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NSB NEW LONDON
5090.3a

Phase II
Remedial Investigation Report
for
Naval Submarine Base
New London
Groton, Connecticut

Volume III - Appendices A - E

Northern Division
Naval Facilities Engineering Command
Contract Number N62472-90-D-1298
Contract Task Order 0129

February 1995

Halliburton NUS
CORPORATION

D-01-95-10

PHASE II
REMEDIAL INVESTIGATION REPORT
FOR
NAVAL SUBMARINE BASE, NEW LONDON
GROTON, CONNECTICUT

VOLUME III - APPENDICES A - E

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION NAVY (CLEAN) CONTRACT

Submitted to:
Northern Division
Environmental Branch, Code 18
Naval Facilities Engineering Command
10 Industrial Highway, Mail Stop #82
Lester, Pennsylvania 19113-2090

Submitted by:
Halliburton NUS Corporation
993 Old Eagle School Road, Suite 415
Wayne, Pennsylvania 19087-1710

CONTRACT NUMBER N62472-90-D-1298
CONTRACT TASK ORDER 0129

FEBRUARY 1995

PREPARED BY:

MATTHEW G. COCHRAN, P.G.
PROJECT MANAGER
HALLIBURTON NUS CORPORATION
PITTSBURGH, PENNSYLVANIA

APPROVED BY:

JOHN J. TREPANOWSKI, P.E.
PROGRAM MANAGER
HALLIBURTON NUS CORPORATION
WAYNE, PENNSYLVANIA

APPENDIX A

BORING LOGS/MONITORING WELL CONSTRUCTION DIAGRAMS

A.1 SITE 1 - CBU DRUM STORAGE AREA
A.2 SITE 2 - AREA A LANDFILL
A.3 SITE 2 - AREA A WETLANDS
A.4 SITE 2 - AREA A WEAPONS CENTER
A.5 SITE 2 - AREA A DOWNSTREAM
A.6 SITE 4 - RUBBLE FILL AT BUNKER A86
A.7 SITE 6 - DRMO
A.8 SITE 7 - TORPEDO SHOPS
A.9 SITE 8 - GOSS COVE LANDFILL
A.10 SITE 13 - LOWER SUBASE
A.11 SITE 14 - OBDANE
A.12 SITE 15 - SPENT ACID STORAGE AND DISPOSAL AREA

APPENDIX A.1

SITE 1 - CBU DRUM STORAGE AREA

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 1TB1
PROJECT NO.: 9594
DATE: 01-18-94
DRILLER: EAST COAST THOMAS / Tim Slabo
ELEVATION:
FIELD GEOLOGIST: T. EVANS
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS OVM
1★ S-1 @ 0848	0.0 / 2.0	6 24 39 27	1.4/2.0		V. Dense	BRN TO BLACK	SAND w/SOME GRAVEL	GP/	Top 3" SNOW WET 0ppm
							SILTY SAND w/SOME GRAVEL	SP	SAND - FINE to Coarse Gr FUEL ODOR OILY SHEEN
S-2 @ 0858	4.0	51 34 41 37	1.0/2.0		V. Dense	BLACK	Silty Sand w/TR Gravel Wood Frags, Bullets, Roots	SP	(NO Little Sample) FUEL ODOR OILY Sheen 0ppm SAND Fine to Med Gr Gravel Max Ø 0.2'
S-3 @ 0918	6.0	6 6 7 5	2.0/2.0				- NO SAMPLE -		NO RECOVERY
2★ S-4 @ 0925	8.0	10 87 75 20	1.75/2.0		HARD - V. Loose	D.BRN	Clayey Silt / SILTY SAND w/ TR Gravel, Plastic ROOTS	CL/ SM	Diesel Odor, Oily Sheen 0ppm Sand - Fine Gr Gravel - Max 0.3'
S-5 @ 0940	10.0	26 32 51 72	1.7/2.0		V. Dense	L.BRN	Silty Sand w/ Some Gravel	GW	0ppm 7ppm (1ppm) Sand - Med to Coarse Gr
S-6 @ 0953	12.0	100/0	0.0/2.0				- NO SAMPLE -		POOR RECOVERY (wash) Auger 12' - 13'
S-7 @ 1011	13.0	39 100	0.9/1.0		V. Dense	L.BRN	SILTY SAND & Gravel	SP/GP	Gravel - Pebble 0ppm 0ppm
S-8 @ 1025	14.0 / 14.5	100	0.5/0.5		V. Dense	TAN	SAND & GRAVEL	GW	Auger 13' - 14' (S-8 2" 14-14.5) 0ppm Sand - Fine to Coarse Gr Gravel - Cobble
							Total Depth 14.5'		
							Fill 0' to 10'		
							Spring Back fill 14.5'		
							8 SS' Samples		

REMARKS: CME 55 HSA R.2
3" x 24" SS (140# wt Cat Head 30" Drop)
4" ID, 8" OD Auger

BORING: 1TB1
PAGE 1 OF 1

* See Legend on Back
★ Sample (1-2oz : 1-8oz jar) sent to lab
1. 1TB1-0002

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: ~~HTB2~~ IMW2S
PROJECT NO.: 9594 DATE: 01-11-94 DRILLER: EAST COAST THOMAS/
ELEVATION: FIELD GEOLOGIST: TIM EVANS/STAN CONTI TIM SABO
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS	
S-1 @	0.0	8 / 18	2.0/2.0			D. BRN	SILTY SAND W/SOME GRAVEL	GP	TOP 0.5' SNOW / FUEL ODOR (IMW2S-0002) FILL	OVI 0 PP
1540	2.0	23 / 33			Dense	D. BRN	SAND W/SOME Al-Foil		SAND - Med Crse	1.2 f (Hoc
S-2 @		63 / 32	0.9/2.0		Dense	D. BRN	SILTY SAND W/TR GRAVEL & BRICK	GW	SL. PETRO ODOR FILL	0.6 pp
1547	4.0	19 / 20								
S-3 @		7 / 15	0.7/2.0	4.0	V. Dense				SATURATED POOR RECOVERY	4 pp (Hoc
1600	6.0	45 / 50							FUEL ODOR	
S-4 @ 1608	6.3	100/.3 / 18	0.3/0.3		V. Dense				FUEL ODOR POOR RECOVERY	4 pp (Hoc
S-5 @		5 / 3	0.6/2.0		M. Dense		w/BRICKS Plastic		POOR RECOVERY	3 pp (Hoc
1621	8.5	14								
	10.0						- NO SAMPLE 8.5 - 10' -			
S-6 @		10 / 4	0.3/2.0		M. Dense	D. BRN	SILTY SAND W/TR CLAY & Gravel	SM	OILY SHEEN POOR RECOVERY	1 pp (Hoc
1641	12.0	3 / 7							SAND - Med to Coarse Gr	
S-7 @		- / -	0.6/2.0		Hard	D. BRN	SILT W/TR ORG	ml	SL. FUEL ODOR (IMW2S-1214)	
1700	14.0	100/3		14.						
							- Total Depth 14' -		Auger Refusal @ 14'	
							HSA → 14'			
							2" SS → 14'			
							Screen 4'-14'			
							Sand 3'-4'		→ 1½ - 100# Bag Clear Sand	
							Bentonite 2'-3'		→ 1 - 50# Bag Pure Gold Med Hydr Chips	
							2' Su			
							4" Steel Protective Casing			

REMARKS CME 55 HSA Rig
4¼" ID 8" Ø Auger
3" x 24" SS (140 # Wt, Cat Head, 30" Drop)

BORING ~~HTB2~~ IMW
PAGE 1 OF 1

* See Legend on Back

* Chemical Sample Only (1-2oz & 1-8oz Jar) - ▲ Sent to Lab
# 1. IMW2S-0002

BORING NO IMW2S

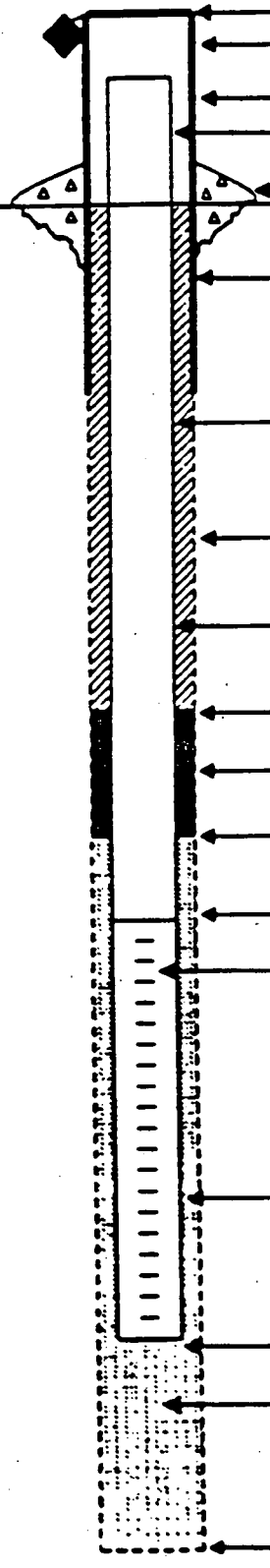
HALLIBURTON NUS
Environmental Corporation

MONITORING WELL SHEET

PROJECT NSB-NLON
PROJECT NO. 9594
ELEVATION
FIELD GEOLOGIST Tim Evans / Stan Canti

LOCATION GROTON, CT.
BORING IMW2S
DATE 1-11-94

DRILLER EAST COAST
DRILLING METHOD HSA
DEVELOPMENT METHOD



ELEVATION OF TOP OF SURFACE CASING :
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING:
STICK - UP RISER PIPE :
TYPE OF SURFACE SEAL: Concrete
I.D. OF SURFACE CASING: 4"
TYPE OF SURFACE CASING: Steel
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: PVC (Schedule 40)
BOREHOLE DIAMETER: 8"
TYPE OF BACKFILL: N/A
ELEVATION / DEPTH TOP OF SEAL: /2'
TYPE OF SEAL: Bentonite Pellets
DEPTH TOP OF SAND PACK: /3'
ELEVATION / DEPTH TOP OF SCREEN: /4'
TYPE OF SCREEN: PVC (Schedule 40)
SLOT SIZE x LENGTH: 0.010 x 10'
I D OF SCREEN: 2"
TYPE OF SAND PACK: Silica Sand
ELEVATION / DEPTH BOTTOM OF SCREEN: /14'
ELEVATION / DEPTH BOTTOM OF SAND PACK: /14'
TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A
ELEVATION / DEPTH OF HOLE: /14'

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB-NLON — BORING NO.: ~~HNUIS~~ ITB3
PROJECT NO.: 9594 — DATE: 01-12-94 — DRILLER: EAST COAST THOMAS
ELEVATION: — FIELD GEOLOGIST: TIM EVANS / STAN CONTI TIM SABO
WATER LEVEL DATA: —
(Date, Time & Conditions) —

SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, FL)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS	OVA
▲ S-1 @	0.0 / 1.0	x / x	—		—	BRN	SILTY SAND w/TR GRAVEL & PLASTIC	GW	FILL NO SS SAMPLE GRAB	0 p.
0955 S-2		65 / 71	1.8/2.0	Fill	V. Dense	BRN	SILTY SAND & GRAVEL w/Plastic	SM/GW	FILL Fuel odor	1 Pp (1.10)
@ 1013	3.0	63 / 17								
S-3 @		3 / 3	0.0/2.0		Loose	—	- NO SAMPLE -	—	NO RECOVERY	
1017	5.0	3 / 3							Refusal @ 5' move 5' SE	
S-4 @		10 / 12	1.5/2.0		M. Dense	D.BRN	SILTY SAND w/SOME GRAVEL, WOOD, PLASTIC	SM	Wet Fuel Odor	1 pp
1055	7.0	16 / 17		Fill						
S-5 @ 1102	7.7 / 8.0	42 / 100/.2	0.6/0.7		V. Dense	D.BRN	SILTY SAND	SP	SATURATED Fuel Odor	—
S-6 @ 1115	8.2	100/.2	0.0/0.2		V. Dense	—	- NO SAMPLE -	-	NO LIVING SAMPLE NO SAMPLE	
	10.0						↓		Auger to 10'	
S-7 @		2 / 3	2.0/2.0		Stiff	D.BRN	Clayey Silt w/Tr Shell	CL	Sulfur Odor	0 pp
1130	12.0	4 / 5							Organic	
S-8 @		1 / 1	1.0/2.0		V. Soft					0 pp
1135	14.0	1 / 1								
							- Total Depth 14' -			
							- Pouring Backfill 14' -			
							HSA to 14' (+ 5')			
							2-3" SS to 14			

REMARKS CME 55 HSA Rig
4¼" ID 8" Ø Auger
3" x 24" SS (140# WH Cat Head 30" Drop)

BORING ~~HNUIS~~ ITB
PAGE 1 OF 1

* See Legend on Back

▲ Chemical Sample sent to Lab (1-2 oz. & 1-8 oz. Jar)
* ITB3 - - - - -

APPENDIX A.2

SITE 2 - AREA A LANDFILL

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2LTB13
PROJECT NO.: 9594 DATE: 12-3-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: TJE
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	0.0	14 / 25	2.0/2.0		V. Dense	TAN	SILTY SAND w/ GNEISS FRAGS	SM	Fill 0 ppm
0818	2.0	26 / 40						SM	
S-2		65 / 72	1.0/2.0		V. Dense	GRAY	SILTY SAND w/ ROCK FRAGS	SM	FILL 0 ppm
0828	4.0	20 / 19						SM	→ MOVED ~10' EAST CREOSOTE @ 1½' 10.2 ppm (OIL?) BZ 0 ppm 0859
S-3		12 / 13	0.8/2.0		M. Dense	BRN	SILTY SAND w/GRAVEL	SM	→ MOVED ~10' SOUTH 0 ppm
0915	6.0	10 / 10							NO SAMPLE 4'-6' (POOR RECOVERY)
S-4		12 / 20	2.0/2.0		[illegible]	D.BRN	SANDY GRAVEL W/TR ORG	SW	WET 0 ppm
0920	8.0	14 / 15							LANDFILL AVG Ø ~0.1" → MOVED ~5' SE BZ 0 ppm 0938
							HSA TO 3'		
							CC TO 8'		
							~ SAMPLES		
									Refusal @ 4'
									1½' (10'SE)
									8' (10'SW)
									4' (5'S)

REMARKS CME 75 HSA R.G
4¼" ID AUGER
2" SS TO SAMPLE

BORING 2LTB13

PAGE 1 OF 1

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2LTB23
PROJECT NO.: 2594 DATE: 12-3-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: TSE
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	0.0	6 / 10	2.0/2.0		M. Dense	TAN TO MAROON	SAND / BRICK, WOOD, NAILS		FILL 0 ppm
1102	2.0	14 / 10					FRAGS!		LANDFILL 1.5→2.0'
							(BOULDERS)		NO SAMPLE DUE TO
									BOULDERS 2'-4'
	4.0								
S-2		10 / 14	1.8/2.0		M. Dense	GRAY TO	SILTY SAND & GNEISS FRAGS /	SM	0 ppm
1116	6.0	16 / 19				BLACK	SILT (ASH?)		LITHO A 5.6'
S-3		16 / 15	1.6/2.0		M. Dense	BLACK TO	SANDY SILT W/GLASS, BRICK /	ml	0 ppm
1120	8.0	15 / 14				RED BRN	CLAY W/ ORG		GREEN & RED XTLS? @ 7.5'
S-4		3 / 3	0.8/2.0		[illegible]	BRN	SILTY SAND W/ GNEISS, GLASS FRAGS	SM	0 ppm
1127	10.0	3 / 3							
S-5		2 / 1	2.0/2.0		[illegible]	D.BRN	GRAVEL W/BRICK FRAGS /	SM	WET SULFUR ODOR 0 ppm
1132	12.0	3 / 2			[illegible]		CLAYEY SILT W/TR SHELL	ML	LANDFILL TO 10.5' LITHO A @ 10.5'
			0.0/2.0				—		NO RECOVERY
1143	14.0								
S-6		2 / 1			[illegible]	D.BRN	CLAYEY SILT W/TR SHELL	ml	Sulfur Odor 0 ppm
1150	16.0	1 / 1							WEIGHT OF HAMMER
							→SA → 14'		
							→ → 6'		
							→ SAMPLES		

REMARKS CME 75 HSA RIG
4 1/4" ID AUGER
3" SS TO SAMPLE

BORING 2LTB23
PAGE 1 OF 1

* See Legend on back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 2LMW19S
PROJECT NO.: 9594
DATE: 12-17-93
DRILLER: EAST COAST THOMAS/ WAYNE LIUFRERS
ELEVATION:
FIELD GEOLOGIST: T. EVANS
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
@ 1100	0.0								
	5.0								
	5.5				HARD	GRAY TO PINK	GNEISS W/GRANITE BOULDER		
					↓	↓	↓		
	10.0				HARD	GRAY	GRAVEL		
					↓	↓	↓		
	12.0								
					HARD	GRAY	GNEISS		
					↓	↓	↓		
	15.0			15'					
					↓	↓	↓		
	17.0				HARD	GRAY	GRAVEL		
	17.5			17.5	↓	↓	↓		HIT BR @ 17.5'
					HARD	GRAY	GNEISS		
@ 1140	20.0								HIT H.O @ 20'±
									2" PVC
									SCREEN 15'-25'
									SAND 12'-25'
	25.0			25'			TOTAL DEPTH 25'		PELLETS 11.5'-13'

REMARKS CHICAGO PNEUMATIC 672 AIR ROTARY RIG
8½" ⌀ AIR HAMMER 0' TO 25'

BORING 2LMW19S

PAGE 1 OF 1

* See Legend on Back

HALLIBURTON NUS
Environmental Corporation

BORING NO: 2LMW19S

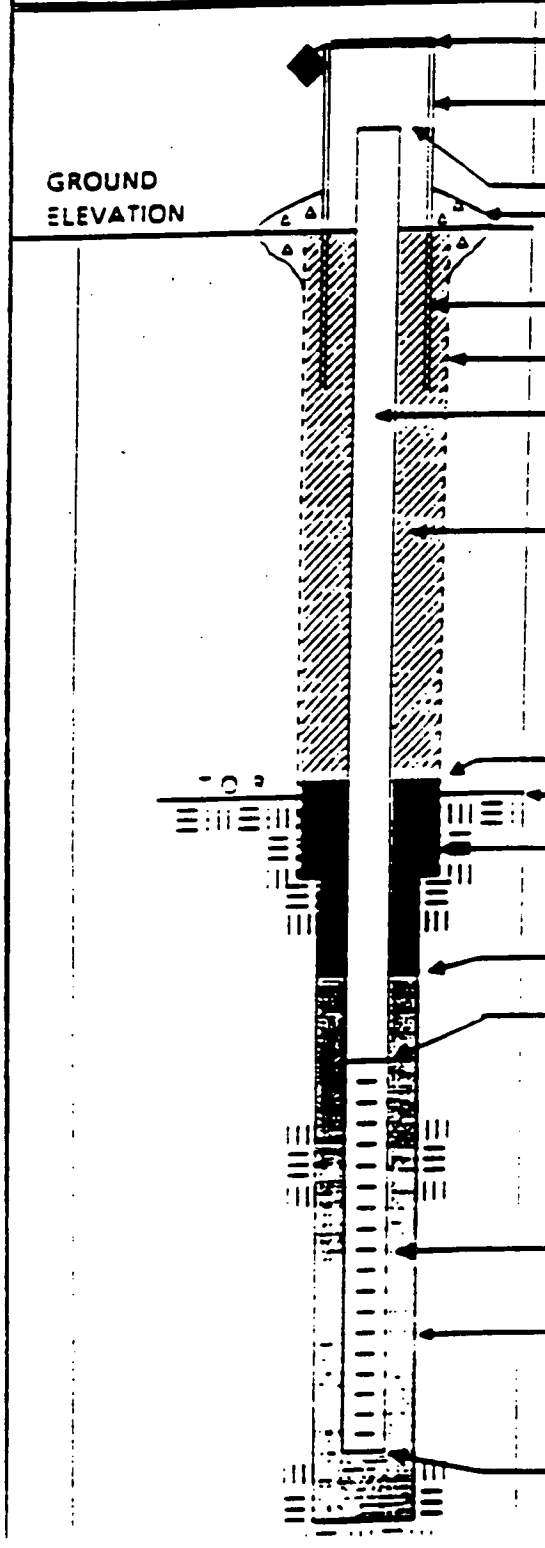
BEDROCK MONITORING WELL SHEET

WELL INSTALLED IN BEDROCK

PROJECT: NSB-NLON
PROJECT NO.: 9594
ELEVATION:
FIELD GEOLOGIST: Tim Evans

LOCATION: GROTON, CT
BORING: 2LMW19S
DATE: 12-17-93

DRILLER: EAST COAST
DRILLING METHOD: Air Rotary
DEVELOPMENT METHOD:



ELEVATION OF TOP OF SURFACE CASING:

STICK UP OF CASING ABOVE GROUND SURFACE: 2.1'

ELEVATION TOP OF RISER: 1.94

TYPE OF SURFACE SEAL: Concrete

I.D. OF SURFACE CASING: 4"

DIAMETER OF HOLE: 8½"

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: PVC (Schedule 40)

TYPE OF BACKFILL: Grout

ELEVATION / DEPTH TOP OF SEAL: /11.5'

ELEVATION / DEPTH TOP OF BEDROCK: /17.5'

TYPE OF SEAL: Bentonite Pellets

ELEVATION / DEPTH TOP OF SAND: /13'

ELEVATION / DEPTH TOP OF SCREEN: /15'

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.010 x 10'

I.D. SCREEN: 2"

TYPE OF SAND PACK: Silica Sand

DIAMETER OF HOLE IN BEDROCK: 8½"

CORE / REAM:

ELEVATION / DEPTH BOTTOM SCREEN: /25'

ELEVATION / DEPTH BOTTOM OF HOLE: /25'

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2LMW19D
PROJECT NO.: 9594 DATE: 12-17-93 DRILLER: EAST COAST THOMAS/ WAYNE LINEBERRY
ELEVATION: FIELD GEOLOGIST: T. EVANS
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	0.0						SEE BORING 2LMW19S		
							FOR LITHOLOGY TO 25'		
	5.0								
	10.0								
	15.0								
	17.5			17.5'					HIT BR @ 17.5'
	20.0								
	25.0								

REMARKS CHICAGO PNEUMATIC 672 AIR ROTARY RIG
8½"ϕ AIR HAMMER 0' TO 28'; 6"ϕ CASING TO 28'
5⅞"ϕ AIR HAMMER 28' TO 120'; 6"ϕ OPEN BOREHOLE 28' TO 120'

BORING 2LMW19D
PAGE 1 OF 5

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2LMW19D
PROJECT NO.: 9594 DATE: 12-17-93 DRILLER: EAST COAST THOMAS/
ELEVATION: FIELD GEOLOGIST: T. EVANS WAYNE LINERERR
WATER LEVEL DATA :
(Date, Time & Conditions)

	SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
		25.0								
12/17		27.5 28.0								HIT H_2O @ 27.5'±
12/18	@ 0830									
		30.0								
		35.0								
		40.0								
		45.0								
		50.0				HARD	L.GRAY	[illegible]		

REMARKS LOG CUTTINGS 45 → 120'

BORING 2LMW19D

PAGE 2 OF 5

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2LMW19D
PROJECT NO.: 9594 DATE: 12-18-93 DRILLER: EAST COAST THOMAS/
ELEVATION: FIELD GEOLOGIST: TIM EVANS WAYNE LINEBERRY
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN No.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	50.0								
	55.0								
	60.0				HARD	GRAY	QTZ-BIO-FSPAR GNEISS		MICA LEDUS
	65.0								
	70.0								LITTLE H_2O @ 70' ±
	75.0								

REMARKS

BORING 2LMW19D

PAGE 3 OF 5

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2LMW14D
PROJECT NO.: 9594 DATE: 12-18-93 DRILLER: EAST COAST THOMAS/
ELEVATION: FIELD GEOLOGIST: T. EVANS W. LINEBERRY
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	75.0								
	80.0				HARD	GRAY	QTZ-BIO-FLDAR GNEISS		MICACEOUS
	85.0								
					▼	▼	▼		
	90.0				M HARD	D GRAY	QTZ. BIO GNEISS		
					▼	▼	▼		
					HARD	GRAY	QTZ. BIO-FLDAR GNEISS		
	95.0								
					▼	▼	▼		
	100.0				HARD	GRAY	GNEISS		

REMARKS

BORING 2LMW14D

PAGE 4 OF 5

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2LMW19D
PROJECT NO.: 9594 DATE: 12-18-93 DRILLER: EAST COAST THOMAS / W. LINEBERRY
ELEVATION: FIELD GEOLOGIST: T. EVANS
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	100.0								
@ 0945	105.0								
	110.0								
	115.0				HARD	PINK	GNEISS		
					HARD	GRAY	GNEISS		
@ 1007	120.0								LET SIT 25 min
									Produces H_2O @ 1040
									(H_2O level ~4' from bottom)
									OPEN BOREHOLE
							Total Depth 120'		74' - 120'

REMARKS

BORING 2LMW19D

PAGE 5 OF 5

* See Legend on Back

HALLIBURTON NUS
Environmental Corporation

BORING NO.: 2LMW19D

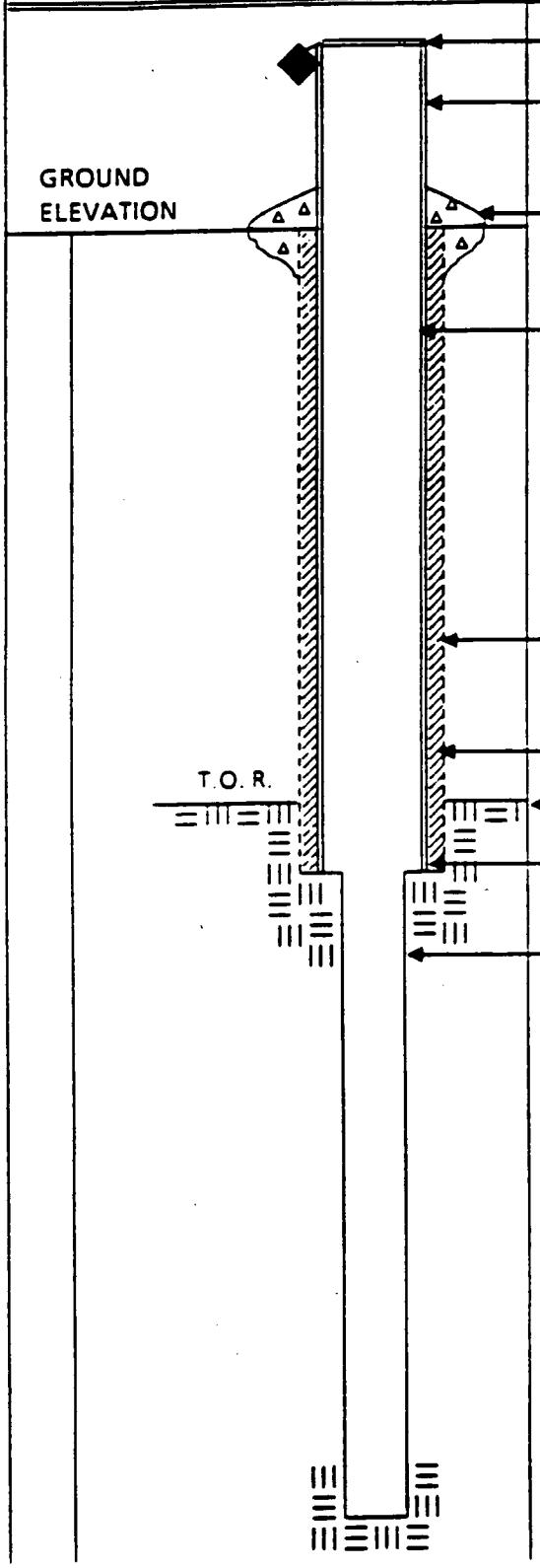
BEDROCK MONITORING WELL SHEET

OPEN HOLE WELL

PROJECT: NSB-NLON
PROJECT NO.: 9594
ELEVATION:
FIELD GEOLOGIST: TIM EVANS

LOCATION: GROTON, CT
BORING: 2LMW19D
DATE: 12-18-93

DRILLER: EAST COAST
DRILLING METHOD: AIR ROTARY
DEVELOPMENT METHOD:



ELEVATION OF TOP OF CASING:

STICK UP OF CASING ABOVE GROUND SURFACE: 1.8'

TYPE OF SURFACE SEAL: CONCRETE PAD

I.D. OF CASING: 6"

TYPE OF CASING: STEEL

TEMP. / PERM.: PERM

DIAMETER OF HOLE: 8½"

TYPE OF CASING SEAL: GROUT

DEPTH TO TOP OF ROCK: 20'

DEPTH TO BOTTOM CASING: 28'

DIAMETER OF HOLE IN BEDROCK: 6"

DESCRIBE IF CORE / REAMED WITH BIT:

N/A

DESCRIBE JOINTS IN BEDROCK AND DEPTH:

N/A

ELEVATION / DEPTH OF HOLE: / 120'

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2L MW 20S
PROJECT NO.: 9594 DATE: 12-18-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: T. EVANS W. LINEBERRY
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN N.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	0.0						ASPHALT		TOP 2"
	2.0					TAN	SAND W/SOME SILT & PEBBLES (FILL)	SM	
	5.0								
	10.0								
	11.0					BRN	SILTY SAND W/TR ORG	SM	DRY M-Cgr Sand
	15.0					D.BRN	SANDY SILT	ML	MOIST Mgr
	17.0					D BRN	SANDY SILT W/TR ORG & PEBBLES	ML	MOIST MICACEOUS, Fgr Sand
	19.0				HARD	GRAY	GNEISS BOULDER	—	
	20.0					BRN	GRAVELLY SAND	GP	H_2O @ 17-20'
						BRN	GRAVEL	GP	(Max Ø 2", F-Mgr Sand Poor Graded
	24.0						W/TR ORG	GP	SATURATED
	25.5						GNEISS BOULDER (?)		
	26.0								

REMARKS CHICAGO PNEUMATIC 672 AIR ROTARY RIG
8½" ⌀ AIR HAMMER 0' TO 26'
2" PVC (0.010 SLOT) SCREEN 0' TO 19' SAND 7' TO 19'
PELLETS 5' TO 7'
LOG CUTTINGS 0' TO 26'
HOLE CAVE-IN 19' TO 26'

BORING 2LMW20S
PAGE 1 OF 1

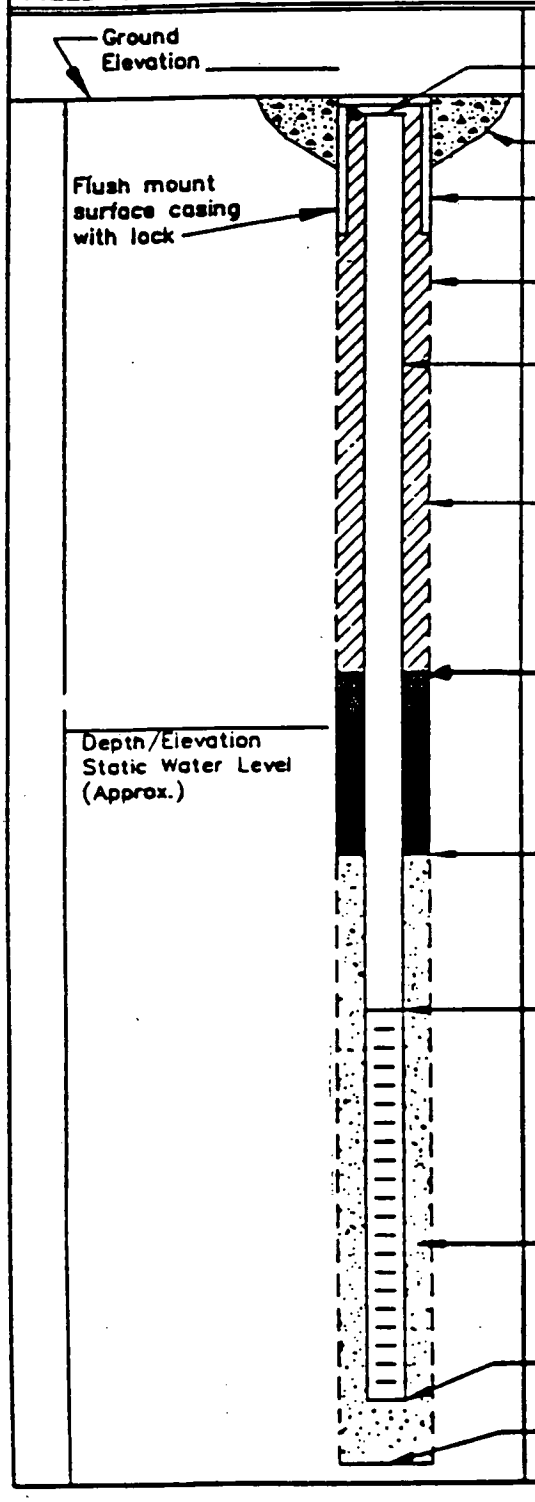
* See Legend on Back

HALLIBURTON NUS
Environmental Corporation

WELL NO.: 2LMW20S

OVERBURDEN MONITORING WELL SHEET

PROJECT: NSB-NLON	LOCATION: Groton CT	DRILLER: East Coast
PROJECT NO.: 9594	BORING: 2LMW20S	DRILLING METHOD: Air Rotary
ELEVATION:	DATE: 12-18-93	DEVELOPMENT METHOD:
FIELD GEOLOGIST: Tim Evans		



ELEVATION TOP OF RISER: _____

TYPE OF SURFACE SEAL: Concrete

TYPE OF PROTECTIVE CASING: Steel

I.D. OF PROTECTIVE CASING: 4"

BOREHOLE DIAMETER: 8 1/2"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: Grout

ELEVATION / DEPTH TOP OF SEAL: 15'

TYPE OF SEAL: Bentonite Chips

DEPTH/ELEVATION TOP OF SAND: 7'

DEPTH/ELEVATION TOP OF SCREEN: 9'

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.010 X 10'

TYPE OF SAND PACK: Silica Sand

DEPTH/ELEVATION BOTTOM OF SCREEN: 19'

DEPTH/ELEVATION BOTTOM OF SAND: 19'

DEPTH/ELEVATION BOTTOM OF HOLE: 19'

BACKFILL MATERIAL BELOW SAND: Natural

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2LMW20D
PROJECT NO.: 9594 DATE: 12-20-93 DRILLER: EAST COAST THOMAS/ WAYNE LINEBERRY DICK SPAULDING
ELEVATION: FIELD GEOLOGIST: TIM EVANS
WATER LEVEL DATA :
(Dat , Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN N.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	0.0						SEE BORING 2LMW20S		
							FOR LITHO TO 18'		
	5.0								
	10.0								
	15.0								
							LIMITED LITHO LOGGED		
	20.0						18 TO 74' DUE TO		
							MUD ROTARY DRILLING		
									LOSE MUD @ 24'
12/20 12/21	25.0								

REMARKS CHICAGO PNEUMATIC 612 A ROTARY RIG
8 3/4" ø MUD ROTARY 0' TO 74' 6" CASING TO 74'
5 7/8" ø AIR HAMMER 74' TO 90'

BORING 2LM20D
PAGE 1 OF 4

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 2LMW20D
PROJECT NO.: 9594 DATE: 12-21-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: TIM EVANS
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	25.0								
	30.0								
							GRAVELLY SAND		LOSE MUD @ 34'
	35.0								
	37.0				V. SOFT	BRN	SILTY CLAY W/TR SHELL	CL	
	38.0				HARD	GRAY TO PINK	BTL - BIO - FSPAR GNEISS		
	40.0								
	44.0								
	45.0								BREAK THRU ~44'-45' GNEISS
	50.0								

REMARKS

BORING 2LMW20D

PAGE 3 OF 4

* See Legend on Back

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB-NLON
BORING NO.: 2LMW20D
PROJECT NO.: 9594
DATE: 12-21-93
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: TIM EVANS
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	50.0								
									LOSE MUD @ 34'
	55.0								
	60.0								
	65.0								
	69.0			69.0					BR? @ 69.0
	70.0								
	74.0								
	75.0								HIT H_2O @ 74.5'-74.75' (~40gpm)

2/21/93

REMARKS

BORING 2LMW20D

PAGE 3 OF 4

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 2LMW20D
PROJECT NO.: 9594
DATE: 1-5-94
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: T. Evans Dick S.
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, FL)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
1/4/94 1/5/94	75.0								Producing ~20 gpm H_2O
	80.0				V. HARD	CLEAR	QUARTZITE	-	

REMARKS LOG CUTTINGS @ 80.0'

BORING 2LMW20D

PAGE 4 OF 4

* See Legend on Back

BORING NO.: 2LMW20D

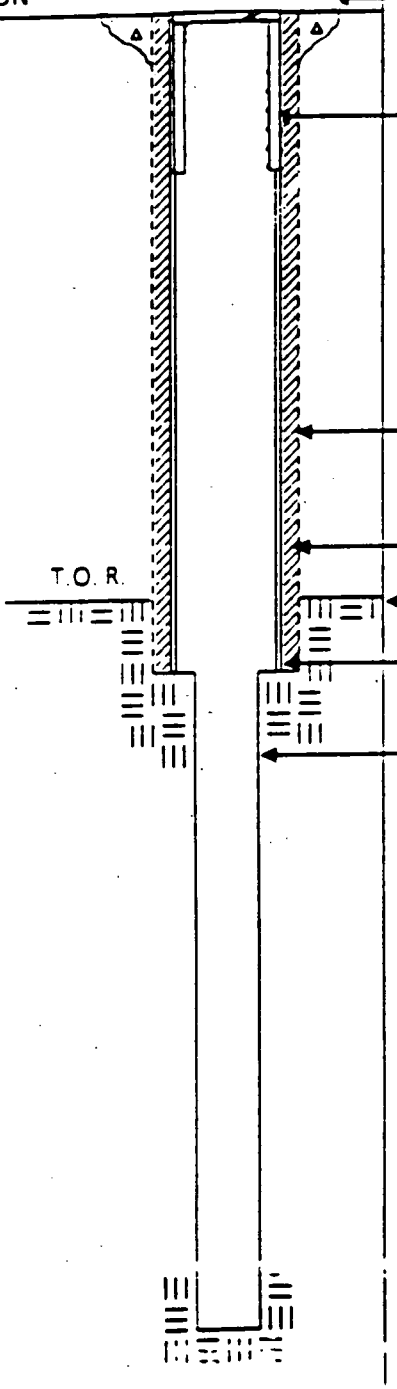
HALLIBURTON NUS
Environmental Corporation

BEDROCK MONITORING WELL SHEET

OPEN HOLE WELL

PROJECT NSB-NLON	LOCATION Groton, CT	DRILLER EAST COAST
PROJECT NO. 9594	BORING 2LMW20D	DRILLING METHOD Mud/Air Rotary
ELEVATION	DATE 1-5-94	DEVELOPMENT METHOD
FIELD GEOLOGIST Tim Evans		

GROUND ELEVATION



TYPE OF SURFACE SEAL: Concrete

I.D. OF CASING: 6"

TYPE OF CASING: Steel

TEMP. / PERM.: perm

DIAMETER OF HOLE: 23/4"

TYPE OF CASING SEAL: grout

DEPTH TO TOP OF ROCK: 69'

DEPTH TO BOTTOM CASING: 74'

DIAMETER OF HOLE IN BEDROCK: 6"

DESCRIBE IF CORE / REAMED WITH BIT:

DESCRIBE JOINTS IN BEDROCK AND DEPTH:

ELEVATION / DEPTH OF HOLE: 80'

24

BORING LOG

HALLIBURTON NUS

PROJECT: NSB - NLON
BORING NO.: 2LOW15
PROJECT NO.: 9594
DATE: 2-4-94
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: J.R. FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 2-4-94 OVERCAST 10°

SAMPLE NO. & TYPE OR RQD	DEPTH (FT) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	0-2	58 / 47	1.8		V. Dense	TAN	SILTY, FINE-MEDIUM Sand	FILL	HNU-0 08:26
		30 / 21	2.0			BLACK	SILTY, M-C Sand Tr gravel + gram mat.	FILL	FROZEN-MOIST
S-2	2-4	53 / 45	1.4		V. Dense	BLACK-	SILTY F-C Sand and SANDY	FILL	HNU-0 09:32
		30 / 20	2.0			BROWN	F-C GRAVEL Tr. Wood + Ash	FILL	MOIST
S-3	4-6	11 / 7	.95		LOOSE	TAN	SILTY F-M Sand	FILL	HNU-0 09:40
		3 / 11	2.0			ORANGE-BROWN	SILTY M-C Sand and SANDY F-M GRAVEL	FILL	Tr ASH, GLASS, RUSTY
S-4	6-8	3 / 3	.75		LOOSE	ORANGE BROWN		FILL	HNU-0 09:48
		3 / 5	2.0			ORANGE BROWN	Wood and metallic Debris	FILL	moist-wet
S-5	8-10	2 / 2	.25		LOOSE	BROWN	Wood, Poor Recovery	FILL	HNU — 09:56
		3 / 3	2.0			BROWN		FILL	WET Antifreeze Gen Water
S-6	10-12	3 / 2	.25		LOOSE	BROWN	Wood Poor Recovery	FILL	HNU-0 10:02
		3 / 4	2.0			BROWN		FILL	WET Antifreeze Gen Water
S-7	12-14	2 / 1	2.0		Soft	BLACK	MICACEOUS ORGANIC SILT	M/	HNU 0
		2 / 2	2.0			GRAY-GREEN	mottled tr. bivalves (wh.b.)	M/	MOIST
							BOTTOM OF BORING = 15.0'		
							INSTALLED OBSERVATION WELL		
							SCREEN FROM 4'-14' SANDPACK		
							3'-14'		
							STATIC WATER LEVEL @ 14:48		
							@ 15' BGS.		

REMARKS DRILLER: FLOYD CROSS RIG CME 75 WATER SAMPLE 10:45 AM
CW-2LOW15

BORING 2LOW15

PAGE 1 OF 1

* See Legend on Back

BORING NO. 2LOW15

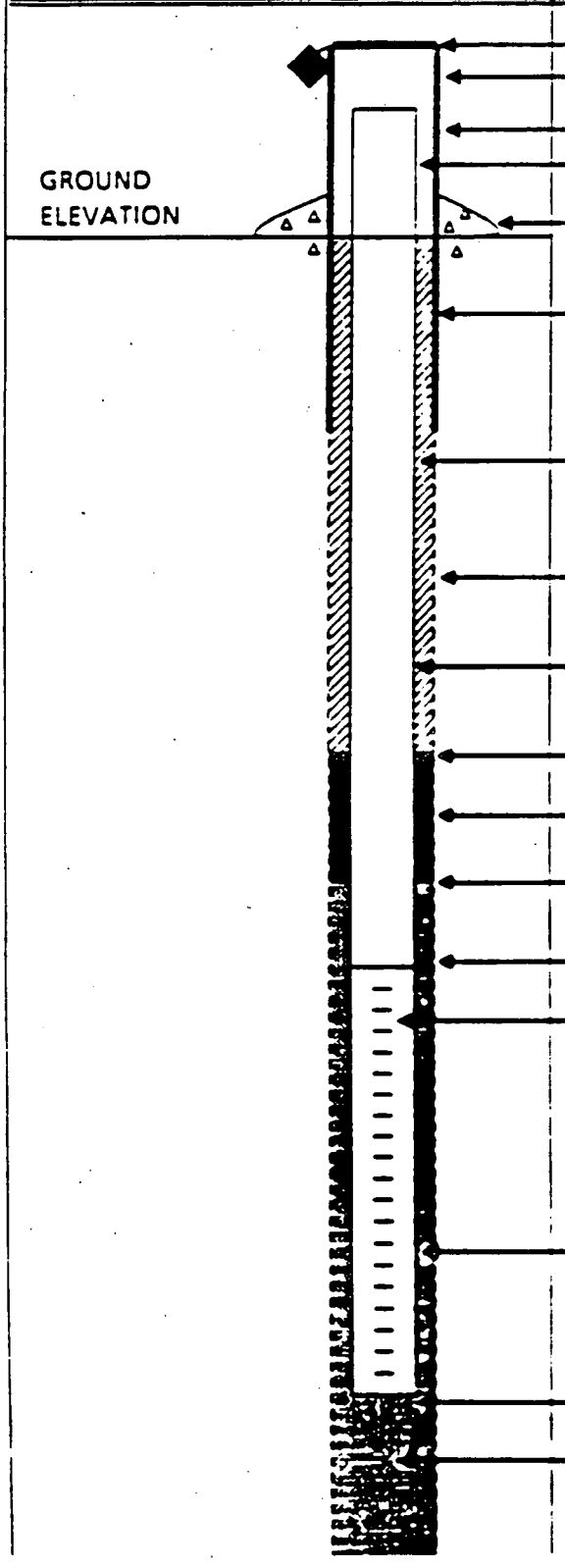
Halliburton NUS CORPORATION

OVERBURDEN MONITORING WELL SHEET

PROJECT NSB New London
PROJECT NO. 9594
ELEVATION
FIELD GEOLOGIST J. R. Ferguson

LOCATION [illegible] Landfill
BORING 2LOW15
DATE 2-4-94

DRILLER E. Cross
DRILLING METHOD Hollow Stem Auger
DEVELOPMENT METHOD Surge / Pump



ELEVATION OF TOP OF SURFACE CASING :
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING: 2.5
STICK - UP RISER PIPE : 2.0
TYPE OF SURFACE SEAL: Portland Cement
I.D. OF SURFACE CASING: 6"
TYPE OF SURFACE CASING: STEEL
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: Schedule 40 PVC
BOREHOLE DIAMETER: 8 1/2"
TYPE OF BACKFILL: NA
ELEVATION / DEPTH TOP OF SEAL: 1.5'
TYPE OF SEAL: Bentonite Pellet
DEPTH TOP OF SAND PACK: 3.0
ELEVATION / DEPTH TOP OF SCREEN: 4.0
TYPE OF SCREEN: Sch 40 PVC
SLOT SIZE x LENGTH: .010 - 10'
I.D. OF SCREEN: 2"
TYPE OF SAND PACK: #2 Silica
ELEVATION / DEPTH BOTTOM OF SCREEN: 14.0
ELEVATION / DEPTH BOTTOM OF SAND PACK: 15.6
TYPE OF BACKFILL BELOW OBSERVATION WELL: [illegible] Sand

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 2LDWID
PROJECT NO.: 9594
DATE: 2-2-94
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: J. R. FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 2-2-94 10° 12:00

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	0-2	46 / 47	1.5		V. Dense	Brown	Silty Fine - Medium Sand, Silty	Fill	HNU - 0 12:18
		39 / 39	2.0			Black	Gravelly Fine - Medium Sand + Asph	Fill	glass, charred, green plastic
S-2	2-4	7 / 19	.60		Dense	Brown-Black	Silty Sandy Gravel, green	Fill	HNU - 0 12:26
		28 / 24	2.0			Black	plastic material wire	Fill	
S-3	4-6	39 / 50/6 / 50/0	.35 1.0		V. Dense	Black	Silty Gravelly Sand Fr. glass	Fill	HNU - 2 ▽ 12:36
									MOIST - WET
	6-8						No Sample Boulders		
S-4	8-10	20 / 29	1.5		V. Dense	Brown	Wood	Fill	HNU - 2 12:50
		32 / 38	2.0			Brown		Fill	WET
S-5	10-12	2 / 3	.35		Loose	Brown	Medium - Coarse Sand and	SP/GP	HNU-0 (Fill) 13:00
		3 / 3	2.0			Brown	Fine - Medium Gravel	SP/GP	WET Took water sample at freeze green color
S-6	12-14	3 / 2	1.8		Soft	Green-Gray	Organic Clayey Silt,	ml	HNU - 0 13:10
		2 / 3	2.0			Green-Gray	micaceous, mottled	ml	moist
S-7	14-16	2 / 3	1.0		M. Stiff	Green Gray	Organic, micaceous Clayey	ml	HNU - 0 14:03
		3 / 2	2.0			Green-Gray	silt mottled Trwhite bivalves	ml	moist
S-8	16-18	1 / 2	1.5		Soft	Green-Gray		ml	HNU - 0 14:12
		2 / 1	2.0			Green-Gray		ml	MOIST
S-9	18-20	W / O	1.65		V. Soft	Green-Gray		ml	HNU - 0 14:20
		R / 2	2.0			Green-Gray		ml	MOIST
S-10	20-22	W / O	1.8		V. Soft	Green-Gray		ml	HNU - 0 14:25
		R / 2	2.0			Green-Gray		ml	MOIST
S-11	22-24	W / O	1.7		V. Soft	Green-Gray		ml	HNU - 0 14:35
		R / 2	2.0			Green-Gray		ml	MOIST
S-12	24-26	W / R	1.8					ml	HNU - 0 14:40

REMARKS Driller Flow [illegible] Cone 75 [illegible] Samples 3" Ø Split Spoon 1 HR Standby - Water Sample
2HR Standby 15:00-17:00 Conference [illegible]

BORING 2LDWID

PAGE 1 OF 2

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2LOWID
PROJECT NO.: 9594 DATE: 2-2-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: J. R. FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 2-2-94 15° OVERCAST

SAMPLE NO. & TYPE OR RQD	DEPTH (FT) OR RUN N.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
		8 / 15	2.0		LOOSE	TAN-OR. BRN	MICACEOUS SILTY VF-F SAND IRONSTONE BANDING	SM	WET
S-13	26-28	8 / 15	1.1		DENSE	TAN	FINE-COARSE QUARTZO-	SP	HNU-0 14:51
		31 / 35	2.0			TAN	FELDSPATHIC SAND	SP	WET
S-14	28-29.25	5 / 13			V. DENSE	TAN	FINE-COARSE QUARTZO-FELDSPATH. SAND	SP	HNU 0 15:00
S-15	29.25-30	50/2 / 100/2	1.25'		V. DENSE	PINK-BLACK	WEATHERED BIOTITE GNEISS		IN TIP OF SAMPLER
							BOTTOM OF BORING: 29.25'		

REMARKS TOP OF ROCK 29.25'

BORING 2LOWID

PAGE 2 OF 2

* See Legend on Back

BORING NO 2LOW 1D

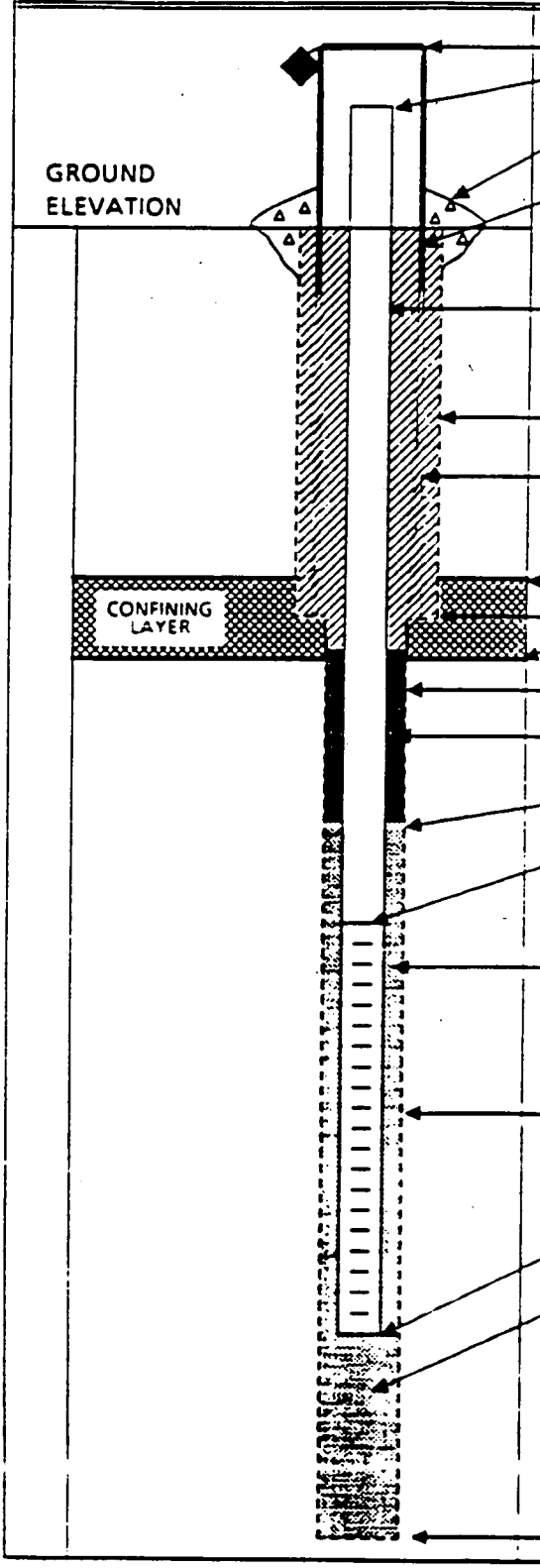
Halliburton NUS CORPORATION

CONFINING LAYER MONITORING WELL SHEET

PROJECT NSB New London
PROJECT NO. 9594
ELEVATION
FIELD GEOLOGIST J.R. Ferguson

LOCATION Site 2 Landfill
BORING 2LOW 1D
DATE 2-3-94
WL (TDW) 5.89 3/30/94

DRILLER F Cross
DRILLING METHOD Hollow Stem Augers
DEVELOPMENT METHOD Surge / Pump



ELEVATION OF TOP OF PERM. CASING: 2.5
ELEVATION OF TOP OF RISER PIPE: 2.0

TYPE OF SURFACE SEAL: Portland Cement

I.D. OF PERM. CASING: 6"
TYPE OF SURFACE CASING: STEEL

RISER PIPE I.D. 2"
TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: 8 1/2"

PERM CASING I.D. NA
TYPE OF CASING & BACKFILL: Portland Cement

ELEVATION / DEPTH TOP CONFINING LAYER: 12.0
ELEVATION / DEPTH BOTTOM OF CASING: NA
ELEVATION / DEPTH BOT. CONFINING LAYER: 25.0

ELEVATION / DEPTH TOP OF SEAL: 14.0
TYPE OF SEAL: Bentonite Pellet

DEPTH TOP OF SAND PACK: 22.0

ELEVATION/DEPTH TOP OF SCREEN: 23.75
TYPE OF SCREEN: Sch 40 PVC

TYPE OF SAND PACK: #2 Silica

BOREHOLE DIA. : 8 1/2"

ELEVATION / DEPTH BOTTOM OF SCREEN: 28.75

ELEVATION / DEPTH BOTTOM OF SAND PACK: 29.50
TYPE OF BACKFILL BELOW OBSERVATION WELL: #2 Silica Sand

ELEVATION / DEPTH OF HOLE: 29.50

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 2LOW23
PROJECT NO.: 9594
DATE: 2-3-94
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: J.R. FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 2-3-94 OVERCAST 10°

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	0-2	44 / 40	1.8		V. Dense	Brown-Black	Silty, Gravelly Sand, Ash	Fill	HNU-0 11:54
		32 / 18	2.0			Brown-Black	and Rubble Fill TR Brick, glass	Fill	moist TR Wood
S-2	2-4	18 / 13	1.6		M. Dense	Brown	Silty, med.-Coarse Sand, Concrete	Fill	HNU-0 11:58
		19 / 8	2.0			Brown	and Brick Fill	Fill	moist
S-3	4-6	6 / 9	1.5		M. Dense	Brown	Silty med-Coarse Sand - Gravel	Fill	HNU-0 12:05
		6 / 6	2.0			Brown	Some Wood Fragments	Fill	moist TR Copper Pipe
S-4	6-8	8 / 11	1.3 ▽		V. Dense	Brown	Silty med-Coarse Sand / med-Coarse	Fill	HNU-2 ▽ 12:18
		50 / 60	2.0			Brown	Gravel, Concrete, Brick, Metal, Debris	Fill	moist
S-5	8-10	17 / 4	.6		M. Dense	Brown	Fine-Coarse Sand, TR-Lith	Fill? SW	HNU-0 12:49
		6 / 7	2.0			Brown	med.-Coarse Gravel	Fill? SW	WET
S-6	10-12	5 / 2			Loose-M. Stiff	Gray-Black	Silty, Sandy, Gravel - Glauc	Fill	HNU-2 12:54
		3 / 3	2.0			Gray-Black	Lee App. Organic Micaceous Silt	ml	WET
S-7	12-14	1 / 1			Soft	Gray-Black	Micaceous Organic Silt,	ml	HNU-0 13:00
		2 / 1	2.0			Green-Gray	Trace whole bivalves	ml	MOIST
							Bottom of Boring: 14.0'		
							Abandoned initial hole and offset		10' since auger
							had deviated out of plumb ≈ 30°		
							Installed observation well from		STATIC AFTER 30 minutes
							4' to 14'		within augers 10.25' DTW

REMARKS Driller: Floyd Cross Rig CME 75 2" Ø Split Barrel Sampler
1300 standby for water level.

BORING 2LOW23

PAGE 1 OF 1

* See Legend on Back

BORING NO. 2LOW25

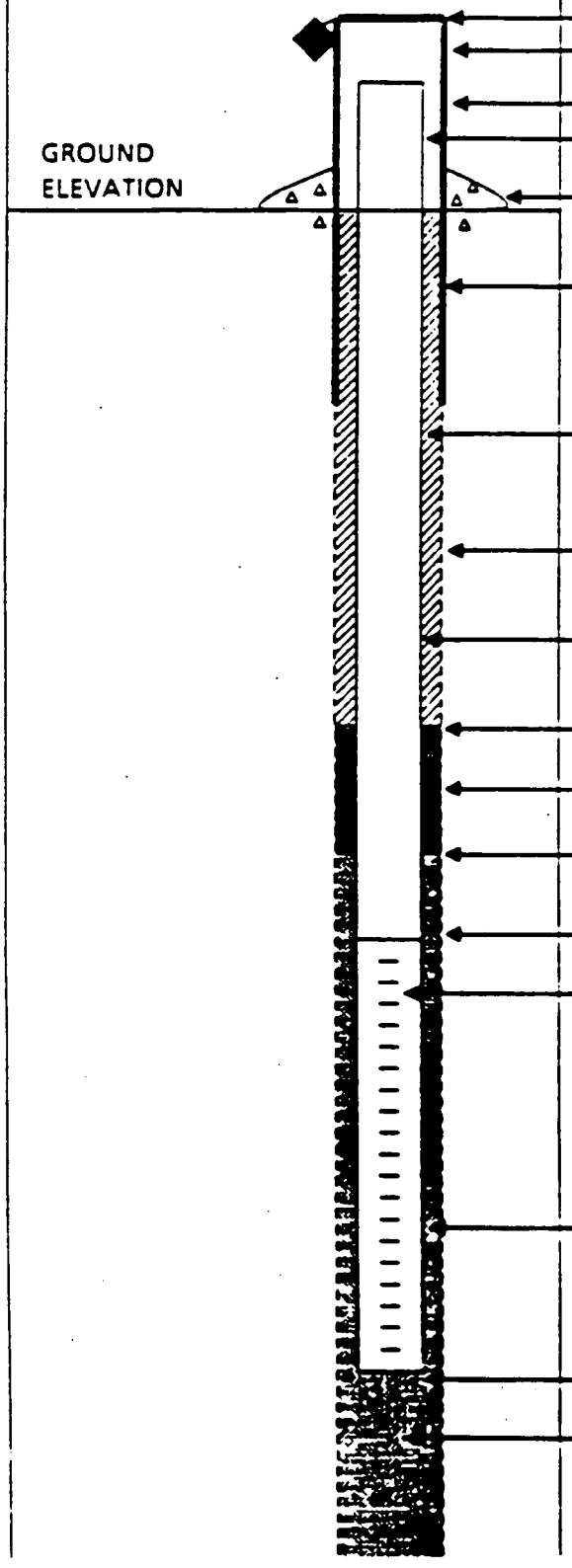
Halliburton NUS CORPORATION

OVERBURDEN MONITORING WELL SHEET

PROJECT NSB New London
PROJECT NO. 9594
ELEVATION
FIELD GEOLOGIST J.R. Ferguson

LOCATION Site 2 Landfill
BORING 2LOW25
DATE 2-3-94

DRILLER F. Cross
DRILLING METHOD Hollow Stem Augers
DEVELOPMENT METHOD Surge/Pump



ELEVATION OF TOP OF SURFACE CASING:
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING: 2.5
STICK - UP RISER PIPE: 2.0
TYPE OF SURFACE SEAL: Portland Cement
I.D. OF SURFACE CASING: 6"
TYPE OF SURFACE CASING: STEEL
RISER PIPE I.D. 2" Ø
TYPE OF RISER PIPE: Sch 40 PVC
BOREHOLE DIAMETER: 8 1/2"
TYPE OF BACKFILL: NA
ELEVATION / DEPTH TOP OF SEAL: 1.5
TYPE OF SEAL: Bentonite Pellet
DEPTH TOP OF SAND PACK: 3.0
ELEVATION / DEPTH TOP OF SCREEN: 4.0
TYPE OF SCREEN: Sch 40 PVC
SLOT SIZE x LENGTH: .010 10'
I D OF SCREEN: 2" Ø
TYPE OF SAND PACK: #2 Silica Sand
ELEVATION / DEPTH BOTTOM OF SCREEN: 14.0
ELEVATION / DEPTH BOTTOM OF SAND PACK: 15.0
TYPE OF BACKFILL BELOW OBSERVATION WELL: #2 Silica Sand

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 2LOW33
PROJECT NO.: 9594
DATE: 2-3-94
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: J.R. FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 2-3-94 PARTLY SUNNY 10°

SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, FL)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	0-2	95 / 118 / 56 / 38	1.65 / 2.0		V. Dense	Brown	Silty F-C Sand, some Fine	Fill	HNU 0 14:58
						Brown	Gravel Tr Brick Fragments	Fill	Frozen
S-2	2-4	26 / 24 / 9 / 10	1.5 / 2.0		Dense	Brown	Silty F-C Sand Little-Some	Fill	HNU 0 15:06
						Brown	Med. Gravel Tr Brick Frags.	Fill	Moist
S-3	4-6	14 / 10 / 11 / 11	— / 2.0	No Recov.	M. Dense		No Recovery		HNU — 15:15
S-4	6-8	5 / 6 / 4 / 6	1.2 / 2.0		Loose	Brown	Silty F-C Sand, Little F-m	Fill	HNU -0 15:20
						Brown	Gravel, Organic Silt at 7.75	Fill	Moist-Wet
S-5	8-10	2 / 3 / 4 / 7	1.5 ▽ / 2.0		Loose	Brown	Silty F-C Sand and F-C gravel	Fill	HNU -3 15:25
						Brown	[illegible] wood C.B	Fill	Wet
S-6	10-12	2 / 2 / 6 / 3	1.8 / 2.0		Loose	Black-Gray	[illegible] Organic Silt block	ml	HNU -0 15:29
						Upper 2.00	[illegible] sulfur odor	ml	Wet(upper) moist matrix
S-7	12-14	1 / 1 / 1 / 2	1.8 / 2.0		V. Soft	Gray-Green		ml	HNU -0 15:32
						Gray-Green		ml	Moist
							Bottom of Boring = 14.0'		
							Installed observation well from [illegible] 10 - .010 slot [illegible]		

REMARKS Driller: Floyd Cross [illegible] 2" Split Barrel Sampler

BORING 2LOW33

PAGE 1 OF 1

* See Legend on Back

BORING NO. 2LOW35

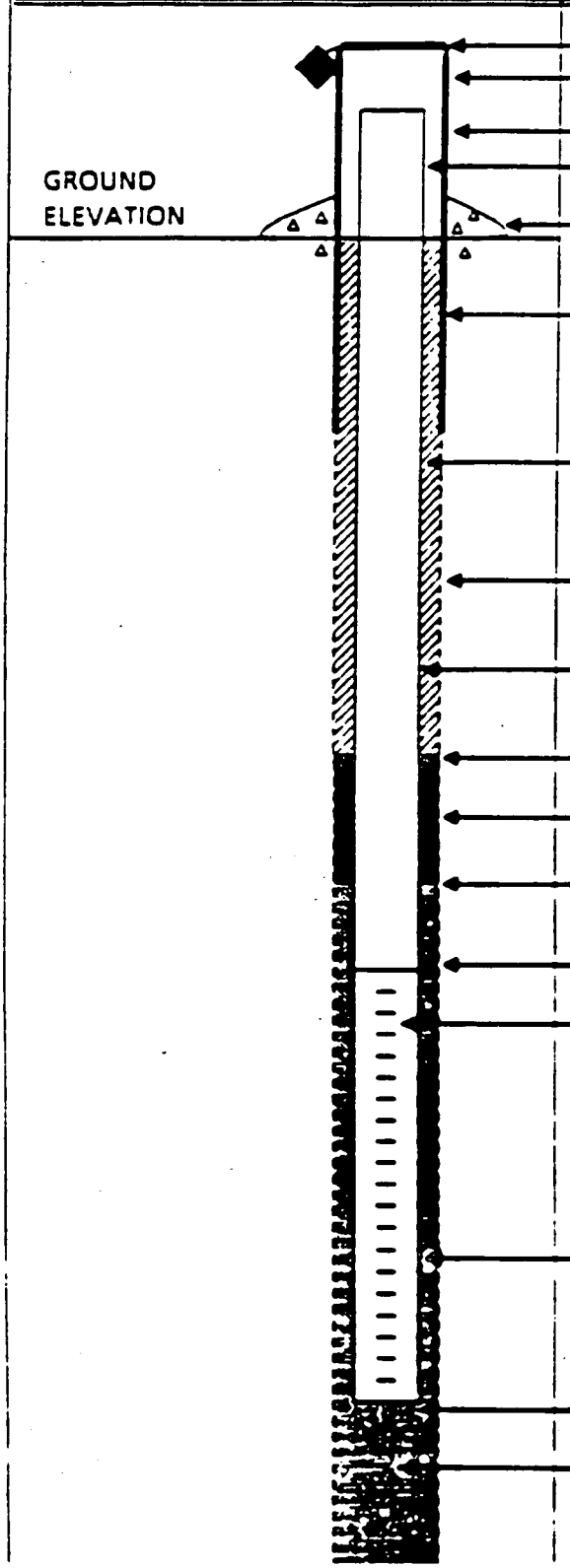
Halliburton NUS CORPORATION

OVERBURDEN MONITORING WELL SHEET

PROJECT NSB New London
PROJECT NO. 0594
ELEVATION
FIELD GEOLOGIST J.R. Ferguson

LOCATION Site 2 Landfill
BORING 2LOW35
DATE 2-3-94

DRILLER F Cross
DRILLING METHOD Hollow Stem Auger
DEVELOPMENT METHOD Surge / Pump



ELEVATION OF TOP OF SURFACE CASING :
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING: 2.5
STICK - UP RISER PIPE : 2.0
TYPE OF SURFACE SEAL: Portland Cement
I.D. OF SURFACE CASING: 6"
TYPE OF SURFACE CASING: STEEL
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: Sch 40 PVC
BOREHOLE DIAMETER: 8 1/2
TYPE OF BACKFILL: N A
ELEVATION / DEPTH TOP OF SEAL: 1.0
TYPE OF SEAL: Bentonite Pellet
DEPTH TOP OF SAND PACK: 2.0
ELEVATION / DEPTH TOP OF SCREEN: 3.0
TYPE OF SCREEN: Sch 40 PVC
SLOT SIZE x LENGTH: .010 10'
I D OF SCREEN: 2"
TYPE OF SAND PACK: #2 Sand
ELEVATION / DEPTH BOTTOM OF SCREEN: 13.0
ELEVATION / DEPTH BOTTOM OF SAND PACK: [illegible]
TYPE OF BACKFILL BELOW OBSERVATION WELL: [illegible] SAND

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON — BORING NO.: 2LOW45
PROJECT NO.: 9594 — DATE: 2-5-94 — DRILLER: EAST COAST THOMAS
ELEVATION: — FIELD GEOLOGIST: J. R. FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 2-5-94 20° OVERCAST

SAMPLE NO. & TYPE OR RQD	DEPTH (FT) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/Ft)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	0-2	— —	—		V. Dense	BROWN	SILTY FINE-COARSE SAND and	SW/GW	HNU-0 Auger cuttings
		— —	—			BROWN	FINE-MED GRAVEL	FILL	FROZEN
S-2	2-4	11 19	1.3		Dense	BLACK	SILTY SANDY FINE-COARSE	FILL	HNU-0 08:17
		24 15	2.0			BLACK	Sand and GRAVEL TR UNDIFF FILL	FILL	MOIST
S-3	4-6	22 45	1.4		V. Dense	BROWN	SILTY, FINE-COARSE SAND and	FILL	HNU-0 08:28
		27 15	2.0			BROWN	FINE-COARSE GNEISSIC GRAVEL	FILL	MOIST-wet
S-4	6-8	12 5	.58		Loose	BROWN GRAY	SILTY F-C SAND and CONCRETE FILL	FILL	HNU-2 08:40
		4 3	2.0			BLACK	ORGANIC CLAYEY SILT (MOTTLED)	ml	MOIST
S-5	8-10	2 2	1.4		M Stiff	GREEN-GRAY		ml	HNU-0 08:46
		2 2	2.0			GREEN-GRAY		ml	MOIST
S-6	10-12	2 2	1.5		Soft	GREEN-GRAY		ml	HNU-0 08:54
		1 1	2.0			GREEN-GRAY		ml	MOIST
S-7	12-14	2 1	1.3		M Stiff	GREEN-GRAY		ml	HNU-0 09:00
		4 1	2.0			GREEN GRAY		ml	MOIST
							Bottom of Boring: 14.0'		
							Observation well installed screen		
							installed from 4'-14' Sandpack		
							2'-14'		

REMARKS Driller Fixed Cross R.L. Cme 75 3" ø Split Barrel Sampler

BORING 2LOW45

PAGE 1 OF 1

* See Legend on Back

BORING NO. 2LOW45

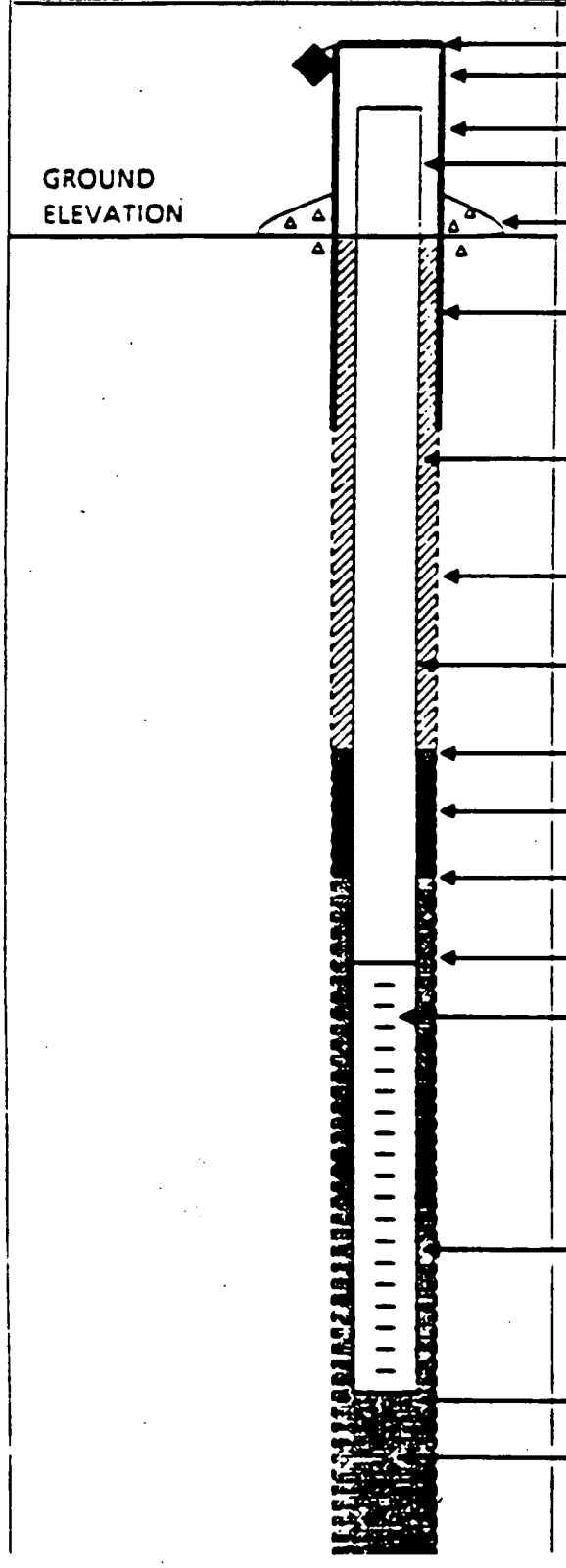
Halliburton NUS CORPORATION

OVERBURDEN MONITORING WELL SHEET

PROJECT NSB New London
PROJECT NO. 9594
ELEVATION
FIELD GEOLOGIST J.R. Ferguson

LOCATION Site 2 Lowlands
BORING 2LOW45
DATE 2-5-95

DRILLER F. Cross
DRILLING METHOD Hollow Stem Auger
DEVELOPMENT METHOD Surge / Pump



ELEVATION OF TOP OF SURFACE CASING :
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING: 2.5
STICK - UP RISER PIPE : 2.0
TYPE OF SURFACE SEAL: Portland Cement
I.D. OF SURFACE CASING: 6"
TYPE OF SURFACE CASING: STEEL
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: Sch 40 PVC
BOREHOLE DIAMETER: 8 1/2 "
TYPE OF BACKFILL: NA
ELEVATION / DEPTH TOP OF SEAL: 1.5
TYPE OF SEAL: Bentonite Pellet
DEPTH TOP OF SAND PACK: 3.0
ELEVATION / DEPTH TOP OF SCREEN: 4.0
TYPE OF SCREEN: Schedule 40 PVC
SLOT SIZE x LENGTH: .010 10'
I D. OF SCREEN: 2"
TYPE OF SAND PACK: #2 Silica Sand
ELEVATION / DEPTH BOTTOM OF SCREEN: 14.0
ELEVATION / DEPTH BOTTOM OF SAND PACK: 14.0
TYPE OF BACKFILL BELOW OBSERVATION WELL: NA

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 2LPW 15
PROJECT NO.: 9594 DATE: 2-4-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: J. R. Ferguson
WATER LEVEL DATA:
(Date, Time & Conditions) 2-4-94 15°

SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	0-2	65 / 50	1.5		V. Dense	Brown	Silty F-C sand and F-C	Fill	HNU-0 12:55
		40 / 30	2.0			Brown	Gravel. Tr. Glass, wood, metal	Fill	moist
S-2	2-4	100/2"	—		V. Dense	—	No Recovery	Fill	HNU — 13:05
			—			—		Fill	—
S-3	4-6	4 / 6	1.2		M. Dense	Black	Silty F-C sand + Silty F-C Gravel	Fill	HNU (as above) 13:10
		5 / 5	2.0			Brown	Silty M-C Sand Tr. Fine gravel	Fill	Moist (appears as clean fill)
S-4	6-8	13 / 97	1.0		V. Dense	Brown	Silty F-m Sand and Sandy F-m	Fill	HNU-0 13:20
		21 / 5	2.0			Brown	Gravel (gneissic)	Fill	moist-wet
S-5	8-10	2 / 4	.50		Loose	Brown-Black	Silty F-C Sand and Gravel	Fill	HNU-0 13:27
		5 / 35	2.0			Black	with wood fill throughout.	Fill	wet
S-6	10-12	17 / 10	1.10		M. Dense	Black	↓ ↓	Fill	HNU-0 wet 13:33
		3 / 3	2.0		Stiff	Black	Organic Micaceous Silt	ml	moist
S-7	12-14	1 / 1			V. Soft	Green-Gray	tr. with bivalves	ml	HNU-0
		1 / 1	2.0			Green-Gray	↓ ↓	ml	moist
							Bottom of Boring = 14.0'		
							Cross sampled with 4¼ Ø - 8½ o.d.		
							augers. For pumping well he will		
							remove augers and then auger		
							to depth with 8¼" Ø - 12" o.d.		
							augers		
							screen depth 4'-14', sand-		
							pack 3'-14'		

REMARKS Driller: Floyd Cross Reg. CME 75

BORING 2LPW 15

PAGE 1 OF 1

* See Legend on Back

BORING NO. 2LPW15

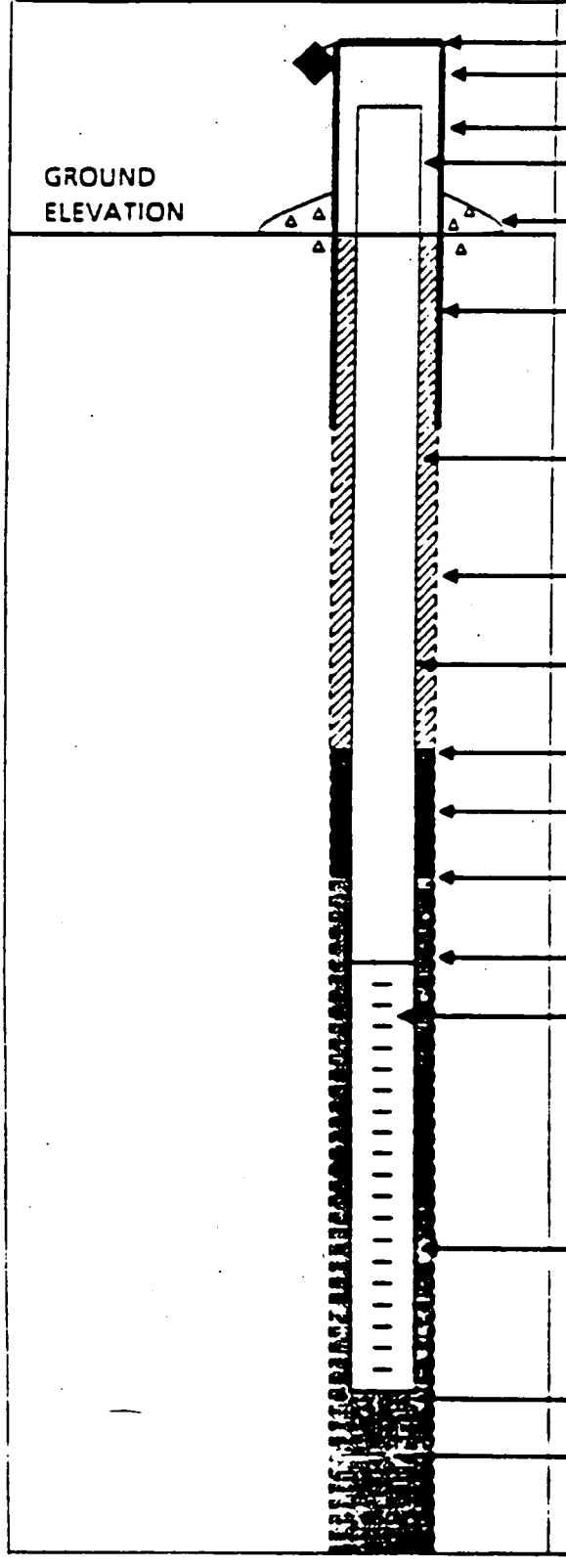
Halliburton NUS CORPORATION

OVERBURDEN MONITORING WELL SHEET

PROJECT NSB New London
PROJECT NO. 9594
ELEVATION
FIELD GEOLOGIST J.R. Ferguson

LOCATION Site 2 Landfill
BORING 2LPW15
DATE 2-4-94
WL (TPVC) 10.52 3/30/94

DRILLER F. Cross
DRILLING METHOD Hollow Stem Auger
DEVELOPMENT METHOD Surge / Pump



ELEVATION OF TOP OF SURFACE CASING:
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING: 2.5'
STICK - UP RISER PIPE: 2.0'
TYPE OF SURFACE SEAL: Portland Cement
I.D. OF SURFACE CASING: 8"
TYPE OF SURFACE CASING: STEEL
RISER PIPE I.D. 6"
TYPE OF RISER PIPE: Sch 40 PVC
BOREHOLE DIAMETER: 12 1/4"
TYPE OF BACKFILL: NA
ELEVATION / DEPTH TOP OF SEAL: 1.5'
TYPE OF SEAL: Bentonite Pellet
DEPTH TOP OF SAND PACK: 3.0'
ELEVATION / DEPTH TOP OF SCREEN: 4.0
TYPE OF SCREEN: SCHEDULE 40 PVC
SLOT SIZE x LENGTH: .010 10'
I.D. OF SCREEN: 6" Ø
TYPE OF SAND PACK: #2 Silica
ELEVATION / DEPTH BOTTOM OF SCREEN: 14.0'
ELEVATION / DEPTH BOTTOM OF SAND PACK: 15.0
TYPE OF BACKFILL BELOW OBSERVATION WELL: [illegible] Silica [illegible]

APPENDIX A.3

SITE 2 - AREA A WETLANDS

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 2WMW5D
PROJECT NO.: 9594 DATE: 3-2-94 DRILLER: EAST COAST THOMAS/ Tim Sabo
ELEVATION: FIELD GEOLOGIST: Tim Evans
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	0.0						See Atlantic Boring		
							Log 2WMW5S for		
							Litho to 13.0'		
	5.0								
	10.0								
	13.0								
S-1 @ 1236	14.5	1 31 100%	1.1/1.5	BR	V Dense	Gray	Sand w/Tr Silt & Mica Gravel	SW	Wet M to VCGr Gravel - Pebbles
2.35/2.35	①	100%	2.35/2.5			Gray	Bio-Gneiss	BR	Hi & Frac 15', 16.5' Break 15.5'
17.0									Weathered 16.5'-17'
18.0									3⅞" Rollerbit to 18'
3/2 / 3/5								Br	Broken to 18.5', 20.3'
2.4/3.5	②	68.5%	3.0/4.0			Gray	Bio Gneiss	VBr	Hi & Jnt 20', 20.1', 20.8' 20.9', 21.1', 22'
								Br	Lo & Frac 19.2', 20.3'
									Jtt in Fracs @ 19.2', 20.8' 20.9
								Br	Spun Casing to 19.0'
1.7/1.7	③	100%	1.7/3.0			Gray	Bio Gneiss	M	Hi & Frac 22.0', 23.0', 23.9'

REMARKS Diedrich D-50 HSA Rig (Bombadier - Mounted)
3" x 24" SS (140# wt, 30" Drop, Cat Head)
4¼" ID, 8" OD Auger; 4" Spun Casing; HQ Core

BORING 2WMW5D
PAGE 1 OF 2

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2WMW5D
PROJECT NO.: 9594 DATE: 3-5-94 DRILLER: EAST COAST THOMAS/
ELEVATION: FIELD GEOLOGIST: Tim Evans Tim Sabo
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN N.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
25.0								M	Hi & Frac @ 26.0', 26.4', 28.4', 28.3', 29.0'
4.7/5.7	RQD	82%	5.7/4.0			Gray	Bio Gneiss	↓	Lo & Frac @ 26.2'
								Br	Break 25.3'
29.0								↓	
							Total Depth 29.0'		
							Screen 17.5'-27.5'		→ 2" PVC Schedule 40
							Sand 16.7' - 27.5'		→ 3/4 - 100# Bag Ottawa Sand
							Pellets 0' - 16.7'		→ 3 - 50# Bag Bentonite Plug
							Natural Fill 27.5'-29'		→ Sand

REMARKS

BORING 2WMW5D

PAGE 2 OF 2

* See Legend on Back

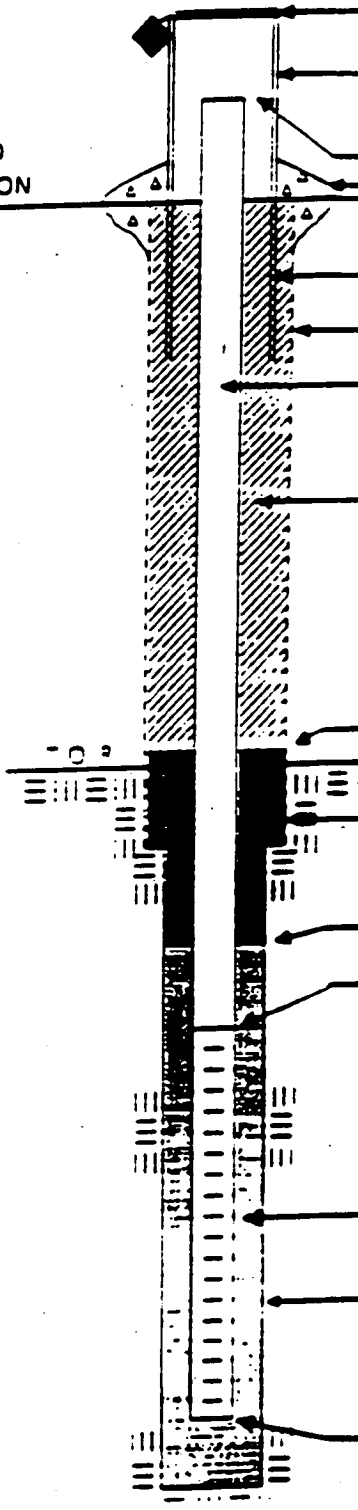
HALLIBURTON NUS
Environmental Corporation

BORING NO: 2WMW5D

BEDROCK MONITORING WELL SHEET

WELL INSTALLED IN BEDROCK

PROJECT: NSB-NLON	LOCATION: GROTON, CT	DRILLER: EAST COAST
PROJECT NO.: 9594	BORING: 2WMW5D	DRILLING METHOD: Core
ELEVATION:	DATE: 3-7-94	DEVELOPMENT METHOD:
FIELD GEOLOGIST:		



ELEVATION OF TOP OF SURFACE CASING:

STICK UP OF CASING ABOVE GROUND SURFACE:

ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: Concrete

I.D. OF SURFACE CASING: 4"

DIAMETER OF HOLE: 4"

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: PVC (Schedule 40)

TYPE OF BACKFILL: N/A

ELEVATION / DEPTH TOP OF SEAL: /1.0'

ELEVATION / DEPTH TOP OF BEDROCK: /14.5'

TYPE OF SEAL: Bentonite Plug

ELEVATION / DEPTH TOP OF SAND: /16.7'

ELEVATION / DEPTH TOP OF SCREEN: /17.5'

TYPE OF SCREEN: PVC

SLOT SIZE & LENGTH: 0.010 x 10'

I.D. SCREEN: 2"

TYPE OF SAND PACK: Ottawa Sand

DIAMETER OF HOLE IN BEDROCK: 4"

CORE BEAM: 2 1/2" d, 14.5' - 27.5'

ELEVATION / DEPTH BOTTOM SCREEN: /27.5'

ELEVATION / DEPTH BOTTOM OF HOLE: /27.5'

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2WMW21S
PROJECT NO.: 9594 DATE: 11-7-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: SJC / TSE / N. LINGBERRY
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	0.0	6 / 10	1.3/2.0		M. Dense	Brn	Silty Sand, some Gravel	SM	0 ppm, moist
@ 0900	2.0	12 / 10							Road Fill
S-2		10 / 10	1.0/2.0		M. Dense	Brn	Sand and Gravel	GW	0 ppm, moist
	4.0	4 / 3		4.0					Max ϕ 1", Road Fill
S-3		0 / 0	0.0/2.0	5	V. Soft		Clayey Silt		Hit H_2O ~4'-6'
	6.0	0 / 0							
S-4		0 / 0	1.8/2.0		V. Soft	L. Brn	Clayey Silt, Tr Roots	ML	0 ppm, wet
	8.0	0 / 0							Sulfur Odor
S-5		0 / 0	2.0/2.0		V. Soft	Gray Brn	Clayey Silt, Tr Shells	ML	0 ppm, wet
	10.0	0 / 0							Sulfur odor
S-6		0 / 0	0.3/2.0		V. Soft	Gray Brn		ML	0 ppm, wet
	12.0	0 / 0							Sulfur Odor
S-7		0 / 0	1.3/2.0		V. Soft	Gray Brn		ML	0 ppm, wet
	14.0	0 / 0							Sulfur Odor
S-8		0 / 0	1.9/2.0	15	V. Soft	Gray Brn		ML	0 ppm, wet
@ 1030	16.0	0 / 1		16.0					Sulfur Odor
							HSA TO 15'		SCREEN 5-15
							S.S. TO 16'		SAND 4-15
									PELLETS 2-4

REMARKS CME 75 HSA RIG
4¼" ϕ ID Auger
2" SS to sample (140# Wt, 30" Drop)

BORING 2WMW21

PAGE 1 OF 1

* See Legend on Back

BORING NO: 2WMW21S

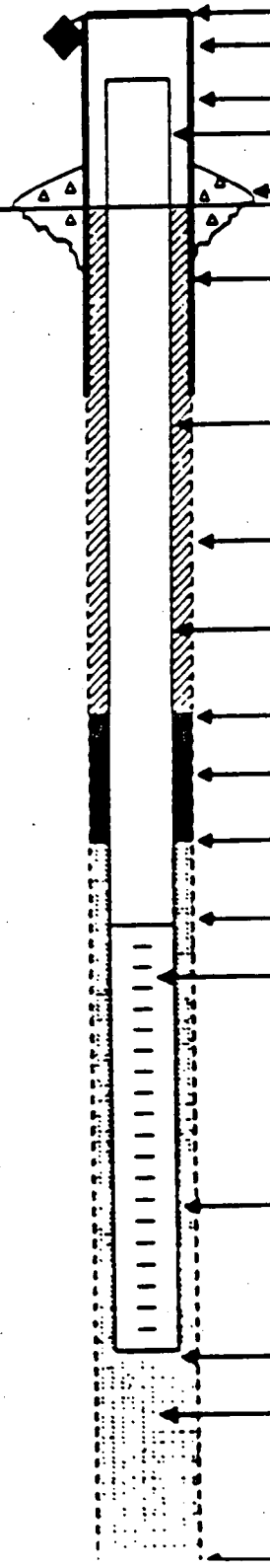
HALLIBURTON NUS
Environmental Corporation

MONITORING WELL SHEET

PROJECT: NSB-NLON
PROJECT NO.: 9594
ELEVATION:
FIELD GEOLOGIST: SJC / TSE

LOCATION: GROTON, CT.
BORING: 21WMW21S
DATE: 11-7-93

DRILLER: EAST COAST
DRILLING METHOD: HSA
DEVELOPMENT METHOD:



ELEVATION OF TOP OF SURFACE CASING:
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING: 2.2'
STICK - UP RISER PIPE: 2.1'
TYPE OF SURFACE SEAL: CONCRETE PAD
I.D. OF SURFACE CASING: 4" Ø
TYPE OF SURFACE CASING: STEEL
RISER PIPE I.D. 2" Ø
TYPE OF RISER PIPE: PVC
BOREHOLE DIAMETER: 8"
TYPE OF BACKFILL: CONCRETE
ELEVATION / DEPTH TOP OF SEAL: 12'
TYPE OF SEAL: BENTONITE CHIPS
DEPTH TOP OF SAND PACK: 4'
ELEVATION / DEPTH TOP OF SCREEN: 15'
TYPE OF SCREEN: PVC
SLOT SIZE x LENGTH: 0.010 x 10'
I.D. OF SCREEN 2" Ø
TYPE OF SAND PACK: SILICA SAND
ELEVATION / DEPTH BOTTOM OF SCREEN: 15'
ELEVATION / DEPTH BOTTOM OF SAND PACK: 15'
TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A
ELEVATION / DEPTH OF HOLE: 15'

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 2WMW21 D
PROJECT NO.: 9594 DATE: 11-3-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: SJC / TSE / W. LINGBERRY
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	0.0						SEE BORING 2WMW21S		10½" Ø AIR HAMMER
							FOR LITHOLOGY TO 16'		FROM 0 TO 29'
									SET CASING @ 28'
	5.0								
	10.0								
	15.0								
	20.0								
	23.0			23.0					HIT BEDROCK @ 23.0
				NEW					
	25.0								

REMARKS CHICAGO PNEUMATIC 672 AIR ROTARY RIG

BORING 2WMW21

PAGE 1 OF 5

* See Legend on back

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB-NLON
BORING NO.: 2W MW21D
PROJECT NO.: 9594
DATE: 11-5-93
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: SJC/TSE /W. LINEBERRY
WATER LEVEL DATA:
(Date, Time & Conditions)

	SAMPLE NO. & TYPE OR RQD	SOIL DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
11/3		25.0								
11/5										CAS AT 28'
										START NX CORE @ 32'
		30.0								ON 11/15 DRILLED OUT GROUT @ 20' THEN CLEANED OUT TO 32'.
11/5	32.0						GRAY			
11/15	0/2.0		0%			HARD	TO PINK	GNEISS - GRANITE.	VBR	① 1430 → 1500
	34.0	①		0.5/2.0					BR	POOR REC.
									BL	② 1510 → 1610
									BR	35.8-36.0' HI & JNT.
	3.8/5.0	②	76%	4.4/5.0		HARD	PINK TO GRAY	GNEISS - SOME		36.4-37.2' HI & JNT
								GRANITE SEAMS		37.5' HI & JNT
11/15	39.0									
11/16									VBR	③ 1[illegible]
									BL	40.2-40.3 LO & FRAC 40.6-40.8 HI & JNT
	2.6/4.0	③	65%	3.1/4.0		HARD	GRAY W/PINK	GNEISS - SOME GRANITE SEAMS	BR	41.6-41.8 HI & JNT (See photo)
11/16	43.0									5 7/8" Φ AIR HAMMER
11/17										FROM 43' TO 123'
		45.0								
										LITTLE H_2O
										FROM 43' TO 93'
		50.0								

REMARKS: NX CORE OD 3' THEN REAM TO 5 7/8" Φ
LOG CUTTINGS FROM 43' TO 123'

