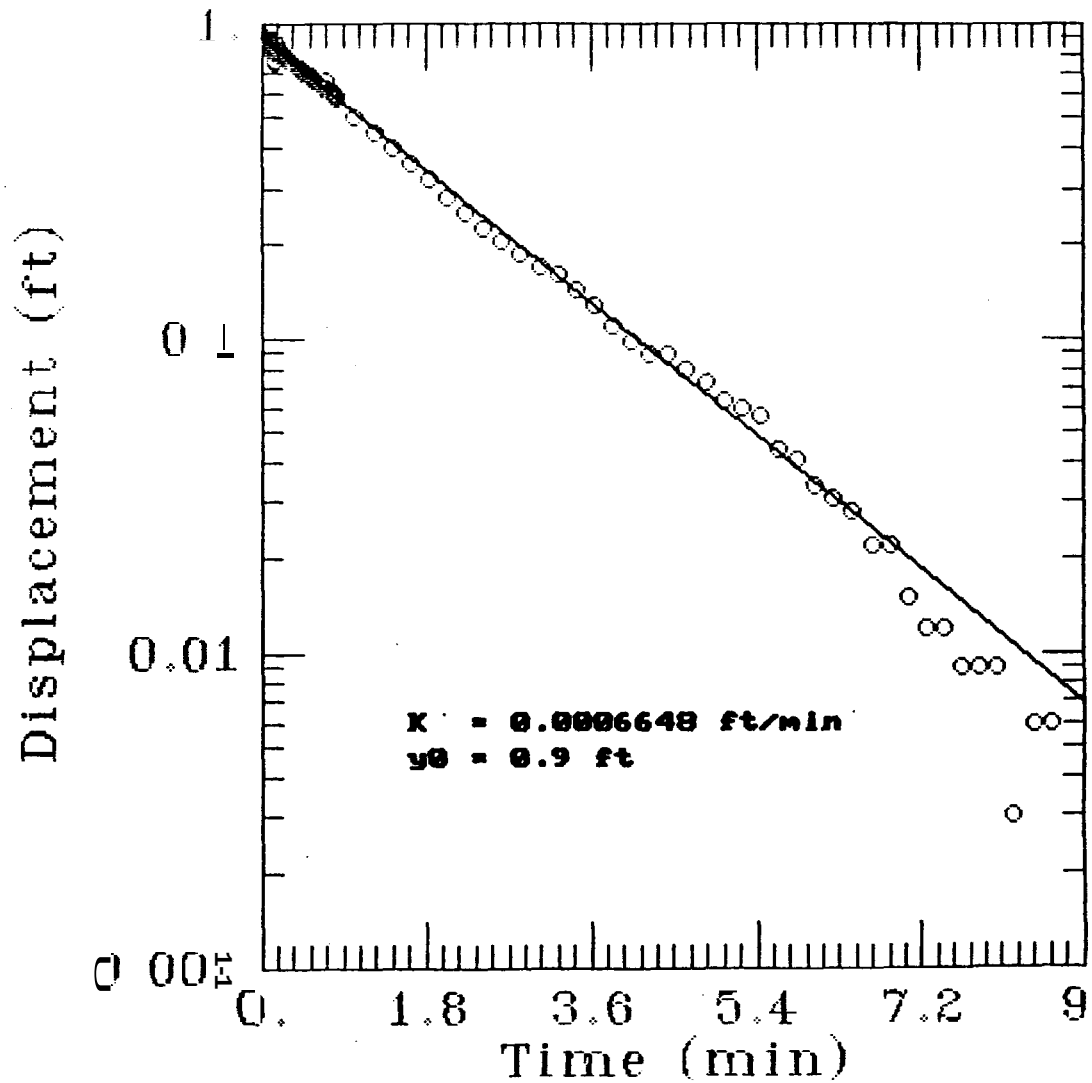
33G11 Injection



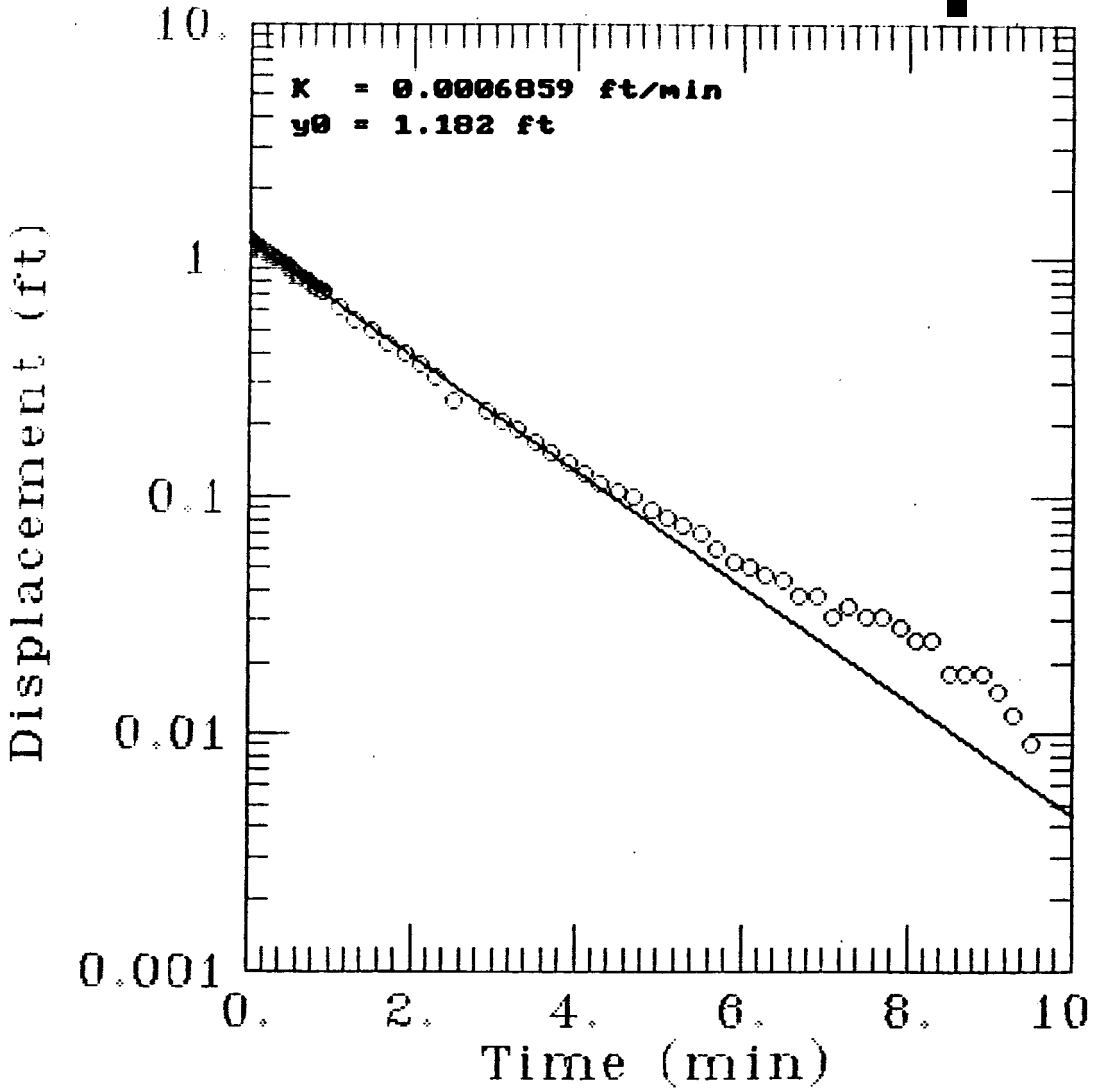
33G11 Withdrawal



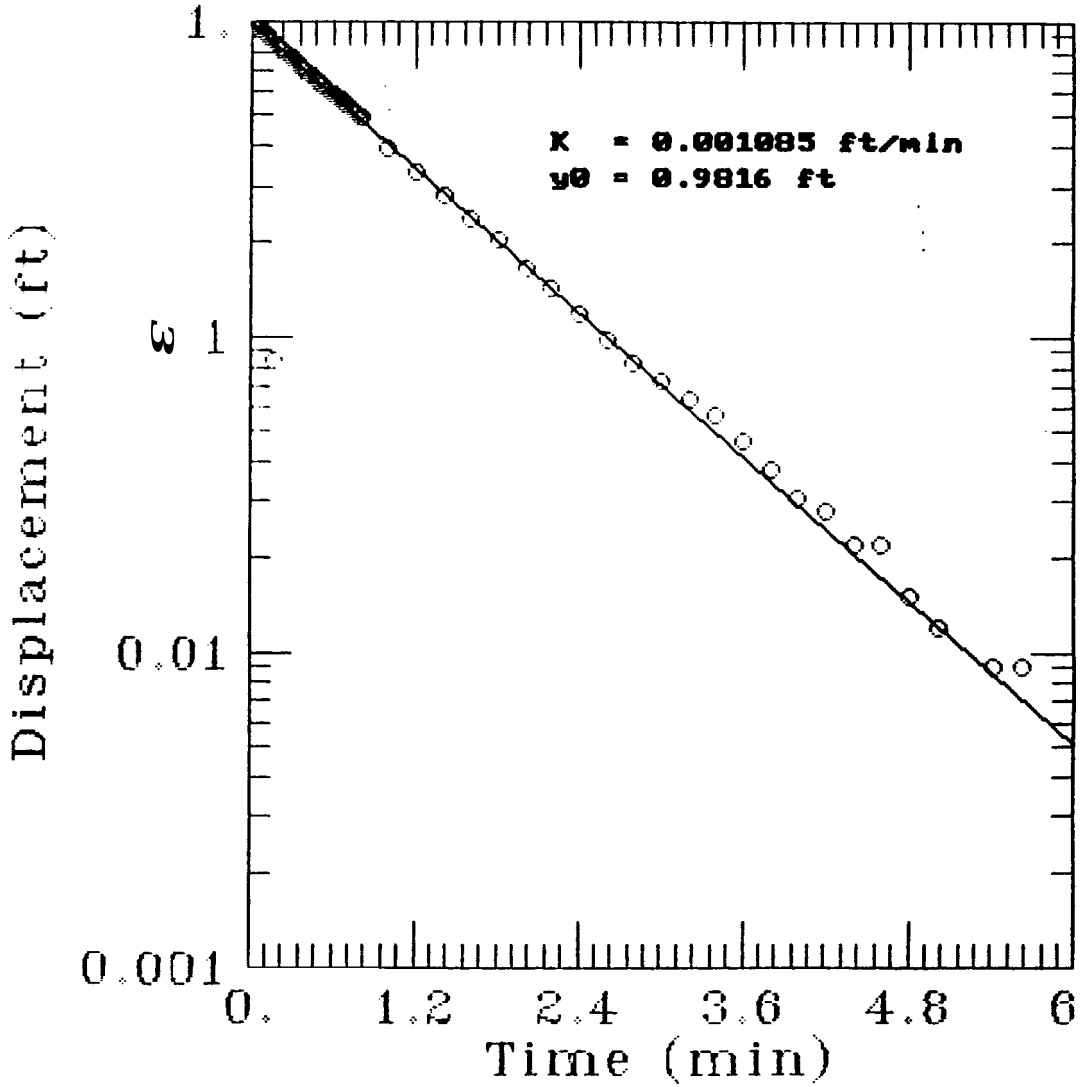
33G12 Injection



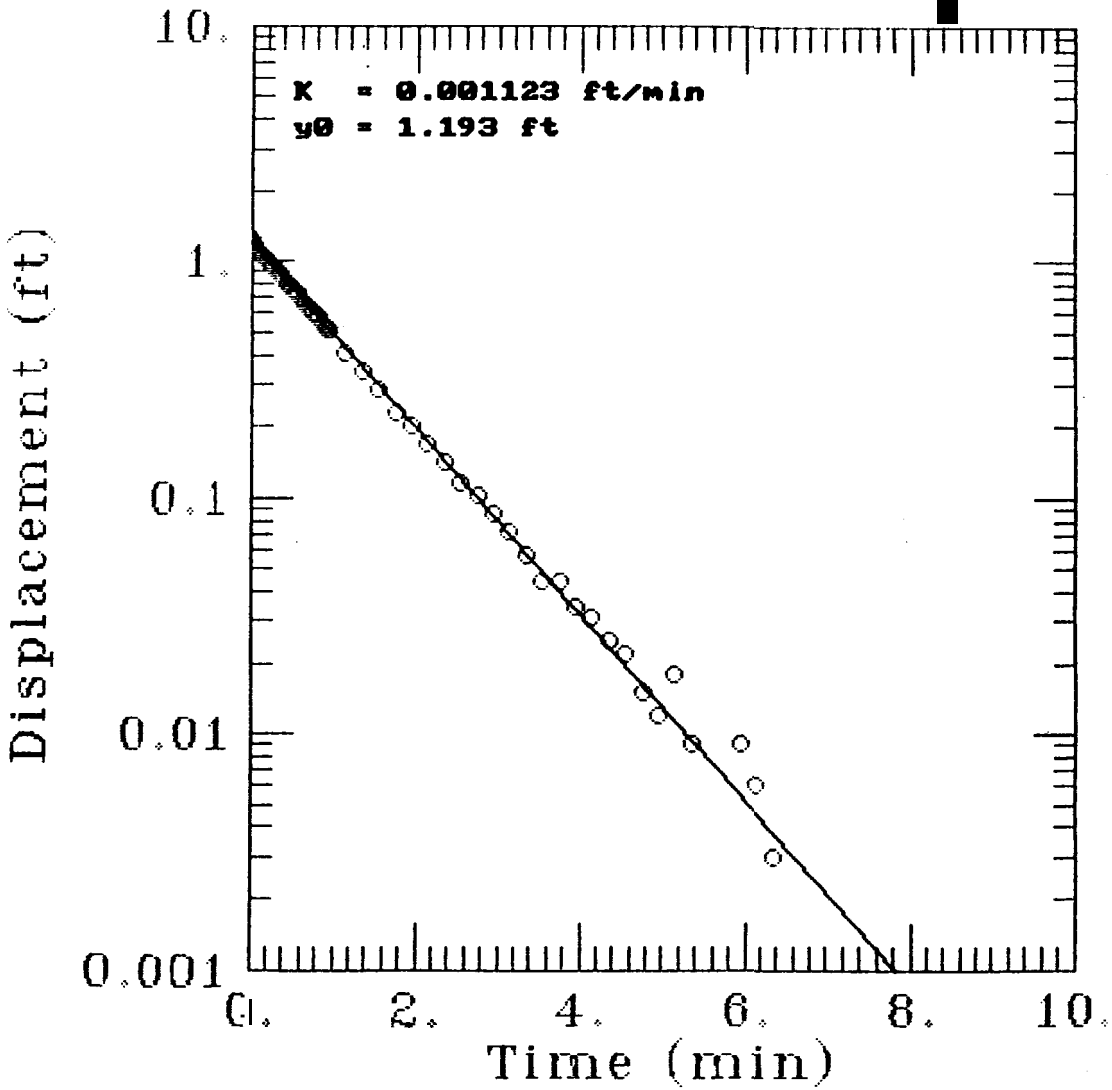