BORING 2WMW21D

PAGE 2 OF 5

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2WMW21D
PROJECT NO.: 9594 DATE: 11-17-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: SJC / TSE / W. LINEBERRY
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	50.0								
					↓	↓	↓		
	53.0				Hard	Gray	GNEISS		1338 → 1401 53' to 63'
	55.0								
	60.0								
					↓	↓	↓		
	63.0				Hard	Gray	GNEISS		
	65.0								
	70.0								
					↓	↓			
	73.0				Hard	Gray			
	75.0				↓	↓	↓		

REMARKS

BORING 2WMW21D

PAGE 3 OF 5

* See Legend on back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2WMW21D
PROJECT NO.: 9594 DATE: 11-17-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: SJC / TSE / W. LINEBERRY
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	75.0								
	80.0								
	83.0				Hard	D. Gray to Black	GNEISS		1625→1637 83' to 93'
	85.0								
	90.0								
	93.0				Hard	Gray	GNEISS		1637→1651 93' to 103' Hit Hid Zone @ 93'
	95.0								
	100.0								

REMARKS

BORING 2WMW21D

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* See Legend on Back

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB-NLON — BORING NO.: 2WMW21D
PROJECT NO.: 9594 — DATE: 11-17-93 — DRILLER: EAST COAST THOMAS
ELEVATION: — FIELD GEOLOGIST: SLC / TSE / W. LINEBERRY
WATER LEVEL DATA: (Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	100.0								
	103.0				Hard	Gray	GNEISS		
11/17 11/18									
	105.0								
	110.0								
	113.0				Hard	Gray to Black	GNEISS		
									Est. 5-7 gpm H_2O
	115.0								
							10½" ⌀ Air Rotary 0'-32'		6" ⌀ Casing @ 28'
							Core (3" OD) 32'-43'		6" ⌀ Open Borehole
	120.0						5⅞" Air Rotary 43'-123'		32' to 123'
	123.0								
							Total Depth 123'		

REMARKS

BORING 2WMW21D

PAGE 5 OF 5

* See Legend on Back

HALLIBURTON NUS
Environmental Corporation

BORING NO.: 2WMW21D

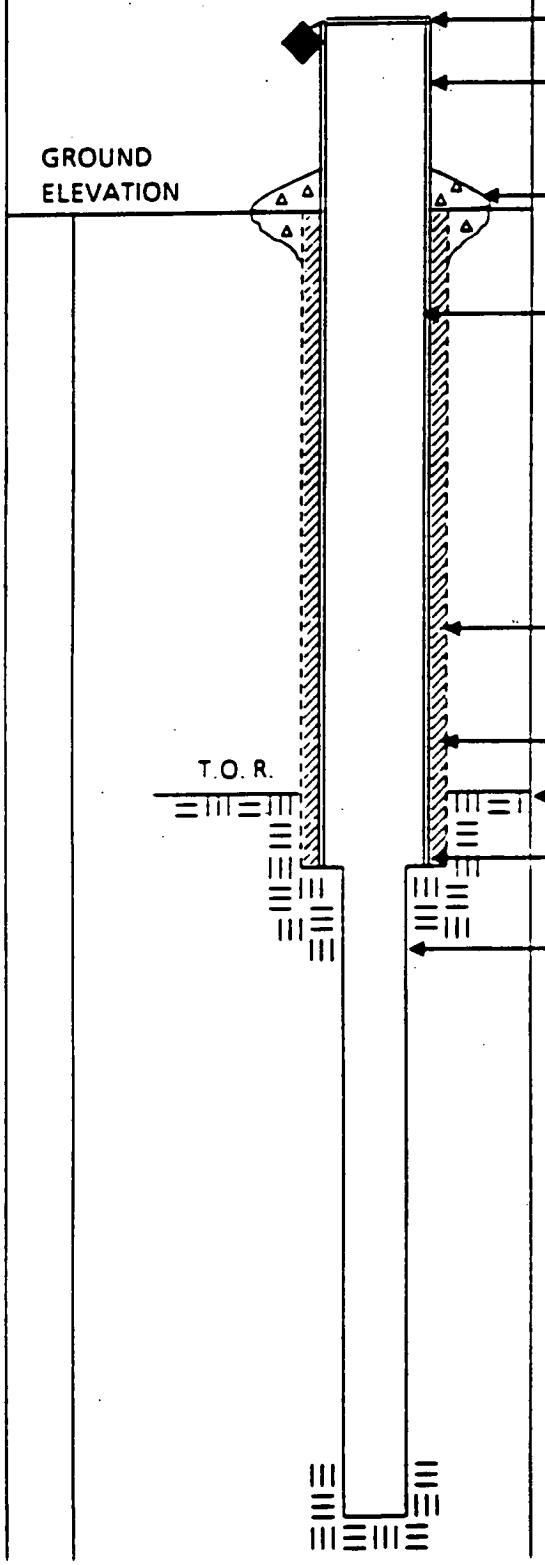
BEDROCK MONITORING WELL SHEET

OPEN HOLE WELL

PROJECT: NSB-NLON
PROJECT NO.: 9594
ELEVATION:
FIELD GEOLOGIST: SJC / TSE

LOCATION: GROTON, CT
BORING: 2WMW21D
DATE: 11-18-93

DRILLER: EAST COAST
DRILLING METHOD: AIR ROTARY / NX CORE
DEVELOPMENT METHOD:



ELEVATION OF TOP OF CASING:

STICK UP OF CASING ABOVE GROUND SURFACE: 1.25'

TYPE OF SURFACE SEAL: NATURAL

I.D. OF CASING: 6" ϕ

TYPE OF CASING: BLACK STEEL

TEMP. / PERM.: PERM

DIAMETER OF HOLE: 10" ϕ

TYPE OF CASING SEAL: GROUT

DEPTH TO TOP OF ROCK: 23'

DEPTH TO BOTTOM CASING: 28'

DIAMETER OF HOLE IN BEDROCK: 6" ϕ

DESCRIBE IF CORE / REAMED WITH BIT:
GNEISS W/ GRANITE SEAMS

DESCRIBE JOINTS IN BEDROCK AND DEPTH:

HIGH ∡ JNT 35.9'	LOW ∡ FRAC 40.2'
HIGH ∡ JNT 37.0'	HIGH ∡ JNT 40.7'
HIGH ∡ JNT 37.5'	HIGH ∡ JNT 41.7'

ELEVATION / DEPTH OF HOLE: / 123'

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2WMW22D
PROJECT NO.: 9594 DATE: 11-19-93 DRILLER: EAST COAST THOMAS / W. LINEBERRY
ELEVATION: FIELD GEOLOGIST: TJE
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	0.0					BRN	CLAYEY SILT (topsoil)	CL	8½" ⌀ AIR HAMMER
									FROM 0' TO 38'
									SET CASING @ 38'
	4.0				HARD	PINK	GNEISS Boulders	—	
	5.0								NO H_2O 0' to 152'
	9.0					TAN	SILTY LOAM w/	SM	
	10.0						SOME GNEISS		
	15.0								
	20.0								
11/19									
11/20									
	25.0								

REMARKS CHICAGO PNEUMATIC 672 AIR ROTARY RIG
LOG CUTTINGS FROM 0' TO 38'

BORING 2WMW22D

PAGE 1 OF 8

* See Legend on back

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB-NLON
BORING NO.: 2WMW22D
PROJECT NO.: 9594
DATE: 11-20-93
DRILLER: EAST COAST THOMAS / W. LINEBERRY
ELEVATION:
FIELD GEOLOGIST: TSE
WATER LEVEL DATA:
(Date, Time & Conditions)

	SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
		25.0								
		30.0								
		32.0			HIT BR @ 32'	HARD	GRAY	GNEISS		
		35.0								
										START NX CORE @ 38'
1/20	38.0									
1/21										① 1055 → 1147
										38.5 → 38.7 HI % JNT 38.7 → 38.8 LO % FRAC
	3.3/4.5	①	73%	3.3/4.5		HARD	GRAY TO PINK	GNEISS (BIO-QTZ-FSPAR) w/ green Qtz & Calcite veins	BL	40.5 → 40.6 LO % FRAC 40.9 → 41.0 LO % FRAC
	42.5									② 1220-1318
										43.2 → 43.5 HI % JNT (44.0 BREAK)
	4.9/5.0	②	98%	4.9/5.0		HARD	GRAY TO PINK	GNEISS (HBL-BIO-QTZ-FSPAR) w/ green Qtz & Calcite veins	BL	44.1 → 44.3 HI % FRAC 44.9 → 45.0 HI % JNT 45.4 → 45.5 45.8 → 46.0 ↓
	47.5									46.2 → 46.3 HI % FRAC 46.3 → 46.6 HI % JNT (SEE PHOTO)
		50.0								5 7/8" ϕ AIR HAMMER FROM 47½' TO 182'

REMARKS: NX CORE OD 3" (CME 75 RIG)
LOC CUTTINGS FROM 47½' TO 182'

BORING 2WMW22D

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* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2WMW22D
PROJECT NO.: 9594 DATE: 11-21-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: TSE / W. LINEBERRY
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	50.0								
						GRAY TO			
	52.0				HARD	PINK	GNEISS		
	55.0								
	60.0								
						GRAY			
	62.0				HARD	TO PINK	GNEISS		
	65.0								
	70.0								
						GRAY			
	72.0				HARD	TO PINK	GNEISS		
	75.0								

REMARKS

BORING 2WMW22

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* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON
BORING NO.: 2WMW22D
PROJECT NO.: 9594
DATE: 11-21-93
DRILLER: EAST COAST THOMAS / W. LINEBERRY
ELEVATION:
FIELD GEOLOGIST: TSE
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft) OR RUN N.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	75.0								
	80.0								
	82.0				HARD	L.Gray	GNEISS (ABUNDANT QTZ)		
	85.0								
	92.0				HARD	PINK	GNEISS		1558 → 1612 92' to 102'
	95.0								
	100.0								
	102.0				HARD	GRAY to PINK	GNEISS		
	105.0								

REMARKS

BORING 2WMW22D

PAGE 4 OF 8

* See Legend on back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2WMW22D
PROJECT NO.: 9594 DATE: 11-21-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: TJE / W. LINEBERRY
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	100.0								
						GRAY			
	102.0				HARD	TO PINK	GNEISS		
	105.0								
	110.0								
						GRAY			
	112.0				HARD	TO PINK	GNEISS		
	115.0								
	120.0								
	122.0				HARD	GRAY	GNEISS		1622 → 1646 122' to 132'
	125.0								

REMARKS

BORING 2WMW[illegible]

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* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2WMW22D
PROJECT NO.: 9594 DATE: 11-21-93 DRILLER: EAST COAST THOMAS / W. LINEBERRY
ELEVATION: FIELD GEOLOGIST: TSP
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	125.0								
	130.0								
	132.0				HARD	GRAY	GNEISS		1646→1701 132' TO 145'
	135.0								
	140.0								
	142.00								
11/21	145.0								1018→1026 145' TO 152'
11/22									(1" of H_2O AFTER SITTING OVERNIGHT)
	150.0								

REMARKS

BORING 2WMW22D

PAGE 6 OF 8

* See Legend on back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 2WMW22D
PROJECT NO.: 9594 DATE: 11-22-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: TSE
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	150.0								
						GRAY TO PINK			
	152.0				HARD		GNEISS		HIT H_2O-BEARING FRACS (<1gpm)
	155.0								
	160.0								
						GRAY TO PINK			
	162.0				HARD		GNEISS		
	165.0								
	170.0								
						GREEN TO PINK			
	172.0				HARD		QTZITE & GNEISS		HIT H_2O-BEARING ZONE (≈5 gpm)
	175.0								

REMARKS

BORING 2WMW22D

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* See Legend on back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 2WMW220
PROJECT NO.: 9594 DATE: 11-22-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: TSE
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	175.0								
	180.0								
	182.0				HARD	GREEN TO PINK	QTZITE & GNEISS		
							CORE (3" OD) 38' to 47½'		6" ø CASING @ 38'
							5⅞" ø AR Drilling 47½' to 182'		6" ø OPEN BOREHOLE
									FROM 38' TO 182'
							Total Depth 182'		

REMARKS

BORING 2WMW220

PAGE 8 OF 8

* See Legend on back

HALLIBURTON NUS
Environmental Corporation

BORING NO.: 2WMW22D

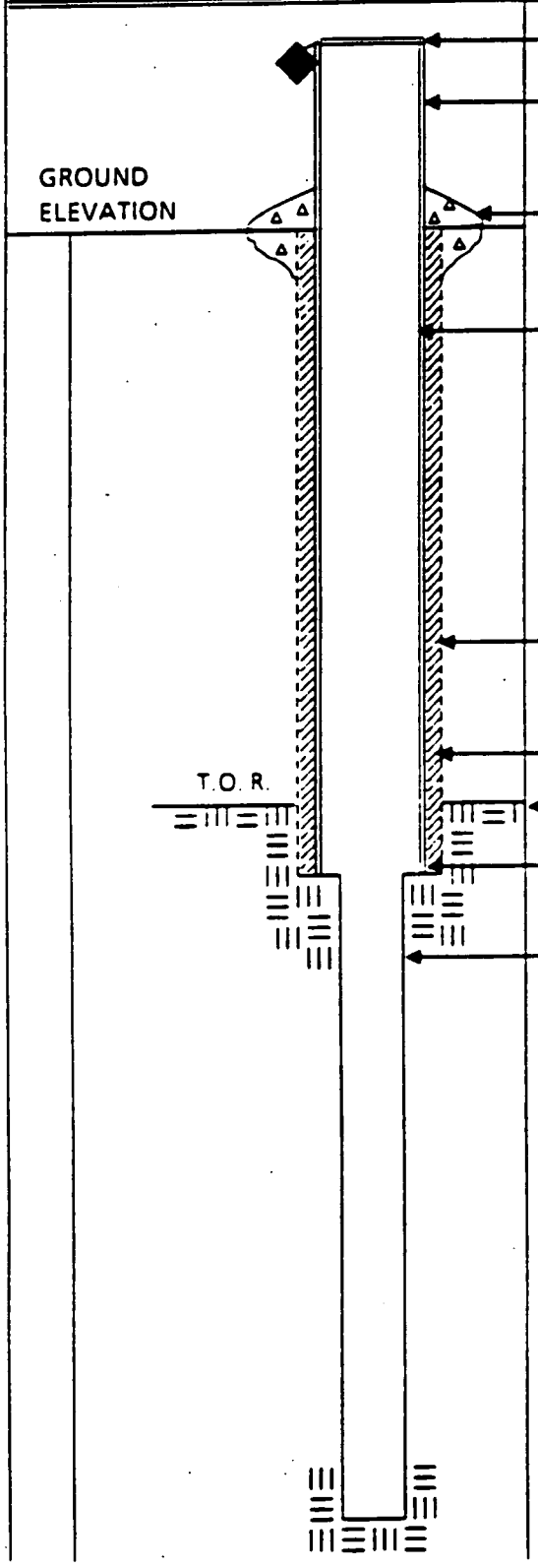
BEDROCK MONITORING WELL SHEET

OPEN HOLE WELL

PROJECT: NSB-NLON
PROJECT NO.: 9594
ELEVATION:
FIELD GEOLOGIST: TSE

LOCATION: GROTON, CT
BORING: 2WMW22D
DATE: 11-22-93

DRILLER: EAST COAST
DRILLING METHOD: AIR ROTARY/NX CORE
DEVELOPMENT METHOD:



ELEVATION OF TOP OF CASING:

STICK UP OF CASING ABOVE GROUND SURFACE: 2.0'

TYPE OF SURFACE SEAL: NATURAL

I.D. OF CASING: 6" ø

TYPE OF CASING: BLACK STEEL

TEMP. / PERM.: PERM

DIAMETER OF HOLE: 8 1/2" ø

TYPE OF CASING SEAL: GROUT

DEPTH TO TOP OF ROCK: 32'

DEPTH TO BOTTOM CASING: 38'

DIAMETER OF HOLE IN BEDROCK: 5 7/8" ø

DESCRIBE IF CORE / REAMED WITH BIT:
GNEISS W/ QUARTZ & CALCITE VEINS

DESCRIBE JOINTS IN BEDROCK AND DEPTH:

HIGH ∡ JNT 38.6'	HIGH ∡ FRAC 44.2'
LOW ∡ FRAC 38.7'	HIGH ∡ JNT 44.9'
LOW ∡ FRAC 40.5'	HIGH ∡ JNT 45.4'
LOW ∡ FRAC 40.9'	HIGH ∡ JNT 45.9'
HIGH ∡ JNT 43.3'	HIGH ∡ FRAC 46.2'
	HIGH ∡ JNT 46.4'

ELEVATION / DEPTH OF HOLE: /182'

APPENDIX A.4

SITE 2 - AREA A WEAPONS CENTER

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 2WCMW15
PROJECT NO.: 9594 DATE: 1-18-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: J FERGUSON
WATER LEVEL DATA :
(Date , Time & Conditions) 1-18-93

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	0-2	42 / 37	2.0		V. Dense	Brown	Silty Fine-Coarse Sand	Fill	HNU-0 13:55
		21 / 20	2.0			Brown	Sand F-C Rock Fragments	Fill	Frozen
S-2	2-4	16 / 28	1.8		V. Dense	Brown		Fill	HNU-0 14:09
		33 / 23	2.0			Brown		Fill	Moist
S-3	4-6	8 / 48	1.5		V. Dense	Brown		Fill	HNU-0 14:16
		17 / 12	2.0			Brown		Fill	Moist
S-4	6-8	11 / 7	1.2		M Dense	Brown		Fill	HNU-0 14:25
		11 / 9	2.0			Brown		Fill	Moist
S-5	8-10	4 / 4	1.3		M Dense	Brown	F-C Sand Some	Fill	HNU-0 14:32
		7 / 4	2.0			Brown	Some Gravel and Rock Fragments	Fill	Moist
S-6	10-12	5 / 2	.75		Loose	Brown		SM	HNU-0 14:40
		7 / 4	2.0			Brown		SM	Moist-Wet
S-7	12-14	4 / 7	1.4		Stiff	Brown		SM	HNU-0 14:47
		54 / 3	2.0			Gray	Some Organic Silt	ML	Wet
	14-16								
	16-18						Bottom of Boring 18.0'		

REMARKS Sampled Groundwater [illegible] 18' in order to screen well [illegible]

BORING 2WCMW15

PAGE 1 OF 1

* See Legend on Back

BORING NO. 2WCMW15

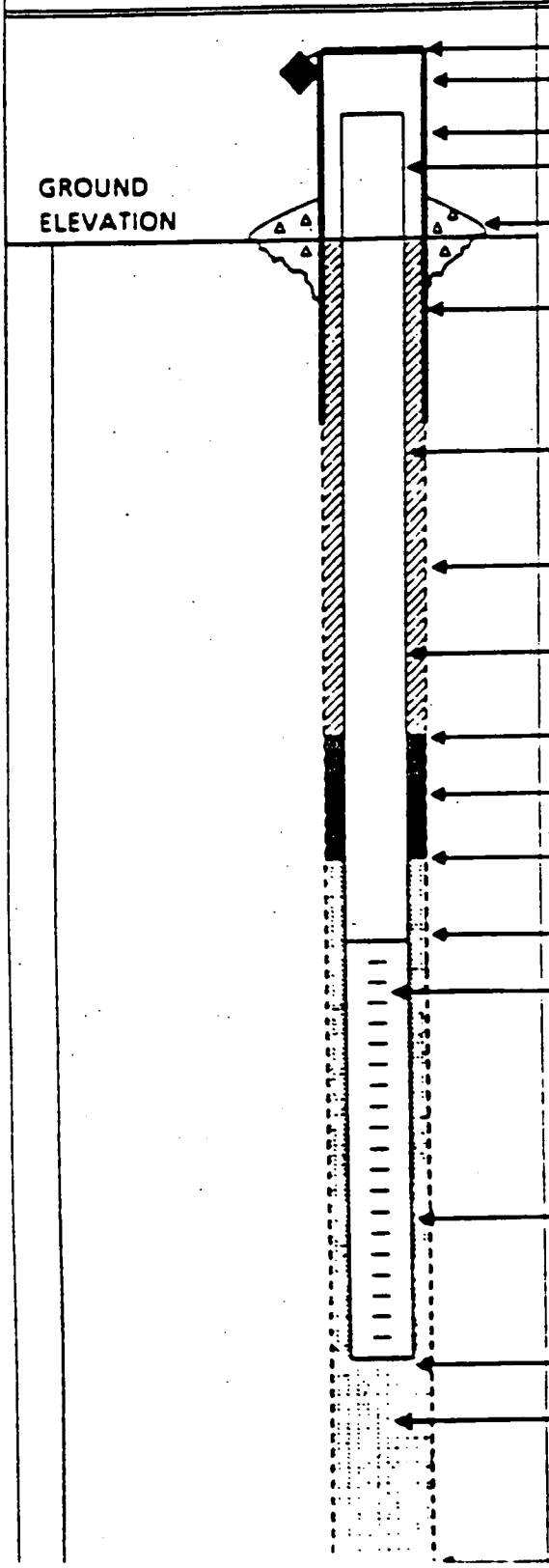
HALLIBURTON NUS
Environmental Corporation

MONITORING WELL SHEET

PROJECT NSB-NLON
PROJECT NO. 9594
ELEVATION
FIELD GEOLOGIST J. R. FERGUSON

LOCATION GROTON, CT.
BORING 2WCMW15
DATE 1-18-94

DRILLER EAST COAST
DRILLING METHOD HOLLOW STEM AUGER
DEVELOPMENT METHOD



ELEVATION OF TOP OF SURFACE CASING: NA
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING: FLUSH
STICK - UP RISER PIPE:
TYPE OF SURFACE SEAL:
I.D. OF SURFACE CASING: 2" Ø
TYPE OF SURFACE CASING: SCHEDULE 40 PVC
RISER PIPE I.D. 2" Ø
TYPE OF RISER PIPE: SCHEDULE 40 PVC
BOREHOLE DIAMETER: 8 1/2" Ø
TYPE OF BACKFILL: BENTONITE/CEMENT
ELEVATION / DEPTH TOP OF SEAL: 14'
TYPE OF SEAL: BENTONITE PELLET
DEPTH TOP OF SAND PACK: 16'
ELEVATION / DEPTH TOP OF SCREEN: 18'
TYPE OF SCREEN: 2" Ø PVC
SLOT SIZE x LENGTH: .010 SLOT - 10'
D OF SCREEN 2"
TYPE OF SAND PACK:
ELEVATION / DEPTH BOTTOM OF SCREEN: 18'
ELEVATION / DEPTH BOTTOM OF SAND PACK:
TYPE OF BACKFILL BELOW OBSERVATION WELL
ELEVATION / DEPTH OF HOLE: 19'

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON — BORING NO.: 2WCMW25
PROJECT NO.: 9594 — DATE: 1-20-94 — DRILLER: EAST COAST THOMAS
ELEVATION: — FIELD GEOLOGIST: J. R. FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 1-20-94 - 5°

SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, FL)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	0-1						Asphalt and gravel Sub-base		
S-1	2-4	12 / 8	1.0		M Dense	Brown	Silty, Fine to Coarse Sand	SW	HNU-0 15:27
		4 / 4	2.0			Brown	Some Granitic Rock Fragments	SW	MOIST
S-2	4-6	5 / 3	.6		Loose	Brown		SW	HNU-0 15:34
		3 / 3	2.0		▽	Brown		SW	WET (Drive 2 spoons)
S-3	6-8	1 / 1	.6		V. Loose	Brown		SW	HNU-0 15:52
		1 / 2	2.0			Brown		SW	WET
S-4	8-10	1 / 2	.5		Loose	Brown		SW	HNU-0 16:06
		3 / 4	2.0			Brown		SW	WET
S-5	10-12	3 / 9	.5		M Dense	Brown		SW	HNU-0 16:20
		20 / 10	2.0			Brown		SW	WET
S-6	12-14	4 / 3	1.0		Loose	Brown		SW	HNU-0 16:34
		4 / 7	2.0			Brown		SW	WET
S-7	14-16	4 / 5	1.6		Loose	Brown-Black	↓	SM	HNU-0 16:42
		1 / 1	2.0		M Stiff	Black	Organic Clayey Silt, Tr org	ML	WET/MOIST
S-8	16-18	W / 0	2.0		V Soft	Green-Gray	material, wood etc.		HNU-0 16:56
		R / 1	2.0			Green-Gray	↓		MOIST
							Bottom of Boring = 18.0		

REMARKS Rig CME 75 - Floyd Gress

BORING 2WCMW25

PAGE 1 OF 1

* See Legend on Back

BORING NO. 2WCMW25

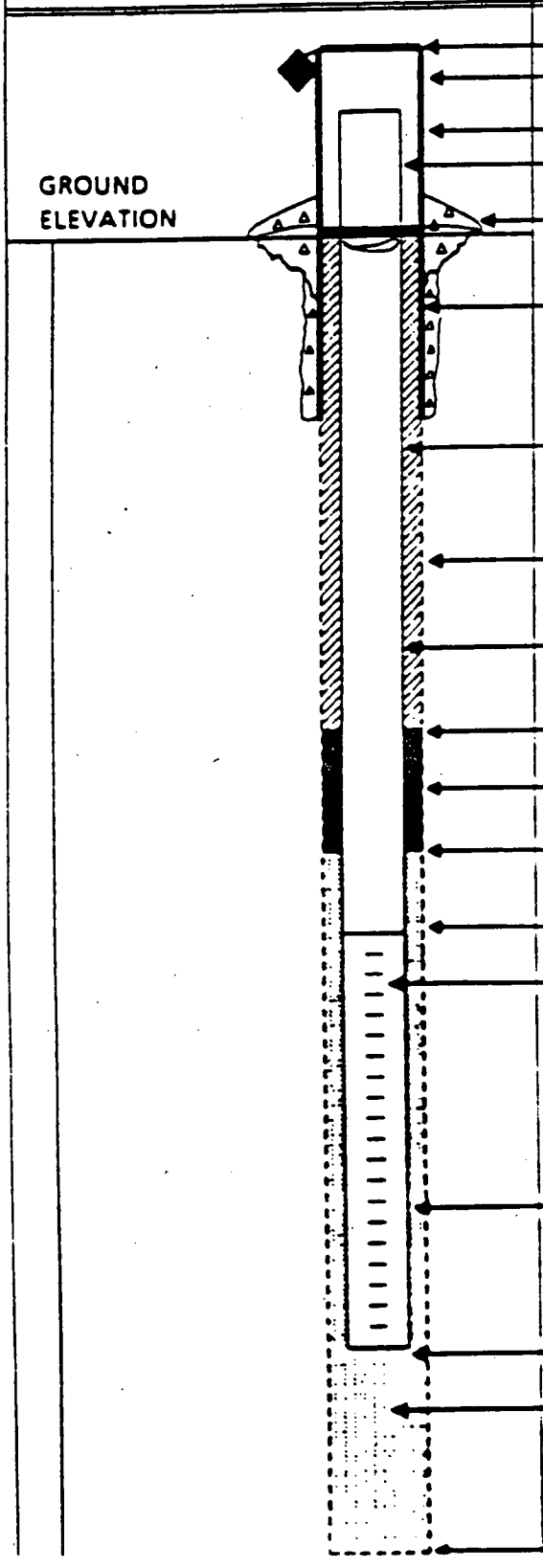
HALLIBURTON NUS
Environmental Corporation

MONITORING WELL SHEET

PROJECT NSB-NLON
PROJECT NO. 9594
ELEVATION
FIELD GEOLOGIST J.R. FERGUSON

LOCATION GROTON, CT.
BORING 2WCMW25
DATE 1-21-94

DRILLER EAST COAST
DRILLING METHOD HOLLOW STEM AUGER
DEVELOPMENT METHOD



ELEVATION OF TOP OF SURFACE CASING: NA
ELEVATION OF TOP OF RISER PIPE: NA
STICK - UP TOP OF SURFACE CASING: NA
STICK - UP RISER PIPE: NA
TYPE OF SURFACE SEAL:
I.D. OF SURFACE CASING: 8"
TYPE OF SURFACE CASING: FLUSH MOUNT WELL COVER
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: SCHEDULE 40 PVC
BOREHOLE DIAMETER: 8½"
TYPE OF BACKFILL:
ELEVATION / DEPTH TOP OF SEAL: 2.0
TYPE OF SEAL: BENTONITE PELLET
DEPTH TOP OF SAND PACK: 3.0
ELEVATION / DEPTH TOP OF SCREEN: 4.0
TYPE OF SCREEN: SCHEDULE 40 PVC
SLOT SIZE x LENGTH: .010 SLOT – 10'
D OF SCREEN 2" Ø
TYPE OF SAND PACK: #2 SILICA SAND
ELEVATION / DEPTH BOTTOM OF SCREEN: 14.0
ELEVATION / DEPTH BOTTOM OF SAND PACK: 15.0
TYPE OF BACKFILL BELOW OBSERVATION WELL BENTONITE PELLET SEAL
ELEVATION / DEPTH OF HOLE 18.0

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 2 WC MW 35
PROJECT NO.: 9594
DATE: 02-20-94
DRILLER: EAST COAST THOMAS/ Tim Sabo
ELEVATION:
FIELD GEOLOGIST: Tim Evans
WATER LEVEL DATA:
(Date, Time & Conditions) 02-20-94 1210 Sunny, 5-10 mph wind S, 8" snow

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS OVM
S-1 @	0.0	17 / 16	1.4/1.8		Dense	Brn	Silty Sand w/tr Quartz Gravel & Roots	SW	Sand - F to C Gr 0ppm
1216	2.0	22 / 30/.3							Gravel - Pebble w/ cobble
	2.5								(Auger 2.0' to 2.5')
S-2 @ 1224		13 / 13 / 10	1.1/2.0		M. Dense	Brn	Silty Sand w/Tr Gneiss Gravel Pebbles	SW	Sand - F to C Gr 0ppm
	4.5	11 / 13							
S-3 @ 1231	6.5	16 / 26 / 21 / 21	1.0/2.0		M. Dense	Brn	Sand w/Some Gneiss Gravel Pebbles	SP	(Poor Recovery) F to M Gr 0ppm Poorly Graded
S-4 @ 1237	8.5	20 / 24 / 23 / 1	0.2/2.0		Dense	Brn			(Poorly Recovery) —
S-5 @ 1247	10.5	2 / 2 / 1 / 3	2.0/2.0	▽	M. Stiff	D. Gray to Black	Clayey Silt w/ Charcoal Laminae	ML	* wet Mica Flakes 0ppm
S-6 @ 1258	12.0	1 / 3 / 3 / 4	3.0/2.0		Soft	D. Gray	Clayey Silt w/tr Shell Frags	ML	* wet Sulfur odor .0ppm
S-7 @ 1308	14.0	2 / 2 / 2 / 2	2.0/2.0		M. Stiff	D. Brn			0ppm
S-8 @ 1318	16.0	5 / 5 / 4 / 4	2.0/2.0		M. Stiff				4 ppm
S-9 @ 1327	18.0	6 / 6 / 5 / 5	2.0/2.0		Stiff				95 ppm *
S-10 @ 1350	20.0	1 / 1 / 1 / 1	2.0/2.0		V. Soft				56 ppm
1400	21.0	4 / 100/.5	1.0/1.0		M. Stiff		w/tr org		20 ppm
							WSC to 20' 10-55 to 21		
							Screen 5.75' to 15.75'		→ 10' - 2" PVC (0.010 Slot)
							Sand 3.75' to 17'		→ 2½ lbs Ottawa Sand
							Bentonite 2' to 3.75'; 17' to 20'		→ 2 - 50# Bag Bentonite Pills

REMARKS Diedrich D-50 w/ 8" O.D. (Rom Cadier - Mounted)
2" x 24" SS (140# wt 30" Drop (at head)
4¼" ID, 8" OD Auger

BORING 2WCMW35

PAGE 1 OF 1

* See Legend on Back

* Sample sent to lab (sample # 2WCMW35-1618)

BORING NO. 2WC MW3S

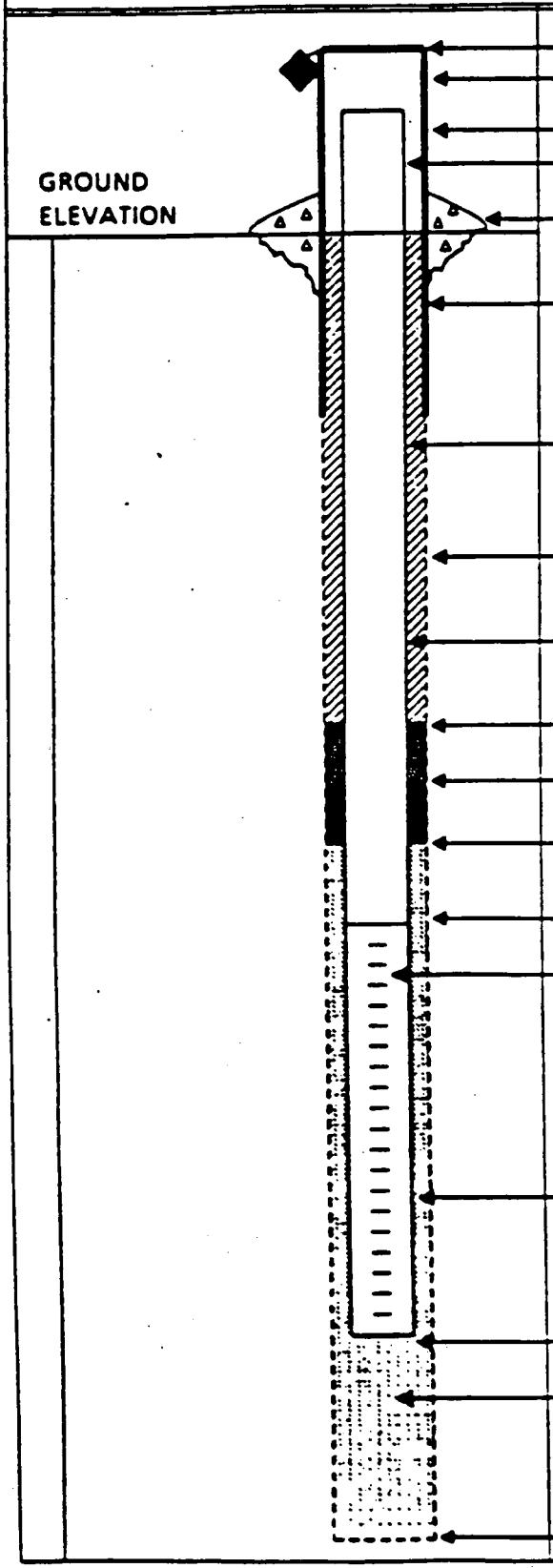
HALLIBURTON NUS
Environmental Corporation

MONITORING WELL SHEET

PROJECT NSB-NLON
PROJECT NO. 9594
ELEVATION
FIELD GEOLOGIST

LOCATION GROTON, CT.
BORING 2WC MW3S
DATE 2-20-94

DRILLER EAST COAST
DRILLING METHOD HSA
DEVELOPMENT METHOD



ELEVATION OF TOP OF SURFACE CASING:
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING:
STICK - UP RISER PIPE:
TYPE OF SURFACE SEAL: Concrete
I.D. OF SURFACE CASING: 4"
TYPE OF SURFACE CASING: Steel
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: PVC (Schedule 40)
BOREHOLE DIAMETER: 8"
TYPE OF BACKFILL: N/A
ELEVATION / DEPTH TOP OF SEAL: /2'
TYPE OF SEAL: Bentonite Pellets
DEPTH TOP OF SAND PACK: 3.75'
ELEVATION / DEPTH TOP OF SCREEN: /5.75'
TYPE OF SCREEN: PVC (Schedule 40)
SLOT SIZE x LENGTH: 0.010 x 10'
I D OF SCREEN: 2"
TYPE OF SAND PACK: Silica Sand
ELEVATION / DEPTH BOTTOM OF SCREEN: /15.75'
ELEVATION / DEPTH BOTTOM OF SAND PACK: /17
TYPE OF BACKFILL BELOW OBSERVATION WELL: Bentonite Pellets
ELEVATION / DEPTH OF HOLE: /21'

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 2WCTB-1
PROJECT NO.: 9594 DATE: DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: J FERGUSON / S CONTE
WATER LEVEL DATA :
(Date, Time & Conditions)

11:00 IN
11:16 Cont

SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, FL)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	0-2	60 / 51	1.8		V. Dense	Brown	Sandy (M-C) Fine-M-C Gravel	FILL	HNU-0 11:31
		39 / 27	2.0			Brown	Sand Gravel Fine-M-C Sand	FILL	MOIST
S-2	2-4	5 / 10	1.7		M. Dense	Brown	Sandy Fine Mottled and Silty	FILL	HNU-0 11:39
		10 / 7	2.0		M-Stiff	Black-Brown	Fine Sand Tr. F-M Gravel	FILL	MOIST
S-3	4-6	6 / 25	1.7		V. Dense	Brown	Silty Fine to Coarse Sand	FILL	HNU-0 11:47
		28 / 30	2.0			Brown	Some Gravel Rock Fragments	FILL	MOIST
S-4	6-8	67 / 74	1.0		V Dense	Brown	Fine Silty Coarse Sand and	SM/GM	HNU-0 12:00
		100/3	1.25			Brown	Rock Fragments	SM/GM	MOIST Weathered Granite
S-5	8	100/1					Auger Refusal / Sampler Refusal		

REMARKS Driller: Floyd Crum = mo -6

BORING 2WCTB 1

PAGE 1 OF 1

* See Legend on Back

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 2WCTB2
PROJECT NO.: 9594
DATE: 1-19-94
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: J. R. FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 1-19-94 → 0°

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	0-2	8 / 18	1.5		M. Dense	Brown	Silty Gravelly Fine to Coarse	Fill	HNU-9 * 13:15
		20 / 21	2.0			Brown	Sand. Trace Fill - wire	Fill	Moist
S-2	2-4	30 / 22	1.6		V. Dense	Brown	↓	Fill	HNU-4 13:27
		40 / 31	2.0			Brown	↓	Fill	Moist
S-3	4-6	17 / 12	1.75		M. Dense	Brown	↓		HNU-L1 13:34
		6 / 5	2.0			Black	Organic Silt Wood Frags	ml	Moist
S-4	6-8	4 / 2	2.0		Soft	Gray-Black	Trace White Bivalve, Minerals	ml	HNU-L1 13:45
		2 / 2	2.0			Gray-Black		ml	Moist
S-5	8-10	1 / 1	2.0		V. Soft	Gray-Black		ml	HNU-L1 13:52
		1 / 1	2.0			Gray-Black		ml	Moist
S-6	10-12	2 / 1	1.8		V. Soft	Green-Gray		ml	HNU-40 13:58
		1 / 2	2.0			Green-Gray		ml	Moist
S-7	12-14	1 / 1	1.6		V. Soft	Green-Gray		ml	HNU-L1 14:17
		1 / 1	2.0			Green-Gray	↓	ml	Moist-Wet
							Bottom of Boring - 14.0'		

REMARKS E.G. AME 75 DRILLER EAST COAST

BORING 2WCTB2

PAGE 1 OF 1

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 2WCTB3
PROJECT NO.: 9594
DATE: 1- -94
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: J.R. FERGUSON
WATER LEVEL DATA :
(Date, Time & Conditions) 1-19-94 0°

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	0-2	— —				Black	Asphalt & Gravel Fill-Mass	Fill	HNU-21 11:15
		6 41	1.0		V. Dense	Brown	Silty (F-C) Sand and Gravel	Fill	FROZEN
S-2	2-4	15 9	1.3		M. Dense	Brown	Silty Gravelly, Medium-	Fill	HNU-4 11:23
		13 15	2.0			Brown	Coarse Sand	Fill	WET
S-3	4-6	3 2			Soft	Black	Organic Silt with wood frags.	ml	HNU-7 * 11:30
		2 3	2.0			Gray-Black	mottled micaceous	ml	MOIST
							Bottom of Boring: 6.0'		

REMARKS

BORING 2WCTB3

PAGE 1 OF 1

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 2WCTR4
PROJECT NO.: 9594 DATE: 1-18-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: J FERGUSON / S CONTI
WATER LEVEL DATA:
(Date, Time & Conditions) 1-18-94 12:45 10°

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	0-2	40 55	1.5		V Dense	Brown	Silty Fine to Coarse Sand	Fill	HNU-0 12:44
		44 40	2.0			Brown	Sand Some Gravel Brown	Fill	Frozen
S-2	2-4	22 19			V Dense	Brown	↓	Fill	HNU-0 12:55
		24 23	.25			Brown	↓	Fill	moist
							Auger and Sampler Refusal @ ±2.5'		13:22

REMARKS

BORING 2WC-B4

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* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 2WCTB5
PROJECT NO.: 9594 DATE: 1-19-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: J. R. FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 1-19-94 10° CLEAR

SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, FL)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	0-2	10 12	1.3		M. DENSE	BROWN	SILTY GRAVELLY M-C SAND +	SM/GM	HNU - <1 15:15
		14 14	2.0			BROWN	SILTY SANDY MEDIUM GRAVEL	FILL	FROZEN
S-2	2-4	10 18	1.0		M. DENSE	BROWN		FILL	HNU - 7 15:30
		23 21	2.0			BROWN		FILL	MOIST
S-3	4-6	10 13			M. DENSE	BROWN		FILL	HNU - <1 15:40
		14 4	2.0			GREEN-GRAY	ORGANIC SILT, TRACE WOOD.	ml	MOIST
S-4	6-8	2 2	2.0		M. STIFF	GREEN GRAY	MICACEOUS, BIVALVES	ml	HNU - 7 * 15:50
		3 2	2.0			GREEN GRAY		ml	MOIST
S-5	8-10	3 3	1.8		M. STIFF	GREEN-GRAY		ml	HNU - <1 15:57
		3 3	2.0			GREEN-GRAY		ml	MOIST
S-6	10-12	1 1	1.7		SOFT	GREEN-GRAY		ml	HNU - 9 16:02
		2 1	2.0			GREEN-GRAY		ml	MOIST
S-7	12-14	1 1	2.0		V SOFT	GREEN GRAY		ml	HNU - <1 16:15
		1 1	2.0			GREEN GRAY		ml	MOIST
							BOTTOM OF BORING: 14.0'		

REMARKS RIG CME 75 DRILLER FLOYD CROSS

BORING 2WCTB5

PAGE 1 OF 1

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2WCTB6
PROJECT NO.: 9594 DATE: 1-20-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: J.R. FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 1-20-94 50° CLEAR

SAMPLE NO. & TYPE OR RQD	DEPTH (ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	0-2	10 / 25	1.8		V. DENSE	BROWN	SILTY MEDIUM - COARSE SAND	FILL	HNU <1 09:57
		30 / 25	2.0			BROWN	SOME GRANITIC ROCK FRAGMENTS	FILL	FROZEN
S-2	2-4	24 / 28	1.6		V. DENSE	BROWN		FILL	HNU <1 10:11
		24 / 14	2.0			BROWN		FILL	MOIST
S-3	4-6	10 / 11	1.7		M. DENSE	BROWN		FILL	HNU <1 10:26
		6 / 9	2.0			BROWN		FILL	WET
S-4	6-8	15 / 13	1.6		M DENSE	BROWN		FILL	HNU <1 10:33
		13 / 10	2.0			BLACK	ORGANIC CLAYEY SILT, TR	ML	WET/MOIST
S-5	8-10	3 / 2	1.0		M. STIFF	GREEN-GRAY	WOOD FRAGMENTS, MOTTLED	ML	HNU <1 10:42
		3 / 2	2.0			GREEN-GRAY	TR BIVALVES	ML	MOIST
S-6	10-12	3 / 2	2.0		M. STIFF	GREEN-GRAY		ML	HNU <1 10:52
		3 / 3	2.0			GREEN-GRAY		ML	MOIST
S-7	12-14	3 / 3	2.0		M. STIFF	GREEN-GRAY		ML	HNU <1 11:10
		3 / 5	2.0			GREEN-GRAY		ML	MOIST
S-8	20-22	2 / 4	2.0		STIFF	GREEN-GRAY		ML	HNU <1 11:34
		4 / 3	2.0			BROWN	SANDY (V.F.) SILT TR ROOTS	ML	MOIST
S-9	25-27	2 / 26	1.8		V. DENSE	BROWN	GRAVELLY (F-M) FINE TO	SW	HNU <1 11:40
		40 / 40	2.0				COARSE SAND	SW	WET
							BOTTOM OF BORING: 27'		

REMARKS

BORING 2WCTB6

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* See Legend on Back

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 2WCTB7
PROJECT NO.: 9594
DATE: 1-19-94
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: J. R. SERVOSON
WATER LEVEL DATA:
(Date, Time & Conditions) 1-19-94

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN N.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	0-[illegible]	70 / 100/9	.75		V Dense	Gray-Brown	[illegible] SANDY F-M GRAVEL	SM/GM	HNU-0 09:25
	(.5-1.5)		.75				and GRAVELLY SILTY F-C Sand	FILL	FROZEN
S-2	[illegible]	50 / 03/6"	1.0 / 1.0		V. Dense	Gray-Brown	[illegible]	SM/GM	HNU-40 09:32
								FILL	FROZEN
S-3	2/-6	13 / 2	1.0		M Dense	Brown	[illegible] SAND F-C GRAVEL AND	FILL	HNU-41 09:48
		7 / 6	.0			Brown	GRAVELLY (F-C) MEDIUM SAND	FILL	MOIST
S-4	5-8	3 / 2	1.4		Soft	Brown [illegible]	[illegible] Some roots	ML	HNU-41 10:04
		6 / 2	.0			Brown [illegible]	[illegible] WOOD etc.	ML	MOIST - WET
S-5	8-10	1 / 1	1.5		V Soft	Brown	[illegible] ROOTS etc.	ML	HNU-7 * 10:15
		1 / 1	.0			Brown	[illegible] IRON [illegible] SAND	ML	WET
							Termination of Boring = 10.0'		

REMARKS [illegible]

BORING 2WCTB7

PAGE 1 OF 1

* See Legend on Back

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON — BORING NO.: 2WCTB8
PROJECT NO.: 9594 — DATE: 02-20-94 — DRILLER: EAST COAST THOMAS/
ELEVATION: — FIELD GEOLOGIST: Tim Evans / Tim Sabo
WATER LEVEL DATA:
(Date, Time & Conditions) 2-20-94 1030 Sunny, 5-10 mph wind S, 10" snow

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS OVM
S-1 @	0.0	10 / 4.0	1.4/2.0		V. Dense	BRN	SAND w/ Some Gneissic Gravel	SW	Top 3" Frozen 0ppm
1038	2.0	54 / 29							Sand - v. fine to C Gr Gravel - Max 0.2" ø
S-2 @		35 / 25	1.2/2.0		Dense -				Dry 0ppm
1043	4.0	18 / 10			HARD	Brn	Clayey Silt w/ Tr Charcoal	ML	Mica Flakes
S-3 @		8 / 7	1.1/2.0		Stiff		w/ Tr Roots		0ppm
1051	6.0	8 / 7							Rust mottling
S-4 @		8 / 10	2.0/2.0		V. Stiff				0ppm
1055	8.0	9 / 11							
S-5 @		4 / 11	2.0/2.0		V. Stiff		w/ Tr Shell Frags		0ppm
1103	10.0	10 / 14					Peat Silty Sand w/ Tr Gneiss Cobble & Roots	SW	Sand - F to C Gr * Wet
S-6 @		10 / 14	0.9/2.0		Dense				" " * Saturated 0ppm
1110	12.0	21 / 22							
S-7 @ 1115	12.5	110/.6 / 24	0.6/0.6		V. Dense		w/ Tr Gneiss Cobble		ppm
S-8 @		65 / 95	1.7/2.0		V. Dense	Gray	Gravelly Sand w/ Tr Silt	GW	Sand - M to VC Gr 0ppm
1128	14.5	61							Auger to 15'
							0 to 15'		
							3 - SS to 14.5'		

REMARKS Dietrich D-50 H.S.A. (Rammer Mounted)
3"x24" SS (140# w/ 30" Drop Cat Head)
4¼" ID 8" OD Auger

BORING 2WCTB8
PAGE 1 OF 1

* See Legend on Back

* Composite sent to lab (Sample # 2WCTB8-1012.6)

APPENDIX A.5

SITE 2 - AREA A DOWNSTREAM

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 20MW23D
PROJECT NO.: 9594 DATE: 11-18-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: TSE
WATER LEVEL DATA:
(Date, Time & Conditions)

	SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN No.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
		0.0								8½" ϕ AIR HAMMER
										FROM 0' TO 7½"
		3.0			Hit BR @ 3'		GRAY	GNEISS		SET CASING @ 7½'
		5.0								
11/18										
11/19										
11/19										5⅞" ϕ AIR HAMMER
11/23										FROM 7½' TO 65'
		10.0								
		15.0								
		18.0				SOFT	DARK GRAY	SCHIST (BIO-GARNET-QTZ)		MOIST
		20.0								
		25.0								

REMARKS CHICAGO PNEUMATIC 672 AIR ROTARY RIG
LOG CUTTINGS FROM 3' TO 65'

BORING 20MW23D

PAGE 1 OF 3

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 2DMW23D
PROJECT NO.: 9594 DATE: 11-23-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: TSE
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN N.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	25.0								
	28.0				SOFT	DARK GRAY	SCHIST (BIO-GARNET-QTZ)		MOIST
	30.0								
	35.0								
	38.0				SOFT	DARK GRAY	SCHIST (BIO-GARNET-QTZ)		MOIST
	40.0								
	45.0								
	48.0				SOFT	DARK GRAY	SCHIST		0933 → 0938 48' TO 58'
									MOIST
	50.0								

REMARKS

BORING 2DMW23

PAGE 2 OF 3

* See Legend on back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2DMW23D
PROJECT NO.: 9594 DATE: 11-23-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: TSE
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	50.0								
	55.0								
	68.0				SOFT	DARK GREY	SCHIST		MOIST
	60.0								HIT H_2O @ 60'±
	65.0								
							5 7/8" ø AR Drilling 7½' to 65'		6" ø CASING @ 7½'
							Total Depth 65'		6" ø OPEN BOREHOLE FROM 7½' TO 65'

REMARKS

BORING 2DMW23D

PAGE 3 OF 3

* See Legend on back

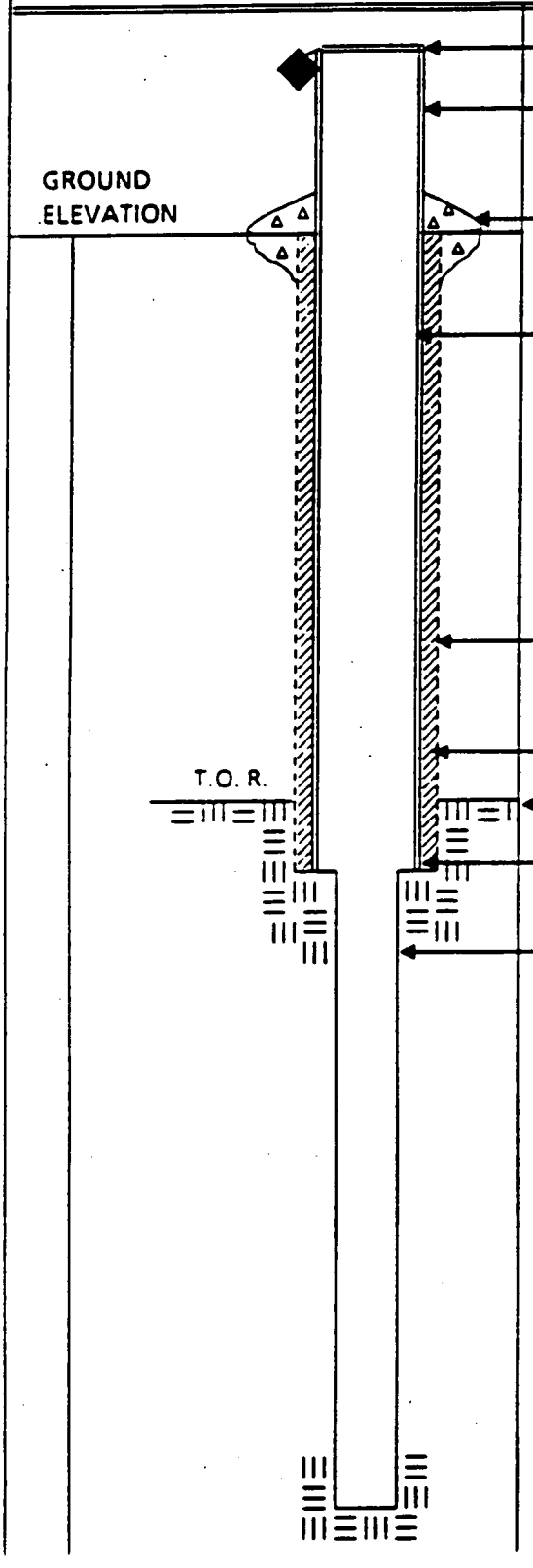
HALLIBURTON NUS
Environmental Corporation

BORING NO.: 2DMW23D

BEDROCK MONITORING WELL SHEET

OPEN HOLE WELL

PROJECT: NSB-NLON
PROJECT NO.: 9594
ELEVATION:
FIELD GEOLOGIST: T. EVANS
LOCATION: GROTON, CT.
BORING: 2DMW23D
DATE: 11-23-93
DRILLER: EAST COAST
DRILLING METHOD: AIR ROTARY
DEVELOPMENT METHOD:



ELEVATION OF TOP OF CASING:

STICK UP OF CASING ABOVE GROUND SURFACE: 1.55'

TYPE OF SURFACE SEAL: CONCRETE PAD

I.D. OF CASING: 6" ϕ

TYPE OF CASING: BLACK STEEL

TEMP. / PERM.: PERM

DIAMETER OF HOLE: 8½"

TYPE OF CASING SEAL: GROUT

DEPTH TO TOP OF ROCK: 3'

DEPTH TO BOTTOM CASING: 7½'

DIAMETER OF HOLE IN BEDROCK: 5⅞"

DESCRIBE IF CORE / REAMED WITH BIT:
N/A

DESCRIBE JOINTS IN BEDROCK AND DEPTH:
N/A

ELEVATION / DEPTH OF HOLE: 165'

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON
BORING NO.: 2DMW 24S
PROJECT NO.: 9594
DATE: 11/30/93
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: S CONTI
W. LINEBERRY.
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	0.0	4 / 12	2.0/2.0		M DENSE	BRN	SILTY SAND AND GR.	SW	TOP 6" TOPSOIL
1100	2.0	14 / 14					SOME GNEISS FR.		MOIST F→C SAND 0PPM
S-2		5 / 11	1.1/2.0		M DENSE		SILTY SAND SOME GR.	SW	MOIST 0PPM
1105	4.0	10 / 10					TR. GNEISS FR		2" ⌀ MAX SIZE
S-3		5 / 9	1.2/2.0		LOOSE	BRN	SILTY SAND AND		WET 0PPM
1145	6.0	3 / 2					GRAVEL	SW	H2O ≈ 5'± TR. GNEISS FR.
S-4		5 / 7	0.5/2.0		LOOSE				
1151	8.0	5 / 5							
S-5		5 / 6	.4/2.0		LOOSE	BRN	SILTY SAND - SOME GR	SM	WET 0 PPM
1154	10.0	10 / 10		10.0			TR CLAY		F→C SAND
S-6		21 / 10	1.4/2.0		M DENSE	BRN GRAY	SANDY SILT / SILTY	SM / ML	WET 0PPM
1205	12.0	11 / 11					SAND		DISTINCT LITH. CHANGE ≈ 10'
S-7		11 / 8	1.6/2.0		LOOSE	GRAY	SILTY FINE SAND	SM	WET
1215	14.0	10 / 10							
									SCREEN 4-14
									SAND 3-14
									PELLETS 3-1
							DRILL HSA TO 14'		
							7 SAMPLES		
							WELL CONST 14'		

REMARKS CME 750 RIG - 2" SPOONS - SPT 4 1/4" ID AUGERS

BORING 2DMW24S

PAGE 1 OF 1

* See Legend on Back

BORING NO: 20MW24S

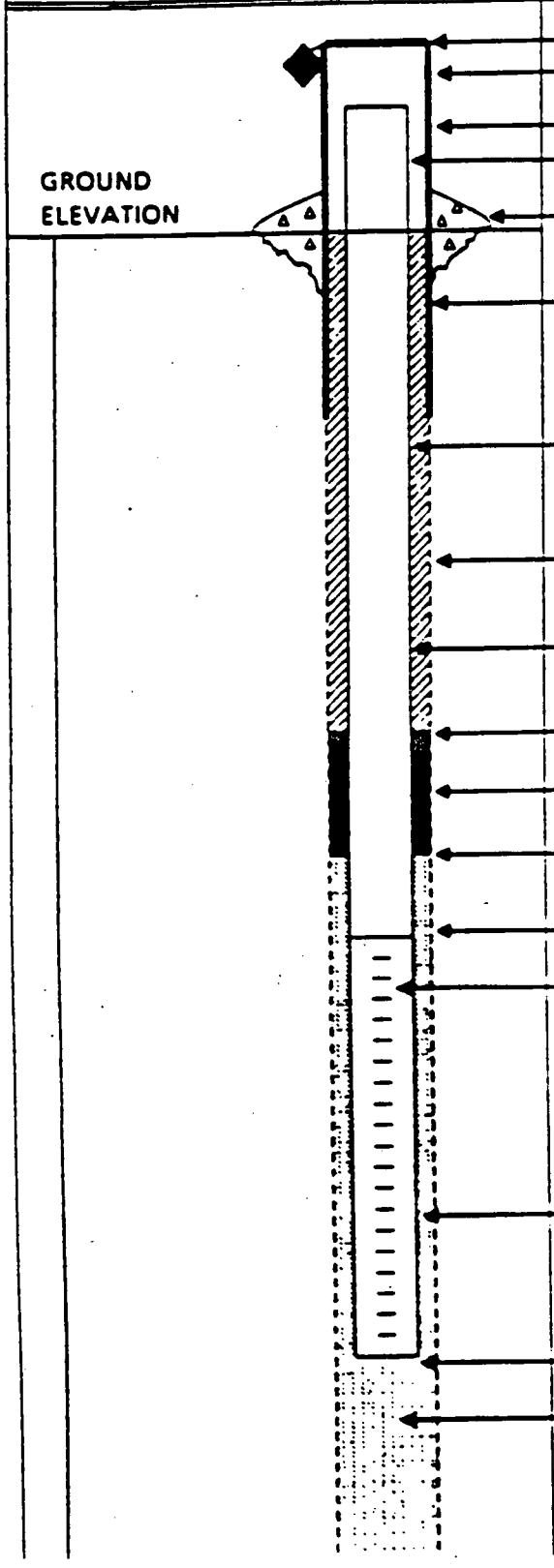
HALLIBURTON NUS
Environmental Corporation

MONITORING WELL SHEET

PROJECT: NSB-NLON
PROJECT NO.: 9594
ELEVATION:
FIELD GEOLOGIST: S. CONTI

LOCATION: GROTON, CT.
BORING: 20MW24S
DATE: 11-30-93

DRILLER: EAST COAST
DRILLING METHOD: HSA
DEVELOPMENT METHOD:



ELEVATION OF TOP OF SURFACE CASING:
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING: 1.74'
STICK - UP RISER PIPE: 1.63'
TYPE OF SURFACE SEAL: CONCRETE PAD
I.D. OF SURFACE CASING: 4"
TYPE OF SURFACE CASING: STEEL
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: PVC
BOREHOLE DIAMETER: 8"
TYPE OF BACKFILL: CONCRETE
ELEVATION / DEPTH TOP OF SEAL: /1'
TYPE OF SEAL: BENTONITE CHIPS
DEPTH TOP OF SAND PACK: 3'
ELEVATION / DEPTH TOP OF SCREEN: /4'
TYPE OF SCREEN: PVC
SLOT SIZE x LENGTH: 0.010 X 10'
I.D. OF SCREEN 2"
TYPE OF SAND PACK: SILICA SAND
ELEVATION / DEPTH BOTTOM OF SCREEN: /14'
ELEVATION / DEPTH BOTTOM OF SAND PACK: /14'
TYPE OF BACKFILL BELOW OBSERVATION WELL N/A
ELEVATION / DEPTH OF HOLE: /14'

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2DMW24D
PROJECT NO.: 9594 DATE: 11-23-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: TSE / W. LINEBERRY
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR OR USCS	REMARKS
	0.0						SEE BORING 2DMW24S		8½"ø AIR ROTARY
							FOR LITHOLOGY TO 14'		FROM 0' TO 25'
									SET CASING @ 25'
	5.0								
	10.0								
	15.0								
	17.0			HIT BR @ 17' IN SL III					
	20.0								
	25.0								

REMARKS CHICAGO PNEUMATIC 672 AIR ROTARY RIG

BORING 2DMW24D

PAGE 1 OF 2

* See Legend on back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 2DMW24D
PROJECT NO.: 9594 DATE: 11-29-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: TSE / W. LINEBERRY
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN No.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	25.0								5⅞" ϕ AIR HAMMER
									FROM 25' TO 45'
	30.0								
	33.0								Hit H_2O @ 33'
	35.0				HARD	DARK GREY	BIOTITE - QTZ GNEISS		
	40.0								
	45.0				HARD	DARK GREY	BIOTITE - QTZ GNEISS		
							5⅞" ϕ AIR ROTARY 0' TO 45'		6" ϕ CASING @ 25'
									6" ϕ OPEN BOREHOLE
							TOTAL DEPTH 45'		25' TO 45'
	50.0								

REMARKS LOG CUTTINGS FROM 35' TO 45'

BORING 2DMW24D

PAGE 2 OF 2

* See Legend on back

HALLIBURTON NUS
Environmental Corporation

BORING NO.: 2D MW24D

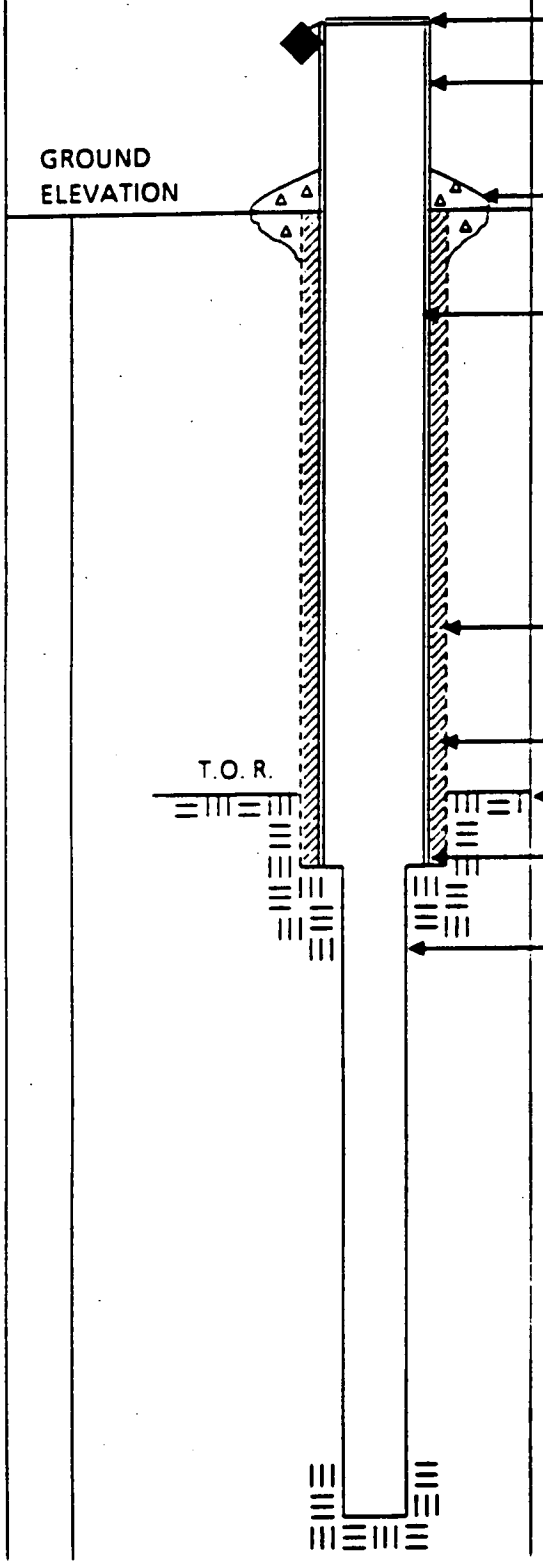
BEDROCK MONITORING WELL SHEET

OPEN HOLE WELL

PROJECT: NSB-NLON
PROJECT NO.: 9594
ELEVATION:
FIELD GEOLOGIST: TSE

LOCATION: GROTON, CT
BORING: 2DMW24D
DATE: 11-29-93

DRILLER: EAST COAST
DRILLING METHOD: AIR ROTARY
DEVELOPMENT METHOD:



ELEVATION OF TOP OF CASING:

STICK UP OF CASING ABOVE GROUND SURFACE: 1.48'

TYPE OF SURFACE SEAL: CONCRETE PAD

I.D. OF CASING: 6" ϕ

TYPE OF CASING: BLACK STEEL

TEMP. / PERM.: PERM

DIAMETER OF HOLE: 8½" ϕ

TYPE OF CASING SEAL: GROUT

DEPTH TO TOP OF ROCK: 17'

DEPTH TO BOTTOM CASING: 25'

DIAMETER OF HOLE IN BEDROCK: 5⅞" ϕ

DESCRIBE IF CORE / REAMED WITH BIT:

N/A

DESCRIBE JOINTS IN BEDROCK AND DEPTH:

N/A

ELEVATION / DEPTH OF HOLE: 145'

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2DMW25S
PROJECT NO.: 9594 DATE: 12-2-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: T. EVANS / B. SWIATEK
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN N.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	0.0	2 / 3	1.1/2.0		LOOSE	BRN TO	SANDY SILT W/ROOTS	SM	0 ppm
1429	2.0	3 / 3				RED BRN			DECAYED ROOT ø 0.25"
S-2		4 / 6	1.0/2.0		LOOSE	D. GRAY	SANDY SILT W/GNEISS FRAGS	SM	MICACEOUS 0 ppm
1433	4.0	3 / 3							
S-3		2 / 2	1.8/2.0		V. LOOSE	BRN	SANDY SILT W/TR ROOTS	SM	MOIST 0 ppm
1439	6.0	2 / 2		5.5'					
S-4		3 / 6	2.0/2.0		V. STIFF	BRN TO GRAY	SILT W/TR GLASS & SAND	ML	MOIST 0 ppm
1441	8.0	14 / 19							
S-5		4 / 13	2.0/2.0		M. DENSE	BRN TO TAN	SANDY SILT /	SM /	MOIST 0 ppm
1447	10.0	16 / 14					SILTY SAND	ML	POORLY GRADED FINE SAND
				10.5'					
							REFUSAL @ 10.5'		
							HSA TO 10.5'		SCREEN 5.5'-10.5'
							SS TO 10'		SAND 4'-5.5'
							5 SS SAMPLES		PELLETS 2'-4'

REMARKS CME 75 HSA RIG
4¼" ID AUGER
2" SS TO SAMPLE (140# WT, 30" DROP)

BORING 2DMW2

PAGE 1 OF 1

* See Legend on Back

BORING NO: 2DMW25J

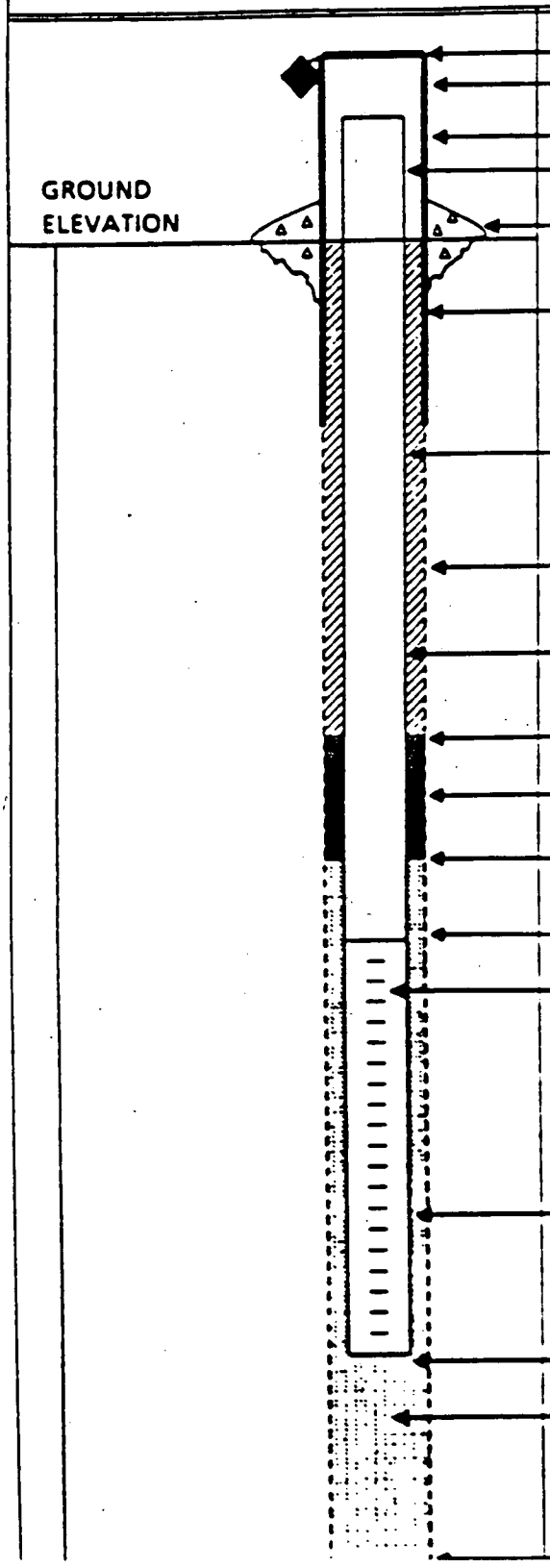
HALLIBURTON NUS
Environmental Corporation

MONITORING WELL SHEET

PROJECT: NSB-NLON
PROJECT NO.: 9594
ELEVATION:
FIELD GEOLOGIST: T. EVANS

LOCATION: GROTON, CT.
BORING: 2DMW25S
DATE: 12-2-93

DRILLER: EAST COAST
DRILLING METHOD: HSA
DEVELOPMENT METHOD:



ELEVATION OF TOP OF SURFACE CASING:
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING: 1.97'
STICK - UP RISER PIPE: 1.55'
TYPE OF SURFACE SEAL: CONCRETE PAD
I.D. OF SURFACE CASING: 4"
TYPE OF SURFACE CASING: STEEL
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: PVC
BOREHOLE DIAMETER: 8"
TYPE OF BACKFILL: CONCRETE
ELEVATION / DEPTH TOP OF SEAL: /2'
TYPE OF SEAL: BENTONITE CHIPS
DEPTH TOP OF SAND PACK: 4'
ELEVATION / DEPTH TOP OF SCREEN: /5.5'
TYPE OF SCREEN: PVC
SLOT SIZE x LENGTH: 0.010 x 10'
D OF SCREEN 2"
TYPE OF SAND PACK: SILICA SAND
ELEVATION / DEPTH BOTTOM OF SCREEN: /10.5'
ELEVATION / DEPTH BOTTOM OF SAND PACK: /10.5
TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A
ELEVATION / DEPTH OF HOLE: /10.5'

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 2DMW25D
PROJECT NO.: 9594 DATE: 11/30/93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: CONTI/EVANS / W. LINEBERRY
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN N.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	0.0						FOR LITHOLOGY SEE		
							LOG FOR 2DMW25S		
	10.0								
	12.0			12.0					
					HARD	GRAY	GNEISS		HIT ROCK ≈ 12'
									SET CAS AT 18'
12/1 18.0					HARD	GRAY	GNEISS	BR	18.4 LO* JNT
								BL	
23/5.0	①		5.0/5.0					BR	20' LO & JNT
									20.5 " "
									21→22 HI & FRACTURE IRON STAINED
23.0									22→22.5 VERT FRACTURE
									GOOD REC. Fe STAINS
	25.0								

REMARKS AIR HAMMER TO 18' TO SET 6"Φ CAS AT 18
NX CORE 18 → 23. THEN REAM 5 7/8" FROM 18
TO 40' (TD)

BORING 2DMW25

PAGE 1 OF 2

* See Legend on Back

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB-NLON
BORING NO.: 2DMW25D
PROJECT NO.: 9594
DATE: 12/1/93
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: CONTI / EVANS / W. LINEBERRY
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	25.0								
	30.0								
	35.0								
	40.0								
							NX CORE (3"OD) 18' TO 23'		6" ø CASING @ 18'
							5 7/8" ø AIR ROTARY 23' TO 40'		6" ø OPEN BOREHOLE
									18' TO 40'
	45.0						TOTAL DEPTH 40'		
	50.0								

REMARKS

BORING 2DMW25D

PAGE 2 OF 2

* See Legend on back

HALLIBURTON NUS
Environmental Corporation

BORING NO.: 2DMW25D

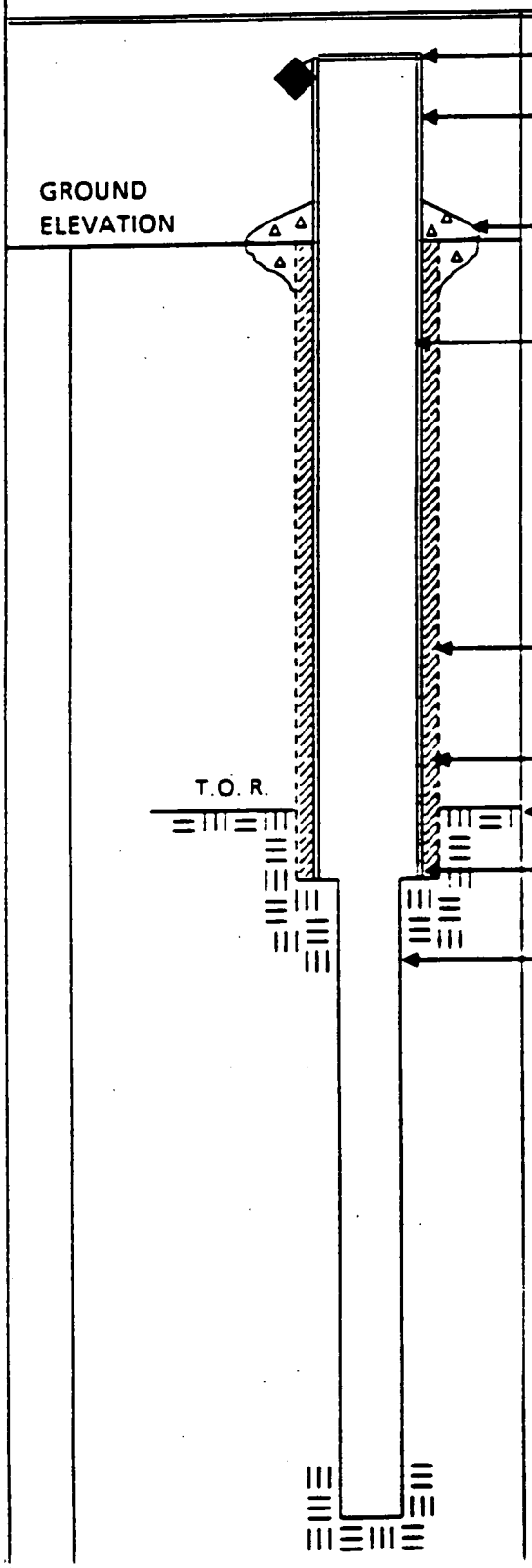
BEDROCK MONITORING WELL SHEET

OPEN HOLE WELL

PROJECT: NSB-NLON
PROJECT NO.: 9594
ELEVATION:
FIELD GEOLOGIST: S. CONTI

LOCATION: GROTON, CT
BORING: 2D MW25D
DATE: 12-1-93

DRILLER: EAST COAST
DRILLING METHOD: AIR ROTARY/NX CORE
DEVELOPMENT METHOD:



ELEVATION OF TOP OF CASING:

STICK UP OF CASING ABOVE GROUND SURFACE: 2.16'

TYPE OF SURFACE SEAL: CONCRETE PAD

I.D. OF CASING: 6"

TYPE OF CASING: BLACK STEEL

TEMP. / PERM.: PERM

DIAMETER OF HOLE: 8 1/2"

TYPE OF CASING SEAL: GROUT

DEPTH TO TOP OF ROCK: 12'

DEPTH TO BOTTOM CASING: 18'

DIAMETER OF HOLE IN BEDROCK: 5 7/8" ø

DESCRIBE IF CORE / REAMED WITH BIT:
GNEISS

DESCRIBE JOINTS IN BEDROCK AND DEPTH:
LOW ∡ JNT 18.4' HIGH ∡ FRAC 21.5'
LOW ∡ JNT 20.0' VERT FRAC 22.0'
LOW ∡ JNT 20.5'

ELEVATION / DEPTH OF HOLE: 140'

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB-NLON
BORING NO.: 2DMW26S
PROJECT NO.: 9594
DATE: 12-1-93
DRILLER: EAST COAST THOMAS / BRETT SWIATEK
ELEVATION:
FIELD GEOLOGIST: TSE
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	0.0	4 / 9	2.0/2.0		M. DENSE	D. BRN TO	CLAYEY SILT SAND W/ GRAVEL		0"-6" TOPSOIL 0 ppm
0800	2.0	11 / 15				TAN			MAX ϕ 0.2"
S-2		9 / 16	2.0/2.0		DENSE	TAN	SAND W/TR GRAVEL	SP	MOIST 0 ppm
	4.0	18 / 21							POORLY GRADED MEDIUM
S-3		5 / 12	1.8/2.0		M DENSE	TAN	SAND	SP	MOIST 0 ppm
	6.0	16 / 17							MEDIUM TO FINE
S-4		8 / 8	2.0/2.0		M. DENSE	TAN	SAND	SP	0 ppm
	8.0	10 / 9		8					
S-5		6 / 5	1.6/2.0		LOOSE	BRN TO TAN	Silty SAND / SAND	SM/ SP	H_2O @ 9' 0 ppm
	10.0	4 / 9							
S-6		2 / 6	2.0/2.0		M. DENSE	TAN TO RUST	SAND	SP	WET 0 ppm
	12.0	6 / 11							Poorly Graded Medium
S-7		4 / 3	2.0/2.0		LOOSE	TAN TO RUST	SAND W/ TR GRAVEL	SP	0 ppm
	14.0	4 / 4							MAX ϕ 0.05"
S-8		6 / 11	2.0/2.0		M. DENSE	TAN	SAND W/ TR GRAVEL	SP	0 ppm
	16.0	9 / 8							
S-9		4 / 10	2.0/2.0						0 ppm
0900	18.0	8 / 8		18					
									SCREEN 8'-18'
							HSA TO 18'		SAND 7'-18'
							SS TO 8'		PELLETS 5'-7'
							9 SAMPLES		
							TOTAL DEPTH 18'		

REMARKS: CME 75 HSA RIG
4¼" ID AUGER
3" SS TO SAMPLE (140# WT. 30" DROP)

BORING 2DMW26S
PAGE 1 OF 1

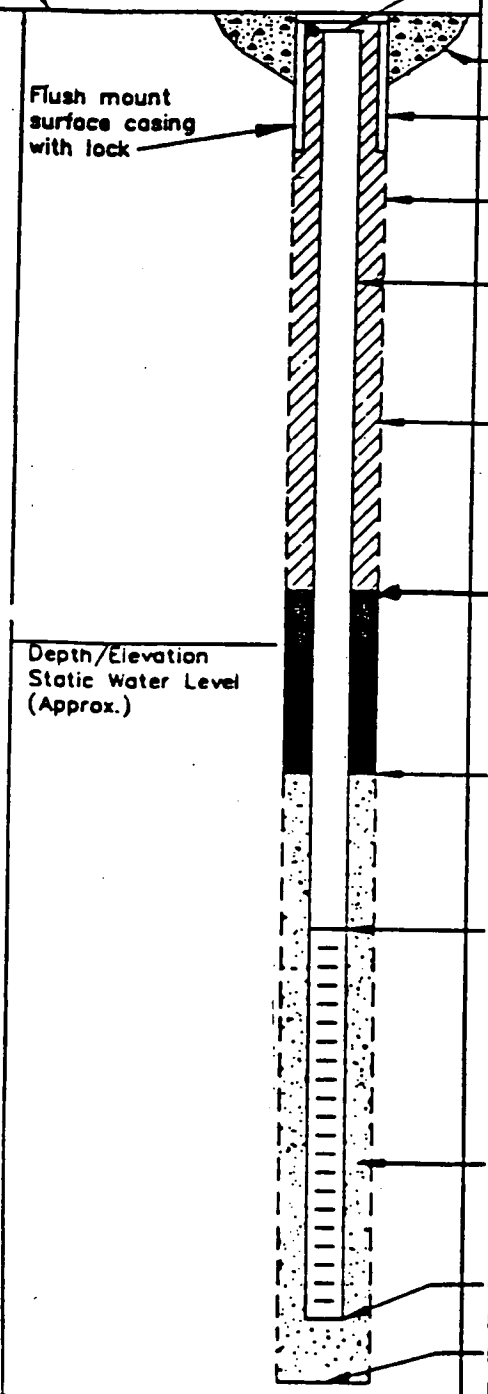
* See Legend on back

HALLIBURTON NUS
Environmental Corporation

WELL NO.: 2DMW26S

OVERBURDEN
MONITORING WELL SHEET

PROJECT: NSB-NLON	LOCATION: Groton CT	DRILLER: East Coast
PROJECT NO.: 9594	BORING: 2DMW26S	DRILLING METHOD: HSA
ELEVATION:	DATE: 12-1-93	DEVELOPMENT METHOD:
FIELD GEOLOGIST: TSE / SJC		



ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: Concrete

TYPE OF PROTECTIVE CASING: Steel

I.D. OF PROTECTIVE CASING: 4"

BOREHOLE DIAMETER: 8"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: Grout

ELEVATION / DEPTH TOP OF SEAL: / 5'

TYPE OF SEAL: Bentonite Chips

DEPTH/ELEVATION TOP OF SAND: / 7'

DEPTH/ELEVATION TOP OF SCREEN: / 8'

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.010 x 10'

TYPE OF SAND PACK: Silica Sand

DEPTH/ELEVATION BOTTOM OF SCREEN: / 18'

DEPTH/ELEVATION BOTTOM OF SAND: / 18'

DEPTH/ELEVATION BOTTOM OF HOLE: / 18'

BACKFILL MATERIAL BELOW SAND: N/A

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2DMW26D
PROJECT NO.: 9594 DATE: 12/2/93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: CONTI / EVANS / W. LINEBERRY
WATER LEVEL DATA :
(Dat , Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	0.0						SEE BORING 2DMW26S		10 5/8" ϕ AIR ROTARY
							FOR LITHOLOGY 0' TO 18'		0' TO 38'
									SET CASING @ 38'
	5.0								
	10.0								
	15.0								
	20.0								
	25.0								

REMARKS CHICAGO PNEUMATIC 672 AIR ROTARY RIG

BORING 2DMW26D

PAGE 1 OF 2

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 20MW260
PROJECT NO.: 9594 DATE: 12-6-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: CONTI / EVANS / W. LINEBERRY
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	25.0								
	30.0								
				30'					
	32.0						GNEISS BOULDER		32' to 34' ±
	35.0								
2/2	38.0								5 7/8" ϕ AIR HAMMER
2/6									38' TO 50'
	40.0			40'					HIT H_2O @ 40' ±
									* CAVE-IN TO 40' ±
									(CASING NOT IN BR)
									SCREEN 30'-40'
	45.0								SAND 27'-40'
									PELLETS 23'-27'
	50.0					BRN	SILTY SAND W/ GRAVEL		

REMARKS LOG CUTTINGS 39' to 50'

BORING 20MW260

PAGE 2 OF 2

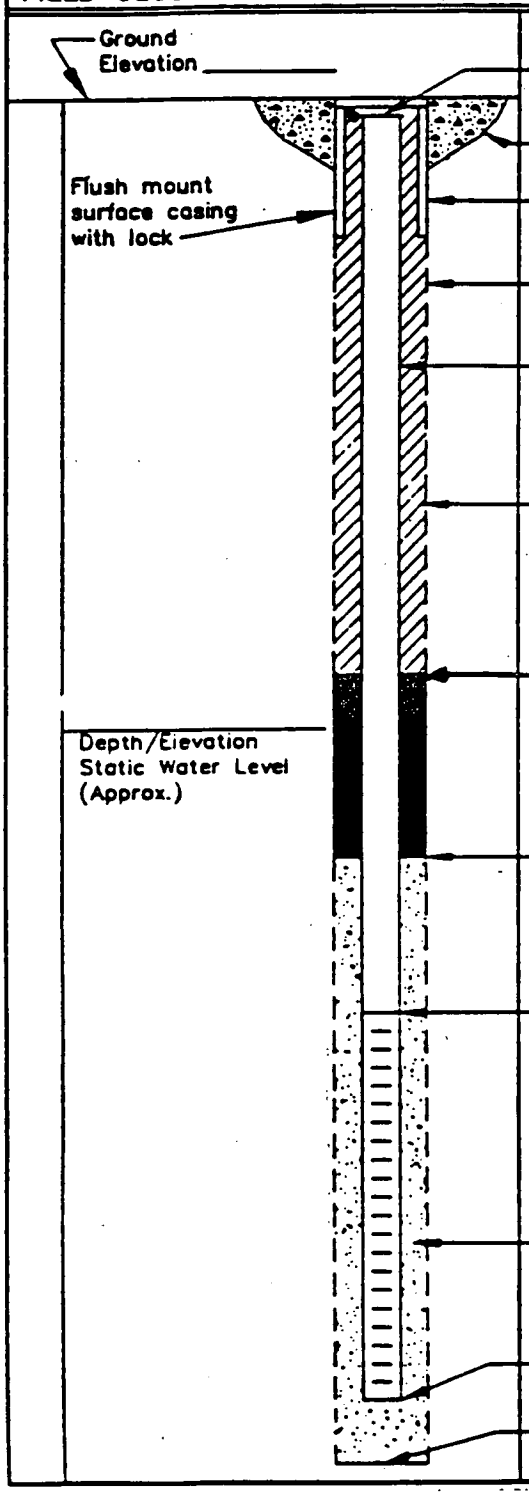
* See Legend on Back

HALLIBURTON NUS
Environmental Corporation

WELL NO.: 2DMW26D

OVERBURDEN
MONITORING WELL SHEET

PROJECT: NSB-NLON	LOCATION: Groton CT	DRILLER: East Coast
PROJECT NO.: 9594	BORING: 2DMW26D	DRILLING METHOD: Air Rotary
ELEVATION:	DATE: 12-6-93	DEVELOPMENT METHOD:
FIELD GEOLOGIST: TSE / SJC		



ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: Concrete

TYPE OF PROTECTIVE CASING: Steel / Black Steel

I.D. OF PROTECTIVE CASING: 4" / 6" to 38'

BOREHOLE DIAMETER: 6"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: Grout

ELEVATION / DEPTH TOP OF SEAL: / 23'

TYPE OF SEAL: Bentonite Chips

DEPTH/ELEVATION TOP OF SAND: / 27'

DEPTH/ELEVATION TOP OF SCREEN: / 30'

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.010 x 10'

TYPE OF SAND PACK: Silica Sand

DEPTH/ELEVATION BOTTOM OF SCREEN: / 40'

DEPTH/ELEVATION BOTTOM OF SAND: / 40'

DEPTH/ELEVATION BOTTOM OF HOLE: / 50'

BACKFILL MATERIAL BELOW SAND: Natural

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2DMW27S
PROJECT NO.: 9594 DATE: 12-1-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: TIM EVANS / BRETT SWIATEK
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	0.0	10 / 4	0.9/2.0		M. DENSE	D. BRN	Sandy Silt w/ org	SM	Topsoil 0 ppm
1200	2.0	9 / 8					& TR Gravel		
S-2		8 / 7	0.9/2.0		M. & MC	TAN TO GRAY	Sand w/ GNEISS FRAGS	SP	Medium 0 ppm
	4.0	9 / 25							
S-3		7 / 66	1.1/2.0		V. DENSE	GRAY	GNEISS FRAGS w/	-	0 ppm
	6.0	53 / 37					TR SAND		MAX Ø 0.13"
S-4	6.9	37 / 100	1.7/2.0		V. DENSE	BRN TO PINK	Silty Sand w/ Gravel &	SM	0 ppm
							Granite Frags		MAX FRAGS Ø 0.1"
									DID NOT SAMPLE 6.9' TO 10' DUE TO BOULDERS
	10.0								
S-5		28 / 41	1.5/2.0	11.5	V. DENSE	TAN	Sand w/ Qtzite, Gneiss Frags	SP	Medium 0 ppm
	12.0	49 / 55							
	13.0		0.4/1.3						
S-6		55 / 68			V. DENSE	BRN	QTZITE FRAGS		Wet 0 ppm
13 0	14.3	100		14.3					Refusal @ 14.3'
	17.0			17.0					
							HSA to 14'		SCREEN 11.5'-17'
							SS to 14.3'		SAND 9.5'-17'
							H_2O Rotary to 17'		PELLETS 7.5'-9.5'

REMARKS CME 75 HSA RIG
2" SS to SAMPLE (NO# 140, 30" Drop)
4¼" ID AUGER 3⅞" Ø Rotary Bit 14' to 17'

BORING 2DMW27S
PAGE 1 OF 1

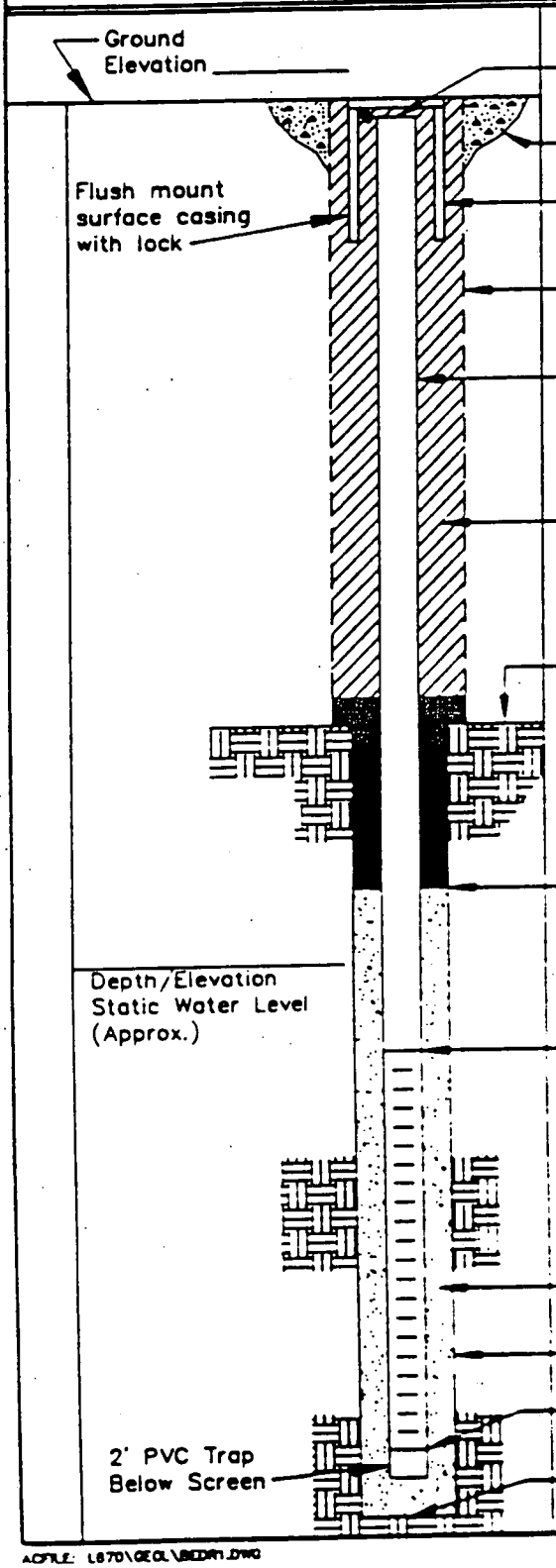
* See Legend on back

WELL NO.: 2DMW27S

HALLIBURTON NUS
Environmental Corporation

BEDROCK MONITORING WELL SHEET
WELL INSTALLED IN BEDROCK

PROJECT: NSB-NLON	LOCATION: GROTON, CT.	DRILLER: EAST COAST
PROJECT NO.: 9594	BORING: 2DMW27S	DRILLING METHOD: HSA
ELEVATION:	DATE: 12-1-93	DEVELOPMENT METHOD:
FIELD GEOLOGIST: Tim Evans		



ELEVATION TOP OF RISER: _____

TYPE OF SURFACE SEAL: Concrete

TYPE OF PROTECTIVE CASING: Steel

I.D. OF PROTECTIVE CASING: 4"

DIAMETER OF HOLE: 8"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: Grout

DEPTH/ELEVATION TOP OF BEDROCK: 11.3'

DEPTH/ELEVATION TOP OF SAND: 9.5'

DEPTH/ELEVATION TOP OF SCREEN: 11.5'

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.010 x 10'

TYPE OF SAND PACK: Silica Sand

DIAMETER OF HOLE IN BEDROCK: 4"

DEPTH/ELEVATION BOTTOM OF SCREEN: 17'

DEPTH/ELEVATION BOTTOM OF SAND: 17'

DEPTH/ELEVATION BOTTOM OF HOLE: 17'

BACKFILL MATERIAL BELOW SAND: N/A

ACFILE: L870\GEOL\BEDRK1.DWG

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB-NLON — BORING NO.: 2DMW27D
PROJECT NO.: 9594 — DATE: 12-3-93 — DRILLER: EAST COAST THOMAS
ELEVATION: — FIELD GEOLOGIST: SJC / TSE / W. LINEBERRY
WATER LEVEL DATA :
(Date, Time & Conditions)

	SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
		0.0						SEE BORING 2DMW27S		10 5/8" ϕ AIR ROTARY
								FOR LITHOLOGY TO 14'		FROM 0' TO 20'
										SET CASING @ 20'
		5.0								
		10.0								
		14.0								HIT BR @ 14' ±
		15.0								
12/3										
12/4										HIT H2O @ 16' ±
12/4		20.0								
12/5									BL	20.95' LO & JNT
	5.0/5.0	①	100%	5.0/5.0		HARD	GRAY TO PINK	BIO-QTZ-FSPAR GNEISS		22.4' LO & JNT
										22.7' LO & JNT
12/5	25.0									(24.45 BREAK)

REMARKS CHICAGO PNEUMATIC 672 AIR ROTARY RIG

NX CORE FROM 20' TO 25' THEN REAM 5 7/8" FROM 20' TO 25'

BORING 2DMW27

PAGE 1 OF 8

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2DMW27D
PROJECT NO.: 9594 DATE: 12-7-93 DRILLER: EAST COAST THOMAS / WAYNE LINEBERRY
ELEVATION: FIELD GEOLOGIST: TSE
WATER LEVEL DATA :
(Date, Time & Conditions)

	SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
12/7	1215	25.0								5 7/8" ϕ AIR HAMMER
										25' TO 205'
										NO H_2O 25' TO 205'
		30.0								
	1239	35.0				HARD	GRAY	QTZ. BIG SCHIST/GNEISS		
		40.0								
	1246	45.0				HARD	BLACK	FINE-QTZ SCHIST/GNEISS		VERY MICACEOUS
		50.0								

REMARKS LOG CUTTINGS [illegible] TO 205'

BORING 2DMW27D

PAGE 2 OF 8

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON
BORING NO.: 2DMW27D
PROJECT NO.: 9594
DATE: 12-7-2?
DRILLER: EAST COAST THOMAS /W. LINEBERRY
ELEVATION:
FIELD GEOLOGIST: TSE
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	50.0								
	55.0				HARD	L.GRAY	QTZ. BIO-FSPAR GNEISS		
	60.0								
	65.0				HARD	BLACK	GNEISS		
	70.0								
	75.0				HARD	L.GRAY	GNEISS		

REMARKS

BORING 2DMW27

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* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2DMW27D
PROJECT NO.: 9594 DATE: 12-7-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: TMF / W. LINEBERRY
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/FL)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	75.0								
	80.0								
	85.0				HARD	PINK TO BLACK	GNEISS		
	95.0				HARD	L. GRAY	GNEISS		

REMARKS

BORING 2DMW27D

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* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 20MW27D
PROJECT NO.: 9594 DATE: 12-7-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: TJE / W. LINEBERRY
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	100.0								
13 56	105.0				HARD	WHITE	GNEISS		
	110.0								
	115.0				HARD	LGRAY	GNEISS		
	120.0								
	125.0				HARD	WHITE	GNEISS		

REMARKS

BORING 20MW27D

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* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2D MW27D
PROJECT NO.: 9594 DATE: 12-7-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: TSE / W. LINE BERRY
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	125.0								
	130.0								
	135.0				HARD	WHITE	QTZITE		
	140.0								
	145.0				HARD	BLACK AND WHITE	GNEISS		

REMARKS

BORING 2D MW27D

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* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2DMW27D
PROJECT NO.: 9594 DATE: 12-7-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: TSE /W. LINEBERRY
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	175.0								
	180.0								
	185.0				HARD	PINK	GNEISS		
	190.0								
	195.0								
	200.0								

REMARKS

BORING 2DMW27D

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* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2DMW27D
PROJECT NO.: 9594 DATE: 12-7-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: TSE /W. LINEBERRY
WATER LEVEL DATA:
(Date, Time & Conditions)

	SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
		200.0								
										HIT @ 195' AFTER
12/7	1610	205.0								SIT OVERNIGHT
12/8										
								10 5/8" ϕ Air Rotary 0' to 20'		6" Casing @ 20'
								NX Core 20' to 25'		6" Open Borehole
								5 7/8" ϕ Air Rotary 25' to 205'		20' to 205'

REMARKS

BORING 2DMW27D

PAGE 8 OF 8

* See Legend on Back

HALLIBURTON NUS
Environmental Corporation

BORING NO.: 2DMW27D

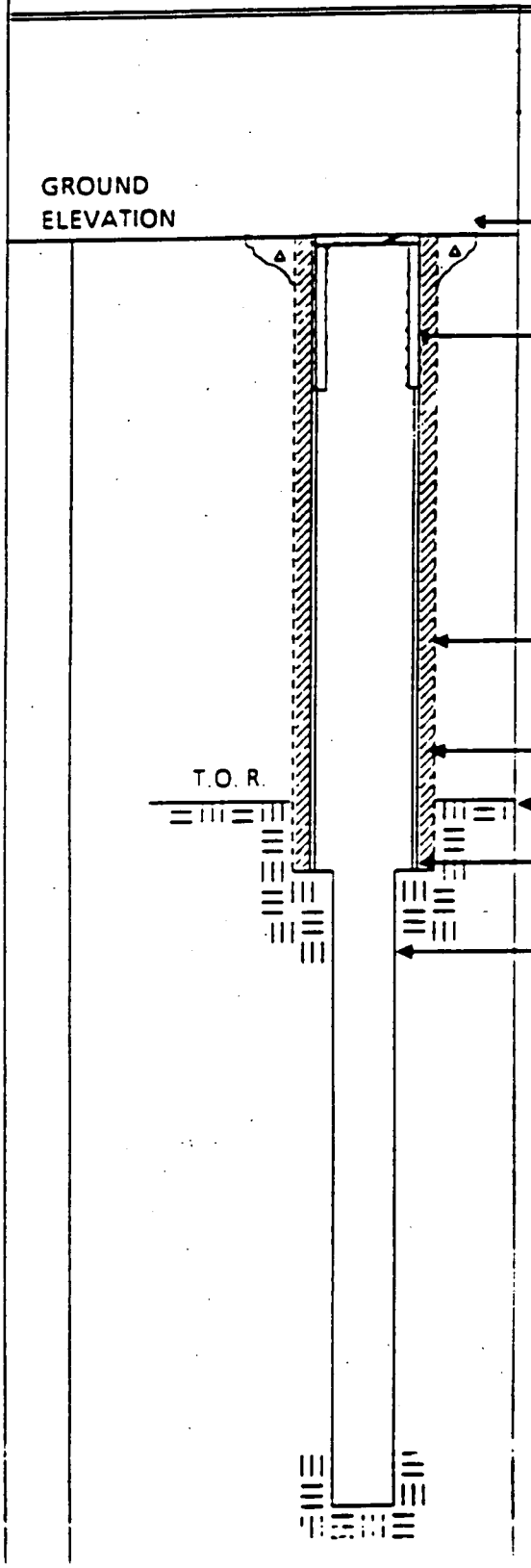
BEDROCK MONITORING WELL SHEET

OPEN HOLE WELL

PROJECT: NSB-NLON
PROJECT NO.: 9594
ELEVATION:
FIELD GEOLOGIST: Tim Evans

LOCATION: Groton, CT
BORING: 2DMW27D
DATE:

DRILLER: EAST COAST
DRILLING METHOD: Air Rotary
DEVELOPMENT METHOD:



TYPE OF SURFACE SEAL: Concrete

I.D. OF CASING: 6"
TYPE OF CASING: Steel

TEMP. / PERM.: Perm

DIAMETER OF HOLE: 10 5/8"

TYPE OF CASING SEAL: Grout

DEPTH TO TOP OF ROCK: 14'

DEPTH TO BOTTOM CASING: 20'

DIAMETER OF HOLE IN BEDROCK: 6"

DESCRIBE IF CORE / REAMED WITH BIT:

DESCRIBE JOINTS IN BEDROCK AND DEPTH:

ELEVATION / DEPTH OF HOLE: 205'

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2D MW28S
PROJECT NO.: 9594 DATE: 12-2-93 DRILLER: EAST COAST THOMAS / BRETT SWIATEK
ELEVATION: FIELD GEOLOGIST: TSE
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	0.0	2 / 3	0.9/2.0		LOOSE	D.BRN	SANDY SILT W/ ORG	SM	TOPSOIL 0ppm
0954	2.0	6 / 7							
S-2		13 / 28	1.5/2.0		V. DENSE	TAN	SAND W/GNEISS FRAGS	SP	FINE 0ppm
0957	4.0	26 / 31							Litho Δ @ 2.2'
S-3		22 / 28	0.9/2.0		V. DENSE	CREAM	GNEISS, QTZITE FRAGS	GW	MED TO V. COARSE 0ppm
1006	6.0	29 / 20					& SAND		V. FINE
S-4		14 / 22	1.0/2.0		DENSE	TAN	SAND & GNEISS GRAVEL	GP	MOIST 0ppm
	8.0	20 / 19							FINE; MAX Ø 0.1"
S-5		16 / 15	1.5/2.0		M. DENSE	TAN	SAND /	SP/	POORLY GRADED 0ppm
1020	10.0	15 / 13					GNEISS GRAVEL & SAND	GP	GRAVEL/SAND 9.6'→
S-6		20 / 26	1.4/2.0		V. DENSE	TAN TO CREAM	GNEISS FRAGS, GRAVEL &	GW	0ppm
	12.0	35 / 46					SAND		FINE TO MED
S-7		15 / 27	1.6/2.0		V. DENSE	TAN	SAND & GNEISS, QTZITE	GW	MED TO COARSE 0ppm
	14.0	25 / 25					GRAVEL		
S-8		12 / 13	1.3/2.0		DENSE	TAN	SAND	SP	POORLY GRADED 0ppm
	16.0	17 / 23							MED
S-9		14 / 22	1.8/2.0	17	DENSE	TAN	SAND	SP	MED 0ppm
	18.0	20 / 21							H_2O @ 18+'
S-10		16 / 12	1.6/2.0		DENSE	D.BRN	SAND	SP	WET 0ppm
	20.0	19 / 11							COARSE, POORLY GRADED
S-11		19 / 20	1.1/2.0		V. DENSE	D.BRN	SAND	SP	COARSE 0 ppm
1055	21.6 / 22.0'	100		22					*Refusal @ 22'
				||| ≡ |||			HSA to 22'		Screen 17'-22'
							SS to 21.6' TD 22'		Sand 16'-22'
							11 Samples		Pellets 14'-16'

REMARKS CME 75 HSA RIG
2" SS TO SAMPLE (140# Wt, 30" Drop)
4 1/4" ID AUGER

BORING 2D MW28S
PAGE 1 OF 1

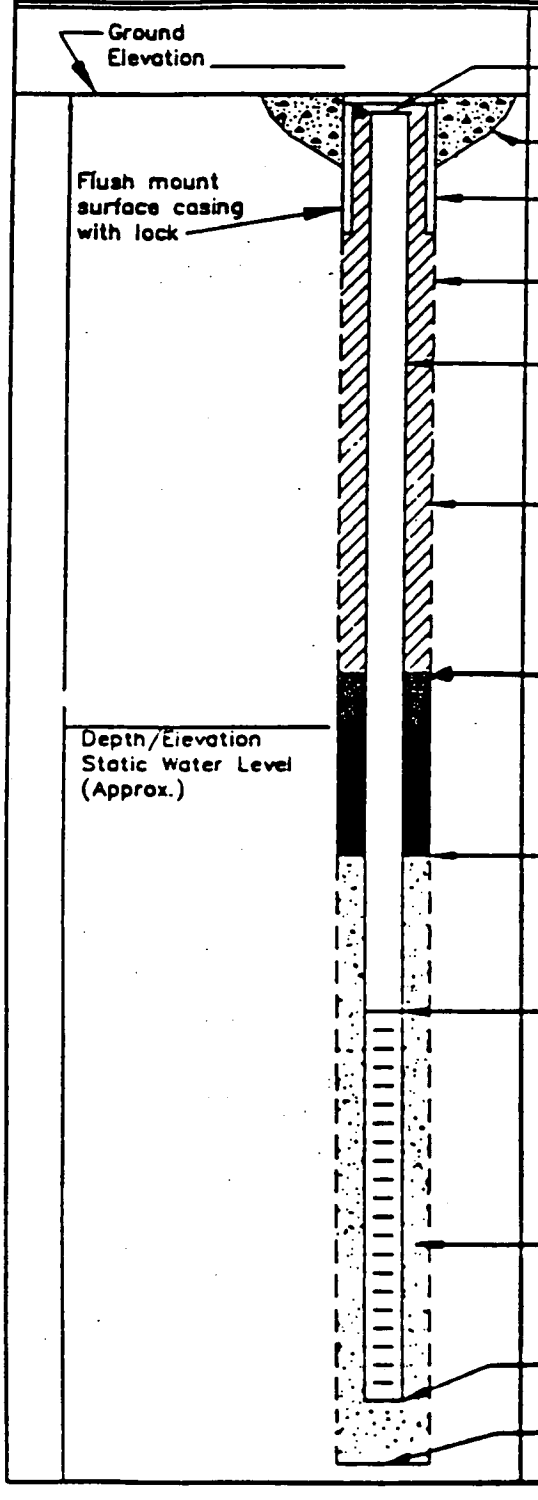
* See Legend on Back

HALLIBURTON NUS
Environmental Corporation

WELL NO.: 2DMW28S

OVERBURDEN
MONITORING WELL SHEET

PROJECT: NSB-NLON	LOCATION: Groton CT	DRILLER: East Coast
PROJECT NO.: 9594	BORING: 2DMW28S	DRILLING METHOD:
ELEVATION:	DATE: 12-2-93	DEVELOPMENT METHOD:
FIELD GEOLOGIST:		



ELEVATION TOP OF RISER: _____

TYPE OF SURFACE SEAL: Concrete

TYPE OF PROTECTIVE CASING: Steel

I.D. OF PROTECTIVE CASING: 4"

BOREHOLE DIAMETER: 8"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: Grout

ELEVATION / DEPTH TOP OF SEAL: 14'/

TYPE OF SEAL: Bentonite Chips

DEPTH/ELEVATION TOP OF SAND: 16'/

DEPTH/ELEVATION TOP OF SCREEN: 17'/

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.010 x 10'

TYPE OF SAND PACK: Silica Sand

DEPTH/ELEVATION BOTTOM OF SCREEN: 22'/

DEPTH/ELEVATION BOTTOM OF SAND: 22'/

DEPTH/ELEVATION BOTTOM OF HOLE: 22'/

BACKFILL MATERIAL BELOW SAND: N/A

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON
BORING NO.: 2DMW28D
PROJECT NO.: 9594
DATE: 12-4-93
DRILLER: EAST COAST THOMAS \ W. LINEBERRY
ELEVATION:
FIELD GEOLOGIST: TSE
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	0.0						SEE BORING 2DMW28S		10 5/8" ϕ AIR ROTARY
							FOR LITHOLOGY TO 22'		FROM 0' TO 26'
									SET CASING @ 26'
	5.0								
	10.0								
	15.0								
	20.0								
	21.5			21.5'					HIT BR @ 21.5'±
	24.0				HARD	GRAY	BIO - QTZ - FSPAR GNEISS		1617-1654 24' TO 26'
	25.0								

REMARKS CHICAGO PNEUMATIC 672 AIR ROTARY RIG
LOG CUTTINGS FROM 21.5' TO 136'
5 7/8" ϕ AIR ROTARY 21.5' TO 136'

BORING 2DMW28D

PAGE 1 OF 6

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2DMW28D
PROJECT NO.: 9594 DATE: 12-4-93 DRILLER: EAST COAST THOMAS / W. LINEBERRY
ELEVATION: FIELD GEOLOGIST: TSE
WATER LEVEL DATA:
(Date, Time & Conditions)

	SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
		25.0								
12/4										
12/6										
		30.0								
		35.0								
		36.0				HARD	GRAY	BIO - QTZ - FSPAR GNEISS		
		40.0								
		45.0								
		46.0				HARD	GRAY	BIO- QTZ-FSPAR GNEISS		
		50.0								

REMARKS

BORING 2DMW28

PAGE 2 OF 6

* See Legend on back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2DMW28D
PROJECT NO.: 9594 DATE: 12-6-93 DRILLER: EAST COAST THOMAS / W. LINEBERRY
ELEVATION: FIELD GEOLOGIST: TSE
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN No.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	50.0								
	55.0								
	56.0				HARD	PINK	GNEISS		
	60.0								
	65.0				HARD	PINK TO GRAY	GNEISS		
	70.0								
	75.0								

REMARKS

BORING 2DMW28D

PAGE 3 OF 6

* See Legend on back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2DMW28D
PROJECT NO.: 9594 DATE: 12-6-93 DRILLER: EAST COAST THOMAS/ W. LINEBERRY
ELEVATION: FIELD GEOLOGIST: TSE
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	75.0								
	76.0				HARD	GRAY	GNEISS		
	80.0								
	85.0								
	86.0				HARD	D.GRAY	GNEISS		
	89.0				HARD	D.GRAY	SCHIST		
	90.0				HARD	GRAY	GNEISS		
	95.0								
	96.0				HARD	GRAY	GNEISS		
	100.0								

REMARKS

BORING 2DMW28D

PAGE 4 OF 6

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 20MW28D
PROJECT NO.: 9594 DATE: 12-6-93 DRILLER: EAST COAST THOMAS/ W. LINEBERRY
ELEVATION: FIELD GEOLOGIST: TSE
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	100.0								
	105.0								
					HARD	GRAY	GNEISS		
	110.0								
	115.0								
	120.0								
	125.0								

REMARKS

BORING 20MW28D

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* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2DMW28D
PROJECT NO.: 9594 DATE: 12-6-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: TSE / W. LINEBERRY
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	125.0								
	130.0								
	131.0								HIT H_2O @ 131' ±
	136.0								
							5⅞"ø AR Drilling 0' TO 136'		6"ø Casing @ 26'
									6"ø Open Borehole
							TOTAL DEPTH 136'		26' TO 136'

REMARKS

BORING 2DMW28D

PAGE 6 OF 6

* See Legend on Back

BORING NO.: 2DMW28D

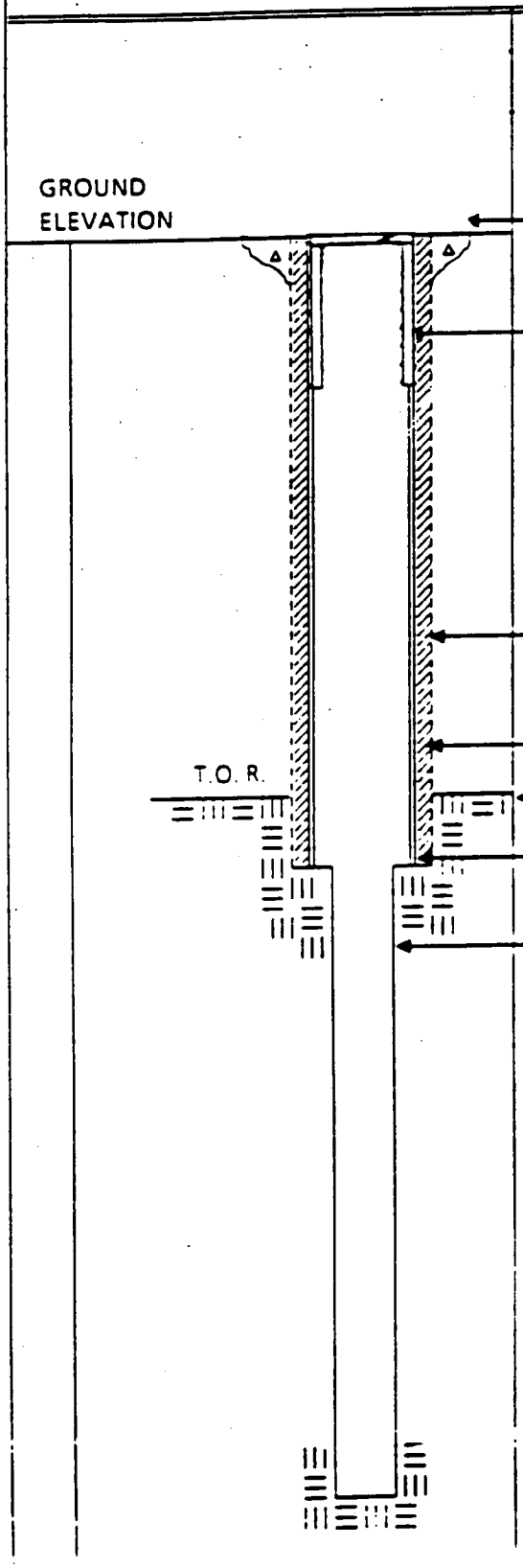
HALLIBURTON NUS
Environmental Corporation

BEDROCK
MONITORING WELL SHEET
OPEN HOLE WELL

PROJECT: NSB-NLON
PROJECT NO.: 9594
ELEVATION:
FIELD GEOLOGIST:

LOCATION: GROTON, CT
BORING: 2DMW28D
DATE: 12-6-93

DRILLER: EAST COAST
DRILLING METHOD: Air Rotary
DEVELOPMENT METHOD:



TYPE OF SURFACE SEAL: Concrete

I.D. OF CASING: 6"
TYPE OF CASING: Steel

TEMP. / PERM.: Perm

DIAMETER OF HOLE: 10 5/8"

TYPE OF CASING SEAL: Grout

DEPTH TO TOP OF ROCK: 21.5'

DEPTH TO BOTTOM CASING: 26'

DIAMETER OF HOLE IN BEDROCK: 6"

DESCRIBE IF CORE / REAMED WITH BIT:

DESCRIBE JOINTS IN BEDROCK AND DEPTH:

ELEVATION / DEPTH OF HOLE: 136'

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 2DMW29S
PROJECT NO.: 9594
DATE: 11-30-93
DRILLER: EAST COAST THOMAS/ BRETT SWIATEK
ELEVATION:
FIELD GEOLOGIST: T. EVANS
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY / SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/Ft)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS (HNU)
S-1	0.0	14 / N	2.0/2.0		M. DENSE	BRN	SAND W/ SOME GRAVEL	SW	Max ϕ 0.15" (0 ppm)
@ 1400	2.0	14 / 11					(FILL)		
S-2		7 / 6	0.9/2.0		M. DENSE	BRN	SILTY SAND W/ GRAVEL	SM	MOIST (0 ppm)
	4.0	5 / 5					& SAND (FILL)		Poorly Graded Sand
S-3		4 / 3	1.9/2.0		LOOSE	TAN	SAND	SP	MOIST (0 ppm)
	6.0	3 / 3							Fine, Poorly Graded
S-4		3 / 2	1.3/2.0	6.0'	LOOSE	TAN TO RUST	SAND W/TR ROOTS	SP	WET (0 ppm)
	8.0	3 / 6							Fine, Poorly Graded
S-5		3 / 5	1.0/2.0		M. DENSE	TAN TO RUST	SAND	SP	SATURATED (0 ppm)
	10.0	6 / 7							Fine, Poorly Graded
S-6		3 / 5	1.8/2.0		M. DENSE	TAN TO BRN	SAND	SP	(0 ppm)
	12.0	7 / 9							Fine, Poorly Graded
S-7		8 / 13	2.0/2.0		DENSE	TAN TO BRN		SP	
	14.0	19 / 10							
S-8		8 / 11	1.3/2.0		M. DENSE			SP	
@ 1414	16.0	12 / 13		16.0'					
							HSA to 16'		SCREEN 6'-16'
							SS to 16'		SAND 5'-16'
							8 SAMPLES		PELLETS 3'-5'
							TOTAL DEPTH 16'		

REMARKS CME 75 HSA RIG
4¼" ID AUGER
2" SS TO SAMPLE (140# WT 30" DROP)

BORING 2DMW29S

PAGE 1 OF 1

* See Legend on Back

BORING NO. 2DMW29S

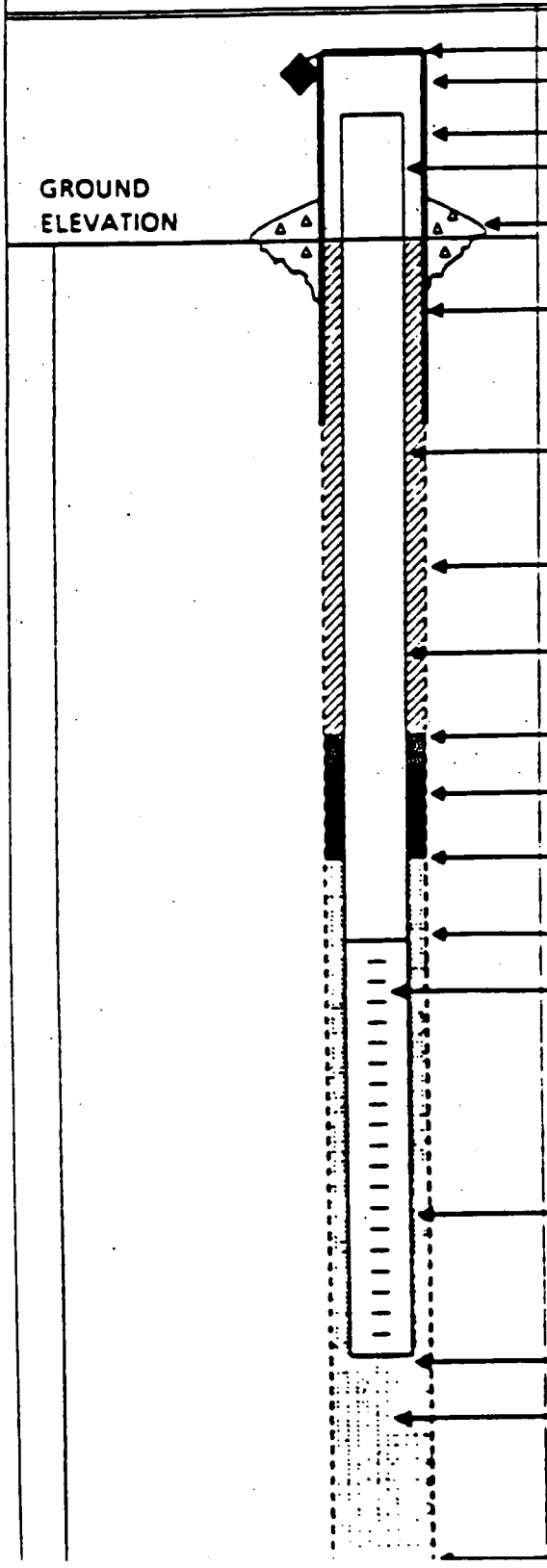
HALLIBURTON NUS
Environmental Corporation

MONITORING WELL SHEET

PROJECT NSB-NLON
PROJECT NO. 9594
ELEVATION
FIELD GEOLOGIST TSE

LOCATION GROTON, CT.
BORING 2DMW29S
DATE 11-30-93

DRILLER EAST COAST
DRILLING METHOD HSA
DEVELOPMENT METHOD



ELEVATION OF TOP OF SURFACE CASING:
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING: 1.69'
STICK - UP RISER PIPE: 1.74'
TYPE OF SURFACE SEAL: CONCRETE PAD
I.D. OF SURFACE CASING: 4" ϕ
TYPE OF SURFACE CASING: STEEL
RISER PIPE I.D. 2" ϕ
TYPE OF RISER PIPE: PVC
BOREHOLE DIAMETER: 8"
TYPE OF BACKFILL: SILICA SAND
ELEVATION / DEPTH TOP OF SEAL: 13'
TYPE OF SEAL: BENTONITE CHIPS
DEPTH TOP OF SAND PACK: 15'
ELEVATION / DEPTH TOP OF SCREEN: 16'
TYPE OF SCREEN: PVC
SLOT SIZE x LENGTH: 0.010 x 10'
I.D. OF SCREEN 2"
TYPE OF SAND PACK: SILICA SAND
ELEVATION / DEPTH BOTTOM OF SCREEN: 116
ELEVATION / DEPTH BOTTOM OF SAND PACK: 116'
TYPE OF BACKFILL BELOW OBSERVATION WELL N/A
ELEVATION / DEPTH OF HOLE: 116'

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 2DMW303
PROJECT NO.: 9594 DATE: 11-30-93 DRILLER: EAST COAST THOMAS/
ELEVATION: FIELD GEOLOGIST: T. EVANS BRETT SWIATEK
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, FL)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS (HNu)
S-1	0.0	6 / 4	1.8/2.0		LOOSE	BRN	SILTY SAND W/ GNEISS	SM	(0 ppm)
@ 1115	2.0	4 / 5					(FILL) COBBLES		
S-2		15 / 27	0.6/2.0		V. DENSE		SANDY SILT W/ GNEISS	SM	MOIST (0 ppm)
	4.0	25 / 11		4.0'			(FILL) COBBLES		MAX ϕ 0.2"
S-3		13 / 15	1.2/2.0		M. DENSE				(0 ppm)
	6.0	8 / 8							
S-4	7.0	38 / 100	0.5/1.0		V. DENSE		SILT W/ GNEISS COBBLES	ML	WET (0 ppm)
S-5		28 / 30	1.0/1.3		V. DENSE	BRN TO GRAY	SAND W/ GNEISS COBBLES	SP	WET (0 ppm)
@ 1150	8.3	100							AVG ϕ 0.01" Weathered BR
	9.5			9.0'					
									Refusal @ 9.5'
							HSA TO 9.5'		SCREEN 4'-9'
							SS TO 8.3'		SAND 3'-9.5'
							5 SAMPLES		PELLETS 1'-3'
							TOTAL DEPTH 9.5'		

REMARKS CME 75 HSA RIG
4¼" ID AUGER
2" SS TO SAMPLE (140# WT, 30" DROP)

BORING 2DMW303
PAGE 1 OF 1

* See Legend on Back

BORING NO. 2DMW30S

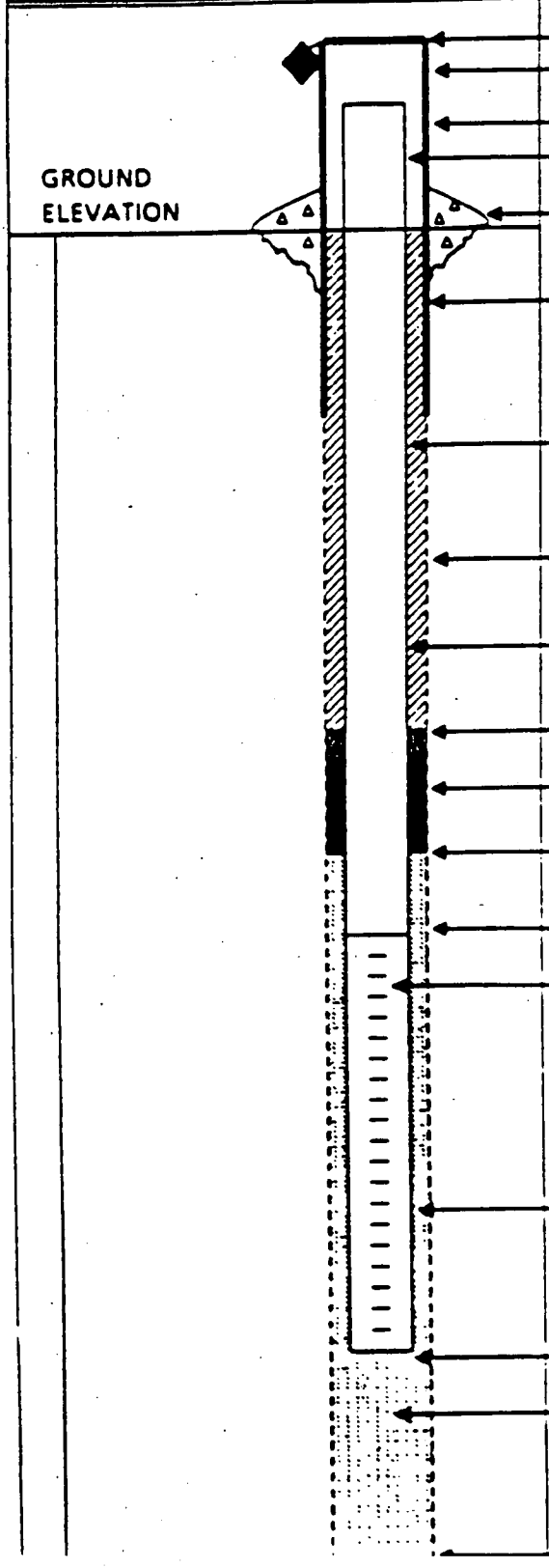
HALLIBURTON NUS
Environmental Corporation

MONITORING WELL SHEET

PROJECT NSB-NLON
PROJECT NO. 9594
ELEVATION
FIELD GEOLOGIST TSE

LOCATION GROTON, CT.
BORING 2DMW30S
DATE 11-30-93

DRILLER EAST COAST
DRILLING METHOD HSA
DEVELOPMENT METHOD



ELEVATION OF TOP OF SURFACE CASING :
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING: 1.92'
STICK - UP RISER PIPE : 1.78'
TYPE OF SURFACE SEAL: CONCRETE PAD
I.D. OF SURFACE CASING: 4" ϕ
TYPE OF SURFACE CASING: STEEL
RISER PIPE I.D. 2" ϕ
TYPE OF RISER PIPE: PVC
BOREHOLE DIAMETER: 8"
TYPE OF BACKFILL: N/A
ELEVATION / DEPTH TOP OF SEAL: /1'
TYPE OF SEAL: BENTONITE CHIPS
DEPTH TOP OF SAND PACK: 3'
ELEVATION / DEPTH TOP OF SCREEN: /4'
TYPE OF SCREEN: PVC
SLOT SIZE x LENGTH: 0.010 x 5'
I.D. OF SCREEN 2"
TYPE OF SAND PACK: SILICA SAND
ELEVATION / DEPTH BOTTOM OF SCREEN: /9'
ELEVATION / DEPTH BOTTOM OF SAND PACK: /9.5'
TYPE OF BACKFILL BELOW OBSERVATION WELL N/A
ELEVATION / DEPTH OF HOLE /9.5'

APPENDIX A.6

SITE 4 - RUBBLE FILL AT BUNKER A86

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB-NLON — BORING NO.: 4MW15
PROJECT NO.: 9594 — DATE: 02-03-94 — DRILLER: EAST COAST THOMAS
ELEVATION: — FIELD GEOLOGIST: Tim Evans / Tim Sabo
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, FL)	SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS (OVM)
S-1 @ 1438	0.0 / 2.0	15 / 15 / 20 / 15	1.5/2.0		Dense	Black to Gray	Gravel w/Tr. Sand	GP	Road bed Wet 0ppm; Sand - Med Crs Gravel - Pebble Gran-Sstone
S-2 @ 1452 4.0		15 / 22 / 62 / 100/3	1.1/1.8	BR@2.5'	V. Dense	TAN	Clayey Sand w/Tr Gravel	SC	Wet 0ppm; Sand - Med Crs Gravel - Gneiss Max Ø.3'
							Silty Sand w/Tr Gravel	SW	
3.25/5.0	(1)	65%	4.5/5.0		Hard	Gray to Pink	Gneiss	BR	Fe-Stained Gravel - Pebbles
							Hi & JNT @ 2.8', 2.8'	*	SS Refusal. Move 1' SW.
							w/ sand seams in joints 3.5' 5.2'	5.8'	Lo & Frac @ 5.0', 7.0', 5.5'
7.0 / 7.75/1.5	(2)		1.4/1.5		Hard	Gray to Pink	Gneiss w/sand seams	Br	Lo & Frac @ 7.2', 8.0'; Hi & JNT 7.5', 7.6'
8.5									
									Lo & Frac @ 12.4', 9.9', 11.5'
									Core Barrel Break @ 5.6', 8.75', 9.1'
4.0/5.0	(3)	70%	5.0/5.0		Hard	Gray to Pink	Gneiss	VBr Br	10.9', 13.5'
13.5							Pump H_2O out to 13.5' Recharge to 6' w/in 30"	M *	2/4
							H_2O level @ 3.1'		2/7
3.9/5.0	(4)	78%	4.8/5.0		Hard	Gray to Pink	Gneiss	VBR	Lo & Frac @ 15.1', 15.2'
								Br	15.5', 16.0', 16.5', 17.2'
									Hi & JNT @ 15.7', 16.5', 16.9'
18.5									
							Total Depth 18.5'		Core Barrel Break @ 17.4'
							Screen 8.5'-18.5'		→ 2" PVC 0.010 Slot
							[illegible] - 18.5'		→ -10# Coa Sand
							[illegible] - 6'		→ -58# Bag Bentonite Plug

REMARKS: Gemco GT 350 HSA R[illegible]
3" x 24" SS (100# [illegible] Cat Head, 3" Drop)
4" Temp Steel Casing w/ Spin Lower Head 0'-8.5'
HQ (3½" OD) Core 2.5 - 8.5'

BORING 4MW15
PAGE 1 OF 1

* See Legend on Back

HALLIBURTON NUS
Environmental Corporation

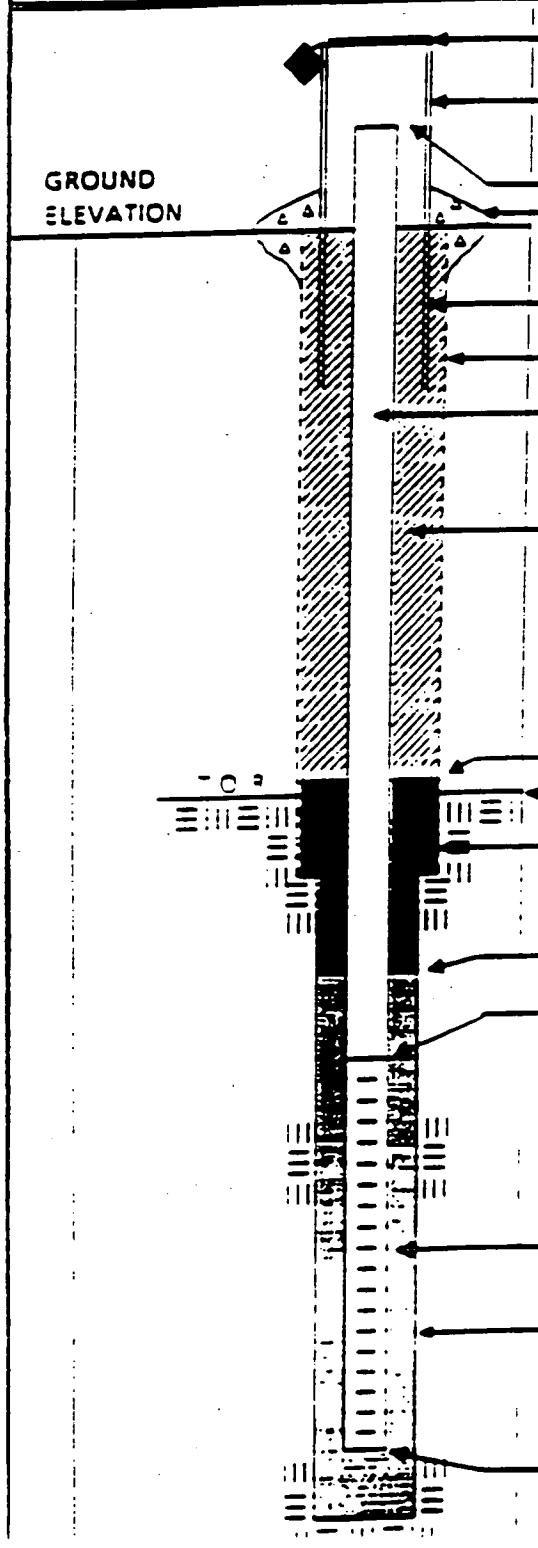
BORING NO: 4MW15

BEDROCK
MONITORING WELL SHEET
WELL INSTALLED IN BEDROCK

PROJECT: NSB-NLON
PROJECT NO.: 9594
ELEVATION:
FIELD GEOLOGIST: Jim Evans

LOCATION: GROTON, CT
BORING: 4MW15
DATE: 2-7-94

DRILLER: EAST COAST
DRILLING METHOD: HSA / HQ Core
DEVELOPMENT METHOD:



ELEVATION OF TOP OF SURFACE CASING:
STICK UP OF CASING ABOVE GROUND SURFACE:
ELEVATION TOP OF RISER:
TYPE OF SURFACE SEAL: Concrete
I.D. OF SURFACE CASING: 4"
DIAMETER OF HOLE: 8"
RISER PIPE I.D.: 2"
TYPE OF RISER PIPE: PVC (Schedule 40)
TYPE OF BACKFILL: N/A
ELEVATION / DEPTH TOP OF SEAL: 13'
ELEVATION / DEPTH TOP OF BEDROCK: 17.5'
TYPE OF SEAL: Bentonite Pellets
ELEVATION / DEPTH TOP OF SAND: 16'
ELEVATION / DEPTH TOP OF SCREEN: 18.5'
TYPE OF SCREEN: PVC
SLOT SIZE x LENGTH: 0.010 x 10'
I.D. SCREEN: 2"
TYPE OF SAND PACK: Silica Sand
DIAMETER OF HOLE IN BEDROCK: 3 11/16"
CORE / REAM:
ELEVATION / DEPTH BOTTOM SCREEN: 18.5'
ELEVATION / DEPTH BOTTOM OF HOLE: 18.5'

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 4MW25
PROJECT NO.: 9594
DATE: 02-02-94
DRILLER: EAST COAST THOMAS/
ELEVATION:
FIELD GEOLOGIST: Tim Evans / Tim Cabo
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS OVM
S-1 @ 1513	0.0	3 3 3 5	1.0/2.0		M. Stiff	Dk Brn to TAN	Topsoil Silt w/Tr Roots & Mica Flakes	ML	Top 2" 0ppm
S-2 @ 1518	2.0	4 3	1.4/2.0		V. Stiff	Brn	Clayey Silt w/Tr Charcoal & Gneiss Cobbles Roots, Gravel	ML	Moist to Wet 0 ppm Mottled Gr - Pebbles 0 ppm
S-3 1608	4.0 4.5	14 36 100/.5			V. Dense	L. Tan	Syenite Cobble w/Tr Quartzite & Sand	—	Rollerbit 4.5' to 6.5' Sand - V.C Gr, F-Sper
							- Boulders 4.5' to 6.5'		
2/2 2/3 @ 0835	6.5							VGr Br Br	Lo & Frac @ 7.0' 7.05'
	42/50	①	84%	5.0/5.0	Hard	Gray to Pink	Gneiss w/ Granite	Dr Br Vgr	Lo & Frac @ 8.5'
									Hi & JNT @ 10.9' 11.5'
0930 @ 1005	11.5								Lo & Frac @ 12' Hi & JNT @ 12.5'
1048		②		3.5/3.5	Hard	Gray	Gneiss	M	Hi & JNT @ 14.6'
1103	15.0								
							- Total Depth 15.25'		
							Screen - 4.5-14.5'		→ 2" PVC (0.010 slot)
							Sand 2.0-14.5'		→ 1-100# Bags Ottawa Sand
							Pellets 1.0-2.0		→ 1/4-50# Bags Bentonite Plug

REMARKS Gemco GT 350 HSA R.a ATV
3" x 24" SS (140# Wt Cat Head, 30" Drop)
4" ID, 4½" OD Temp Steel Casing w/Cutter Head 0 to 6.5'

BORING 4MW25
PAGE 1 OF 1

* See Legend on Back

3⅞" ϕ Roller bit 4.5'-6.5'
HA (3½" OD) from 6.5' - 15'

HALLIBURTON NUS
Environmental Corporation

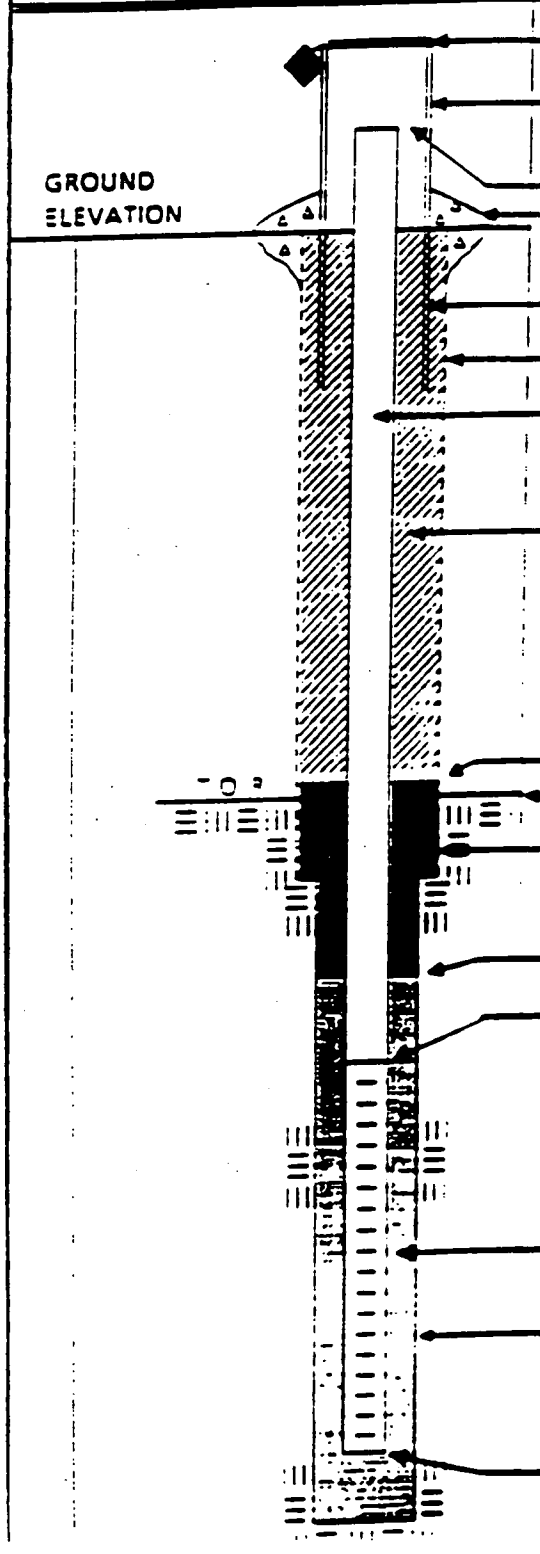
BORING NO: 4MW2S

BEDROCK
MONITORING WELL SHEET
WELL INSTALLED IN BEDROCK

PROJECT: NSB-NLON
PROJECT NO.: 9594
ELEVATION:
FIELD GEOLOGIST: Tim Evans

LOCATION: GROTON, CT
BORING: 4MW2S
DATE: 2-2-94

DRILLER: EAST COAST
DRILLING METHOD: HSA / HQ Core
DEVELOPMENT METHOD:



ELEVATION OF TOP OF SURFACE CASING:
STICK UP OF CASING ABOVE GROUND SURFACE:
ELEVATION TOP OF RISER:
TYPE OF SURFACE SEAL: Concrete
I.D. OF SURFACE CASING: 4"
DIAMETER OF HOLE: 8"
RISER PIPE I.D.: 2"
TYPE OF RISER PIPE: PVC (Schedule 40)
TYPE OF BACKFILL: N/A
ELEVATION / DEPTH TOP OF SEAL: 11'
ELEVATION / DEPTH TOP OF BEDROCK: 16.5
TYPE OF SEAL: Bentonite Pellets
ELEVATION / DEPTH TOP OF SAND: 12'
ELEVATION / DEPTH TOP OF SCREEN: 14.5'
TYPE OF SCREEN: PVC
SLOT SIZE / LENGTH: 0.010 x 10'
I.D. SCREEN: 2"
TYPE OF SAND PACK: Silica Sand
DIAMETER OF HOLE IN BEDROCK: 3"/16"
CORE BEAM:
ELEVATION / DEPTH BOTTOM SCREEN: 19.5'
ELEVATION / DEPTH BOTTOM OF HOLE: 19.5'

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB-NLON — BORING NO.: 4MW35
PROJECT NO.: 9594 — DATE: 2-01-94 — DRILLER: EAST COAST THOMAS
ELEVATION: — FIELD GEOLOGIST: Tim Evans, Tim Sabo
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth Ft.)	SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS (OVM)
S-1 @	0.0	6 / 8	1.7/2.0		M. Dense	D Brn to Tan	Silty Sand w/ Gravel (some Sand) Tr Roots	SP	Sand-VF Gr 0 ppm
0902 S-2	2.0	8 / 6							Sand & Gravel - CGr & Pebble
@ 0912	2.8	17 / 100/3	0.7/0.8		V. Dense	Brn	Silty Sand w/ Tr Sand	SW	Moist Mottled 0 ppm
S-3 @ 0927		100/0	0.0/0.0				- No Recovery 2.8'-3.0' -		Weathered Rock in Shoe
4.5								VBr	Auger to 4.5' & Wet Mto CGr 0 ppm — Poor Recov.
							10% Frac 4.7, 4.8, 5.3, 5.4 7.1 7.2	Blk	Auger Refusal @ 5.0' ① Move 10' NW ② 5'SW
2.4/3.2	①		3.2/3.2			Gray to Pink	Gneiss & Granite	VBr	③ 5'S ④ 5'W
7.7							Hi Frac 5.7-6.0 6.0'-6.1' 7.3'-7.7'		Spin casing 0' to 9'
8.5									Rollerbit 8.5'-9.0 (3 7/8" ø)
9.0								VBr	
4.4/4.4	②		4.8/5.0			Gray to Pink	Gneiss & Granite	BL	
								VBr	Vert Frac 12'-14' 10.5'-11.5
								BL	Lo Frac 10', 11.4'*
13.5									Hi Frac JNT 10.8, 11.2*, 12.0, 13.4*
							- Total Depth 13.5' -		* - Sand Filled
							Screen 3.5' - 13.5'		→ 2" PVC Schedule 40 0.010 Slot
							Sand 3' - 13.5'		→ 1-100# Bag Ottawa Sand
							Chips 2' - 3'		→ ½-50# Bag Bentonite Pellets
									Auger to 5.0'
									to 4.0' ① → Bad Hole
									to 3.0' ②
									to 5.5' ③
									to 4.5' ④

REMARKS: Diedrich D-50 HSA Rig (Cemco CT350 ATV-Mounted)
3" x ≈4" SST (140# w/ 30" Drop Cat Head)
4¼" ID, 8" OD Auger

BORING 4MW35

PAGE 1 OF 1

* See Legend on Back

HQ Core (3 11/16" OD x 5')

HALLIBURTON NUS
Environmental Corporation

BORING NO: 4MW3S

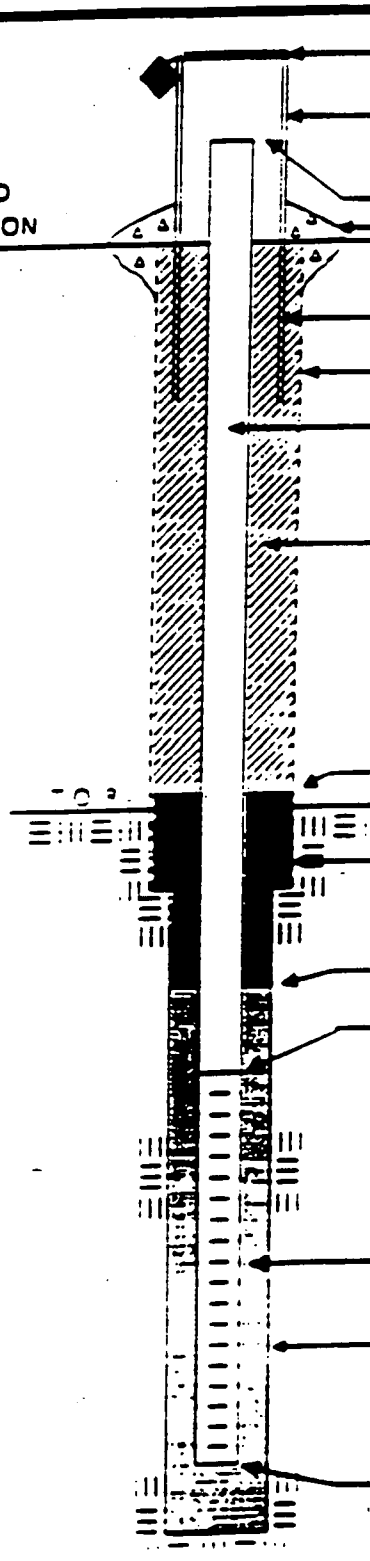
BEDROCK MONITORING WELL SHEET

WELL INSTALLED IN BEDROCK

PROJECT: NSB-NLON
PROJECT NO.: 7594
ELEVATION:
FIELD GEOLOGIST: Tim Evans

LOCATION: GROTON, CT
BORING: 4MW3S
DATE: 2-2-94

DRILLER: EAST COAST
DRILLING METHOD: Core
DEVELOPMENT METHOD:



ELEVATION OF TOP OF SURFACE CASING:

STICK UP OF CASING ABOVE GROUND SURFACE:

ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL:

I.D. OF SURFACE CASING: 4"

DIAMETER OF HOLE: 8"

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: PVC (Schedule 40)

TYPE OF BACKFILL: N/A

ELEVATION / DEPTH TOP OF SEAL: 12'

ELEVATION / DEPTH TOP OF BEDROCK: 14.5'

TYPE OF SEAL: Bentonite Plug

ELEVATION / DEPTH TOP OF SAND: 13'

ELEVATION / DEPTH TOP OF SCREEN: 13.5'

TYPE OF SCREEN: PVC (Schedule 40)

SLOT SIZE x LENGTH: 0.010 x 10'

I.D. SCREEN: 2"

TYPE OF SAND PACK: Ottawa Sand

DIAMETER OF HOLE IN BEDROCK: 4"

CORE / REAM: 3"/16" core 4.5' - 13.5'

ELEVATION / DEPTH BOTTOM SCREEN: 13.5'

ELEVATION / DEPTH BOTTOM OF HOLE: 13.5'

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 4MW4S
PROJECT NO.: 9594
DATE: 02-8-94
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: Tim Evans
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS OVM
S-1 @	0.0	4 / 7	0.1/2.0		V. Stiff	D. Brn	Sandy Silt w/ Tr org	ML	Topsoil Poor Recovery
0910	2.0	9 / 10							Sand - VF to mgr
S-2 @		14 / 27	0.1/1.3		Hard	D. Brn	Sandy Silt w/ Tr org & Gneissic cobble	ML	Poor Recovery
0917 S-3	3.3	100/.3 / 28	0.1/1.3						
@ 1030	4.6	100/3							Refusal @ 4.6'
1130	7.0							VBr Br VBr	Lo & Frac 7.5', 7.7', 7.9', 8.7'
									Hi & JNT 8.3', 8.5', 8.6', 10.0', 11.6'
	①		4.7/5.0		Hard	Gray	Gneiss	BL	Break 11.3'
12.0								Br	Hi & JNT 12.8', 13.5', 14.0'
	②		2.5/2.5		Hard	Gray	Gneiss	BL Br	Break 12.3' Lo & Frac 14.2' 14.4'
1550 14.5									* pump H2O to 14.5'
							End Depth 14.5'		Recharge ~~[illegible]~~ 4.0'
									Artesian
							Screen 4.5' - 14.5'		→ 2" PVC 0.010 slot
							Sand 3.0 - 14.5'		→ 1 - 100# Bag Ottawa Sand
							Bentonite 0 - 3.0'		→ 1/4 - 50# Bag Bentonite pellets

REMARKS Dietrich D-50 HSA (Bore-a-Log-mounted)
3' x 24" SS, 140# wt, 30" Drop (at Head)
HQ Core (3 3/4" OD x 5') 9.5' to 14.5'

BORING 4MW4S
PAGE 1 OF 1

* See Legend on Back

4" ID, 4 1/2" OD Temp Spin Casing 0' to 8'

HALLIBURTON NUS
Environmental Corporation

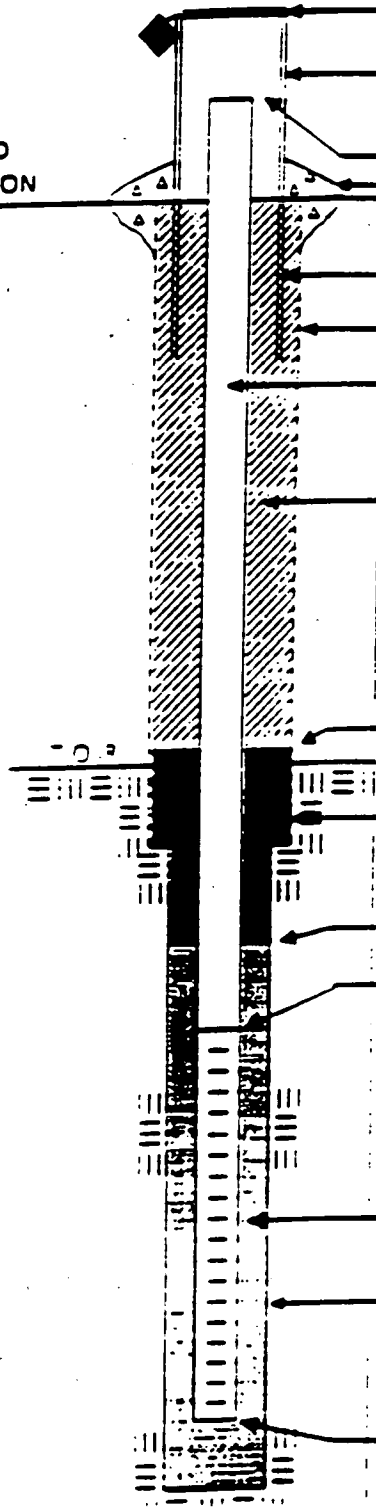
BORING NO: 4MW4S

BEDROCK
MONITORING WELL SHEET
WELL INSTALLED IN BEDROCK

PROJECT: NSB-NLON
PROJECT NO.: 9594
ELEVATION:
FIELD GEOLOGIST: Jim Evans

LOCATION: GROTON, CT
BORING: 4MW4S
DATE: 2-8-94

DRILLER: EAST COAST
DRILLING METHOD: HSA / HQ Core
DEVELOPMENT METHOD:



ELEVATION OF TOP OF SURFACE CASING:
STICK UP OF CASING ABOVE GROUND SURFACE:
ELEVATION TOP OF RISER:
TYPE OF SURFACE SEAL: Concrete
I.D. OF SURFACE CASING: 4"
DIAMETER OF HOLE: 8"
RISER PIPE I.D.: 2"
TYPE OF RISER PIPE: PVC (Schedule 40)
TYPE OF BACKFILL: N/A
ELEVATION / DEPTH TOP OF SEAL: 12'
ELEVATION / DEPTH TOP OF BEDROCK: 14.5
TYPE OF SEAL: Bentonite Pellets
ELEVATION / DEPTH TOP OF SAND: 13'
ELEVATION / DEPTH TOP OF SCREEN: 14.5'
TYPE OF SCREEN: PVC (Schedule 40)
SLOT SIZE x LENGTH: 0.010 x 10'
I.D. SCREEN: 2"
TYPE OF SAND PACK: Silica Sand
DIAMETER OF HOLE IN BEDROCK: 3 4/16"
CORE / REAM:
ELEVATION / DEPTH BOTTOM SCREEN: 14.5'
ELEVATION / DEPTH BOTTOM OF HOLE: 14.5'

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON — BORING NO.: 4MW4D
PROJECT NO.: 9594 — DATE: 02-15-94 — DRILLER: EAST COAST THOMAS
ELEVATION: — FIELD GEOLOGIST: TIM EVANS / Tim Sabo
WATER LEVEL DATA:
(Date, Time & Conditions)

	SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
		0.0						See Boring 4MW4S		
								for Litho to 4.5		
		3.0			3.0'±					Hit BR @ 3.0'±
								Boulder		
	0.0/0.75		0%	0.0/0.75				(No Recovery)		
					8.5'±					
	0.5/1.0			0.5/1.0		HARD	GRAY	GNEISS	Br	Core Breaks @ 8.7' 9.1' 9.5'
2										
2/16										
									VBr Br	Hi & JNT 10.2' 10.75' 10.8' 10.9'
									VBr BL	Lo & Frac 13.0' 10.1' 14.5'
	4.3/5.0	3	96%	5.0/5.0		HARD	GRAY	GNEISS & Granite		Core Break 13.9'
							Pink			
									VBr	xH2O artesian
2/16										
2/17									BL	Lo & Frac 16.1', 18.4'
										Hi & JNT 18.9'
	3.9/4.2	4	93%	4.2/4.5		Hard	Gray → Pink	GNEISS & Granite		
									Br	
0900										
0916									M	
	3.3/3.3	5	100%	3.3/3.5		Hard	Gray → Pink	Gneiss & Granite		
1145										
1210	1.0/1.0	6	100%	1.0/1.0		Hard	D. Green Black	Gneiss w/ Amphibole	BL	
1520 2/18	1.0/1.0	7	100%	1.0/1.0		Hard	D. Gray	Gneiss w/ Amphibole	BL	Lo & Frac 24.4' 24.5'

REMARKS: Diedrich D-50 HSA Rig (Bombardier-Mounted)
HQ Core (3"/16" ID)
4" (4½" OD) Spin Casing 0 to 9.5'
3⅞" Ø Roller bit 9.0' to 10.0'

BORING 4MW4D
PAGE 1 OF 2

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 4MW4D
PROJECT NO.: 9594 DATE: 02-18-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: Tim Evans Tim Sabo
WATER LEVEL DATA :
(Date, Time & Conditions)

	SAMPLE NO. & TYPE OR RQD	DEPTH (FT) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
0927									VBr Br	+ No Natural Fracs
	3.6/4.5	(8)	80%	4.5/5.0		Hard	D.Gray to Green	Gneiss w/ Some Amphibole ? Granite		
1300	30.0									
1330									M	
	5.0/5.0	(9)	100%	5.0/5.0		Hard	D.Gray	Gneiss (Migmatic)	1	
										Lo ∡ Frac 33.5'
1500	35.0									
1610									BL	Break (?) 36.0', 36.75', 37.2'
1735	2.1/2.5	(10)	84%	2.5/2.5		Hard	D.Gray to Green	Gneiss	Br	Hi ∡ Frac 37.0'
									Br	
2/19	2.3/2.5	(11)	92%	2.5/2.5		Hard	D.Gray	Gneiss		Core Break 37.6' Hi ∡ JNT 38.9'
										Lo ∡ Frac 39.8'
								- Total Depth 40' -		
								Screen 30' - 40'		→ 2" PVC (0.010 Slot)
								Sand 28.25 - 40'		→ 1 - 100# Bag Ottawa Sand
								Bolom 1 - 24.25		→ 2½ - 5# Bag Bentonite Pellets

REMARKS

BORING 4MW4D

PAGE 2 OF 2

* See Legend on Back

HALLIBURTON NUS
Environmental Corporation

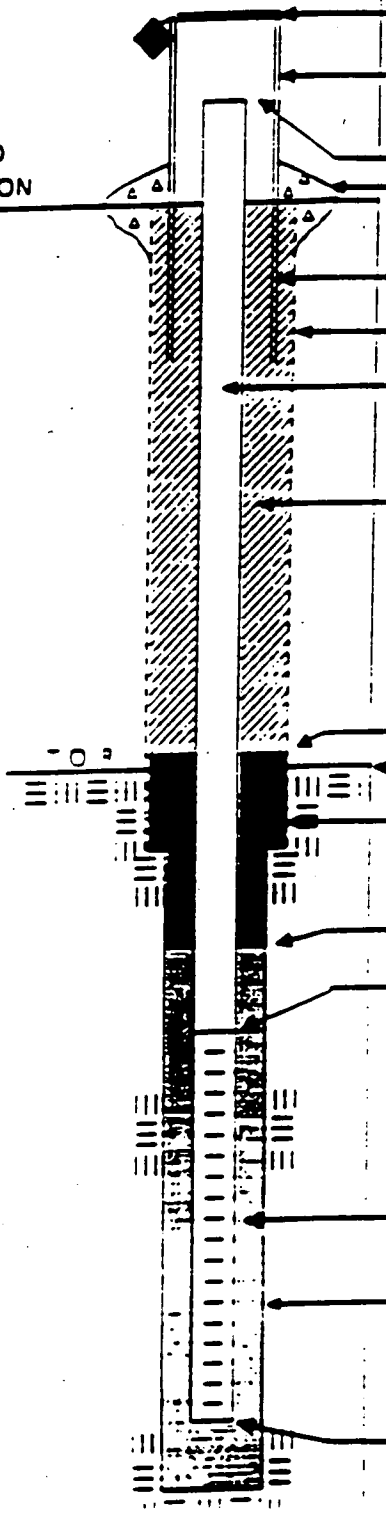
BORING NO: 4MW4D

BEDROCK
MONITORING WELL SHEET
WELL INSTALLED IN BEDROCK

PROJECT: NSB-NLON
PROJECT NO.: 9594
ELEVATION:
FIELD GEOLOGIST: Tim Evans

LOCATION: GROTON, CT
BORING: 4MW4D
DATE: 2-19-94

DRILLER: EAST COAST
DRILLING METHOD: HSA / HQ Core
DEVELOPMENT METHOD:



ELEVATION OF TOP OF SURFACE CASING:
STICK UP OF CASING ABOVE GROUND SURFACE:
ELEVATION TOP OF RISER:
TYPE OF SURFACE SEAL: Concrete
I.D. OF SURFACE CASING: 4"
DIAMETER OF HOLE: 8"
RISER PIPE I.D.: 2"
TYPE OF RISER PIPE: PVC (Schedule 40)
TYPE OF BACKFILL: N/A
ELEVATION / DEPTH TOP OF SEAL: /1'
ELEVATION / DEPTH TOP OF BEDROCK: /8.5
TYPE OF SEAL: Bentonite Pellets
ELEVATION / DEPTH TOP OF SAND: /24'
ELEVATION / DEPTH TOP OF SCREEN: /30'
TYPE OF SCREEN: PVC (Schedule 40)
SLOT SIZE x LENGTH: 0.010 x 10'
I.D. SCREEN: 2"
TYPE OF SAND PACK: Silica Sand
DIAMETER OF HOLE IN BEDROCK: 3 1/16"
CORE / REAM:
ELEVATION / DEPTH BOTTOM SCREEN: /40'
ELEVATION / DEPTH BOTTOM OF HOLE: /40'

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 4TB1
PROJECT NO.: 9594
DATE: 2-2-94
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: J.R. FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 2-2-94 0°

SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN N.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, FL)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	0-2	7 / 4	1.2		LOOSE	BROWN	SILTY VERY FINE TO FINE SAND	FILL	HNU-0 09:20
		3 / 3	2.0			BROWN	TR-LITTLE MEDIUM GRAVEL	FILL	MOIST
S-2	2-4	2 / 4	1.0		M. DENSE	BROWN	SILTY MEDIUM TO COARSE SAND	FILL	HNU-0 09:28
		9 / 16	2.0			BROWN	TR-LITTLE MEDIUM GRAVEL	FILL	MOIST
S-3	4-6	6 / 13	.85		M. DENSE	BROWN	SILTY MEDIUM-COARSE SAND TR-	FILL	HNU-0 09:37
		14 / 7	2.0			BROWN	LITTLE MED. GRAVEL TR. FLYSH	FILL	MOIST
S-4	6-8	27 / 18	.9		M. DENSE	GRAY-BROWN	SILTY MEDIUM-COARSE SAND	FILL	HNU-0 09:47
		9 / 6	2.0			GRAY-BROWN	AND MEDIUM-COARSE GRAVEL	FILL	MOIST
S-5	8-10	12 / 9	1.0		DENSE	BROWN	COARSE GRAVEL - COBBLES	FILL	HNU-0 09:54
▽		30 / 4	2.0			BROWN	AND SILTY FINE-COARSE SAND	FILL	MOIST-WET
S-6	10-12	7 / 17	1.0		V. DENSE	ORANGE BROWN	CLAYEY SAND, WEATHERED BIOTITE	SC	HNU-0 10:02
		50/0					GNEISS IN T.P OF SAMPLER		WET
							BOTTOM OF BORING = 12.5'		

REMARKS Driller: Floyd Cross

BORING 4TB1

PAGE 1 OF 1

* See Legend on Back

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB-NLON
BORING NO.: 4TB2
PROJECT NO.: 9594
DATE: 02-08-94
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: Tim Evans
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, FL)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS OVM
S-1 @	0.0	5 / 7	1.7/2.0		Stiff	BRN	Sandy Silt w/ Tr Gneissic gravel & Roots	ML	mottled 0ppm
0814	2.0	5 / 4							sand - v fgr
S-2 @		14 / 28	1.5/1.5		Hard	Brn to Gray	Silty Sand w/ Tr Gneissic Gravel & Roots	SM	0ppm
0814	3.5	100/6							sand - F gr
									refusal @ 3.5'

REMARKS Dietrich D-50 HSA Rig (Bomanator mounted) 3" x 24" SS (140 # wt 30" Drop at Head)

BORING 4TB2

PAGE 1 OF 1

* See Legend on Back

APPENDIX A.7

SITE 6 - DRMO

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 6MW2D
PROJECT NO.: 9594
DATE: 12-20-93
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: CONTI
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS HNU
S-1	0.0	10 / 9	2.9/2.0		MDENSE	BRN	SILTY SAND - SOME GRAV	SP	MOIST 0 PPM
0910	2.0	9 / 15							2" GRAVEL
S-2		10 / 10	1.8/2.0		MDENSE	BRN	SILTY SAND - SOME GR	SP	MOIST → WET
0915	4.0	9 / 10					TR BRICKS		FILL ? 0 PPM
S-3		4 / 6	1.7/2.0		MDENSE	BRN	SILTY SAND - SOME GR	SP	[WATER ≈ 4 TO 5']
0920	6.0	6 / 5							SENT S-3 TO LAB
S-4		7 / 7	.6/2.0		MDENSE	BRN	SILTY SAND - SOME GR	SP	WET 0.5 PPM
0925	8.0	7 / 6					TR WOOD FRAG.		
S-5		3 / 7	.7/2.0		LOOSE	BRN	SILTY SAND / SANDY	SP	WET 0 PPM
0935	10.0	4 / 3					SOME GR. SILT	SW	
S-6		19 / 10			LOOSE	TAN BRN	FINE TO MED SAND	SP	WET 0 PPM
0940	12.0	5 / 5		12.0					POOR REC
S-7		NO BLOW COUNT			DENSE	BLACK BRN	WOOD		HIT REF @ 12'± NOT SURE IF ITS ROCK
0950	14.0			FILL ? BELOW WT ?					OR WHAT. APPEARS TO BE WOOD
	15.0								HAS CREOSOTE ODOR
S-8 1005		21 / 23	1.8/2.0		DENSE		WOOD		80 PPM HNU
	17.0	27 / 29							
	20.0								
S-9		100/0	0/0				NO REC		? WOOD
									CREOSOTE ODOR.

REMARKS CME 75 RIG 3" SPOONS TO
• SENT TO LAB 6MW2D-0406 { 1 20Z, 1 80Z
→ BASED ON WT

BORING 6MW2D

PAGE 1 OF 4

* See Legend on Back

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB-NLON
BORING NO.: 6MW2D
PROJECT NO.: 9594
DATE: 12-20-93
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: CONTI
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-10	25.0	4/7	0/0		M DENSE		NO REC		WET
@ 1030	27.0	8/8							NOT SURE - LOOKS
									LIKE FILL WELL
									BELOW WT.
									NO REC DUE TO
									PUSHING WOOD
S-11	30.0			30.0					AHEAD OF DRIVE SHOE.
@ 1040		4/8	2.0/2.0		STIFF	BRN GRAY	CLAYEY SILT / SILTY	ML	WET 2 PPM
3"	32.0	5/5					CLAY TR SHELL AND	/OL	ORGANIC PEAT
2"							WOOD FRAG		SULPHUR ODOR
S-12	35.0								
@ 1100		3/3	2.0/2.0		STIFF		CLAYEY SILT - TR CLAY	ML/	WET 2 PPM
	37.0	5/5					TR SHELLS	OL	ORGANIC PEAT
S-13	40.0								
@ 1115		3/4	2.0/2.0		M. STIFF	OLIVE BRN	CLAYEY SILT / SILTY CLAY	ML	WET 0 PPM
	42.0	2/5					TR SHELLS	/OL	
S-14	45.0								
@ 1130		0/0	2.0/2.0		SOFT		CLAYEY SILT / SILTY CLAY	ML	WET 0PPM
	47.0	3/3					TR SHELLS	/OL	STILL "ORGANIC" PEAT

REMARKS

BORING 6MW2D

PAGE 2 OF 4

* See Legend on Back

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 6MW2D
PROJECT NO.: 9594
DATE: 12-20-93
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: CONTI
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-15	50.0	0 / 2	2.0/2.0		SOFT	OLIVE BRN	SILTY CLAY / CLAYEY SILT	ML	WET 0PPM
C 1310	52.0	2 / 3					TR SHELLS	CL	
S-16	55.0								
C 1330		4 / 4	2.0/2.0		Stiff		CLAYEY SILT / SILTY CLAY	ML	MOIST → WET 0PPM
	57.0	4 / 4					TR SHELLS	CL	SAME AS ABV.
									(ORGANIC PEAT)
	60.0								
S-17 C		0 / 3	1.9/2.0		M. STIFF	OLIVE BRN	CLAYEY SILT - TR	ML	MOIST 0.5PPM
1350	62.0	3 / 4					SHELLS		SAME AS ABV.
									MAYBE A BIT DRIER
									SAME CONSISTENCY
	65.0								
S-18		0 / 0	1.8/2.0		V SOFT	OLIVE GRAY	CLAYEY SILT - TR WOOD	ML	MOIST 0PPM
C 1412	67.0	0 / 3					FRAG.		NOT MANY SHELLS
									MORE LAYERED WOOD
									FRAGS (BEACH DEP)
S-19	70.0								
C 1510		0 / 4	2.0/2.0		M. STIFF	GRAY	CLAYEY SILT / SILTY CLAY	CL / ML	MOIST 0PPM
	72.0	4 / 5					TR WOOD		
							FRAG		

REMARKS 0 = WT OF RODS / 6"

BORING 6MW2D

PAGE 3 OF 4

* See Legend on Back

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB-NLON — BORING NO.: 6MW2D
PROJECT NO.: 9594 — DATE: 12-20-93 — DRILLER: EAST COAST THOMAS
ELEVATION: — FIELD GEOLOGIST: CONTI
WATER LEVEL DATA:
(Date, Time & Conditions)

	SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
12/20	S-20	75.0	3	2.0/2.0		SOFT/ MDENSE	GRAY	SILTY CLAY/CLAYEY	CL	MOIST → WET
12/21			5		76.5			SILT	ML	
	0945	77.0	7 9			MDENSE	GRAY	FINE TO MED		
								SAND	SP	WET - CONTACT
					SAND					IN SPOON
	S-21	80.0								
	@ 1010		12	1.8/2.0		DENSE	GRAY	FINE TO COARSE SAND	SW	MOIST → WET
		82.0	20 20 24					- TR GRAVEL		1/2" GRAVEL
	S-22	85.0			85.0					
	@ 1055		10	1.7/2.0		VDENSE	GRAY	FINE SILTY SAND - TR	SM	MOIST → WET
		87.0	13 38 50					GR/ROCK FRAG.		GR/ROCK FRAG ARE
	S-23									IN DRIVE SHOE - REST
	@ 1135	88.5 90.0	100/ .5	0/.5	88.5 REF	HARD	GRAY	GNEISS		OF SAMPLE IS SILTY
										SAND - FINER THAN
										S-21 - BUT NOT A CONFINING LAYER
										AUGER IS "GRINDING"
								BOTM HSA 88.5		AT ≈ 87, BUT CUTTING
								SCR 77 TO 87		COULD BE ROCK?
								SAND 88.5 → 75.5		NO REC AT S-23
								PELLETS 73.5 → 75.5		AUGER/SS REF. A FEW GNEISS CUTTINGS
										ON DRIVE SHOE IS ONLY INDICATION
										OF BR. STOPPED HERE.

REMARKS

BORING 6MW2D

PAGE 4 OF 4

* See Legend on Back

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 6MW30
PROJECT NO.: 9594
DATE: 1-5-99
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: Jim Ferguson
WATER LEVEL DATA:
(Date, Time & Conditions) 1-5-99 Sunny 17° (snow) 1-6-99 25° overcast

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN N.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	0-2	17 14	1.6		Dense	Brown	Silty Fine to Coarse Sand	SW	HNU-0 11:52
		18 11	2.0			Brown	TR- Brick - Flyash Some Fine - Coarse Med Gravel	SW	Moist
S-2	2-4	10 8	.75		M Dense	Brown	Silty F-C Sand, Some med.	SW	HNU-0 12:00
		9 8	2.0			Brown	F-C Gravel	SW	Moist - Wet
S-3	4-6	3 3	.85		Loose	Brown	Silty F-C Sand Tr Fine Gravel	SW	HNU-0 14:15
		0 2	2.0			Brown	goobs to silty Sand	SM	Wet
S-4	6-8	5 6	.80		M. Dense	Brown-Pink	Silty F-C Sand Some F-M	SW	HNU-0 14:20
		8 8	2.0	WOOD		Brown-Pink	Gravel Some Wood & Metal	SW	Wet Fill
NO SAMPLE	8-10	W O R	—	NO RECOV.			No Recovery	Fill	Attempted Sample 14:37
			2.0					Fill	No Recovery
NO SAMPLE	10-12		—				Augers @ 10.0' -> Auger Plug	Fill	
			2.0				Auger To W.O.R @ 12.0	Fill	
1-5 S-5	12-12.5	6 100/0	.5	WOOD	V Dense	Brown and	Fine - Coarse Sand Some F-C	SW	HNU-0 Moist
							Gravel and Wood	Fill	Wet Sulfur Odor
				WOOD				Fill	Offset 15' East of original borehole. Auger to 15' to take sample 6
1-6 S-6	15-17	5 3	1.0		M. St. Lt	Green Gray	Clay Silt Trace Fine	ml	HNU-7.8 14:30
		4 4	2.0			Green Gray	Rounded Gravel	ml	Moist Unusual Odor
1-10 S-7	20-22	3 2	1.0		Soft	Green Gray	Silt To Fine Sand	ml	HNU-1.1 10:10
		1 1	2.0			Green Gray		ml	Wet

REMARKS Drill Rig: CME 75 Sampler: Nexus Lowrise 3" Ø Samples
Soil Sample 6MW30-406 sent to LAB 1-20-2
2" Ø Samples from 5-6 ↓ 1-8-02

BORING 6MW30

PAGE 1 OF 4

* See Legend on Back

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 6MW3D
PROJECT NO.: 9594
DATE: 1-10-94
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: J. R. FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 1-10-93 08:30 (-10°F-10°)

	SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/FL)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
1-10	S-8	25-27	3 / 3	1.0		SOFT	GRAY	Sandy (fine) SILT, MICACEOUS	ml	HNU-0 10:27
			1 / 1	2.0			GRAY		ml	MOIST sulfur odor
	S-9	30-32	W.O. / R	2.0		V. SOFT	GREEN GRAY	Clayey SILT, MICACEOUS, Tr.	ml	HNU-0 10:37
			1 / 1	2.0			GREEN GRAY	Organic mat. (roots etc.)	ml	moist sulfur odor
	S-10	35-37	W.O. / R	2.0		V. SOFT	Green Gray	Clayey SILT, MICACEOUS with white	ml	HNU-0 10:51
			1 / 1	2.0			Green Gray	bivalves - gastropods	ml	moist sulfur odor
	S-11	40-42	W.O. / R	2.0		V SOFT	Green Gray	Clayey Silt, MICACEOUS with	ml	HNU-0 11:10
			1 / 1	2.0			Green Gray	shell fragments.	ml	moist sulfur odor
	S-12	45-47	1 / W.O. / R	2.0		V SOFT	Green Gray	Clayey Silt, MICACEOUS with	ml	HNU-0 11:26
			1	2.0			Green Gray	shell fragments	ml	moist

REMARKS

BORING 6MW3D

PAGE 2 OF 4

* See Legend on Back

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 6MW3D
PROJECT NO.: 9594
DATE: 1-10-93
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: J.R. FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 1-10-93 (-10°F - 10°F)

SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-13	50-52	1 / 1	1.1		V. Loose	Green Gray	Silty Fine to Coarse Sand Trace to	SM	HNU-0 12:17
		1 / 1	2.0			Green Gray	some fine to coarse gravel and shell frags.	SM	WET
S-14	55-57	1 / 2	1.3		Loose	Green Gray	Silty fine to coarse Sand, trace to	SM	HNU-0 12:46
		3 / 4	2.0			Green Gray	some fine gravel and shell fragments	SM	WET
S-15	60-62	6 / 5	1.5		Loose	GRAY	Silty Sandy (F-m) Fine to Coarse	GW	HNU-0 13:00
		5 / 7	2.0	WOOD		GRAY	gravel (subang-subrund) wood last 3"	GW	WET
S-16	65-67	3 / 10	.95		M Dense	GRAY	Silty Sandy Fine to Coarse Gravel and with wood	SM/GM	HNU-0 13:36
		10 / 22	2.0			GRAY	Silty Gravelly Fine to Coarse Sand	SM/GM	WET
S-17	70-72	4 / 6	.75		M Dense	GRAY	Silty Very Fine - Fine Sand	SM	HNU-0 14:00
		12 / 14	2.0			GRAY		SM	WET

REMARKS

BORING 6MW3D

PAGE 3 OF 4

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 6MW3D
PROJECT NO.: 9594 DATE: 1-10-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: J.R. FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 1-10-93 (-10°F-10°F) 1-11-93 (6°F-20°F)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-18	75-77	3 / 4	—		M. Dense		No Recovery		HNU-0 15:10
		10 / 12	2.0						—
1-11 S-19	80-82	1 / 2	1.2		M. Dense	GRAY	Fine to Coarse Sand, Trace to	SW	HNU-0 09:01
		10 / 26	2.0			GRAY	Some Gravel	SW	WET
S-20	85-87	1 / 2	—		LOOSE	—	No Recovery	—	HNU-— 9:45
		4 / 12	2.0					—	—
S-21	90-92	52 / 54	.5 / 1.0		V. Dense	GRAY PINK	Silty Fine to Coarse Sand with	SW	HNU-0 12:10
						GRAY PINK	Some Fine Granitic Gravel	SW	WET
							Bottom of Boring = 91.0'		
							Discontinued Boring.		
							Drillers feel that augers		
							are flexing on an angulated		
							Bedrock surface.		