33G12 Withdrawa



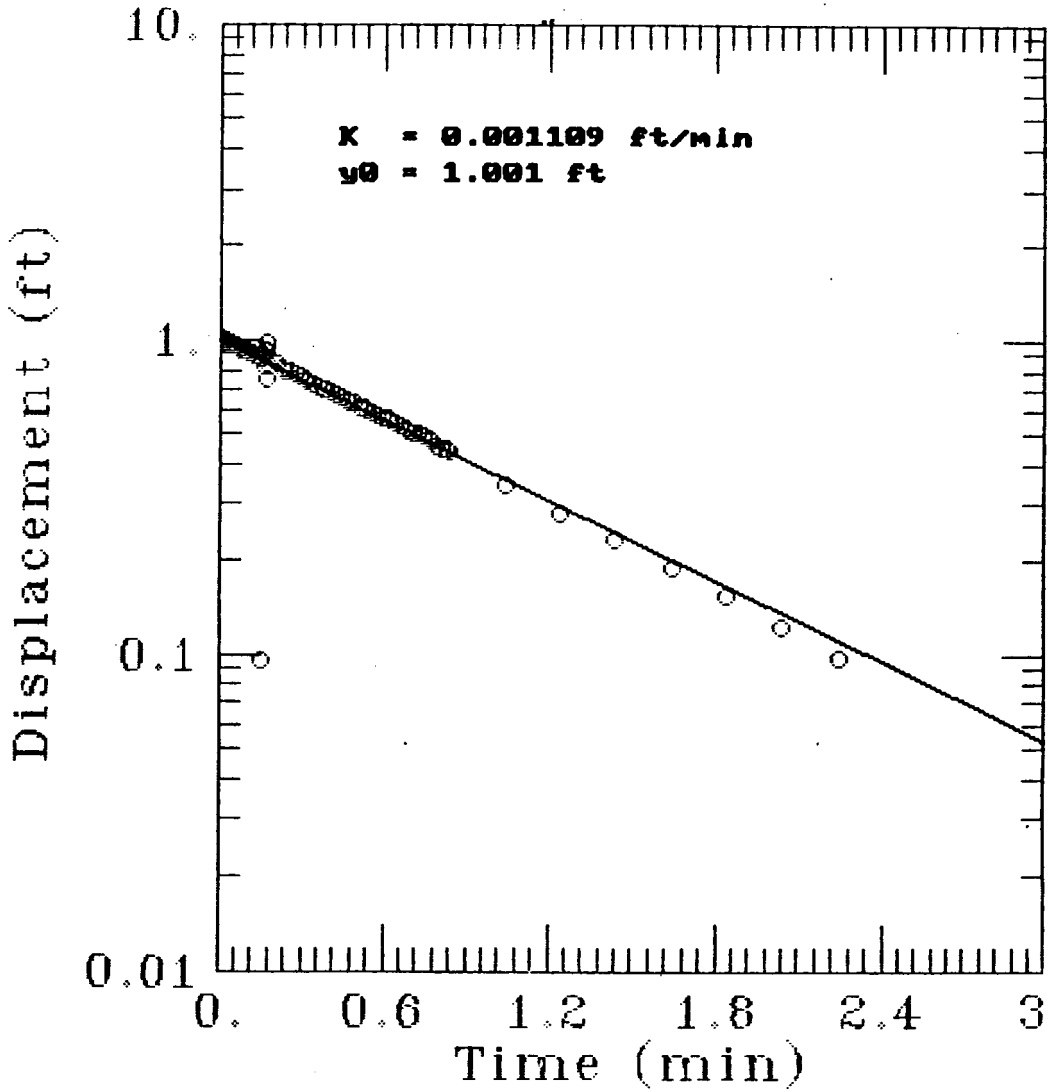
33G13 Injection



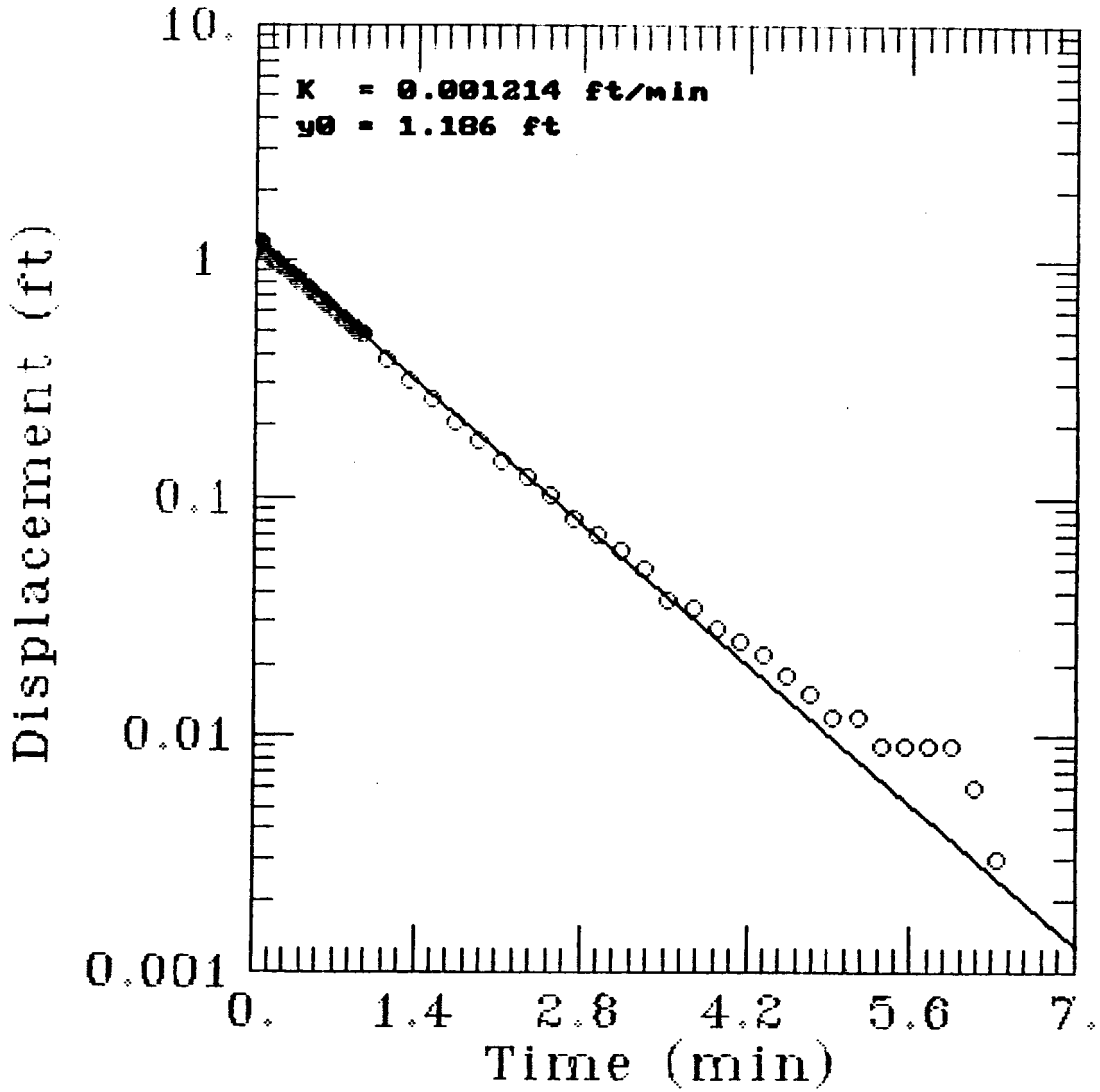
33G13 Withdrawa



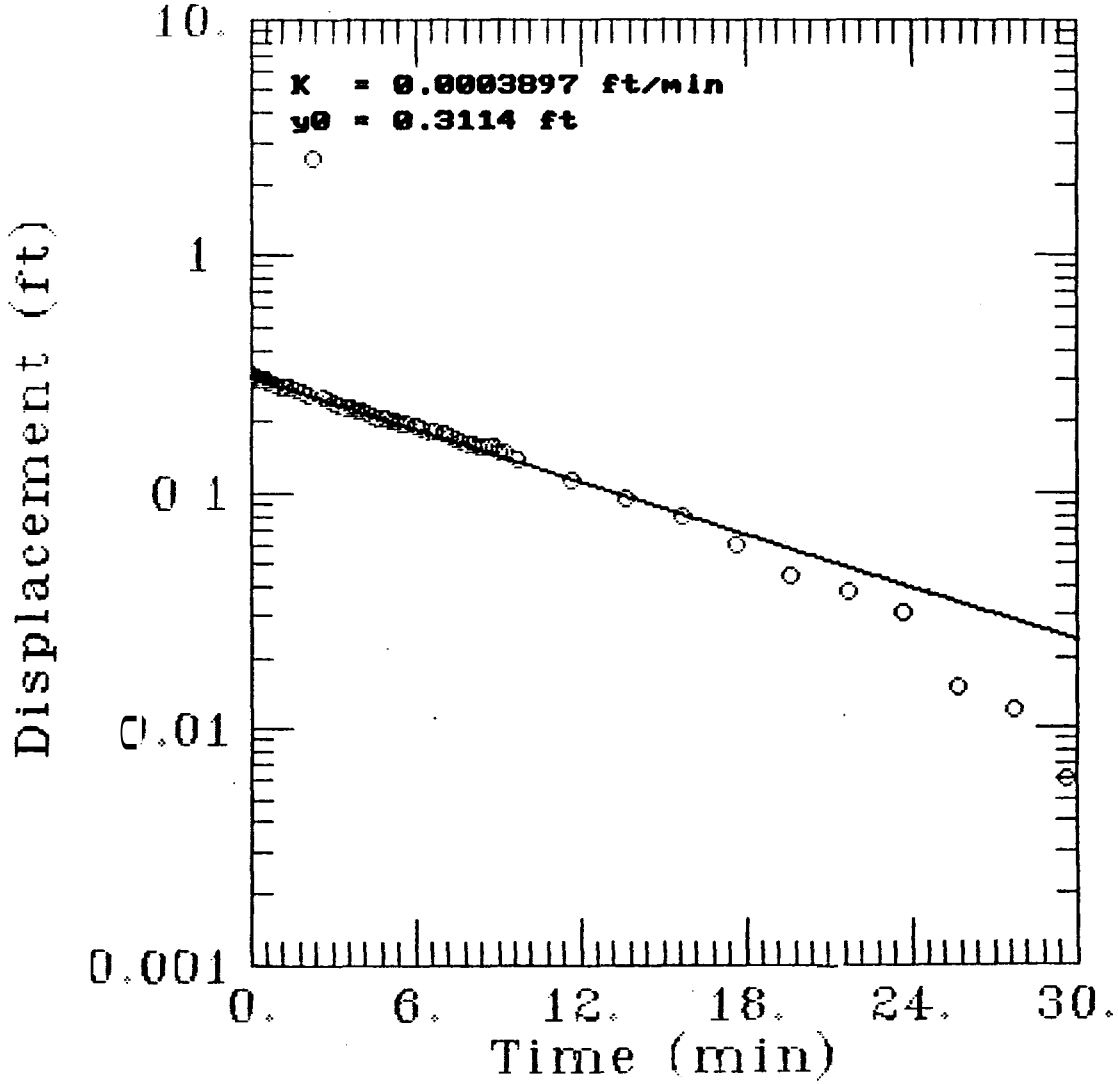
33G14 Injection