REMARKS 2" Ø PVC Well Installed screen from 88'-78' sand 85'-76' Bentonite Pellets from 76'-71' → Bentonite cement grout 71 to 15'

BORING 6MW3D

PAGE 4 OF 4

* See Legend on Back

BORING NO: GMW3D

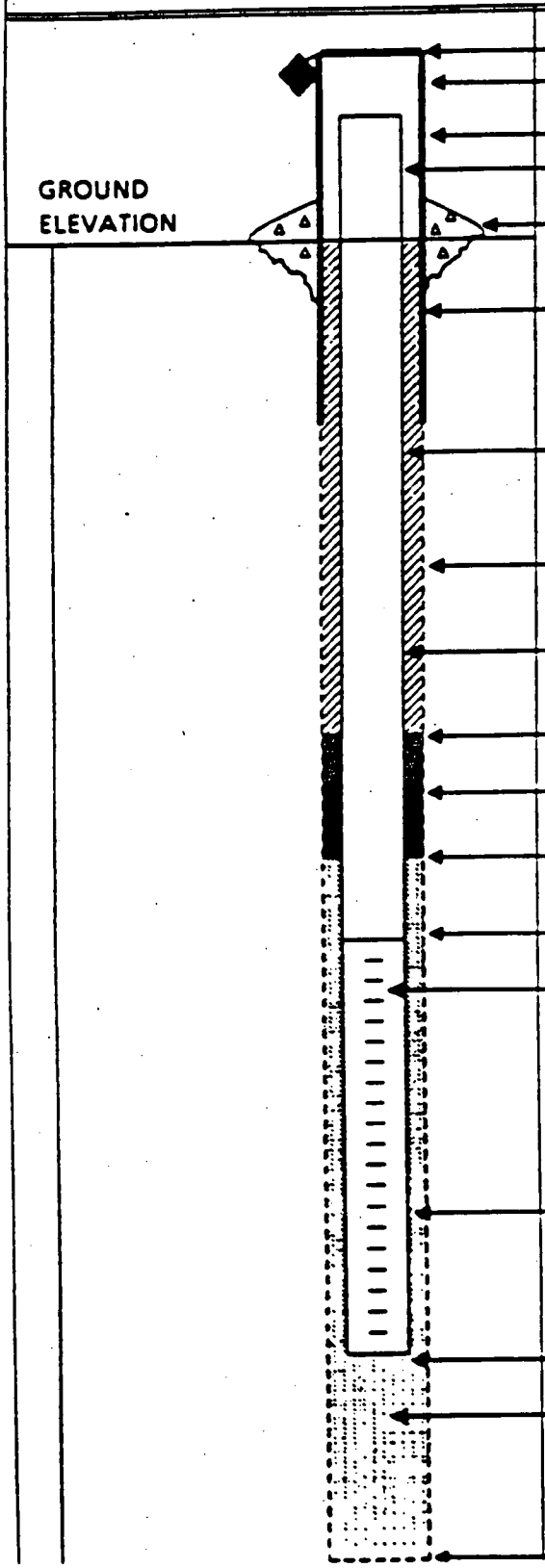
HALLIBURTON NUS
Environmental Corporation

MONITORING WELL SHEET

PROJECT: NSB-NLON
PROJECT NO.: 9594
ELEVATION:
FIELD GEOLOGIST: J.R. FERGUSON

LOCATION: GROTON, CT.
BORING: GMW3D
DATE: 1-11-93

DRILLER: EAST COAST
DRILLING METHOD: HOLLOW STEM AUGER
DEVELOPMENT METHOD:



ELEVATION OF TOP OF SURFACE CASING:
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING:
STICK - UP RISER PIPE:
TYPE OF SURFACE SEAL:
I.D. OF SURFACE CASING:
TYPE OF SURFACE CASING:
RISER PIPE I.D.: 2" Ø
TYPE OF RISER PIPE: SCH. 40 PVC
BOREHOLE DIAMETER: 8" Ø
TYPE OF BACKFILL: BENTONITE/CEMENT GROUT
ELEVATION / DEPTH TOP OF SEAL: 171'
TYPE OF SEAL: BENTONITE PELLET
DEPTH TOP OF SAND PACK: 176
ELEVATION / DEPTH TOP OF SCREEN: 178'
TYPE OF SCREEN: SCH 40 PVC
SLOT SIZE x LENGTH: .010 - 10'
I D OF SCREEN: 2" Ø
TYPE OF SAND PACK: SILICA SAND
ELEVATION / DEPTH BOTTOM OF SCREEN: 188'
ELEVATION / DEPTH BOTTOM OF SAND PACK: 189
TYPE OF BACKFILL BELOW OBSERVATION WELL: SAND
ELEVATION / DEPTH OF HOLE: 190'

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 6MW65
PROJECT NO.: 9594 DATE: 01-10-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: TIM EVANS TIM SABO
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	0.0						NO SAMPLE 0'-5'		
	5.0								
S-1 @		13 / 13	0.9/2.0		M. Dense	L. Brn	GRAVELLY SAND	GP	DRY OVM 0ppm
1229	7.0	10 / 16							Sand - Med Gr, well round Gravel - 0.1" ø AG, Well Round
	9.0								* Hit H_2O
									[5'-7' 1-3" SS Chemical Sample 1-2oz. 1-8oz. Jar]
	10.0								# 6MW65-0507
S-2 @		4 / 7	1.1/2.0		M. Dense	TAN TO PINK	SAND W/TR GRAVEL	GW	Saturated OVM 0ppm
1240	12.0	12 / 9							Sand - Coarse Gr Sub-round
	15.0								
S-3 @		7 / 16	1.5/1.5		V. Dense	TAN	SAND W/TR MICA	SP	OVM 0ppm
1256	16.5	100 / 8							SAND - Med to Fine Gr
	20.0								
	21.0	1 / 14	1.5/1.5		V. Dense	TAN	SAND W/TR GRAVEL	SP	OVM 0ppm
1320	21.5	100 / 8							Sand - Med Gr. Gravel - Max ø .10
							HSG @ 22'		*Auger Refusal @ 22'
							SCREEN 6'-16' SAND 4'-16' PELLETS 2'-4'		
	25.0								

REMARKS CME 75 HSA Rig
2" x 24" SS (140# Wt Cat Head, 30" Drop)
4¼" ID Auger

BORING 6MW65
PAGE 1 OF 1

* See Legend on Back

BORING NO: 6MW6S

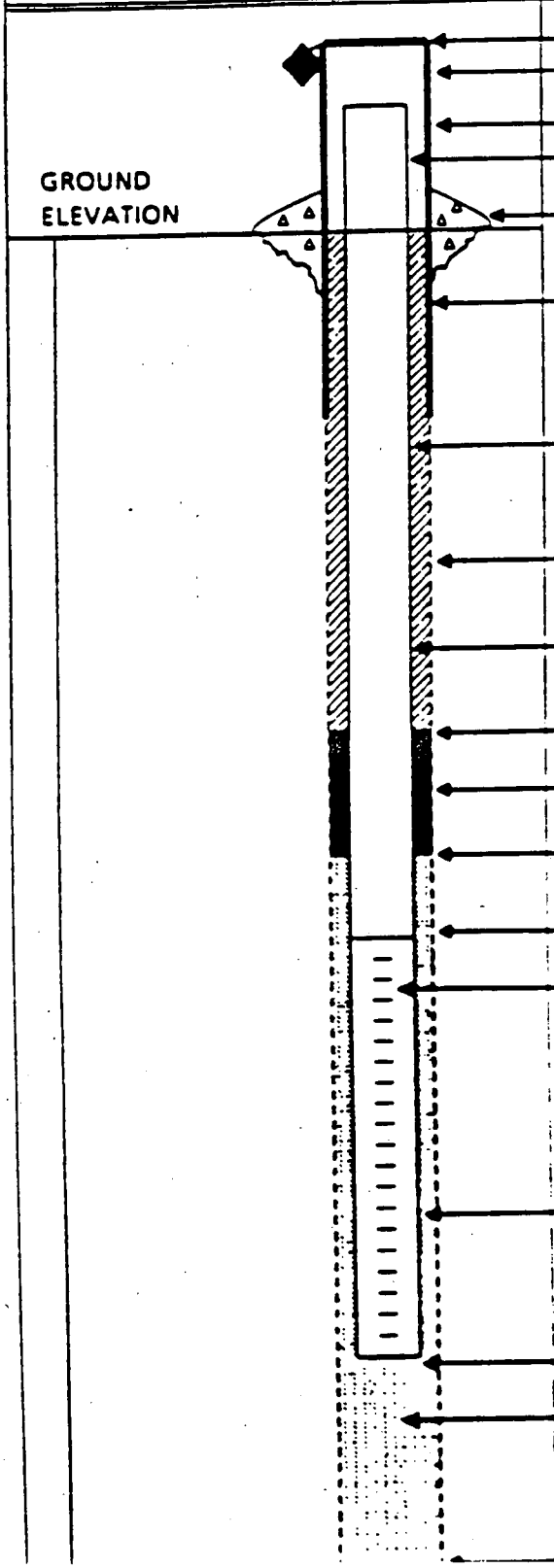
HALLIBURTON NUS
Environmental Corporation

MONITORING WELL SHEET

PROJECT: NSB-NLON
PROJECT NO.: 9594
ELEVATION:
FIELD GEOLOGIST: TIM EVANS

LOCATION: GROTON, CT.
BORING: 6MW6S
DATE: 01-10-94

DRILLER: EAST COAST
DRILLING METHOD: HSA
DEVELOPMENT METHOD:



ELEVATION OF TOP OF SURFACE CASING:
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING:
STICK - UP RISER PIPE:
TYPE OF SURFACE SEAL: CEMENT
I.D. OF SURFACE CASING: 4"
TYPE OF SURFACE CASING: STEEL
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: PVC
BOREHOLE DIAMETER: 8"
TYPE OF BACKFILL:
ELEVATION / DEPTH TOP OF SEAL: 12'
TYPE OF SEAL: BENTONITE CHIPS
DEPTH TOP OF SAND PACK: 4'
ELEVATION / DEPTH TOP OF SCREEN: 16'
TYPE OF SCREEN PVC
SLOT SIZE x LENGTH 0.010 x 10'
I.D. OF SCREEN 2"
TYPE OF SAND PACK SILICA SAND
ELEVATION / DEPTH BOTTOM OF SCREEN: 16'
ELEVATION / DEPTH BOTTOM OF SAND PACK: 16'
TYPE OF BACKFILL BELOW OBSERVATION WELL N/A
ELEVATION / DEPTH OF HOLE: 16'

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 6MW6D
PROJECT NO.: 9594 DATE: 01-24-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: Tim Evans Dick Spaulding
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
@ 1210	0.0						See Boring 6MW6S		8¾" ⌀ Mud Rotary
							for Litho to 21.5'		0' to 28'
									Set 6" ⌀ Casing to 28'
	5.0								
	10.0								
	15.0								
	20.0								
@ 1255	22.0			22.0					Hit BR @ 22'
	23.0			||| ≡ |||	Hard	Pink	Qtz-Fspar-Bio Gneiss		

REMARKS Chicago Pneumatic 672 Air Rotary Rig
8¾" ⌀ Roller bit 0' to 28'
5⅞" ⌀ Air Hammer 28' to 42'
Log Cuttings 23' to 42'

BORING 6MW6D

PAGE 1 OF 2

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: GMW6D
PROJECT NO.: 9594 DATE: 01-24-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: Tim Evans Dick Spaulding
WATER LEVEL DATA:
(Date, Time & Conditions)

	SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN N.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, FL)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
		25.0								
1/24	@ 1530	28.0								
1/25										
		30.0				Soft	D.Gray	Schist / Gneiss		
		36.0				Hard	Gray	Gneiss		
	@ 1140	37.0			▼					H_2O @ 37.0' ± (4-10 gpm)
		42.0				Hard	Gray	Gneiss		
								Total Depth 42' -		
								6" ø Open Borehole		
								28' - 42'		
								Develop 30 min		

REMARKS

BORING GMW6D

PAGE 2 OF 2

* See Legend on Back

HALLIBURTON NUS
Environmental Corporation

BORING NO.: 6MW6D

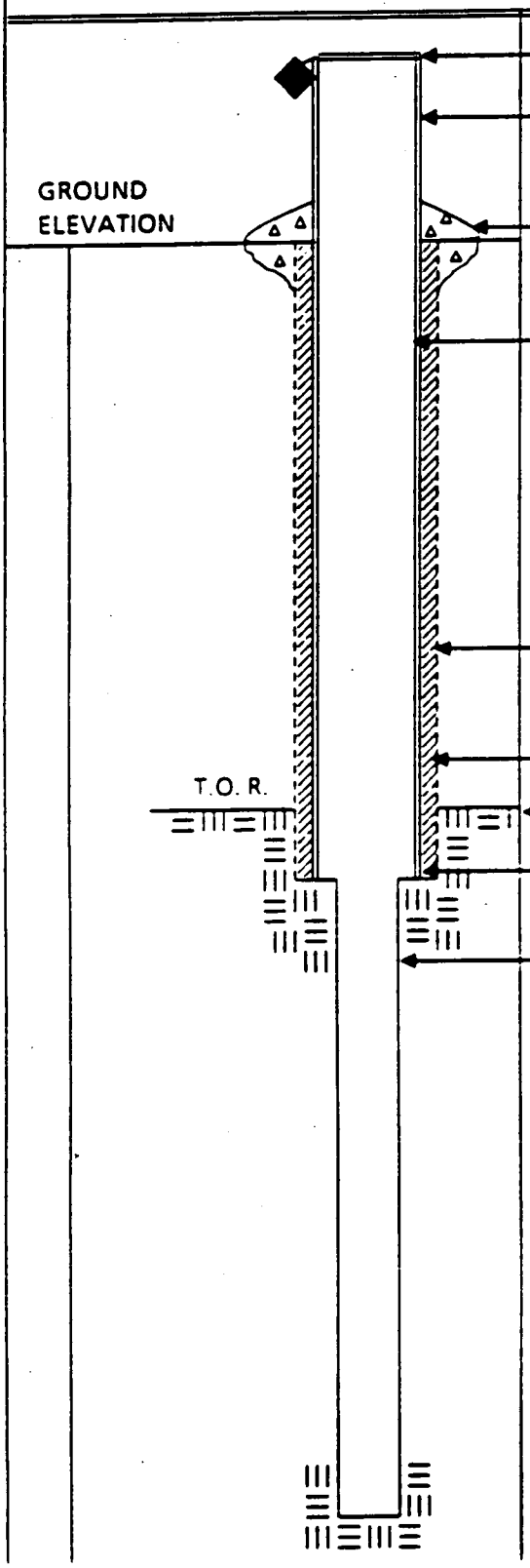
BEDROCK MONITORING WELL SHEET

OPEN HOLE WELL

PROJECT: NSB-NLON
PROJECT NO.: 9594
ELEVATION:
FIELD GEOLOGIST: Tim Evans

LOCATION: Groton, CT
BORING: 6MW6D
DATE: 1-25-94

DRILLER: EAST COAST
DRILLING METHOD: Mud/Air Rotary
DEVELOPMENT METHOD:



ELEVATION OF TOP OF CASING:

STICK UP OF CASING ABOVE GROUND SURFACE:

TYPE OF SURFACE SEAL: Concrete

I.D. OF CASING: 6"

TYPE OF CASING: Black Steel

TEMP. / PERM.: Perm

DIAMETER OF HOLE: 8 3/4"

TYPE OF CASING SEAL: Grout

DEPTH TO TOP OF ROCK: 22.0'

DEPTH TO BOTTOM CASING: 28.0'

DIAMETER OF HOLE IN BEDROCK: 5 7/8"

DESCRIBE IF CORE / REAMED WITH BIT:

N/A

DESCRIBE JOINTS IN BEDROCK AND DEPTH:

@ 37.0'

ELEVATION / DEPTH OF HOLE: 42.0'

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 6MW7S
PROJECT NO.: 9594
DATE: 01-11-94
DRILLER: EAST COAST THOMAS/
ELEVATION:
FIELD GEOLOGIST: TIM EVANS TIM SARO
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS	OVA
	0.0						ASPHALT		TOP 4"	
S-1 @ 0915	- 3.0	41 / 35 / 18 / 21	1.5/2.0		Dense	L. BRN	GRAVELLY SAND W/SOME SILT	GP	TOP 0.5' SNOW & ICE SAND - FINE TO MED GR Gravel - Gne iss, Max Ø 0.2'	OPF
S-2 @ 0923	5.0	31 / 20 / 30 / 15	1.2/2.0		V. DENSE	BRN TO BLACK			MOIST	OPP
▲ * S-3 @ 0958	7.0	60 / 40 / 39 / 25	0.6/2.0		V. Dense	BRN	SILTY SAND W/TR Gravel	SM	SATURATED 6MW7S-0507 Sand - Med Gr Gravel - Max 0.2' Ø	1 PP
* S-4 @ 1006	9.0	22 / 7 / 25 / 21	0.9/2.0		V. Dense	BRN TO TAN	GRAVELLY SAND	GW	Sand - Coarse - Med Gr Gravel - Max 0.1' Ø	OPP
S-5 @ 1019	11.0	18 / 15 / 11 / 35	1.2/2.0		V. DENSE	BRN	GRAVELLY SAND	GW	SAND - FINE to Coarse Gr Gravel - Max Ø 0.03' & 1 Cobble 0.25' Ø	OPP
* S-6 @ 1028	13.0	60 / 40 / 100/3 / 7	0.7/1.3		V. Dense	D. BRN	SANDY GRAVEL W/SOME SILTY		SAND - Med - Coarse Gr GRAVEL - COBBLE 0.2' Ø Fe-Stained Arc 0.1' Ø	OPP
S-7 @ 1156	15.0	2 / 3 / 7 / 7	1.6/2.0		Stiff	D. BRN	Clayey Silt W/TR ORGT SHELL	CL	Natural / organic Sulfur odor	OPP
							— TOTAL DEPTH 13' —			
							HSA to 14'			
							SS to 15'			
							SCREEN 3.5' - 13.5'			
							SAND 2.5' - 3.5'			
							PELLETS 2 - 2.5'			

REMARKS CME 55
3" x 24" SS (140# Wt Cat Head, 30" Drop)
4¼" ID, 8" OD Auger

BORING 6MW7S
PAGE 1 OF 1

* See Legend on Back

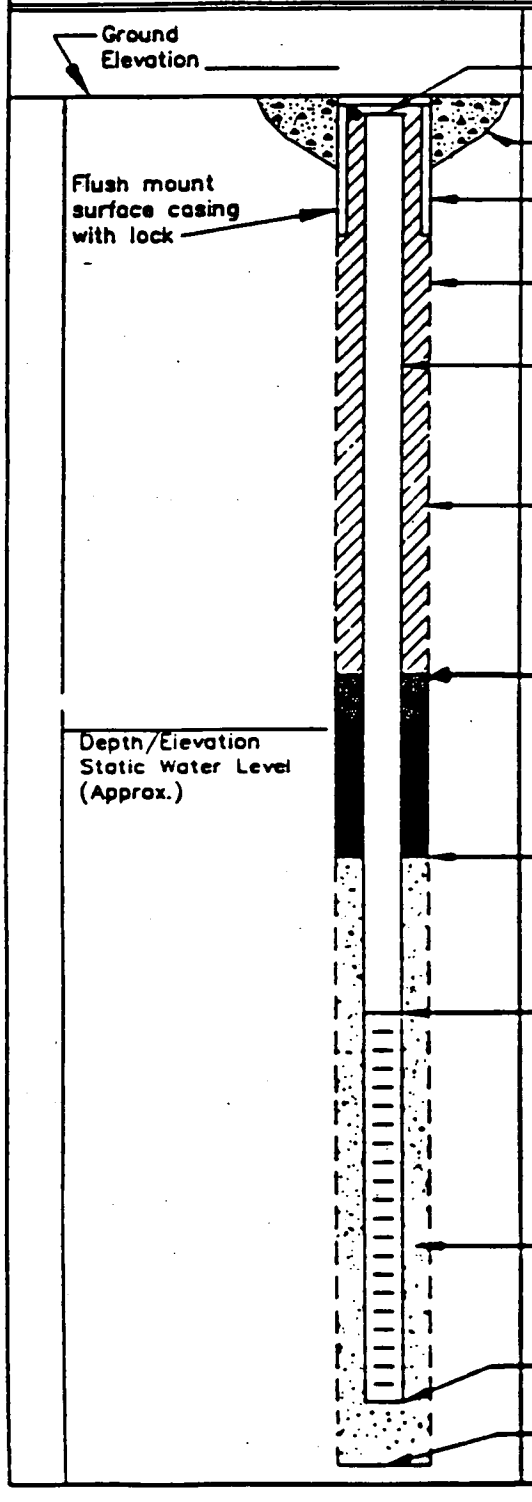
* Chemical Sample Only (1 - 402 1 - 7oz. Jar) - ▲ Sent to Lab (6MW7S-0507)

HALLIBURTON NUS
Environmental Corporation

WELL NO.: 6MW7S

OVERBURDEN
MONITORING WELL SHEET

PROJECT: NSB-NLON	LOCATION: Groton CT	DRILLER: East Coast
PROJECT NO.: 9594	BORING: 6MW7S	DRILLING METHOD: HSA
ELEVATION:	DATE: 1-10-94	DEVELOPMENT METHOD:
FIELD GEOLOGIST: Tim Evans		



ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: Concrete

TYPE OF PROTECTIVE CASING: Steel

I.D. OF PROTECTIVE CASING: 4"

BOREHOLE DIAMETER: 8"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: Grout

ELEVATION / DEPTH TOP OF SEAL: / 2'

TYPE OF SEAL: Bentonite Chips

DEPTH/ELEVATION TOP OF SAND: 4' /

DEPTH/ELEVATION TOP OF SCREEN: 6' /

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.010 x 10'

TYPE OF SAND PACK: Silica Sand

DEPTH/ELEVATION BOTTOM OF SCREEN: 16' /

DEPTH/ELEVATION BOTTOM OF SAND: 16' /

DEPTH/ELEVATION BOTTOM OF HOLE: 16' /

BACKFILL MATERIAL BELOW SAND: Natural

APPENDIX A.8

SITE 7 - TORPEDO SHOPS

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 7MW 2D
PROJECT NO.: 9594 DATE: 3-15-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: J.R. FERGUSON
WATER LEVEL DATA:
(Date, Tim & Conditions) 3-15-94 PARTLY CLOUDY 45° / 3-4-94 20° CLEAR

SAMPLE NO. & TYPE OR RQD	DEPTH (ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
						BLACK	ASPHALT 0.0 TO 0.5'		
S-1	2'-4'	2 5	1.3		M. Dense	TAN-GRAY	SILTY MICACEOUS, Very Fine -	SM	HNU-0 08:29
		8 10	2.0			TAN-GRAY	Fine Sand	SM	w/ 3-4-94
	4-5								
S-2	6-6.5	3 100/0	.5 .5		V. Dense	Brown	SILTY Very Fine - Fine Sand	SM	HNU-0 08:40
									Difficult drilling augers are sideways in hole
									SET TEMPORARY 8" O.D.
	9-10								STEEL CASING TO 10.5'
									WITH CHICAGO PNEUMATIC
									DRILL RIG 3-15-94
	14-15				HARD	PINK-GREY-BLUE	IGNEOUS ROCK CRYSTS BIOTITE		
							FELDSPAR AND QUARTZ		
									09:45 WAITED 15 MINUTES
	19-20				HARD	PINK-GREY-BLUE	IGNEOUS ROCK CRYSTS BIOTITE		FOR WATER NO WATER IN
							FELDSPAR AND QUARTZ		BOREHOLE (SOFT AT 21')
					HARD	[illegible]	[illegible]		09:55 @ 25' [illegible]
						[illegible]	[illegible]		[illegible]

REMARKS [illegible] Rock [illegible] Boreholes
Diameter in Rock 6" Ø

BORING 7MW
PAGE 1 OF 2

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 7MW2D
PROJECT NO.: 9594 DATE: 3-15-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: J.R. FERGUSON
WATER LEVEL DATA :
(Date, Time & Conditions) 3-15-9 PARTLY CLOUDY 50°

SAMPLE NO. & TYPE OR RQD	DEPTH (FT) OR RUN N.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
					HARD	PINK-GRAY	GRANITIC BIOTITE, FELDSPAR		10:10 @ 29' WAITED TO
	29-30				HARD	PINK-GRAY	MICA QUARTZ		10:20 FOR H2O Resumed
									DRILLING when No water found
					[illegible]	[illegible]	[illegible] BIOTITE QUARTZ		10:25 @ 35' NO WATER
	34-35				[illegible]	[illegible]	[illegible] FELDSPAR		BEGIN DRILLING AT 10:40
					[illegible]	[illegible]	[illegible] QUARTZ		10:45 @ 40' Soft @ 35
	39-40		STATIC WATER @ 39.2		[illegible]	[illegible]	[illegible]		SUBMERGE PISTON IN (?)
			12:10 3-15-94						RESUME DRILLING AT 10:55
					.001	[illegible]	[illegible]		11:10 @ 45' STOPPED TO
	44-45'				.001	[illegible]			WAIT ON WATER
							[illegible]		
							[illegible] SCREEN 45.0'		
							[illegible] 45-32'		
							[illegible] 32-25'		

REMARKS [illegible]

BORING 7MW2D

PAGE 2 OF 2

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 7MW2D
PROJECT NO.: 9594 DATE: 3-4-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: J.R. FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 3-4-94 CLEAR 20°

SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth FL)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
						BLACK	ASPHALT 0-.5'		
S-1	2-4	2 5	1.3		M. Dense	TAN-GRAY	SILTY, MICACEOUS, VERY FINE TO	SM	HNU-0 08:38
		8 10	2.0			TAN-GRAY	FINE SAND	SM	WET
S-2	6-6.5	3 100/0	.5		V. Dense	BROWN	SILTY VERY FINE - FINE SAND	SM	HNU-0 08:40
									DIFFICULT DRILLING. Augers WALK SIDEWAYS.
									HNU-
									HNU

REMARKS 2" Ø SPLIT BARREL SAMPLER

BORING 7MW2D

PAGE 1 OF

* See Legend on Back

Halliburton NUS CORPORATION

BORING NO.: 7MW2D

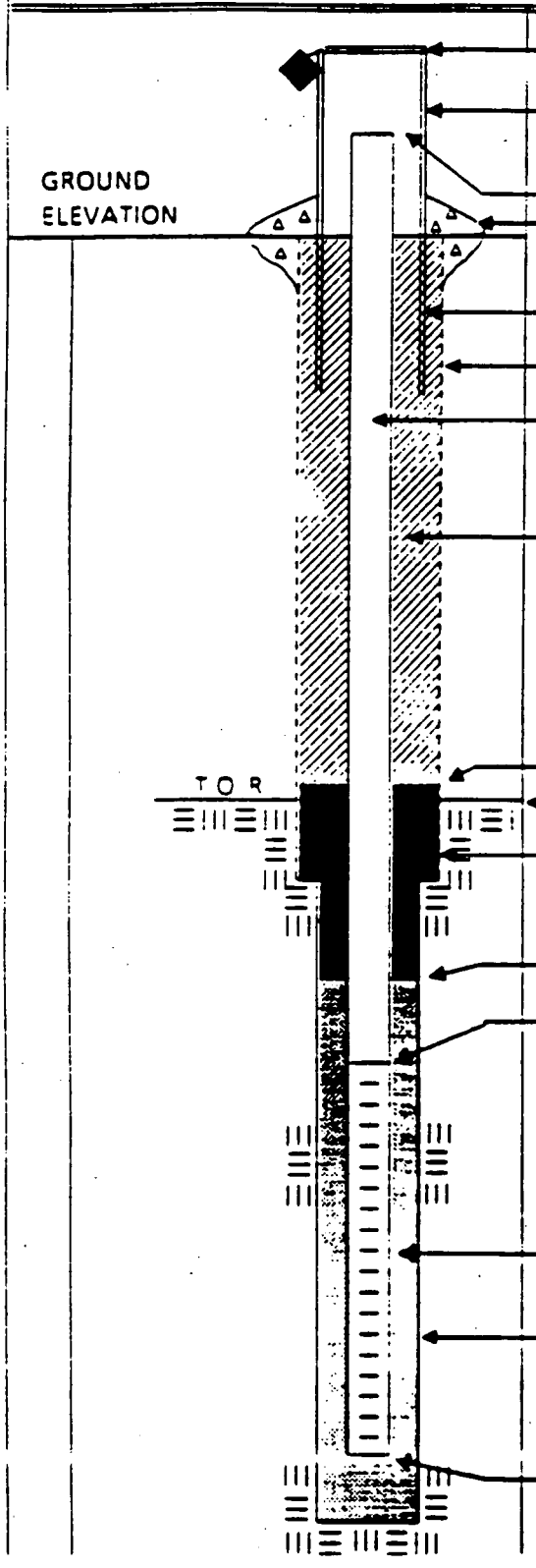
BEDROCK MONITORING WELL SHEET

WELL INSTALLED IN BEDROCK

PROJECT NSB New London
PROJECT NO. 9594
ELEVATION
FIELD GEOLOGIST T. R. Ferguson

LOCATION Site 7 Torpedo Shops
BORING 7MW2D
DATE 3-15-94

DRILLER D. Spaulding
DRILLING METHOD Air Rotary
DEVELOPMENT METHOD Surge / Pump



ELEVATION OF TOP OF SURFACE CASING: Flush

STICK UP OF CASING ABOVE GROUND SURFACE: -0.5'

ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: Portland Cement

I.D. OF SURFACE CASING: 6"

DIAMETER OF HOLE: 8 1/2"

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: SCH 40 PVC

TYPE OF BACKFILL: Bentonite

ELEVATION / DEPTH TOP OF SEAL: [illegible]

ELEVATION / DEPTH TOP OF BEDROCK: 80

TYPE OF SEAL: Bentonite

ELEVATION / DEPTH TOP OF SAND: 32.0

ELEVATION / DEPTH TOP OF SCREEN: 35.0

TYPE OF SCREEN: SCH 40 PVC

SLOT SIZE x LENGTH: .010 10'

I D SCREEN: [illegible]

TYPE OF SAND PACK: #2 [illegible] Sand

DIAMETER OF HOLE IN BEDROCK: 8 1/2" Ø

CORE / REAM: [illegible] - 45.0

ELEVATION / DEPTH BOTTOM SCREEN: 45.0

ELEVATION / DEPTH BOTTOM OF HOLE: 45.0

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 7MW3D
PROJECT NO.: 9594 DATE: 3-2-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: J. R. FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 3-2-94 CLEAR 20°

SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
						GRAY-BLACK	GNEISSIC AND GRANITIC	FILL	BOULDER FILL - VISIBLE IN VOID Crated by Driller
						GRAY-BLACK	BOULDERS	FILL	AUGERS HAVING DIFFICULTY ADVANCING DUE TO BOULDER FILL.
S-1	2-4	4 / 3	.4		LOOSE	BROWN	SILTY FINE-COARSE SAND and	FILL	HNU-0 09:38
		4 / 3	2.0			BROWN	GRANITIC BOULDERS	FILL	MOIST
S-2	6-8	5 / 11	.8		M. DENSE	BROWN	SILT: FINE-COARSE SAND TRACE	FILL	HNU- 09:33
		5 / 8	2.0			BROWN	Fine granitic gravel angular	FILL	MOIST - WET
									AUGERS WALKING ON BOULDERS - Difficult Drilling
S-3	10-12	8 / 4	.8		M. STIFF	BROWN	PEAT WOOD (DECOMPOSED)		HNU- 09:53
		3 / 3	2.0			BROWN	Tree Roots		WET
S-4	14-16	2 / 1	1.3		SOFT	GRAY	CLAYEY SILT	ml	HNU- 10:02
		2 / 3	2.0			BROWN	BROWN SILT TO VF-F SAND	ml	MOIST
S-5	18-20	7 / 8	1.3		M. DENSE	DARK BROWN	INTERBEDDED SILT: FINE SAND	SM/ml	HNU-0 10:13
		7 / 8	2.0			DARK BROWN	ORG & BROWN SANDY SILT	SM/ml	WET-MOIST Fe STAINING
S-6	22-24	7 / 7	1.5		V STIFF	DARK	SILT - DENSE	ml	HNU-0 10:24
		11 / 13	2.0			DARK		ml	MOIST - WET

REMARKS: 2" Ø SPLIT SPOON SAMPLER INSTALLED 2" Ø PVC MONITORING WELL 3-5-94

BORING 7MW3D

PAGE 1 OF 2

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 7MW3D
PROJECT NO.: 9594 DATE: 3-2-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: J. R. FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 3-2-94 CLEAR 20°

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-7	26-28	7 / 9	1.4		V. STIFF	GRAY	Interbedded clayey silt and silty	ml	HNU-0 10:36
		10 / 16	2.0			GRAY	MICACEOUS VERY FINE-FINE SAND	ml	Moist-wet
S-8	30-32	W / OR	1.2		LOOSE	ORANGE BROWN	SILTY, VERY FINE TO FINE SAND	SM	HNU- 11:09
		7 / 11	2.0			ORANGE BROWN	MICACEOUS, Fe STAINING	SM	WET
S-9	34-36	10 / 13	1.1		DENSE	GRAY-BROWN	SILTY, VERY FINE-FINE SAND,	SM	HNU-0 11:19
		28 / 20	2.0			GRAY-BROWN	MICACEOUS	SM	WET
S-10	38-40	8 / 10	1.2		M DENSE	BROWN	SILTY VERY FINE-FINE SAND	SM	HNU-0 11:30
		11 / 14	2.0			BROWN		SM	WET
S-11	42-43	14 / 18	1.2		V DENSE	BROWN	SILTY MEDIUM-COARSE SAND	SM	HNU-0 12:44
		100/0	2.0				WEATHERED BIOTITE GNEISS IN →		WET TIP OF SPOON
S-12	43.0	85/0	—		V DENSE	—	NO RECOVERY		13:00
							TOP OF ROCK = 43.0'		

REMARKS

BORING 7MW3D

PAGE 2 OF 2

* See Legend on Back

BORING NO. 7MW3D

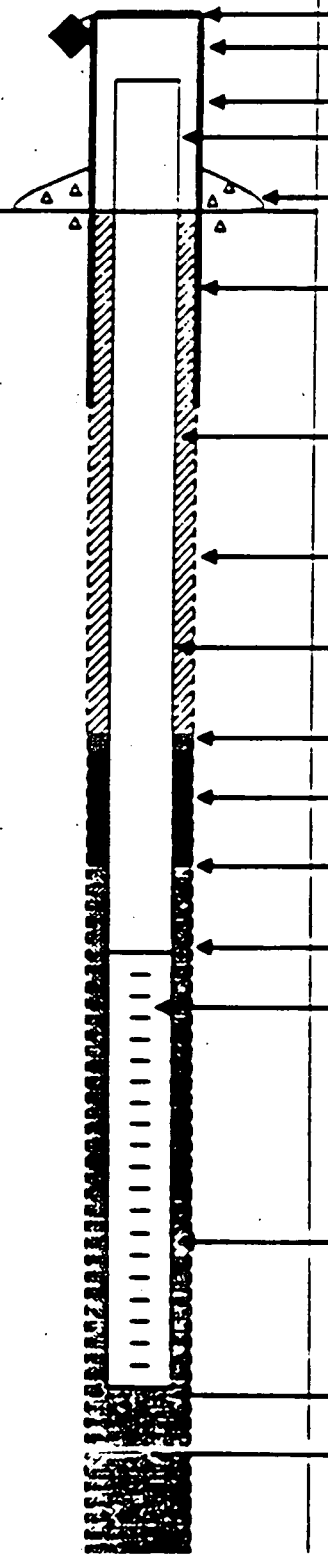
Halliburton NUS CORPORATION

OVERBURDEN MONITORING WELL SHEET

PROJECT NSB New London
PROJECT NO. 9594
ELEVATION
FIELD GEOLOGIST J.R. Ferguson

LOCATION Site 7 Torpedo Shops
BORING 7MW3D
DATE 3-5-94

DRILLER R. Swinter
DRILLING METHOD Hollow Stem Auger
DEVELOPMENT METHOD Surge / Pump



ELEVATION OF TOP OF SURFACE CASING:
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING: 2.5
STICK - UP RISER PIPE: 2.0
TYPE OF SURFACE SEAL: Portland Cement
I.D. OF SURFACE CASING: 4"
TYPE OF SURFACE CASING: STEEL
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: Sch 40 PVC
BOREHOLE DIAMETER: 8 1/2"
TYPE OF BACKFILL: Bentonite Cement Grout
ELEVATION / DEPTH TOP OF SEAL: 28.0
TYPE OF SEAL: Bentonite Pellet
DEPTH TOP OF SAND PACK: 31.0
ELEVATION / DEPTH TOP OF SCREEN: 33.8
TYPE OF SCREEN: Sch 40 PVC
SLOT SIZE x LENGTH: .010 10'
I.D. OF SCREEN: 2" ø
TYPE OF SAND PACK: #2 Silica Sand
ELEVATION / DEPTH BOTTOM OF SCREEN: 43.8
ELEVATION / DEPTH BOTTOM OF SAND PACK:
TYPE OF BACKFILL BELOW OBSERVATION WELL: NA

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 7MW45
PROJECT NO.: 9594 DATE: 3-4-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: J.R. FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 3-4-94 CLEAR 20°

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/ft)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
							ASPHALT 0-5'		
S-1	1-3	2 17			DENSE	GRAY-BLACK	SILTY SANDY GRAVEL and GRAVELLY	CM/SM	HNU- 09:27
		14 25	3.0			GRAY-BLACK	SILTY SAND (GRANITIC GRAVEL) FILL	CM/SM	MOIST
					V. HARD	PINK-BLACK	MASSIVE BIOTITE FELDSPATHIC		BEGAN NX CORING RUN
98%	1		100%				GNEISS. FOLIATION ≈ 45°		11:30 RUN 1 of 4
									(3.0' TO 6.65')
				(15°) (5°)	V. HARD	GRAY-BLACK	BROKEN. BIOTITE FELDSPATHIC		(BEDROCK) (BROKEN)
60%	2		100%	(20° W) (15° W)	V HARD	PINK-GRAY-BLACK	GNEISS		BEGAN RUN 2 of 4 13:10
									(6.65' TO 8.70')
000%	3		100%	(35° W)	V. HARD	PINK-GRAY-BLACK	BLOCKY BIOTITE FELDSPATHIC		RUN 3 of 4 8.70 to 11.05
							GNEISS (9.5 - 35° WEATHERED FOLIA)		
					V. HARD	PINK-GRAY-BLACK			RUN 4 of 4 11.05 TO 14.30
100%	4		100%						
							STOPPED @ 14.30		

REMARKS ANALYTICAL SOIL SAMPLE → VOC, SVOC, MO, TPH, ENGINEERING PROPS
7 SO 45 0103 → 3-4-93
INSTALLED MONITORING WELL SCREEN → 9.5-14.30 → SAND PACK 7.5-14.30'

BORING 7MW45
PAGE 1 OF 1

* See Legend on Back Bentonite Pellet seal 3-8-93

Halliburton NUS CORPORATION

BORING NO.: 7MW4S

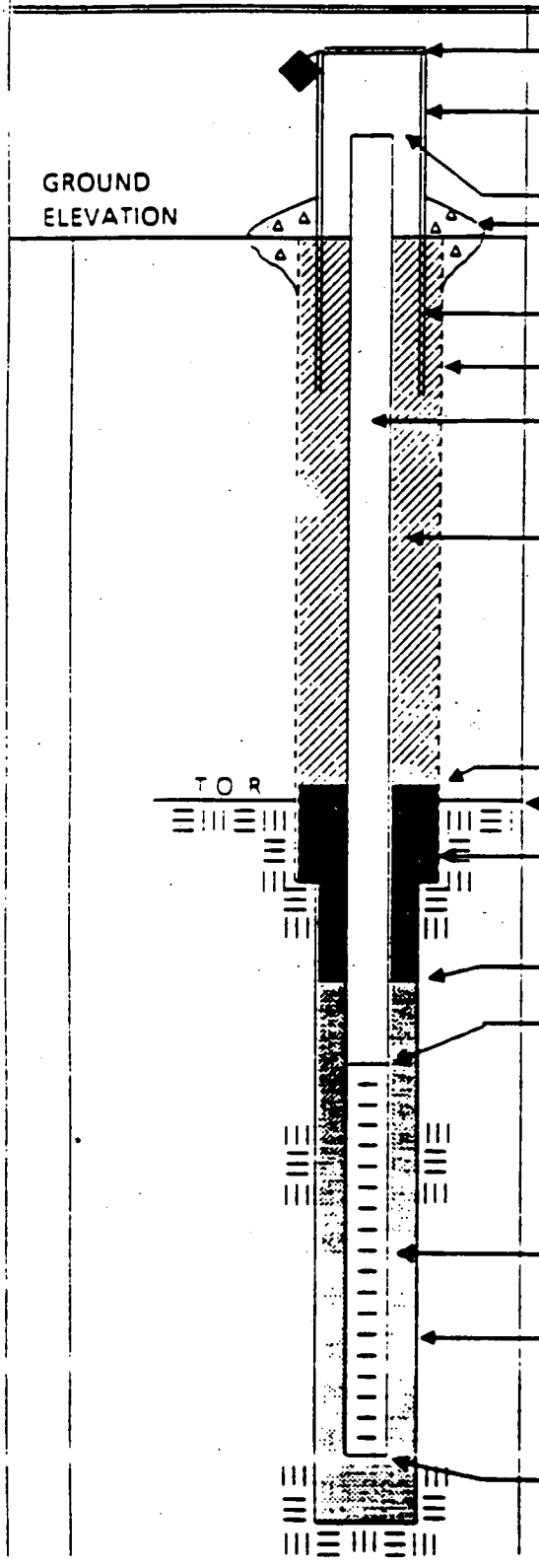
BEDROCK MONITORING WELL SHEET

WELL INSTALLED IN BEDROCK

PROJECT NSB New London
PROJECT NO. 9594
ELEVATION
FIELD GEOLOGIST J.R. Ferguson

LOCATION Site 7 - Torpedo Shops
BORING 7MW4S
DATE 3-4-94

DRILLER B. Swiatek
DRILLING METHOD Conventional Core
DEVELOPMENT METHOD Surge/Pump



ELEVATION OF TOP OF SURFACE CASING: 2.5

STICK UP OF CASING ABOVE GROUND SURFACE: 2.0

ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: Portland Cement

I.D. OF SURFACE CASING: 4"

DIAMETER OF HOLE: 4 1/2"

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: Sch 40 PVC

TYPE OF BACKFILL: Bentonite Cement Grout

ELEVATION / DEPTH TOP OF SEAL: 2.0

ELEVATION / DEPTH TOP OF BEDROCK: 3.0

TYPE OF SEAL: Bentonite Pellet

ELEVATION / DEPTH TOP OF SAND: 3.5

ELEVATION / DEPTH TOP OF SCREEN: 4.0

TYPE OF SCREEN: Sch 40 PVC

SLOT SIZE x LENGTH: .010 10'

I D SCREEN: 2"

TYPE OF SAND PACK: #2 Silica Sand

DIAMETER OF HOLE IN BEDROCK: 4 1/2"

CORE / REAM: 3.0 - 14.30

ELEVATION / DEPTH BOTTOM SCREEN: 14.0

ELEVATION / DEPTH BOTTOM OF HOLE: 14.30

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB-NLON — BORING NO.: 7MW55
PROJECT NO.: 9594 — DATE: 3-8-94 — DRILLER: EAST COAST THOMAS/
ELEVATION: — FIELD GEOLOGIST: Tim Evans / Tim Sabo
WATER LEVEL DATA: —
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft)	SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS OVM
S-1	0.0 0.5	22	1.0/1.0		Dense	Tan	Asphalt Silty Sand w/Tr Gravel & Wood	SM	Top 2" M to C Gr
@ 1240 S-2	1.5 2.0	13 100/.5	0.5/0.5		V Dense				Auger Refusal @ 1.75' Move 2' SW
@ 1348 S-3		28 10	1.4/2.0		M. Dense				
@ 1414	3.5 4.0	11							
S-4 @		8 5	1.7/2.0		M. Dense	Tan	Silty Sand w/Tr Gravel	SM	F Gr
1425	6.0	13 14							Fe-Stain/mottled
S-5 @		7 14	1.0/2.0		Dense				
1433	8.0	21 17							
S-6 @		13 39	1.7/2.0		V. Dense	D. Brn	Silty Sand & Gravel Cobble	SM	Moist
1441	10.0	48 89							
S-7 @	11.0	22 100	0.6/1.0		V. Dense	D. Brn			
3/8 1400 S-8	12.0	100/.0	0.1/0.0						Very Micaceous
3/9 @ 1506								VBr	Auger Refusal @ 12'
0925								Br	0945 Rock blocked in core barrel
1.5/2.5	0	60%	2.5/5.0		Hard	Gray	Gneiss		Hi & Frac 12.25' 14.0'
									Poor Recovery Highly Fractured
1020 17.0									Cave-in to 14.0'
							-Total Depth 17'-		3/14 Spin Casing to 14.7'
									H_2O level 9.35' GS @ 1700
									3/15 @ 0822 12.1' GS Rollerbit to 17'
									Spin Casing to 14.5'
							Screen 7'-17'		→ 10'-2" PVC (Schedule 40 0.010 Slot)
							Sand 6'-17'		→ 1-100# Bag Sand
							Pellets 5'-6'		→ 1-50# Bag

REMARKS: Diedrich D-50 HSA & a (Bumbadier Mounted)
2" x 24" SST (30" Drop 140# wt, Cat Head)
4¼" ID, 8" OD Auger

BORING 7MW55
PAGE 1 OF 1

* See Legend on Back

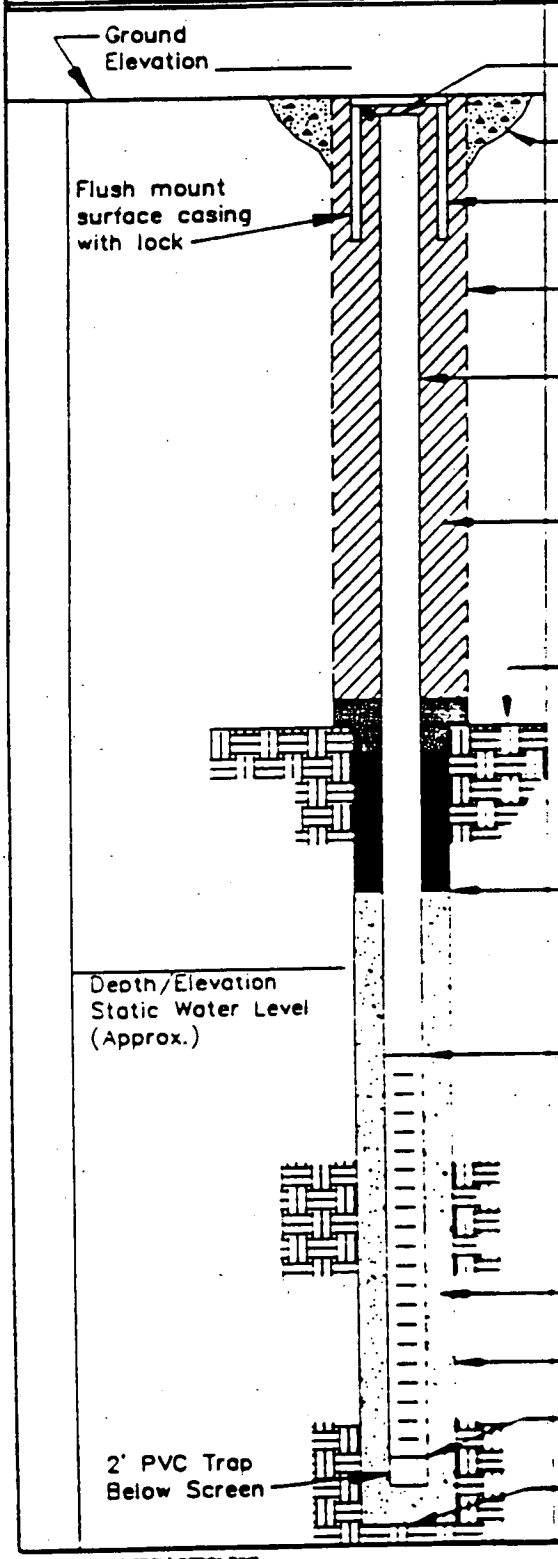
4" Spin Casing

WELL NO.: 7MW5S

HALLIBURTON NUS
Environmental Corporation

BEDROCK MONITORING WELL SHEET
WELL INSTALLED IN BEDROCK

PROJECT: NSB-NLON	LOCATION: GROTON, CT.	DRILLER: EAST COAST
PROJECT NO.: 9594	BORING: 7MW5S	DRILLING METHOD:
ELEVATION:	DATE: 3-15-94	DEVELOPMENT METHOD:
FIELD GEOLOGIST:		



ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: Concrete

TYPE OF PROTECTIVE CASING: Steel

I.D. OF PROTECTIVE CASING: 4"

DIAMETER OF HOLE: 8" (0'-12')

TYPE OF RISER PIPE: ~~2"~~ PVC

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: ~~Bentonite~~ N/A

DEPTH/ELEVATION TOP OF BEDROCK: 12'

DEPTH/ELEVATION TOP OF SAND: 6'

DEPTH/ELEVATION TOP OF SCREEN: 7'

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.010 x 10'

TYPE OF SAND PACK: Ottawa Sand

DIAMETER OF HOLE IN BEDROCK: 4"

DEPTH/ELEVATION BOTTOM OF SCREEN: 17'

DEPTH/ELEVATION BOTTOM OF SAND: 17'

DEPTH/ELEVATION BOTTOM OF HOLE: 17'

BACKFILL MATERIAL BELOW SAND: N/A

ACFILE: L670\GEOL\BEDRK1.DWG

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 7MW5D
PROJECT NO.: 9594 DATE: 3-15-95 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: James R. Ferguson
WATER LEVEL DATA:
(Date, Time & Conditions) 3-15-95 OVERCAST RAIN 45° - 3-16-95 CLEAR 45°

SAMPLE NO. & TYPE OR RQD	DEPTH (ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
							SEE BORING LOG 7MW5S		
							FOR LITHOLOGIC DETAILS		SEE 6 1/4" Ø STEEL CASING
							FROM G.S. TO 15.0'		FROM G.S. TO 16.0'
	14-15								
						PINK	GRANITE GNEISS SCHIST AND		WELL BEGIN PRODUCING
							K SPAR		- significant quantity
									of water between 15' and
									25'
						GRAY-BLACK	GRANITIC GNEISS WITH MINOR		
	19-20						K SPAR		
						WHITE-BLACK	QUARTZ		
						TAN-GRAY	QUARTZ		

REMARKS

BORING 7MW5D

PAGE 1 OF 2

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 7MW5D
PROJECT NO.: 9594 DATE: [illegible] DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: J P Ferguson
WATER LEVEL DATA:
(Date, Time & Conditions) 3-16-95 Overnight Rain 45° 3-16-95 Sunny 45°

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
									No significant water
	[illegible]					GRAY-BLACK	[illegible]		bearing zones were
									noticed during drilling
	[illegible]								17:00
							[illegible] Boring No: 47.5'		
							INSTALLED 2" PVC Monitoring		→ 3-16-95
							well Screen 27'-42'		
							[illegible] 38.5-42.0 Bentonite		
							[illegible] 14.5'-28.5' Grout		
							[illegible]		

REMARKS

BORING 7MW5D

PAGE 2 OF 2

* See Legend on Back

BORING NO.: 7MW5D

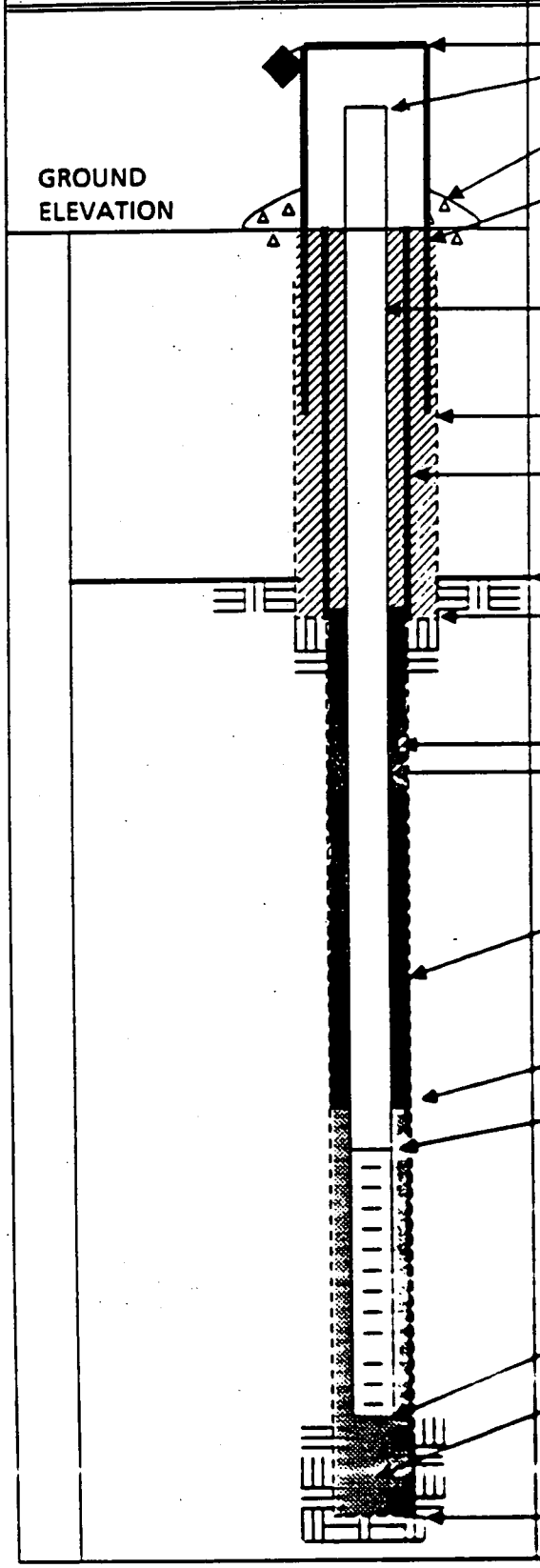
Halliburton NUS CORPORATION

BEDROCK MONITORING WELL SHEET WELL INSTALLED IN BEDROCK

PROJECT NSB New London
PROJECT NO. 0594
ELEVATION
FIELD GEOLOGIST J. R. Ferguson

LOCATION Site 7 Torpedo Shops
BORING 7MW5D
DATE

DRILLER D. SPAULDING
DRILLING METHOD AIR ROTARY
DEVELOPMENT METHOD Surge / Pump



ELEVATION OF TOP OF SURFACE CASING : FLUSH
ELEVATION OF TOP OF RISER PIPE: -0.5'

TYPE OF SURFACE SEAL: Portland Cement

I.D. OF SURFACE CASING: 6"
TYPE OF SURFACE CASING: STEEL

RISER PIPE I.D. 2" Ø
TYPE OF RISER PIPE: Sch 40 PVC

BOREHOLE DIAMETER: 8 1/2

PERM. CASING I.D. 6"
TYPE OF CASING & BACKFILL: Cement Portland

ELEVATION / DEPTH TO BEDROCK: 17.0
ELEVATION/DEPTH BOTTOM OF CASING: 15.0

BOREHOLE DIA. BELOW CASING: 6"
TYPE OF BACKFILL: Bentonite - 14
Cement 20-14.0

ELEVATION / DEPTH TOP OF SEAL: 14.0
TYPE OF SEAL: Bentonite Pellet

ELEVATION / DEPTH TOP OF SAND PACK: 28.5

ELEVATION/DEPTH TOP OF SCREEN: 32.0
TYPE OF SCREEN Sch 40 PVC

SLOT SIZE x LENGTH: .010 - 10'
ID OF SCREEN 2
TYPE OF SAND PACK: #2 Silica Sand

ELEVATION / DEPTH BOTTOM OF SCREEN: 42.0

ELEVATION / DEPTH BOTTOM OF SAND PACK: NA
TYPE OF BACKFILL BELOW OBSERVATION WELL
NA

ELEVATION / DEPTH OF HOLE: 42.0

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 7MW65
PROJECT NO.: 9594 DATE: 3-6-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: J.R. FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 3-6-94 CLEAR 45°

SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/FL)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
							ASPHALT 0-.5 and Gravel Sub-base		
S-1	1-3	4 / 17	1.4		V. Dense	Brown	Silty Fine-coarse Sand, Tr-	SM	HNU-0 11:23
		40 / 34	2.0			Brown	Little F-C gravel	SM	MOIST
S-2	3-5	30 / 27	1.0		V. Dense	Black-white-Brown	Silty Sandy F-C Gravel	GM	HNU-2 11:33
		38 / 30	2.0		▽	Black-white-Brown	slight organic odor	GM	MOIST-wet 7 30 65 0305
S-3	5-7	16 / 28	1.0		Dense	Brown	↓	GM	HNU-0 Fuel Oil ODOR 11:46
		17 / 16	2.0			Brown	↓ Fuel oil Odor ↓	GM	WET 7 30 65 0507 4'-5' Difficult Auger Advancement
S-4	7-9	7 / 9	1.3		M. Dense	Gray-Org Brn	Micaceous Silty VF-Fine	SM	HNU 11:57
		10 / 15	2.0			Gray-Org Brn	Sand, mottled Fe Stained	SM/ML	moist-wet
S-5	9-11	3 / 7	1.4		M. Dense	Gray-Org Brn	↓	SM	HNU-0 12:01
		13 / 12	2.0					SM	WET
S-6	11-13	6 / 16	1.4		Dense	Gray-Org. Brn		SM	HNU-0 12:07
		17 / 17	2.0					SM	WET
S-7	13-15	10 / 19	1.2		Dense	Gray-Or Brn		SM	HNU-0 12:22
		30 / 28	2.0					SM	WET
S-8	15-17	3 / 17	1.3		Dense	Gray-Org. Brn		SM	HNU-0 12:34
		30 / 36	2.0				↓	SM	WET
S-9	17-19	5 / 17	1.5		Dense	Brown	Micaceous Silty Fine-Medium	SM/ML/SP	HNU-0 12:45
		50 / 41	2.0				Sand w/ Interbedded SILT Laminae	SM/ML/SP	wet-moist
S-10	19-21	4 / 15	1.4		HARD	Gray-Brown	Clayey Silt - Fe Stained	ML	HNU-0 12:53
		22 / 29	2.0			Gray-Brown		ML	moist
S-11	21-23	16 / 26			HARD	Gray	Plastic Clay Tube	CL	HNU-0 13:09
		27 / 25	2.0			Gray	Bedrock Fragments	CL	moist
S-12	23-25	7 / 12			Dense	Gray	Silty VF-Fine Sand	SM	HNU-0 13:17
		19 / 36	2.0			Gray		SM	dilatant wet

REMARKS 3" Ø SPLIT BARREL SAMPLERS DRILLER - SWIATOK RIG - CME 75

BORING 7MW65

PAGE 1 OF 2

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 7MW65
PROJECT NO.: 9594 DATE: 3-6-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: J. R. FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 3-6-94 CLEAR 45°

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN No.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-13	30-32	27 70	1.0		V. Dense	Brown	Silty M-C Sand Tr Bdrl.		HNU- 14:35
		61 45	2.0			Brown	K-SPAR - Relict Gneissic texture		WET (SAPROLITE)
							BOTTOM OF BORING: 32.5'		Auger REFUSAL AT 32.5'
							SHALLOW MONITORING WELL		
							INSTALLED SCREEN 4'-14'		
							SANDPACK 3.5'-18', Bent-		
							onite 3.5'-2.5'		

REMARKS INSTALLED MONITORING WELL → 2" Ø SCH 40 PVC SCREEN FROM 4'-14', SANDPACK 3'-18' Bentonite pellet seal from 2'-3'

BORING 7MW65

PAGE 2 OF 2

* See Legend on Back

BORING NO. 7MW65

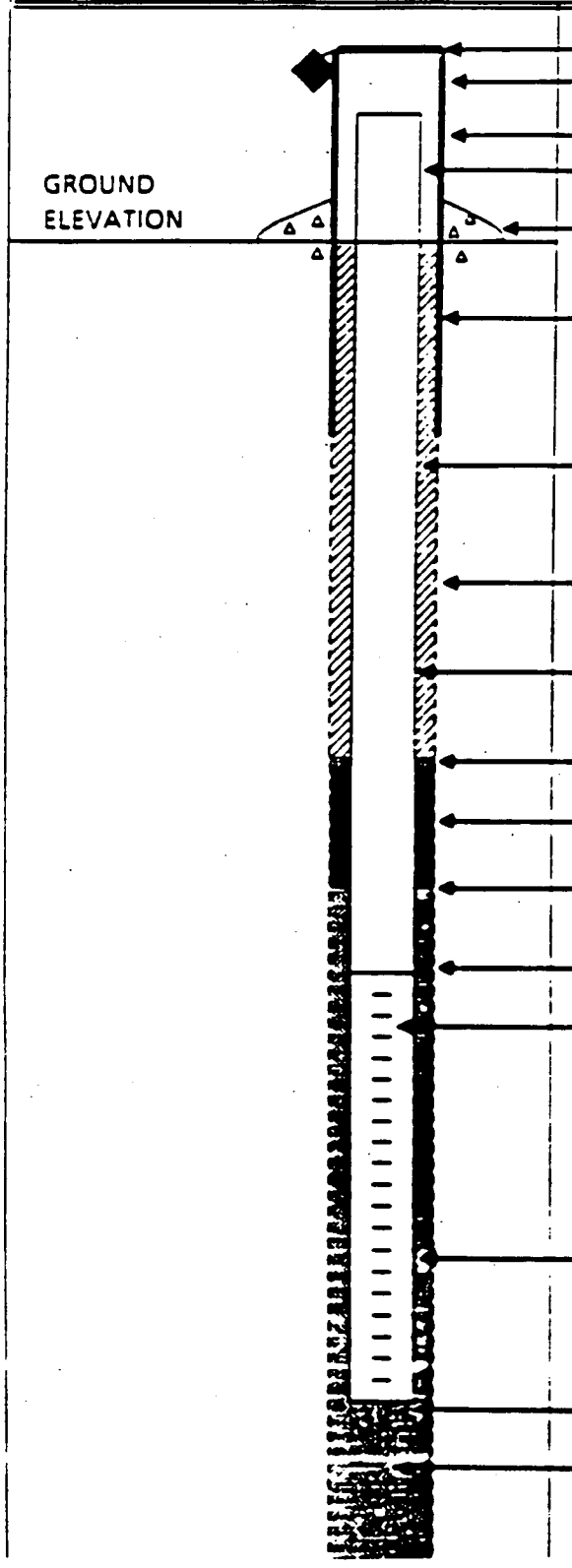
Halliburton NUS CORPORATION

OVERBURDEN MONITORING WELL SHEET

PROJECT NSB New London
PROJECT NO. 9594
ELEVATION
FIELD GEOLOGIST J.R. Ferguson

LOCATION Site 7 Torpedo Shops
BORING 7MW65
DATE 3-6-94

DRILLER Swiatek
DRILLING METHOD Hollow Stem Auger
DEVELOPMENT METHOD Surge / Pump



ELEVATION OF TOP OF SURFACE CASING:
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING: Flush Mount
STICK - UP RISER PIPE: -0.5
TYPE OF SURFACE SEAL: Portland Cement
I.D. OF SURFACE CASING: 6"
TYPE OF SURFACE CASING: Steel - Flush
RISER PIPE I.D. 2" Ø
TYPE OF RISER PIPE: Sch 40 PVC
BOREHOLE DIAMETER: 8 1/2
TYPE OF BACKFILL: NA
ELEVATION / DEPTH TOP OF SEAL: 2.0
TYPE OF SEAL: Bentonite Pellet
DEPTH TOP OF SAND PACK: 3.0
ELEVATION / DEPTH TOP OF SCREEN: 4.0
TYPE OF SCREEN: Sch 40 PVC
SLOT SIZE x LENGTH: .010 10'
I.D. OF SCREEN: 2 Ø
TYPE OF SAND PACK: [illegible] Sand
ELEVATION / DEPTH BOTTOM OF SCREEN: 14.0
ELEVATION / DEPTH BOTTOM OF SAND PACK: [illegible]
TYPE OF BACKFILL BELOW OBSERVATION WELL: [illegible] Sand

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 7MW 75
PROJECT NO.: 9594
DATE: 3-7-94
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: J.R. FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 3-7-94 OVERCAST 45° 3-8-94 OVERCAST RAIN 45°

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft)	SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
							ASPHALT 0-.5' → GRAVEL SUB-BASE		
S-1	1-3	23 45 41 59	1.3 2.0		V. Dense	BROWN-PINK-BLACK	SILTY GRAVELLY SAND and SAND	SM/GW	HNU-0 12:50
							SILTY GRAVEL (GNEISSIC)	SM/GM	7MW75 0103 MOIST-WET
S-2	3-3.75	45 100/3	.25 ▽ 0.75		V. Dense	GRAY	GNEISSIC BROKEN ROCK FRAGS		HNU-0 WET 12:10
	5-7						SPUN 4 7/8" CASING TO 7.0'		
							ROLLER BIT FROM 5'-7'		
50%	①	7.0 9.0	100%	NORM 50°/90°	BROKEN	GRAY-PINK-BLACK	GRANITE (SEVERAL 30° fractures, 1-silicified)		RUN 1of 7.0'-9.0'
100%	②	9.0	100%	HORIZ	MASSIVE	GRAY-PINK-BLACK	GRANITE (HORIZONTAL FRACTURES AT 10.4' and 11.1' - fresh)		RUN 2of 9.0-11.35
					MASSIVE	GRAY-PINK-BLACK	GRANITE (LOW angle fractures AT 15.7 and 15.4' Fresh)		RUN 3of 10.35-16.00
100	③		100						
							BOTTOM OF BORING: 16.0		
							INSTALLED MONITORING WELL		
							SCREEN INTERVAL 5.5'-15.5'		
							SANDPACK 5.0'-16.0' Bentonite		
							5.0-3.0'		

REMARKS [illegible] SAND FILL AT 9.0' [illegible] USE A ROLLER BIT TO GET THROUGH THIS ZONE BEFORE ATTEMPTING SAMPLING. SPUN CASING TO 7.0 AND BELOW FOR RUN

BORING 7MW75

PAGE 1 OF 1

* See Legend on Back

BORING NO. 7MW7S

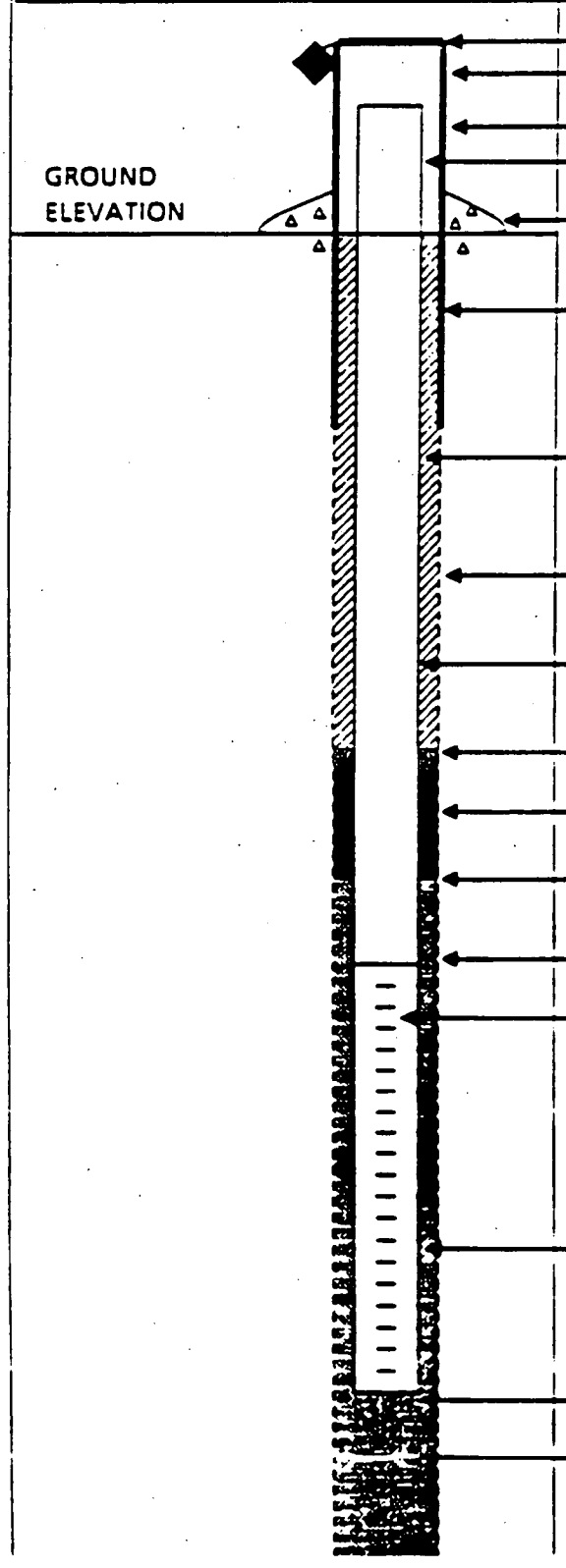
Halliburton NUS CORPORATION

OVERBURDEN MONITORING WELL SHEET

PROJECT NSB New London
PROJECT NO. 9594
ELEVATION
FIELD GEOLOGIST J. R. FERGUSON

LOCATION Site 7 Tarpaulin Stamp
BORING 7MW7S
DATE 3-8-94

DRILLER B. SWIATEK
DRILLING METHOD Conventional Core
DEVELOPMENT METHOD Surge / Bailer



ELEVATION OF TOP OF SURFACE CASING:
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING: FLUSH
STICK - UP RISER PIPE: -0.5
TYPE OF SURFACE SEAL: Portland Cement
I.D. OF SURFACE CASING: 6"
TYPE OF SURFACE CASING: STEEL - FLUSH
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: SCH 40 PVC
BOREHOLE DIAMETER: 4 1/2"
TYPE OF BACKFILL: Bent. Cement
ELEVATION / DEPTH TOP OF SEAL: 3.5
TYPE OF SEAL: Bentonite Pellet
DEPTH TOP OF SAND PACK: 5.0
ELEVATION / DEPTH TOP OF SCREEN: 5.5
TYPE OF SCREEN: SCH 40 PVC
SLOT SIZE x LENGTH: .010 10'
I D. OF SCREEN: 2" Ø
TYPE OF SAND PACK: #2 Silica Sand
ELEVATION / DEPTH BOTTOM OF SCREEN: 15.5
ELEVATION / DEPTH BOTTOM OF SAND PACK:
TYPE OF BACKFILL BELOW OBSERVATION WELL: #2 Silica Sand

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 7MW85
PROJECT NO.: 9594 DATE: 2-6-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: J.R. FERGUSON / T.S. EVANS
WATER LEVEL DATA :
(Date, Time & Conditions) 2-6-94 CLEAR 30°

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
					2	BLACK GRAY	ASPHALT AND GRAVEL SUB-BASE	FILL	Augered through engineered fill to 2.0'
S-1	2-4	50 / 24	1.5		Dense	BLACK	SILTY SANDY GRAVEL GRAVELLY F-C SAND	F.G.	HNU - 0 13:19
		17 / 16	2.0			ORANGE BROWN	SANDY (VF-F) SILT MICACEOUS	ml	FR STRENGTH
S-2	4-6	1 / 1	1.8		V. SOFT	GRAY	SANDY (VF) MICACEOUS SILT	ml	HNU - 29 13:37
		1 / 3	2.0			GRAY	↓ ↓	ml	Petroleum odor wet
S-3	6-8	10 / 9	1.5		M. Dense	GRAY	SANDY VF-F SAND, MICACEOUS	SM	HNU - 33 13:40
		18 / 27	2.0			GRAY	↓ ↓	SM	WET oily sheen on H_2O
S-4	8-10	6 / 15	1.4		Dense	GRAY	SILTY VF-F SAND, OCCASIONAL	SM	HNU - 1 13:55
		18 / 19	2.0			GRAY	SILT LENSES MICACEOUS	SM	WET
S-5	10-12	8 / 12	1.5		Dense	GRAY	↓ ↓	SM	HNU - 1 14:00
		20 / 25	2.0			GRAY	↓ ↓	SM	WET
S-6	12-14	12 / 17	1.4		Dense	GRAY	↓ ↓	SM	HNU - 0 14:14
		22 / 29	2.0			GRAY	↓ ↓	SM	WET
							BOTTOM OF BORING 14.0'		
							MON TORENT WELL INSTALLED		
							WELL 2" PVC SAND 2.5'-14'		

REMARKS DRILLER TIM SABO BILL JOE [illegible] VERIFIED ABOVE OUT OF TO OVERHEAD ELECTRICAL [illegible]

BORING 7MW85

PAGE 1 OF 1

* See Legend on Back

BORING NO. 7MW3S

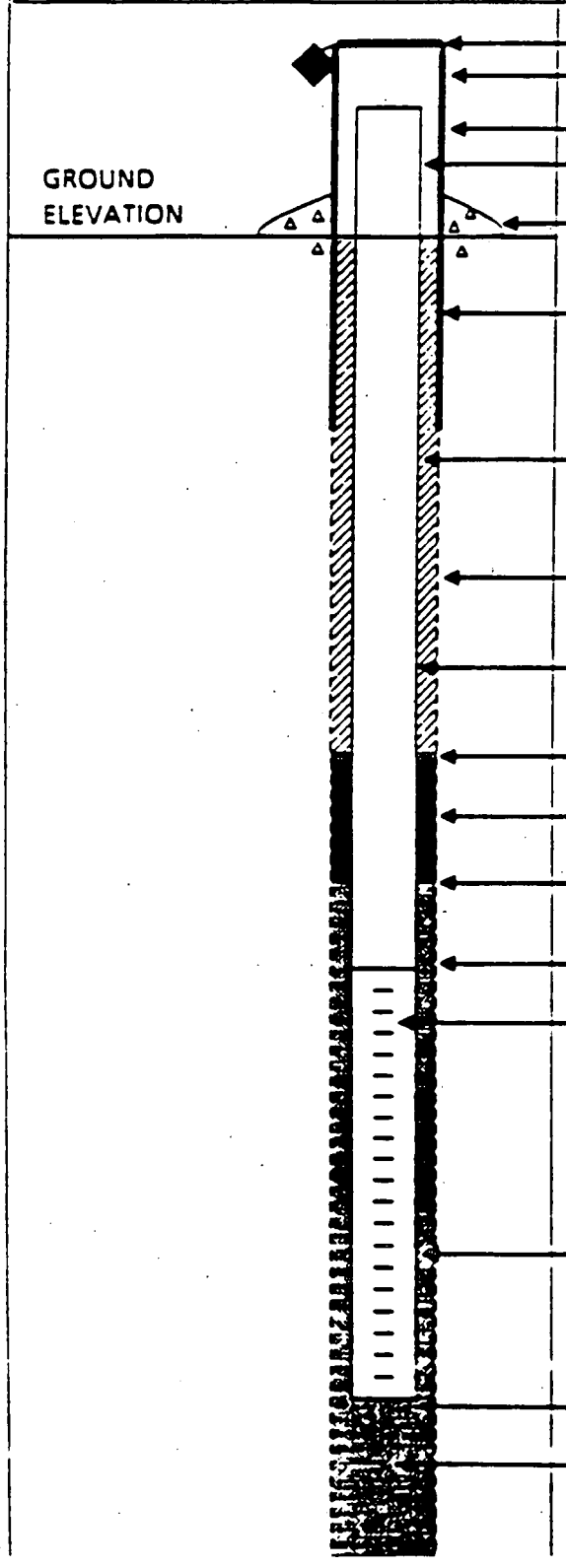
Halliburton NUS CORPORATION

OVERBURDEN MONITORING WELL SHEET

PROJECT NSB NLON
PROJECT NO. 9594
ELEVATION
FIELD GEOLOGIST J.P. Ferguson

LOCATION SITE 7 TORPEDO SHOP
BORING 7MW8S
DATE 2-6-94

DRILLER T Saba
DRILLING METHOD Hollow Stem Auger
DEVELOPMENT METHOD Surge/Pump



ELEVATION OF TOP OF SURFACE CASING:
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING: NA
STICK - UP RISER PIPE: -0.5
TYPE OF SURFACE SEAL: Portland Cement
I.D. OF SURFACE CASING: 6"
TYPE OF SURFACE CASING: STEEL - FLUSH
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: SCH 40 PVC
BOREHOLE DIAMETER: 8½"
TYPE OF BACKFILL: NA
ELEVATION / DEPTH TOP OF SEAL: 1.5
TYPE OF SEAL: Bentonite Pellet
DEPTH TOP OF SAND PACK: 2.5
ELEVATION / DEPTH TOP OF SCREEN: 3.0
TYPE OF SCREEN: SCH 40 PVC
SLOT SIZE x LENGTH: 010 10'
I.D. OF SCREEN: 2"
TYPE OF SAND PACK: #2 Silica Sand
ELEVATION / DEPTH BOTTOM OF SCREEN: 13.0
ELEVATION / DEPTH BOTTOM OF SAND PACK: 14.0
TYPE OF BACKFILL BELOW OBSERVATION WELL: #2 Silica Sand

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 7MW95
PROJECT NO.: 9594
DATE: 2-6-94
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: J R FERGUSON / T.S. EVANS
WATER LEVEL DATA :
(Date, Time & Conditions) 2-6-94 09:45 30° CLEAR

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	0-2	33 / 16	1.5		Dense	BROWN	SILTY F-C SAND TRACE	FILL	HNU-0 10:00
		24 / 17	2.0			BROWN	gravel (fine) TR wood	FILL	MOIST
S-2	2-4	16 / 11	1.6		M. Dense	BROWN	SILTY Very Fine-Fine Sand and	SM/ML	HNU-0 10:05
		5 / 16	2.0			BROWN	Sandy VF-F SILT	SM/ML	MOIST
S-3	4-6	6 / 2	1.4		LOOSE	BROWN	SILTY-CLAYEY VERY FINE-FINE	SM/SC	HNU-0 10:18
		6 / 10	2.0			ORANGE BROWN	Sand TR. gneissic rock fragment	SM/SC	MOIST-WET
S-4	6-8	6 / 16	1.5 ▽		Dense	BROWN	SILTY MICACEOUS VERY FINE-	SM	HNU-0 10:30
		20 / 22	2.0			BROWN-ORANGE-BROWN	FINE SAND TR (gravel, silt lens.	SM	WET some Fe staining.
S-5	8-10	7 / 10	1.3		M. Dense	TAN		SP	HNU-0 10:45
		16 / 20	2.0			TAN	FINE - COARSE SAND	SP	WET
S-6	10-12	12 / 14	1.4		Dense	TAN	Coarse Quartzo Feldspathic	SW	HNU-0 10:51
		26 / 32	2.0			TAN	sand	SW	
S-7	12-14	15 / 18	1.25		Dense	TAN		SW	HNU-0 11:07
		19 / 22	2.0			ORANGE BROWN	Fe STAINING	SW	WET
							BOTTOM OF BORING = 14.0'		
							INSTALLED MONITORING WELL		
							SCREEN from 4'-14' → Sand pack		
							3-15' Bentonite 2'-3'		

REMARKS DRILLER: TIM SADD R.G. CONT 75 :" Ø SPLIT BARREL SAMPLER

BORING 7MW95

PAGE 1 OF 1

* See Legend on Back

BORING NO 7MW95

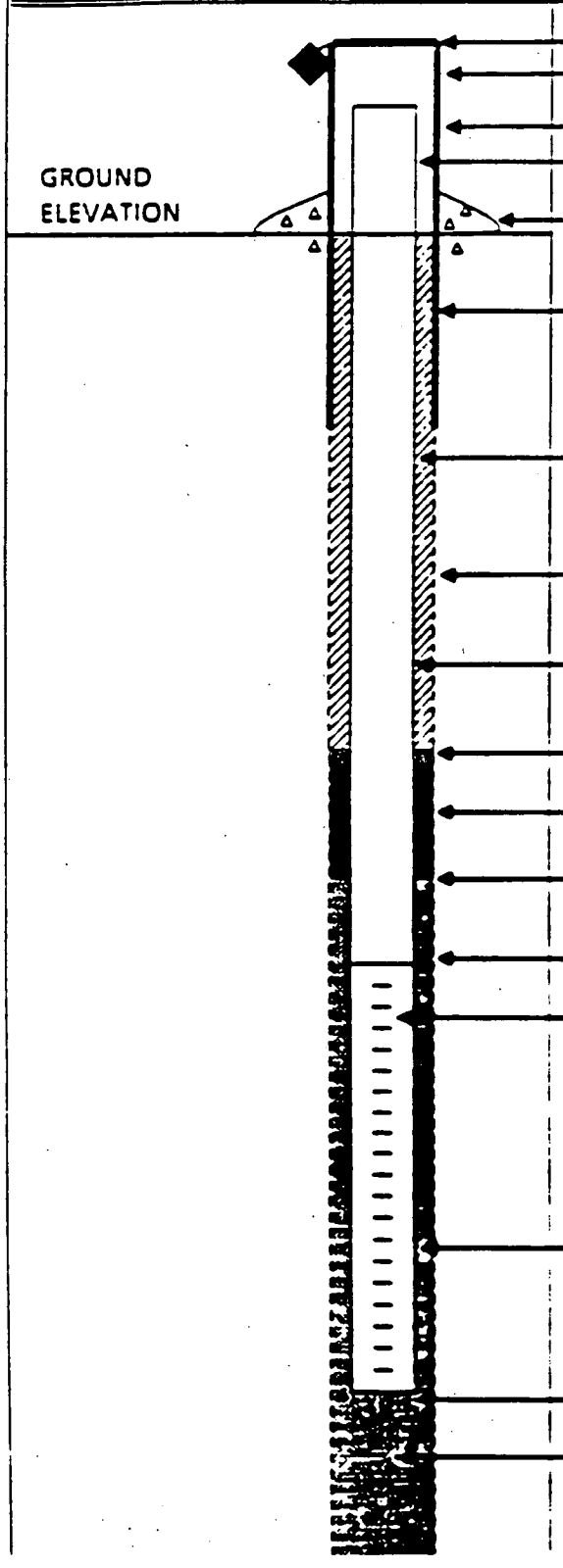
Halliburton NUS CORPORATION

OVERBURDEN MONITORING WELL SHEET

PROJECT NSB New London
PROJECT NO. 9594
ELEVATION
FIELD GEOLOGIST J.R. Ferguson

LOCATION Site 7 Torpedo Shop
BORING 7MW95
DATE 2-16-94

DRILLER T. Sabo
DRILLING METHOD Hollow Stem Auger
DEVELOPMENT METHOD Surge / Bailer



ELEVATION OF TOP OF SURFACE CASING :
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING: NA
STICK - UP RISER PIPE : -0.5
TYPE OF SURFACE SEAL: Portland Cement
I.D. OF SURFACE CASING: 6"
TYPE OF SURFACE CASING: STEEL
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: Sch 40 PVC
BOREHOLE DIAMETER: 8 1/2"
TYPE OF BACKFILL: NA
ELEVATION / DEPTH TOP OF SEAL: 1.5
TYPE OF SEAL: Bentonite Pellet
DEPTH TOP OF SAND PACK: 3.0'
ELEVATION / DEPTH TOP OF SCREEN: 4.0
TYPE OF SCREEN: Sch 40 PVC
SLOT SIZE x LENGTH: .010 10'
I.D. OF SCREEN 2"
TYPE OF SAND PACK: #2 Silica Sand
ELEVATION / DEPTH BOTTOM OF SCREEN: 14.0
ELEVATION / DEPTH BOTTOM OF SAND PACK:
TYPE OF BACKFILL BELOW OBSERVATION WELL: [illegible] Sand

BORING NO. 7MW105

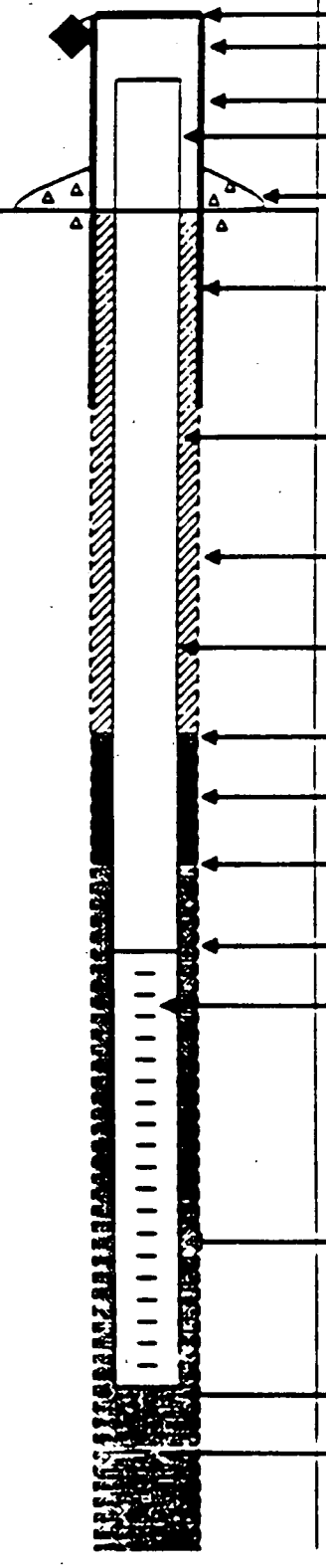
Halliburton NUS CORPORATION

OVERBURDEN MONITORING WELL SHEET

PROJECT NSB NEW LONDON
PROJECT NO. 9594
ELEVATION
FIELD GEOLOGIST J.R. FERGUSON

LOCATION SITE 7 TORPEDO SHOPS
BORING 7MW105
DATE 2-8-94

DRILLER [illegible]
DRILLING METHOD Hollow Stem Auger
DEVELOPMENT METHOD Surge Pump



ELEVATION OF TOP OF SURFACE CASING :
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING: 2.5'
STICK - UP RISER PIPE : 2.0'
TYPE OF SURFACE SEAL: Portland Cement
I.D. OF SURFACE CASING: 6"
TYPE OF SURFACE CASING: STEEL
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: SCH 40 PVC
BOREHOLE DIAMETER: 8 1/2"
TYPE OF BACKFILL: NA
ELEVATION / DEPTH TOP OF SEAL: 1.5
TYPE OF SEAL: Bentonite Pellet
DEPTH TOP OF SAND PACK: 3.0
ELEVATION / DEPTH TOP OF SCREEN: 4.0
TYPE OF SCREEN: SCH 40 PVC
SLOT SIZE x LENGTH: .010 10'
I.D. OF SCREEN: 2"
TYPE OF SAND PACK: #2 Silica
ELEVATION / DEPTH BOTTOM OF SCREEN: 14.0
ELEVATION / DEPTH BOTTOM OF SAND PACK:
TYPE OF BACKFILL BELOW OBSERVATION WELL:

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 7MW115
PROJECT NO.: 9594 DATE: 3-9-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: J. R. FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 3-9-94 OVERCAST 40°

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	1-3	12 / 19	1.0		Dense	Brown	SILTY, F-C SAND TRACE -	SM	HNU-0 08:25
		12 / 7	2.0			Brown	LITTLE F-C GRAVEL (trace)	SM	moist
S-2	3-5	2 / 3	1.0		Loose	Brown	SILTY, VF-F SAND w/ HNU ORG.	SM	Contact (FILL) HNU-0 08:34
		2 / 2	2.0			GRAY	SILTY VF-F SAND (mottled)	SM	moist-wet TR ROOTS
S-3	5-7	1 / 1	1.3		V. Loose	GRAY		SM	HNU-0 08:38
		1 / 3	2.0			GRAY		SM	7MW115 0507 wet
S-4	7-9	6 / 12	1.5		M. Dense	GRAY	SILTY F-C SAND, Fe STAINED	SM	HNU-0 08:44
		14 / 15	2.0			GRAY		SM	WET
S-5	9-11	2 / 2	1.6		M Dense	ORANGE-GRAY		SM	HNU-0 08:50
		11 / 14	2.0			ORANGE GRAY		SM	WET
S-6	11-13	6 / 15	1.5		Dense	ORANGE BRN	MICACEOUS SILTY F-C SAND	SM/SW	HNU-0 08:55
		22 / 22	2.0			ORANGE BRN	(Fe STAINED - HEAVY)	SM/SW	WET
S-7	13-15	7 / 11	1.3		Dense	GRAY-ORG BRN		SM SW	HNU-0 09:05
		24 / 26	2.0			GRAY-ORG BRN		SM/SW	WET
							BOTTOM OF BORING = 15.0'		
							INSTALLED MONITORING WELL		
							SCREEN 4'-14' SANDPACK 3'-15'		
							Bentonite 2'-3'		

REMARKS 3" Ø SPLIT BARREL Sampler — Drill Rig Diedrich 150
DRILLER Swiatek — OPTIONAL MONITORING WELL BASED UPON FINDINGS AT 7MW65

BORING 7MW115
PAGE 1 OF 1

* See Legend on Back

BORING NO. 7MW115

Halliburton NUS CORPORATION

OVERBURDEN MONITORING WELL SHEET

PROJECT NSB New London
PROJECT NO. 9594
ELEVATION
FIELD GEOLOGIST J. R. Ferguson

LOCATION Site 7 Torpedo Shops
BORING 7MW115
DATE 5-9-94

DRILLER B Swinter
DRILLING METHOD Hollow Stem Augers
DEVELOPMENT METHOD Surge / Pump

ELEVATION OF TOP OF SURFACE CASING:
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING: Flush
STICK - UP RISER PIPE: -0.5'
TYPE OF SURFACE SEAL: Portland Cement
I.D. OF SURFACE CASING: 6"
TYPE OF SURFACE CASING: STEEL - Flush
RISER PIPE I.D. 2" Ø
TYPE OF RISER PIPE: Sch 40 PVC
BOREHOLE DIAMETER: 8 1/2"
TYPE OF BACKFILL: NA
ELEVATION / DEPTH TOP OF SEAL: 2.0
TYPE OF SEAL: Bentonite Pellet
DEPTH TOP OF SAND PACK: 3.0
ELEVATION / DEPTH TOP OF SCREEN: 4.0
TYPE OF SCREEN: Sch 40 PVC
SLOT SIZE x LENGTH: .010 10'
I.D. OF SCREEN 2" Ø
TYPE OF SAND PACK: #2 Silica Sand
ELEVATION / DEPTH BOTTOM OF SCREEN: 14.0
ELEVATION / DEPTH BOTTOM OF SAND PACK: 15.0
TYPE OF BACKFILL BELOW OBSERVATION WELL: #2 Silica Sand

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB-NLON — BORING NO.: 7TB7
PROJECT NO.: 9594 — DATE: 3-14-94 — DRILLER: EAST COAST THOMAS/ Floyd Cross
ELEVATION: — FIELD GEOLOGIST: Tim Evans
WATER LEVEL DATA: —
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, FL)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	0.0	2 / 11	1.4/2.0		M. Dense	Brn to	Silty Sand w/ Tr Roots & Orgs / Silty Sand w/ Tr Gneiss Gravel	SM / SP	Top 2" Topsoil Damp
@ 1549	2.0	12 / 13				Brn			Sand F Gr
S-2		27 / 50	1.2/2.0		V Dense	Brn to			moist
1556	4.0	30 / 33				Gray	Bio-Garnet Schist Silty Sand	— / SP	to wet
S-3 @		17 / 14	1.3/2.0		Dense	Brn to	Silty Sand w/some Bio-Garnet Schist Cobbles	Sp	Mottled
1610	6.0	23 / 41				Gray			
S-4	6.0 to 7.0	50 / 100/.1	0.4/0.6		V. Dense	Brn to Gray	Silty Sand & Bio Schist		Weathered rock
1627									Auger Refusal @ 7.0'
							- Boring Depth 7.0' -		
							Boring Backfill 7.0'		

REMARKS: Diedrich D-50 HSA Rig (GT 350 4x4 ATV-mounted)
3" x 24" SST (30" Drop, 140# Wt, Cat Head)
4¼" ID, 8" OD Auger

BORING 7TB7

PAGE 1 OF 1

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 7TB8
PROJECT NO.: 9594 DATE: 3-15-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: Tim Evans Brett Swiatek
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1 @	0.0	2 / 4	1.5/2.0			D Brn to	Silty Sand w/ Tr Roots	SM	Top 8" Topsoil Sand - F to M Gr
1105	2.0	3 / 3				Brn	Silty Sand w/ Tr Roots & Gneissic Gravel	SW	Sand - F to CGr *Wet Gravel - Pebbles
★ S-2 @	2.9	15 / 100/.4	0.6/0.9			Gray to Brn	Silt Silty Sand w/ Sand Laminae	ML SP	Laminae - Rust Colored
1115							(Granite/Syenite ? in Shoe)		SST Refusal 2.9'
							- Total Depth 2.9' -		
									(1108 SST Bounce on
							Boring Backfill 4.9'		Grounding Wire
							3 - 3" SST		Move 2' N)

REMARKS Tripod "Monkey-on-a-stick"
-" x 24" SST (3' Drop, 140# Wt, Cat Head)

BORING 7TB8

PAGE 1 OF 1

* See Legend on Back

Sample Sent to Lab (7TB8-0202.9 & -0202.9D)

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB-NLON
BORING NO.: TTB9
PROJECT NO.: 9594
DATE: 3-8-94
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: Tim Evans / Tim Sabo
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/FL)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS OVM
★ S-1 @	0.0	6 / 5	1.7/2.0		M. Dense	D. Brn Tan	Silty Sand w/Tr gneiss gravel & org	SM	Top 4" Topsoil Oppm
0940	2.0	9 / 8				↓	Sand	SP	FGr, Poorly Graded
S-2 @		22 / 24	0.9/2.0		Dense	↓	↓	↓	Oppm
0942	4.0	24 / 28				Pink	Granite Cobbles	–	
S-3 @	5.0	39 / 100/.9	0.4/1.0		V. Dense	D. Brn	Gravelly Sand w/Gneiss Cobble	SW	Wet Sand - f to m Gr Oppm
0957									Gravel - Granule
									Auger Refusal @ 5.0'
							- Boring Depth 5.0' -		
							? - 3" SST		
							Boring Backfill 5'		
							Air 5'		

REMARKS: Diedrich D-50 Hollow Stem (Truck Mounted)
3" x 24" SST (14.10 lbs 30" Drop Free Head)
4 1/4" ID 8" OD Auger

BORING TTB9
PAGE 1 OF 1

* See Legend on Back

★ Sent Sample TTB9-0003 to Lab

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 7-TB-10
PROJECT NO.: 9594 DATE: 3-6-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: JR Ferguson
WATER LEVEL DATA:
(Date, Time & Conditions) 3-6-94 Sunny 40°

SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, FL)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
						BLACK	ASPHALT 0 TO 0.75' GRAVEL SUB		
S-1	1-3	40 27	1.0		V. Dense	BROWN	SILTY SANDY MED-COARSE GRAVEL	GM	HNU- 0 09:27
		27 30	2.0			BROWN	(FILL) GNEISSIC - GRANITIC	GM	7 30 10 0103 WATER IN BOREHOLE @ 2.1'
S-2	3-5	17 72			V. Dense	BLACK-WHITE-PINK	SAPROLITE RELICT GNEISSIC		HNU - 0 09:39
		34 38	2.0			FLAKE-WHITE-PINK	TEXTURE		WET
							BOTTOM OF BORING = 5.0'		

REMARKS 2-3" Ø SPLIT BARREL SAMPLERS
DISCONTINUED DRILLING AT 5' WITH RIG GOING ROUGH DRIVE
SNAPPED

BORING 7TB10
PAGE 1 OF 1

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 7TB12
PROJECT NO.: 9594 DATE: 3-8-94 DRILLER: EAST COAST THOMAS/
ELEVATION: FIELD GEOLOGIST: Tim Evans Tim Sabo
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth,FL)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS OVM
	0.0 0.5						Asphalt		Top 2"
* S-1 @ 1211	2.0	11 6 21	0.4/1.5		M. Dense	Tan	Silty Sand & Gneiss Pebbles	GW	Sand F to CGr
★ S-2 @ 1226		9 17	1.4/2.0		V. Dense	↑	↓	↓	Auger Refusal @ 2.0' Move 5' E 0ppm
	4.0	29 100				D. Brn	Sand D Br	SP	F Gr/mottled Auger Refusal @ 4.7'
							Boring Depth 5.0'		
							HSA to 5.0' (7.0' total)		
							2-3" SST		
							7.0' Backfill		

REMARKS Diedrich D-50 HSA Rig (Truck Mounted)
3" x 24" SST (140 lbs - 30" drop Safety Head)
4¼" ID 8" OD Auger

BORING 7TB12
PAGE 1 OF 1

* See Legend on Back

* = SST for S-1
★ [illegible] 7TB12 [illegible] sent to lab

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 7TB13
PROJECT NO.: 9594 DATE: 3-8-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: Tim Evans Tim Sabo
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth,FL)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS OVM
S-1 @ 1030	0.0 1.0	6 40	0.9/1.0		Dense	Tan	Asphalt Sand → MCr Silty Sand w/ Trace Gravel → Tr	SP SM	top 2" 0ppm
	1.5	24					- Boulder -		Auger to 1.5', Refusal wet
S-2 @ 1141		35 21	0.8/2.0		Dense	Gray Tan	Silty Sand w/ Tr Gravel	SM	Move 15' N. Sand → FCr 0ppm
S-3 @ 1145	3.5 4.0	15 16 100/0	0.1/0.5		V Dense	↓	↓	↓	Poor Recovery Auger Refusal @ 3.5'
							Boring Depth 3.5'		
							HSA to 3.5' (5.0' Total)		
							2-3" SST		
							5.0' Backfill		

REMARKS Diedrich D-50 HSA R.G (Ramsador Rig)
3" x 24" SST (30" Long, Wire Line Cat Head)
4 1/4" ID, 8" OD Auger

BORING 7TB13

PAGE 1 OF 1

* See Legend on Back

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON — BORING NO.: 7TB14
PROJECT NO.: 9594 — DATE: 2-6-94 — DRILLER: EAST COAST THOMAS
ELEVATION: — FIELD GEOLOGIST: J.R. FERGUSON / T.S. EVANS
WATER LEVEL DATA:
(Date, Time & Conditions) 2-6-94 CLEAR 30° 2-7-94 CLEAR 32°

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	1-3	43 / 47	1.3		V. Dense	Brown	Silty Gravelly F-C Sand + Silt	Fill	HNU-0 15:50
		63 / 36	2.0			Brown	Sandy F-C Gravel	Fill	MOIST
S-2	3-5	10 / 12	1.4		Stiff - M. Dense	Orange Brown	Sandy (VF-F) Silt Silty very -	ml/SM	HNU-0 15:55
		7 / 9	2.0			Tan	Fine - Crse Sand	ml/SM	MOIST - WET
S-3	5-7	6 / 8	1.4		M. Dense	Tan	Medium Sand (Fe Staining)	SW	HNU-0 16:00
		11 / 10	2.0			Orange Brown		SW	WET
S-4	7-9	5 / 15	1.2		Dense	Brown	Silty Fine - Medium Sand	SM	HNU-0 16:10
		17 / 23	2.0			Brown	Micaceous (Fe Staining)	SM	WET
S-5	9-11	10 / 15	1.1		Dense	Gray	Silty Very Fine - Fine Sand	SM	HNU-0 16:20
		22 / 49	2.0			Orange-Brown	Micaceous Fe Staining	SM	WET
S-6	11-13	15 / 16	1.1		M Dense	Gray		SM	HNU-0 16:30
		20 / 20	2.0			Gray		SM	wet
S-7	13-15	7 / 12	1.2		Dense	Gray		SM	HNU-0 16:40
		17 / 20	2.0			Gray		SM	WET
S-8	15-16.5	17 / 50/0	.5 / .5		V Dense	Gray		SM	HNU-0 17:00
						Gray	Sandy Rubble - Boulders	SM	WET Augered through boulder zone
S-9	17-19	13 / 23	1.1		V. Dense	Brown-Gray		SM	HNU-0 17:10
		64 / 41	2.0			Brown-Gray		SM	WET
S-10	19-21	12 / 15	1.2		Dense	Brown-Gray		SM	HNU-0 17:20
		16 / 19	2.0			Brown-Gray		SM	WET
S-11	21-23	10 / 17	1.0		Dense	Gray		SM	HNU-0 09:55
		15 / 45	2.0			Black-White	Saprolite - Weathered Bedrock		wet
S-12	23-24	22 / 100/3	— / 1.0		V Dense	—	No Recovery		HNU-0 wet 10:10
S-13	24-26	27 / 27	1.2		V Dense	Gray-White	Saprolite - Gneissic-Remnant		HNU-0 10:20

REMARKS Driller Jabo/Cross R.O. Page 75

BORING 7TB14

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* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 77B14
PROJECT NO.: 9594 DATE: 2-7-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: J. R. FERGUSON
WATER LEVEL DATA :
(Date, Time & Conditions) 2-7-94 32° CLEAR

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-13	25-26	26 40	2.0		V. Dense	Black-Pink-White	Saprolite - Remnant Gneissic Fabric		
S-14	26-28	39 35			V. Dense	Black-White Pink	SAPROLITE		HNU - 10:34
		25 55	2.0				↓ ↓		Augers encountering wet difficult cutting material
							Bottom of Boring = 28.0'		Augers become slanted
									(10° off vertical within
									borehole)

REMARKS

BORING 77B14

PAGE 2 OF 2

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 7TB15
PROJECT NO.: 9594 DATE: 2-7-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: J.R. FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 2-7-94 CLEAR 34°

SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth FL)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	0-2	10 / 17	1.5		Dense	Dark-Brown	Silty Clayey Sand and F-C	Fill	HNU-0 13:16
		23 / 27	2.0			Gray	gravel	Fill	moist
S-2	2-4	11 / 48	1.0		V. Dense	Brown	Silty Very Fine-Fine Sand	SM	HNU-0 13:19
		50 / 40	2.0			Brown	To Coarse gravel	SM	moist
S-3	4-6	12 / 5	1.2		M. Dense	Brown	Silty F-M Sand Biotite	SM	HNU-0 14:00
		6 / 60	2.0			Brown	Shards in Tip of Spoon	SM	moist (offset)
S-4	6-8	8 / 9	1.4		M. Dense	Gray-Brown	Silty Fine-V Fine sand tr	SM	HNU-0 14:38
		7 / 7	2.0			Gray-Brown	silt laminations	SM	wet (offset)
S-5	8-10	3 / 13	1.5		M Dense	Gray Brown		SM	HNU-0
		10 / 11	2.0			Gray-Brown		SM	WET
S-6	10-12	9 / 8	1.6		M Dense	Gray	Silt, Micaceous, Very Fine-	SM	HNU-0 14:52
		11 / 9	3.0			Gray	Fine Sand	SM	WET
S-7	12-14	7 / 8	1.5		M Dense	Gray		SM	HNU-0 15:10
		9 / 8	2.0			Gray		SM	2"ø
S-8	16-18	7 / 6	1.2		M Dense	Gray		SM	HNU-0 15:17
		6 / 7	2.0			Gray		SM	2"ø
	18-20								
S-10	20-22	8 / 7	1.4		M Dense	Gray		SM	HNU-0 15:[illegible]
		3 / 2	2.0			Gray		SM	2ø"
	22-24								
S-11	24-26	3	1.5		M Dense		[illegible] Sand		HNU [illegible]

REMARKS [illegible]

BORING 7TB15

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* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 7TB15
PROJECT NO.: 9594 DATE: 2-7-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: J.P. FERGUSON
WATER LEVEL DATA :
(Date, Time & Conditions) 2-7-94 Clear 34°

SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/FL)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-11	24-26	8 / 6	2.0		M. Dense	GRAY	Micaceous Silty VF-F Sand	SM	WET 2" ø
S-12	28-30	9 / 6			M. Dense	GRAY	Micaceous Silty VF-F Sand Tr	SM	HNU-0 15:54
		21 / 60	2.0			GRAY	Bolite gravel rock fragments.	SM	WET 2" ø
									Augers have difficulty advancing
S-13	31-32	20 / 75	.65 / 1.0		V Dense	GRAY-BLACK PINK	Weathered Bolite gravel - Saprolite		
							BOTTOM OF BORING - 32.0'		
							BACKFILLED BORING with		
							Bentonite Cement Grout.		