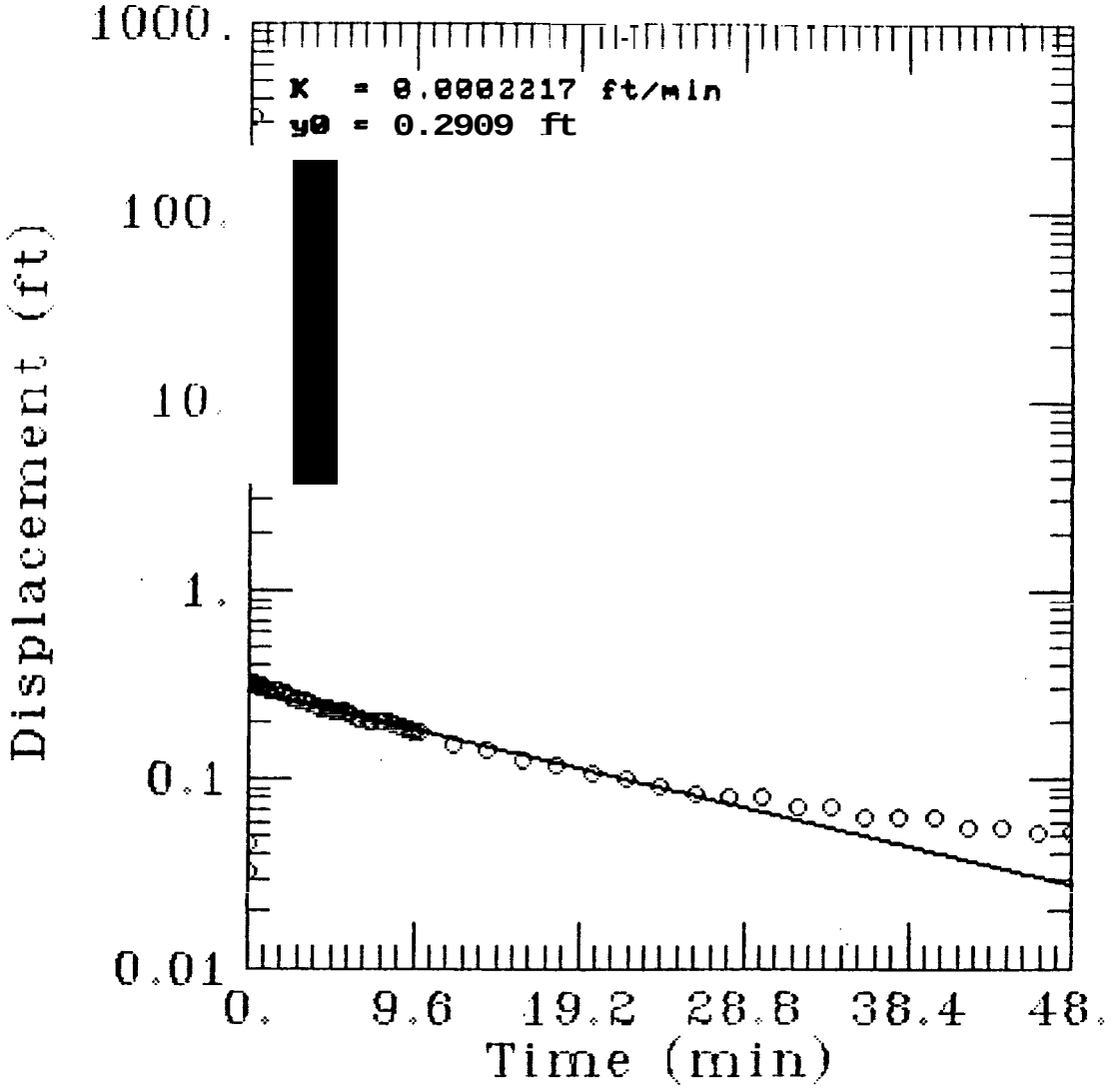
33G14 Withdrawal



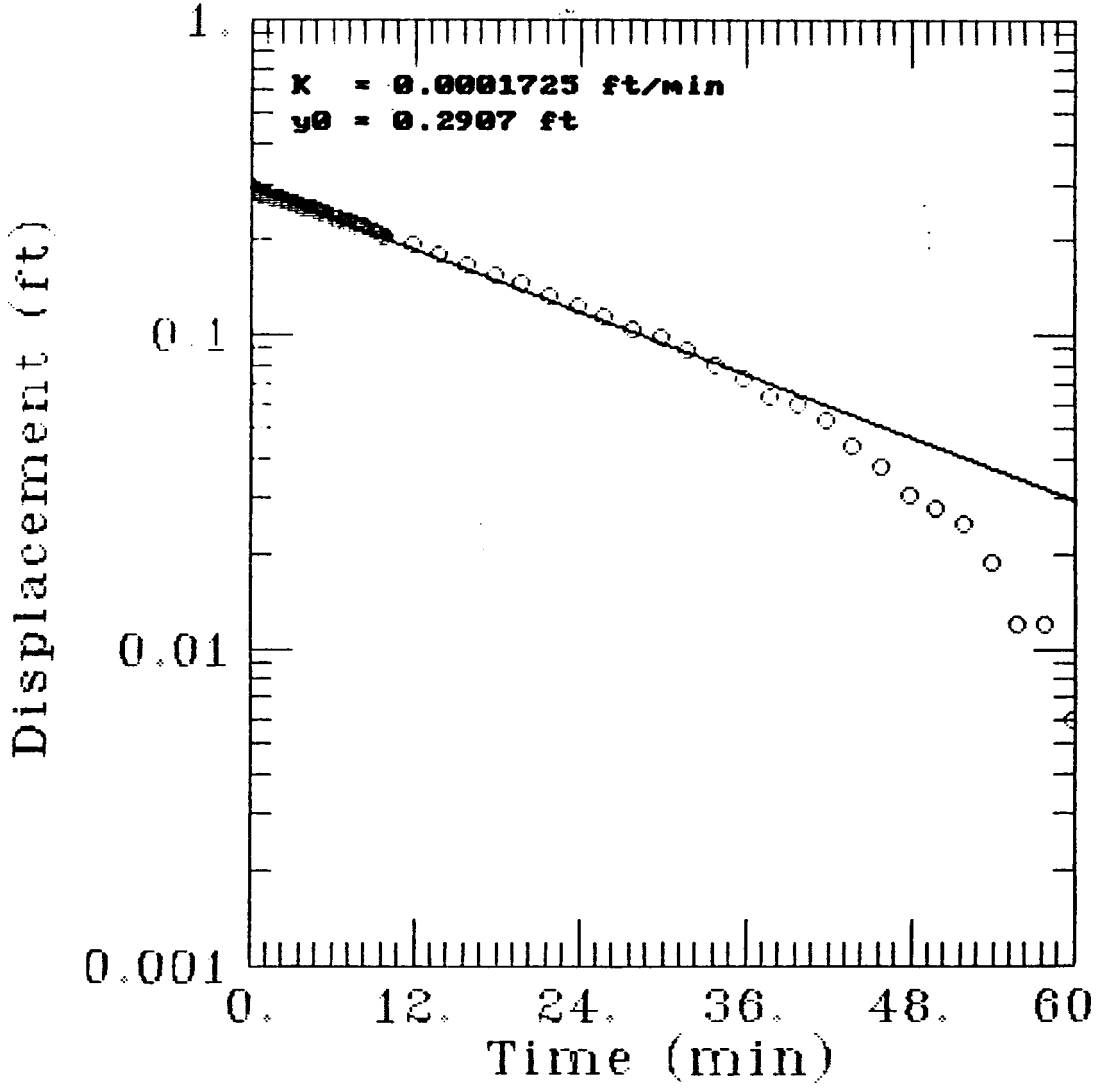
33G16 Injection



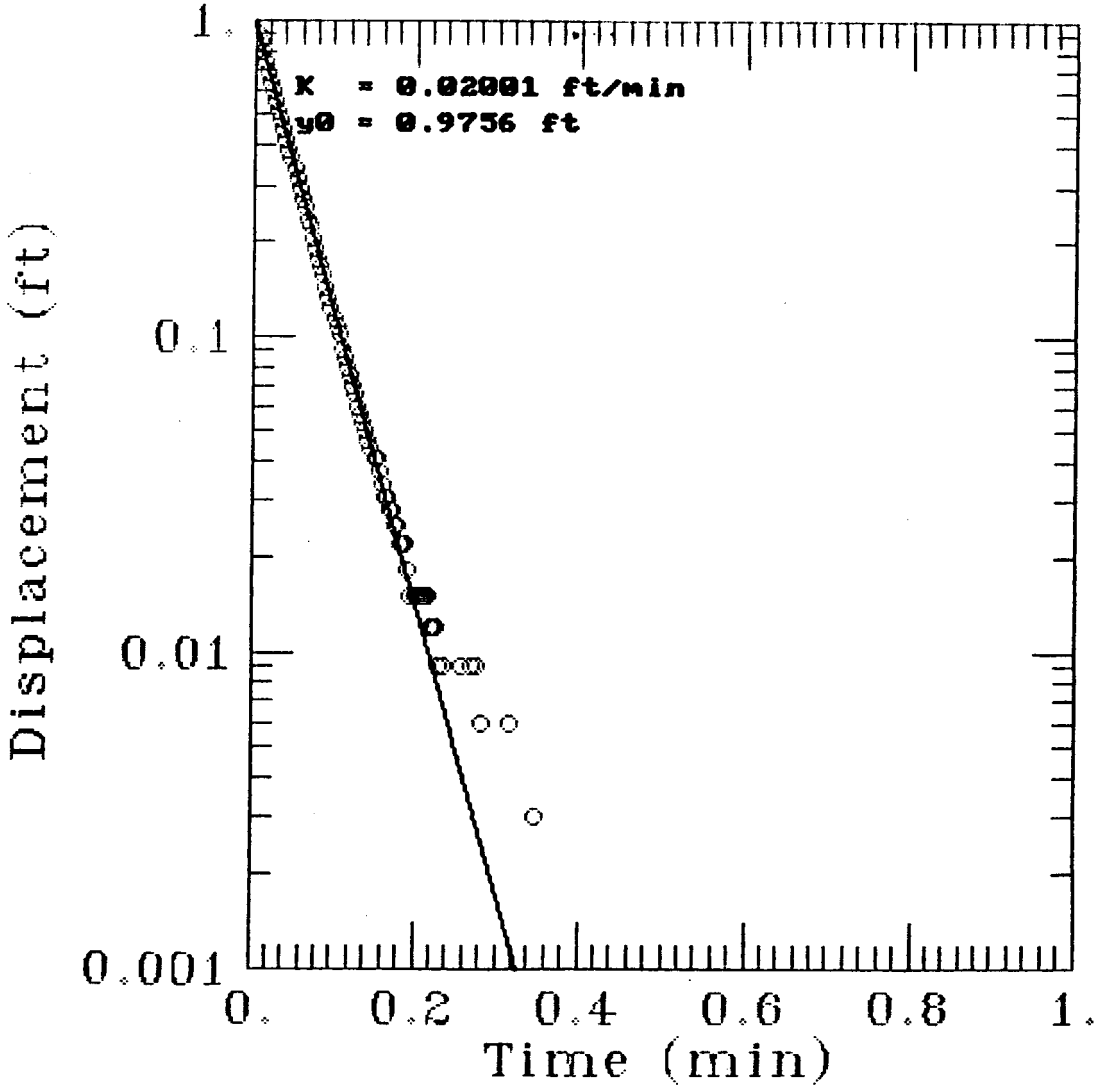
33G16 Withdrawal



33G17 Injection



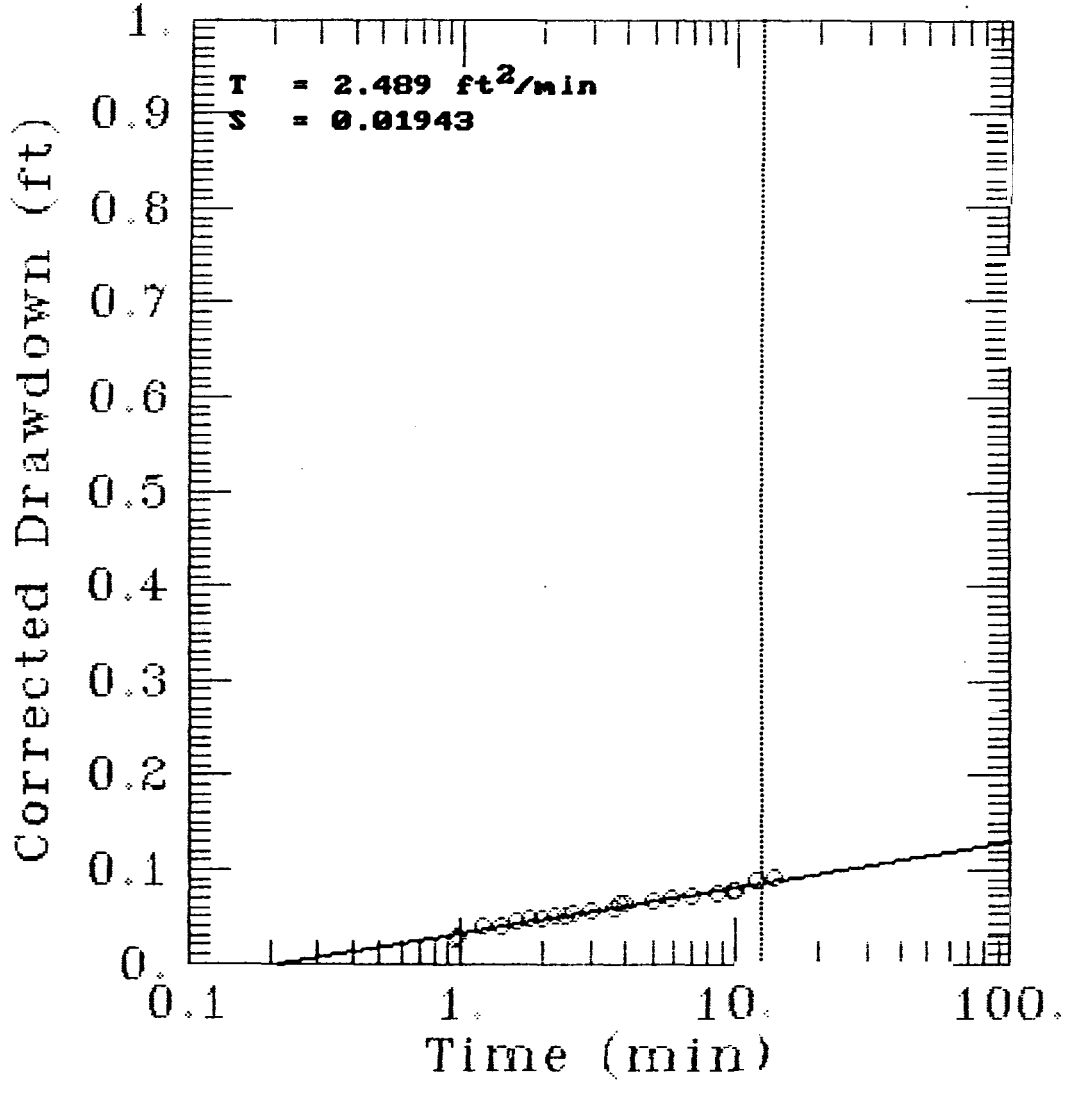
33G19 Withdrawal



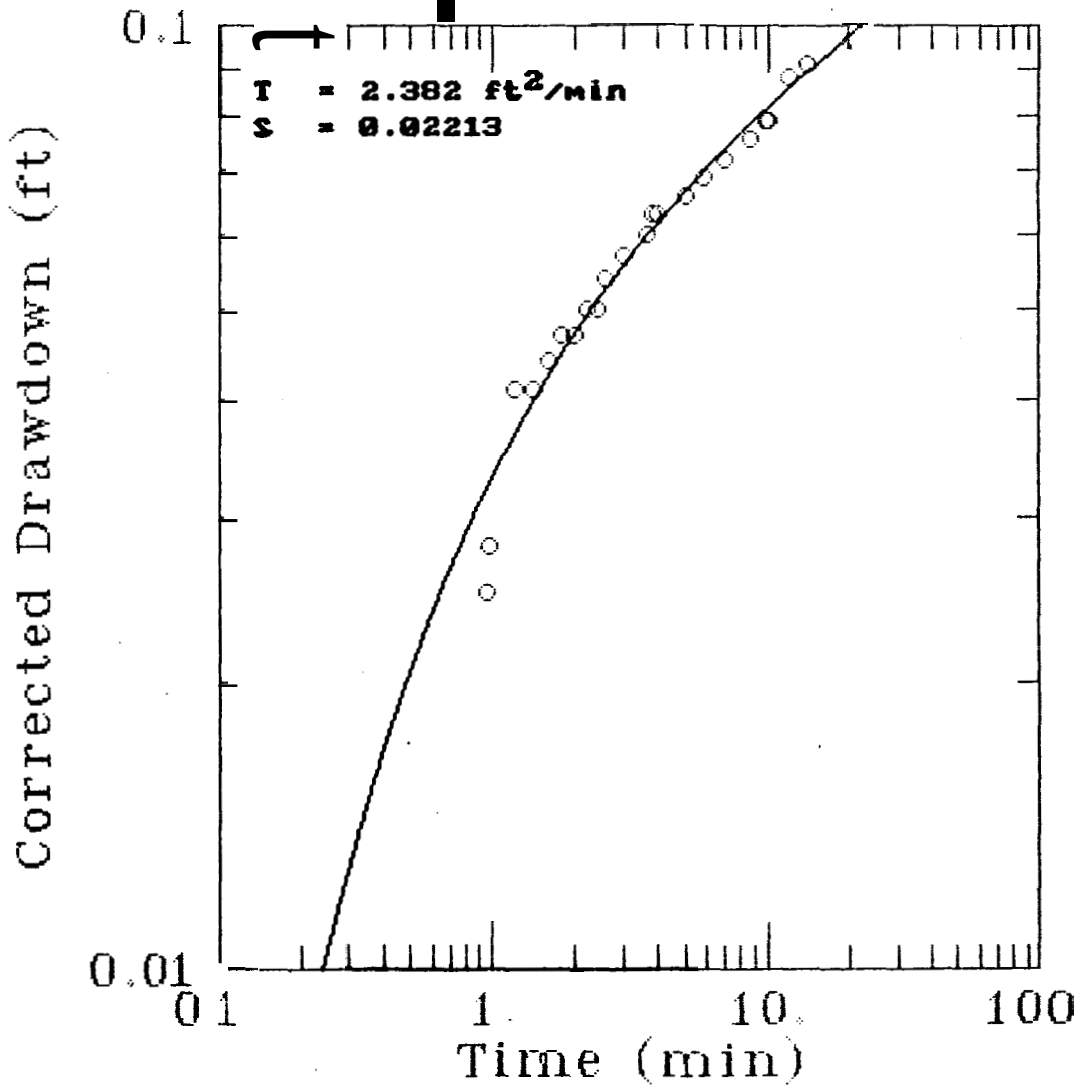
APPENDIX K

PUMPING TESTS

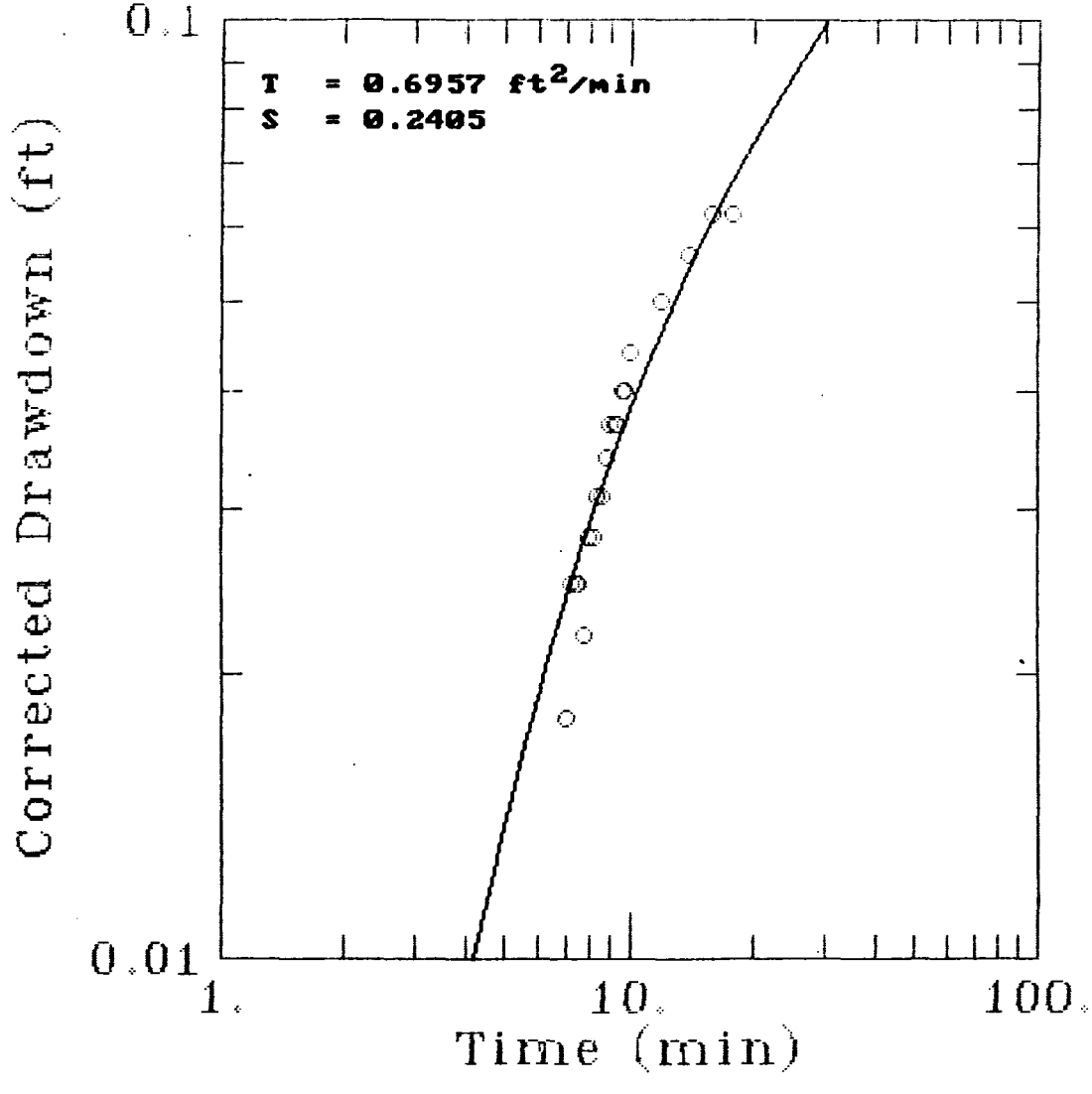
Observation Well GM-8, Recovery of RW-5