REMARKS

BORING 7TB15

PAGE 2 OF 2

* See Legend on Back

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 7TB16
PROJECT NO.: 9594
DATE: 3-7-94
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: J.R. FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 3-7-94 OVERCAST 45°

SAMPLE NO. & TYPE OR RQD	DEPTH (FT) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	1-3	3 / 5	1.8		LOOSE	ORANGE BROWN	SILTY Very Fine-Fine Sand	SM	HNU-0 09:08
		5 / 6	2.0			BROWN	mottled		MOIST
S-2	3-5	2 / 1	1.0 ▽		V. LOOSE	BROWN	MICACEOUS SILTY Very Fine-Fine	SM	HNU-0 09:15
		1 / 2	2.0			BROWN	Sand Fe STAINED	SM	WET 7TB16 0305
S-3	5-7	3 / 7	1.3		M DENSE	ORANGE BROWN		SM	HNU-0 09:22
		10 / 13	2.0			ORANGE BROWN		SM	wet
S-4	7-9	10 / 19	1.4		DENSE	BROWN-GRAY		SM	HNU-0 09:26
		18 / 30	2.0			BROWN-GRAY		SM	wet
S-5	9-11	6 / 10	1.0		M. DENSE	GRAY-ORANGE BROWN		SM	HNU-0 09:36
		15 / 14	2.0			GRAY-ORANGE BROWN		SM	wet
S-6	11-13	11 / 10	1.5		M DENSE	BROWN	MICACEOUS SILTY VF-Fine Sand	SM	HNU- 09:45
		18 / 15	2.0			BROWN	trace interbedded silt laminae	SM	MOIST-wet
S-7	13-15	6 / 11	1.2		M DENSE	TAN	CLAYEY SILT	ML	HNU-0 9:50
		15 / 17	2.0			BROWN	MICACEOUS SILTY Sand w/interbedded silt	SM/ML	
S-8	15-17	4 / 8	1.3		M. DENSE	BROWN		SM	HNU-0 10:00
		10 / 11	2.0			BROWN		SM	wet
S-9	17-19	10 / 11	1.5		M DENSE	BROWN			HNU 10:08
		8 / 12	2.0			BROWN			
S-10	19-21	6 / 10	1.4		V DENSE	BROWN	SILTY med. Coarse Sand Broken		HNU- 10:22
		32 / 34	2.0			BROWN	Slight Relict Cross Bedding Texture		wet (SAPROLITE)
							BOTTOM OF BORING 21.0'		AUGER REFUSAL AT 21.0'

REMARKS 3" Ø SPLIT BARREL SAMPLE FINISH BORING AND BACKFILLED BORING WITH Bentonite Cement Grout

BORING 7TB16

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* See Legend on Back

APPENDIX A.9

SITE 8 - GOSS COVE LANDFILL

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON — BORING NO.: 8MW2D
PROJECT NO.: 9594 — DATE: 12-06-93 — DRILLER: EAST COAST THOMAS
ELEVATION: — FIELD GEOLOGIST: PAUL DAVIS / Stan Conti
WATER LEVEL DATA: —
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	0.0 / 1.0						Asphalt/crushed rock		Auger thru. It
S-1 @		14 / 12			med. Dense	Orange Brown	Sandy gravel with fill	GM Fill	No Hnu readings Dry
0850	3.0	11 / 13	24/24		med. Dense		mtrl. - brkn. glass, metal, cinders, wood.		
									Auger Down
	5.0								
S-2 @		8 / 7		Fill	med Dense	Grayish Brn.	Silty Sand some gravel	SM Fill	NO Hnu readings
0905	7.0	6 / 10	24/24		med Dense		and cobbles w/ fill		moist
							mtrl - glass, brick, metal frags		Auger Down
	10.0								
S-3 @		4 / 6			med Dense	Dark gray	Silty Sand some		Saturated
0920	12.0	6 / 6			med Dense	to black	gravel & pebbles trace		No Hnu readings
				Fill			fill mtrl.		Auger Down
	15.0			Sand					
S-4 @		3 / 6			Loose	Dark gray	Silty Sand some	SM	Saturated some wood fill mtrl from above
0930	17.0	9 / 9	7/24		med dense		gravel & pebbles		0.7 ppm
									Auger Down
	20.0								
S-5 @		2 / 4			med stiff	Olive gray	Clayey silt - organic	OL	2.5 ppm sulfur
0939	22.0	3 / 3	18/24	Silt			large calcareous shells &		odors - Saturated
							plant matter		Auger Down
	25.0								

REMARKS: CME 75
140 lb automatic hammer
3" x 24" & 2" x 24" split spoons

BORING 8MW2D

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* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 8MW 2D
PROJECT NO.: 9594 DATE: 12-06-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: Paul Davis / Stan Conti
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth FL)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-6 @	25.0	3 / 3			Med Stiff	Olive gray	Organic Clayey Silt	OL	12 ppm Saturated
0451	27.0	4 / 3	15/24		Med. Stiff		trace of plant mtl.: wood, twigs & Shell frags.		Strong nat. Sulfur odors
									Auger Down
	30.0								
S-7 @		2 / 2			Soft	Olive gray	Organic Clayey Silt	OL	Saturated
1010	32.0	2 / 2	3/24		Soft		trace Shells & plant mtr.		
				Silt					Auger Down
	35.0								
S-8 @		1 / 1			very soft	Brownish gray	Organic Clayey Silt	OL	16 ppm Saturated
1025	37.0	1 / 1	24/24		very soft		trace sand & micaceous		Sulfur odors
	40.0								
S-9 @		2 / 6			Loose	Gray	Fine to medium grain	SP	11 ppm Saturated
1039	42.0	7 / 7	10/24		med. Dense		Sand (poorly sorted)		Sulfur odors
				Sand					Auger Down
	45.0								
	50.0								

REMARKS

BORING 8MW2D

PAGE 2 OF 4

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 8 MW 2 D
PROJECT NO.: 9594 DATE: 12-06-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: Paul Davis / Stan Conti
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-10 @	50.	3 / 6			loose	Gray	Fine to medium grain	SP	Saturated
1200	52.0	7 / 7	13/24		med. Dense		Sand (poorly sorted)		NO HNU readings
									Auger Down
	55.0								
	60.0								
S-11 @		9 / 8			med. Dense	Gray			NO Recovery
1411	62.0	8 / 7	0/24	Sand	med Dense				No recovery
	65.0								
	70.0								
S-12 @		7 / 6			med Dense	Olive Gray	Fine to medium grain sand	SP	No HNU readings
1432	72.0	6 / 15	24/24	Fine Silty Sand	med. Dense	Olive Brn	Fine Silty Sand ~~Silty Sand~~	SM	
									Auger Down

REMARKS

BORING 8 MW 2D

PAGE 3 OF 4

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 8mw2D
PROJECT NO.: 9594 DATE: 12-06-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: Paul Davis / Stan Conti
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	75.0								
				Fine Silty Sand					
	80.0								
S-13 @		6 8			med. Dense	Olive Brn.	Fine Silty Sand	Sm	Saturated
1502	82.0	10 12	4/24		med. dense				No Hnu readings
									Auger Down
	85.0								

REMARKS

BORING 8mw2D

PAGE 4 OF 4

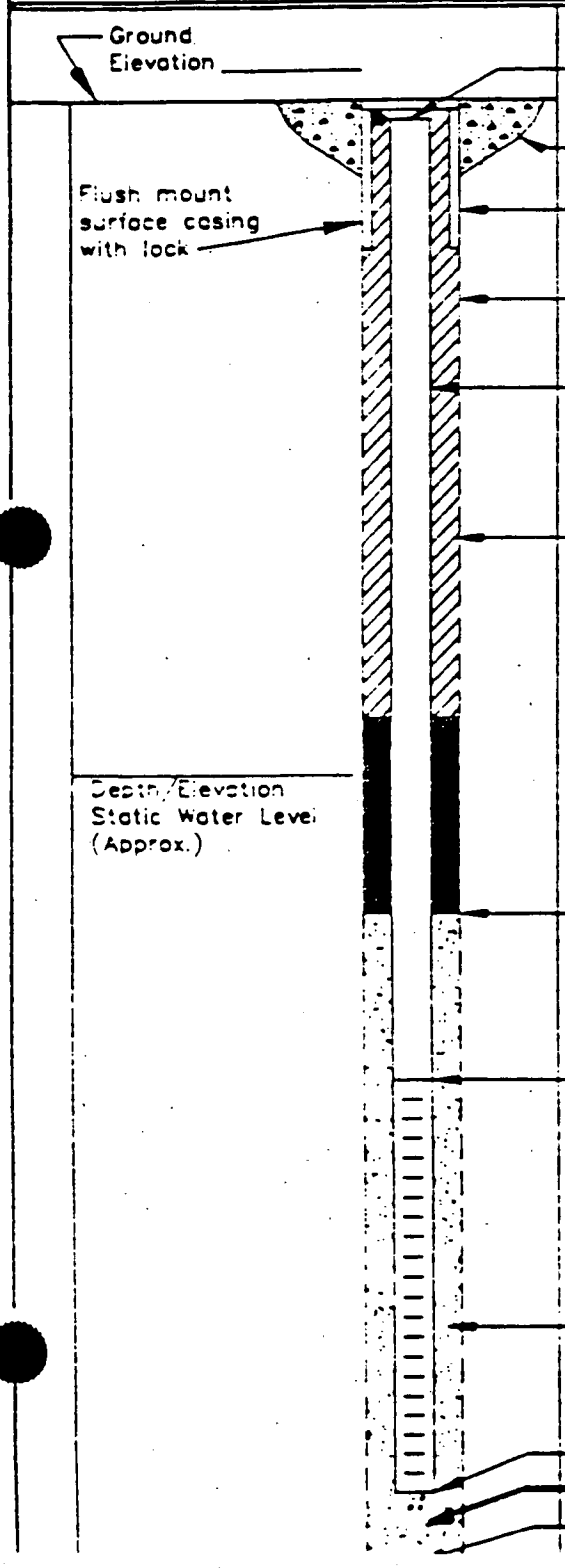
* See Legend on Back

NUS CORPORATION

WELL NO.: 8MW2D

OVERBURDEN MONITORING WELL SHEET

PROJECT: NSB - NLON	LOCATION: Goss Cove	DRILLER: Bret Swiatek
PROJECT NO.: 9594	BORING: 8MW2D	DRILLING METHOD: HSA
ELEVATION:	DATE: 12-6-93	DEVELOPMENT METHOD:
FIELD GEOLOGIST: PAUL DAVIS		



ELEVATION TOP OF RISER: _____

TYPE OF SURFACE SEAL: Concrete

TYPE OF PROTECTIVE CASING: Steel

I.D. OF PROTECTIVE CASING: 6"

BOREHOLE DIAMETER: 8"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: Cement Grout / Bentonite Pellet

DEPTH/ELEVATION TOP OF SAND: 53' /

DEPTH/ELEVATION TOP OF SCREEN: 54' GS /

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 10 SL x 10'

TYPE OF SAND PACK: Silica Sand

DEPTH/ELEVATION BOTTOM OF SCREEN: 64' GS /

DEPTH/ELEVATION BOTTOM OF SAND: 64' GS /

DEPTH/ELEVATION BOTTOM OF HOLE: 64' GS /

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 8MW5S
PROJECT NO.: 9594 DATE: 12-11-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: PAUL DAVIS
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	0.0 / 1.0						Asphalt - Crushed rock	SM	Auger thru. it.
S-1 @		38 / 24	V		Very Dense	Brown	Silty Sand with pebs. & grav.	SM	No Hnu readings
1425	3.0	61 / 65	22/24	Silty Sand with pebbles	Very Dense	Dark Brown	Silty Sand w/ pebs & gravel	SM	Dry - Gniess & Qrtz cobbles
S-2 @		14 / 36			Very Dense		Same as		No Hnu readings
1430	5.0	39 / 42	3/24		Very Dense		above		moist
S-3 @		32 / 89			Very Dense	Brown	Silty Sand w/ pebs. & gravel	SM	moist
1440	7.0	76 / 95	12/24	Fill	Very Dense	Dark Brn.	Fill mtrl. - wood chunks, metal strips, glass	Fill	No Hnu readings
S-4 @		24 / 21			Dense	Dark Brn.	Fill mtrl. - wood chaks.,		No Hnu readings
1444	9.0	32 / 19	4/24		Very Dense		brkn. glass, metal strips, sand, Gniess/Qrtz cobble		moist
S-5 @		24 / 14			Dense	Brown	Clayey Sand w/ pebbs.,	SC	Saturated
1452	11.0	13 / 20	2/24		Dense		gravels & cobble frags		No Hnu readings
S-6 @		14 / 64			Very Dense	Brown	Sandy gravel w/ gniess	GM	Saturated
1459	13.0	59 / 60	4/24		Very Dense		& Qrtz Cobble frags.		No Hnu readings
S-7 @		9 / 13			Med. Dense	Brown	Fine grain Sand with	SM	Saturated - Sheen on spoon
1510	15.0	11 / 10	16/24		Med Dense		silt some pebbs & gravel		No Hnu readings.
S-8 @		4 / 5			loose	Olive Brown	Organic fine gr. Sand		Sulfur odors No Hnu read.
1520	17.0	5 / 4	12/24		loose		w/ silt & pebbs./gravel trce. Shells		Saturated Sheen on spoons
S-9 @		6 / 3			loose	Olive Brn.	Organic fine gr. Sand		Saturated - No Hnu readings
1528	19.0	4 / 3	14/24		loose		w/ silt, pebs & grav. some shells		Sulfur odor - Sheen on spoons
S-10 @		9 / 11			Med Dense	Olive Brn.	Same as		Same
1534	21.0	13 / 16	16/24		Med Dense		above		"
							- End of Boring -		

REMARKS CME 75
140 lb. auto hammer
3" x 24" Split Spoon sample barrels

BORING 8MW5S
PAGE 1 OF 1

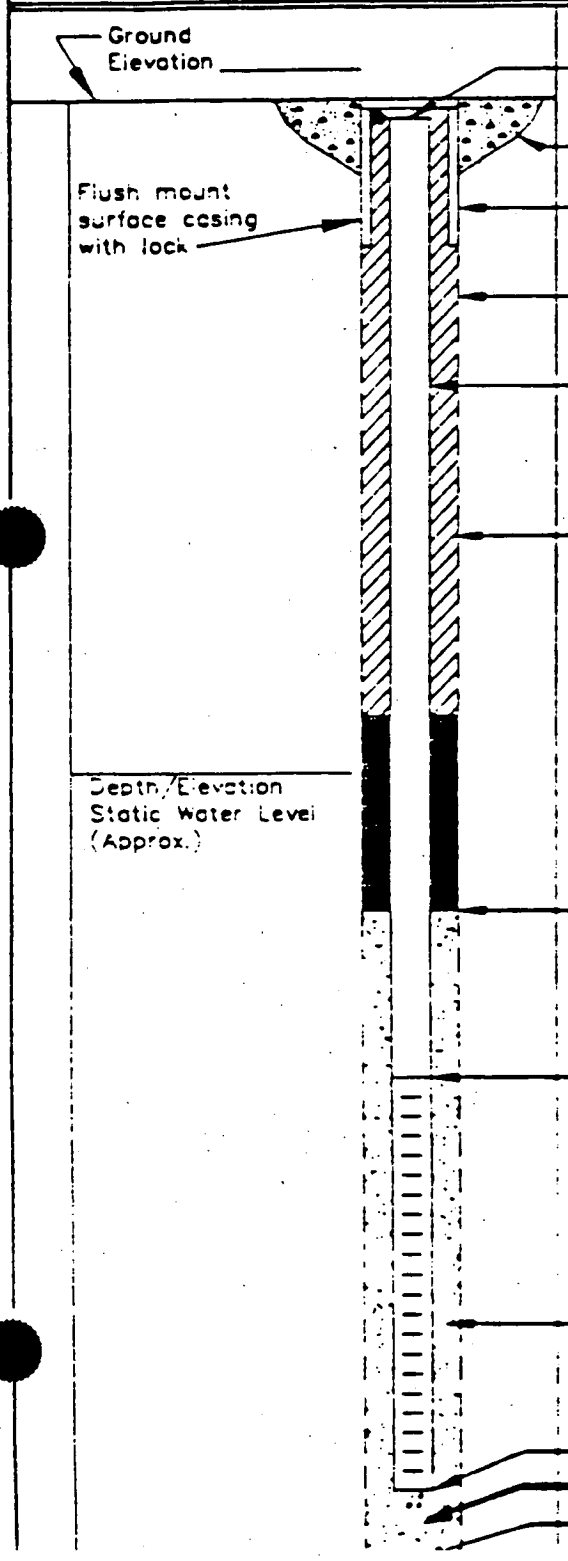
* See Legend on Back

NUS CORPORATION

WELL NO.: 8MW55

OVERBURDEN MONITORING WELL SHEET

PROJECT: NSB - NLON	LOCATION: Goss Cove	DRILLER: Bret Swintek
PROJECT NO.: 9594	BORING: 8MW55	DRILLING METHOD: H.S.A.
ELEVATION:	DATE: 12-11-93	DEVELOPMENT METHOD:
FIELD GEOLOGIST:		



ELEVATION TOP OF RISER: _____

TYPE OF SURFACE SEAL: Concrete

TYPE OF PROTECTIVE CASING: Steel

I.D. OF PROTECTIVE CASING: 6"

BOREHOLE DIAMETER: 8"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: Cement Grout / Bentonite Pellet

DEPTH/ELEVATION TOP OF SAND: 5.0' /

DEPTH/ELEVATION TOP OF SCREEN: 6.0' /

TYPE OF SCREEN: PVC

SLOT SIZE & LENGTH: 10 SL x 10'

TYPE OF SAND PACK: Silica Sand

DEPTH/ELEVATION BOTTOM OF SCREEN: 16' /

DEPTH/ELEVATION BOTTOM OF SAND: 16' /

DEPTH/ELEVATION BOTTOM OF HOLE: _____ /

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 8MW 6S
PROJECT NO.: 9594 DATE: 12-07-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: Paul Davis
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR R.Q.	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S1	0.0	6 / 14			Med. Dense	Dark Brn.	Top soil - grass roots Silty Sand with some		Dry
1125	2.0	25 / 38	24/24		very Dense	Brnish Tan	pebbles and rounded cobbles		0.4 ppm
									Auger Down
	4.0								
S2		14 / 27		Silty Sand with pebbles	Dense	Brnish Tan	Silty Sand with		Moist
1442	6.0	36 / 42	24/24		very Dense		Some pebbs. & cobbs.		1.2 ppm
									Auger Down
	9.0								
S3		27 / 62			very Dense	Dark Brn.	Silty Sand w/ pebbs/cobbs		Saturated
1554	11.0	18 / 14	18/24		Dense	Gray	Fill mtrl. - Concrete &		Fill. Saturated
				Fill			cement frags., sand,		NO Hnu readings
							metal strips, and brkn. glass		Auger Down
	14								
S4	14.5	100/6	6/6		very Dense	wnish Brn.	Fill mtrl. - Concrete frags,		very hard drilling for Rig - Rig stalled out
1700							brkn glass, metal, sand &		Refusal at 14.5'
							pebbles.		NO Hnu readings

REMARKS CME 75
140 lb automatic hammer
3" x 24" split barrels

BORING 8MW6S
PAGE 1 OF 1

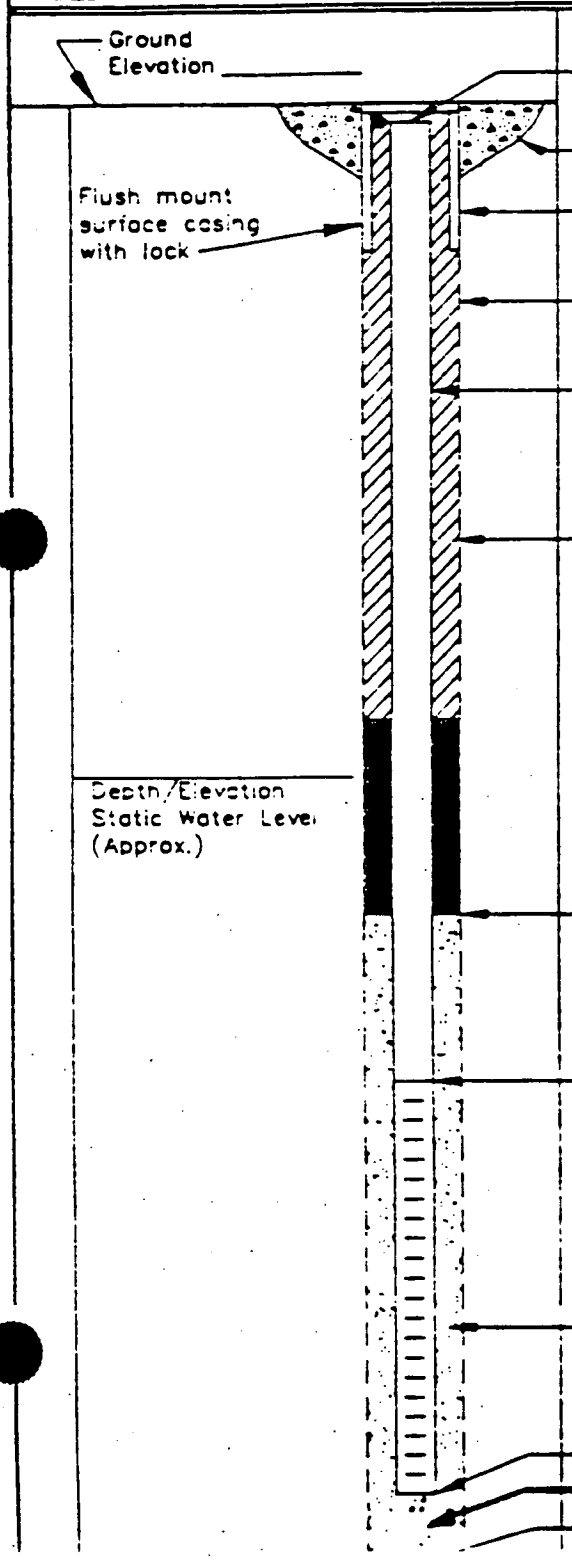
*See Legend on Back

NUS CORPORATION

WELL NO.: 8MW6S

OVERBURDEN MONITORING WELL SHEET

PROJECT: NSB-NLON	LOCATION: Goss Cove	DRILLER: Bret Swiatek
PROJECT NO.: 9594	BORING: 8MW6S	DRILLING METHOD: HSA
ELEVATION:	DATE: 12-07-93	DEVELOPMENT METHOD:
FIELD GEOLOGIST: PAUL DAVIS		



ELEVATION TOP OF RISER: _____

TYPE OF SURFACE SEAL: Concrete

TYPE OF PROTECTIVE CASING: Steel

I.D. OF PROTECTIVE CASING: 6"

BOREHOLE DIAMETER: 8"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: Cement & Grout / Bentonite Pellet

DEPTH/ELEVATION TOP OF SAND: 3' GS/

DEPTH/ELEVATION TOP OF SCREEN: 4' GS/

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 10 SL x 10'

TYPE OF SAND PACK: Silica Sand

DEPTH/ELEVATION BOTTOM OF SCREEN: 14' GS/

DEPTH/ELEVATION BOTTOM OF SAND: 14' GS/

DEPTH/ELEVATION BOTTOM OF HOLE: 14' GS/

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB-NLON — BORING NO.: 8MW6D
PROJECT NO.: 9594 — DATE: 12-08-93 — DRILLER: EAST COAST THOMAS
ELEVATION: — FIELD GEOLOGIST: Paul Davis
WATER LEVEL DATA: —
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY / SAMPLE LENGTH	LITHOLOGY CHANGE (Depth Ft.)	SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	0.0						Asphalt/crushed rock		
	1.0								
S-1 @		14 / 25		Silty Sand with pebbles	Dense	Brown	Sandy Silt w/Some pebbles & cobbles	SM	0.6 ppm moist
0812	3.0	40 / 48	18/24		Very Dense	Orange Brown	Silty Sand w/Some pebbles & cobbles	SM	Subrounded pebbles/cobbles
	4.0								Boulder in way auger thru it.
S-2 @	5.0	19 / 26			Dense	Dark Gray	Clayey Silt trace of pebbles	SC	0.0 ppm
0824	6.0	30 / 48	18/24	Fill	Very Dense	Black	Fill mtrl. - brkn. brick frags cement, glass, Sand	Fill	moist
S-3 @		20 / 18			Dense	Black	Fill mtrl. - Sand, brkn. glass frags,		1.0 ppm moist
0828	8.0	14 / 9	12/24		Med. Dense		brkn. cement chunks, paper metal strips		wet
S-4 @		8 / 6			Med Dense	Black	Fill mtrl. Same		Saturated 5 ppm
0835	10.0	6 / 4	2/24		Med. Dense		- as above -		Sheen on Spoon.
S-5 @		4 / 7			Med Dense	Black	Fill mtrl. - alot of Sand,		Saturated
0843	12.0	5 / 5	8/24		Med Dense		brkn. brick frags, wood chunks, metal debris.		No Hnu readings
S-6 @		2 / 2			loose	Black	Fill mtrl. - Sand		Saturated
0849	14.0	2 / 2	4/24		loose		as above w/Sand		Sheen on Spoon
S-7 @		3 / 6			loose	Black	Fill mtrl. Same as		1.0 ppm
0854	16.0	4 / 5	13/24		loose		above some Sand trace silt		Saturated.
S-8 @		6 / 14			Med. Dense	Black	Fill mtrl. - Same as		No Hnu readings
0911	18.0	28 / 42	13/24		Very Dense		above w/ Concrete frags.		very Hard drilling relocate drill rig
	19.0								
S-9 @		4 / 10		Silty Sand	Med Dense	Dark Brn	Silty Sand - micaceous	SM Fill	No Hnu readings
1043	21.0	14 / 10	3/24		Med Dense		trace of fill mtrl.		Saturated.
1									Auger Down
	24.0			Org Clayey Silt					
S-10 @	25.0	1 / 1			Soft	Olive Brn	Organic Clayey Silt	OL	13 ppm wet Somewhat plastic

REMARKS: CME 75
140 lb. Automatic hammer
3" x 24" & 2" x 24" Split Spoon Sample barrels

BORING 8MW6D
PAGE 1 OF 3

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 8MW 6D
PROJECT NO.: 9594 DATE: 12-08-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: Paul Davis
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
1057	26.0	1 / 1	24/24		Soft	Olive Gray	Organic Clayey Silt trace of weathered ives. roots. and shells.	OL	Sulfur odors 2" Spl
									Auger Down
	29.0								
S-11 @		1 / 1		Org. clayey silt	Soft	Olive Gray	Organic Clayey Silt	OL	3 ppm Saturated
1105	31.0	1 / 1	6/24		Soft		w/ trace of calcareous shell		Sulfur odors moderate plasticity
									Auger Down
	34.0								
S-12 @		2 / 1			Soft	Olive Gray	Organic Clayey Silt	OL	13 ppm - Sulfur odor
1114	36.0	1 / 2	24/24		Soft		w/ Some Calc. shells frags		moderate plasticity.
									Auger Down
	39.0								
S-13 @		1 / 1		Silty Sand	very loose	Gray	Silty Sand with Some	SM	Saturated
1125	41.0	1 / 1	18/24		very loose		micaceous flakes		4 ppm
									Auger Down
	44.0								
S-14 @		4 / 3			loose	Gray	Silty Sand w/ mica flakes	SM	3 ppm Saturated
1229	46.0	6 / 6	18/24		med. dense	Gray	Fine grain Sand with		
							mica flakes		Auger Down
	49.0								
S-15 @	50.0	6 / 13		F.G. sand	med dense	Gray	Fine grain Sand trace silt	SM SP	1.0 ppm Saturated

REMARKS

BORING 8MW 6D

PAGE 2 OF 3

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 8MW6D
PROJECT NO.: 9594 DATE: 12-08-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: Paul Davis
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
1250	51.0	19/17	14/24	Fine grain Sand	Dense	Gray	Fine grain Sand trace Silt	SM SP	Saturated
									Auger Down
	54.0								
S-16 @		10/14		Fine to med. grain Sand	Med Dense	Brownish Gray	Fine to med. gr. Sand	SM SP	wet
1305	56.0	11/11	10/24		Med. Dense				No Hnu readings
									Auger Down
	59.0								
S-17 @		4/14			Med. Dense	Brnish Gray	Fine to med. grain -	SM SP	No Hnu reading
1336	61.0	14/10	24/24		Med Dense		Sand		wet
									Auger Down
	64.0								
S-18 @		8/11			Med. Dense	Brown Gray	Fine to med. grain	SM SP	No Hnu readings
1400	66.0	8/7	20/24		Med. Dense		Sand		wet
									Auger Down
	69.0								
S-19 @		12/15		Fine silty Sand	Med Dense	Olive Brown	Very Fine Silty Sand	SM	wet
1437	71.0	18/10	12/24		Med Dense				No Hnu readings
							- End of Boring -		

REMARKS

BORING 8MW6D

PAGE 3 OF 3

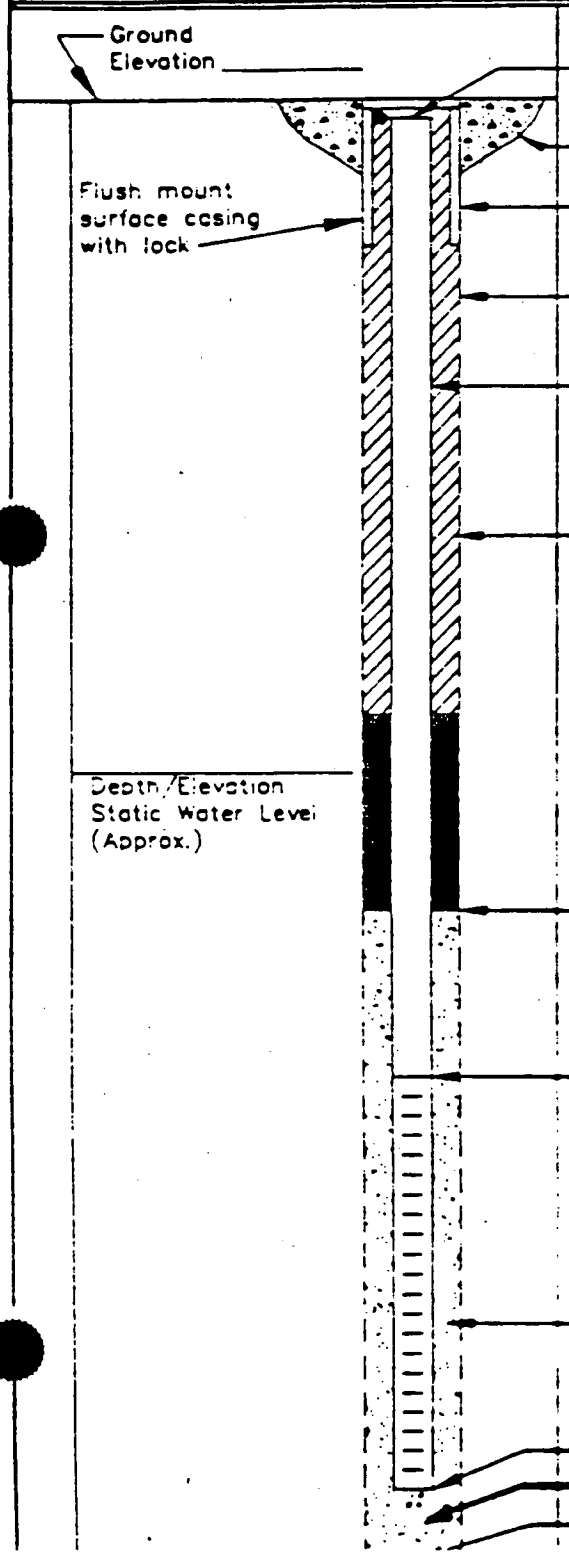
* See Legend on Back

NUS CORPORATION

WELL NO.: 8mw6D

OVERBURDEN MONITORING WELL SHEET

PROJECT: NSB - NLON	LOCATION: Goss Cove	DRILLER: Bret Swiatek
PROJECT NO.: 9594	BORING: 8mw6D	DRILLING METHOD: H.S.A.
ELEVATION:	DATE: 12-08-93	DEVELOPMENT METHOD:
FIELD GEOLOGIST: Paul Davis		



ELEVATION TOP OF RISER: _____

TYPE OF SURFACE SEAL: Concrete

TYPE OF PROTECTIVE CASING: Steel

I.D. OF PROTECTIVE CASING: 6"

BOREHOLE DIAMETER: 8"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: Cement Grout / Bentonite Pellet

DEPTH/ELEVATION TOP OF SAND: 59'/

DEPTH/ELEVATION TOP OF SCREEN: 60'/

TYPE OF SCREEN: PVC

SLOT SIZE & LENGTH: 10 SL x 10'

TYPE OF SAND PACK: Silica Sand

DEPTH/ELEVATION BOTTOM OF SCREEN: 70'/

DEPTH/ELEVATION BOTTOM OF SAND: 70'/

DEPTH/ELEVATION BOTTOM OF HOLE: 70'/

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 8MW7S
PROJECT NO.: 9594 DATE: 12-09-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: PAUL DAVIS
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1 @	0.0	6 / 4			Med. Dense	Dark Brown	Top Soil - Grass roots		No Hnu reading
1342	2.0	9 / 11	18/24	Silty Sand with pebbles	Med. Dense	Brown	Silty Sand w/ pebbs gravel	SM	moist
S-2 @		13 / 12			Med. Dense	Brown orange	Silty Sand w/ pebbs		No Hnu readings
1346	4.0	9 / 9	20/24		Med. Dense		& gravel		moist
S-3 @		6 / 6			Med. Dense	Dark Brown	Clayey Sand with	SC	No Hnu readings moist
1356	6.0	7 / 4	13/24	Fill	Med. Dense		cobbles & pebbles		Saturated
S-4 @		4 / 10			Med Dense	Dark Brn	Fill mtrl. - brkn. glass	Fill	Saturated
1401	~~8.0~~ 7.5	100/6 / X	3/18		Very Dense		brick frags, plastic & fiber glass some sand		Auger Refusal relocate borehole
S-5 @		4 / 6			Med Dense	Olive Brown	Clayey Silt with fill		Saturated
1450	10.0	5 / 5	3/24		Med Dense		mtrl. - porcelain frags, wire, glass, wood.		No Hnu reading.
S-6 @		4 / 5			loose	Black	Fill mtrl. - brkn. brick,		4 ppm
1455	12.0	4 / 4	12/24		loose		pebbles glass rock & a lot of sand		Saturated.
S-7 @		6 / 4			Med Dense	Black	Fill mtrl - Same as above		1 ppm
1500	14.0	5 / 6	12/24		Med Dense		with much sand & pebbs.		Saturated.
S-8 @		8 / 11			Med Dense	Black	Fill mtrl - Same		20 ppm Petroleum odor
1509	16.0	14 / 17	10/24		Dense		as above.		Saturat. Sheen
S-9 @		9 / 7			Med Dense	Black	Fill mtrl Same as above		3.0 ppm
1513	18.0	6 / 5	14/24	Silty Clay		Gray	Silty Clay trace Sand	CL	Saturated
S-10 @		6 / 11			V Stiff	Olive Brn	Silty Clay with some	Fill	No Hnu
1518	20.0	10 / 10	20/24				Sand and trace of fill		readings
							mtrl (glass frags/wood)		
							- END of Boring -		

REMARKS CME 75
140 lb. automatic hammer
3" x 24" split spoon sample barrels

BORING 8MW7S
PAGE 1 OF 1

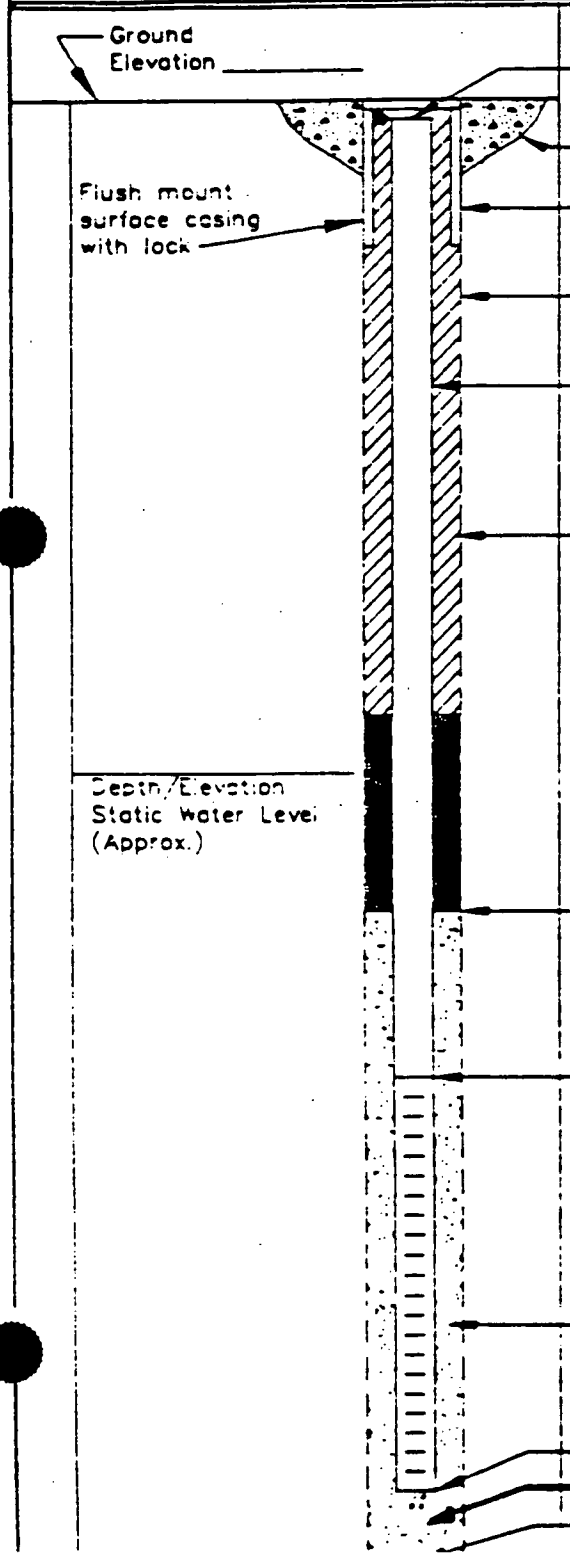
* See Legend on Back

NUS CORPORATION

WELL NO.: 8MW7S

OVERBURDEN MONITORING WELL SHEET

PROJECT: NSB-NLON	LOCATION: Goss Cove	DRILLER: Bret Swiatek
PROJECT NO.: 9594-	BORING: 8MW7S	DRILLING METHOD: H.S.A.
ELEVATION:	DATE: 12-09-93	DEVELOPMENT METHOD:
FIELD GEOLOGIST: Paul Davis		



ELEVATION TOP OF RISER: _____

TYPE OF SURFACE SEAL: Concrete

TYPE OF PROTECTIVE CASING: Steel

I.D. OF PROTECTIVE CASING: 6"

BOREHOLE DIAMETER: 8"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: Cement Grout / Bentonite Pellet

DEPTH/ELEVATION TOP OF SAND: 3' /

DEPTH/ELEVATION TOP OF SCREEN: 4' /

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 10 SL x 10'

TYPE OF SAND PACK: Silica Sand

DEPTH/ELEVATION BOTTOM OF SCREEN: 14' /

DEPTH/ELEVATION BOTTOM OF SAND: 14' /

DEPTH/ELEVATION BOTTOM OF HOLE: 14' /

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 8 MW 8 S
PROJECT NO.: 9594 DATE: 12-10-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: PAUL DAVIS
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1 @	0.0	24 / 32			Very Dense	Dark Brn.	Top Soil - grass roots		Dry
0826	2.0	37 / 41	24/24		Very Dense	Brown	Gravelly Sandy Silt w/ pebbles	GM	no Hnu readings
S-2 @		19 / 16			Dense	Brown	F.G. Sand with Silt and	SP	moist
0833	4.0	10 / 9	18/24		Med. Dense		pebbles (Gneiss frags)		No Hnu readings
S-3 @		8 / 6			Med. Dense	Brn.	Same as		No Hnu readings
0854	6.0	7 / 7	8/24		Med. Dense		above		moist (Gneiss frags)
S-4 @		7 / 2			loose	Brn.	Same as above		No Hnu readings
0857	8.0	3 / 6	3/24		loose		(Gneiss & Qrtz frags.)		moist
S-5 @		8 / 11			Med. Dense	Brn.	Same as above		No Hnu readings
0905	10.0	10 / 10	2/24		Med. Dense		(Gneiss & Qrtz frags.)		moist
							- End of boring -		Very hard drilling rig stalled. Auger Refusal at 10' grinding against rock. Will use air rotary to continue boring at a later date.

3" Spoon

REMARKS CME 75 140 lb automatic hammer
3" x 24" split spoon sample barrels

BORING 8 MW 8 S

PAGE 1 OF 1

* See Legend on Back

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB-NLON — BORING NO.: 8MW8S
PROJECT NO.: 9594 — DATE: 12-15-93 — DRILLER: EAST COAST THOMAS/ WAYNE LINEBERRY
ELEVATION: — FIELD GEOLOGIST: TIM EVANS
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	0.0						No Litho Logged to 12'		8½"Ø AIR HAMMER
							Due to AIR Drilling		0' TO 12'
									SET TEMP CASING
									TO 12'
	5.0								
									NO H_2O to 12'
	10.0								HIT BR @ 12'
12.0 @1340				12.0				VBR	BREAK 12.15'
								BR BL	HORIZ FRAC 13.00'
4.48/5.0	1	89.6%	4.85/5.0		HARD	BLACK & WHITE	BIO-QTZ-FSPAR GNEISS W/ GRANITE VEIN	BR	HORIZ FRAC 13.30' LONG JNT 14.30'
									HI ∠ JNT 14.8'-14.95' HORIZ FRAC 15.5'
									HI ∠ JNT 15.5'-15.7' HORIZ FRAC 15.7
17.0 @1600									HORIZ FRAC 16.4'
									SCREEN 7'-17'
									SAND 5'-7'
									PELLETS 3'-5'

REMARKS: CHICAGO PNEUMATIC 1572 AIR ROTARY RIG
HQ CORE 4" OD, 2 5/8" ID

BORING 8MW8S

PAGE 1 OF 1

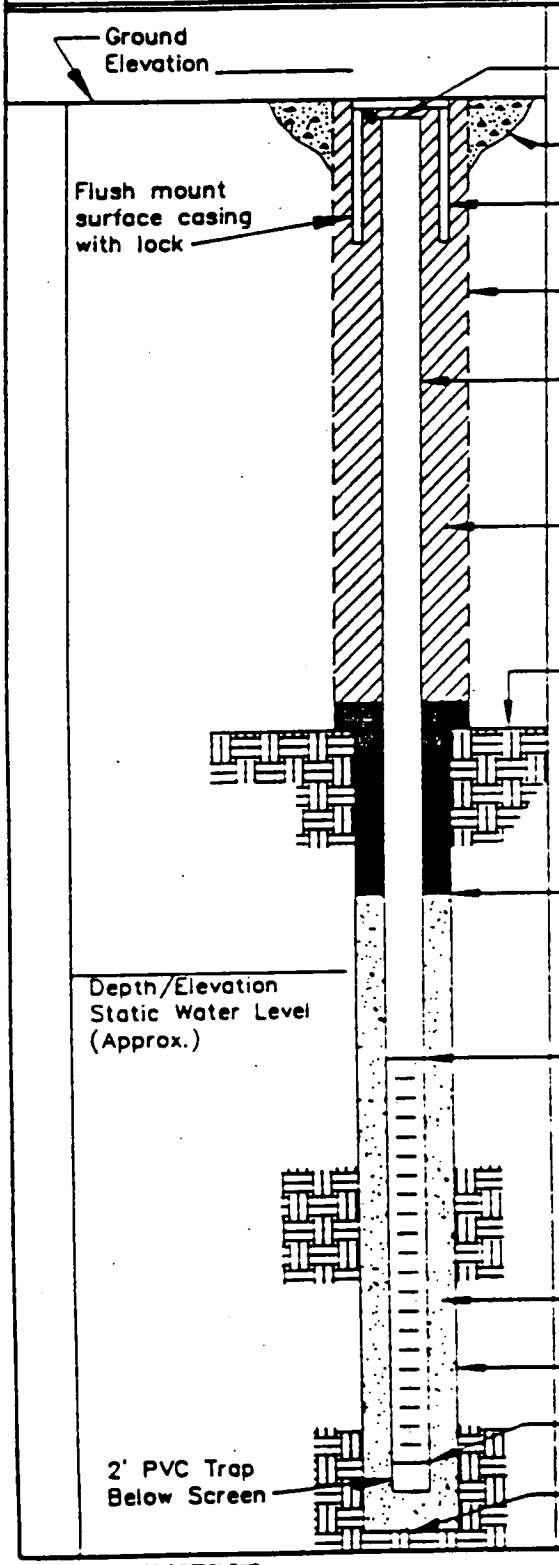
* See Legend on Back

WELL NO.: 8 MW8S

HALLIBURTON NUS
Environmental Corporation

BEDROCK
MONITORING WELL SHEET
WELL INSTALLED IN BEDROCK

PROJECT: NSB-NLON	LOCATION: GROTON, CT.	DRILLER: EAST COAST
PROJECT NO.: 9594	BORING: 8 MW8S	DRILLING METHOD: HSA / HQ Core
ELEVATION:	DATE: 12-15-94	DEVELOPMENT METHOD:
FIELD GEOLOGIST: Tim Evans		



ELEVATION TOP OF RISER: _____

TYPE OF SURFACE SEAL: Concrete

TYPE OF PROTECTIVE CASING: Steel

I.D. OF PROTECTIVE CASING: 4"

DIAMETER OF HOLE: 8"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: Grout

DEPTH/ELEVATION TOP OF BEDROCK: 12'

DEPTH/ELEVATION TOP OF SAND: 5'

DEPTH/ELEVATION TOP OF SCREEN: 7'

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.010 x 10'

TYPE OF SAND PACK: Silica Sand

DIAMETER OF HOLE IN BEDROCK: 4"

DEPTH/ELEVATION BOTTOM OF SCREEN: 17'

DEPTH/ELEVATION BOTTOM OF SAND: 17'

DEPTH/ELEVATION BOTTOM OF HOLE: 17'

BACKFILL MATERIAL BELOW SAND: N/A

ACFILE: L670\GEOL\BEDRK1.DWG

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 8MW8D
PROJECT NO.: 9594 DATE: 12-14-93 DRILLER: EAST COAST THOMAS/
ELEVATION: FIELD GEOLOGIST: TIM EVANS WAYNE LINEBERRY
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	0.0						No Litho logged to 30'		
							due to AR Drilling		
	5.0								
	10.0								
	12.0			12.0					HIT BR @ 12.0'
	15.0								
	20.0								
	25.0								

REMARKS CHICAGO PNEUMATIC 672 AIR ROTARY RIG
12/14 8½" Ø AIR HAMMER 0' TO 13'. TEMP CASING @ 13'
5⅞" Ø AIR HAMMER 13' TO 65'
12/15 5⅞" Ø AIR HAMMER 65' TO 80'

BORING 8MW8D
PAGE 1 OF 4

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 8MW8D
PROJECT NO.: 9594 DATE: 12-14-93 DRILLER: EAST COAST THOMAS/
ELEVATION: FIELD GEOLOGIST: TIM EVANS WAYNE LINEBERRY
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	25.0								
	30.0				M. HARD	GRAY	GNEISS		MICACEOUS
	35.0								
	40.0				M HARD	GRAY	GNEISS		MICACEOUS
	45.0								
	50.0				M. HARD	GRAY	GNEISS		MICACEOUS

REMARKS LOG CUTTINGS 30-50'

BORING 8MW8D

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* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 8MW8D
PROJECT NO.: 9594 DATE: 12-14-93 DRILLER: EAST COAST THOMAS/ WAYNE LINEBERRY
ELEVATION: FIELD GEOLOGIST: TIM EVANS
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	50.0								
	55.0								
	60.0								
12/14	65.0								NO H_2O to 65' @ 1600
12/15									LET SIT OVERNIGHT H_2O @ 0700
									Will continue to 80'
									& Screen 50'-80'
	70.0								
	75.0								

REMARKS

BORING 8MW8D

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* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 8MW8D
PROJECT NO.: 9594 DATE: 12-15-93 DRILLER: EAST COAST THOMAS/ WAYNE LINEBERRY
ELEVATION: FIELD GEOLOGIST: TIM EVANS
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	75.0								
				78'					
									CAVE-IN TO 78'
	80.0								
							SCREEN 48'-78'		
							SAND 38'-78'		
							PELLETS 37'-38'		
							TOTAL DEPTH 78'		

REMARKS

BORING 8MW8D

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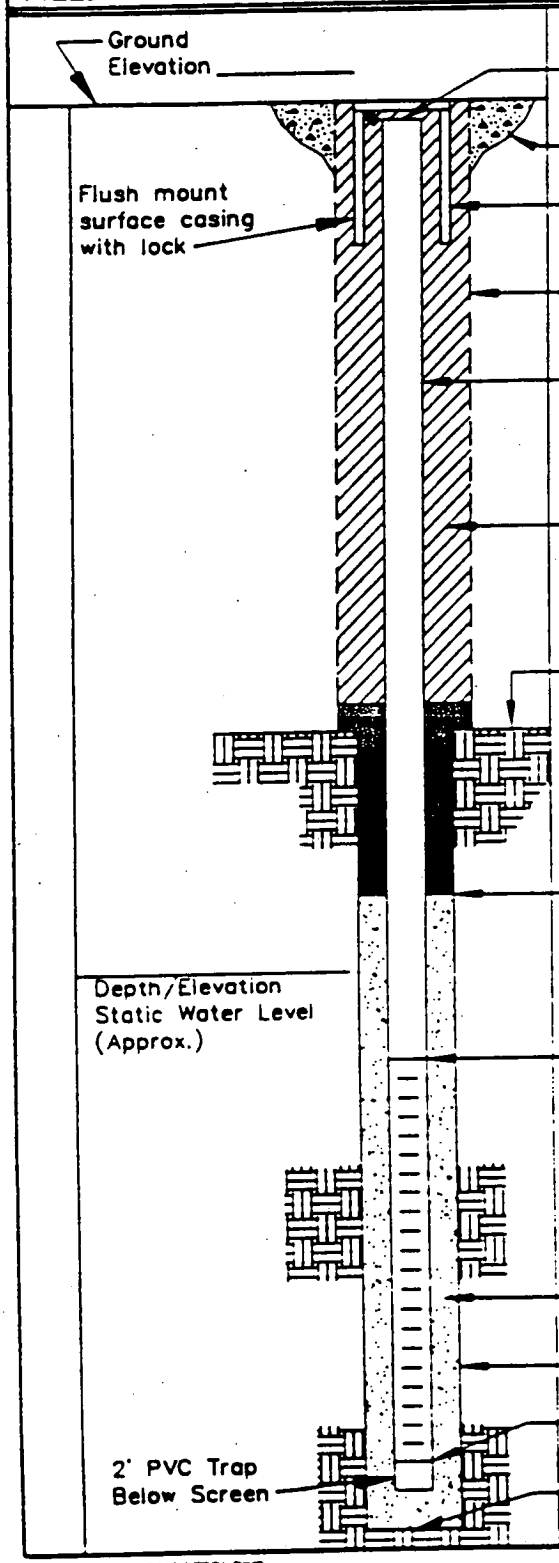
* See Legend on Back

WELL NO.: 8MW8D

HALLIBURTON NUS
Environmental Corporation

BEDROCK MONITORING WELL SHEET
WELL INSTALLED IN BEDROCK

PROJECT: NSB-NLON	LOCATION: GROTON, CT.	DRILLER: EAST COAST
PROJECT NO.: 9594	BORING: 8MW8D	DRILLING METHOD:
ELEVATION:	DATE:	DEVELOPMENT METHOD:
FIELD GEOLOGIST:		



ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: Concrete

TYPE OF PROTECTIVE CASING: Steel

I.D. OF PROTECTIVE CASING: 4"

DIAMETER OF HOLE: 8½"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: Grout

DEPTH/ELEVATION TOP OF BEDROCK: 12'

DEPTH/ELEVATION TOP OF SAND: 38'

DEPTH/ELEVATION TOP OF SCREEN: 48'

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.010 x 10'

TYPE OF SAND PACK: Silica Sand

DIAMETER OF HOLE IN BEDROCK: 6"

DEPTH/ELEVATION BOTTOM OF SCREEN: 78'

DEPTH/ELEVATION BOTTOM OF SAND: 78'

DEPTH/ELEVATION BOTTOM OF HOLE: 78'

BACKFILL MATERIAL BELOW SAND: Natural

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 8TB4
PROJECT NO.: 9594 DATE: 12-10-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: PAUL DAVIS
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1 @	0.5	14 / 12			Med. Dense	Dark Brn.	Asphalt - crushed rock Fill mtrl. - Clayey Silt	Fill	Auger thru it
1422	2.5	10 / 10	18/24		med Dense		w/ trce. Sand, Pebbs, & Cobbs.		No Hnu readings.
S-2 @		x / 16			med Dense	Olive Brn.	Fill mtrl. - Clayey Silt		No Hnu readings
1428	4.0	8 / 7	18/18	Fill	med Dense	Dk Dark Brn	w/ wood chnks, broken brick & conc. frags, Sand		Dry
S-3 @		8 / 7			med Dense	Dark Brn.	Fill mtrl. - Clayey Silt		No Hnu readings
1435	6.0	6 / 11	20/24		med Dense		trce Sand brkn. brick frags pebbs, & cobbs.		Dry.
S-4 @		14 / 64			very Dense	Dk. Brn.	Fill mtrl. Same as above Clayey Silt	↓	Wet
1511	8.0	22 / 18	24/24		Dense	Olive Brn.	Silty F.G. Sand pcs.	Sm	No Hnu readings
							of vegetation & Shells.		very hard auging grinding against rock
							- End of Boring		Auger Refusal @ 9'

REMARKS CME 75
140 lb. auto hammer
2" x 24" spl. barrels

BORING 8TB4

PAGE 1 OF 1

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 8TB5
PROJECT NO.: 9594 DATE: 12-10-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: Paul Davis
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1 @	0.5	32 / 41		Silty Sand pebbles	Very Dense	Dr. Bro.	Asphalt & crushed rock Silty Sand with gravel	SM	No Hnu readings
0955	2.5	40 / 38	22/24			Brown	Silty Sand with gravel	SM	Dry
S-2 @		X / 35					↓		Dry
1000	4.0	51 / 55	19/18		Very Dense	Black	Fill mtrl. - metal, wood, Clayey Sand	Fill	5 ppm
S-3 @		22 / 18				Grayish Brn.	Fill mtrl. - Clayey Silt	Fill	1 ppm moist
1010	6.0	45 / 65	19/24		Very Dense		w/ gravel, rubber, wood, glass, metal.		(gniess frags)
S-4 @		10 / 22			Dense		↓		No Hnu readings
1015	8.0	11 / 8	16/24		Dense				moist
S-5 @		6 / 9			Med. Dense	Dark Brn	Trace. Sand & pebbles		Wet No
1021	10.0	11 / 11	8/24		Med. Dense		↓		Wet Hnu readings
S-6 @		4 / 6		Fill	Stiff	Brown	Clayey Silt with trace	Fill	Saturated
1031	12.0	7 / 7	10/24		Stiff		Sand & pebbles & trace fill.		No Hnu readings
S-7 @ 1035	12.5	100/6 / X	1/6		Hard		↓		
	14.0	X / X					↓		
S-8 @		22 / 30			Very Dense		Silty Sand w/ pebbles.	SM Fill	No Hnu readings
1046	16.0	45 / 50	18/24		Very Dense		& cobbles (gniess frags)		
S-9 @		12 / 24				Orange Blk	Unknown Substance (cylinder shape)	Fill	
1055	18.0	5 / 5	10/24		Med Dense		light weight coal-like mtrl.		Dry - No Hnu reading
S-10 @		14 / 10			Med Dense	Black	Coarse grain Sand	Fill	Saturated
1103	20.0	4 / 3	12/24				with trace fill mtrl.		No Hnu reading.
							- End of Boring -		

REMARKS CME 75
140 lb auto hammer
3" x 24" split spoon sample barrels

BORING 8TB5

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* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 8TB6
PROJECT NO.: 9594 DATE: 12-10-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: PAUL DAVIS
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1 @	0.0	10 / 6			med. Dense	Dark Brn.	Top soil Fill - Clayey silt w/ pebbs &	CL OL	Dry
1248	2.0	5 / 5	24/24		med. Dense	Dk. Brn.	cobbs, brkn. brick frags, concrete frags, glass	Fill	NO Hnu readings
S-2 @		7 / 11			med. Dense	Dk. Brn.	Fill - Clayey silt tree of		Dry (Qrtz frags)
1258	4.0	19 / 24	18/24		MED. Dense		Sand - brkn. brick frags		NO Hnu readings
S-3 @		10 / 18		Fill	Dense	Brn.	Fill - Clayey silt tree. Sand		NO Hnu readings
1304	6.0	26 / 30	14/24		Dense	Brown Orange	Fill - Sand some silt with wood, glass, metal		moist.
S-4 @		29 / 32			Very Dense	Brown orange	Fill - Sand Some silt		NO Hnu readings
1315	8.0	18 / 12	18/24		Very Dense	Brn	alot of thick wood chips		wet Strong Naphthalene odor
S-5 @	9.0	35 / 100/6	12/12		Very Dense		Thick pie of wood Kerosene odor		60 ppm
1333	11.0					Gray white	Crystaline Sandy Substance		15 ppm Naphthalene
							-End of boring-		Very hard augering
									Rig stalled - grinding

REMARKS Cine 75
140 lb Bitcraft hammer
3" x 24" Selfscreen sample barrels

BORING 8TB6

PAGE 1 OF 1

* See Legend on Back

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB-NLON
BORING NO.: 8TB7
PROJECT NO.: 9594
DATE: 12-12-93
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: Paul Davis
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1 @	0.0	14 / 20			Dense	Dk. Br. ~~Brn.~~	Top soil		moist
1018	2.0	18 / 12	18/24		Dense	Brn.	Silty Sand w/ pebbs/cobbs	SM	No Hnu readings
S-2 @		28 / 39			Very Dense	Brn.	Silty Sand with	SM	No Hnu readings
1022	4.0	40 / 36	14/24		Very Dense		pebbles & gravel	↓	moist
S-3 @		14 / 22			Dense	Brn.	Same as above	↓	wet
1033	6.0	10 / 6	14/24		Dense		Trce. fill mtrl. chnks wood creosote odor	Fill	10 ppm creosote odor
S-4 @		30 / 38			Very Dense			↓	No recovery wet
1037	8.0	42 / 69	0/24		Very Dense			↓	No recovery
S-5 @		5 / 6			Loose		Gneiss fragment	↓	Very hard drilling grinding agnst rock
1124	10.0	4 / 7	2/24		Loose			↓	Relocate rig to 2nd bore hole.
S-6 @		6 / 4			Loose	Black	Wood chunk - roofing sealant odor	↓	Saturated 8 ppm
1129	12.0	5 / 5	3/24		Loose	Brn.	Sand and gravel	↓	5 ppm
S-7 @		3 / 2			Vloose	Blk.	Sand and cinders	↓	Sealant odor oily sheen
1132	14.0	2 / 2	10/24		Vloose	Brn	Silty Sand - organic	↓	Sulfur odor.
S-8 @ 1140	15.0	14 / 100/6	10/12		Very Dense	Brng Blk.	Sand some silt petrol. odor	↓	2 ppm Saturated
							Auger refusal.		Very hard drilling grinding agnst rock

REMARKS: CME 75
140 lb auto hammer
3" x 24" Split Spoons

BORING 8TB7

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* See Legend on back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 8TB8
PROJECT NO.: 9594 DATE: 12-11-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: PAUL DAVIS
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1 @	0.5	14 / 19		Silty Sand	Dense	Brown	Asphalt / crushed rock Silty Sand w/ gravel & pebbs	SM	Auger thru. it. NO Hnu readings
1050	2.5	16 / 10	20/24		Dense		Silty Sand w/ trace. brick frags pebbs & gravel	SM	Dry
S-2 @		X / 10		Fill	med. Dense	Brown	Fill mtrl. - Silty Sand w/	Fill	NO Hnu readings
1054	4.0	8 / 6	18/18		Med. Dense		brkn. brick & concrete frags pebbs & gravel		Dry
S-3 @		22 / 41			Very Dense	Brn.	Fill mtrl. - Sandy silt		NO Hnu readings
1100	6.0	38 / 29	20/24		very Dense		w/ concrete & brick frags., cobb. frags, glass, cinders slag		Dry
S-4 @		16 / 12			Dense	Brn.	Fill - Sandy silt w/ pebbs/gravel Some coal,		NO Hnu readings
1106	8.0	22 / 14	20/24		Dense	Grayish Brn.	Fill - Fine grain sand w/silt brkn brick/conc. frags		Wet
S-5 @		22 / 48			very Dense	Grayish brn.	Fill - Same as above		wet NO Hnu readings
1115	10.0	39 / 61	18/24		very Dense	Black	Fill - Sandy gravel - big pce of lead - pcs. of brick/concrete		Some wood chunks & metal - SATURATED
S-6 @		11 / 10			med. Dense	Dark Brn	Fill mtrl. - Sandy gravel w/		Saturated Paint odors 14 ppm
1122	12.0	14 / 13	14/24		mod. Dense		pces. of brkn. brick, concrete, wood, glass, metal, brkn. paint chips		Sheen on spoon.
S-7 @		13 / 17			Med Dense	Dark Brn	Same as		5 ppm - Saturated
1127	14.0	10 / 16	12/24		med Dense		above		Sheen on spoon
S-8 @		6 / 4			loose	Dark Brn.	Fill mtrl. brkn. brick		2 ppm Saturated
1136	16.0	2 / 2	4/24		loose		conc. frags, metal, cinders.		Sheen on Spoon
S-9 @		3 / 1			V loose		Fill mtrl. Same		2 ppm alot of
1141	18.0	1 / 3	8/24		V loose		as above	↓	sheen on spoon
S-10 @		3 / 3		Org. clayey silt	loose	Olive Brown	Organic Clayey silt	OL	Sulfur odor
1145	20.0	3 / 3	8/24		loose		w/ trace of sand and		NO Sheen.
							Some shells & plnt. mtr.		
							-End of Boring @ 20'-	↓	

REMARKS CME 75 140 lb automatic hammer
3" x 24" Split spoon sample barrels

BORING 8TB8

PAGE 1 OF 1

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 8TB9
PROJECT NO.: 9594 DATE: 12-12-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: Paul Davis
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1 @	0.0	4 / 6			Med. Dense	Dk. Brn Brn	Top Soil Silty Sand w/ pebbles	SM	moist
1324	2.0	12 / 10	18/24	Silty Sand	Med. Dense		& gravel	SM	No Hnu readings
S-2 @		3 / 2			MED DENSE	Reddish Brn.	Silty Sand w/ pebbs. Fill mtrl. - Sand, pebbs,		moist
1326	4.0	9 / 11	20/24		Med. Dense	Brn Tan	metal frags, plastic wrap, Fine grain Sand w/ silt	Fill	No Hnu readings
S-3 @		13 / 24			Dense	Dark Brn	Fill mtrl. - brkn. glass,		30 ppm Solvent odors
1340	6.0	42 / 65	20/24		Very Dense		metal, wood, brick, porcelain some clay		paint/solvent odor
S-4 @		22 / 13			Dense	Dark Brn.	Fill mtrl. - brkn. brick,		8 ppm Solvent odor
1344	8.0	24 / 36	12/24	Fill	Dense		prcln, glass frags, & metal		wet
S-5 @ 1355	9.0	52 / 100/6	12/12		Very Dense		Same as above		24 ppm wet
	10.0	X / X							Solvent odor.
S-6 @		38 / 42			Very Dense	Drk. Brn.	Fill mtrl. - brkn. glass,		9 ppm Saturated
1404	12.0	14 / 10	12/24		VERY DENSE		wood, metal Some Sand & Silt		
S-7 @		49 / 36			Very Dense		Same as		4 ppm Saturated
1410	14.0	36 / 48	6/24		Very Dense		above		
S-8 @ 1418	15.0	34 / 100/6	12/12		Very Dense	Blk.	Fill mtrl. - Clayey silt trce. of Sand		2 ppm Saturated
							- End of Boring -		Auger Refusal

REMARKS CME 75 140 lb automatic hammer
3" x 24" Split spoons

BORING 8TB9

PAGE 1 OF 1

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 8TB 10
PROJECT NO.: 9594 DATE: 12-11-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: PAUL DAVIS
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1 @	0.5	21 / 16		Silty Sand	MED Dense	Dark Brn.	Asphalt (rock crushed) Silty Sand w/ pebbs.	Sm	Auger thru it. NO HNU reading
0813	2.5	13 / 35	18/24	Clayey Silt	MED Dense	Dark Brn.	Clayey Silt w/ pebbs & gravel	Sm/SC	Dry
S-2 @		X / 14			Dense	Brn.	Clayey Silt w/ trce Sand		NO HNU readings
0821	4.0	26 / 19	18/18	Fill	Dense	Black	Fill mtrl. - glass, wood some sand	Fill	moist
S-3 @		26 / 14			Dense	Black	Fill mtrl. - Cinders, Sand		moist
0830	6.0	26 / 31	20/24		Dense		brkn. glass, metal, wood chips		4 ppm
S-4 @		18 / 29			Dense		↓		NO Recovery
0836	8.0	14 / 12	0/24		Dense		↓		NO Recovery
S-5 @		14 / 26			VERY Dense	Black	Fill mtrl. - Cinders, Sand,		Hard drilling - rig stalled Saturated
0852	10.0	31 / 40	6/24		Very Dense		brkn. glass frags, brick frags metal, kit bricks, pebbs.		2 ppm
S-6 @		6 / 3			loose	Black	Fill mtrl. Same as		Saturated
0908	12.0	3 / 3	4/24		loose		above - a lot of Sand		NO HNU readings
S-7 @		3 / 1			loose	Black	Fill mtrl. - Same as		Saturated
0911	14.0	2 / 2	2/24		loose		above - a lot sand, brkn. glass, brick/conc.		NO HNU readings
S-8 @		4 / 6			loose	Black	Fill mtrl. - A lot Sand some silt		2 ppm
0916	16.0	8 / 11	18/24		med Dense		brkn brick & concrete frags, metal, glass, cinders, wood		Saturated.
S-9 @		8 / 16			med Dense	Black	Fill mtrl. - brkn. brick		Saturated
0924	18.0	12 / 10	4/24		med Dense		frags, cement frags, metal & glass		2 ppm
S-10 @		6 / 2			loose	Black	Fill mtrl. - brkn concrete & brick		8 ppm Sheen on spoon
0935	20.0	3 / 3	12/24		loose		frags, Sand, cinders, metal		Saturated
S-11 @		3 / 4		Org. Clayey Silt	loose	Olive Brown	Organic Clayey Silt	OL	Sulfur odors
0941	22.0	4 / 4	14/24		loose		trce Sand & Shells / Plant matter		moist
							- End of Boring -		

REMARKS CME 75
140 lb. automatic hammer
3" x 24" split spoon sampling barrels

BORING 8TB 10

PAGE 1 OF 1

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 8TB11
PROJECT NO.: 9594 DATE: 12-13-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: Paul Davis
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1 @	0.0	10 / 6			Med. Dense	O.Brn / Brn	Top Soil Silty Sand with pebbles & gravel and Cement Chunk	Sm	No Hnu readings
0804	2.0	11 / 13	18/24	Fill	Med Dense			Fill	Damp.
S-2 @		6 / 4		Fine grain Sand	loose	Brown	Silty Sand w/ broken glass & pebbles		No Hnu readings
0807	4.0	2 / 2	18/24		loose	Tan	Fine grain Sand w/ Silt	SP	Damp
S-3 @		12 / 6			Med. Dense	Tan	Fine grain Sand w/ Silt	SP	
0816	6.0	11 / 8	6/24		med. dense	white	Concrete Chunk		No Hnu readings
S-4 @									very hard drilling
0853	8.0		1/24				Concrete Chunk		grinding against rock Auger Refusal @ 8'
							- End of boring -		

REMARKS CME 75 140 lb Automatic hammer
3" x 24" Split spoon sample barrels

BORING 8TB11

PAGE 1 OF 1

* See Legend on Back

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON — BORING NO.: 8TB12
PROJECT NO.: 9594 — DATE: 12-13-93 — DRILLER: EAST COAST THOMAS
ELEVATION: — FIELD GEOLOGIST: Paul Davis
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN N.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK SYM. OR USCS	REMARKS
	0.0 / 1.0						Asphalt & crushed rock		Auger thru. it.
S-1 @		14 / 36			Very Dense	Brown	Silty Sand w/gravel	Sm	NO Itnu readings
1357	3.0	52 / 48	20/24	Silty Sand w/ pebbles	Very Dense	Dark Brn.	Silty Sand w/pebbles	Sm	Dry Horse manure odor
S-2 @		18 / 12			Dense	Brown			5 ppm
1405	5.0	26 / 32	5/24		Dense				moist
S-3 @		3 / 3			loose	Brown			moist
1414	7.0	3 / 3	4/24		loose				15 ppm Solvent odor wet
S-4 @		1 / 1		Fill	very loose	Brown	Sandy gravel with	Fill	Saturated Sulfur odor
1419	9.0	1 / 1	2/24		very loose		fill mtrl. - brkn. glass, porcelain, metal		10 ppm
S-5 @		100/6" / X	3/6		Very Dense	Black	Fill mtrl. - brkn glass,		Saturated Sheen on spoon
1429	11.0	X / X					porcelain metal - Sand & gravel		10 ppm Sulfur odor
S-6 @ 1525	12.0	16 / 33	12/12		med Dense	Dark Brn			10 ppm Sheen on spoon
S-7 @						Dark Brn			5 ppm Sheen on spoon
1531	14.0		10/24						Saturated.
	15.0						- End of Boring -		Auger Refusal @ 15'

REMARKS: Cone 75 use is a [illegible] humus/ 3" x 24" Sol. [illegible] sample barrel

BORING 8TB12

PAGE 1 OF 1

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 8TB13
PROJECT NO.: 9594 DATE: 12-14-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: Paul Davis
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1 @	0.0	26 / 32		Silty sand	very Dense	Dk brn Tan	Top soil Silty Sand w/ pebbles	SM	~~moist~~ damp
0808	2.0	39 / 41	20/24		very Dense	Dk. brn Gray	Silty Sand w/ pebbles concrete chunk	SM	NO HNU readings
S-2 @		14 / 12			med. Dense	Dark Brn.	Clayey Sand w/ pebbles &	SC	NO HNU readings
0814	4.0	16 / 20	14/24	Fill	med Dense		Some brick. Cobble frags. brick, conc., wood	Fill	moist
S-3 @		18 / 16			Dense		↓	↓	NO HNU readings
0824	6.0	22 / 11	18/24		Dense		↓	↓	moist
S-4 @		14 / 20		Fine to med. grain sand	Dense	Brown	Fine to medium grain Sand	SP	NO HNU readings
0830	8.0	19 / 22	20/24		Dense		Trce. Silt & Some pebbles & cobbles		moist
S-5 @		12 / 32		Silty sand	Dense	Brown	Silty Sand w/ pebbles	SM	NO HNU reading
0840	10.0	18 / 10	14/24		Dense		brown gniess/qrtz cobble	↓	moist
S-6 @		47 / 52			very Dense		↓	↓	NO recovery
0849	12.0	59 / 50	0/24		very Dense		↓	↓	NO recovery
	13.0						-End of Boring-		Auger refusal @ 13'

REMARKS CME 75 140 lb Automatic hammer
3" x 24" split spoon sample barrels

BORING 8TB13

PAGE 1 OF 1

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 8TB14
PROJECT NO.: 9594 DATE: 12-14-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: Paul Davis
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1 @	0.0	26 / 39		Silty Sand	Very Dense	Dk. Brn Brn.	Top Soil Silty Sand with pebbles	SM	~~moist~~ damp
1024	2.0	52 / 65	24/24		Very Dense	Black	Clayey Sand with pebbles	SC	No HNU reading
S-2 @		100/6 X X X	0/6		Very Dense		Small piece of a	Fill	No recovery
1031	4.0						wood chunk		No recovery
S-3 @		56 / 41			Very Dense	Brown	Silty Sand with pebbles		Petroleum odor
1046	6.0	13 / 5	20/24		V. Dense		pcs. of wood & brick chats		moist
S-4 @		3 / 2			loose	Black	Pieces of brick chats, wood		
1050	8.0	7 / 3	8/24	Fill	loose		metal and sand - Fill		wet
S-5 @		35 / 41			Very Dense	Black	Fill - silty Clay w/ brick glass		Saturated
1059	10.0	26 / 11	18/24		Very Dense	Black	Fill Sandy gravel w/ glass metal wood		
S-6 @		24 / 19			Dense	Black			Naphthalene odor
1105	12.0	30 / 37	10/24		Dense		with wire porcelain, metal		Sheen on spoon
S-7 @		16 / 28			Very Dense	Black	med to Crse. grain Sand		Strong naphthalene odors
1111	14.0	52 / 60	18/24		Very Dense		w/ metal, porcelain, glass		Oily Sheen
							- End of Boring -		Auger refusal @ 15'

REMARKS Cme 75 140 lb automatic hammer
3" x 24" Split Spoon Sample barrels
HNU wasn't working properly

BORING 8TB14
PAGE 1 OF 1

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 8TB15
PROJECT NO.: 9594 DATE: 12-14-93 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: Paul Davis
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1 @	0.0	10 / 14		Silty Sand	Med. Dense	Brn	Top Soil Silty Sand with pebbles	SM	dry
1311	2.0	12 / 9	20/24		Med. Dense	reddish Brn.	Silty sand w/ fill mtrl.	SM Fill	NO Hnu readings
S-2 @		12 / 6			Med. Dense	Reddish Brn	Silty Sand w/ brn. glass metal, wood	Fill	Moist
1314	4.0	5 / 5	12/24		Med. Dense	Brn			NO Hnu readings
S-3 @		28 / 42			Very Dense	Orange Brn			NO Hnu readings
1334	6.0	65 / 92	14/24		Very Dense				Moist
S-4 @		42 / 25			Very Dense				gneiss/qtz frags
1342	8.0	32 / 16	6/24	Fill	Dense				moist
	9.0	X / X				Brn	Sandy gravel		Saturated - Diesel odor
S-5 @		36 / 24			Very Dense				Green liquid
1354	11.0	20 / 11	2/24		Dense				
S-6 @		42 / 57			Dense				Green liquid
1401	12.5	100/6	0/18		Very Dense		Auger Refusal @ 12.5'		Diesel odor

REMARKS CME 75 140 lb automatic hammer
3" x 24" split spoon sample barrels

BORING 8TB15

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* See Legend on Back

APPENDIX A.10

SITE 13 - LOWER SUBASE

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 13MW18
PROJECT NO.: 9594 DATE: 1-24-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: J.P. Ferguson / SJ Conti
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN No.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/ft)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	1-2	27 / 100/.2	.8		V. Dense	Brown	MEDIUM - COARSE SAND	Fill	HNU 10:21
			.8			Brown	some medium gravel	SW/GW	moist XRF
S-2	3-5	23 / 10	1.4		M. Dense	Black-Brown	MEDIUM - Coarse Sand Some	Fill	HNU 10:27
		7 / 6	2.0			Black-Brown	medium gravel tr-flyash	SW/GW	moist XRF
S-3	5-7	11 / 5	1.5		M. Dense	Brown	MEDIUM - Coarse Sand	Fill	HNU 10:32
		7 / 10	2.0			Brown		SP	moist XRF
S-4	7-9	6 / 7	1.4		M. Dense	Brown		Fill	HNU 10:39
▽		6 / 8	2.0	▽		Brown	SLIGHT PETROLEUM ODOR	SP	moist-wet XRF
S-5	9-11	2 / 3	1.5		Loose	Brown		Fill	HNU 10:42
		4 / 7	2.0			Brown	(Diesel fuel oil present in sample)	SP	WET XRF
S-6	11-13	13 / 12	1.3		M. Dense	GRAY	MEDIUM - COARSE SAND, Some	SW/GW	HNU 10:51
		16 / 15	2.0			GRAY	medium - coarse GRAVEL	SW/GW	WET XRF
S-7	13-15	9 / 11	1.2		M. Dense	GRAY	↓ ↓	SW/GW	HNU 11.00
		14 / 19	2.0			GRAY	↓ ↓	SW/GW	WET XRF
							Bottom of Boring = 15.0'		
							Installed Well - Screen		
							Interval 5-15' Sandpack		
							4-15' Bentonite 2'-4'		

REMARKS Rig CME 75 Driller Steve Jones

BORING 13MW18

PAGE 1 OF 1

* See Legend on Back

BORING NO. 13MW18

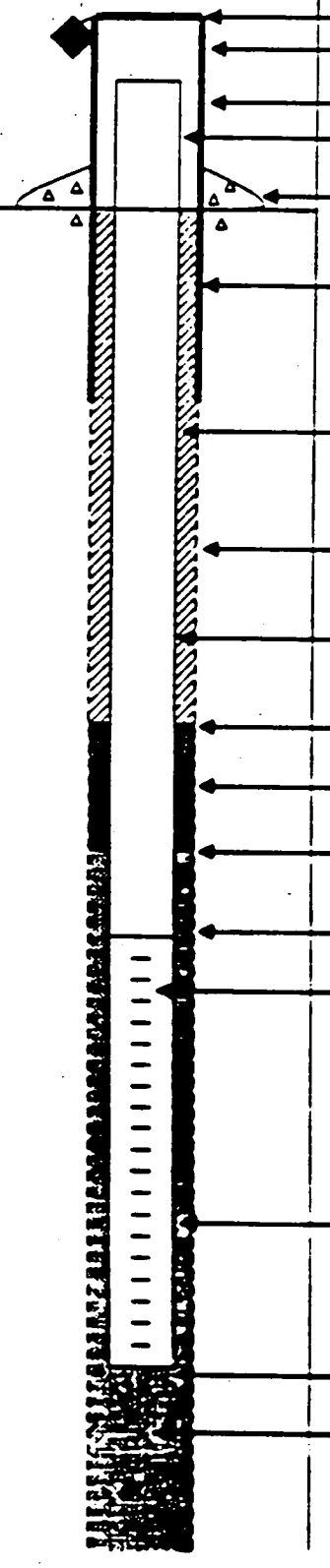
Halliburton NUS CORPORATION

OVERBURDEN MONITORING WELL SHEET

PROJECT NSB New London
PROJECT NO. 9594
ELEVATION
FIELD GEOLOGIST J.R. Ferguson

LOCATION Site 13 Lower Base
BORING 13MW18
DATE 1-26-94

DRILLER T Cross
DRILLING METHOD Hollow Stem Auger
DEVELOPMENT METHOD Surge / Bailer



ELEVATION OF TOP OF SURFACE CASING: NA
ELEVATION OF TOP OF RISER PIPE: NA
STICK - UP TOP OF SURFACE CASING: Flush
STICK - UP RISER PIPE: -0.5
TYPE OF SURFACE SEAL: Portland Cement
I.D. OF SURFACE CASING: 6"
TYPE OF SURFACE CASING: STEEL
0.0-2.0
RISER PIPE I.D. 2" Ø
TYPE OF RISER PIPE: Sch 40 PVC
BOREHOLE DIAMETER: 8½"
TYPE OF BACKFILL: NA
ELEVATION / DEPTH TOP OF SEAL: 2.0
TYPE OF SEAL: Bentonite Pellet
DEPTH TOP OF SAND PACK: 4.0
ELEVATION / DEPTH TOP OF SCREEN: 5.0
TYPE OF SCREEN: Sch 40 PVC
SLOT SIZE x LENGTH: .010 10'
I D OF SCREEN: 2"
TYPE OF SAND PACK: #2 Silica Sand
ELEVATION / DEPTH BOTTOM OF SCREEN: 15.0
ELEVATION / DEPTH BOTTOM OF SAND PACK: 15.5
TYPE OF BACKFILL BELOW OBSERVATION WELL: #2 Silica Sand

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 13TB2A
PROJECT NO.: 9594 DATE: 1-22-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: TRF/SJC
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
						BLACK GRAY	ASPHALT & CONCRETE	FILL	
								FILL	15:45
								FILL	
								FILL	
S-1	4-6	60 / 33	1.0		M. DENSE	BROWN	SILTY FINE-MEDIUM SAND TR-	SM FILL	HNU-0 16:04
		15 / 17	2.0			BROWN	SOME GRAVEL AND CONCRETE FRAGS.	FILL	MOIST XRF-1511
S-2	6-8	14 / 12	1.0	WOOD	M. DENSE	BROWN	SILTY SAND, GRAVEL, WOOD PIECES	GP	HNU-1.5 16:14
		17 / 5	2.0			BROWN	3.1 SORTED SAND	FILL	WET XRF -
	8-10		—	VOID					Attempted to sample 8-10
			2.0						Augers dropped from 9-10
	10-12		—						Sampler dropped to 14'
			2.0						
	12-14		—						
			2.0						
S-3	14-16		1.2		V SOFT	GREEN-GRAY	CLAYEY SILT SOME WATER	ML	HNU-0 16:26
		1 / 1	2.0			GREEN-GRAY	BIVALVES	ML	WET XRF —

REMARKS

BORING 13TB2A

PAGE 1 OF 1

* See Legend on Back

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 13TB3A
PROJECT NO.: 9594
DATE: 01-22-94
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: Tim Evans / Tim Sabo
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS (OVM)	
S-1 @ 1150	0.0	- / 100/.5	0.3/0.5		V. Dense	BRN	Asphalt / Silty Sand / Gravel	GW	Top 8" Sand - F.-C Gr / Gravel / Cobble max @ 2' — 2ppm	1069
							- No Sample 1.0'-2.5' -			
	2.5	25 / 25								
★ S-2 @ 1205	4.5 / 5.0	27 / 21	2.0/2.0		V. Dense	BRN	Sand & Gravel	GW	Sand - M to C Gr Appr / Gravel Avg ø <0.1'	3352
							- No Sample 5.0'-5.5' -		→ Wood (?)	
S-3 @ 1216	5.5 / 6.0	100/.3 / -								
S-4 @ 1226	8.0	23 / 3 / 4 / 2	0.5/2.0		M. Stiff	D. BRN	Wood Frags	-	Saturated w/Grease — 1 ppm	1275p
S-5 @ 1230	10.0	3 / 2 / 1 / 1	0.0/2.0		Soft	Tan	Wood Frags	-	w/Grease No recovery 0 ppm	-319p
S-6 @ 1239	12.0	3 / 2 / 3 / 1	0.7/2.0		Loose	D. Gray	Sand	SW	M & C Gr / Fuel odor / Oily Sheen	
S-7 @ 1244	14.0	4 / 2 / 1 / 1	0.6/2.0		V. Loose				2ppm	-304p
S-8 @ 1300	16.0	25 / 23 / 22 / 24	1.3/2.0		Dense		Sand w/Some Gravel	SW	Fuel odor / Oily Sheen	
							- Total Depth 16.0' -			
							HSA to 14'			
							& - 3" SS to 16'			
							Backfill w/ Grout			

REMARKS: CME 55 HSA Rig
3" x 24" SS (140 lb w/ 30" Drop, Cat Head)
4¼" ID 8" OD Auger

BORING: 13TB3A
PAGE 1 OF 1

* See Legend on Back

★ Sample (13TB3A - 2.5 4.5) Sent to laboratory

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 13TB4A
PROJECT NO.: 9594
DATE: 1-22-94
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: JRF / SJC
WATER LEVEL DATA:
(Date, Time & Conditions) 1-22-94 15°-20°

SAMPLE NO. & TYPE OR RQD	DEPTH (FT) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	0-2	26 / 25	1.5		Dense	Black Brown	Silty Fine - medium Sand	SM/GM	HNU-0 13:00
		17 / 13	2.0			Brown	Tr-Some F-M Gravel	SM/GM	DRY XRF 4384
S-2	2-4	13 / 11	1.1		M. Dense	Brown	Tr Brick	Fill	HNU-0 13:05
		15 / 9	2.0			Brown		SM/GM	MOIST XRF-706
S-3	4-6	16 / 8	1.2		M Dense	Brown-Black	As Above	Fill	HNU-0 13:11
		5 / 11	2.0			Brown-Black		Fill	MOIST-Wet XRF —
S-4	6-8	1 / 2	.8		Loose	Brown		Fill	HNU-0 13:21
		6 / 13	2.0			Brown		SM/GM	WET XRF 1730
S-5	8-10	10 / 10	.5		M. Dense	Brown		Fill	HNU-0 13:28
		9 / 7	2.0			Brown		SM/GM	WET XRF —
S-6	10-12	9 / 8	1.1		M. Dense	Brown		Fill	HNU-0 13:31
		6 / 4	2.0			Brown		SM/GM	WET XRF 1194
S-7	12-14	23 / 13			M. Dense	Brown	Medium - Coarse Sand Tr-	SP	HNU-0 13:40
		9 / 6	2.0			Brown	Some F-M Gravel	SP	WET XRF —
S-8	14-16	4 / 8			M. Dense	Brown	↓	SP	HNU-0 13:46
		6 / 9	2.0			Brown	↓	SP	WET XRF —
							Bottom of Boring: 15.0'		

REMARKS: CME 75 3" ϕ SPLIT BARREL SAMPLER Driller Swalek

BORING 13TB4A

PAGE 1 OF 1

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 13TB5A
PROJECT NO.: 9594 DATE: 01-22-94 DRILLER: EAST COAST THOMAS/
ELEVATION: FIELD GEOLOGIST: Tim Evans Tim Sabo
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS OVM	XR
	0.0 1.0						Asphalt Concrete		Top 2" 6"	
	1.5	11								
* S-1 @		11 12	0.8/2.0		M. Dense	Tan	SAND & Gravel	GW	Dry Sand - F to C Gr 0 ppm	-102
1520	3.5	13 12								
S-2 @		14 11	0.6/2.0						0 ppm	-222
1523	5.5	13 13								
S-3 @		14 13	0.4/2.0		M. Dense	L. Brn	SILTY SAND & GRAVEL	GW	MOIST 0 ppm	-98
1534	7.5	13 8								
S-4 @		10 10	0.5/2.0						WET 0 ppm	-383
1539	9.5	8 4								
S-5 @		1 1	0.6/2.0		V Loose	Gray Brn	SILTY SAND w/ some gravel, wood frags, roots	SW	0 ppm	-394
1546	11.5	4 8								
S-6 @		10 8	0.6/2.0		M. Dense	Gray to Pink	SAND & GRAVEL	SW	SAND - C to V.C. Gr Gravel Pebbles 0 ppm	-364
1551	13.5	9 21								
S-7 @		53 42	2.0/2.0		V. Dense	Brn	SAND	SW	C to V.C Gr	
1600	15.5	9								
							- Total Depth 15.5'			
							HSA to 13.5'			
							7 - 3" SS to 15.5'			
							Backfill w/ Grout			

REMARKS CME 55 HSA Rig
3" x 24" SS (140# wt, 30" Drop, Cat Head)
4 1/4" ID, 8" OD Auger

BORING 13TB5A
PAGE 1 OF 1

* See Legend on Back

* Sample (13TB5A - 1.5 2.5) Sent to laboratory

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 13TB6
PROJECT NO.: 9594
DATE: 1-23-94
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: J.R. FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 1-23-94 - 15°

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
						Black-Brown	Asphalt 0-.5 Concrete		
							.5-1.5'		
S-1	3-5	9 7 3 3	.5 2.0		LOOSE	Brown	[illegible] to Medium Sand	FILL	HNU 1 14:30
						Brown	[illegible] Gravel	FILL	[illegible] XRF —
S-2	5-7	7 4 3 3	1.3 2.0	WOOD	LOOSE	Brown-Black	[illegible] Gravel	FILL	HNU 14:17
						Brown	[illegible] Sand oil covered	FILL	WET XRF —
S-3	7-9	55 50/3	.5 .75	WOOD	[illegible]	[illegible]	[illegible] (F) coarse gravel	FILL	HNU 14:21
						[illegible]	[illegible] sand [illegible] brown	FILL	wet XRF
S-4	9-11	[illegible]	[illegible] 2.0		LOOSE	[illegible]	[illegible]	FILL	HNU 14:31
						[illegible]	[illegible]	FILL	WET XRF
S-5	11-13	[illegible]	.7 2.0		V. LOOSE	[illegible]	[illegible] Coarse Sand	SP	HNU 14:39
						[illegible]		—	WET XRF
S-6	13-15	[illegible]	— 2.0		V. LOOSE	—	No Recovery	—	HNU — 14:42
						—		—	— XRF —
S-7	15-17	17 6 4 4	2.0		LOOSE	Gray	Medium to Coarse Quartzose	SP	HNU 15:15
						[illegible]	Sand	SP	WET XRF
S-8	17-19	[illegible]	.3 2.0		STIFF	Gray	Medium Clayey Silt	ml	HNU 15:20
						Gray	[illegible] sand	ml	moist XRF
							Bottom of Boring: 19.0'		

REMARKS [illegible]

BORING 13TB6

PAGE 1 OF 1

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB-NLON BORING NO.: 13TB7
PROJECT NO.: 9594 DATE: 01-22-94 DRILLER: EAST COAST THOMAS/
ELEVATION: FIELD GEOLOGIST: TIM EVANS Tim Sabo
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS OVM	VRI
	0.0						Asphalt / Concrete		Top 2"/4"	
	1.0									
* S-1 @		11 / 13	1.3/2.0		M. Dense	D. BRN To	SILTY SAND & GRAVEL	GW	Dry F to C Gr FILL 0ppm	-214
1407	3.	15 / 12				TAN			Gravel max Ø 0.2'	
S-2 @		11 / 15			M. Dense	TAN			Dry M to C Gr 0 ppm	-285p
1412	5.0	15 / 17		FILL					Gravel Avg. Ø 1" moist	
S-3 @		13 / 11	1.8/2.0		M. Dense	BRN				-337p
1419	7.0	11 / 4								
S-4 @		3 / 4	0.4/2.0		Loose				Wet w/Grease 0ppm	-432p
1422	9.0	4 / 3								
S-5 @		1 / 1	1.8/2.0		V. Loose	GRAY BRN	SANDY SILT w/TR Gravel	SM	Mica Flakes 0ppm	
1430	11.0	2 / 1								
S-6 @		6 / 6	2.0/2.0		M. Dense	Gray BRN	SILTY SAND w/TR Gravel	GW	Mica	-429p
1435	13.0	7 / 8							Gravel Avg Ø 0.1' Sand M to C Gr	
S-7 @		2 / 3	0.5/2.0		V. Loose	Gray BRN	SILTY SAND w/TR Mica	SP	Sand F Gr	
1452	15.0	1 / 1								
							- Total Depth 15' -			
							HSA to 13'			
							7-3" SS to 15			
							Back fill w/ Grout			

REMARKS CME 55 HSA Rig
3"x24" SS / 140# wt, 30" Drop (at Head)
4 1/4" ID, 8" OD Auger

BORING 13TB7
PAGE 1 OF 1

* See Legend on Back

* Sample (13TB7-0103) sent to laboratory

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 13TBB
PROJECT NO.: 9594
DATE: 1-24-94
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: J. R. FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 1-24-94 - 13:40 - 38°

SAMPLE NO. & TYPE OR RQD	DEPTH (ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
							Asphalt		
S-1	1-3	10 / 50	1.0		V. Dense	Gray	Concrete, Silty Fine to Coarse	Fill	HNU 0 13:45
		20 / 20	2.0			Brown	Sand Some med. Gravel	Fill	MOIST XRF —
S-2	3-5	9 / 13	1.1		M Dense	Gray	Silty Fine-Medium Sand Some	Fill	HNU 0 13:57
		11 / 11	2.0			Gray	fine-medium gravel	Fill	MOIST XRF —
S-3	5-7	5 / 7	1.2		M. Dense	Brown	Medium-Coarse Sand Tr-	Fill	HNU 0 14:19
		6 / 6	2.0			Brown	Some Rounded (fr-M) gravel	SP	MOIST XRF —
S-4	7-9	16 / 10	1.3		M. Dense	Brown	↓	SP	HNU 0 14:26
		10 / 10	2.0			Brown	↓	SP	MOIST XRF —
S-5	9-11	23 / 9	1.25 ▽		M. Dense	Brown	↓	SP	HNU 0 14:30
		5 / 4	2.0			Brown	↓	SP	WET XRF —
S-6	11-13	4 / 5	.95		M. Dense	Brown	↓	SP	HNU 0 14:38
		9 / 8	2.0			Brown	↓	SP	WET XRF —
S-7	13-15	31 / 17	1.3		M. Dense	Brown	Medium-Coarse Sand and	SP/GP	HNU 0 14:44
		10 / 11	2.0			Brown	Fine to Medium Gravel	SP/GP	WET XRF —
	15-17						↓		
S-8	19-21	28 / 22	.95		Dense	Brown	↓	SP/GP	HNU 0 15:00
		21 / 19	2.0			Brown	↓	SP/GP	WET XRF —
							Bottom of Boring = 21.0'		

REMARKS R.C. CME 75 Driller: Floyd Cross

BORING 13TBB

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* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 13TB9
PROJECT NO.: 9594 DATE: 1-24-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: J R. Ferguson
WATER LEVEL DATA :
(Date, Time & Conditions) 1-24-94 10:50 40°

SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, FL)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	1-3	10 11	1.1		M. Dense	Brown	Silty F-C Sand Tr-Some Fine	Fill	HNU- 0 11:01
		8 14	2.0			Brown	gravel + rock fragments	Fill	MOIST-FROZEN XRF —
S-2	3-5	9 13	1.5		M. Dense	Brown		Fill	HNU 0 11:07
		10 10	2.0			Brown		Fill	moist XRF —
S-3	5-7	6 7	1.1		M. Dense	Brown	Silty Fine-coarse sand some	Fill	HNU 0 11:15
		9 11	2.0			Brown	f-m gravel	Fill	moist XRF —
S-4	7-9	9 8	1.5		M. Dense	Brown	Fine to medium sand, clean	SP	HNU 0 11:23
		6 9	2.0			Brown	sugary texture (FILL)	SP	moist XRF —
S-5	9-11	2 5	1.4		M. Dense	Brown		SP	HNU 0 11:28
		5 9	2.0			Brown		SP	MOIST XRF —
S-6	11-13	5 7	1.3 ▽		M. Dense	Brown		SP	HNU 0 11:36
		8 6	2.0			Brown		SP	WET XRF —
S-7	13-15	6 7	1.5		M. Dense	Brown	Silty Fine - Coarse Sand	SP	HNU 0 11:42
		9 13	2.0			Brown	Tr-Some med gravel	SP	wet XRF —
	15-17								
S-8	17-19	3 6	1.5		M. Dense	Brown	Silty Fine - Coarse Sand Trace	SP	HNU 11:54
		7 8	2.0			Brown	to some medium gravel	SP	WET XRF
	19-21								
S-9	21-23	24 24	-		Dense	—	No RECOVERY	—	HNU 12:06
		13 19	2.0			—		—	WET XRF
							Bottom of Borehole = 23.0'		

REMARKS R.6 CME 75 DRILLER 'BOSS

BORING 13TB9

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* See Legend on Back

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON
B RING NO.: 13TB ~~12~~ 10
PROJECT NO.: 9594
DATE: 1-31-94
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: J. R. Ferguson
WATER LEVEL DATA:
(Date, Time & Conditions) 14:45 PARTLY SUNNY 45°

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	1-3	2 25	.80		V. Dense	GRY	Silt: Some Gravel and	Fill	HNU 0
		17 35	2.0			GRAY	Gravelly Sand - trace fill	Fill	XRF
							TERMINATED BORING since we encountered an electric feed line to pier.		

REMARKS DRILLER: FLOYD CROSS P. [illegible] 8 [illegible] Bobcat Sampler

BORING 13TB ~~12~~ 10 [illegible]

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* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 13TB11
PROJECT NO.: 9594 DATE: 1-24-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: J.R. FERGUSON
WATER LEVEL DATA :
(Date, Time & Conditions) 1-24-94 08:00 20°

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
						[illegible]	[illegible]		
S-1	2-4	60 / 30	1.2		[illegible]	Brown [illegible]	[illegible]	[illegible]	HNU 0 08:38
		15 / 10	2.0			[illegible]	[illegible] Fine-[illegible] Sand	[illegible]	WET XRF —
S-2	4-6	[illegible]	[illegible]		M Dense	Brown	Sand [illegible] Medium Sand	[illegible]	HNU 0 08:43
		7 / 6	2.0			Brown	[illegible]	[illegible]	[illegible] WET XRF —
S-3	6-8	5 / 8	[illegible]		M. Dense	Brown	↓	Fill	HNU 0 08:50
		2 / 10	2.0			Black-Brown	↓	Fill	WET XRF —
S-4	8-10	5 / 7	.8		M Dense	Black	[illegible]	Fill	HNU 0 09:00
		8 / 12	2.0			Black	Gravelly silty sand (oil stain)	Fill	WET XRF —
S-5	10-12	5 / 5	.5		Loose	Black Brown	↓	SW/GW	HNU 0 09:14
		5 / 5	2.0			Black-Brown	↓	SW/GW	WET XRF —
S-6	12-14	14 / 19	[illegible]		M Dense	Black-Brown	[illegible] Gravelly (f) Sand to	SW	HNU 0 09:22
		5 / 5	2.0			Black-Brown	[illegible] Sand	SW	WET XRF —
S-7	14-16	[illegible] / 8	1.0		V Loose	Green-Gray	Sand (f) [illegible] with trace	ml	HNU 0 09:27
		1 / 1	2.0			Green-Gray	[illegible]	ml	WET XRF —
							Bottom of Boring = 16.0		

REMARKS [illegible] 2" [illegible] 2" [illegible] 2" ø SPLIT BARREL Samples

BORING 13TB11

PAGE 1 OF 1

* See Legend on Back

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 13TB12
PROJECT NO.: 9594
DATE: 1-22-95
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: JRF/SJC
WATER LEVEL DATA:
(Date, Time & Conditions) 1-22-95, 09:00, 20°

SAMPLE NO. & TYPE OR RQD	DEPTH (FT) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth/Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	0-2	– –	–			BLACK	ASPHALT 0.5 - .5'		
		– –	–			GRAY	Concrete .5 - 1.5'		
S-1	2-4	14 R 6 9	.7 2.0		M. DENSE	BROWN	SILTY Medium-Coarse Sand Tr-	SM	HNU-0 09:32
						BROWN	Some Concrete Frags.	SM	DRY-ROOT 826 - XRF
S-2	4-6	5 5	1.1 ▽		LOOSE	BROWN	MEDIUM-COARSE Sand and	SP/SP	HNU-0 09:45
		5 7	1.1 2.0			BROWN	Sandy F-M GRAVEL	SP/GP	WET 347 - XRF
S-3	6-8	17 26 4 4	1.0 2.0	WOOD	M. DENSE	BROWN	Wood 6.5-7.0'	SP/GP	HNU-0 09:49
						BROWN			WET - XRF
S-4	8-10	WO R WO R	– 2.0		V. LOOSE	—	NO RECOVERY		HNU-- 10:18
						—			WET - XRF
S-5	10-12	3 2 1 1	1.0 2.0		V. LOOSE	BROWN	MEDIUM-COARSE SAND	SP	HNU-0 10:22
						BROWN		SP	WET - XRF
S-6	12-14	1 2 1 1	.7 2.0		V. LOOSE	GRAY		SP	HNU-0 10:30
						GRAY		SP	WET - XRF
S-7	14-16	3 2 1 1	.8 2.0		V. LOOSE	GRAY		SP	HNU-0 10:36
						GRAY		SP	WET - XRF
							BOTTOM OF BORING = 16.0'		

REMARKS Rig - Cme 75 3" Ø SPLIT BARREL SAMPLER. Noted approx 6' of borehole washed out Ø of concrete : 3' To : 6' depth.
Driller: Swiatek

BORING 13TB12

PAGE 1 OF 1

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 13TB13
PROJECT NO.: 9594 DATE: 1-26-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: J.R Ferguson
WATER LEVEL DATA :
(Date, Time & Conditions) 1-26-94 20° SNOW

SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth FL)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
							Asphalt 0-.5'		
S-1	1-3	35 / 25	1.3		DENSE	BROWN	SILTY SANDY (M-C) GRAVEL	FILL	HNU-0 08:38
		15 / 10	2.0			BROWN	(COARSE)	FILL	MOIST XRF
S-2	3-5	13 / 17	1.2		M. DENSE	BROWN	SILTY GRAVELLY SAND, some	FILL	HNU-0 8:42
		16 / 16	2.0			BROWN	gravel	FILL	MOIST XRF
S-3	5-7	16 / 17	.95		M. DENSE	BROWN	SILTY GRAVELLY Fine to Coarse	FILL	HNU-0 8:50
		11 / 11	2.0			BROWN	Sand and SANDY COARSE GRAVEL	FILL	MOIST XRF
S-4	7-9	15 / 15	.3		DENSE	BROWN		FILL	HNU-0 8:57
		16 / 13	2.0			BROWN	(SLIGHT DIESEL FUEL ODOR)	FILL	MOIST XRF
S-5	9-11	13 / 12	1.2		M. DENSE	BROWN	SILTY Sandy Fine-MEDIUM	SP/GP	HNU-3 9:04
		11 / 11	2.0			BROWN	Gravel and Gravelly Silty Coarse Sand	SP/GP	WET Diesel fuel odor XRF
S-6	11-13	9 / 17	1.2		DENSE	BROWN		SP/GP	HNU-1 09:12
		31 / 17	2.0			BROWN		SP/GP	WET XRF
S-7	13-15	15 / 10	1.3		M DENSE	BROWN		SP/GP	HNU-0 09:22
		13 / 11	2.0			BROWN		SP/GP	WET XRF
							Termination of Boring: 15.0'		

REMARKS Rig CME 75 Daylight Time Zone

BORING 13TB13

PAGE 1 OF 1

* See Legend on Back

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 13TB15 (13MW21)
PROJECT NO.: 9594
DATE: 1-25-94
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: J. R. FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 1-25-94

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
						BLACK	ASPHALT 0-.35 CONCRETE		
							.75-1.25 GRAVEL 1.25-2.0		
S-1	5-5	8 / 15	1.2		Dense	GRAY	Coarse Fragments	Fill	HNU 0 13:24
		27 / 35	2.0			BROWN	Silty Gravelly m-c Sand	Fill	moist XRF
S-2	5-7	10 / 8	.65		m. Dense	GRAY	Poor Recovery - Granite	Fill	HNU 0 13:32
▽		5 / 5	▽ 2.0			GRAY	Boulder in Sampler	Fill	moist XRF
S-3	7-9	7 / 8	1.0		M Dense	Brown-Gray	Silty Sandy Coarse Gravel	Fill	HNU 4.0 13:42
		10 / 14	2.0			Brown-Gray	oily - Diesel fuel odor	Fill	WET XRF
S-4	9-11	17 / 15	1.5		M Dense	Brown-Gray	Silty Sandy Medium-Coarse	Fill	HNU 20 13:50
		10 / 22	2.0			Brown-Gray	Capped	Fill	wet XRF
S-5	11-13	15 / 18	1.4		Dense	Brown-Gray		Fill	HNU 0 14:02
		21 / 25	2.0			Brown-Gray		Fill	wet XRF
S-6	13-15	[illegible] / 17	1.3		Dense	GRAY	Silty Gravelly Medium-	SM/GM	HNU 0 14:20
		19 / 24	2.0			GRAY	Coarse Sand	SM/GW	wet XRF
S-7	[illegible]	[illegible]	[illegible]		V Dense	GRAY		SM/GM	HNU 0 14:40
		[illegible]	2.0			GRAY		SM/GW	wet XRF
S-8	23-25	14 / 25	1.0		V. Dense	GRAY		SM/GW	HNU 0 14:55
		22 / 25	2.0			GRAY		SM/GW	wet
S-9	[illegible]	[illegible]			V. Dense	GRAY		SM/GW	HNU 15:15
		[illegible]	2.0			GRAY		SM/GW	wet

Bottom of Boring: 30.0'

REMARKS Rig: CME 75 Driller Floyd Cross
Installed monitoring well screen from 5'-15', Sand from 4'-17'

BORING 13TB15

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* See Legend on Back

BORING NO. 13TB15
13MW21

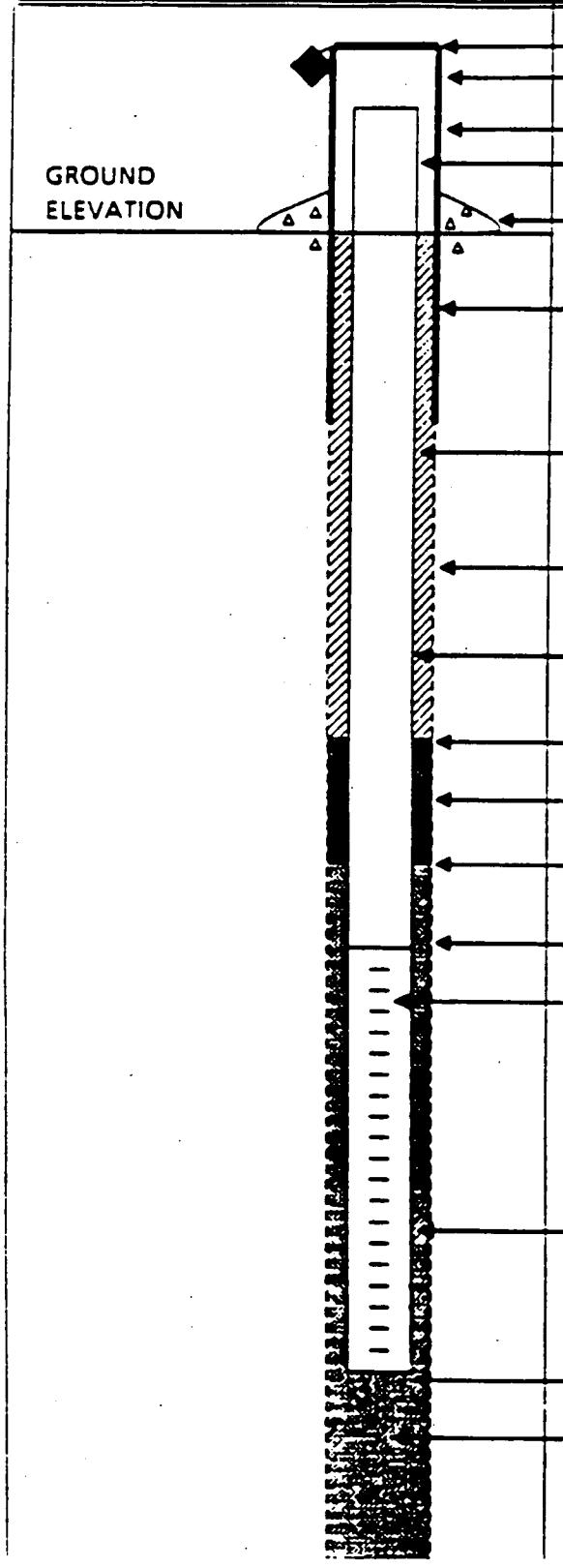
Halliburton NUS CORPORATION

OVERBURDEN MONITORING WELL SHEET

PROJECT NSB New London
PROJECT NO. 9594
ELEVATION
FIELD GEOLOGIST J.R. Ferguson

LOCATION Site 13 Lower Base
BORING 13TB15 13MW21
DATE 1-25-94

DRILLER F. Cross
DRILLING METHOD Hollow Stem Auger
DEVELOPMENT METHOD Surge / Pump



ELEVATION OF TOP OF SURFACE CASING :
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING: Flush Mount
STICK - UP RISER PIPE : -0.5'
TYPE OF SURFACE SEAL: Portland Cement
I.D. OF SURFACE CASING: 6"
TYPE OF SURFACE CASING: STEEL
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: Sch 40 PVC
BOREHOLE DIAMETER: 8 1/2"
TYPE OF BACKFILL: NA
ELEVATION / DEPTH TOP OF SEAL: 2.5'
TYPE OF SEAL: Bentonite Pellet
DEPTH TOP OF SAND PACK: 4.0
ELEVATION / DEPTH TOP OF SCREEN: 5.0
TYPE OF SCREEN: Schedule 40 PVC
SLOT SIZE x LENGTH: .010 10'
I.D. OF SCREEN: 2"
TYPE OF SAND PACK: #2 Silica Sand
ELEVATION / DEPTH BOTTOM OF SCREEN: 15.0
ELEVATION / DEPTH BOTTOM OF SAND PACK: 17.0
TYPE OF BACKFILL BELOW OBSERVATION WELL: #2 Silica Sand

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB-NLON
BORING NO.: 13TB16 (13MW19)
PROJECT NO.: 9594
DATE: 1-24-94
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: J.R. Ferguson
WATER LEVEL DATA:
(Date, Time & Conditions) 1-24-94 16:50 35°

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
				ASPHALT			Asphalt - Concrete	Fill	
							Limestone Gravel Subbase	Fill	
S-1	2-4	12 9	1.25		M. Dense	Brown	Silty Fine to Medium Sand	Fill	HNU 0 16:00
		6 8	2.0			Brown	Tr. Some Round (m) Gravel	Fill/Sm	Moist XRF
S-2	4-6	9 7	1.4		M. Dense	Brown		Sm	HNU 0 16:06
		5 7	2.0			Brown		Fill/Sm	moist XRF
S-3	6-8	14 72	.45		V. Dense	Brown		Fill/Sm	HNU 0 16:15
		19 16	2.0			Brown		Fill/Sm	moist XRF
S-4	8-10	2 34	1.3	WOOD	Dense	Black	Silty Sandy Gravel wood	Fill	HNU-10 16:29
		15 9	2.0			Black	diesel fuel in sample	Fill	Diesel fuel coated wet IRF
S-5	10-12	6 6	.95		M. Dense	Black	Silty Sandy Medium Gravel	Fill	HNU-3 16:36
		6 6	2.0			Black	diesel fuel odor	Fill/GP	wet XRF
S-6	12-14	9 10	.5		M. Dense	Black		Fill?	HNU-3 16:44
		7 4	2.0			Black		GP	WET XRF
S-7	14-16	25 30			V. Dense	Black		GP	HNU-5 16:50
		22 10	2.0			Black		GP	WET XRF
							Bottom of Boring - 16.0'		

REMARKS Rig: CME 75 Driller Floyd Cross
Installed monitoring well screen from 5-15' Sandpack from 4' to 18' Bentonite 2.5' to 4'

BORING 13TB16

PAGE 1 OF 1

* See Legend on Back

BORING NO. 13TB16
13MW16

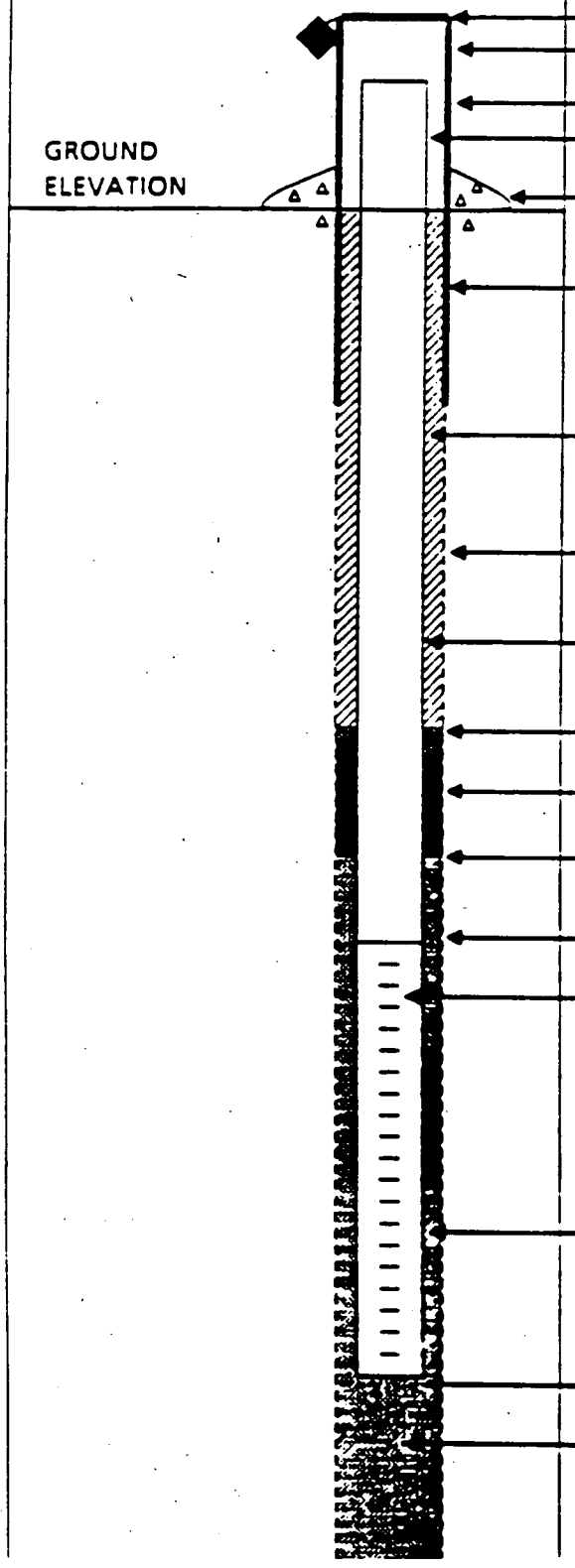
Halliburton NUS CORPORATION

OVERBURDEN MONITORING WELL SHEET

PROJECT: NSB New London
PROJECT NO.: 9594
ELEVATION:
FIELD GEOLOGIST: J R Ferguson

LOCATION: Site 13 Lower Base
BORING: 13TB16 — 13MW19
DATE: 1-25-94

DRILLER: E. Cross
DRILLING METHOD: Hollow Stem Auger
DEVELOPMENT METHOD: Surge / Pump



ELEVATION OF TOP OF SURFACE CASING:
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING: Flush Mount
STICK - UP RISER PIPE: -0.5'
TYPE OF SURFACE SEAL: Portland cement
I.D. OF SURFACE CASING: 6"
TYPE OF SURFACE CASING: STEEL 0.0 - 2.0'
RISER PIPE I.D. 2" Ø
TYPE OF RISER PIPE: Schedule 40 PVC
BOREHOLE DIAMETER: 8 1/2
TYPE OF BACKFILL: NA
ELEVATION / DEPTH TOP OF SEAL: 2.5'
TYPE OF SEAL: Bentonite Pellet
DEPTH TOP OF SAND PACK: 4.0
ELEVATION / DEPTH TOP OF SCREEN: 5.0
TYPE OF SCREEN: Sch 40 PVC
SLOT SIZE x LENGTH: .010 10'
I D OF SCREEN: 2" Ø
TYPE OF SAND PACK: #2 SILICA
ELEVATION / DEPTH BOTTOM OF SCREEN: 15.0
ELEVATION / DEPTH BOTTOM OF SAND PACK: 18.0'
TYPE OF BACKFILL BELOW OBSERVATION WELL: #2 SILICA SAND

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON
PROJECT NO.: 9594 DATE: 1-25-93
ELEVATION: FIELD GEOLOGIST: J.R. FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 1-25-93 09:20 32°

BORING NO.: ~~13TB19~~ (13MW20) 13TB17
DRILLER: EAST COAST THOMAS

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft) OR RUN N.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth Ft)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
							ASPHALT, Concrete fragments	FILL	
							COARSE Rock fragments	FILL	
S-1	2-4	17 / 9			M. Dense	BROWN-BLACK	SILTY SANDY MEDIUM-COARSE	FILL	HNU 0 09:41
		12 / 10	2.0			BROWN-BLACK	GRAVEL	FILL	moist XRF
S-2	4-6	34 / 21	1.0		M. Dense	BROWN	SILTY Fine to Medium Sand	FILL	HNU 0 09:47
		8 / 11	2.0			BROWN	Tr-Some medium gravel	FILL	moist XRF
S3	6-8	9 / 18	1.5		Dense	BLACK-BROWN		FILL	HNU 3 09:56
		22 / 14	2.0			BLACK-BROWN	OILY SHEEN Diesel Fuel ODOR	FILL	wet XRF
S-4	8-10	10 / 16	1.6		Dense	GRAY-BLACK	MEDIUM - COARSE Sand, Trace	FILL	HNU 1 10:02
		17 / 14	2.0			GRAY-BLACK	to Some MEDIUM GRAVEL (DIESEL	FILL	WET XRF
S-5	10-12	16 / 22	1.45		Dense	GRAY-BLACK	Fuel odor	FILL	HNU 0 10:10
		20 / 16	2.0			GRAY-BLACK		FILL	WET XRF
S-6	12-14	12 / 20	1.5		Dense	GRAY-BLACK		FILL	HNU 0 10:17
		20 / 30	2.0			GRAY-BLACK		FILL	WET XRF
S-7	14-16	19 / 20	1.4		Dense	GRAY-BLACK		FILL	HNU 0 10:25
		14 / 15	2.0			GRAY-BLACK		FILL	WET XRF
							Bottom of Boring: 16.0		
							INSTALLED MONITORING WELL		
							MW 20 SCREEN from 3'-13'		
							Sand from 2.5-16'		

REMARKS: All PID 75 Drilling PDS: 12.70 STATIC 5.9 from CS
INSTALLED WELL SCREEN 3'-13' Sand 2'-16' 3" Ø SPLIT
BARREL SAMPLES

BORING 13TB19
PAGE 1 OF 1

* See Legend on Back

BORING NO. 13TB17
13MW20

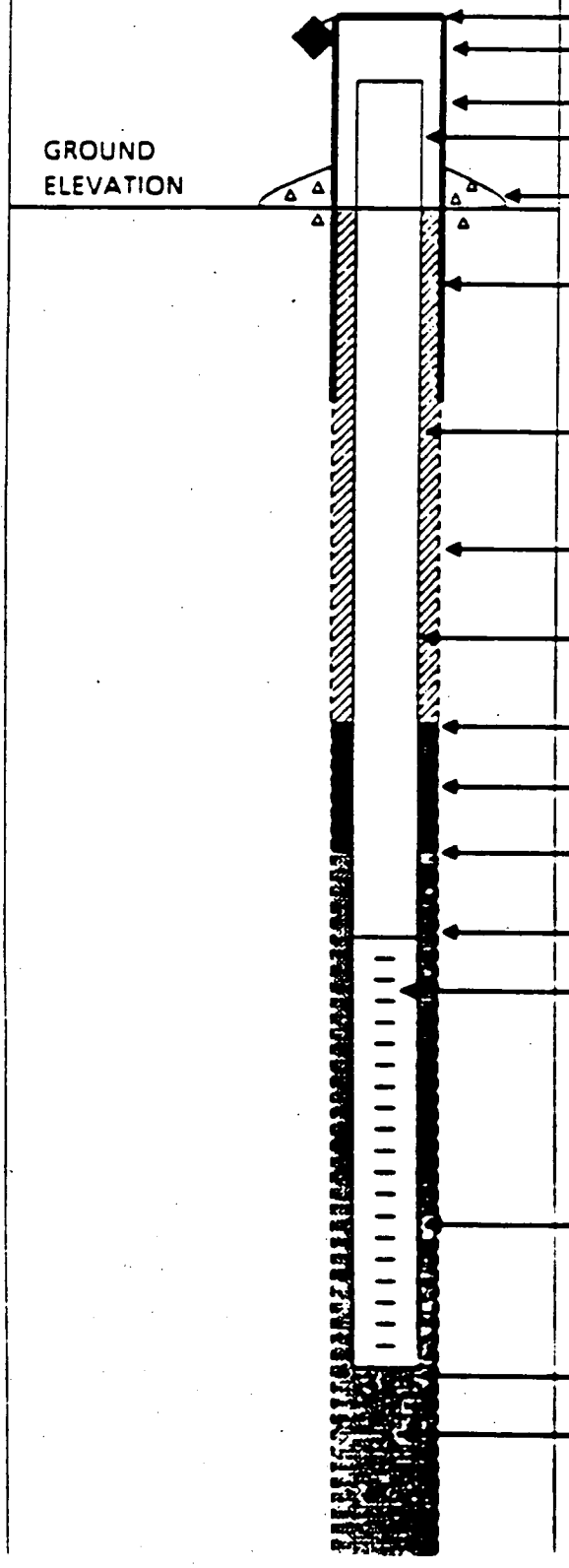
Halliburton NUS CORPORATION

OVERBURDEN MONITORING WELL SHEET

PROJECT NSB New London
PROJECT NO. 9594
ELEVATION
FIELD GEOLOGIST J.R. Ferguson

LOCATION Site 13 Lower Base
BORING 13TB19 13MW20
DATE 1-25-94

DRILLER F. Cross
DRILLING METHOD Hollow Stem Auger
DEVELOPMENT METHOD Surge / Pump



ELEVATION OF TOP OF SURFACE CASING :
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING: Flush Mount
STICK - UP RISER PIPE : -0.5'
TYPE OF SURFACE SEAL: Portland Cement
I.D. OF SURFACE CASING: 6"
TYPE OF SURFACE CASING: Steel
0.0 - 3.0'
RISER PIPE I.D. 2" Ø
TYPE OF RISER PIPE: Sch 40 PVC
BOREHOLE DIAMETER: 8½"
TYPE OF BACKFILL: NA
ELEVATION / DEPTH TOP OF SEAL: 1.5'
TYPE OF SEAL: Bentonite Pellet
DEPTH TOP OF SAND PACK: 2.5'
ELEVATION / DEPTH TOP OF SCREEN: 3.0'
TYPE OF SCREEN: Sch 40 PVC
SLOT SIZE x LENGTH: .010 10'
I D OF SCREEN: 2"
TYPE OF SAND PACK: #2 Silica Sand
ELEVATION / DEPTH BOTTOM OF SCREEN: 13.0
ELEVATION / DEPTH BOTTOM OF SAND PACK: 16.0
TYPE OF BACKFILL BELOW OBSERVATION WELL: 2 Silica Sand

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 13TB18
PROJECT NO.: 9594 DATE: 2-1-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: J R FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 2-1-94 CLEAR 20°

SAMPLE NO. & TYPE OR RQD	DEPTH (FL) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth FL)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
							ASPHALT AND CONCRETE		
S-1	1-3	3 2	1.0		LOOSE	BROWN	GRAVELLY MEDIUM-COARSE SAND	FILL	HNU - 0 11:08
		3 4	2.0			BROWN	and Sandy MEDIUM GRAVEL	FILL	MOIST XRF
S-2	3-5	4 4	1.1		LOOSE	BROWN		FILL	HNU - 0 11:15
		4 6	2.0			BROWN		FILL	MOIST XRF
S-3	5-7	13 11	.95		M. DENSE	BROWN		FILL	HNU - 0 11:19
		9 7	▽ 2.0			BROWN		FILL	MOIST-WET XRF
S-4	7-9	11 7	.8		M. DENSE	BROWN	COARSE SAND and fine	FILL	HNU - 0 11:26
		4 2	2.0			BROWN	gravel above pier	FILL	WET XRF
—	9-11		—	VOID			Augers DROP without any	VOID	HNU -
			2.0				feed pressure SAMPLING Rods	VOID	XRF
—	11-13		—				DROP to ± 12-13'	VOID	HNU —
			2.0						XRF
S-5	13-15	8 5	.5		LOOSE	GREEN-GRAY	SANDY (VF-F) SILT	ml	HNU - 0 11:45
		4 3	2.0			GREEN-GRAY			XRF
							BOTTOM OF BORING 15.0'		

REMARKS DRILLER FLOYD CROSS RIG CME 75

BORING 13TB18

PAGE 1 OF 1

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 13TB19
PROJECT NO.: 9594 DATE: 2-1-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: J. R. FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 2-1-94 OVERCAST 20°

SAMPLE NO. & TYPE OR RQD	DEPTH (FT) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
							ASPHALT + CONCRETE		
S-1	1-3	13 / 22	.75		V. DENSE	GRAY-BROWN	CONCRETE FRAGMENTS AND	FILL	HNU - 0 12:51
		100/0	1.25			BROWN	COARSE SAND, TRACE M. GRAVEL	FILL	NEF
							TERMINATED BORING - 3.0'		
							HIT ANOTHER ELECTRIC		
							UTILITY SUPPLYING POWER TO		
							PIER SEE LOG BOOK 2220		
							ABANDONED LOCATION		

REMARKS DRILLER FLOYD CROSS RIG CME 75

BORING 13TB19

PAGE 1 OF 1

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 13 WE 4A
PROJECT NO.: 9594 DATE: 1-23-94 DRILLER: EAST COAST THOMAS
ELEVATION: FIELD GEOLOGIST: J.R. FERGUSON
WATER LEVEL DATA:
(Date, Time & Conditions) 1-23-94 09:00 - 15°

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1	0-2	26 33	1.2		V. Dense	Black-Brown	Gravelly Silty Fine to Coarse	Fill	HNU-1 09:10
		42 18	2.0			Black-Brown	Sand, Tr Brick + Flyash.	Fill	DRY XRF —
S-2	2-4	11 11	1.2		M. Dense	Brown	Silty Fine to med. m	Fill	HNU-0 09:18
		8 8	2.0			Brown	Sand tr brick + flyash	Fill	MOIST XRF —
S-3	4-6	4 8	1.2		M Dense	Brown		Fill	HNU-0 09:26
		7 5	2.0			Brown		Fill	MOIST-WET XRF —
S-4	6-8	6 11	1.1		M Dense	Brown D. Brown	Silty Fine - Coarse Sand	sm	HNU-0 09:35
		8 16	2.0			Gray	Tr. Shell Fragment microfossils	sm	WET XRF -
S-5	8-10	3 2	1.5		Loose	Green-Gray	Microfossils, Clayey Silt, Tr.	ml	HNU-0 09:39
		3 3	2.0			Green-Gray	Bivalve + gastropod frags	ml	moist XRF —
S-6	10-12	3 2	1.5		V. Loose	Green-Gray		ml	HNU-0 09:49
		2 1	2.0			Green-Gray		ml	moist XRF —
S-7	12-14	1 2	1.3		Stiff	Green-Gray		ml	HNU-0 09:53
		7 9	2.0			Green-Gray		ml	Moist XRF —
S-8	14-16	3 2	2.0		V. Loose	Green-Gray	Microfossil Clayey Silt trace	ml	HNU-0 10:10
		2 1	2.0			Green-Gray	Fine Sand and fine gravel	ml	moist XRF —
							Bottom of Boring: 16.0		

REMARKS PID AME 75 DRILLER FLOYD ROSS

BORING 13WE4A

PAGE 1 OF 1

* See Legend on Back

APPENDIX A.11

SITE 14 - OBDANE

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 14MW15
PROJECT NO.: 9594 DATE: 2-28-94 DRILLER: EAST COAST THOMAS/
ELEVATION: FIELD GEOLOGIST: Tim Evans Tim Sabo
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS OVM
★ S-1 @ 1356	0.0	1 1	2.0/2.0		Soft	D. Brn → Gray Brn	Silt w/ Tr Wood Frags & Roots	ML	Top 0.5' Snow Moist 0ppm
	2.0	2 2							
S-2 @ 1358		2 3	1.8/2.0		M Stiff -	Gray Brn	Silt w/ Tr Wood Frags & Roots	ML	Moist 0ppm
	4.0	2 3			Loose	D. Brn Tan	Silty Sand w/ Tr Roots & Mica Sand	SM SP	→ F Gr → M Gr.
S-3 @ 1410		4 14	2.0/2.0		Dense	Tan	Sand w/ Tr Roots & Mica	SP	*Wet 0ppm
	6.0	26 34							→ M to C Gr
S-4 @ 1418		9 25	2.0/2.0		V. Dense	Tan	Sand w/ Tr Mica	SP	→ C to F Gr 0ppm
	8.0	30 31							
S-5 @ 1428		26 37	2.0/2.0		V. Dense	Tan	Sand w/ Tr Mica	SP	→ F to M Gr 0ppm
	10.0	33 35							
S-6 @ 1444		12 18	1.3/1.3		V. Dense	Tan	Sand w/ Tr Mica	SP	→ F Gr 0ppm
	11.3 12.0	100/3					(Mica Schist In Auge)		
							(Weathered BR)		Auger to 14'
	14.0								
							Total Depth 14.0'		
							HSA to 14'		
							6" SS to 11.3'		
							Screen 4'-14'	→	2" PVC (0.010 Slot)
							Sand 2.5'-14'	→	3-100# Bag Ottawa Sand
							Pellets 1.5'-2.5'	→	1-50# Bag Benton. Plug

REMARKS Dietrich D-50 HSA Rig (Bombardier-Mounted 3" x 24" SS (140# Wt 30" Drop, Cat Head) 4 1/4" ID 8" OD Auger

BORING 14MW15

PAGE 1 OF 1

* See Legend on Back

* Sent to lab (Sample # 14MW15-0002 & 14MW15-0204)

BORING NO. 14MW1S

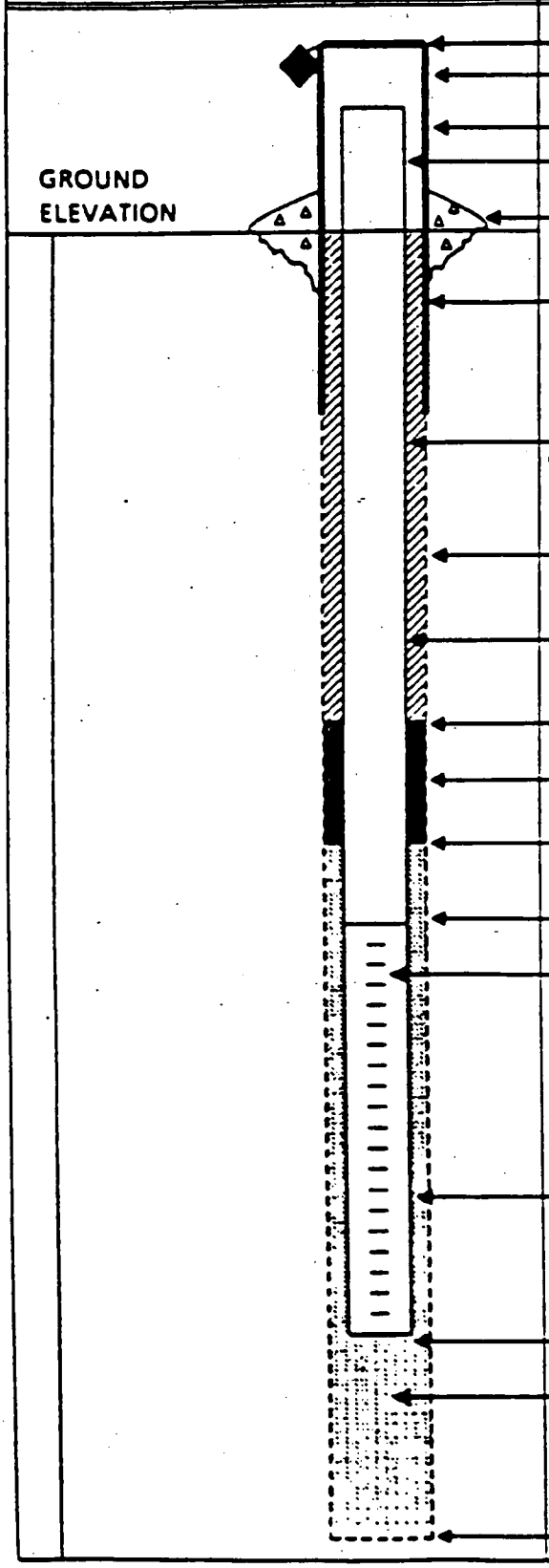
HALLIBURTON NUS
Environmental Corporation

MONITORING WELL SHEET

PROJECT: NSB-NLON
PROJECT NO.: 9594
ELEVATION:
FIELD GEOLOGIST: Tim Evans

LOCATION: GROTON, CT.
BORING: 14MW1S
DATE: 2-28-94

DRILLER: EAST COAST
DRILLING METHOD: HSA
DEVELOPMENT METHOD:



ELEVATION OF TOP OF SURFACE CASING:
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING:
STICK - UP RISER PIPE:
TYPE OF SURFACE SEAL: Concrete
I.D. OF SURFACE CASING: 4"
TYPE OF SURFACE CASING: Steel
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: PVC (Schedule 40)
BOREHOLE DIAMETER: 8"
TYPE OF BACKFILL: N/A
ELEVATION / DEPTH TOP OF SEAL: / 1.0'
TYPE OF SEAL: Bentonite Pellets
DEPTH TOP OF SAND PACK: 2.5'
ELEVATION / DEPTH TOP OF SCREEN: 4'
TYPE OF SCREEN: PVC
SLOT SIZE x LENGTH: 0.010 x 10'
I D OF SCREEN: 2"
TYPE OF SAND PACK: Silica Sand
ELEVATION / DEPTH BOTTOM OF SCREEN: / 14'
ELEVATION / DEPTH BOTTOM OF SAND PACK: / 14'
TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A
ELEVATION / DEPTH OF HOLE: / 14'

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 147B1
PROJECT NO.: 9594
DATE: 02-21-94
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: Tim Evans / Tim Sabo
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN No.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS OVM
S-1 @	0.0	7 / 22	1.8/1.8		V. Dense	L. Brn	Silty Sand w/ Gneiss Frags & Tr Roots	SP	Sand - F to MGr
1347	2.0	31 / 100/.3							
	2.5	10					- Boulder -		Auger 1.8 to 2.5
S-2 @		18 / 24	0.8/2.0		Dense	L. Brn	Silty Sand w/ Gneiss Frags & Tr Roots	SP	Moist
1401	4.5	24 / 11							
S-3 @		15 / 12	1.6/2.0		M. Dense	L. Brn	Silty Sand w/ Gneiss Frags	SP	Sand - F Gr
1410	6.5	12 / 5			↓	↓	↓	↓	
S-4 @		12 / 15	1.0/2.0		↓	↓	↓	↓	
1413	8.5	14 / 6			↓	↓	↓	↓	
S-5 @		1 / 2	1.6/2.0		M. Dense	L. Brn	Silty Sand	SP	Sand - F to MGr
1423	1 .5	16 / 22							
S-6 @		7 / 9	0.0/2.0		M. Dense		- No Recovery -		
1428	12.5	39 / 26			V. Dense		- No Recovery		
S-7 @ 1445		100/.5	0.0/1.0						
S-8 @		70 / 50			V. Dense		- No Recovery		
2/21 1500		100/.0							HSA to 15.5'
2/22									Auger Refusal @ 16.0' 0916 - Move ~5' SW
									Auger Refusal @ 5.0' 1020 - Move 5' N
									Refusal @ 0.5' - Move 2' N
									Refusal @ 1.5' - Move 5' E
									Refusal @ 1.5' 1100
							Back fill 21 ft		
							Stand by 1 hr		Hill ~18± Total Elev

REMARKS: Dietrich D-50 HSA Rig (Bombadier-Mounted)
3" x 24" SST (140# Wt, 30" Drop, Cat Head)
4 1/4" ID, 8" OD Auger

BORING 147B1
PAGE 1 OF 1

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON BORING NO.: 14TB2
PROJECT NO.: 9594 DATE: 0-21-94 DRILLER: EAST COAST THOMAS/
ELEVATION: FIELD GEOLOGIST: Tim Evans Tim Sabo
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-1 @	0.0	8 / 24	0.0/2.0		V. Dense		- No Recovery -		① Refusal @ 0.5' ② Move 3' N, Refusal @ 0.5'
1530	2.0	69 / 57							③ Move 2.5' S Refusal @ 0.5'
									④ Move 10' NE, Auger to 3.5'
	3.5	8							
S-2 @		24 / 69	1.2/2.0		V. Dense	Brn	Silty Sand w/ Gneiss Frags	SP	Sand - FGr
1620	5.5	57 / 11			↓	↓	↓	↓	
S-3 @		5 / 7	0.1/2.0		↓	↓	↓	↓	Poor Recovery
1630	7.5	100/.3			↓	↓	↓	↓	Auger Refusal @ 6.5'

REMARKS Dietrich D-50 Hole Hog (Truck-Mounted)
3" x 24" SST (100# w/ 30° Dog Cat Head)
4¼" ID, 8" OD Auger

BORING 14TB2

PAGE 1 OF 1

* See Legend on Back

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 14TB2A
PROJECT NO.: 9594
DATE: 3-1-94
DRILLER: EAST COAST THOMAS/
ELEVATION:
FIELD GEOLOGIST: Tim Evans Tim Sabo
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQ	DEPTH (FL) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, FL)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS OVM
S-1 @	0.0	1 / 2	2.0/2.0		V. Loose	D. Brn	Clayey Sand w/ Tr Roots	SC	Snow Top 0.4' Moist FGr 0ppm
0920	2.0	2 / 2				Orange Brn	Sand w/ Tr Roots	SP	M Gr
S-2 @		3 / 11	1.8/2.0		M. Dense	Orange Brn	Sand w/ Tr Mica	SP	wet 1ppm
0922	4.0	13 / 26				Orange			M to C Gr Fe-stain laminations
S-3 @		5 / 19	1.7/2.0		Dense	Orange Brn to	Sand w/ Tr Mica	SP	wet 0ppm
0931	6.0	26 / 32				Tan			M Gr
S-4 @		13 / 21	2.0/2.0		V. Dense	Tan	Sand w/ Tr Mica	SP	F to M Gr 0ppm
0936	8.0	37 / 37							Fe-staining
S-5 @		15 / 27	1.7/2.0		V. Dense	Tan	Sand w/ Tr Mica	SP	F to M Gr 0ppm
0951	10.0	34 / 46							Fe-staining laminated
S-6 @		6 / 22	2.0/2.0		V. Dense	Tan	Sand w/ Tr Mica	SP	M Gr 0ppm
0959	12.0	41 / 47							Laminated
S-7 @		22 / 41	2.0/2.0		V Dense	Tan	Sand w/ Tr Mica	SP	F to C Gr 0ppm
1016	13.8	43 / 100/.3							Laminated
S-8 @ 1031	14.0	100/1.0					Mica Schist		
							Total Depth 14'		
							HSA 0' - 14'		
							8 - SS to 14'		
							Backfill 0'-14' → Grout		

REMARKS Dietrich D-50 HSA Rig (Bombardier Mounted)
3" x 24" SST (30" Drop, 140# Wt, Cat Head)
4¼" ID, 8" OD Auger

BORING 14TB2A

PAGE 1 OF 1

* See Legend on Back

APPENDIX A.12

SITE 15 - SPENT ACID STORAGE AND DISPOSAL AREA

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB-NLON — BORING NO.: 15MW15
PROJECT NO.: 9594 — DATE: 01-20-94 — DRILLER: EAST COAST THOMAS/
ELEVATION: — FIELD GEOLOGIST: TIM EVANS — TIM SABO
WATER LEVEL DATA: —
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS	OVA
	0.0						Asphalt /			
	2.0						Concrete			
S-1 @		20 / 25	1.3/2.0		V. Dense	TAN	SAND & GRAVEL	GP	Sand - Fine to Med Gravel Max Ø 0.1' FILL	0 PP
1326	4.0	31 / 17				TO BRN	SILTY SAND	SM	DRY SAND - Fine Gr	
S-2 @		16 / 8	1.8/2.0		M. Dense	ORANGE BRN	SILTY SAND	SM	MOIST SAND - Fine Gr	0 PP (Hea
1316	6.0	10 / 11								
* S-3 @	7.0	12 / 17	1.0/1.0		M. Dense	GRAY BRN	SILTY SAND SILT	SP/ML	MOIST Fe-Stains SAND - Med to Coarse Gr	2 PP
1324 S-4 @		7 / 15	1.7/2.0		Dense	L. BRN	SAND	SP	Wet	0 PP (Hea
1335	9.0	28 / 34		?FILL?					Med to Coarse Gr Poorly Graded	
S-5 @		21 / 23	2.0/2.0		Dense	GRAY TO TAN	Silty Sand / SILT W/ TR MICA	SP/ML	Wet * Fe-Stained Sand - Fine to Med Gr	0 PP
1347	11.0	24 / 27								
S-6 @		17 / 17	2.0/2.0		Dense	Gray	Silty Sand w/ Tr Mica	SP	Saturated	0 PP
1355	13.0	27 / 27			HARD				Sand - Fine Gr, Poorly Graded	
S-7 @		21 / 32			V. Dense	Gray	Silt Sand w/ Tr Mica /	SP/	Laminated	0 PP
1404	15.0	34 / 24			HARD		Silt	ML	Sand - Fine Gr, Poorly Graded	
							- Total Depth 15' -			
							Screen 5'-15'		→ 2" PVC 0.010 x 10'	
							Sand 3.5'-15'		→ 3 - 100# Bag Ottawa Sand	
							Pellets 1.5'-3.5'		→ 1 - 68# Bag Pure Gold Medium Bentonite Chips	

REMARKS: CME 55 HSA Rig
3" x 24" SS (140# Wt, Cat Head, 30" Drop)
4¼" ID, 8" OD Auger

BORING 15MW15
PAGE 1 OF 1

* See Legend on Back

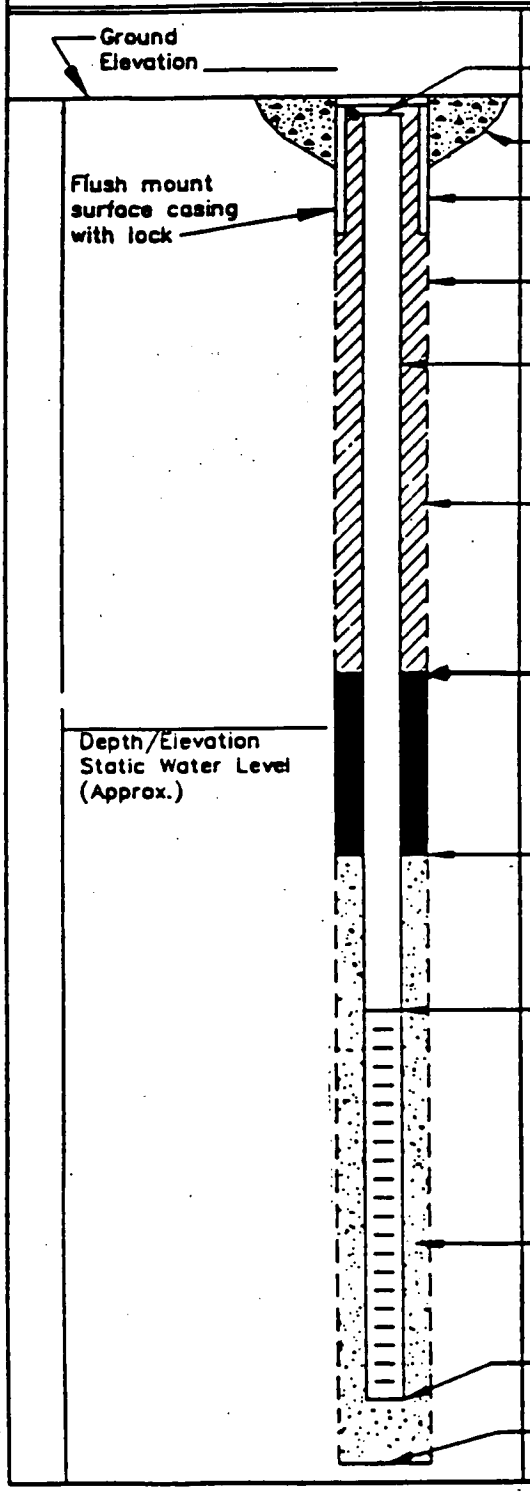
* Sample (1-2oz & 1-8 oz jar) Sent to laboratory for analyses
# 15MW15-0607

HALLIBURTON NUS
Environmental Corporation

WELL NO.: 15MW1S

OVERBURDEN MONITORING WELL SHEET

PROJECT: NSB-NLON	LOCATION: Groton, CT	DRILLER: East Coast
PROJECT NO.: 9594	BORING: 15MW1S	DRILLING METHOD: HSA
ELEVATION:	DATE: 1-20-94	DEVELOPMENT METHOD:
FIELD GEOLOGIST: Tim Evans		



ELEVATION TOP OF RISER: _____

TYPE OF SURFACE SEAL: Concrete

TYPE OF PROTECTIVE CASING: Steel

I.D. OF PROTECTIVE CASING: 4"

BOREHOLE DIAMETER: 8"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: Grout

ELEVATION / DEPTH TOP OF SEAL: /1.5'

TYPE OF SEAL: Bentonite Chips

DEPTH/ELEVATION TOP OF SAND: 3.5'/

DEPTH/ELEVATION TOP OF SCREEN: 5'/

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.010 x 10'

TYPE OF SAND PACK: Silica Sand

DEPTH/ELEVATION BOTTOM OF SCREEN: 15'/

DEPTH/ELEVATION BOTTOM OF SAND: 15'/

DEPTH/ELEVATION BOTTOM OF HOLE: 15'/

BACKFILL MATERIAL BELOW SAND: N/A

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB-NLON — BORING NO.: 15MW1D
PROJECT NO.: 9594 — DATE: 01-19-94 — DRILLER: EAST COAST THOMAS/
ELEVATION: — FIELD GEOLOGIST: TIM EVANS — TIM SABO
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (FT.) OR RUN N.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
1345	0.0						See Boring 15MW1S		Auger 0' to 15'
							for Litho 0' to 15'		
	5.0								
	10.0								
	15.0								
	20.0								
S-1 @		1 17	20/2.0		Hard	Tan	Silt	ML	Massive, Mica Flakes
1418	22.0	14 21			↓	↓	↓	↓	
									Auger 22' to 30'
	25.0								

REMARKS CME 55 HSA Rig
2" x 24" SS (140# wt. Cat Head, 30" Drop)
4¼" ID, 8" OD Auger

BORING 15MW1D

PAGE 1 OF 2

* See Legend on Back

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB-NLON — BORING NO.: 15MW1D
PROJECT NO.: 9594 — DATE: 01-19-94 — DRILLER: EAST COAST THOMAS
ELEVATION: — FIELD GEOLOGIST: Tim Evans / Tim Sabo
WATER LEVEL DATA: —
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth ft)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	25.0								
	30.0								
S-2 @		7 / 8	1.3/2.0		V. Stiff	Brn	Silt	ML	
1444	32.0	10 / 12			↓	↓	↓	↓	
									Auger 32' to 40'
	35.0								
	40.0								
S-3 @		11 / 14	1.2/2.0		Hard	Brn	Silt w/Tr Mud	ML	Laminated w/ Mud Laminae
1520	42.0	17 / 18			↓	↓	↓	↓	
	45.0								
S-4 @	45.5	100/.5	0.5/0.5		Hard	Brn	Silt w/Tr Gneiss Frags	ML	Gneiss in Shoe
1538									Auger to 46.5
							- Total Depth 46' -		Refusal @ 46.5

REMARKS: Screen 36' to 46' → 2" PVC 0.010 x 10'
Sand 35' to 46' → 3½ - 100# Bag (Ottawa)
Pellets 33' to 35' → 1 - 6# Bag (Pure Gold Med Bentonite Chips)
4" Steel Protective Casing (Flush Mount)

BORING 15MW1D
PAGE 2 OF 2

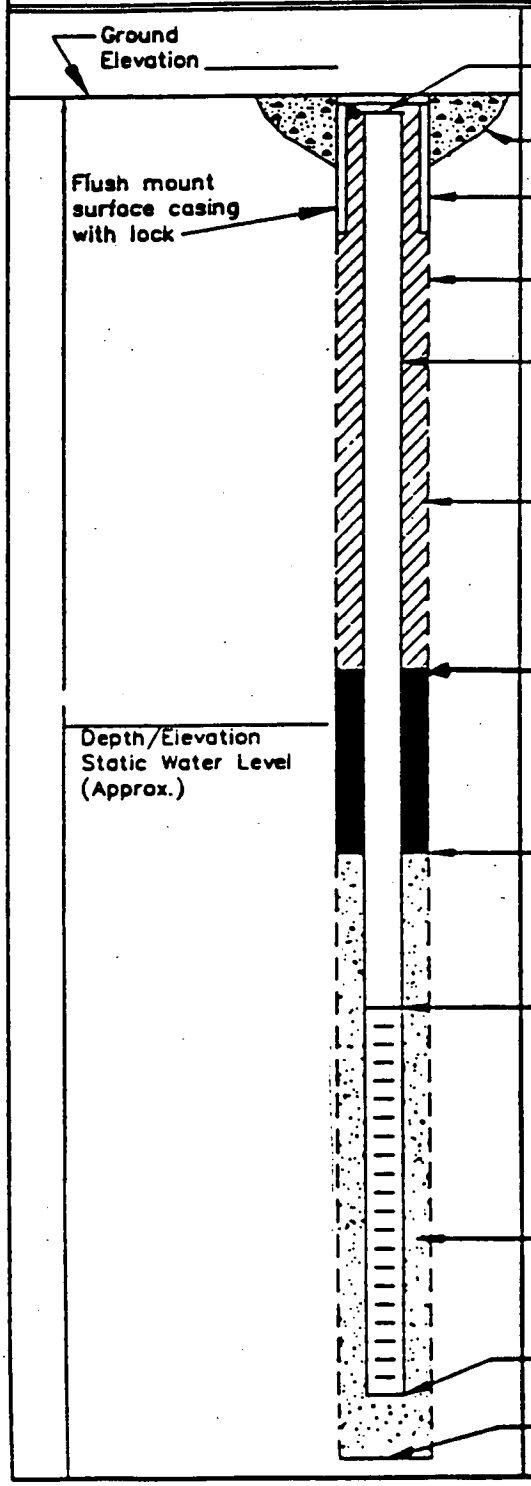
* See Legend on Back

HALLIBURTON NUS
Environmental Corporation

WELL NO.: 15MW1D

OVERBURDEN
MONITORING WELL SHEET

PROJECT: NSB-NLON	LOCATION: Groton, CT	DRILLER: East Coast
PROJECT NO.: 9594	BORING: 15MW1D	DRILLING METHOD: HSA
ELEVATION:	DATE: 1-19-94	DEVELOPMENT METHOD:
FIELD GEOLOGIST:		



ELEVATION TOP OF RISER: _____

TYPE OF SURFACE SEAL: Concrete

TYPE OF PROTECTIVE CASING: Steel

I.D. OF PROTECTIVE CASING: 4"

BOREHOLE DIAMETER: 8"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: Grout

ELEVATION / DEPTH TOP OF SEAL: / 33'

TYPE OF SEAL: Bentonite Chips

DEPTH/ELEVATION TOP OF SAND: 35'/

DEPTH/ELEVATION TOP OF SCREEN: 36'/

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.010 x 10'

TYPE OF SAND PACK: Silica Sand

DEPTH/ELEVATION BOTTOM OF SCREEN: 46'/

DEPTH/ELEVATION BOTTOM OF SAND: 46'/

DEPTH/ELEVATION BOTTOM OF HOLE: 46'/

BACKFILL MATERIAL BELOW SAND: N/A

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON — BORING NO.: 15MW25
PROJECT NO.: 9594 — DATE: 01-21-94 — DRILLER: EAST COAST THOMAS
ELEVATION: — FIELD GEOLOGIST: Tim Evans / Tim Sabo
WATER LEVEL DATA: —
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS	
@ 1420	0.0 0.5	6					Concrete		Top 6"	
* S-1 @		6 9	1.5/2.0		M. Dense	BRN	SILTY SAND w/ Tr Coal, Brick, Gneiss	SP	Dry SAND. V. Fine Gr	0 ppm
1450	2.5	13 7				↓	↓	↓	Gneiss Cobble in Shoe	
S-2 @		8 8			M. Dense	orange Brn	SAND w/ Tr Gneiss		Dry Sand - V Fine Gr Fe-Stain	0 ppm
1453	4.5 5.0	15							Gneiss Cobble at Top	
S-3 @		9 16	2.0/2.0		Dense	TAN	SILTY SAND w/ Tr Mica SILT	SP ML	Fine to Med Gr w/ Coarse Moist	0 ppm
1506	7.0	27 35				to Gray	SAND	SP	Fine to Med Gr	
S-4 @		10 16	1.5/2.0		Dense	TAN	SILTY SAND w/ Tr Mica	SP	Laminated WET	0 ppm
1511	9.0	14 15					SAND w/ TR MICA	SW	Med to Coarse Gr	
S-5 @		10 12	2.0/2.0		M. Dense	TAN				
1522	11.0	17 19								
S-6 @		25 27	2.0/2.0		V. Dense					0 ppm
1527	13.0	26 31					SILTY SAND w/ TR MICA	SP	SAND Fine, Mica Laminae	
							- NO SAMPLE -			
	15.0									
S-7 @		10 17	1.0/2.0		Dense	TAN	SILT SILTY SAND w/ TR MICA	ML SP	TOP 2" SAND FINE Gr, Mica Laminae	
1550	17.0	21 29								
							HSA to 15'			
							7 SS to 17			
							Screen 5-15		→ 2" PVC 0.010	
							Sand 4-15		→ 3 - 100# Bag Ottawa Sand	
							Pellets 3-4		→ 1/2 - 68# Bag Pure Gold medium Bentonite Chips	

REMARKS: CME 55 HSA Rig
3" x 24" SS (140# wt, Cat Head, 30" Drop)
4¼" ID, 8" OD Auger

BORING 15MW25
PAGE 1 OF 1

* See Legend on Back

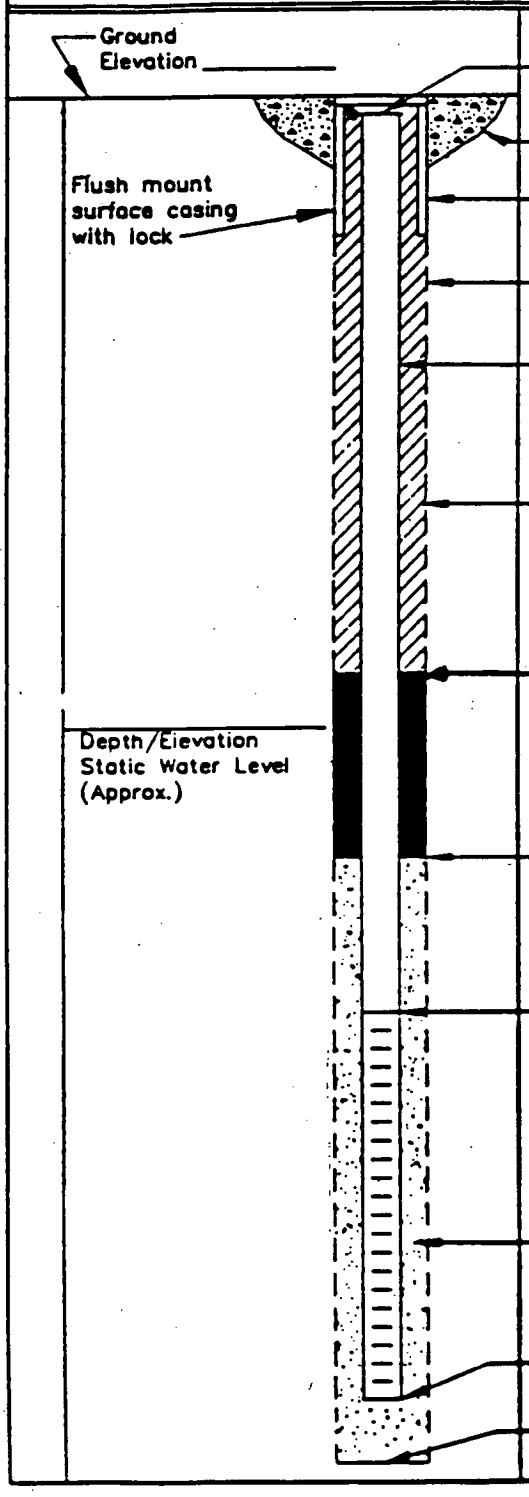
* Sample (15MW25-0.5-2.5) sent to laboratory for analyses (1-2oz. & 1-8oz. jar)

HALLIBURTON NUS
Environmental Corporation

WELL NO.: 15MW2S

OVERBURDEN
MONITORING WELL SHEET

PROJECT: NSB - NLON	LOCATION: Groton, CT	DRILLER: East Coast
PROJECT NO.: 9594	BORING: 15MW2S	DRILLING METHOD: HSA
ELEVATION:	DATE: 1-21-94	DEVELOPMENT METHOD:
FIELD GEOLOGIST: Tim Evans		



ELEVATION TOP OF RISER: _____

TYPE OF SURFACE SEAL: Concrete

TYPE OF PROTECTIVE CASING: Steel

I.D. OF PROTECTIVE CASING: 4"

BOREHOLE DIAMETER: 8"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: grout

ELEVATION / DEPTH TOP OF SEAL: 13'

TYPE OF SEAL: Bentonite Chips

DEPTH/ELEVATION TOP OF SAND: 4'

DEPTH/ELEVATION TOP OF SCREEN: 5'

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.010 x 10'

TYPE OF SAND PACK: Silica Sand

DEPTH/ELEVATION BOTTOM OF SCREEN: 15'

DEPTH/ELEVATION BOTTOM OF SAND: 15'

DEPTH/ELEVATION BOTTOM OF HOLE: 15'

BACKFILL MATERIAL BELOW SAND: N/A

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 15MW35
PROJECT NO.: 9594
DATE: 01-21-94
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: TIM EVANS / TIM SABO
WATER LEVEL DATA:
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS	
1047	0.0						Asphalt		Top 3"	OVA
	2.0						- No Sample (Boulders) -			
* S-1 @		SD 41	0.8/2.0		V. Dense	BRN	GRAVEL & SILTY SAND	GP	DRY GRAVEL - Max ø 0.1'	OPP
1100	4.0	12 8							SAND - FINE to Med Gr	
	5.0						- No Sample (Boulder) -			
S-2 @		17 14	1.45/2.0	▼	HARD	Gray to	Silt w/ Tr Mica	ML	H_2O @ 6'	OPPM
1122	7.0	21 7				BRN	SILTY Clay w/ Tr Org	CL	Bottom 0.2'	
S-3 @		5 4	1.8/2.0		V. Stiff	BRN to	↓	↓		OPPM
1124	9.0	7 13				TAN	SILTY SAND	SP	Moist Poorly Graded SAND - Fine Gr	
S-4 @		12 24	1.7/2.0		M Dense	L. BRN	SILTY SAND w/ Some Silt	SP/	Saturated Poorly Graded SAND - Med Gr	
1156	11.0	44 72						ML	Fe - Stains	
S-5 @		25 25			V. Dense	L. BRN TO	SAND /	SP/	SAND - Med to Coarse Gr. Poorly Graded	OPPM
1204	13.0	45 42				TAN	SILT w/ TR MICA	ML	LAMINATED	
S-6 @		19 25	2.0/2.0		V. Dense	TAN	SILTY SAND & SILT	SP/ML	SAND - V. Fine Gr	OPPM
1216	15.0	27 18							Laminated	
							- Total Depth 15'			
							HSA to 15'			
							6 SS to 15'			
							Screen 5'-15'		→ 2" PVC 0.010 x 10'	
							Sand 3'-15'		→ 3½ - 100# Bags Ottawa Sand	
							Pellets 2'-3'		→ 1 - 68# Bag Pure Gold Medium Bentonite Chips	

REMARKS: CME 55 HSA Rig
3" x 24" SS (140# wt, Cat Head 30" Drop)
4¼" ID, 8" OD Auger

BORING 15MW35
PAGE 1 OF 1

* See Legend on Back

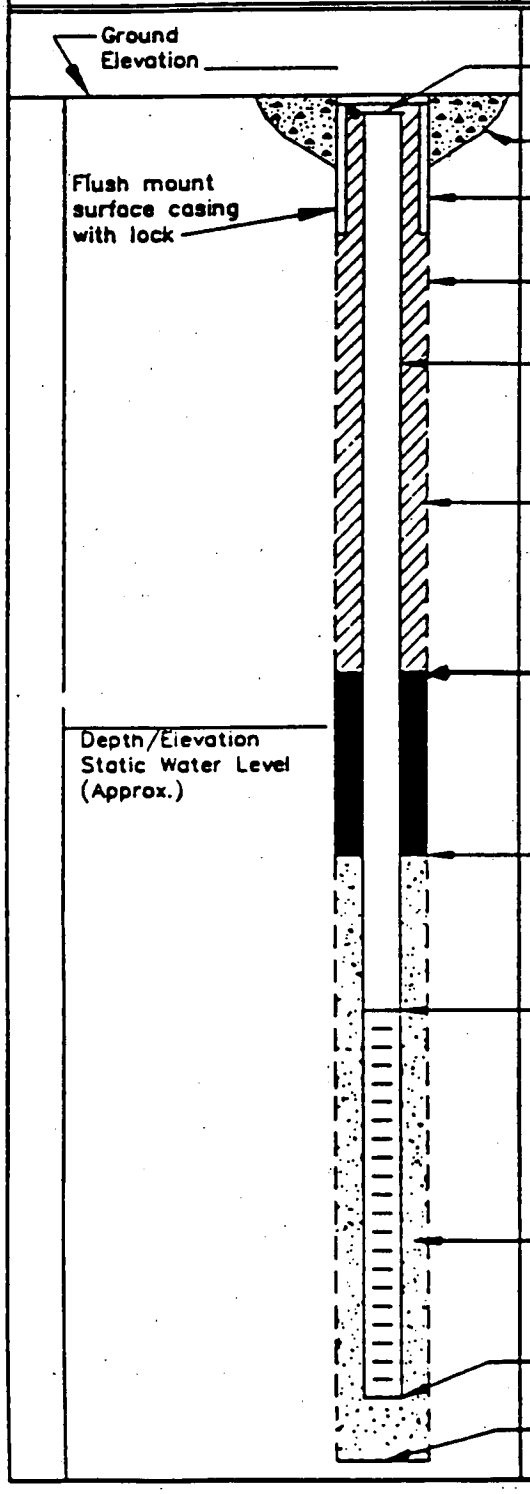
★ Sample (15MW35-0204) sent to laboratory for analyses (1.2 & 1.5 m ...)

HALLIBURTON NUS
Environmental Corporation

WELL NO.: 15MW3S

OVERBURDEN MONITORING WELL SHEET

PROJECT: NSB-NLON	LOCATION: Groton CT	DRILLER: East Coast
PROJECT NO.: 9594	BORING: 15MW3S	DRILLING METHOD: HSA
ELEVATION:	DATE: 1-21-94	DEVELOPMENT METHOD:
FIELD GEOLOGIST: Tim Evans		



ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: Concrete

TYPE OF PROTECTIVE CASING: Steel

I.D. OF PROTECTIVE CASING: 4"

BOREHOLE DIAMETER: 8"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: Grout

ELEVATION / DEPTH TOP OF SEAL: /2'

TYPE OF SEAL: Bentonite Chips

DEPTH/ELEVATION TOP OF SAND: 3'/

DEPTH/ELEVATION TOP OF SCREEN: 5'/

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.010 x 10'

TYPE OF SAND PACK: Silica Sand

DEPTH/ELEVATION BOTTOM OF SCREEN: 15'/

DEPTH/ELEVATION BOTTOM OF SAND: 15'/

DEPTH/ELEVATION BOTTOM OF HOLE: 15'/

BACKFILL MATERIAL BELOW SAND: N/A

BORING LOG — **HALLIBURTON NUS**

PROJECT: NSB-NLON — BORING NO.: 15MW4S
PROJECT NO.: 9594 — DATE: 01-18-94 — DRILLER: EAST COAST THOMAS/ TIM SABO
ELEVATION: — FIELD GEOLOGIST: TIM EVANS
WATER LEVEL DATA: —
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft.) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft.)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
	0.0						Asphalt Boulder		3" asphalt
▲ S-1 @ 1322	3.0	18 / 13 / 10 / 9	1.9/2.0		M. Dense	Brn to Tan	Silt w/Tr Sand & Gravel	ML	Gravel Cobble Rust Nothing 0 ppm; Sand - Med to Coarse Gr
S-2 @ 1329	5.0	6 / 7 / 12 / 14	1.1/2.0		M. Dense	TAN	SAND	SP	MOIST 2 ppm; Fine to Med Gr, Poorly Graded
S-3 @ 1340	5.8	40 / 100/.3			V. Dense		- NO SAMPLE -		Wet Poor Recovery
	7.0								
S-4 @ 1350	9.0	19 / 21 / 25 / 24	1.9/2.0		Dense	GRAY	SILTY SAND	SP	SATURATED 0 ppm; Fine Gr, Poorly Graded Mica Flakes, Fe-Stain
S-5 @ 1400	11.0	21 / 25 / 28 / 51	2.0/2.0		V. Dense				0 ppm (
S-6 @ 1405	13.0	7 / 8 / 17 / 19	2.0/2.0		M. Dense				0 ppm (Head
S-7 @ 1410	15.0	25 / 27 / 29 / 31	2.0/2.0		V. Dense				0 ppm (Head
S-8 @ 1430	17.0	13 / 15 / 16 / 25	2.0/2.0		Dense				0 ppm (Head
							Silt w/Tr SAND	ML	FINE SAND LAMINAE
S-9 @ 1434	19.0	18 / 19 / 31 / 37	2.0/2.0		V. Dense				1 ppm (Head
S-10 @ 1451	21.0	19 / 24 / 47 / 43	2.0/2.0		V. Dense	TAN			0 ppm (Head
S-11 @ 1500	23.0	14 / 16 / 25 / 29	2.0/2.0		Loose	TAN			0 ppm (Head
S-12 @ 1510	25.0	10 / 16 / 12 / 10	2.0/2.0		M. Dense	TAN to Brn	SILT w/Tr MUD	ML	LAMINATED CYCLIC MUD LAMINAE

REMARKS: CME 55 HSA Rig
3" x 24" SS (140 # wt, Cat Head, 30" Drop)
4" ID, 8" OD Auger
2" x 24" SS (140 # wt, Cat Head, 30" Drop)
▲ Sample (1-2oz, 1-8oz jar) send laboratory

BORING 15MW4S
PAGE 1 OF 2

* See Legend on Back

BORING LOG **HALLIBURTON NUS**

PROJECT: NSB - NLON
BORING NO.: 15MW45
PROJECT NO.: 9594
DATE: 01-18-94
DRILLER: EAST COAST THOMAS
ELEVATION:
FIELD GEOLOGIST: TIM EVANS / TIM SABO
WATER LEVEL DATA :
(Date, Time & Conditions)

SAMPLE NO. & TYPE OR RQD	DEPTH (Ft) OR RUN NO.	BLOWS 6" OR RQD (%)	SAMPLE RECOVERY SAMPLE LENGTH	LITHOLOGY CHANGE (Depth, Ft)	MATERIAL DESCRIPTION* SOIL DENSITY CONSISTENCY OR ROCK HARDNESS	COLOR	MATERIAL CLASSIFICATION	ROCK BR. OR USCS	REMARKS
S-13 @	25.0	11 / 13	2.0/2.0		Dense				0 ppm
1525	27.0	21 / 25							
S-14 @		16 / 27			HARD	TAN	SILT W/TR MUD & SAND	ML	LAMINATED
1550	29.0	46 / 43							MUD & SAND LAMINAE
S-15 @		9 / 12	1.8/2.0		V. Stiff -	TAN N	SILT / SANDY SILT	ML/SP	LAMINATED
1600	31.0	14 / 13			In Dense	GRAY			SAND-FINE Gr
3" SS									
2" SS									Auger to 35'
	35.0								
S-16 @		11 / 16			HARD	L. BRN	SILT	ML	LAMINATED
1633	37.0	21 / 24							
1/18									Auger to 40'
1/19									
	40.0								
S-17 @	40.8	15 / 100/.3	1.4/2.0		V. Dense	BRN	SAND	SP	SAND-FINE Gr Poorly Graded
0859									
	43.0								Auger Refusal @ 43'
									Screen 4'-14'
									Sand 3'-15'
									Pellets 2'-3'

REMARKS SAND 10¼ - 100# Bag Clean Sand
Pellets 1 - 50# Bag Pure Gold Medium Bentonite Chips

BORING 15MW45

PAGE 2 OF 2

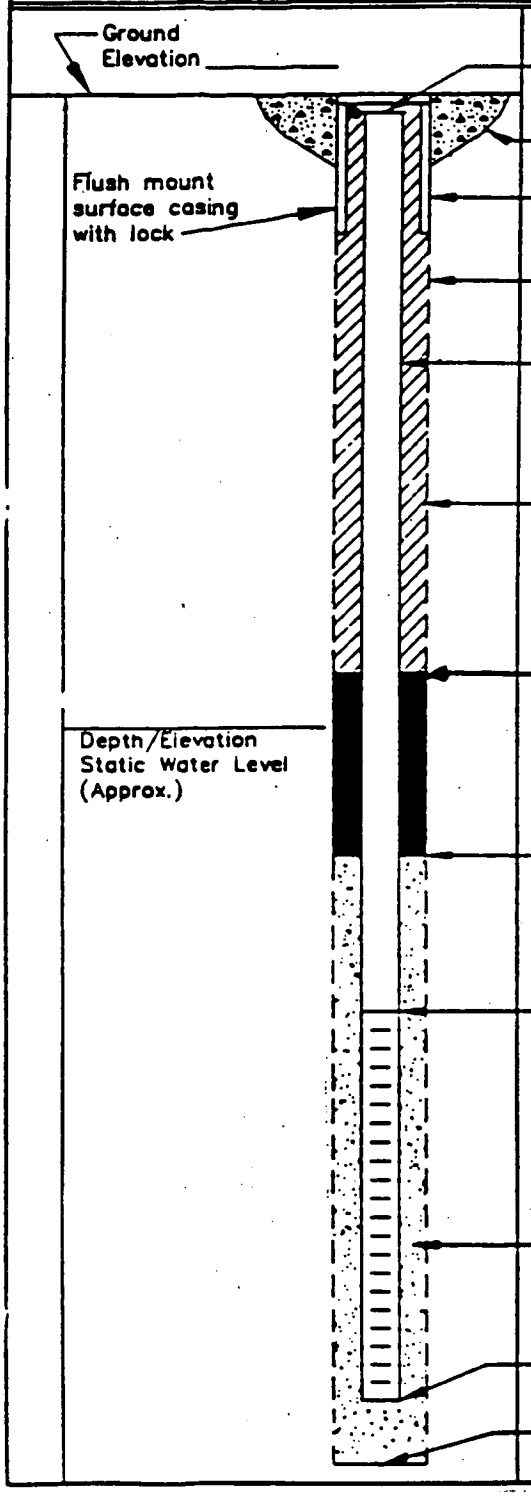
* See Legend on Back

HALLIBURTON NUS
Environmental Corporation

WELL NO.: 15MW4S

OVERBURDEN
MONITORING WELL SHEET

PROJECT: NSB-NLON	LOCATION: Groton CT	DRILLER: East Coast
PROJECT NO.: 9594	BORING: 15MW4S	DRILLING METHOD: HSA
ELEVATION:	DATE: 1-19-94	DEVELOPMENT METHOD:
FIELD GEOLOGIST: Tim Evans		



ELEVATION TOP OF RISER: _____

TYPE OF SURFACE SEAL: Concrete

TYPE OF PROTECTIVE CASING: Steel

I.D. OF PROTECTIVE CASING: 4"

BOREHOLE DIAMETER: 8"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: Grout

ELEVATION / DEPTH TOP OF SEAL: /2'

TYPE OF SEAL: Bentonite Chips

DEPTH/ELEVATION TOP OF SAND: 3' /

DEPTH/ELEVATION TOP OF SCREEN: 4' /

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.010 x 10'

TYPE OF SAND PACK: Silica Sand

DEPTH/ELEVATION BOTTOM OF SCREEN: 14' /

DEPTH/ELEVATION BOTTOM OF SAND: 15' /

DEPTH/ELEVATION BOTTOM OF HOLE: 15' /

BACKFILL MATERIAL BELOW SAND: Natural

APPENDIX B

SURVEY DATA

DESCRIPTION	PT.NO	NORTHING	EASTING	O.G.	TOP CASE	TOP RISER
13MW18	1055	205346.669	780574.843	12.65	12.65	12.12
13MW19	1059	205412.673	780387.941	8.34	8.34	8.05
13MW20	1057	205475.832	780452.778	10.71	10.71	10.45
13MW21	1056	205448.354	780399.765	9.03	9.03	8.7
13TB10	1044	204721.21	780586.003	7.73		
13TB11	1045	204642.719	780644.654	8.29		
13TB12	1046	204532.742	780661.437	7.68		
13TB13	1058	205440.838	780480.767	11.49		
13TB18	1047	204459.89	780692.856	7.84		
13TB2A	1043	204312.658	780863.041	7.75		
13TB3A	1051	204377.891	780731.459	7.64		
13TB4A	1052	204379.795	780787.786	8.45		
13TB5A	1049	204443.723	780761.829	8.09		
13TB6	1041	204195.577	780810.125	7.75		
13TB7	1050	204461.29	780815.095	8.81		
13TB8	1054	204724.467	780809.61	12.56		
13TB9	1053	204889.996	780699.975	14.02		
14MW1S	1114	208559.021	782002.549	49.22	51.65	51.44
14SS3	1189	208515.007	782054.776	50.08		
14TB1	1111	208631.946	782025.474	74.51		
14TB2A	1113	208554.77	782033.584	49.82		
15MW1D	1006	203504.565	782939.045	28.25	28.25	28.05
15MW1S	1007	203504.608	782948.666	28.35	28.35	28.08
15MW2S	1008	203568.796	782954.062	29.28	29.28	28.9
15MW3S	1010	203438.264	782909.947	26.44	26.44	26.26
15MW4S	1009	203510.098	782837.371	26.37	26.37	26.24
15SD1	1011	203370.075	783047.492	23.13		
1MW2S	1142	207453.039	782361.663	86.02	88.92	88.49
1TB1	1141	207490.555	782325.351	85.98		
1TB3	1140	207502.13	782361.953	85.05		
2DMW23D	1063	209598.58	781309.872	81.82	83.38	
2DMW24D	1076	208533.555	781210.28	34.54	36.07	
2DMW24S	1077	208533.056	781217.293	34.7	36.4	36.29
2DMW25D	1072	208605.985	780821.716	33.46	35.48	
2DMW25S	1071	208609.414	780826.455	33.48	35.41	34.98
2DMW26D	1068	208906.608	780928.149	29.19	29.19	
2DMW26S	1067	208888.709	780914.105	28.71	28.71	
2DMW27D	1070	208385.564	780447.811	28.32	28.32	27.95
2DMW27S	1069	208374.881	780446.095	28.29	28.29	28.17
2DMW28D	1065	208795.572	780468.351	35.61	35.61	35.4
2DMW28S	1064	208802.402	780466.956	35.54	35.54	35.26
2DMW29S	1083	209538.95	780956.074	34.98	36.86	36.68
2DMW30S	1082	209638.154	780847.731	31.37	33.29	33.11

DESCRIPTION	PT.NO	NORTHING	EASTING	O.G.	TOP CASE	TOP RISER
2DSW14	1115	208042.529	781487.75	91.23		
2DSW15	1107	208731.661	781939.408	61.14		
2DSW\SD11	1066	208531.261	780455.108	19.78		
2DSW\SD2	1190	208477.71	781886.131	46.99		
2DSW\SD30	1075	208720.284	781231.448	32.99		
2DSW\SD31	1074	208638.714	781228.497	32.97		
2DSW\SD32	1073	208546.558	781185.059	32.84		
2DSW\SD4	1191	208543.149	781671.578	42.98		
2DSW\SD5	1185	208409.688	781338.012	34		
2DSW\SD7	1091	209263.387	781317.167	38.34		
2DSW\SD9	1081	209741.138	780804.65	24.85		
2LMW19D	1170	206332.024	783274.04	93.9	95.74	
2LMW19S	1171	206337.225	783284.227	93.5	95.62	95.44
2LMW20D	1167	206812.981	783055.82	87.55	87.55	87.4
2LMW20S	1168	206823.415	783048.846	87.35	87.35	87.21
2LOW1D	1121	207817.175	782058.218	86.88	89.54	89.43
2LOW1S	1119	207832.187	782075.664	86.26	88.59	88.4
2LOW2S	1117	207842.646	782051.944	86.69	89.21	89.09
2LOW3S	1118	207859.99	782104.091	85.5	87.68	87.52
2LOW4S	1116	207896.243	781995.86	86.83	89.53	89.36
2LPW1S	1120	207824.541	782068.624	86.25	89.2	89.07
2LTB13	1123	207911.658	781890.426	88.18		
2LTB23	1122	207741.952	782048.715	88.09		
2WCMW1S	1153	208205.931	782507.441	84.47	84.47	83.92
2WCMW2S	1154	208592.281	782877.168	86.35	86.35	86.16
2WCMW3S	1162	208268.144	782772.399	83.78	86.16	85.95
2WCSD1	1144	208798.896	782612.755	84.97		
2WCSD10	1161	208716.969	783021.832	83.22		
2WCSD11	1160	208315.492	782762.147	76.86		
2WCSD13	1165	208087.495	782717.588	73.05		
2WCSD14	1163	208230.422	782835.153	75.33		
2WCSD15	1181	208084.823	782914.362	73.09		
2WCSD2	1143	208662.318	782484.765	81.49		
2WCSD3	1146	208567.345	782493.274	79.84		
2WCSD4	1002	208143.369	782467.874	70.06		
2WCSD5	1001	208163.414	782483.922	76.14		
2WCSD6	1005	208129.412	782529.752	69.78		
2WCSD7	1004	208157.261	782533.093	71.93		
2WCSD8	1158	208477.646	782805.628	78.87		
2WCSD9	1157	208590.504	782909.911	80.95		
2WCSW3	1000	208206.008	782369.079	72.07		
2WCSW4	1188	208150.5	782535.252	70.78		
2WCSW5	1159	208315.504	782758.921	76.2		

DESCRIPTION	PT.NO	NORTHING	EASTING	O.G.	TOP CASE	TOP RISER
2WCTB1	1152	208366.185	782379.84	84.09		
2WCTB2	1147	208509.229	782491.18	85.14		
2WCTB3	1145	208753.617	782616.536	87.21		
2WCTB4	1151	208288.344	782461.343	84.26		
2WCTB5	1149	208410.763	782596.299	84.33		
2WCTB6	1148	208703.898	782741.346	86.94		
2WCTB7	1150	208244.299	782623.907	82.09		
2WCTB8	1164	208192.445	782742.298	83.34		
2WMW21D	1176	207315.068	783459.701	74.79	76.09	
2WMW21S	1175	207208.976	783440.557	74.75	76.63	76.47
2WMW22D	1177	209598.382	782472.662	121.62	123.69	
2WMW5D	1179	207730.874	783109.89	74.19	76.09	75.96
2WSD15	1166	208534.724	783000.064	80.94		
2WSD22	1003	208116.709	782436.577	69.39		
2WSD31	1180	207921.42	783109.962	74.45		
2WSD34	1193	207644.035	782563.59	71.08		
2WSD35	1194	207498.132	782770.605	71.34		
2WSD37	1178	207553.098	783332.532	73.14		
2WSD42	1172	206892.356	783365.901	72.82		
2WSW1	1182	207101.337	783462.639	76.17		
2WSW10	1169	206674.904	783171.187	85.51		
2WSW12	1192	207641.64	782558.247	68.8		
2WSW2	1187	208183.619	782198.353	69.65		
2WSW7	1183	207012.244	783512.278	85.08		
2WSW8	1174	206575.6	783614.129	85.72		
2WSW9	1173	206614.771	783502.035	79.19		
3SD6	1186	208153.753	781869.342	43.35		
4MW1S	1130	207476.015	782064.6	127.91	129.68	129.51
4MW2S	1139	207603.964	782090.59	96.65	98.95	98.79
4MW3S	1138	207618.408	782002.224	100.55	103.65	103.49
4MW4D	1136	207576.469	782056.234	107.29	109.89	109.74
4MW4S	1137	207578.108	782045.843	107.8	110.45	110.33
4SS10	1127	207554.677	782023.281	126.21		
4SS4	1134	207600.807	782047.221	103.09		
4SS5	1135	207563.922	782078.33	107.48		
4SS6	1125	207564.887	781987.127	127.54		
4SS7	1128	207525.852	782040.425	126.84		
4SS8	1132	207604.261	781978.396	105.99		
4SS9	1126	207549.042	782003.04	129.03		
4SW\SD1	1124	207386.752	781885.724	151.12		
4SW\SD2	1131	207677.548	781963.093	89.84		
4TB1	1129	207543.409	782025.289	128.6		
4TB2	1133	207592.058	782009.992	107.04		

DESCRIPTION	PT.NO	NORTHING	EASTING	O.G.	TOP CASE	TOP RISER
6MW2D	1184	210137.152	779891.835	6.64	7.93	7.85
6MW3D	1078	210280.712	779922.55	4.9	4.9	4.78
6MW6D	1155	210070.584	780216.834	10.02	12.5	
6MW6S	1156	210078.942	780214.238	10.01	12.31	12.16
6MW7S	1195	210035.617	780063.117	6.6	6.6	6
6MW8S	1079	210281.27	780001.178	5.75	5.75	5.44
7MW10S	1089	209261.753	781219.344	40.71	43.59	43.42
7MW11S	1103	208926.812	781698.689	46.7	46.7	46.49
7MW2D	1093	209243.972	781435.353	43.2	43.2	43.02
7MW3D	1085	209049.843	781481.248	44.14	46.81	46.67
7MW4S	1104	208924.861	781907.442	47.18	47.18	46.84
7MW5D	1095	209258.766	781730.906	56.82	56.82	56.57
7MW5S	1096	209256.247	781740.775	56.92	56.92	56.62
7MW6S	1106	208968.819	781699.409	47.04	47.04	46.65
7MW7S	1099	209159.006	781760.356	46.95	46.95	46.57
7MW8S	1086	209211.86	781354.88	42.28	42.28	42.1
7MW9S	1088	209138.308	781250.972	38.2	38.2	37.91
7SD2	1110	209162.964	781926.113	45.53		
7SD3	1109	209197.602	781561.037	40.84		
7SW1	1108	209216.548	781468.062	39.21		
7TB10	1105	208901.186	781815.196	46.81		
7TB12	1097	209248.781	781803.889	56.82		
7TB13	1098	209244.71	781877.821	56.83		
7TB14	1090	209241.715	781304.23	41.9		
7TB15	1087	209172.673	781331.394	42.6		
7TB16	1094	209167.442	781538.552	43.57		
7TB7	1100	209310.246	781703.134	54.35		
7TB8	1101	209351.222	781843.675	57.48		
7TB9	1102	209328.161	781985.665	56.71		
8MW2D	1023	202815.827	781606.679	10.17	10.17	9.77
8MW5S	1020	203104.702	781512.85	11.51	11.51	10.94
8MW6D	1026	202666.534	781688.873	9.9	9.9	9.62
8MW6S	1027	202645.689	781693.36	10.1	10.1	9.66
8MW7S	1035	202631.256	781882.028	6.34	6.34	5.95
8MW8D	1033	202800.053	781956.968	19.83	19.83	19.53
8MW8S	1034	202810.736	781955.216	20.01	20.01	19.68
8SW\SD2	1037	202523.741	781958.593	-2.96		
8SW\SD3	1038	202514.178	781819.304	-4.14		
8SW\SD4	1039	202472.527	781703.835	-4.06		
8SW\SD5	1036	202337.061	781910.943	-2.95		
8SW\SD6	1040	202373.748	781705.179	-3.1		

DESCRIPTION	PT.NO	NORTHING	EASTING	O.G.	TOP CASE	TOP RISER
8TB10	1025	202803.708	781701.171	10.44		
8TB11	1017	203003.991	781514.519	11.72		
8TB12	1029	202759.294	781785.415	10.04		
8TB13	1032	202704.367	781953.735	17.57		
8TB14	1028	202640.809	781787.621	10.33		
8TB15	1019	203145.932	781532.285	12.72		
8TB4	1024	202892.719	781717.984	11.53		
8TB5	1031	202719.474	781827.996	10.98		
8TB6	1030	202781.375	781845.211	12.75		
8TB7	1018	203134.749	781486.524	12.53		
8TB8	1022	202863.087	781599.488	10.8		
8TB9	1021	203029.329	781605.718	12.55		
BLDG TIE	1060	205434.068	780408.474	5.66		
BLDG TIE	1061	205492.194	780384.023	8.41		
BRASS DISC	21	208357.656	780452.678	28.78		
BRASS DISC	30	204526.882	780601.02	7.59		
BRASS DISC	32	204069.338	780925.55	7.92		
BRASS DISC	36	202896.447	781860.068	75.12		
BRASS DISC	61	203370.932	783045.415	26.25		
BRASS DISC	62	203760.215	783038.645	35.36		
BRASS DISC	161	207859.567	781393.243	104.83		
BRASS DISC	210	208874.592	780522.23	36.25		
BRASS DISC	211	209631.4	780589.886	38.33		
BRASS DISC	213	209141.754	781481.385	44.29		
BRASS DISC	261	205773.881	780384.860	10.53		
BRASS DISC	262	205176.192	780613.5	13.42		
BRASS DISC	500	208232.112	782417.791	80.01		
BRASS DISC	509	206558.89	783173.112	91.61		
BRASS DISC	517	204419.09	780709.835	7.75		
BRASS PIN	1	202892.223	782198.231	21.7		
DRILL HOLE	515	202877.558	781622.655	11.23		
DRILL HOLE	516	202543.336	781896.647	2.14		
DRILL HOLE	524	208772.031	780931.123	40.43		
DRILL HOLE	537	207458.489	782469.453	96.18		
DRILL HOLE	542	210137.358	780623.84	39.49		
DRILL HOLE	545	209170.972	782551.757	121.67		
IRON PIN	97	206622.037	782831.927	145.41		
IRON PIN	214	208651.92	782103.033	96.25		
IRON PIN	215	208477.814	782224.83	98.27		
IRON PIN	217	207958.955	781763.253	93.75		

DESCRIPTION	PT.NO	NORTHING	EASTING	O.G.	TOP CASE	TOP RISER
IRON PIN	221	209600.594	780004.25	7.21		
IRON PIN	222	208606.65	780058.998	9.33		
IRON PIN	528	209221.459	781713.086	68.89		
IRON PIN	800	209978.924	780693.557	44.9		
MH TIE	1062	205436.538	780330.179	3.49		
NAIL	510	206774.172	783023.218	106.55		
NAIL	511	206590.778	783450.673	88.34		
NAIL	518	204200.848	780857.561	8.27		
NAIL	519	204506.132	780912.699	10.43		
NAIL	520	205484.440	780486.278	11.51		
NAIL	521	205452.491	780376.890	8.14		
NAIL	522	210069.509	780676.976	40.58		
NAIL	523	209874.912	781001.552	66.37		
NAIL	525	209999.269	779921.198	6.09		
NAIL	526	210274.483	779917.068	4.84		
NAIL	527	209669.262	780764.841	33.52		
NAIL	530	208929.699	781685.754	46.4		
NAIL	538	208739.581	782035.632	71.81		
NAIL	539	208490.345	782522.072	85.19		
NAIL	540	208377.639	782642.032	83.8		
NAIL	541	208707.107	782284.175	83.58		
NAIL	543	210034.235	780265.847	14.18		
NAIL	544	209440.114	782520.12	126.85		
OTMW01	1016	203105.876	783184.079	22.61	25.7	25.11
OTMW02	1015	203156.444	783196.396	22.78	26.1	25.71
OTMW03	1013	203119.747	783230.643	22.9	25.98	25.35
OTMW04	1014	203150.069	783246.288	22.85	26.23	25.97
RRSPIKE	533	207808.285	782017.135	88.72		
SG-1	1080	209889.963	779989.959	8.84		
SG-2	1048	204483.402	780657.49	7.2		
SG-3	1012	203122.792	783212.131	26.58		
SG-4	1084	209619.65	780902.506	32.1		
SG-5	1092	209241.404	781334.61	41.42		
SG-6	1112	208200.295	782167.585	85.29		
STK	501	208309.175	782271.651	81.06		
STK	502	208172.969	782496.02	78.84		
STK	503	208197.106	782629.902	79.45		
STK	504	208166.991	782713.147	83.45		
STK	505	208384.945	782721.209	82.29		
STK	507	208554.262	782887.02	83.3		
STK	508	208523.364	782983.63	82.33		
STK	512	207342.147	783451.678	84.09		
STK	513	207531.896	783331.464	72.8		

DESCRIPTION	PT.NO	NORTHING	EASTING	O.G.	TOP CASE	TOP RISER
STK	514	207717.569	783279.056	75.01		
STK	529	209353.532	781699.6	57		
STK	531	208319.953	782178.038	85.66		
STK	532	208427.045	782059.341	66.54		
STK	534	207539.846	781964.933	131.33		
STK	535	207621.538	781974.261	101.91		
STK	536	207598.466	782229.214	86.84		
STK	546	208813.727	782524.418	97.95		
STK	547	207731.434	783098.134	74.22		
STK	548	207952.171	783103.4	74.45		
STK	551	208175.774	782079.742	87.22		
STK	552	208493.032	781934.293	58.79		
STK	553	208440.338	781814.882	50.63		
WE4A	1042	204338.519	780871.732	8.58		

Louis Federici & Associates

Land Surveyors • Consultants • Planners • Biologists

Rhode Island Connecticut • Massachusetts

August 19, 1994

Halliburton Nus Corporation
993 Old Eagle School Road
Wayne, PA 19087-1710
ATTN: Mathew Cochran, Project Mgr.