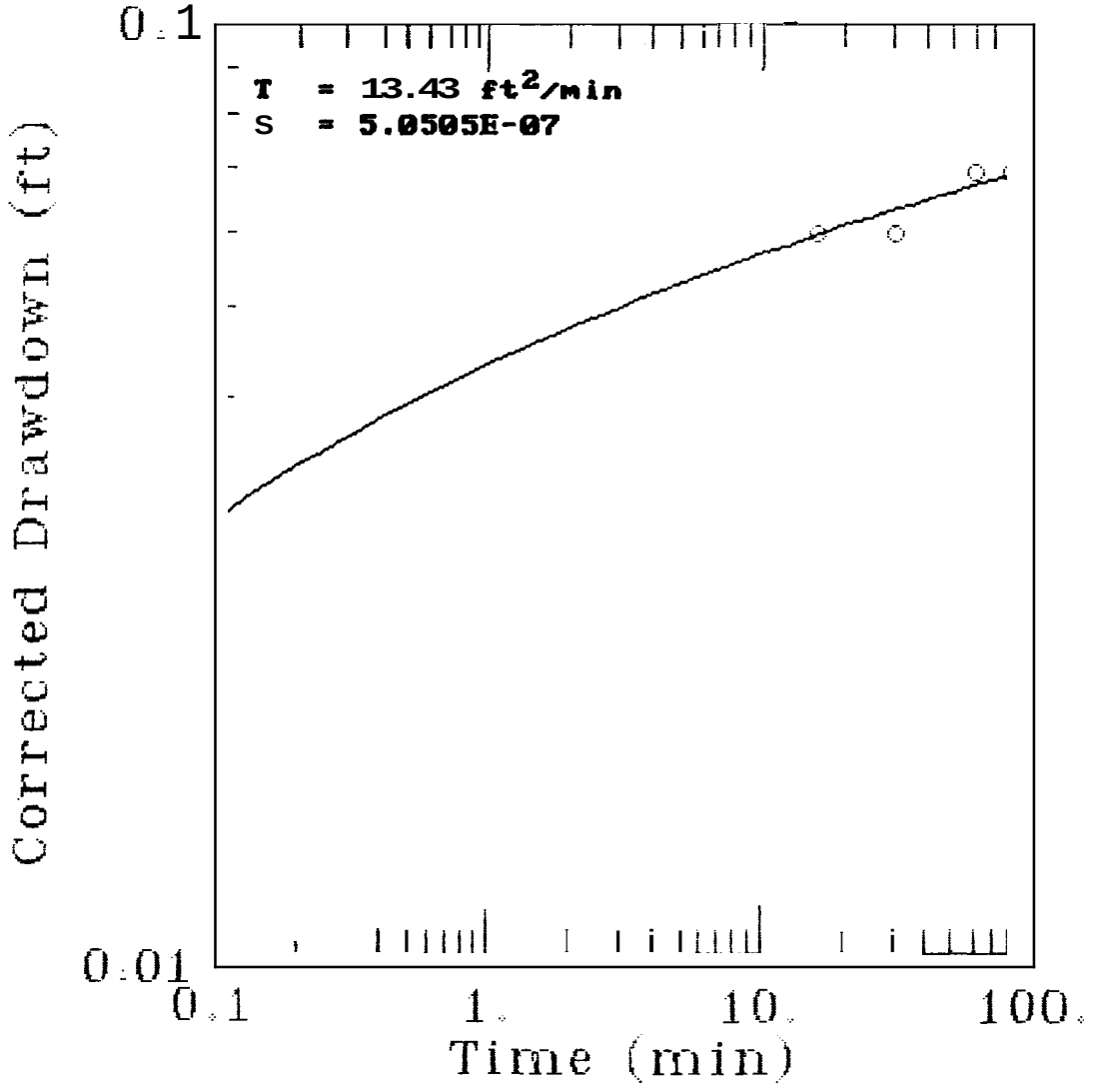
Observation Well GM-8, Recovery of RW-5



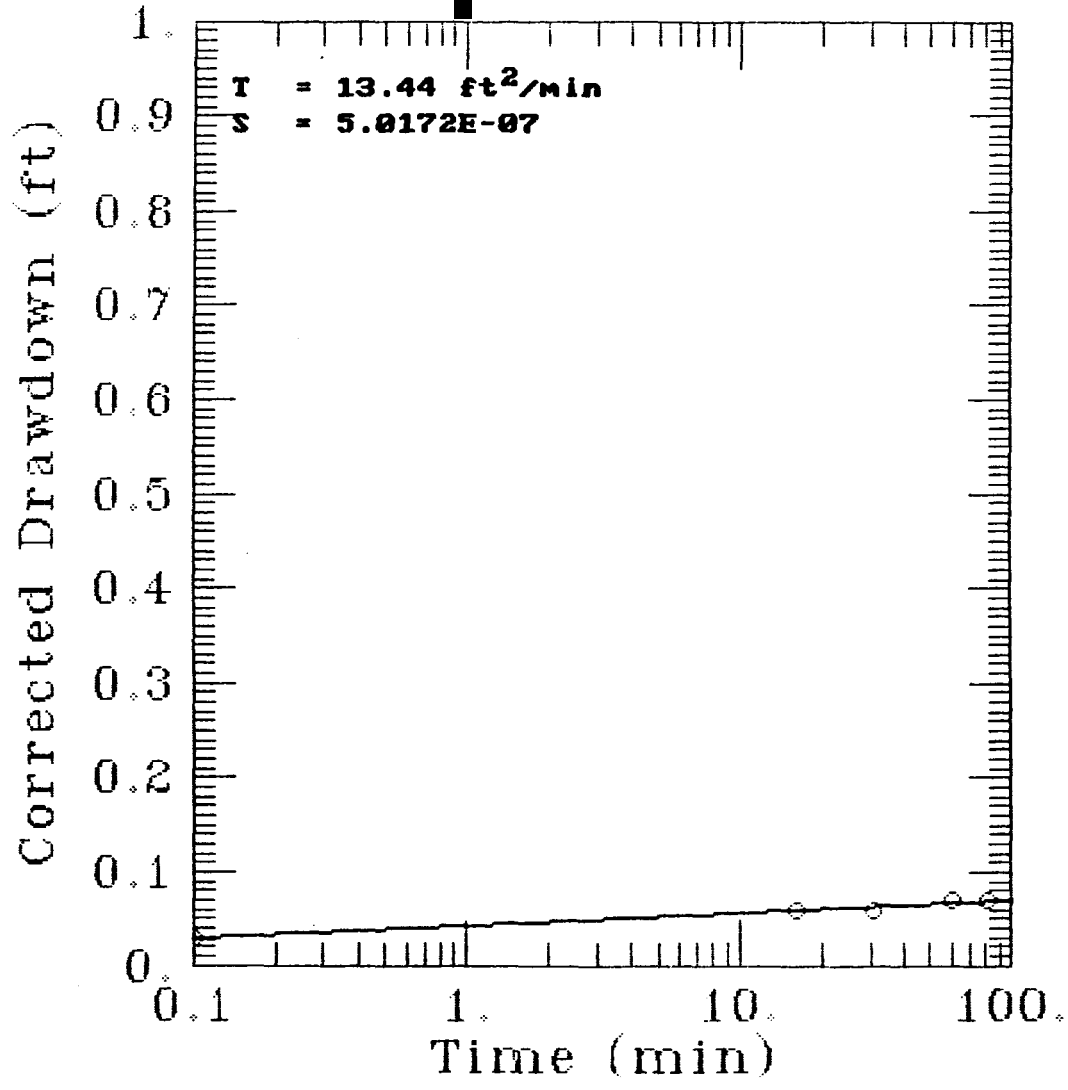
Observation Well GM-8, Pumping RW-5



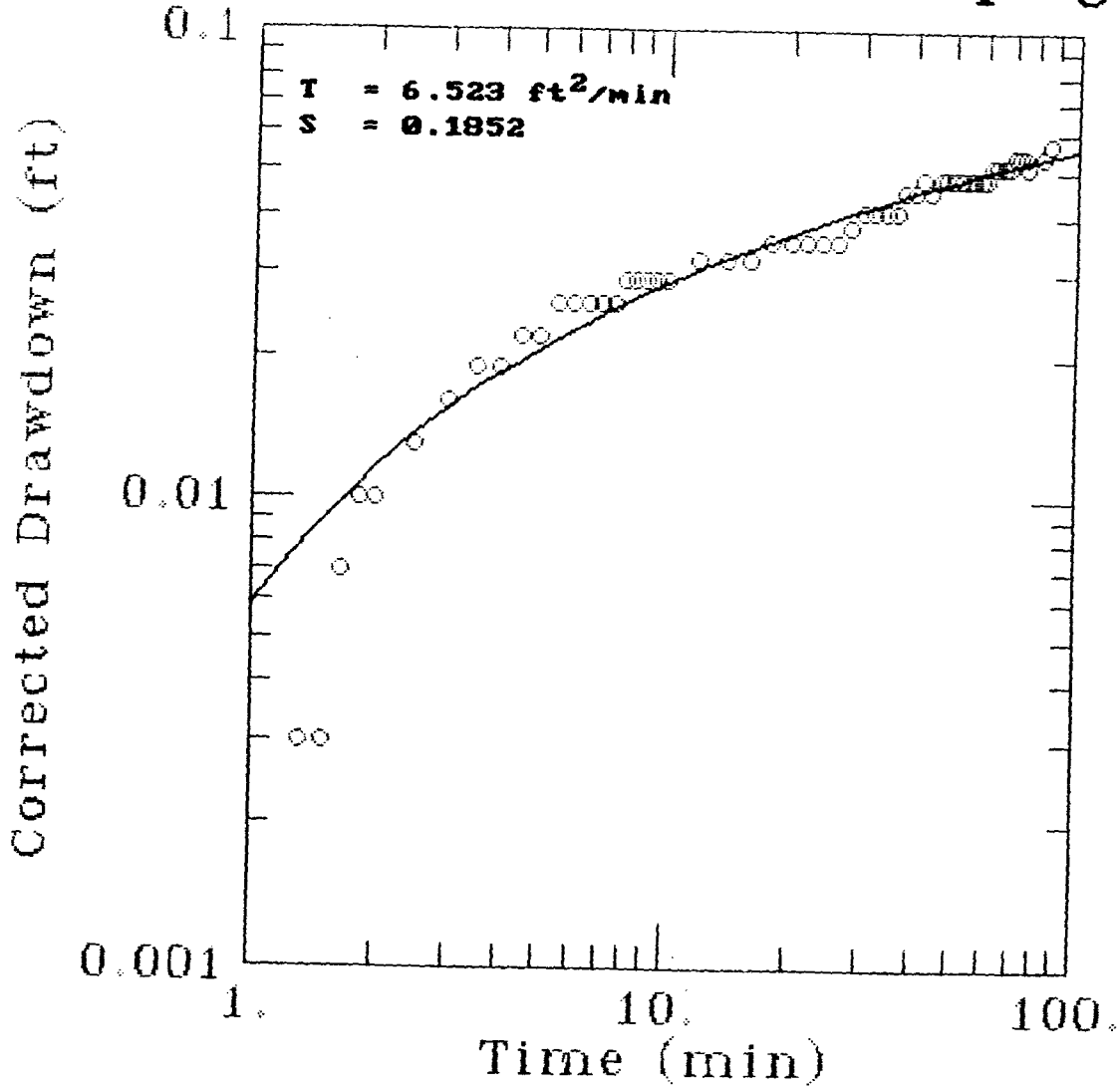