Dear Mr. Cochran

The following list of Well Locations for CTO NO. 129- Perform a Phase II Remedial Investigation, New London, Groton, CT; our Project #940407, could not be located due to physical obstructions or inaccessibility.

Wells:	2WSD20	2WSD29
	2WSD21	2WSD30
	2WSD10	2WSD32
	2WSD11	2WSD33
	2WSD12	2WSD36
	2WSD13	2WSD38
	2WSD14	2WSD39
	2WSD16	2WSD40
	2WSD17	2WSD41
	2WSD18	2WCSD12
	2WSD19	2DSW10
	2WSD27	2WSW6
	2WSD28	2WSW11

A total of 26 Wells. Please advise as how to proceed.

Respectfully Submitted.

Louis Federici, P.L.S.

LF:tkt

235 Promenade St., Room 195, Providence, RI 02908
Tele (401) 331-1570 FAX. (401) 331-1593

Member of R.I. Society of Professional Land Surveyors • American Congress on Surveying & Mapping
Connecticut Association of Land Surveyors • Massachusetts Association of Land Surveyors & Civil Engineers
Rhode Island Conveyancers Association • American Arbitration Association

APPENDIX C

AQUIFER CHARACTERISTIC CALCULATIONS

C.1 SLUG TEST CALCULATIONS
C.2 PUMPING TEST CALCULATIONS
C.3 MONTHLY HYDROGRAPHS
C.4 STEP DRAWDOWN TESTS

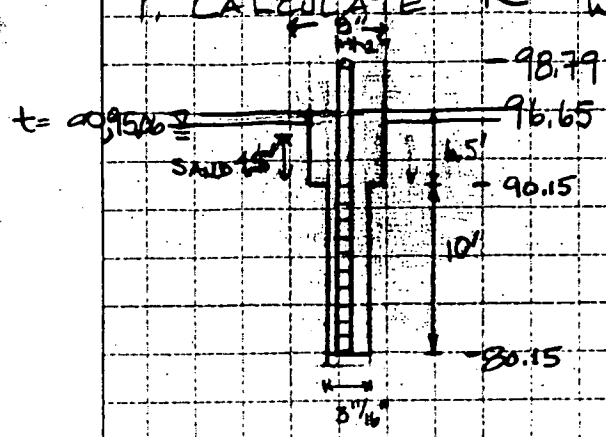
APPENDIX C.1

SLUG TEST CALCULATIONS

CLIENT NSB-NLON	JOB NUMBER
SUBJECT 4MW2S SLUG TEST ANALYSIS (FALLING & RISING)	
BASED ON	DRAWING NUMBER
BY L.J. GROSS	CHECKED BY D.A.Y ~~1-6-95~~ 1-9-95
APPROVED BY	DATE 1/5/95

1. FALLING HEAD TEST

1. CALCULATE K WITH HVORSLEV METHOD



GND ELEVATION = 96.65'
TOC ELEVATION = 98.79'
STATIC WATER LEVEL = 98.79 - 3.73
= 95.06'

WATER LEVEL STAYS ABOVE SCREEN THROUGHOUT TEST, SO CALCULATE A RADIUS OF INTAKE THAT IS PROPORTIONED TO LENGTH

r_w ≡ radius of well center to undisturbed aquifer

$$= \left(\frac{8''}{2}\right)\left(\frac{4.5}{14.5}\right) + \left(\frac{3\,11/16}{2}\right)\left(\frac{10.0}{14.5}\right)$$

$$= 1.24 + 1.27 = 2.51 \text{ in}$$

$$= 0.209 \text{ ft}$$

r_c ≡ radius of well casing

$$= \frac{2.0}{2} \text{ in} = 1.0 \text{ in}$$

$$= 0.083 \text{ ft}$$

L ≡ LENGTH OF INTAKE = 14.5 ft

T_0 ≡ BASIC TIME LAG FROM RECOVERY VS TIME CURVE

= 0.42 MIN

CLIENT NSB-NLON	JOB NUMBER 9594
SUBJECT 4MW2S SLUG TEST ANALYSIS	
BASED ON	DRAWING NUMBER
BY L.J. GROSS / CHECKED BY DAY 1-5-95 (D.Y.) recheck 1-9-95	APPROVED BY / DATE 1/5/95

1. HVORSLEV METHOD (CONTINUED)

$$K = \frac{r_c^2 \ln(L/r_w)}{2 L T_o}$$

$$= \frac{(0.083\ ft)^2 \ln\left(\frac{14.5\ ft}{0.209\ ft}\right)}{2(14.5\ ft)(0.42\ min)}$$

$$= 2.40 \times 10^{-3}\ ft/min$$

$$= 3.45\ ft/day$$

2. CALCULATE K WITH BOUWER AND RICE METHOD

$$K = \frac{r_c^2 \ln\left(\frac{R_e}{r_w}\right)}{2L} \frac{1}{t} \ln\left(\frac{y_o}{y_t}\right)$$

where $\ln\left(\frac{R_e}{r_w}\right) = \left[\frac{1.1}{\ln\left(\frac{H}{r_w}\right)} + \frac{C}{L/r_w}\right]^{-1}$

H ≡ distance from water table to bottom of intake
= 95.06 − 80.15 = 14.91 ft

L ≡ length of intake = 14.5 feet

r_w ≡ radius of well center to undisturbed aquifer
= 0.209 ft (proportion calculation)

BECAUSE ASSUME D ≈ H then use equation with constant C. FOR $L/r_w = 69.4$, C = 3.2

CLIENT NSB-NLON	JOB NUMBER 9594
SUBJECT 4MW2S SLUG TEST ANALYSIS	
BASED ON	DRAWING NUMBER
BY L.J. GROSS / CHECKED BY DAY 1-9-95	APPROVED BY / DATE 1/6/95

2. BOUWER & RICE (cont)

$r_c = 0.083$ ft
D ≡ AQUIFER THICKNESS ≈ H (IN BEDROCK)

$y_0 = 1.45$ ft
$y_t = 0.31$ ft @ $t = 0.60$ min

$$\ln\left(\frac{R_e}{r_w}\right) = \left[\frac{1.1}{\ln\left(\frac{14.91}{0.209}\right)} + \frac{3.2}{\left(14.5/0.209\right)}\right]^{-1}$$

$$= 3.29$$

$$K = \frac{(0.083\text{ ft})^2(3.29)}{2(14.5\text{ ft})}\,\frac{1}{0.60}\,\ln\left(\frac{1.45}{0.31}\right)$$

$= 2.0 \times 10^{-3}$ ft/min
$= 2.90$ ft/day

3. RISING HEAD TEST - SAME AS FALLING HEAD TEST EXCEPT
$y_0 = 1.65$
$y_t = 0.45$ @ $t = 0.415$ min

$$K = \frac{(0.083\text{ ft})^2(3.29)}{2(14.5\text{ ft})}\left(\frac{1}{0.415}\right)\ln\left(\frac{1.65}{0.45}\right)$$

$= 2.45 \times 10^{-3}$ ft/min
$= 3.52$ ft/day

CLIENT NSB-NLON	JOB NUMBER 9594
SUBJECT 4MW2S SLUG TEST	
BASED ON	DRAWING NUMBER
BY L.J. GROSS / CHECKED BY DAY 1-9-95	APPROVED BY / DATE 1/6/95

4. AVERAGE OF 2 ESTIMATES FROM FALLING HEAD

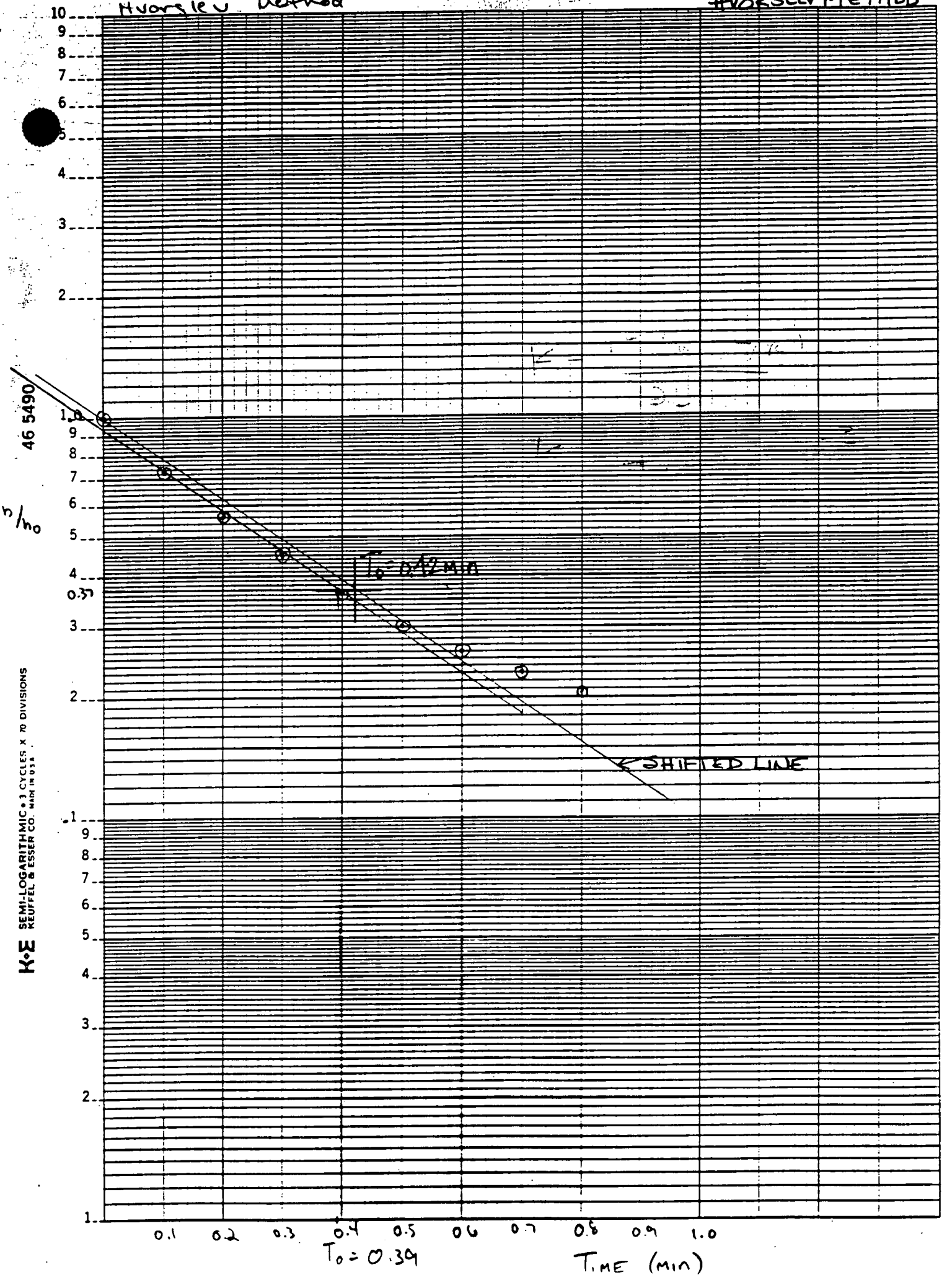
$$\bar{K} = \frac{3.45 + 2.90}{2} = 3.17 \text{ ft/day}$$

AVERAGE OF RISING/FALLING HEAD TESTS

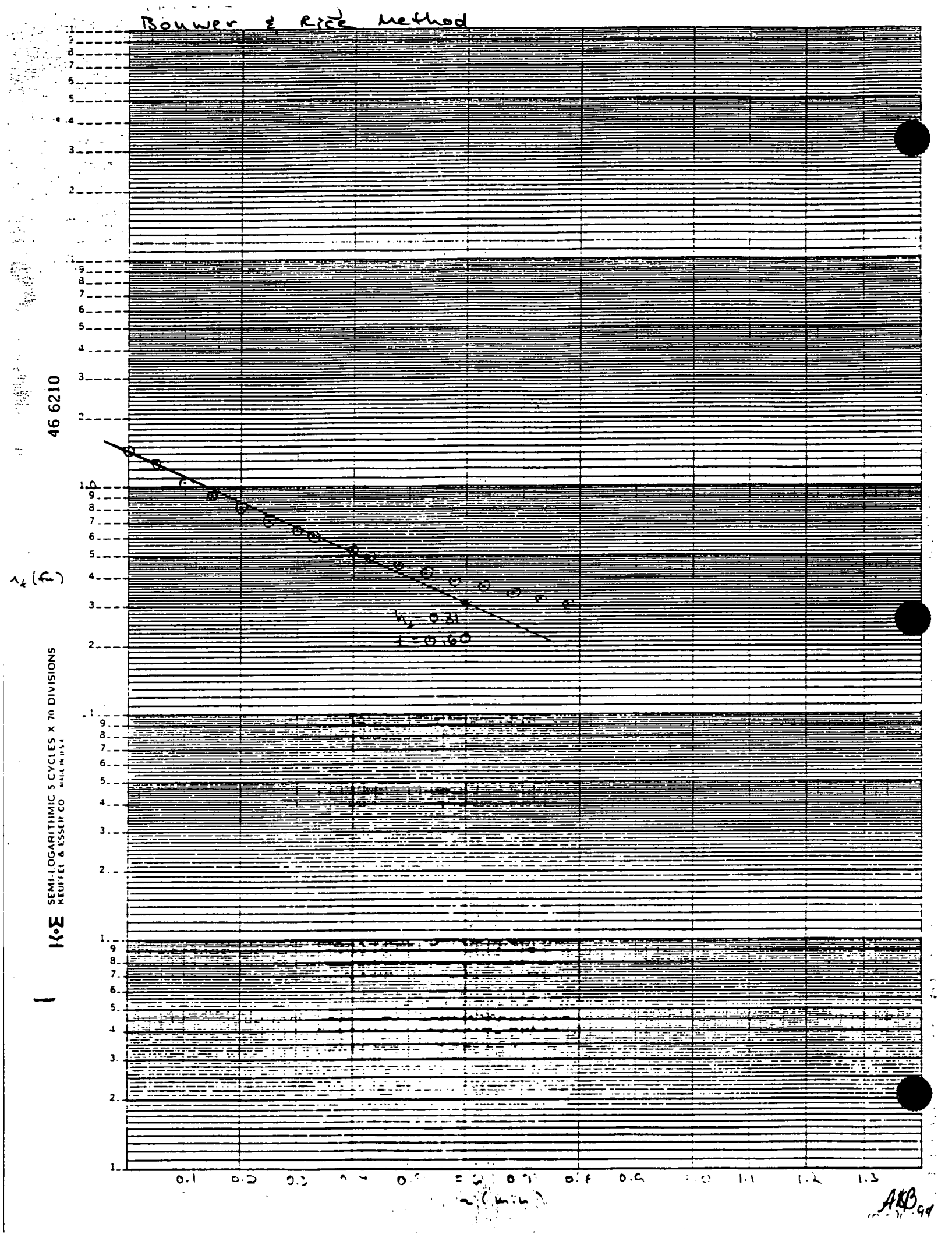
$$\bar{K} = \frac{3.17 + 3.52}{2} = 3.35 \text{ ft/day}$$

Hvorslev Method

HVORSLEV METHOD

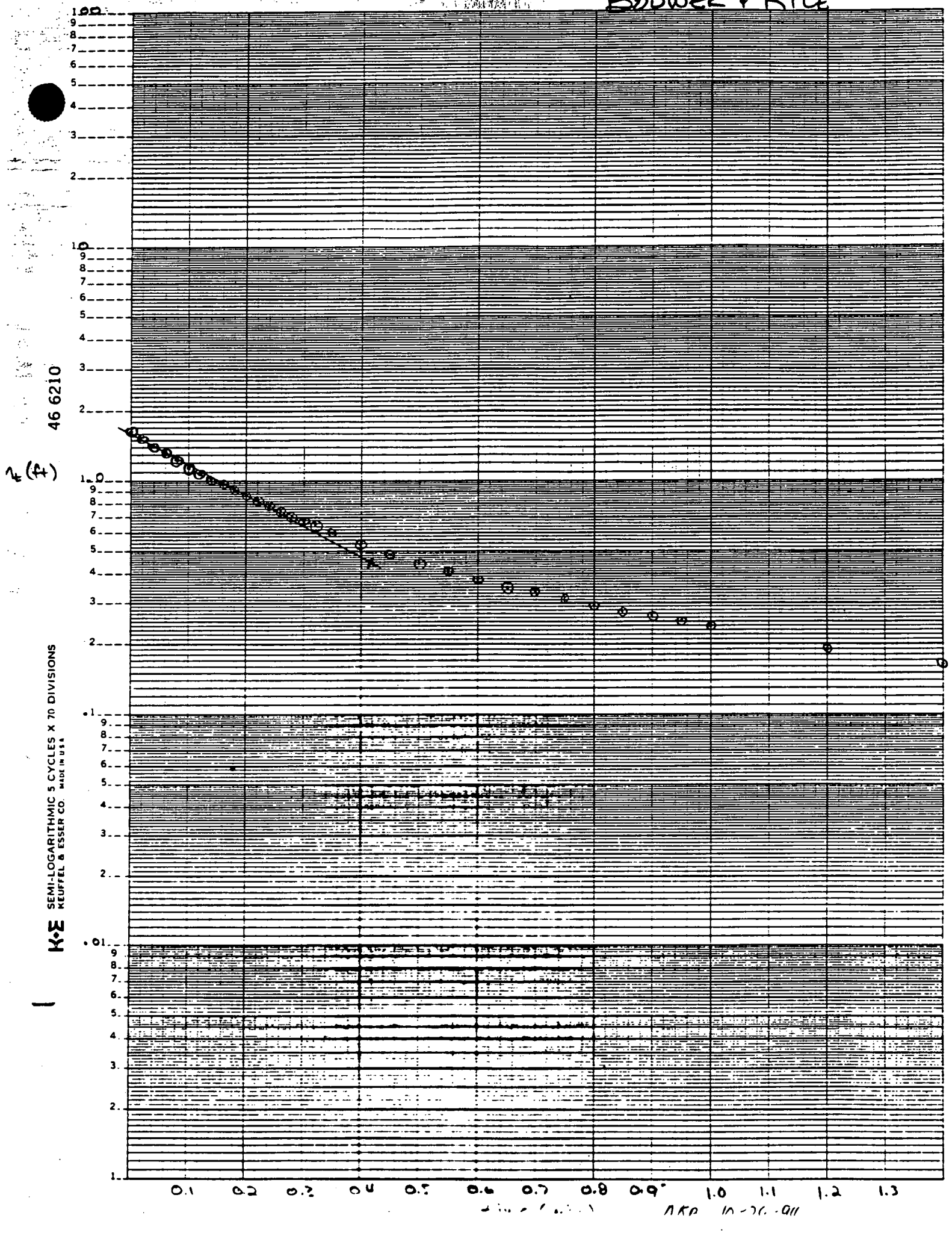


Bouwer & Rice Method



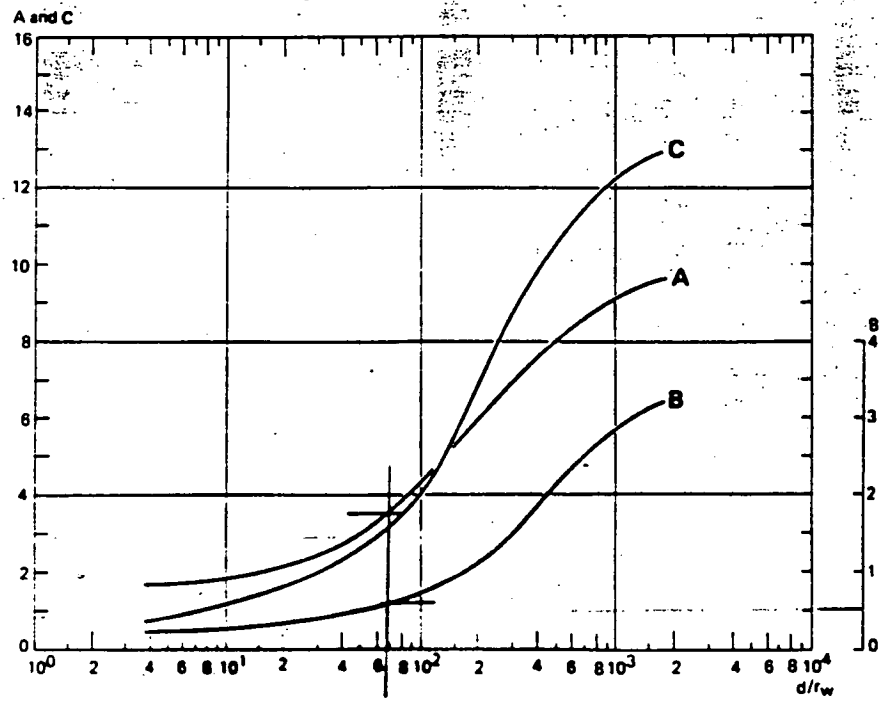
AKB 94

TMW2S KISING HEAD
BOUWER & RICE



4MW2S Falling Head
Bouwer & Rice Method

A = 3.5



B = 0.70

Figure 16.6 The Bouwer and Rice curves showing the relation between the parameters A, B, C, and d/r_w

$$\frac{L}{r_w} = \frac{14.5\ ft}{0.209\ ft} = 69.4'$$

HALLIBURTON NUS
Environmental Corporation

BORING NO: 4MW2S

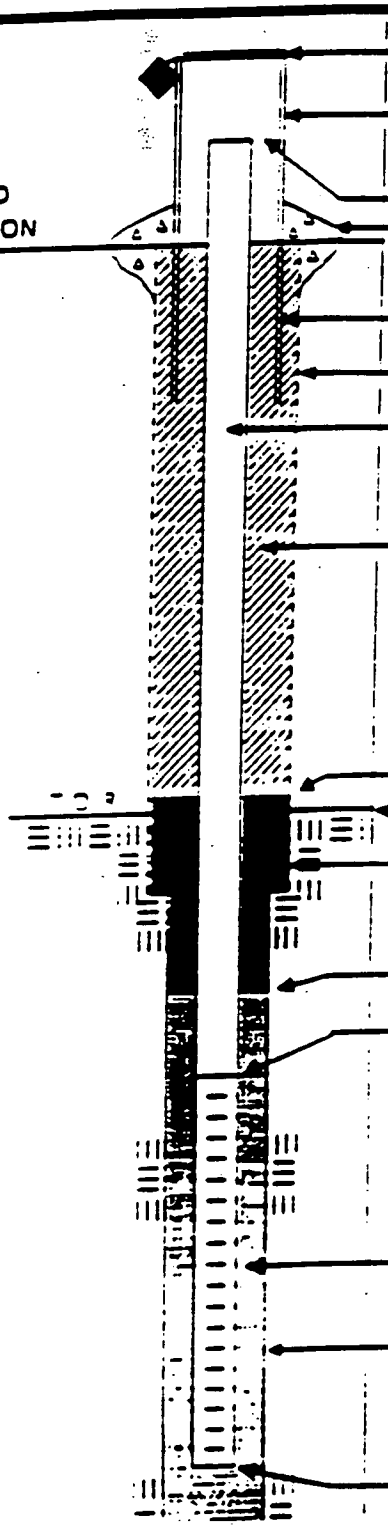
BEDROCK MONITORING WELL SHEET

WELL INSTALLED IN BEDROCK

PROJECT: NSB-NLON
PROJECT NO.: 2594
ELEVATION:
FIELD GEOLOGIST: Tim Evans

LOCATION: GROTON, CT
BORING: 4MW2S
DATE: 2-2-94

DRILLER: EAST COAST
DRILLING METHOD: HSA / HQ Core
DEVELOPMENT METHOD:



ELEVATION OF TOP OF SURFACE CASING:

STICK UP OF CASING ABOVE GROUND SURFACE:

ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: Concrete

I.D. OF SURFACE CASING: 4"

DIAMETER OF HOLE: 8"

RISER PIPE I.D.: 2"

TYPE OF RISER PIPE: PVC (Schedule 40)

TYPE OF BACKFILL: N/A

ELEVATION / DEPTH TOP OF SEAL: 11'

ELEVATION / DEPTH TOP OF BEDROCK: 16.5

TYPE OF SEAL: Bentonite Pellets

ELEVATION / DEPTH TOP OF SAND: 12'

ELEVATION / DEPTH TOP OF SCREEN: ~~14.5'~~ 16.5

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.010 x 10'

I.D. SCREEN: 2"

TYPE OF SAND PACK: Silica Sand

DIAMETER OF HOLE IN BEDROCK: 3 3/16"

CORE / REAM:

ELEVATION / DEPTH BOTTOM SCREEN: 16.5 ~~26~~

AKB 10-26-94

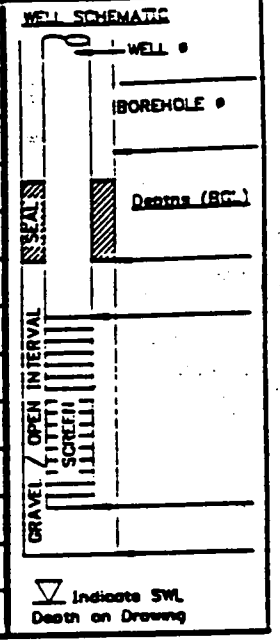
HYDRAULIC CONDUCTIVITY TESTING DATA SHEET — HALLIBURTON NUS CORPORATION

PROJECT NAME: NSB-NL N
WELL/BORING NO.: 4MW25
PROJECT NO.: 9594
GEOLOGIST: Tim E./Steve. Total Depth: 16.5
WELL DIAMETER: 2"
SCREEN LENGTH/DEPTH: 10' / 6
TEST NO.:
STATIC WATER LEVEL (Depth/Elevation): 3.73' TOC
DATE: 4-9-94
TEST TYPE (Rising/Falling/Constant Head): Falling
CHECKED:
METHOD OF INDUCING WATER LEVEL CHANGE: Slug (Length=5.13', Dia=0.1')
PAGE 1 OF 1
REFERENCE PT. FOR WL MEAS. (Top of Casing, Transducer, etc.): SURFACE

16.5

ELAPSED TIME (min. or sec.)	MEASURED WATER LEVEL (feet)	DRAWDOWN OR HEAD (ΔH) (feet)	ELAPSED TIME (min. or sec.)	MEASURED WATER LEVEL (feet)	DRAWDOWN OR HEAD (ΔH) (feet)
0.00		-1.570			
0.10		-1.166			
0.20		-0.889			
0.30		-0.703			
0.40		-0.564			
0.50		-0.466			
.60		-0.397			
0.70		-0.350			
0.80		-0.312			
0.90		-0.283			

WELL SCHEMATIC



REMARKS:
XD @ 15.29

Maximum Drawdown: ft.
Recovery Time: min.
Recovery Depth: ft.

CALCS.SKETCH MAPS, ETC.:

DD(ft)

0.5 1.0

time (min)

HYDRAULIC CONDUCTIVITY TESTING DATA SHEET — HALLIBURTON NUS CORPORATION

PROJECT NAME: USB-NL N — WELL/BORING NO.: 4MW25

PROJECT NO.: 9594 — GEOLOGIST: Tim E./Stan C. — Total Depth: 16.5' 16.54'

WELL DIAMETER: 2" — SCREEN LENGTH/DEPTH: 10' — TEST NO.:

STATIC WATER LEVEL (Depth/Elevation): 3.73' — DATE: 4-9-94

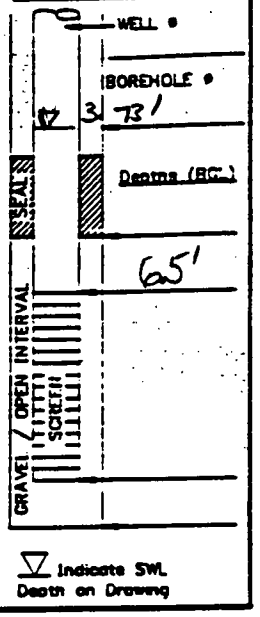
TEST TYPE (Rising/Falling/Constant Head): Rising — CHECKED:

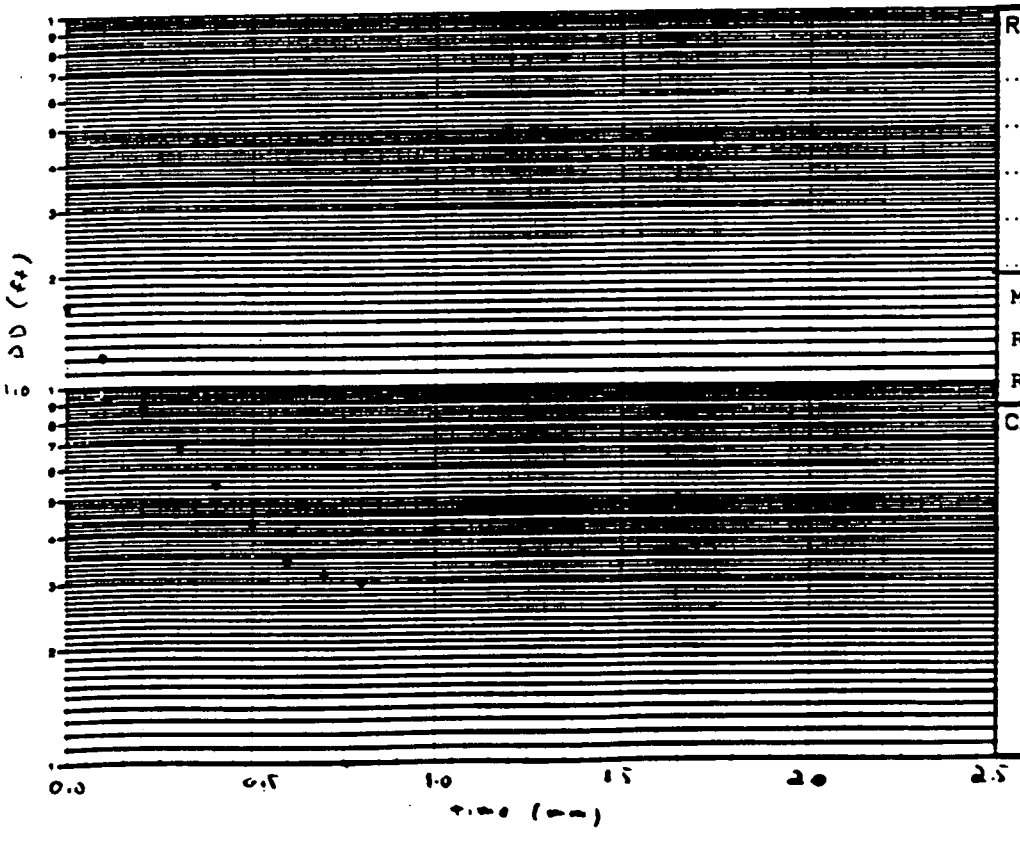
METHOD OF INDUCING WATER LEVEL CHANGE: Slug (Length=5.13', Dia=0.1') — PAGE 1 OF 1

REFERENCE PT. FOR WL MEAS. (Top of Casing, Transducer, etc.): TOC

ELAPSED TIME (min. or sec.)	MEASURED WATER LEVEL (feet)	DRAWDOWN OR HEAD (ΔH) (feet)	ELAPSED TIME (min. or sec.)	MEASURED WATER LEVEL (feet)	DRAWDOWN OR HEAD (ΔH) (feet)
0.00		-1.652			
0.10		-1.173			
0.20		-0.873			
0.30		-0.678			
0.40		-0.539			
0.50		-0.444			
0.60		-0.378			
0.70		-0.334			
0.80		-0.293			

WELL SCHEMATIC





REMARKS:

XD @ 12.49

Maximum Drawdown: 1.652 ft.

Recovery Time: 10 min.

Recovery Depth: ft.

CALCS.SKETCH MAPS, ETC.:

279-280

AKB 10/26/94

SE1000C
Environmental Logger
04/09 12:02

Unit# 00143 Test 0

Setups:	INPUT 1
Type	Level (F)
Mode	Surface
I.D.	00018
Reference	0.000
Linearity	0.000
Scal factor	8.990
Offset	0.040
Delay mSEC	50.000

Step 0 04/09 11:08:22

Elapsed Time	INPUT 1
0.0000	1.469
0.0033	1.545
0.0066	1.570
0.0100	1.535
0.0133	1.504
0.0166	1.494
0.0200	1.479
0.0233	1.475
0.0266	1.438
0.0300	1.406
0.0333	1.422
→ 0.0366	1.450
0.0400	1.396
0.0433	1.349
0.0466	1.365
0.0500	1.356
0.0533	1.337
0.0566	1.321
0.0600	1.311
0.0633	1.296
0.0666	1.283
0.0700	1.274
0.0733	1.258
0.0766	1.251
0.0800	1.251
0.0833	1.220
0.0866	1.229
0.0900	1.192
0.0933	1.188
0.0966	1.179
0.1000	1.166
0.1033	1.154
0.1066	1.144
0.1100	1.135
0.1133	1.122
0.1166	1.113
0.1200	1.103

FALLING HEAD SLUG TEST
4/9/94
4MW2S

0.1233	1.094
0.1266	1.081
0.1300	1.072
0.1333	1.062
0.1366	1.053
0.1400	1.043
0.1433	1.034
0.1466	1.024
0.1500	1.015
0.1533	1.005
0.1566	0.996
0.1600	0.990
0.1633	0.980
0.1666	0.971
0.1700	0.961
0.1733	0.955
0.1766	0.946
0.1800	0.936
0.1833	0.930
0.1866	0.920
0.1900	0.914
0.1933	0.905
0.1966	0.898
0.2000	0.889
0.2033	0.882
0.2066	0.876
0.2100	0.867
0.2133	0.860
0.2166	0.854
0.2200	0.848
0.2233	0.838
0.2266	0.832
0.2300	0.826
0.2333	0.819
0.2366	0.813
0.2400	0.807
0.2433	0.801
0.2466	0.794
0.2500	0.788
0.2533	0.782
0.2566	0.775
0.2600	0.769
0.2633	0.763
0.2666	0.756
0.2700	0.750
0.2733	0.744
0.2766	0.741
0.2800	0.734
0.2833	0.728
0.2866	0.722
0.2900	0.719
0.2933	0.712
0.2966	0.706
0.3000	0.703
0.3033	0.696
0.3066	0.690
0.3100	0.687
0.3133	0.681
0.3166	0.674
0.3200	0.671

0.3233	0.665
0.3266	0.662
0.3300	0.655
0.3333	0.652
0.3500	0.627
0.3666	0.605
0.3833	0.583
0.4000	0.564
0.4166	0.545
0.4333	0.526
0.4500	0.510
0.4666	0.495
0.4833	0.479
0.5000	0.466
0.5166	0.454
0.5333	0.438
0.5500	0.428
0.5666	0.419
0.5833	0.409
0.6000	0.397
0.6166	0.387
0.6333	0.378
0.6500	0.372
0.6666	0.365
0.6833	0.356
0.7000	0.350
0.7166	0.343
0.7333	0.334
0.7500	0.327
0.7666	0.324
0.7833	0.315
0.8000	0.312
0.8166	0.305
0.8333	0.299
0.8500	0.296
0.8666	0.293
0.8833	0.286
0.9000	0.283
0.9166	0.280
0.9333	0.274
0.9500	0.271
0.9666	0.268
0.9833	0.264
1.0000	0.261
1.2000	0.214
1.4000	0.186
1.6000	0.164
1.8000	0.145
2.0000	0.129
2.2000	0.113
2.4000	0.107
2.6000	0.097
2.8000	0.086
3.0000	0.082
3.2000	0.075
3.4000	0.072
3.6000	0.066
3.8000	0.059
4.0000	0.056
4.2000	0.053

4.4000	0.050
4.6000	0.047
4.8000	0.044
5.0000	0.040
5.2000	0.037
5.4000	0.037
5.6000	0.037
5.8000	0.037
6.0000	0.034
6.2000	0.034
6.4000	0.031
6.6000	0.031
6.8000	0.031
7.0000	0.031
7.2000	0.028
7.4000	0.028
7.6000	0.028
7.8000	0.028
8.0000	0.028
8.2000	0.028
8.4000	0.028
8.6000	0.025
8.8000	0.025
9.0000	0.028
9.2000	0.025
9.4000	0.025
9.6000	0.025
9.8000	0.025
10.0000	0.025
12.0000	0.025
14.0000	0.025
16.0000	0.028
18.0000	0.028
20.0000	0.031
22.0000	0.028

END

SE1000C
Environmental Logger
04/09 11:45

Unit# 00143 Test 0

Setups:	INPUT 1
Type	Level (F)
Mode	Surface
I.D.	~~00018~~ 4MW2S
Reference	0.000
Linearity	0.000
Scale factor	9.990
Offset	0.040
Delay mSEC	50.000

Step 1 04/09 11:32:18

Elapsed Time	INPUT 1
0.0000	-1.652
0.0033	-1.630
0.0066	-1.611
0.0100	-1.592
0.0133	-1.570
0.0166	-1.551
0.0200	-1.532
0.0233	-1.513
0.0266	-1.498
0.0300	-1.479
0.0333	-1.463
0.0366	-1.444
0.0400	-1.428
0.0433	-1.409
0.0466	-1.397
0.0500	-1.378
0.0533	-1.365
0.0566	-1.349
0.0600	-1.334
0.0633	-1.318
0.0666	-1.305
0.0700	-1.289
0.0733	-1.277
0.0766	-1.261
0.0800	-1.248
0.0833	-1.236
0.0866	-1.223
0.0900	-1.211
0.0933	-1.195
0.0966	-1.185
0.1000	-1.173
0.1033	-1.160
0.1066	-1.148
0.1100	-1.135
0.1133	-1.125
0.1166	-1.113
0.1200	-1.100

Rising Head Slug Test
4/9/94
4MW2S

AKB
10-26-94

0.1233	-1.091
0.1266	-1.081
0.1300	-1.069
0.1333	-1.056
0.1366	-1.047
0.1400	-1.037
0.1433	-1.028
0.1466	-1.015
0.1500	-1.006
0.1533	-0.996
0.1566	-0.987
0.1600	-0.977
0.1633	-0.968
0.1666	-0.958
0.1700	-0.949
0.1733	-0.943
0.1766	-0.933
0.1800	-0.924
0.1833	-0.914
0.1866	-0.905
0.1900	-0.898
0.1933	-0.889
0.1966	-0.883
0.2000	-0.873
0.2033	-0.867
0.2066	-0.857
0.2100	-0.851
0.2133	-0.842
0.2166	-0.835
0.2200	-0.829
0.2233	-0.820
0.2266	-0.813
0.2300	-0.807
0.2333	-0.797
0.2366	-0.794
0.2400	-0.785
0.2433	-0.779
0.2466	-0.772
0.2500	-0.766
0.2533	-0.760
0.2566	-0.753
0.2600	-0.747
0.2633	-0.741
0.2666	-0.734
0.2700	-0.728
0.2733	-0.722
0.2766	-0.715
0.2800	-0.709
0.2833	-0.706
0.2866	-0.697
0.2900	-0.693
0.2933	-0.687
0.2966	-0.681
0.3000	-0.678
0.3033	-0.671
0.3066	-0.665
0.3100	-0.662
0.3133	-0.656
0.3166	-0.649
0.3200	-0.646

0.3233	-0.640
0.3266	-0.637
0.3300	-0.630
0.3333	-0.627
0.3500	-0.602
0.3666	-0.580
0.3833	-0.558
0.4000	-0.539
0.4166	-0.520
0.4333	-0.501
0.4500	-0.485
0.4666	-0.473
0.4833	-0.457
0.5000	-0.444
0.5166	-0.432
0.5333	-0.419
0.5500	-0.410
0.5666	-0.397
0.5833	-0.387
0.6000	-0.378
0.6166	-0.369
0.6333	-0.362
0.6500	-0.353
0.6666	-0.346
0.6833	-0.340
0.7000	-0.334
0.7166	-0.324
0.7333	-0.318
0.7500	-0.312
0.7666	-0.305
0.7833	-0.299
0.8000	-0.293
0.8166	-0.290
0.8333	-0.283
0.8500	-0.277
0.8666	-0.274
0.8833	-0.271
0.9000	-0.265
0.9166	-0.261
0.9333	-0.258
0.9500	-0.252
0.9666	-0.249
0.9833	-0.242
1.0000	-0.239
1.2000	-0.189
1.4000	-0.164
1.6000	-0.138
1.8000	-0.119
2.0000	-0.101
2.2000	-0.091
2.4000	-0.078
2.6000	-0.069
2.8000	-0.063
3.0000	-0.056
3.2000	-0.044
3.4000	-0.041
3.6000	-0.037
3.8000	-0.031
4.0000	-0.028
4.2000	-0.025

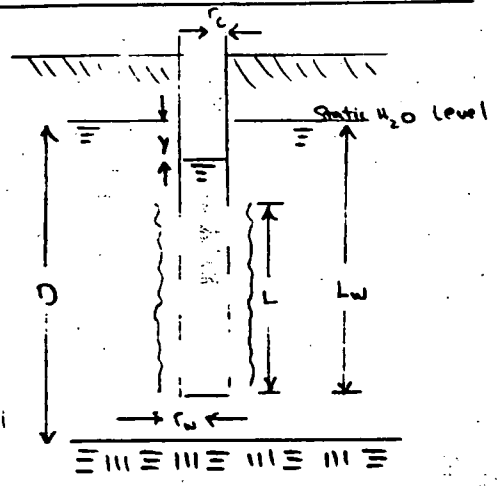
4.4000	-0.019
4.6000	-0.019
4.8000	-0.015
5.0000	-0.012
5.2000	-0.009
5.4000	-0.009
5.6000	-0.009
5.8000	-0.009
6.0000	-0.006
6.2000	-0.006
6.4000	-0.003
6.6000	-0.003
6.8000	0.000
7.0000	0.000
7.2000	0.000
7.4000	0.003
7.6000	0.003
7.8000	0.000
8.0000	0.003
8.2000	0.003
8.4000	0.003
8.6000	0.006
8.8000	0.006
9.0000	0.006
9.2000	0.006
9.4000	0.009
9.6000	0.006
9.8000	0.006
10.0000	0.006

END

CALCULATION WORKSHEET Order No. 19116 (01-91)

CLIENT: NSB-NLON	JOB NUMBER: 9594 - 0300
SUBJECT: Bouwer & Rice Slug Test Data Analysis	
BASED ON: 6MW3D Rising Head	DRAWING NUMBER:
BY: TSE / CHECKED BY: WJB	APPROVED BY: / DATE: 4-12-94

Given $K = \frac{r_c^2 \ln(R_e/r_w)}{2L} \frac{1}{t} \ln \frac{y_0}{y_t}$



where r_c = casing radius
L = screen length
y_0 = head @ $t_0 = 0$
y_t = head @ $t > t$
L_w = height of H_2O in well
D = saturated thickness

r_w = radius from well centre to undisturbed aquifer

$r_c = 1.0$ in $= 0.083$ ft
$L = 10$ ft
$r_w = 4.0$ in $= 0.333$ ft

Static H_2O level = 5.33 ft
Well Depth = 90.0 ft
$L_w = (90 - 5.33) = 84.67$

$y_0 = 1.539$ ft
$y_t = 0.52$ ft
$t = 0.1$ min $= 6.94 \times 10^{-5}$ day

$$K = \frac{r_c^2 \ln(R_e/r_w)}{2L} \frac{1}{t} \ln\left(\frac{y_0}{y_t}\right)$$

$$\ln(R_e/r_w) = \left[\frac{1.1}{\ln(L_w/r_w)} + \frac{C}{L/r_w}\right]^{-1}$$

$$K = \frac{(0.083\text{ ft})^2 (3.77)}{2(10\text{ ft})(6.94 \times 10^{-5}\text{ d})} \ln\left(\frac{1.539}{0.52}\right)$$

$$= \left[\frac{1.1}{\ln(84.67\text{ ft}/0.333\text{ ft})} + \frac{2}{10\text{ ft}/0.333\text{ ft}}\right]^{-1}$$

$$K = 20.3\text{ ft/day}$$

$$= 3.77$$

$K = 20.3$ ft/day $= 7.16 \times 10^{-3}$ cm/s

6MW3D Rising Head
Bouwer & Rice Method

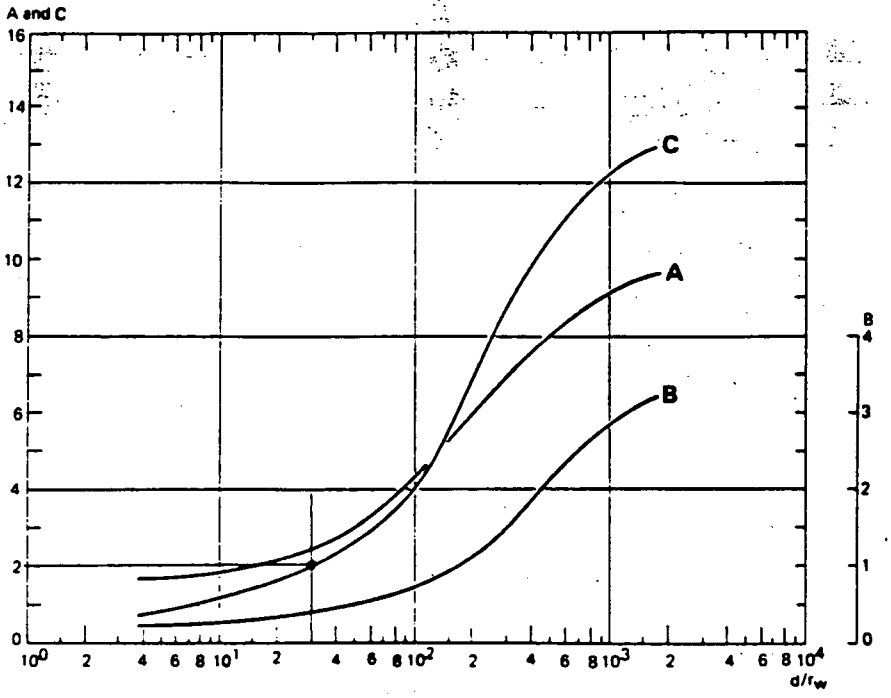


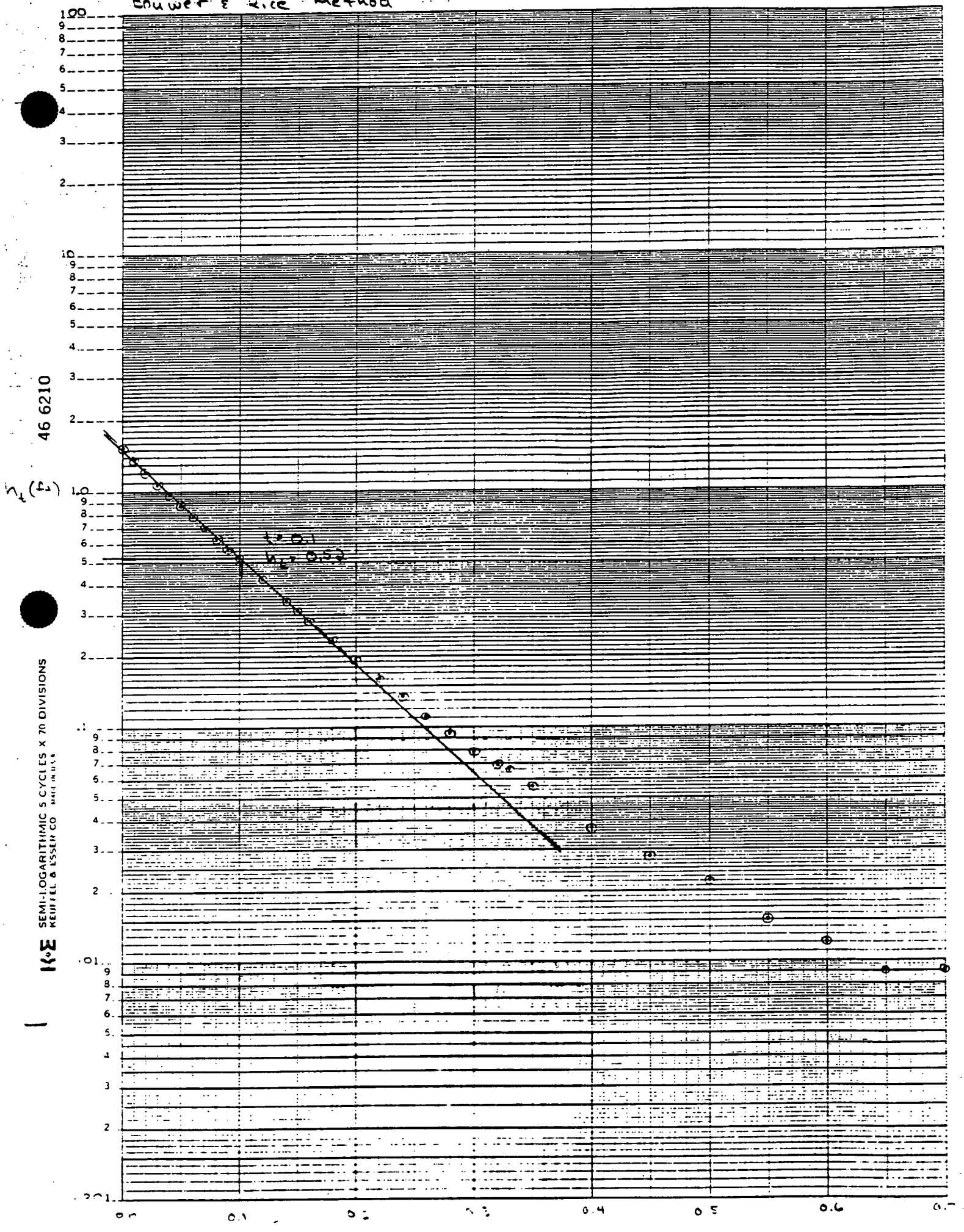
Figure 16.6 The Bouwer and Rice curves showing the relation between the parameters A, B, C, and d/r_w

$$d/r_w = 10\,ft / 0.333\,ft = 30.03$$

$$C = 2$$

6MW3D Rising Head Test

Bouwer & Rice Method

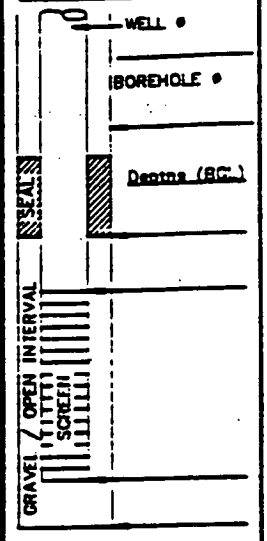


HYDRAULIC CONDUCTIVITY TESTING DATA SHEET — HALLIBURTON NUS CORPORATION

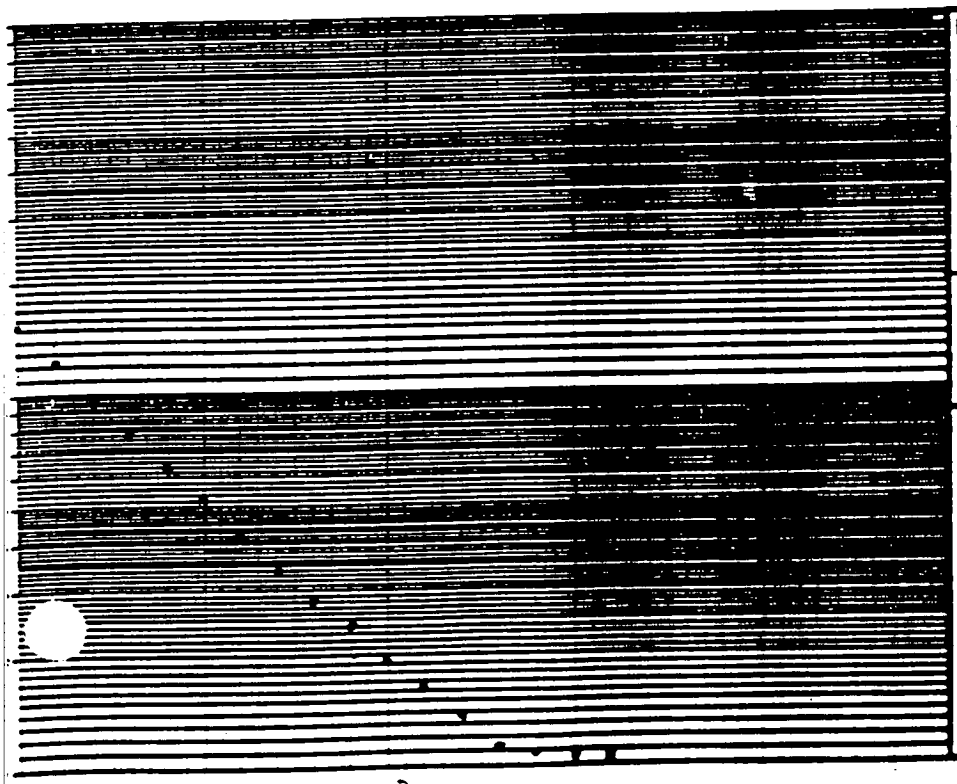
PROJECT NAME: NSB-NLON
WELL/BORING NO.: 6MW3D
Total Depth: 89.5'
PROJECT NO.: 9594
GEOLOGIST:
WELL DIAMETER: 2"
SCREEN LENGTH/DEPTH:
TEST NO.:
STATIC WATER LEVEL (Depth/Elevation): 5.33'
DATE:
TEST TYPE (Rising/Falling/Constant Head): Rising
CHECKED:
METHOD OF INDUCING WATER LEVEL CHANGE: Slug (Length = 5.13', Dia = 0.1') PAGE 1 OF 1
REFERENCE PT. FOR WL MEAS. (Top of Casing, Transducer, etc.): Sv face

ELAPSED TIME (min. or sec.)	MEASURED WATER LEVEL (feet)	DRAWDOWN OR HEAD (ΔH) (feet)	ELAPSED TIME (min. or sec.)	MEASURED WATER LEVEL (feet)	DRAWDOWN OR HEAD (ΔH) (feet)
0.00		-1.539	0.22		-0.164
0.02		-1.223	0.24		-0.135
0.04		-0.971	0.26		-0.113
0.06		-0.785	0.28		-0.094
0.08		-0.637	0.30		-0.078
0.10		-0.520	0.32		-0.069
0.12		-0.425			
0.13		-0.381			
0.14		-0.343			
0.16		-0.283			
0.18		-0.233			
0.20		-0.195			

WELL SCHEMATIC



Indicate SWL Depth on Drawing



REMARKS:
XD @ 12.75'

Maximum Drawdown: ____ ft.
Recovery Time: ____ min.
Recovery Depth: ____ ft.

CALCS, SKETCH MAPS, ETC.:

BORING NO: GMW3D

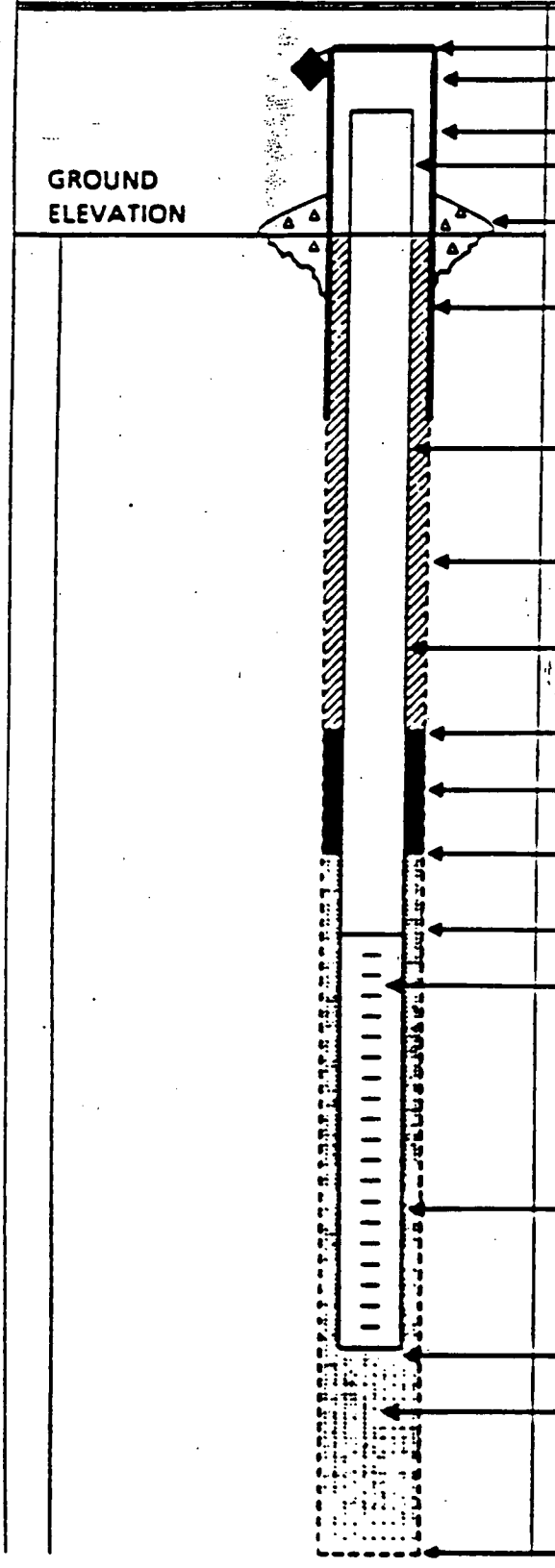
HALLIBURTON NUS
Environmental Corporation

MONITORING WELL SHEET

PROJECT: NSB-NLON
PROJECT NO.: 9594
ELEVATION:
FIELD GEOLOGIST: J. R. FERGUSON

LOCATION: GROTON, CT.
BORING: GMW3D
DATE: 1-11-93

DRILLER: EAST COAST
DRILLING METHOD: HOLLOW STEM AUGER
DEVELOPMENT METHOD:



ELEVATION OF TOP OF SURFACE CASING:
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING:
STICK - UP RISER PIPE:
TYPE OF SURFACE SEAL:
I.D. OF SURFACE CASING:
TYPE OF SURFACE CASING:
RISER PIPE I.D.: 2" Ø
TYPE OF RISER PIPE: Sch. 40 PVC
BOREHOLE DIAMETER: 8" Ø
TYPE OF BACKFILL: BENTONITE/CEMENT GROUT
ELEVATION / DEPTH TOP OF SEAL: 171'
TYPE OF SEAL: BENTONITE PELLET
DEPTH TOP OF SAND PACK: 176
ELEVATION / DEPTH TOP OF SCREEN: 178'
TYPE OF SCREEN: Sch 40 PVC
SLOT SIZE x LENGTH: .010 - 10'
I D OF SCREEN: 2" Ø
TYPE OF SAND PACK: SILICA SAND
ELEVATION / DEPTH BOTTOM OF SCREEN: 188'
ELEVATION / DEPTH BOTTOM OF SAND PACK: 189
TYPE OF BACKFILL BELOW OBSERVATION WELL: SAND
ELEVATION / DEPTH OF HOLE: 190'

SE1000C
Environmental Logger
04/09 15:40

Unit# 00143 T st 0

Setups:	INPUT 1
Type	Level (F)
Mod	Surface
I.D.	00007
Reference	0.000
Linearity	0.000
Scal factor	9.990
Offset	0.040
D lay mSEC	50.000

Step 0 04/09 15:28:13

Rising Head Slug Test
4/9/94
6MW3D

Elapsed Time	INPUT 1
0.0000	-1.539
0.0033	-1.482
0.0066	-1.428
0.0100	-1.375
0.0133	-1.321
0.0166	-1.271
0.0200	-1.223
0.0233	-1.176
0.0266	-1.132
0.0300	-1.094
0.0333	-1.053
0.0366	-1.012
0.0400	-0.971
0.0433	-0.939
0.0466	-0.908
0.0500	-0.876
0.0533	-0.845
0.0566	-0.813
0.0600	-0.785
0.0633	-0.756
0.0666	-0.731
0.0700	-0.709
0.0733	-0.678
0.0766	-0.659
0.0800	-0.637
0.0833	-0.615
0.0866	-0.592
0.0900	-0.570
0.0933	-0.551
0.0966	-0.536
0.1000	-0.520
0.1033	-0.498
0.1066	-0.485
0.1100	-0.470
0.1133	-0.451
0.1166	-0.438
0.1200	-0.425

0.1233	-0.406
0.1266	-0.394
0.1300	-0.381
0.1333	-0.369
0.1366	-0.356
0.1400	-0.343
0.1433	-0.331
0.1466	-0.321
0.1500	-0.312
0.1533	-0.302
0.1566	-0.293
0.1600	-0.283
0.1633	-0.271
0.1666	-0.265
0.1700	-0.255
0.1733	-0.246
0.1766	-0.239
0.1800	-0.233
0.1833	-0.227
0.1866	-0.217
0.1900	-0.214
0.1933	-0.205
0.1966	-0.198
0.2000	-0.195
0.2033	-0.189
0.2066	-0.183
0.2100	-0.176
0.2133	-0.170
0.2166	-0.167
0.2200	-0.164
0.2233	-0.157
0.2266	-0.151
0.2300	-0.148
0.2333	-0.145
0.2366	-0.138
0.2400	-0.135
0.2433	-0.132
0.2466	-0.129
0.2500	-0.123
0.2533	-0.119
0.2566	-0.116
0.2600	-0.113
0.2633	-0.110
0.2666	-0.107
0.2700	-0.104
0.2733	-0.101
0.2766	-0.097
0.2800	-0.094
0.2833	-0.091
0.2866	-0.091
0.2900	-0.088
0.2933	-0.085
0.2966	-0.082
0.3000	-0.078
0.3033	-0.078
0.3066	-0.076
0.3100	-0.075
0.3133	-0.072
0.3166	-0.072
0.3200	-0.069

0.3233	-0.069
0.3266	-0.066
0.3300	-0.066
0.3333	-0.063
0.3500	-0.056
0.3666	-0.050
0.3833	-0.041
0.4000	-0.037
0.4166	-0.034
0.4333	-0.028
0.4500	-0.028
0.4666	-0.025
0.4833	-0.022
0.5000	-0.022
0.5166	-0.019
0.5333	-0.019
0.5500	-0.015
0.5666	-0.015
0.5833	-0.015
0.6000	-0.012
0.6166	-0.012
0.6333	-0.009
0.6500	-0.009
0.6666	-0.009
0.6833	-0.009
0.7000	-0.009
0.7166	-0.003
0.7333	-0.009
0.7500	-0.009
0.7666	-0.006
0.7833	-0.003
0.8000	-0.003
0.8166	-0.006
0.8333	-0.003
0.8500	-0.006
0.8666	-0.003
0.8833	-0.003
0.9000	-0.006
0.9166	-0.006
0.9333	-0.006
0.9500	-0.006
0.9666	-0.006
0.9833	-0.006
1.0000	-0.003
1.2000	-0.003
1.4000	-0.006
1.6000	-0.006
1.8000	-0.003
2.0000	-0.006
2.2000	-0.003
2.4000	-0.006
2.6000	-0.006
2.8000	-0.009
3.0000	-0.015
3.2000	-0.012
3.4000	-0.009
3.6000	-0.015
3.8000	-0.009
4.0000	-0.019
4.2000	-0.015

4.4000	-0.012
4.6000	-0.012
4.8000	-0.012
5.0000	-0.012
5.2000	-0.015
5.4000	-0.012
5.6000	-0.012
5.8000	-0.012
6.0000	-0.012
6.2000	-0.012
6.4000	-0.012
6.6000	-0.009
6.8000	-0.012
7.0000	-0.009
7.2000	-0.009
7.4000	-0.012
7.6000	-0.012
7.8000	-0.012
8.0000	-0.012
8.2000	-0.015
8.4000	-0.012
8.6000	-0.015
8.8000	-0.015
9.0000	-0.015
9.2000	-0.012
9.4000	-0.012
9.6000	-0.015
9.8000	-0.012
10.0000	-0.006

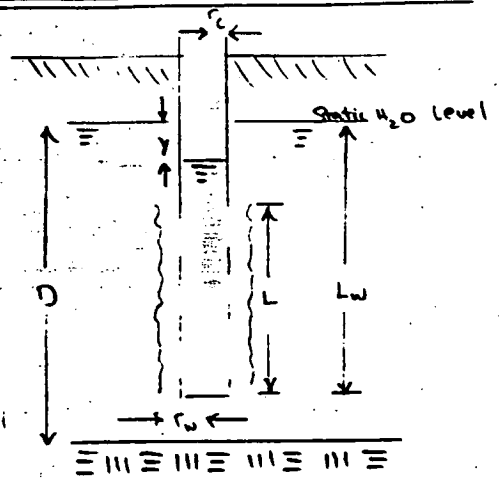
END

CALCULATION WORKSHEET

Order No. 19116 (01-91)

CLIENT: NSB-NLON	JOB NUMBER: 9594 - 0300
SUBJECT: Bouwer & Rice Slug Test Data Analysis	
BASED ON: 6 MW7S Rising Head	DRAWING NUMBER: —
BY: TSE / CHECKED BY: WJB	APPROVED BY: / DATE: 4-12-94

Given $K = \frac{r_c^2 \ln(R_e/r_w)}{2L} \frac{1}{t} \ln \frac{y_0}{y_t}$



where r_c = casing radius
L = screen length
y_0 = head @ $t_0 = 0$
y_t = head @ $t > t$
L_w = height of H_2O in well
D = saturated thickness

r_w = radius from well centre to undisturbed aquifer

$r_c = 1.0$ in $= 0.083$ ft
$L = 10$ ft
$r_w = 4.0$ in $= 0.333$ ft

Static H_2O level = 5.16 ft
well Depth = 13.15 ft
$L_w = (13.15 - 5.16) = 7.99$ ft

$y_0 = 1.633$ ft
$y_t = 0.331$ ft
$t = 1.0$ min $= 6.94 \times 10^{-4}$ day

$$K = \frac{r_c^2 \ln(R_e/r_w)}{2L} \frac{1}{t} \ln\left(\frac{y_0}{y_t}\right)$$

$$\ln(R_e/r_w) = \left[\frac{1.1}{\ln(L_w/r_w)} + \frac{C}{L/r_w}\right]^{-1}$$

$$K = \frac{(0.083\text{ ft})^2 (2.42)}{2(10\text{ ft})} \frac{1}{(6.94 \times 10^{-4}\text{ d})} \ln\left(\frac{1.633\text{ ft}}{0.331\text{ ft}}\right)$$

$$= \left[\frac{1.1}{\ln(7.99\text{ ft}/0.333\text{ ft})} + \frac{2}{10\text{ ft}/0.333\text{ ft}}\right]^{-1}$$

$$= 2.42$$

$K = 1.92$ ft/day

$K = 1.92$ ft/day $= 6.76 \times 10^{-4}$ cm/s

6MW7S Rising Head
Bouwer & Rice Method

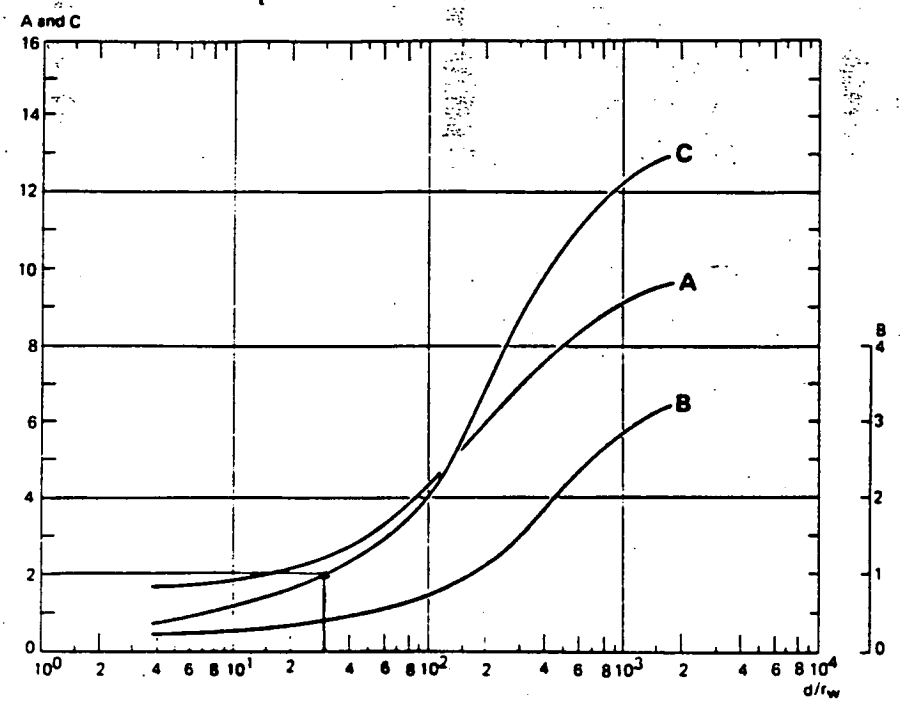


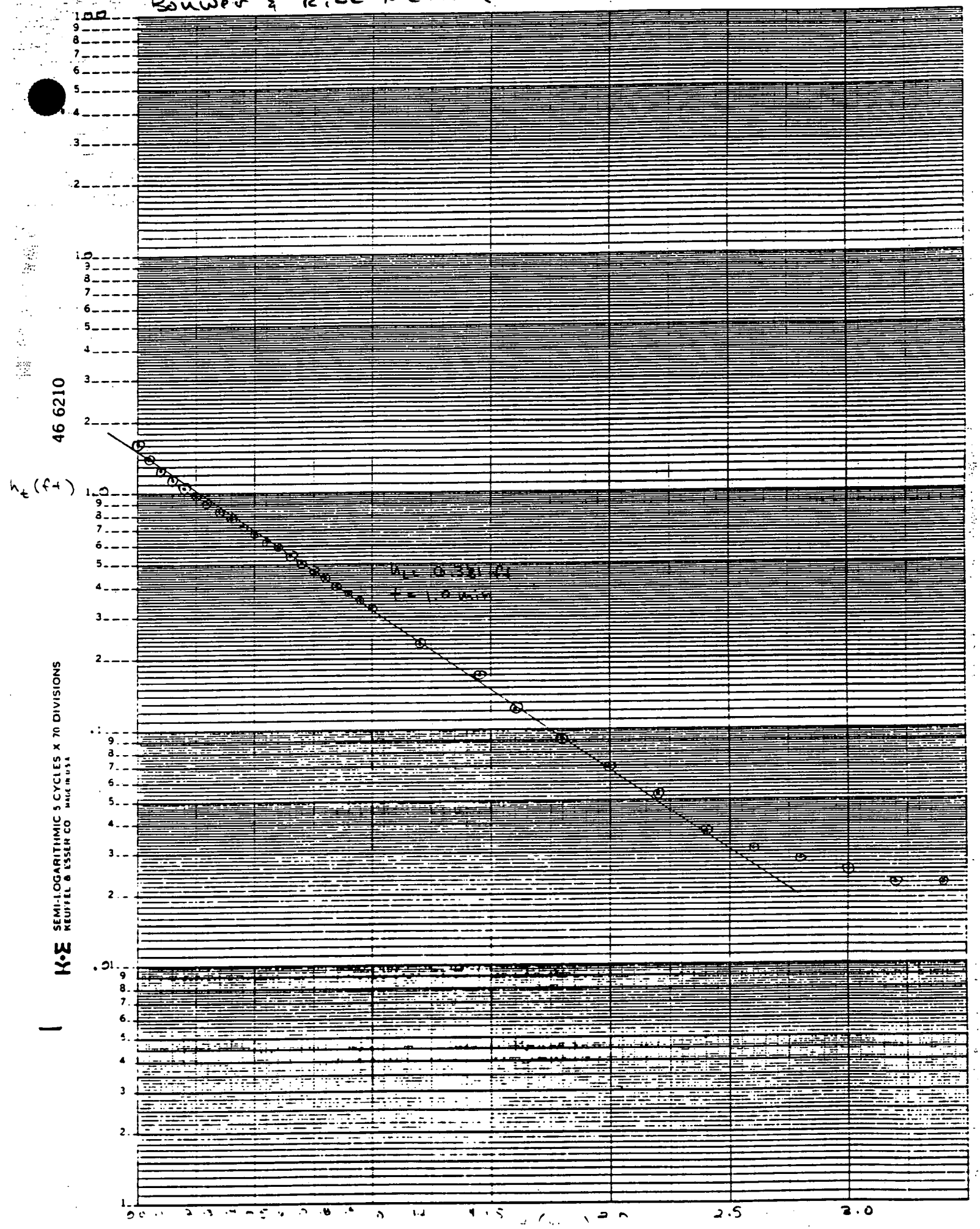
Figure 16.6 The Bouwer and Rice curves showing the relation between the parameters A, B, C, and d/r_w

$$d/r_w = 10\,ft / 0.333\,ft = 30.03$$

$$C = 2$$

6MW 7S Rising Head Slug Test

Bouwer & Rice Method

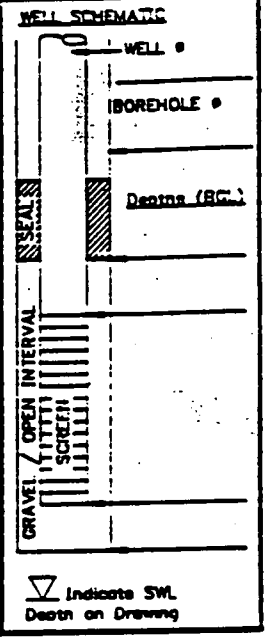


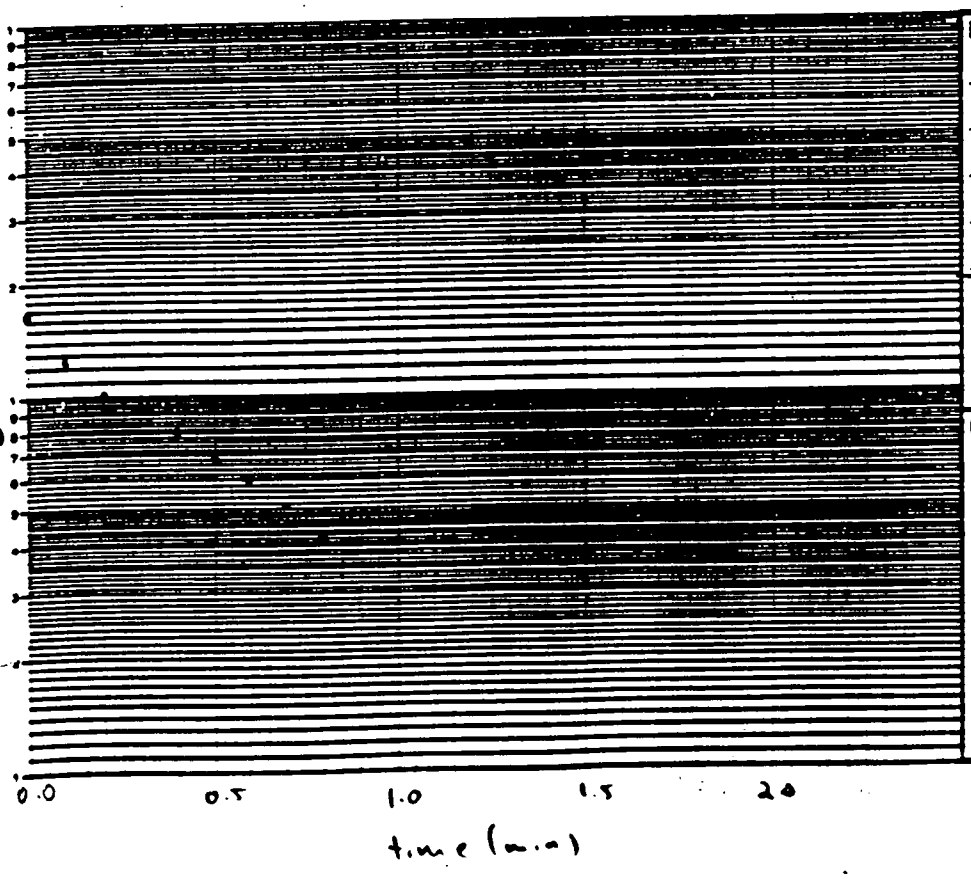
HYDRAULIC CONDUCTIVITY TESTING DATA SHEET — HALLIBURTON NUS CORPORATION

PROJECT NAME: NSB-NLON WELL/BORING NO.: 6MW7S
PROJECT NO.: 9594 GEOLOGIST: Tim E / Stan C Total Depth: 13.15'
WELL DIAMETER: 2" SCREEN LENGTH/DEPTH: 10' TEST NO.:
STATIC WATER LEVEL (Depth/Elevation): 5.16' DATE: 4-9-94
TEST TYPE (Rising/Falling/Constant Head): Rising CHECKED:
METHOD OF INDUCING WATER LEVEL CHANGE: Slug (Length = 5.13', Dia = 0.1') PAGE 1 OF 1
REFERENCE PT. FOR WL MEAS. (Top of Casing, Transducer, etc.): Surface

ELAPSED TIME (min. or sec.)	MEASURED WATER LEVEL (feet)	DRAWDOWN OR HEAD (ΔH) (feet)	ELAPSED TIME (min. or sec.)	MEASURED WATER LEVEL (feet)	DRAWDOWN OR HEAD (ΔH) (feet)
0.00	-1.63				
0.10	-1.26				
0.20	-1.06				
0.30	-0.91				
0.40	-0.79				
0.50	-0.68				
0.60	-0.59				
0.70	-0.51				
0.80	-0.44				
0.90	-0.37				

WELL SCHEMATIC





REMARKS:
XD @ 7.81'

Maximum Drawdown: _____ ft.
Recovery Time: _____ min.
Recovery Depth: _____ ft.

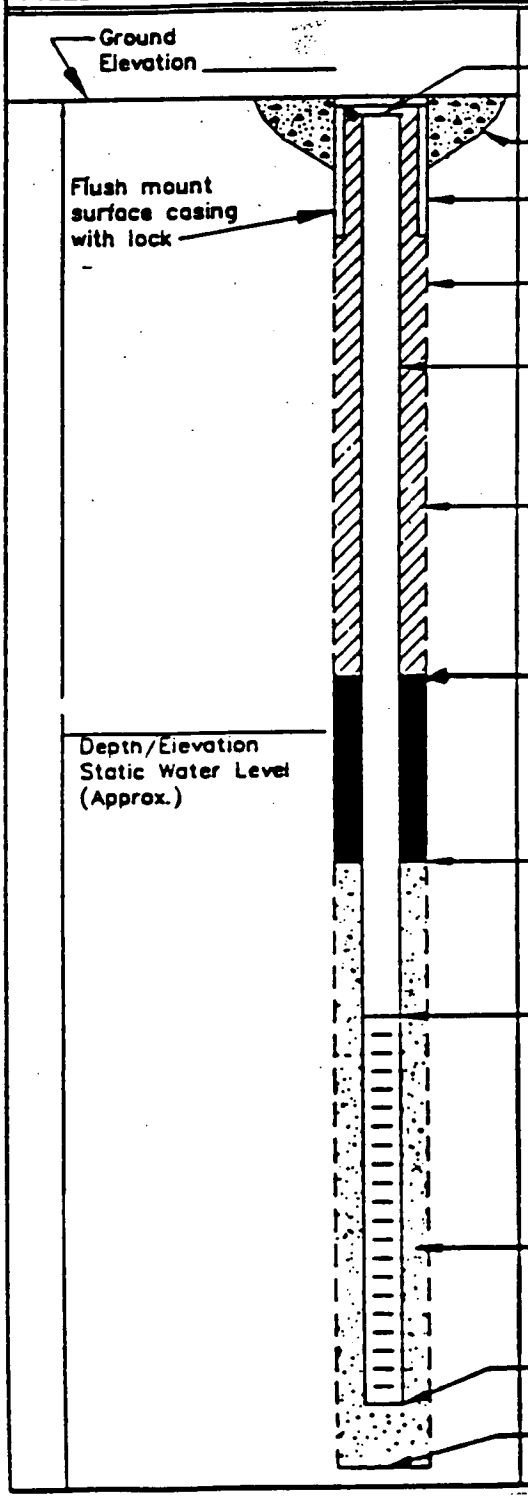
CALCS.SKETCH MAPS. ETC.:

HALLIBURTON NUS
Environmental Corporation

WELL NO.: 6MW7S

OVERBURDEN MONITORING WELL SHEET

PROJECT: NSB-NLON	LOCATION: Groton CT	DRILLER: East Coast
PROJECT NO.: 9594	BORING: 6MW7S	DRILLING METHOD: HSA
ELEVATION:	DATE: 1-10-94	DEVELOPMENT METHOD:
FIELD GEOLOGIST: Tim Evans		



ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: Concrete

TYPE OF PROTECTIVE CASING: Steel

I.D. OF PROTECTIVE CASING: 4"

BOREHOLE DIAMETER: 8"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: Grout

ELEVATION / DEPTH TOP OF SEAL: / 2'

TYPE OF SEAL: Bentonite Chips

DEPTH/ELEVATION TOP OF SAND: 4' /

DEPTH/ELEVATION TOP OF SCREEN: 6' /

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.010 x 10'

TYPE OF SAND PACK: Silica Sand

DEPTH/ELEVATION BOTTOM OF SCREEN: 16' /

DEPTH/ELEVATION BOTTOM OF SAND: 16' /

DEPTH/ELEVATION BOTTOM OF HOLE: 16' /

BACKFILL MATERIAL BELOW SAND: Natural

SE1000C
Environmental Logger
04/09 15:08

Unit# 00143 Test 0

Setups:	INPUT 1
Type	Level (F)
Mod	Surface
I.D.	00007
R fer nce	0.000
Linearity	0.000
Scale factor	9.990
Offset	0.040
Delay mSEC	50.000

Step 0 04/09 14:56:12

Rising Head Slug Test
4/9/94
GMW7S

Elaps d Time	INPUT 1
0.0000	-1.633
0.0033	-1.614
0.0066	-1.592
0.0100	-1.570
0.0133	-1.551
0.0166	-1.538
0.0200	-1.520
0.0233	-1.504
0.0266	-1.491
0.0300	-1.472
0.0333	-1.463
0.0366	-1.447
0.0400	-1.434
0.0433	-1.422
0.0466	-1.412
0.0500	-1.400
0.0533	-1.387
0.0566	-1.376
0.0600	-1.368
0.0633	-1.356
0.0666	-1.346
0.0700	-1.337
0.0733	-1.327
0.0766	-1.318
0.0800	-1.308
0.0833	-1.299
0.0866	-1.289
0.0900	-1.283
0.0933	-1.274
0.0966	-1.267
0.1000	-1.258
0.1033	-1.248
0.1066	-1.242
0.1100	-1.236
0.1133	-1.226
0.1166	-1.217
0.1200	-1.210

0.1233	-1.204
0.1266	-1.198
0.1300	-1.188
0.1333	-1.182
0.1366	-1.176
0.1400	-1.170
0.1433	-1.163
0.1466	-1.157
0.1500	-1.151
0.1533	-1.141
0.1566	-1.135
0.1600	-1.129
0.1633	-1.122
0.1666	-1.116
0.1700	-1.113
0.1733	-1.103
0.1766	-1.100
0.1800	-1.094
0.1833	-1.088
0.1866	-1.081
0.1900	-1.075
0.1933	-1.069
0.1966	-1.065
0.2000	-1.059
0.2033	-1.053
0.2066	-1.047
0.2100	-1.043
0.2133	-1.037
0.2166	-1.031
0.2200	-1.028
0.2233	-1.021
0.2266	-1.015
0.2300	-1.012
0.2333	-1.006
0.2366	-0.999
0.2400	-0.996
0.2433	-0.990
0.2466	-0.987
0.2500	-0.980
0.2533	-0.977
0.2566	-0.971
0.2600	-0.968
0.2633	-0.961
0.2666	-0.955
0.2700	-0.952
0.2733	-0.946
0.2766	-0.942
0.2800	-0.936
0.2833	-0.933
0.2866	-0.927
0.2900	-0.924
0.2933	-0.920
0.2966	-0.914
0.3000	-0.911
0.3033	-0.905
0.3066	-0.901
0.3100	-0.898
0.3133	-0.892
0.3166	-0.889
0.3200	-0.883

0.3233	-0.879
0.3266	-0.876
0.3300	-0.873
0.3333	-0.870
0.3500	-0.845
0.3666	-0.826
0.3833	-0.804
0.4000	-0.785
0.4166	-0.766
0.4333	-0.747
0.4500	-0.728
0.4666	-0.712
0.4833	-0.693
0.5000	-0.678
0.5166	-0.662
0.5333	-0.646
0.5500	-0.630
0.5666	-0.614
0.5833	-0.602
0.6000	-0.586
0.6166	-0.573
0.6333	-0.558
0.6500	-0.545
0.6666	-0.532
0.6833	-0.520
0.7000	-0.507
0.7166	-0.495
0.7333	-0.482
0.7500	-0.473
0.7666	-0.460
0.7833	-0.447
0.8000	-0.438
0.8166	-0.428
0.8333	-0.419
0.8500	-0.406
0.8666	-0.397
0.8833	-0.387
0.9000	-0.378
0.9166	-0.368
0.9333	-0.362
0.9500	-0.353
0.9666	-0.343
0.9833	-0.337
1.0000	-0.331
1.2000	-0.230
1.4000	-0.170
1.6000	-0.122
1.8000	-0.091
2.0000	-0.069
2.2000	-0.053
2.4000	-0.037
2.6000	-0.031
2.8000	-0.028
3.0000	-0.025
3.2000	-0.022
3.4000	-0.022
3.6000	-0.022
3.8000	-0.022
4.0000	-0.025
4.2000	-0.025

4.4000	-0.028
4.6000	-0.028
4.8000	-0.028
5.0000	-0.031
5.2000	-0.031
5.4000	-0.034
5.6000	-0.034
5.8000	-0.037
6.0000	-0.037
6.2000	-0.040
6.4000	-0.040
6.6000	-0.044
6.8000	-0.044
7.0000	-0.044
7.2000	-0.047
7.4000	-0.047
7.6000	-0.047
7.8000	-0.050
8.0000	-0.050
8.2000	-0.053
8.4000	-0.053
8.6000	-0.056
8.8000	-0.056
9.0000	-0.050
9.2000	-0.053
9.4000	-0.053
9.6000	-0.053
9.8000	-0.053
10.0000	-0.056

END

CLIENT NSB-NLON	JOB NUMBER 9594
SUBJECT 8MW2S BLUG TEST ANALYSIS	
BASED ON BOUWER & RICE METHOD	DRAWING NUMBER
BY L. J. GROSS / CHECKED BY DAY 1-9-95	APPROVED BY / DATE 1/6/95

1. RISING HEAD TEST

GND ELEV = 9.91
TOC = 9.43
STATIC WATER LEVEL = 9.43 - 6.73 = 2.70'
TOP OF SCREEN = 9.43 - 5.10 = 4.33' (FIELD MEAS)
BOTTOM OF SCREEN = 9.43 - 15.10 = -5.67' (FIELD MEAS)

WATER TABLE CROSSES SCREEN → H = L
H ≡ distance from water table to bottom of intake
L ≡ LENGTH OF INTAKE

$H = L = 2.7 - (-5.67) = 8.37$ ft

IN THIS AREA OVERBURDEN >85 feet thick.
→ ASSUME $D \gg H$, D ≡ AQUIFER THICKNESS

r_c ≡ radius of casing = 1"/12 = 0.083 ft
r_w ≡ radius of well = 4"/12 = 0.333 ft
$y_0 = 1.07$ ft
$y_t = 0.027$ ft @ $t = 1.1$ min

$$\ln \frac{R_e}{r_w} = \left[\frac{1.1}{\ln(H/r_w)} + \frac{A + B\ln\left(\frac{D-H}{r_w}\right)}{L/r_w}\right]^{-1}$$

FOR $D \gg H$, $\ln\left(\frac{D-H}{r_w}\right) \to 6$

$L/r_w = \frac{8.37 \text{ feet}}{0.333 \text{ feet}} = 25.14$

FROM CURVES A = 2.3 B = 0.30

CALCULATION WORKSHEET Order No. 19116 (01-91)

CLIENT		JOB NUMBER	
SUBJECT			
BASED ON		DRAWING NUMBER	
BY	CHECKED BY DAY 1-9-95	APPROVED BY	DATE

$$\ln\left(\frac{R_e}{r_w}\right) = \left[\frac{1.1}{\ln\left(\frac{8.37}{0.333}\right)} + \frac{2.3 + 0.3\,(6)}{(8.37/0.333)}\right]^{-1}$$

$$= 1.98$$

$$K = \frac{r_c^2 \ln(R_e/r_w)}{2L} \frac{1}{t} \ln \frac{y_0}{y_t}$$

$$= \frac{(0.083)^2\,(1.98)}{2(8.37)} \left(\frac{1}{1.1\,\text{min}}\right) \ln\left(\frac{1.07}{0.027}\right)$$

$$= 2.73 \times 10^{-3}\ \text{ft/min}$$

$$= 3.93\ \text{ft/day}$$

HYDRAULIC CONDUCTIVITY TESTING DATA SHEET — HALLIBURTON NUS CORPORATION

PROJECT NAME: NSB NEW LONDON WELL/BORING NO.: BMW25

PROJECT NO.: 9594 GEOLOGIST: J.P. FERGUSON

WELL DIAMETER: 2" Ø SCREEN LENGTH/DEPTH: 10' 15.10 TEST NO.: T2 S1

STATIC WATER LEVEL (Depth/Elevation): 6.73' DATE: 3-20-94

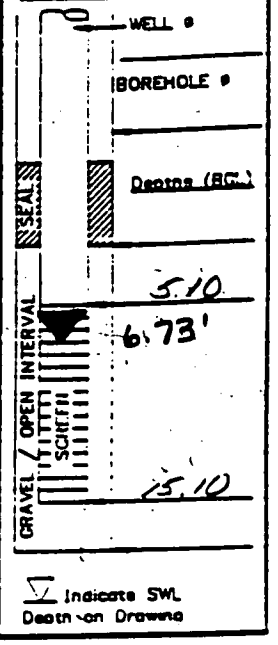
TEST TYPE (Rising/Falling/Constant Head): RISING HEAD CHECKED:

METHOD OF INDUCING WATER LEVEL CHANGE: SOLID SLUG REMOVAL PAGE 2 OF 7

REFERENCE PT. FOR WL MEAS. (Top of Casing, Transducer, etc.): T.O.C PVC

ELAPSED TIME (min. or sec.)	MEASURED WATER LEVEL (feet)	DRAWDOWN OR HEAD (ΔH) (feet)	ELAPSED TIME (min. or sec.)	MEASURED WATER LEVEL (feet)	DRAWDOWN OR HEAD (ΔH) (feet)
.0100	2.508	x			
.0300	2.272				
.0500	1.802	x			
.0800	1.411				
.1000	1.242	x			
.3000	.438	x			
.5000	.193	x			
.6000	.136	x			

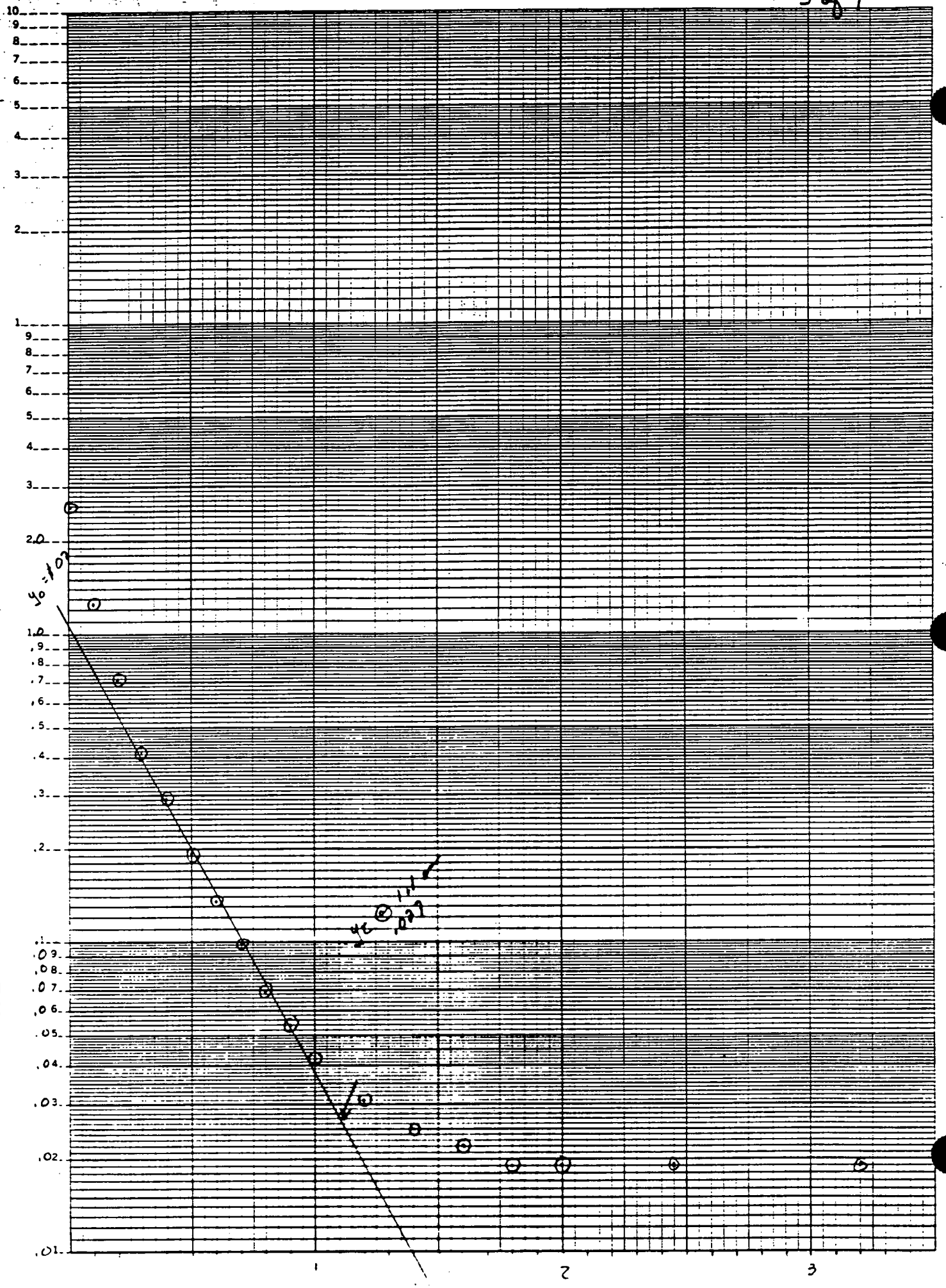
WELL SCHEMATIC



REMARKS:

BMW25 IS TIDALLY INFLUENCED. Possibly reason for well not recovering to original STATIC WATER LEVEL. STATIC WATER LEVEL AT START OF TEST 2 STEP 1 = 6.73'

CALCS.SKETCH MAPS, ETC.:



5-20-94
46 6010
K+E SEMI-LOGARITHMIC 4 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.