Observation Well RW-6, Pumping PCI-1



Observation Well RW-6, Pumping PCI-1

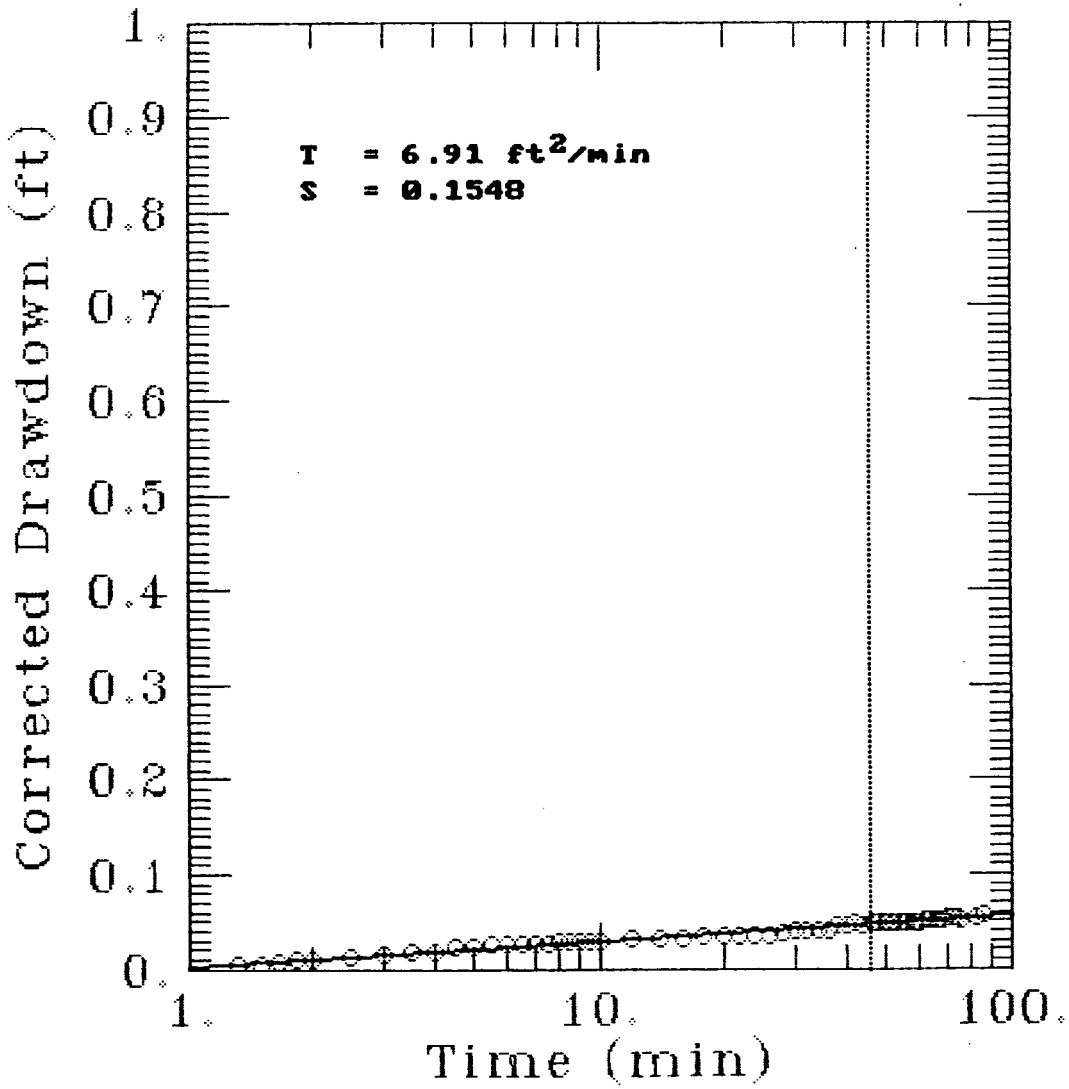


Observation Well PCS-1, Pumping PCI-1

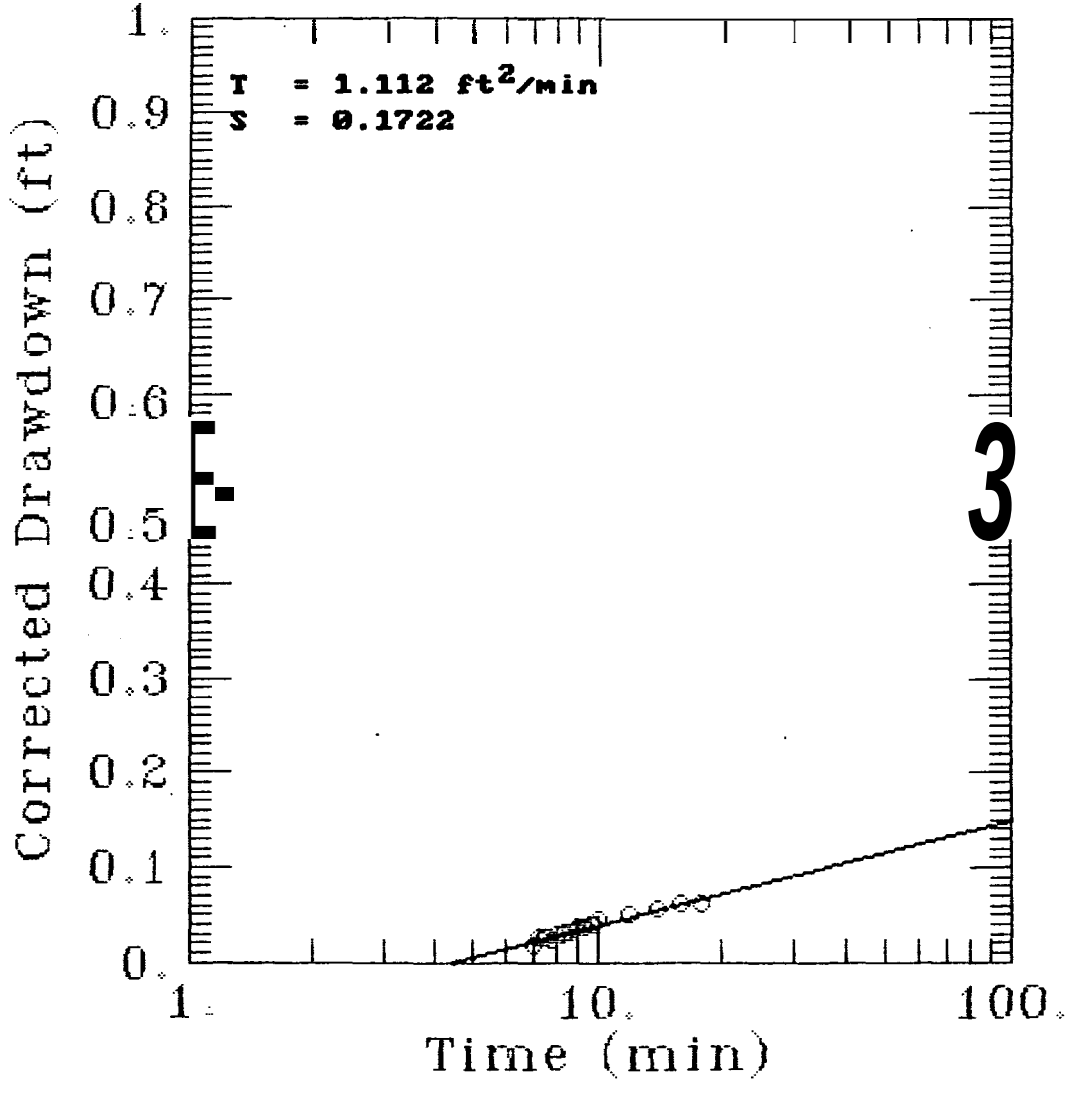


a

Observation Well PCS-1, Pumping PCI-1

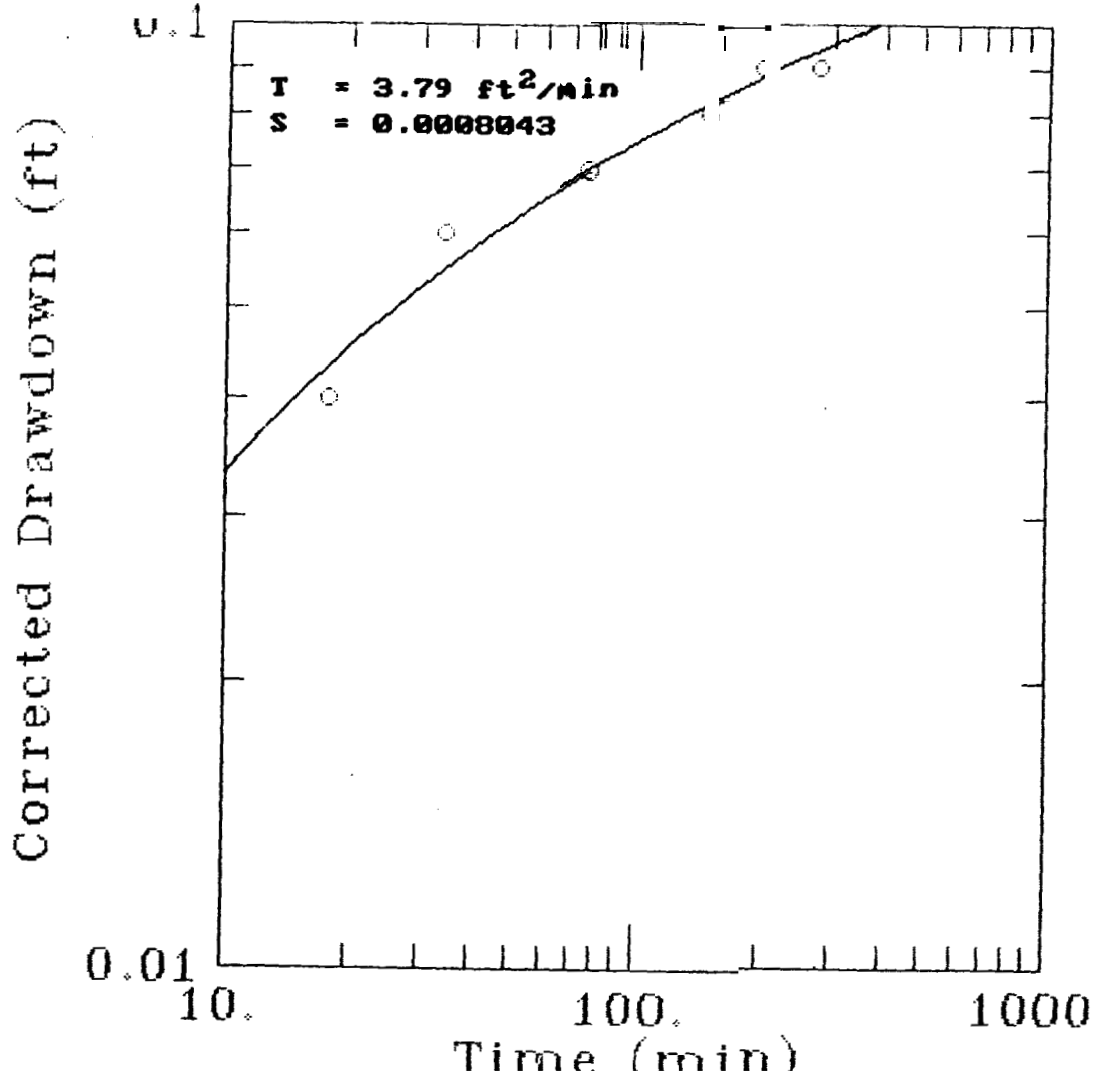


Observation We11 GM-8, Pumping RW-5

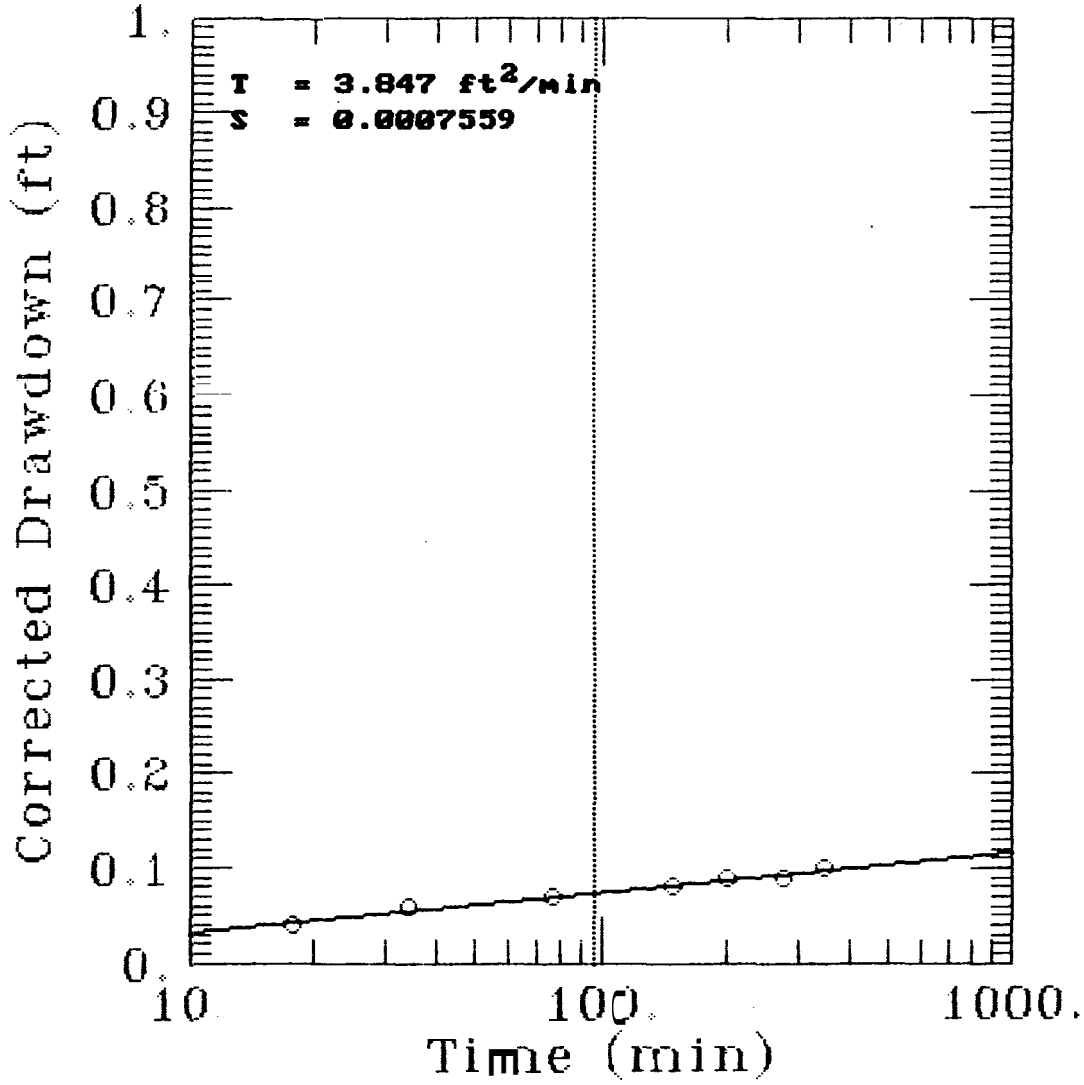


3

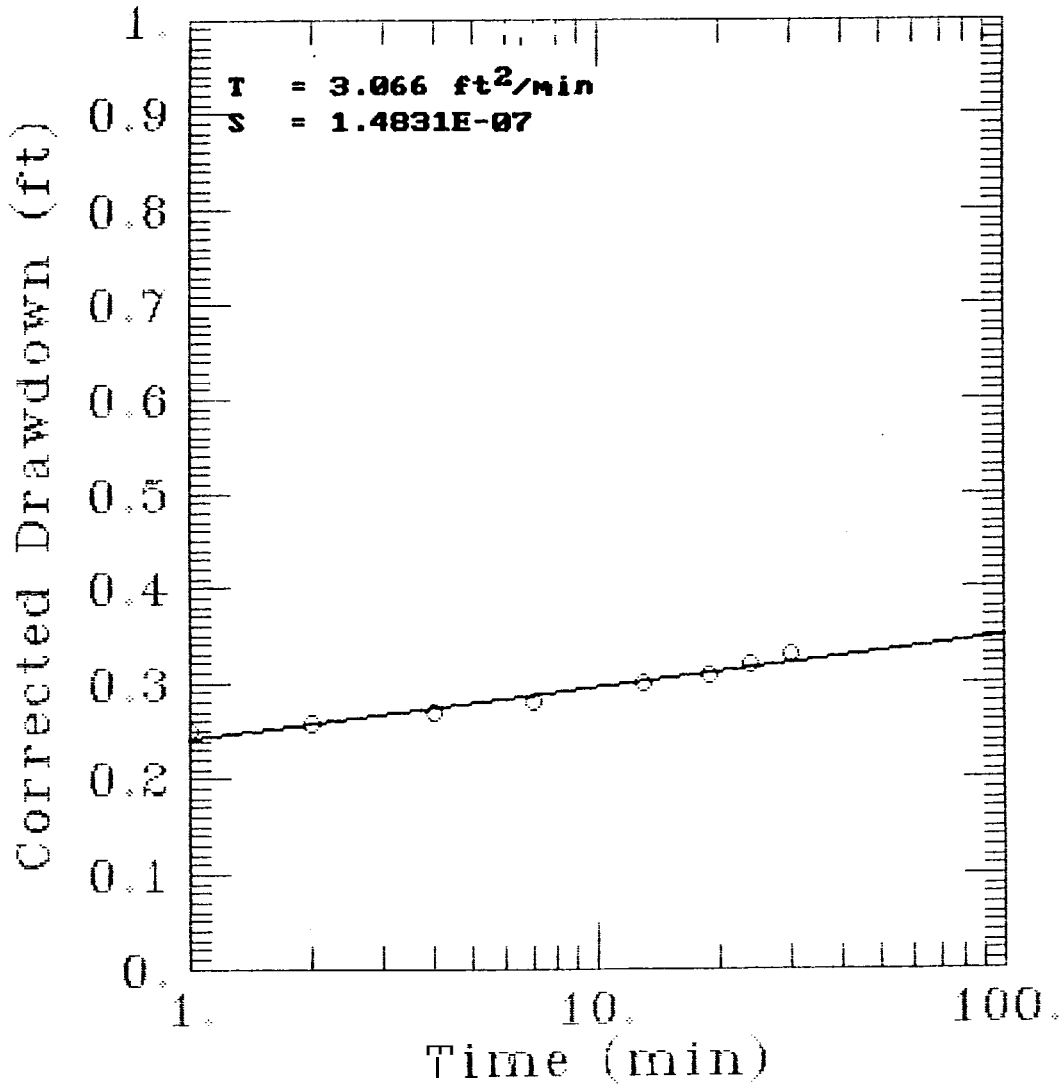
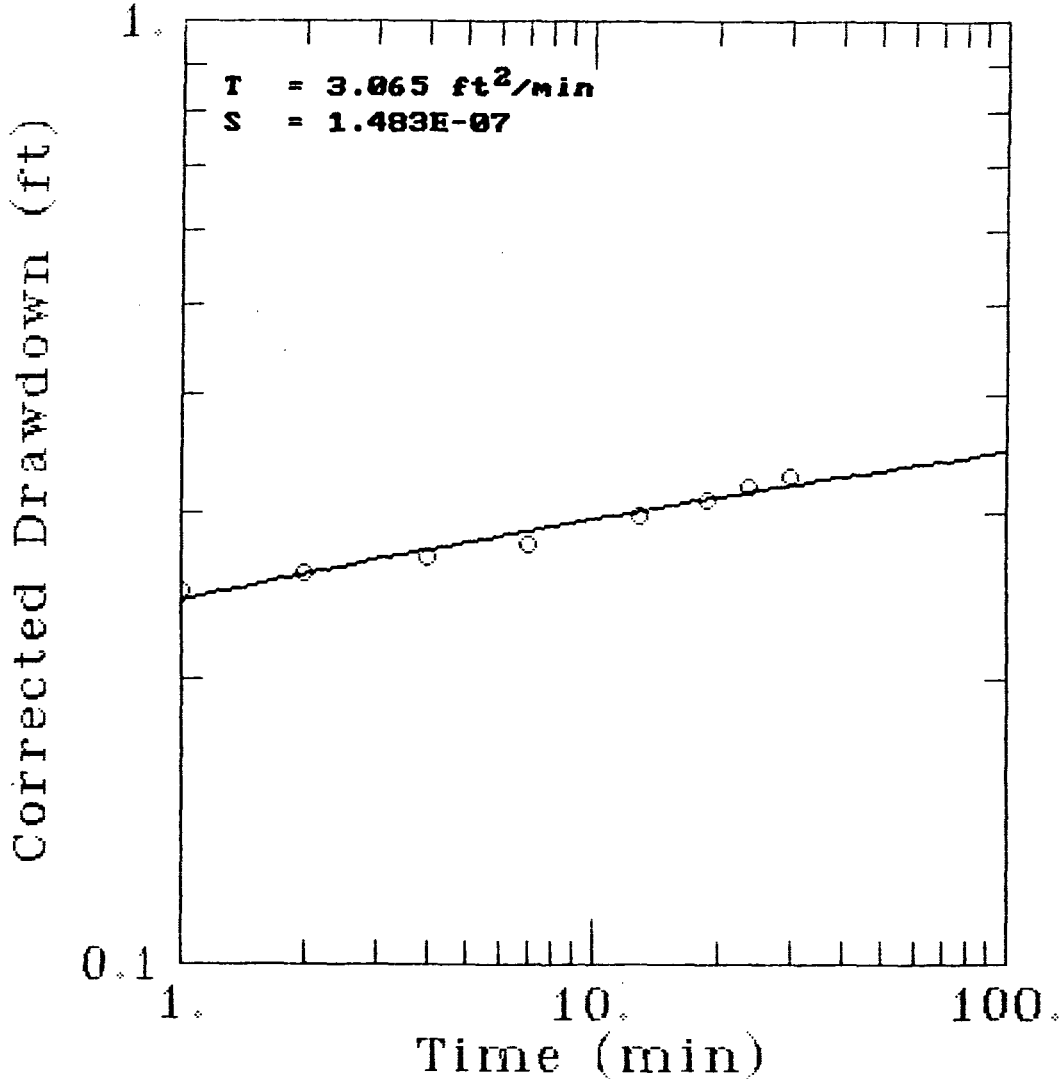
Obs rvation Well 33G17, Pumping RW-4



Observation Well 33G17, Pumping RW-4



Observation Well 33G01, Recovery of RW-4



Observation Well 33G01, Recovery of RW-4