SE1000C
Environmental Logger
03/21 11:01

Unit# 00143 Test 2

Setups:	INPUT 1
Type	Level (F)
Mod	TOC
I.D.	00000
Reference	0.000
Linearity	0.000
Scale factor	10.070
Offs t	0.000
D lay mSEC	50.000

Step 1 03/20 16:40:59

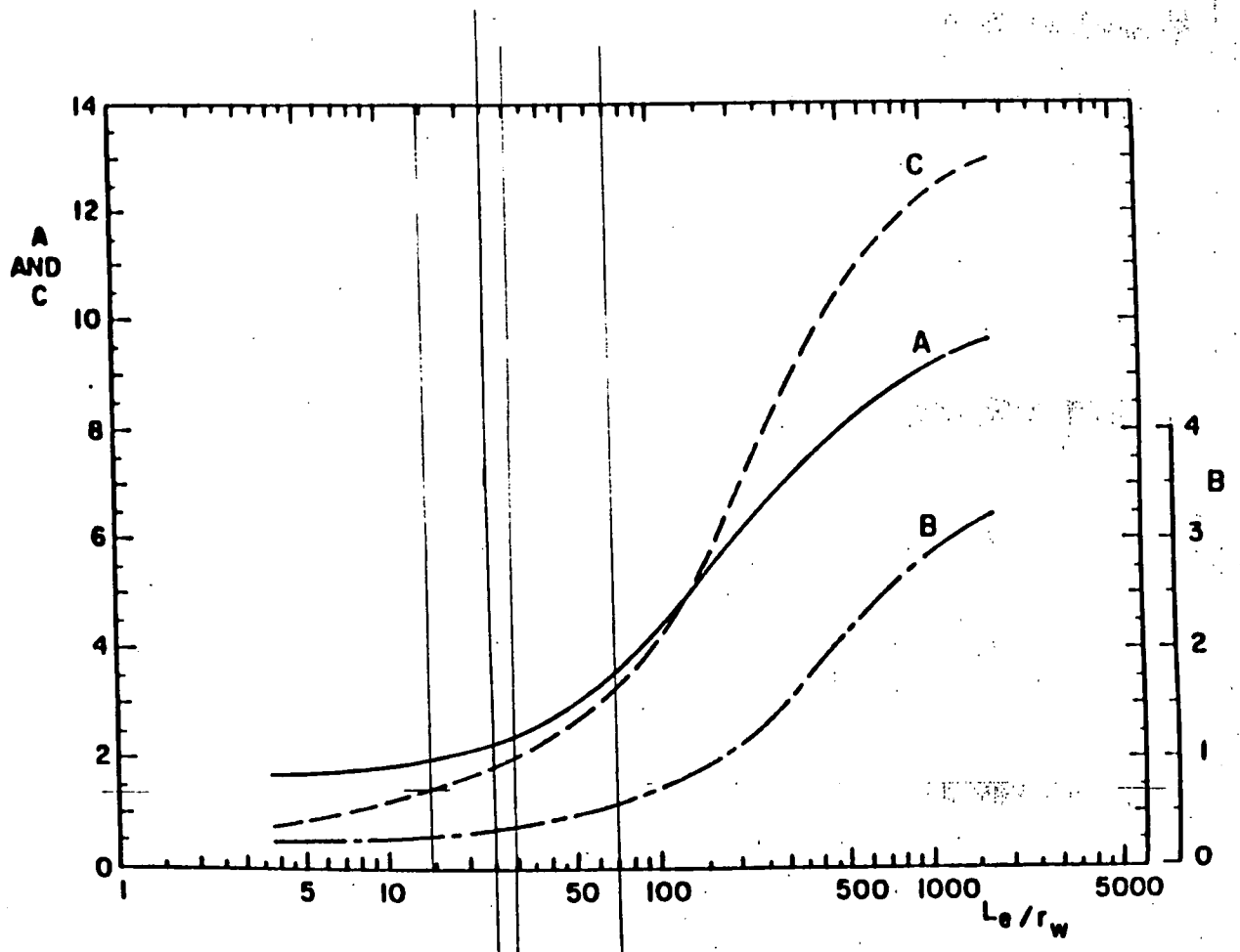
Elapsed Time	INPUT 1
0.0000	1.964
0.0033	2.342
0.0066	2.400
0.0100	2.508
0.0133	2.457
0.0166	2.381
0.0200	2.272
0.0233	2.250
0.0266	2.129
0.0300	2.098
0.0333	2.056
0.0366	1.967
0.0400	1.875
0.0433	1.866
0.0466	1.815
0.0500	1.802
0.0533	1.770
0.0566	1.700
0.0600	1.640
0.0633	1.624
0.0666	1.548
0.0700	1.506
0.0733	1.452
0.0766	1.443
0.0800	1.411
0.0833	1.379
0.0866	1.357
0.0900	1.312
0.0933	1.281
0.0966	1.265
0.1000	1.242
0.1033	1.204
0.1066	1.188

0.1100	1.169
0.1133	1.150
0.1166	1.128
0.1200	1.106
0.1233	1.090
0.1266	1.064
0.1300	1.049
0.1333	1.026
0.1366	1.007
0.1400	0.988
0.1433	0.972
0.1466	0.956
0.1500	0.934
0.1533	0.918
0.1566	0.902
0.1600	0.883
0.1633	0.867
0.1666	0.851
0.1700	0.836
0.1733	0.823
0.1766	0.807
0.1800	0.797
0.1833	0.778
0.1866	0.766
0.1900	0.753
0.1933	0.737
0.1966	0.727
0.2000	0.712
0.2033	0.699
0.2066	0.689
0.2100	0.680
0.2133	0.667
0.2166	0.654
0.2200	0.645
0.2233	0.635
0.2266	0.626
0.2300	0.613
0.2333	0.604
0.2366	0.591
0.2400	0.581
0.2433	0.572
0.2466	0.562
0.2500	0.553
0.2533	0.543
0.2566	0.537
0.2600	0.527
0.2633	0.518
0.2666	0.511
0.2700	0.502
0.2733	0.492
0.2766	0.486
0.2800	0.480
0.2833	0.470
0.2866	0.464
0.2900	0.457
0.2933	0.451
0.2966	0.445
0.3000	0.438
0.3033	0.432

0.3100	0.419
0.3133	0.413
0.3166	0.406
0.3200	0.400
0.3233	0.397
0.3266	0.391
0.3300	0.387
0.3333	0.381
0.3500	0.356
0.3666	0.333
0.3833	0.311
0.4000	0.292
0.4166	0.273
0.4333	0.257
0.4500	0.238
0.4666	0.222
0.4833	0.206
0.5000	0.193
0.5166	0.181
0.5333	0.171
0.5500	0.162
0.5666	0.152
0.5833	0.143
0.6000	0.136
0.6166	0.127
0.6333	0.120
0.6500	0.114
0.6666	0.108
0.6833	0.101
0.7000	0.098
0.7166	0.092
0.7333	0.089
0.7500	0.082
0.7666	0.079
0.7833	0.073
0.8000	0.069
0.8166	0.066
0.8333	0.063
0.8500	0.063
0.8666	0.060
0.8833	0.057
0.9000	0.054
0.9166	0.054
0.9333	0.050
0.9500	0.047
0.9666	0.047
0.9833	0.044
1.0000	0.044
1.2000	0.031
1.4000	0.025
1.6000	0.022
1.8000	0.019
2.0000	0.019
2.2000	0.019
2.4000	0.019
2.6000	0.022
2.8000	0.022
3.0000	0.019
3.2000	0.019
3.4000	0.022

3.6000	0.022
3.8000	0.022
4.0000	0.019
4.2000	0.022
4.4000	0.022
4.6000	0.022
4.8000	0.025
5.0000	0.025
5.2000	0.025
5.4000	0.025
5.6000	0.028
5.8000	0.028
6.0000	0.028
6.2000	0.028
6.4000	0.028
6.6000	0.025
6.8000	0.028
7.0000	0.028
7.2000	0.031
7.4000	0.028
7.6000	0.031
7.8000	0.031
8.0000	0.031
8.2000	0.031
8.4000	0.031
8.6000	0.031
8.8000	0.031
9.0000	0.035
9.2000	0.035
9.4000	0.035
9.6000	0.035
9.8000	0.038
10.0000	0.035
12.0000	0.038
14.0000	0.041

END



C = 1.4

Fig. 2. Dimensi nless parameters A, B, and C as a function of L_e/r_w for calculati n f $\ln(R_e/r_w)$.

692

CALCULATION WORKSHEET

Order No. 19116 (01-91)

CLIENT	JOB NUMBER
NAVAL SUBMARINE BASE NEW LONDON	2049 9594 030

SUBJECT: BOUWER AND RICE SLUG TEST ANALYSIS - BMW2D RISING HEAD

BASED ON:

DRAWING NUMBER:

BY	CHECKED BY	APPROVED BY	DATE
JRF		WJB	4-1-94 4-8-94

STATIC WATER LEVEL = 6.70'

$H = L_w = (64 - 6.70) = 57.30$

$L_e = 10'$

$r_c = 1''$ or $.083'$

$r_w = 4''$ or $.333'$

$B = (64 - 6.70) = 57.30$

$y_o = 3.2'$

$y_c = .317'$

$\Delta t = 11.8$ min

For $H = L_w = D$ $L_e / r_w = 14.92$ — $C = 1.4$

(see Figure 2 Dimensionless parameters in Falling head calculation)

$$\ln \frac{R_e}{r_w} = \frac{1}{\left[\frac{1.1}{\ln(L_w/r_w)} + \frac{C}{L_e/r_w}\right]}$$

$$K = \frac{r_c^2 \ln (R_e/r_w)}{2 L_e} \frac{1}{t} \ln \frac{y_o}{y_c}$$

$$\ln \frac{R_e}{r_w} = \frac{1}{\left[\frac{1.1}{\ln(57.3/.333)} + \frac{1.4}{10/.333}\right]}$$

$$K = \frac{(.083)^2 (3.83)}{2(10)} \frac{1}{11.8} \ln \frac{3.2}{.317}$$

$$\ln \frac{R_e}{r_w} = \frac{1}{\left[\frac{1.1}{\ln 172.02} + \frac{1.4}{30.03}\right]}$$

$$K = \frac{(.007)(3.83)}{(20)} (.085)(2.31)$$

$$\ln \frac{R_e}{r_w} = \frac{1}{\left[1.1/5.15 + .047\right]}$$

$$K = (.0013)(.085)(2.31)$$

$$K = 2.63 \times 10^{-4} \text{ ft/min}$$

$$\ln \frac{R_e}{r_w} = \frac{1}{.214 + .047} = 3.83$$

$$= 2.63 \times 10^{-4} \frac{\text{ft}}{\text{min}} \quad \frac{1 \text{ min}}{60 \text{ sec}} = 4.39 \times 10^{-6} \text{ ft/sec}$$

$$4.39 \times 10^{-6} \frac{\text{ft}}{\text{sec}} \quad \frac{12 \text{ in}}{1 \text{ ft}} \quad \frac{2.54 \text{ cm}}{1 \text{ in}} = 1.34 \times 10^{-4} \text{ cm/sec}$$

HYDRAULIC CONDUCTIVITY TESTING DATA SHEET — HALLIBURTON NUS CORPORATION

PROJECT NAME: NSB NEW LONDON WELL/BORING NO.: BMW2D

PROJECT NO.: 9694 GEOLOGIST: J.R. FERGUSON

WELL DIAMETER: 2" ø SCREEN LENGTH/DEPTH: 10' 61.99 TEST NO.: T351

STATIC WATER LEVEL (Depth/Elevation): 16.70 DATE: 3-20-94

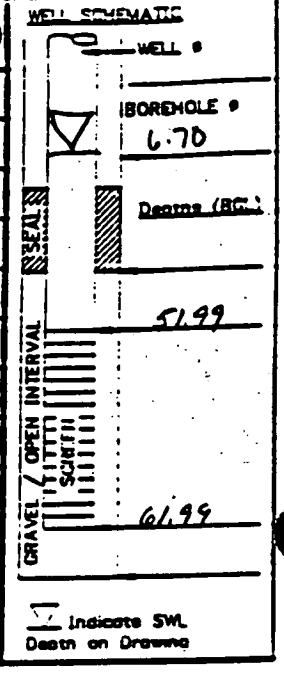
TEST TYPE (Rising/Falling/Constant Head): RISING HEAD CHECKED:

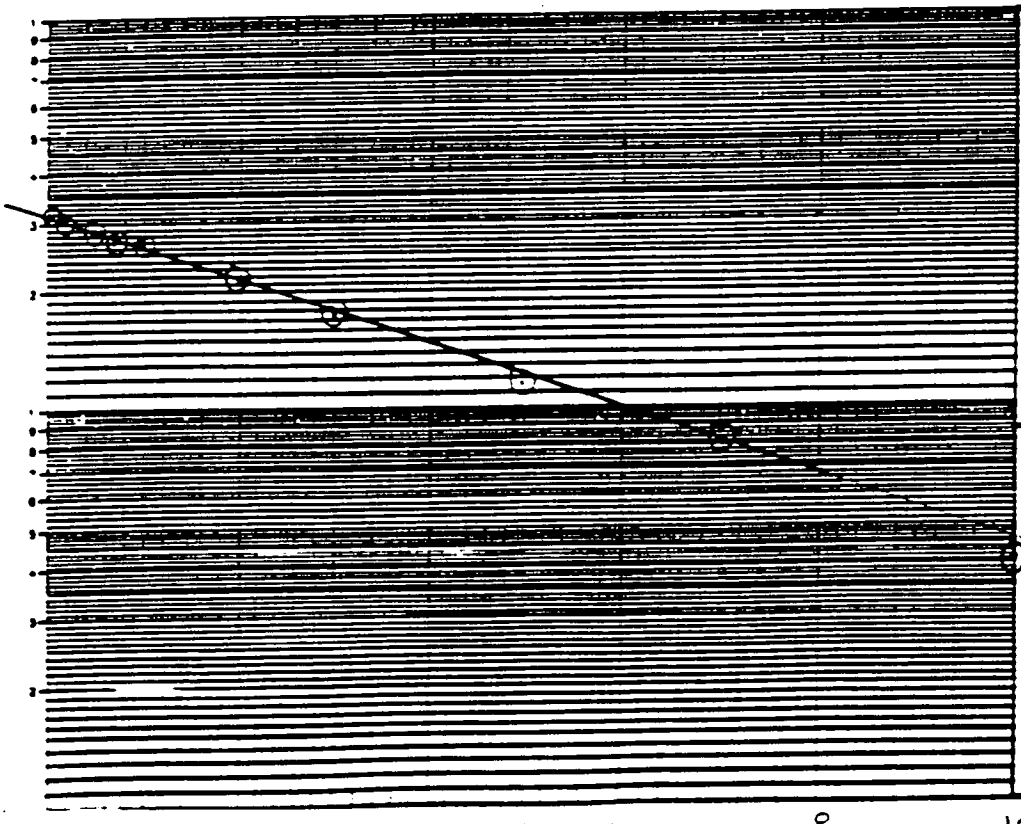
METHOD OF INDUCING WATER LEVEL CHANGE: REMOVAL OF SOLID SLUG PAGE 2 OF 8

REFERENCE PT. FOR WL MEAS. (Top of Casing, Transducer, etc.): T.O.C PVC

ELAPSED TIME (min. or sec.)	MEASURED WATER LEVEL (feet)	DRAWDOWN OR HEAD (ΔH) (feet)	ELAPSED TIME (min. or sec.)	MEASURED WATER LEVEL (feet)	DRAWDOWN OR HEAD (ΔH) (feet)
.0366	3.3666 x		12.00	.356	
.1000	3.140				
.200	3.048 x				
.300	2.991				
.5000	2.867 x				
.7500	2.730 x				
1.00	2.600 x				
2.00	2.101 x				
3.00	1.726 x				
5.00	1.166 x				
7.00	.801 x				
10.00	.479 x				

WELL SCHEMATIC



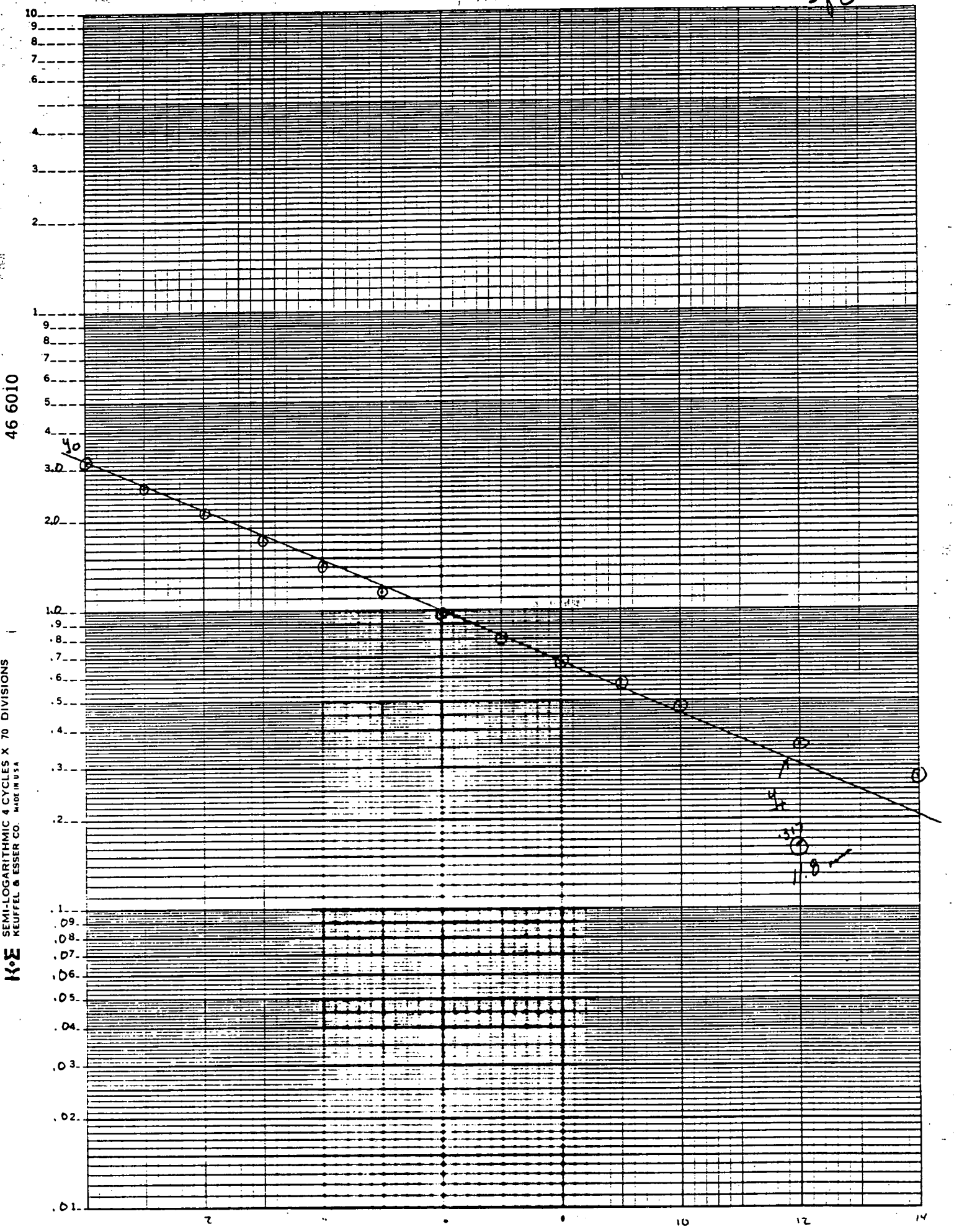


REMARKS:

STATIC WATER LEVEL AT START OF TEST 3 STEP 1 = 6.70'

CALCS, SKETCH MAPS, ETC.:

3 of 8


10
9
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3.0
2.0
1.0
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.09
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.06
.05
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.03
.02
.01
40
.31
1.8
2
10
12
14
K+E SEMI-LOGARITHMIC 4 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.
46 6010
3-20-94

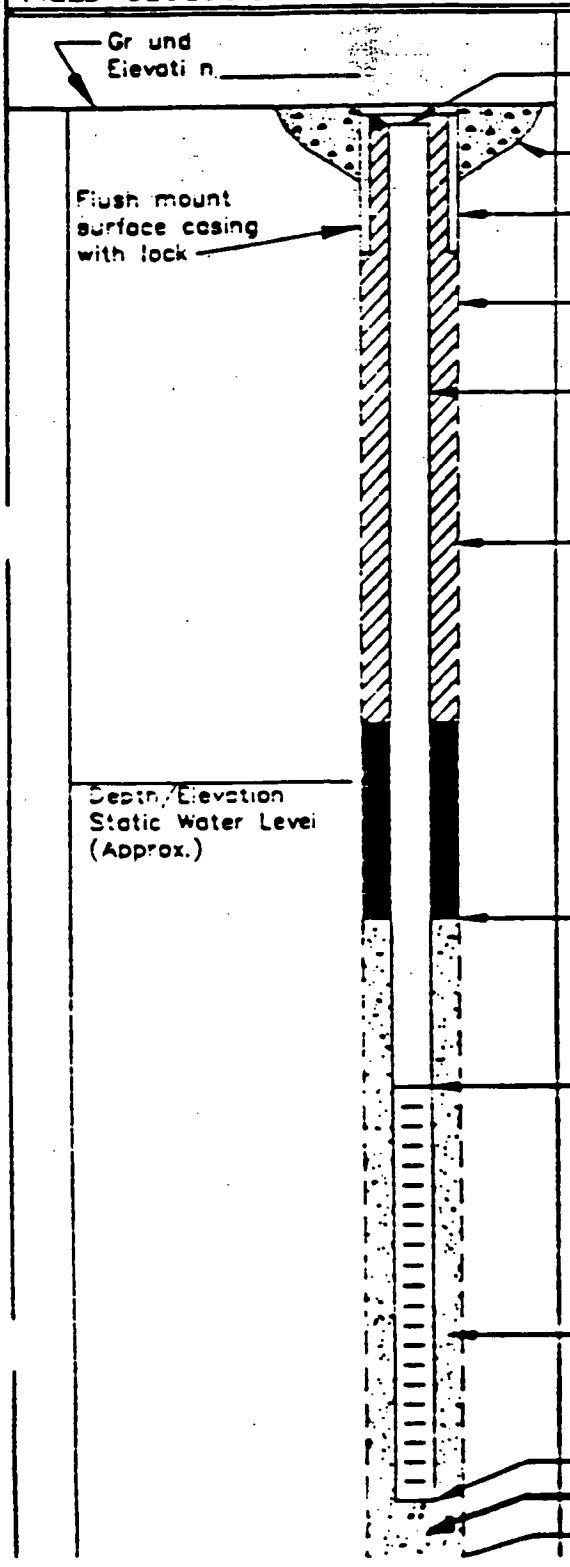
NUS CORPORATION

4 of 8

WELL NO.: 8MW2D

OVERBURDEN MONITORING WELL SHEET

PROJECT: NSB - NLON	LOCATION: Goss Cove	DRILLER: Bret Swiatek
PROJECT NO.: 9594	BORING: 8MW2D	DRILLING METHOD: HSA
ELEVATION:	DATE: 12-6-93	DEVELOPMENT METHOD:
FIELD GEOLOGIST: PAUL DAVIS		



ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: Concrete

TYPE OF PROTECTIVE CASING: Steel

I.D. OF PROTECTIVE CASING: 6"

BOREHOLE DIAMETER: 8"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: Cement Grout / Bentonite Pellet

DEPTH/ELEVATION TOP OF SAND: 53' /

DEPTH/ELEVATION TOP OF SCREEN: 54' GS/

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 10 SL x 10'

TYPE OF SAND PACK: Silica Sand

DEPTH/ELEVATION BOTTOM OF SCREEN: 64' GS/

DEPTH/ELEVATION BOTTOM OF SAND: 64' GS/

DEPTH/ELEVATION BOTTOM OF HOLE: 64' GS/

SE1000C
Environmental Logger
03/21 11:11

Unit# 00143 Test 3

Setups:	INPUT 1
Type	Level (F)
Mode	TOC
I.D.	00000
Reference	0.000
Linearity	0.000
Scale factor	10.070
Offset	0.000
Delay mSEC	50.000

Step 1 03/20 17:47:01

Elapsed Time	INPUT 1
0.0000	0.410
0.0033	1.144
0.0066	1.446
0.0100	1.554
0.0133	1.738
0.0166	2.012
0.0200	2.390
0.0233	2.425
0.0266	2.832
0.0300	2.959
0.0333	2.997
0.0366	3.166
0.0400	3.147
0.0433	3.169
0.0466	3.166
0.0500	3.159
0.0533	3.159
0.0566	3.143
0.0600	3.150
0.0633	3.137
0.0666	3.150
0.0700	3.147
0.0733	3.118
0.0766	3.137
0.0800	3.162

0.0833	3.134
0.0866	3.134
0.0900	3.127
0.0933	3.099
0.0966	3.134
0.1000	3.140
0.1033	3.102
0.1066	3.121
0.1100	3.112
0.1133	3.112
0.1166	3.105
0.1200	3.105
0.1233	3.102
0.1266	3.099
0.1300	3.099
0.1333	3.096
0.1366	3.093
0.1400	3.089
0.1433	3.089
0.1466	3.086
0.1500	3.086
0.1533	3.083
0.1566	3.080
0.1600	3.077
0.1633	3.077
0.1666	3.073
0.1700	3.070
0.1733	3.070
0.1766	3.067
0.1800	3.064
0.1833	3.064
0.1866	3.061
0.1900	3.058
0.1933	3.054
0.1966	3.051
0.2000	3.048
0.2033	3.048
0.2066	3.045
0.2100	3.045
0.2133	3.042
0.2166	3.042
0.2200	3.038
0.2233	3.035
0.2266	3.035
0.2300	3.032
0.2333	3.029
0.2366	3.026
0.2400	3.023
0.2433	3.023
0.2466	3.019
0.2500	3.019
0.2533	3.016
0.2566	3.013
0.2600	3.013
0.2633	3.010
0.2666	3.007
0.2700	3.007
0.2733	3.004
0.2766	3.000
0.2800	3.000

0.2833	2.997
0.2866	2.994
0.2900	2.994
0.2933	2.991
0.2966	2.991
0.3000	2.991
0.3033	2.984
0.3066	2.984
0.3100	2.981
0.3133	2.978
0.3166	2.978
0.3200	2.975
0.3233	2.975
0.3266	2.972
0.3300	2.972
0.3333	2.969
0.3500	2.959
0.3666	2.949
0.3833	2.937
0.4000	2.927
0.4166	2.918
0.4333	2.908
0.4500	2.899
0.4666	2.889
0.4833	2.880
0.5000	2.867
0.5166	2.857
0.5333	2.851
0.5500	2.838
0.5666	2.829
0.5833	2.822
0.6000	2.813
0.6166	2.800
0.6333	2.791
0.6500	2.784
0.6666	2.775
0.6833	2.765
0.7000	2.756
0.7166	2.746
0.7333	2.740
0.7500	2.730
0.7666	2.721
0.7833	2.711
0.8000	2.702
0.8166	2.695
0.8333	2.686
0.8500	2.676
0.8666	2.667
0.8833	2.660
0.9000	2.651
0.9166	2.641
0.9333	2.632
0.9500	2.625
0.9666	2.616
0.9833	2.606
1.0000	2.600
1.2000	2.463
1.4000	2.368
1.6000	2.276
1.8000	2.187

2.0000	2.101
2.2000	2.018
2.4000	1.942
2.6000	1.865
2.8000	1.792
3.0000	1.726
3.2000	1.656
3.4000	1.592
3.6000	1.532
3.8000	1.475
4.0000	1.417
4.2000	1.363
4.4000	1.309
4.6000	1.258
4.8000	1.214
5.0000	1.166
5.2000	1.122
5.4000	1.080
5.6000	1.039
5.8000	1.001
6.0000	0.966
6.2000	0.928
6.4000	0.896
6.6000	0.864
6.8000	0.832
7.0000	0.801
7.2000	0.772
7.4000	0.746
7.6000	0.718
7.8000	0.692
8.0000	0.670
8.2000	0.648
8.4000	0.626
8.6000	0.603
8.8000	0.584
9.0000	0.565
9.2000	0.546
9.4000	0.527
9.6000	0.511
9.8000	0.495
10.0000	0.479
12.0000	0.356
14.0000	0.279
16.0000	0.232
18.0000	0.206
20.0000	0.190
22.0000	0.184
24.0000	0.184
26.0000	0.187
28.0000	0.190
30.0000	0.197
32.0000	0.203
34.0000	0.209
36.0000	0.219
38.0000	0.228

END

CALCULATION WORKSHEET

Order No. 19116 (01-91)

CLIENT	JOB NUMBER
NAVAL SUBMARINE BASE New London	2049 9594 030

SUBJECT: BOUWER AND RICE SLUG TEST ANALYSIS — 8MW2D FALLING HEAD

BASED ON	DRAWING NUMBER

BY	CHECKED BY	APPROVED BY	DATE
JRF		WJB	4-1-94 4-8-94

STATIC WATER LEVEL 7.23' (PVC)

$L_w = (64 - 7.23) = 56.77'$

$L_e = 10'$

$r_c = 2''$ or $.083$

$r_w = 8''$ or $.333$

$H = 64 - 7.23 = 56.77$

$y_o = 3.1'$

$y_t = .184'$

$\Delta t = 12$ min $(y_t - y_o)$

$$K = \frac{r_c^2 \ln(R_e/r_w)}{2 L_e} \frac{1}{t} \ln \frac{y_o}{y_t}$$

$$= \frac{(.083)^2 (3.83)}{2(10)} \cdot \frac{1}{12} \cdot \ln \frac{3.1}{.184}$$

$$= \frac{(.007)(3.83)}{20} \cdot (.083)(\ln 16.85)$$

$$= (.0013)(.083)(2.82)$$

$K = 3.04 \times 10^{-4}$ ft/— or 5.07×10^{-6} ft/sec or 1.55×10^{-4} cm/sec

FOR $H = L_w$

$L_e/r_w = 14.92$

$C = 1.4$

$$\ln \frac{R_e}{r_w} = \frac{1}{\left[\frac{1.1}{\ln(L_w/r_w)} + \frac{C}{L_e/r_w}\right]}$$

$$\ln \frac{R_e}{r_w} = \frac{1}{\left[\left(\frac{1.1}{\ln(56.77/.333)}\right) + \left(\frac{1.4}{10/.333}\right)\right]}$$

$$\frac{1}{\left[\left(\frac{1.1}{\ln(170.48)}\right) + \left(\frac{1.4}{30.03}\right)\right]}$$

$$\frac{1}{\left[\left(\frac{1.1}{5.13}\right) + .047\right]}$$

$$\ln R_e/r_w = \frac{1}{(.214 + .047)} = \rightarrow 3.83$$

HYDRAULIC CONDUCTIVITY TESTING DATA SHEET — HALLIBURTON NUS CORPORATION

PROJECT NAME: NSB New London — WELL/BORING NO.: 8MW2D

PROJECT NO.: 9594 — GEOLOGIST: J.R. Ferguson

WELL DIAMETER: 2" ø — SCREEN LENGTH/DEPTH: 10' 61.99' — TEST NO.: T3.50

STATIC WATER LEVEL (Depth/Elevation): 7.23 — DATE: 3-20-94

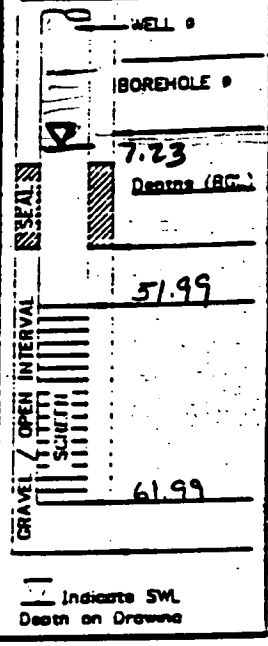
TEST TYPE (Rising/Falling/Constant Head): Falling Head — CHECKED:

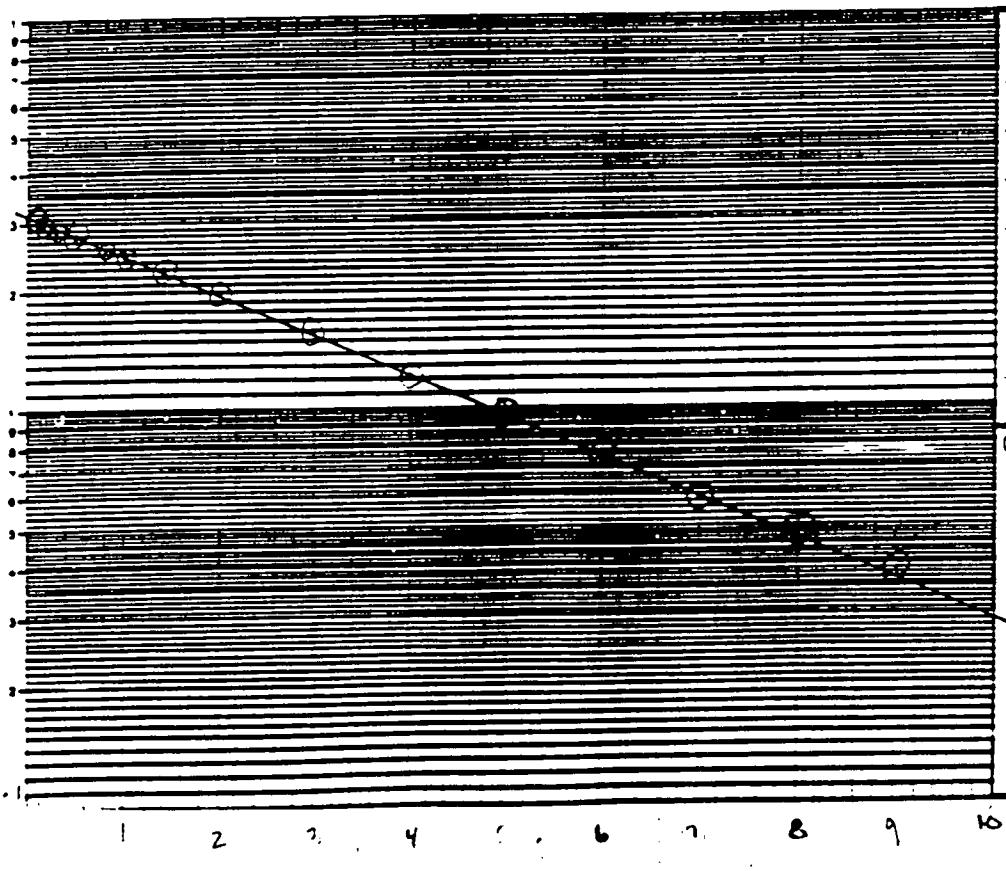
METHOD OF INDUCING WATER LEVEL CHANGE: Insertion of Solid Slug — PAGE 3 OF 9

REFERENCE PT. FOR WL MEAS. (Top of Casing, Transducer, etc.): T.O.C. PVC

ELAPSED TIME (min. or sec.)	MEASURED WATER LEVEL (feet)	DRAWDOWN OR HEAD (ΔH) (feet)	ELAPSED TIME (min. or sec.)	MEASURED WATER LEVEL (feet)	DRAWDOWN OR HEAD (ΔH) (feet)
.0933	3.077 X		7.00	0.591	
.2000	2.921 X		8.00	0.470	
.3000	2.842 X		9.00	0.372	
.5000	2.730 X				
.8000	2.568 X				
1.000	2.463 X				
1.400	2.231 X				
2.00	1.955 X				
3.00	1.554 X				
4.00	1.220				
5.00	0.953				
6.00	0.750				

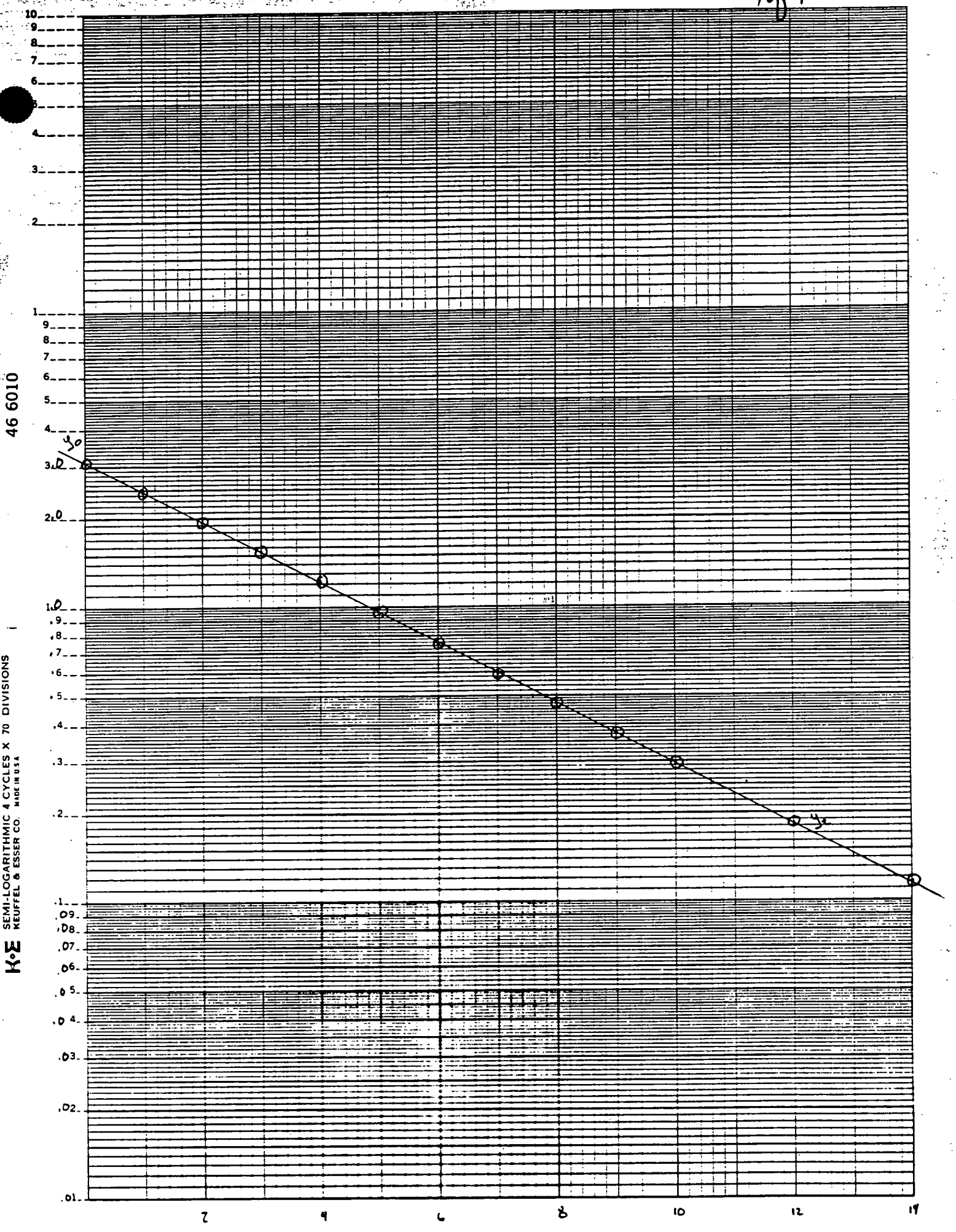
WELL SCHEMATIC





REMARKS:

CALCS.SKETCH MAPS, ETC.:

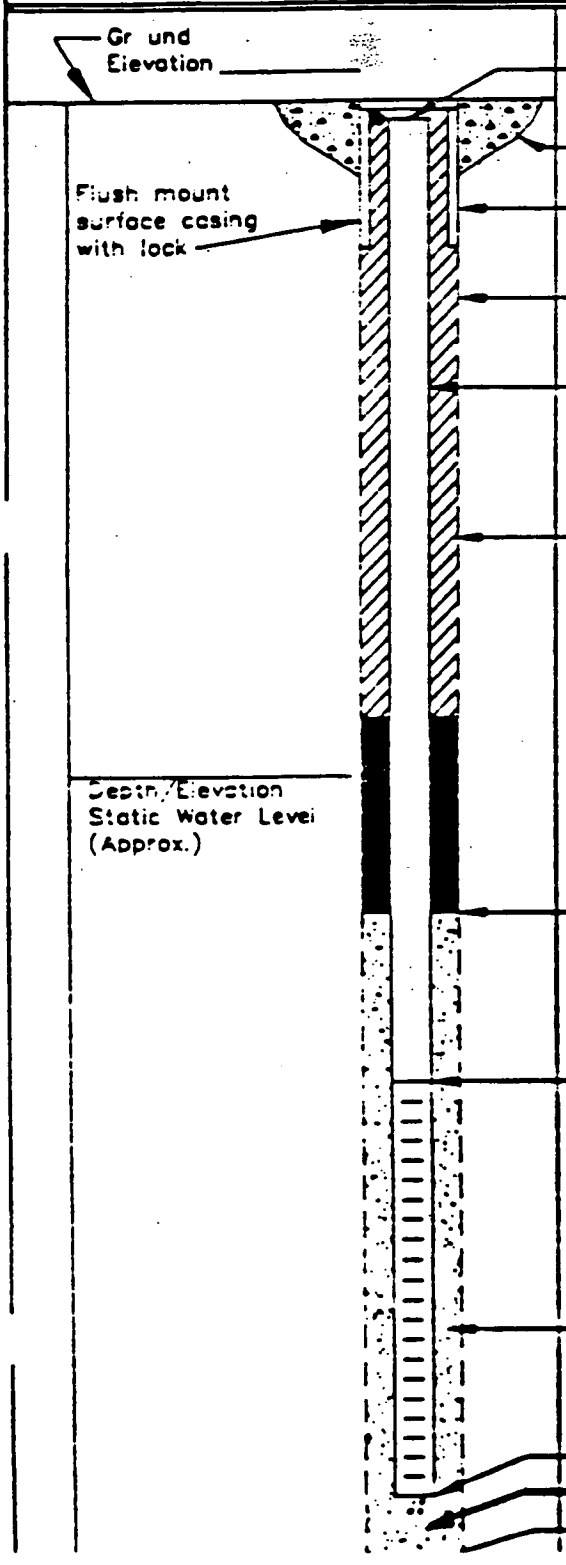

10
9
8
7
6
5
4
3
2
1
9
8
7
6
5
4
3.0
2.0
1.0
.9
.8
.7
.6
.5
.4
.3
.2
.1
.09
.08
.07
.06
.05
.04
.03
.02
.01
y_0
y_x
2
4
6
8
10
12
14
3-20-94
46 6010
K+E SEMI-LOGARITHMIC 4 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.

NUS CORPORATION

WELL NO.: 8MW2D

OVERBURDEN MONITORING WELL SHEET

PROJECT: NSB - NLON
LOCATION: Goss Cove
DRILLER: Bret Swiatek
PROJECT NO.: 9594
BORING: 8MW2D
DRILLING METHOD: HSA
ELEVATION:
DATE: 12-6-93
DEVELOPMENT METHOD:
FIELD GEOLOGIST: PAUL DAVIS



ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: Concrete

TYPE OF PROTECTIVE CASING: Steel

I.D. OF PROTECTIVE CASING: 6"

BOREHOLE DIAMETER: 8"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: Cement Grout / Bentonite Pellet

DEPTH/ELEVATION TOP OF SAND: 53' /

DEPTH/ELEVATION TOP OF SCREEN: 54' GS/

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 10 SL x 10'

TYPE OF SAND PACK: Silica Sand

DEPTH/ELEVATION BOTTOM OF SCREEN: 64' GS/

DEPTH/ELEVATION BOTTOM OF SAND: 64' GS/

DEPTH/ELEVATION BOTTOM OF HOLE: 64' GS/

SE1000C
Environmental Logger
03/21 11:07

Unit# 00143 Test 3

Setups:	INPUT 1
Type	Level (F)
Mode	TOC
I.D.	00000
Refer nce	0.000
Linearity	0.000
Scale factor	10.070
Offset	0.000
Delay mSEC	50.000

Step 0 03/20 17:15:01

Elapsed Time	INPUT 1
0.0000	-2.673
0.0033	-3.693
0.0066	-3.601
0.0100	-2.966
0.0133	-2.816
0.0166	-2.117
0.0200	-2.365
0.0233	-3.458
0.0266	-3.331
0.0300	-3.124
0.0333	-2.778
0.0366	-3.016
0.0400	-3.337
0.0433	-3.035
0.0466	-1.792
0.0500	-3.442
0.0533	-3.449
0.0566	-2.842
0.0600	-2.295
0.0633	-3.223
0.0666	-3.010
0.0700	-2.931
0.0733	-2.962
0.0766	-2.966
0.0800	-2.969
0.0833	-2.962
0.0866	-2.966
0.0900	-2.956
0.0933	-3.077
0.0966	-2.972
0.1000	-2.962
0.1033	-2.953
0.1066	-2.950
0.1100	-2.950
0.1133	-2.946
0.1166	-2.946
0.1200	-2.943

0.1233	-2.940
0.1266	-2.940
0.1300	-2.985
0.1333	-2.953
0.1366	-2.931
0.1400	-2.931
0.1433	-2.927
0.1466	-2.927
0.1500	-2.924
0.1533	-2.924
0.1566	-2.921
0.1600	-2.918
0.1633	-2.918
0.1666	-2.915
0.1700	-2.915
0.1733	-2.943
0.1766	-2.915
0.1800	-2.912
0.1833	-2.905
0.1866	-2.902
0.1900	-2.902
0.1933	-2.899
0.1966	-2.889
0.2000	-2.921
0.2033	-2.902
0.2066	-2.889
0.2100	-2.889
0.2133	-2.889
0.2166	-2.886
0.2200	-2.886
0.2233	-2.883
0.2266	-2.883
0.2300	-2.886
0.2333	-2.886
0.2366	-2.768
0.2400	-2.858
0.2433	-2.816
0.2466	-2.851
0.2500	-2.864
0.2533	-2.867
0.2566	-2.864
0.2600	-2.864
0.2633	-2.861
0.2666	-2.861
0.2700	-2.858
0.2733	-2.858
0.2766	-2.854
0.2800	-2.854
0.2833	-2.851
0.2866	-2.851
0.2900	-2.848
0.2933	-2.848
0.2966	-2.845
0.3000	-2.842
0.3033	-2.838
0.3066	-2.838
0.3100	-2.835
0.3133	-2.835
0.3166	-2.832
0.3200	-2.832

0.3233	-2.829
0.3266	-2.829
0.3300	-2.826
0.3333	-2.822
0.3500	-2.813
0.3666	-2.803
0.3833	-2.794
0.4000	-2.781
0.4166	-2.775
0.4333	-2.765
0.4500	-2.756
0.4666	-2.746
0.4833	-2.737
0.5000	-2.730
0.5166	-2.721
0.5333	-2.711
0.5500	-2.702
0.5666	-2.692
0.5833	-2.683
0.6000	-2.673
0.6166	-2.664
0.6333	-2.654
0.6500	-2.644
0.6666	-2.638
0.6833	-2.629
0.7000	-2.619
0.7166	-2.613
0.7333	-2.603
0.7500	-2.594
0.7666	-2.584
0.7833	-2.575
0.8000	-2.568
0.8166	-2.559
0.8333	-2.549
0.8500	-2.540
0.8666	-2.530
0.8833	-2.524
0.9000	-2.517
0.9166	-2.505
0.9333	-2.495
0.9500	-2.489
0.9666	-2.479
0.9833	-2.470
1.0000	-2.463
1.2000	-2.333
1.4000	-2.231
1.6000	-2.136
1.8000	-2.044
2.0000	-1.955
2.2000	-1.869
2.4000	-1.786
2.6000	-1.707
2.8000	-1.627
3.0000	-1.554
3.2000	-1.478
3.4000	-1.411
3.6000	-1.344
3.8000	-1.278
4.0000	-1.220
4.2000	-1.160

4.4000	-1.106
4.6000	-1.052
4.8000	-1.004
5.0000	-0.953
5.2000	-0.912
5.4000	-0.867
5.6000	-0.826
5.8000	-0.788
6.0000	-0.750
6.2000	-0.718
6.4000	-0.683
6.6000	-0.651
6.8000	-0.619
7.0000	-0.591
7.2000	-0.565
7.4000	-0.537
7.6000	-0.515
7.8000	-0.492
8.0000	-0.470
8.2000	-0.448
8.4000	-0.426
8.6000	-0.410
8.8000	-0.391
9.0000	-0.372
9.2000	-0.356
9.4000	-0.340
9.6000	-0.324
9.8000	-0.311
10.0000	-0.295
12.0000	-0.184
14.0000	-0.114
16.0000	-0.063
18.0000	-0.031
20.0000	-0.006
22.0000	0.012
24.0000	0.025
26.0000	0.041
28.0000	0.050
30.0000	0.044

END

CLIENT	JOB NUMBER
NSB New London	Z049 9594-0300

SUBJECT: Bouwer and Rice Slug Test Analysis - 15MW13 Falling Head Test

BASED ON	DRAWING NUMBER

BY	CHECKED BY	APPROVED BY	DATE
JRF		WJB	4-1-94 4/8/94

Static Water Level 3.00

$L_w = (14.45 - 3.0) = 11.45$

$L_e = 10'$

$r_c = 1''$ or $.083'$

$r_w = 4''$ or $.333'$

$H = 11.45$

$y_0 = 2.17$

$y_t = .2$

$\Delta t = 5$

For $H = L_w$

$L_e/r_w = 14.92$

$C = 1.4$

$$\ln R_e/r_w = \frac{1}{\left[\frac{1.1}{\ln(L_w/r_w)} + \frac{C}{L_e/r_w}\right]}$$

$$\ln R_e/r_w = \frac{1}{\left[\frac{1.1}{\ln(11.45/.333)} + \frac{1.4}{(10/.333)}\right]}$$

$$\ln R_e/r_w = \frac{1}{\left[\left(\frac{1.1}{3.54}\right) + \left(\frac{1.4}{30.03}\right)\right]}$$

$$\ln R_e/r_w = \frac{1}{(.311 + .047)} = 2.79$$

$$K = \frac{r_c^2 \ln R_e/r_w}{2L_e} \frac{1}{t} \ln \frac{y_0}{y_t}$$

$$K = \frac{(.083)^2 (2.79)}{2(10)} \frac{1}{(5)} \ln \frac{(2.17)}{(.2)}$$

$$K = \frac{(.003)(2.79)}{(20)} (.20)(2.38)$$

$$K = 4.65 \times 10^{-4} \frac{ft}{__} = 0.67 \text{ ft/day}$$

$$4.65 \times 10^{-4} \frac{ft}{__} \quad \frac{1 __}{60 __} = 7.75 \times 10^{-6} \text{ ft/sec}$$

$$7.75 \times 10^{-6} \text{ ft/sec} \quad \frac{12 __}{1 ft} \quad \frac{2.54 __}{1 __} = 2.36 \times 10^{-4} \frac{cm}{sec}$$

HYDRAULIC CONDUCTIVITY TESTING DATA SHEET — HALLIBURTON NUS CORPORATION

PROJECT NAME: NSB New London — WELL/BORING NO.: 15MW15

PROJECT NO.: 9594 — GEOLOGIST: J.R. Ferguson

WELL DIAMETER: 2" Ø — SCREEN LENGTH/DEPTH: 10' 14.45 — TEST NO.: T150

STATIC WATER LEVEL (Depth/Elevation): 3.00' — DATE: 3-20-94

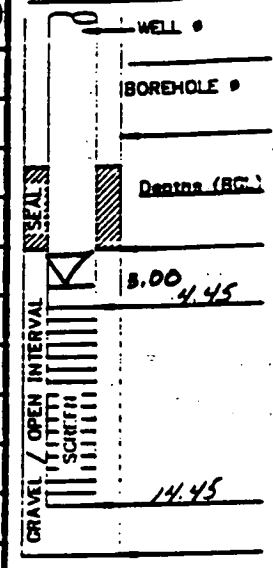
TEST TYPE (Rising/Falling/Constant Head): Falling Head Test — CHECKED:

METHOD OF INDUCING WATER LEVEL CHANGE: Solid Slug Insertion — PAGE 2 OF 8

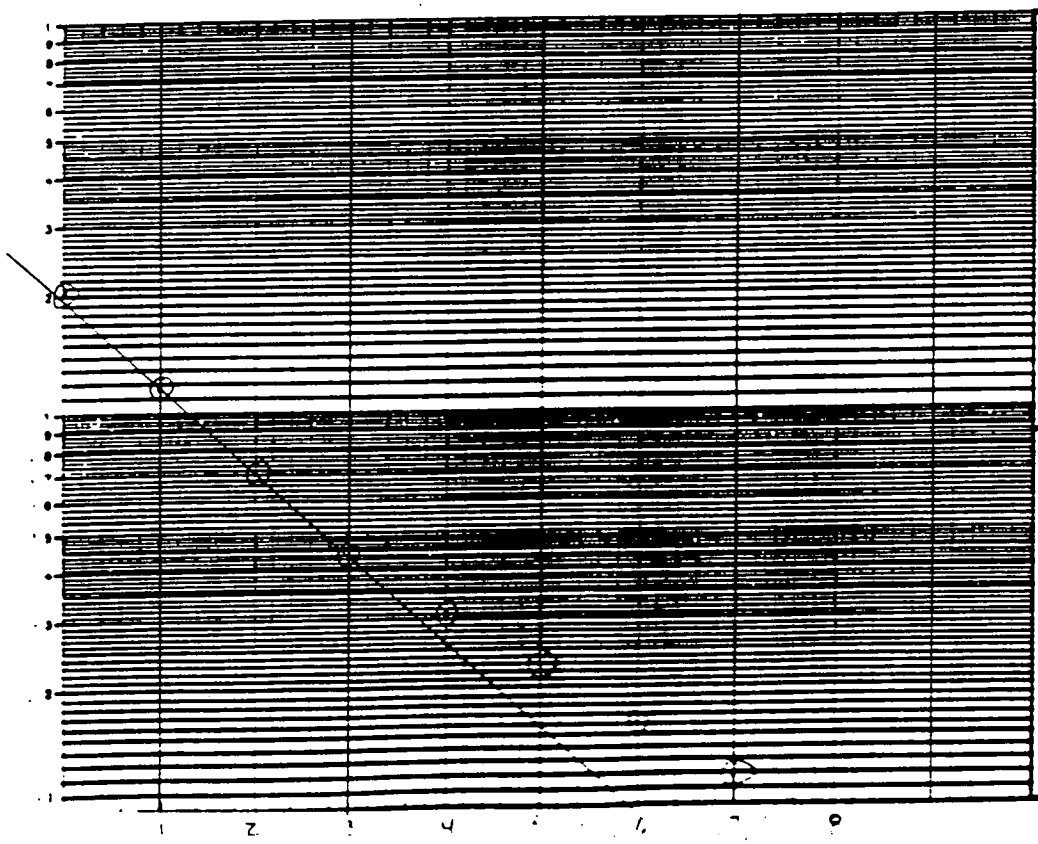
REFERENCE PT. FOR WL MEAS. (Top of Casing, Transducer, etc.): Top of PVC Casing

ELAPSED TIME (min. or sec.)	MEASURED WATER LEVEL (feet)	DRAWDOWN OR HEAD (ΔH) (feet)	ELAPSED TIME (min. or sec.)	MEASURED WATER LEVEL (feet)	DRAWDOWN OR HEAD (ΔH) (feet)
.0500	2.085				
.1000	1.872				
.2000	1.751				
.4000	1.548				
.5000	1.462				
1.00	1.153				
2.00	.715				
3.00	.480				
4.00	.329				
5.00	.228				
6.00	.162				
7.00	.117				

WELL SCHEMATIC

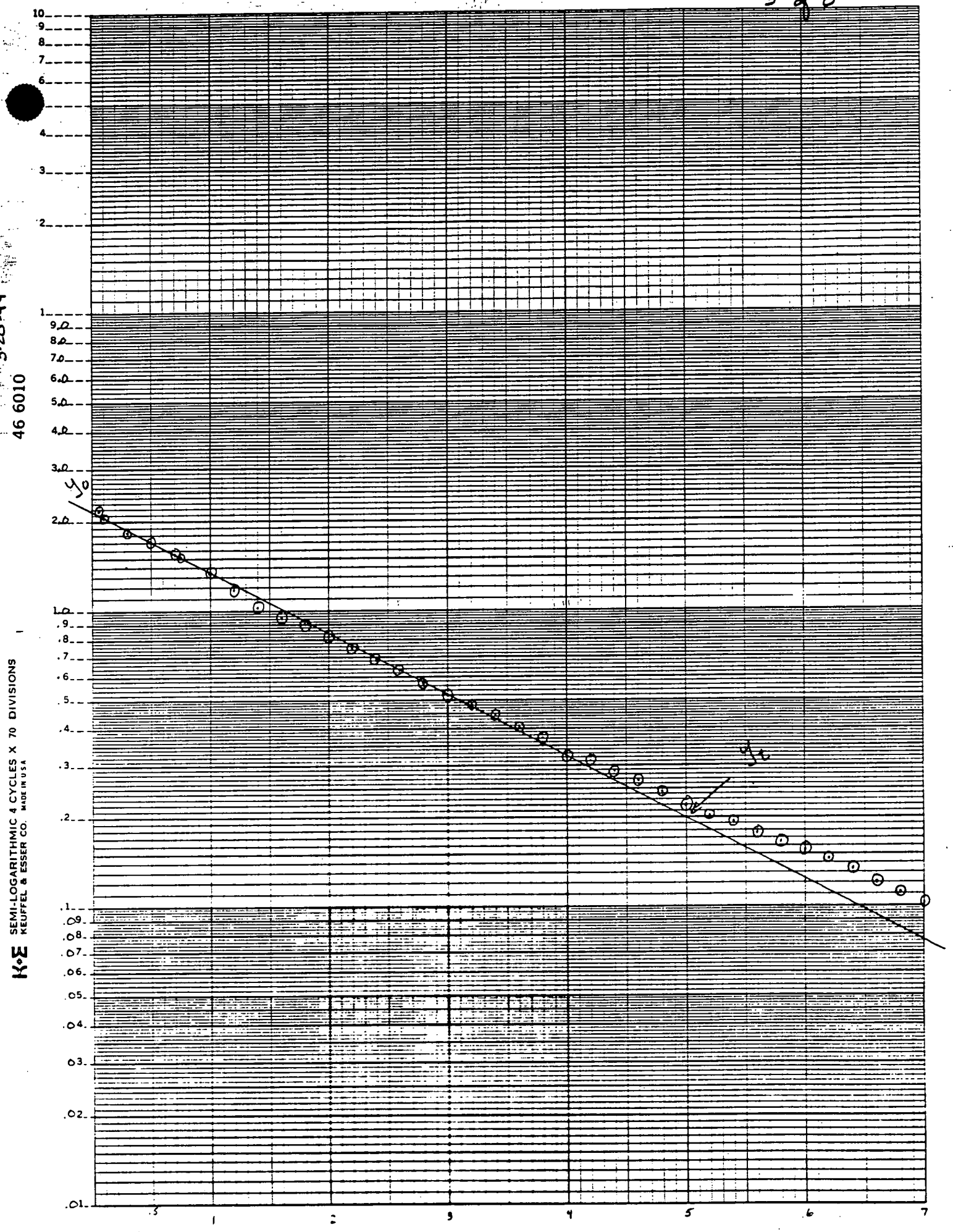


▽ Indicate SWL Depth on Drawing



REMARKS:

CALCS.SKETCH MAPS, ETC.:

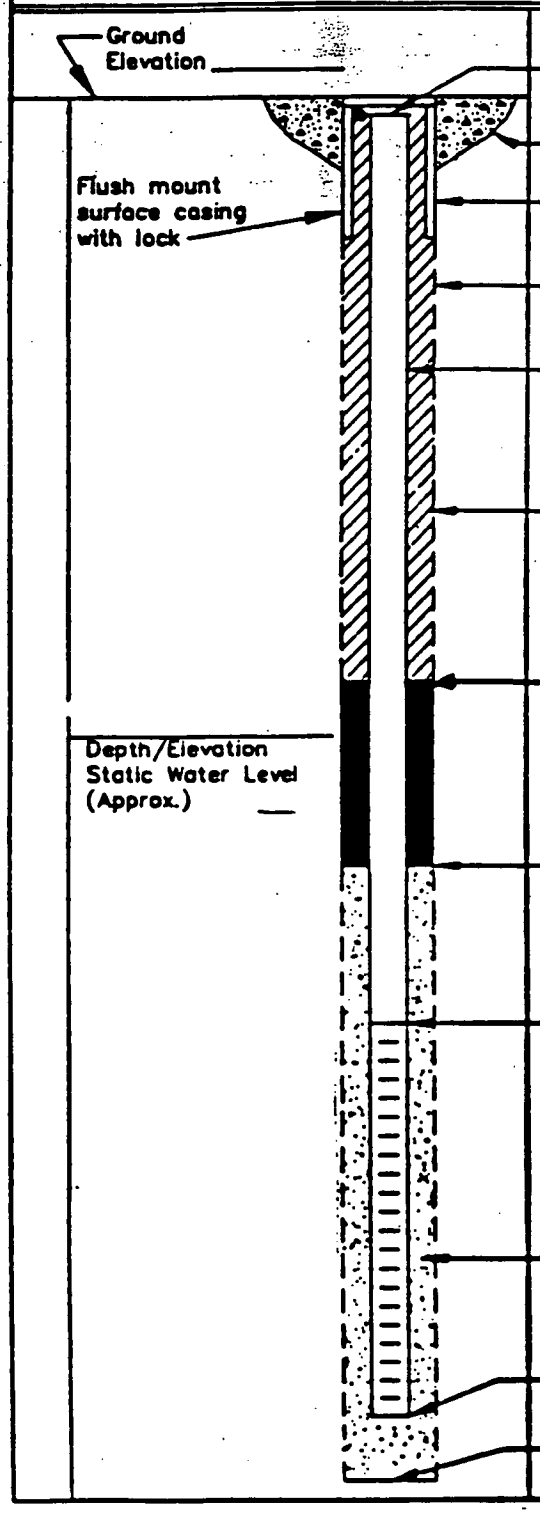

K+E SEMI-LOGARITHMIC 4 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.
46 6010
3-20-94
y_0
y_L

HALLIBURTON NUS
Environmental Corporation

WELL NO.: 15MW1S

OVERBURDEN MONITORING WELL SHEET

PROJECT: NSB-NLON
LOCATION: Groton, CT
DRILLER: East Coast
PROJECT NO.: 9544
BORING: 15MW1S
DRILLING METHOD: HSA
ELEVATION:
DATE: 1-20-94
DEVELOPMENT METHOD:
FIELD GEOLOGIST: Tim Evans



ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: Concrete

TYPE OF PROTECTIVE CASING: Steel

I.D. OF PROTECTIVE CASING: 4"

BOREHOLE DIAMETER: 8"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: Grout

ELEVATION / DEPTH TOP OF SEAL: /1.5'

TYPE OF SEAL: Bentonite Chips

DEPTH/ELEVATION TOP OF SAND: 3.5'/

DEPTH/ELEVATION TOP OF SCREEN: 4.45 5'/

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.010 x 10'

TYPE OF SAND PACK: Silica Sand

DEPTH/ELEVATION BOTTOM OF SCREEN: Field measurement 14.45 15'/

DEPTH/ELEVATION BOTTOM OF SAND: 15'/

DEPTH/ELEVATION BOTTOM OF HOLE: 15'/

BACKFILL MATERIAL BELOW SAND: N/A

SE1000C
Environmental Logg r
03/21 10:51

Unit# 00143 Test 1

S tups:	INPUT 1
Type	Level (F)
Mode	TOC
I.D.	00000
Referenc	0.000
Linearity	0.000
Scale factor	10.070
Offset	0.000
Delay mSEC	50.000

St p 0 03/20 14:20:01

Elapsed Time	INPUT 1
0.0000	-2.571
0.0033	-2.549
0.0066	-1.907
0.0100	-1.233
0.0133	-1.109
0.0166	-1.560
0.0200	-2.136
0.0233	-2.565
0.0266	-2.501
0.0300	-2.168
0.0333	-1.827
0.0366	-1.681
0.0400	-1.831
0.0433	-2.050
0.0466	-2.152
0.0500	-2.085
0.0533	-1.945
0.0566	-1.856
0.0600	-1.869
0.0633	-1.945
0.0666	-1.993
0.0700	-1.977
0.0733	-1.923
0.0766	-1.885
0.0800	-1.885
0.0833	-1.907
0.0866	-1.923
0.0900	-1.913
0.0933	-1.891
0.0966	-1.875
0.1000	-1.872
0.1033	-1.875
0.1066	-1.878
0.1100	-1.881
0.1133	-1.843
0.1166	-1.850

0.1200	-1.837
0.1233	-1.843
0.1266	-1.850
0.1300	-1.846
0.1333	-1.834
0.1366	-1.824
0.1400	-1.821
0.1433	-1.821
0.1466	-1.818
0.1500	-1.815
0.1533	-1.808
0.1566	-1.802
0.1600	-1.799
0.1633	-1.796
0.1666	-1.792
0.1700	-1.786
0.1733	-1.783
0.1766	-1.777
0.1800	-1.773
0.1833	-1.770
0.1866	-1.767
0.1900	-1.764
0.1933	-1.757
0.1966	-1.754
0.2000	-1.751
0.2033	-1.748
0.2066	-1.745
0.2100	-1.742
0.2133	-1.735
0.2166	-1.732
0.2200	-1.726
0.2233	-1.722
0.2266	-1.719
0.2300	-1.716
0.2333	-1.713
0.2366	-1.710
0.2400	-1.707
0.2433	-1.703
0.2466	-1.700
0.2500	-1.697
0.2533	-1.691
0.2566	-1.688
0.2600	-1.684
0.2633	-1.681
0.2666	-1.678
0.2700	-1.675
0.2733	-1.672
0.2766	-1.668
0.2800	-1.665
0.2833	-1.662
0.2866	-1.659
0.2900	-1.656
0.2933	-1.653
0.2966	-1.649
0.3000	-1.646
0.3033	-1.640
0.3066	-1.640
0.3100	-1.637
0.3133	-1.634
0.3166	-1.630

0.3200	-1.627
0.3233	-1.621
0.3266	-1.621
0.3300	-1.618
0.3333	-1.614
0.3500	-1.599
0.3666	-1.579
0.3833	-1.564
0.4000	-1.548
0.4166	-1.532
0.4333	-1.516
0.4500	-1.503
0.4666	-1.487
0.4833	-1.475
0.5000	-1.462
0.5166	-1.452
0.5333	-1.440
0.5500	-1.427
0.5666	-1.414
0.5833	-1.401
0.6000	-1.392
0.6166	-1.379
0.6333	-1.370
0.6500	-1.360
0.6666	-1.351
0.6833	-1.336
0.7000	-1.328
0.7166	-1.316
0.7333	-1.306
0.7500	-1.297
0.7666	-1.287
0.7833	-1.274
0.8000	-1.268
0.8166	-1.255
0.8333	-1.243
0.8500	-1.236
0.8666	-1.227
0.8833	-1.214
0.9000	-1.208
0.9166	-1.198
0.9333	-1.185
0.9500	-1.179
0.9666	-1.169
0.9833	-1.163
1.0000	-1.153
1.2000	-1.020
1.4000	-0.931
1.6000	-0.852
1.8000	-0.782
2.0000	-0.715
2.2000	-0.661
2.4000	-0.610
2.6000	-0.562
2.8000	-0.521
3.0000	-0.480
3.2000	-0.441
3.4000	-0.413
3.6000	-0.381
3.8000	-0.352
4.0000	-0.327

4.2000	-0.305
4.4000	-0.282
4.6000	-0.263
4.8000	-0.248
5.0000	-0.228
5.2000	-0.213
5.4000	-0.200
5.6000	-0.184
5.8000	-0.171
6.0000	-0.162
6.2000	-0.149
6.4000	-0.139
6.6000	-0.133
6.8000	-0.124
7.0000	-0.117
7.2000	-0.108
7.4000	-0.101
7.6000	-0.095
7.8000	-0.092
8.0000	-0.085
8.2000	-0.082
8.4000	-0.076
8.6000	-0.069
8.8000	-0.069
9.0000	-0.066
9.2000	-0.060
9.4000	-0.057
9.6000	-0.050
9.8000	-0.050
10.0000	-0.047
12.0000	-0.031
14.0000	-0.022
16.0000	-0.015
18.0000	-0.012
20.0000	-0.012
22.0000	-0.006

END

CALCULATION WORKSHEET

Order No. 19116 (01-01)

CLIENT	JOB NUMBER
Naval Submarine Base New London	2049 9594 0300

SUBJECT: Bouwer and Rice Slug Test Analysis – 15MW15 Rising Head Test

BASED ON	DRAWING NUMBER

BY	CHECKED BY	APPROVED BY	DATE
JRF		WJB	4-1-94 4/8/94

Static water level 3.0' (PVC)

For H = Lw $L_e/r_w = 14.92 \rightarrow C = 1.4$

$L_w = 14.45 - 3.0 = 11.45$

$L_e = 10'$

$r_c = 1''$ or .083

$r_w = 4''$ or .333

$H = 11.45$

$y_0 = 1.89$

$y_t = .225$

$\Delta t = 4.5$

$$\ln R_e/r_w = \frac{1}{\frac{1.1}{\ln(L_w/r_w)} + \frac{C}{L_e/r_w}}$$

$$\ln R_e/r_w = \frac{1}{\frac{1.1}{\ln(11.45/.333)} + \frac{1.4}{(10/.333)}}$$

$$K = \frac{r_c^2 \ln R_e/r_w}{2L_e} \frac{1}{t} \ln \frac{y_0}{y_t}$$

$$\ln R_e/r_w = \frac{1}{\left(\frac{1.1}{3.54}\right) + \left(\frac{1.4}{30.03}\right)}$$

$$K = \frac{(.083)^2 (2.79)}{2(10)} \frac{1}{4.5} \ln\left(\frac{1.89}{.225}\right)$$

$$\ln R_e/r_w = \frac{1}{.311 + .047} = 2.79$$

$$K = \frac{(.007)(2.79)}{(20)} (2.22)(2.13)$$

$$K = 4.62 \times 10^{-3} \frac{ft}{min} \frac{1 \text{ min}}{60 \text{ sec}} = 7.69 \times 10^{-5} \frac{ft}{sec} \frac{12 \text{ in}}{1 \text{ ft}} \frac{2.54}{1 \text{ in}} = 2.34 \times 10^{-3} \frac{cm}{sec}$$

$= 6.65$ ft/day

HYDRAULIC CONDUCTIVITY TESTING DATA SHEET — HALLIBURTON NUS CORPORATION

PROJECT NAME: NSB New London — WELL/BORING NO.: 15MW15

PROJECT NO.: 9594 — GEOLOGIST: J.R. Ferguson

WELL DIAMETER: 2" — SCREEN LENGTH/DEPTH: 10' 14.45' — TEST NO.: T1 S1

STATIC WATER LEVEL (Depth/Elevation): 3.00' — DATE: 3-20-94

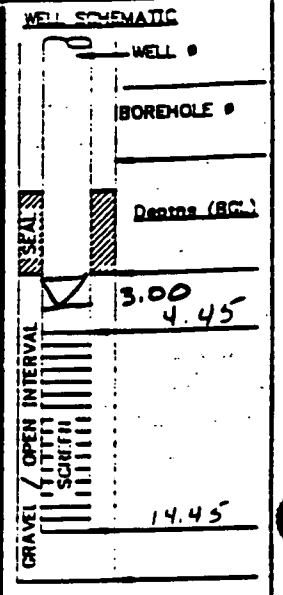
TEST TYPE (Rising/Falling/Constant Head): Rising Head — CHECKED:

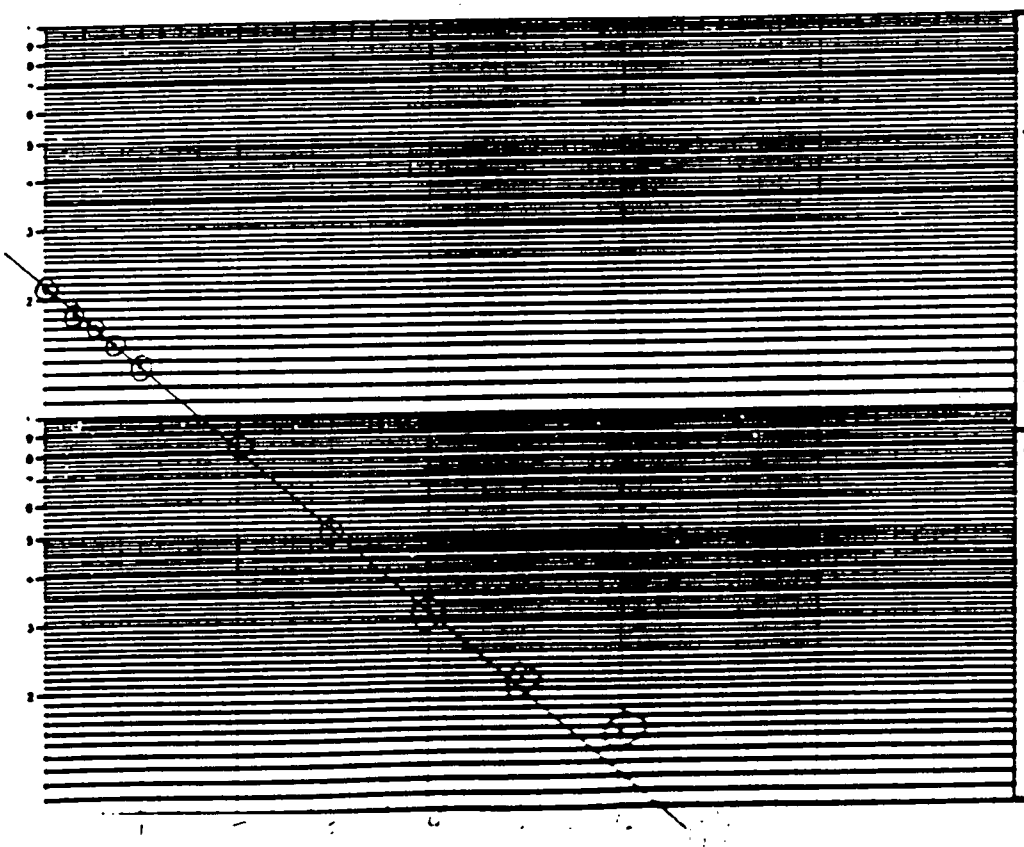
METHOD OF INDUCING WATER LEVEL CHANGE: Removed Solid Slug — PAGE 2 OF 8

REFERENCE PT. FOR WL MEAS. (Top of Casing, Transducer, etc.): Top of PVC Casing

ELAPSED TIME (min. or sec.)	MEASURED WATER LEVEL (feet)	DRAWDOWN OR HEAD (ΔH) (feet)	ELAPSED TIME (min. or sec.)	MEASURED WATER LEVEL (feet)	DRAWDOWN OR HEAD (ΔH) (feet)
x .06	2.18				
.10	2.07				
x .300	1.846				
x .500	1.716				
x .700	1.56				
.750	1.52				
x 1.0	1.35				
x 2.0	0.82				
x 3.0	0.52				
x 4.0	0.34				
x 5.0	0.22				
x 6.0	.155				

WELL SCHEMATIC

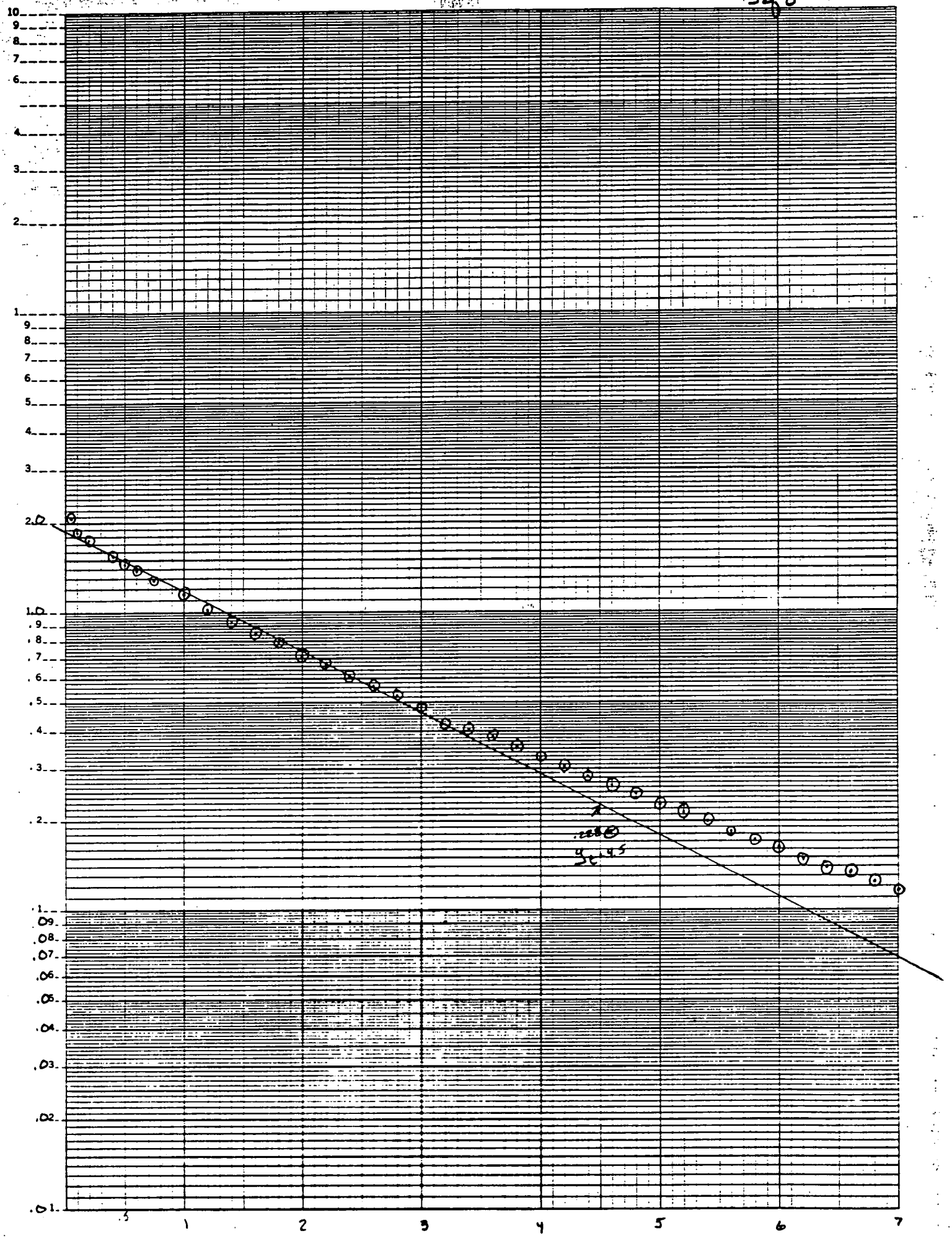




REMARKS:

Static water level at start of test 1 step 1 = 3.00'

CALCS, SKETCH MAPS, ETC.:



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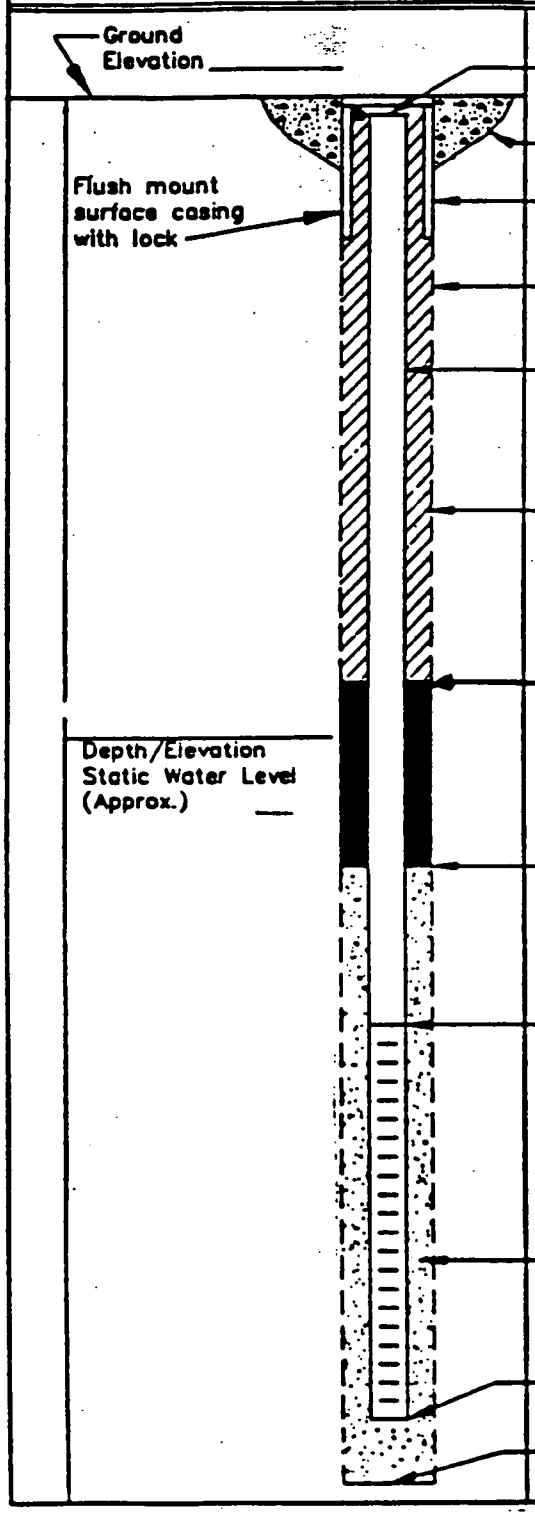
46 6010
3-20-94

HALLIBURTON NUS
Environmental Corporation

WELL NO.: 15MW15

OVERBURDEN MONITORING WELL SHEET

PROJECT: NSB-NLON
LOCATION: Groton, CT
DRILLER: East Coast
PROJECT NO.: 9594
BORING: 15MW15
DRILLING METHOD: HSA
ELEVATION:
DATE: 1-20-94
DEVELOPMENT METHOD:
FIELD GEOLOGIST: Tim Evans



ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: Concrete

TYPE OF PROTECTIVE CASING: Steel

I.D. OF PROTECTIVE CASING: 4"

BOREHOLE DIAMETER: 8"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: Grout

ELEVATION / DEPTH TOP OF SEAL: /1.5'

TYPE OF SEAL: Bentonite Chips

DEPTH/ELEVATION TOP OF SAND: 3.5'/

DEPTH/ELEVATION TOP OF SCREEN: Field meas. 4.45 5'/

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.010 x 10'

TYPE OF SAND PACK: Silica Sand

DEPTH/ELEVATION BOTTOM OF SCREEN: 15'/

DEPTH/ELEVATION BOTTOM OF SAND: 15'/

DEPTH/ELEVATION BOTTOM OF HOLE: Field meas. 14.45 15'/

BACKFILL MATERIAL BELOW SAND: N/A

SE1000C
Environmental Logger
03/21 10:54

Unit# 00143 Test 1

Setups:	INPUT 1
Type	Level (F)
Mod	TOC
I.D.	00000
Referenc	0.000
Linearity	0.000
Scale factor	10.070
Offset	0.000
Delay mSEC	50.000

Step 1 03/20 14:43:52

Elap ed Time	INPUT 1
0.0000	1.322
0.0033	0.893
0.0066	0.387
0.0100	0.244
0.0133	0.813
0.0166	1.357
0.0200	1.608
0.0233	1.487
0.0266	1.354
0.0300	1.942
0.0333	2.120
0.0366	2.044
0.0400	2.225
0.0433	2.562
0.0466	2.215
0.0500	2.257
0.0533	2.285
0.0566	2.187
0.0600	2.231
0.0633	2.209
0.0666	2.180
0.0700	2.177
0.0733	2.152
0.0766	2.142
0.0800	2.133
0.0833	2.117
0.0866	2.113
0.0900	2.101
0.0933	2.088
0.0966	2.082
0.1000	2.075
0.1033	2.066
0.1066	2.059
0.1100	2.053

0.1133	2.044
0.1166	2.037
0.1200	2.031
0.1233	2.024
0.1266	2.018
0.1300	2.012
0.1333	2.009
0.1366	2.005
0.1400	1.996
0.1433	1.993
0.1466	1.986
0.1500	1.983
0.1533	1.977
0.1566	1.974
0.1600	1.970
0.1633	1.964
0.1666	1.961
0.1700	1.958
0.1733	1.951
0.1766	1.948
0.1800	1.945
0.1833	1.942
0.1866	1.939
0.1900	1.935
0.1933	1.932
0.1966	1.929
0.2000	1.926
0.2033	1.923
0.2066	1.920
0.2100	1.913
0.2133	1.913
0.2166	1.910
0.2200	1.907
0.2233	1.904
0.2266	1.900
0.2300	1.897
0.2333	1.897
0.2366	1.894
0.2400	1.891
0.2433	1.888
0.2466	1.885
0.2500	1.881
0.2533	1.878
0.2566	1.878
0.2600	1.875
0.2633	1.872
0.2666	1.872
0.2700	1.869
0.2733	1.866
0.2766	1.866
0.2800	1.862
0.2833	1.859
0.2866	1.859
0.2900	1.853
0.2933	1.853
0.2966	1.853
0.3000	1.846
0.3033	1.846
0.3066	1.843
0.3100	1.843

0.3133	1.840
0.3166	1.837
0.3200	1.837
0.3233	1.837
0.3266	1.834
0.3300	1.831
0.3333	1.827
0.3500	1.818
0.3666	1.808
0.3833	1.799
0.4000	1.789
0.4166	1.783
0.4333	1.770
0.4500	1.761
0.4666	1.748
0.4833	1.732
0.5000	1.716
0.5166	1.703
0.5333	1.687
0.5500	1.675
0.5666	1.662
0.5833	1.649
0.6000	1.637
0.6166	1.621
0.6333	1.611
0.6500	1.595
0.6666	1.583
0.6833	1.570
0.7000	1.557
0.7166	1.548
0.7333	1.535
0.7500	1.522
0.7666	1.513
0.7833	1.500
0.8000	1.487
0.8166	1.475
0.8333	1.465
0.8500	1.452
0.8666	1.443
0.8833	1.430
0.9000	1.417
0.9166	1.408
0.9333	1.395
0.9500	1.382
0.9666	1.373
0.9833	1.363
1.0000	1.351
1.2000	1.198
1.4000	1.090
1.6000	0.995
1.8000	0.906
2.0000	0.823
2.2000	0.750
2.4000	0.686
2.6000	0.629
2.8000	0.575
3.0000	0.524
3.2000	0.483
3.4000	0.441
3.6000	0.406

3.8000	0.371
4.0000	0.343
4.2000	0.311
4.4000	0.289
4.6000	0.267
4.8000	0.244
5.0000	0.222
5.2000	0.209
5.4000	0.193
5.6000	0.178
5.8000	0.165
6.0000	0.155
6.2000	0.143
6.4000	0.133
6.6000	0.120
6.8000	0.111
7.0000	0.104
7.2000	0.101
7.4000	0.089
7.6000	0.089
7.8000	0.082
8.0000	0.079
8.2000	0.073
8.4000	0.066
8.6000	0.063
8.8000	0.060
9.0000	0.057
9.2000	0.054
9.4000	0.050
9.6000	0.047
9.8000	0.044
10.0000	0.044
12.0000	0.025
14.0000	0.015
16.0000	0.012
18.0000	0.009
20.0000	0.006
22.0000	0.009
24.0000	0.009
26.0000	0.006
28.0000	0.006

END

CALCULATION WORKSHEET Order No. 19118 (01-91)

CLIENT	JOB NUMBER
NSB New London	2049 9594 0300

SUBJECT: BOUWER AND RICE SLUG TEST ANALYSIS 15MW35 FALLING HEAD TEST

BASED ON:

DRAWING NUMBER:

BY	CHECKED BY	APPROVED BY	DATE
JRF		WJB	4-4-94 4-8-94

STATIC WATER LEVEL 2.87

L_w: 13.60 - 2.87 = 10.73

L_c: 10'

r_c: 1" or .083'

r_w: 4" or .333

H = 10.73

y_o = 1.72

y_t = .48

Δt = 7

FOR $H = L_w$ L_c/r_w = 14.92 C ~ 1.4

$$\ln R_e/r_w = \frac{1}{\frac{1.1}{\ln(L_w/r_w)} + \frac{C}{(L_c/r_w)}}$$

$$\ln R_e/r_w = \frac{1}{\frac{1.1}{\ln(10.73/.333)} + \frac{1.4}{(10/.333)}}$$

$$\ln R_e/r_w = \frac{1}{\left(\frac{1.1}{3.47}\right) + \left(\frac{1.4}{30.03}\right)} + \frac{1}{(.317 + .046)}$$

$$K = \frac{(r_c)^2}{2(L_c)} \ln R_e/r_w \; \frac{1}{t} \ln \frac{y_o}{y_t}$$

$$K = \frac{(.083)^2}{20}(2.75)\,\frac{1}{7}\ln\left(\frac{1.72}{.48}\right)$$

$\ln R_e/r_w = 2.75$

$$K = \frac{(.007)}{(20)}(2.75)(.143)(1.28)$$

$$K = (9.625 \times 10^{-4})(.143)(1.28) = 1.76 \times 10^{-4}\,\frac{ft}{min}\;\frac{1\,min}{60\,sec} = 2.94 \times 10^{-6}\,\frac{ft}{sec}\;\frac{12\,in}{1\,ft}\;\frac{2.54}{1\,in} = 8.95 \times 10^{-5}\,\frac{cm}{sec}$$

= 0.253 ft/day

HYDRAULIC CONDUCTIVITY TESTING DATA SHEET — HALLIBURTON NUS CORPORATION

PROJECT NAME: NSB New London — WELL/BORING NO.: 15MW35

PROJECT NO.: 9594 — GEOLOGIST: J. R. Ferguson

WELL DIAMETER: 2" Ø — SCREEN LENGTH/DEPTH: 10' 13.60 — TEST NO.: 70 50

STATIC WATER LEVEL (Depth/Elevation): 2.87 — DATE: 3-20-94

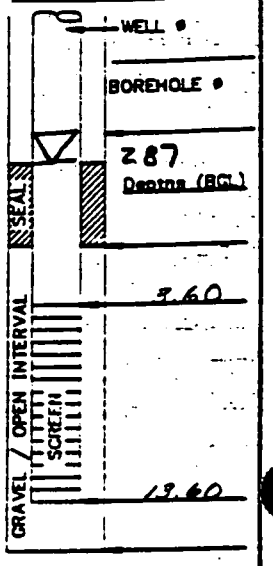
TEST TYPE (Rising/Falling/Constant Head): Falling Head — CHECKED:

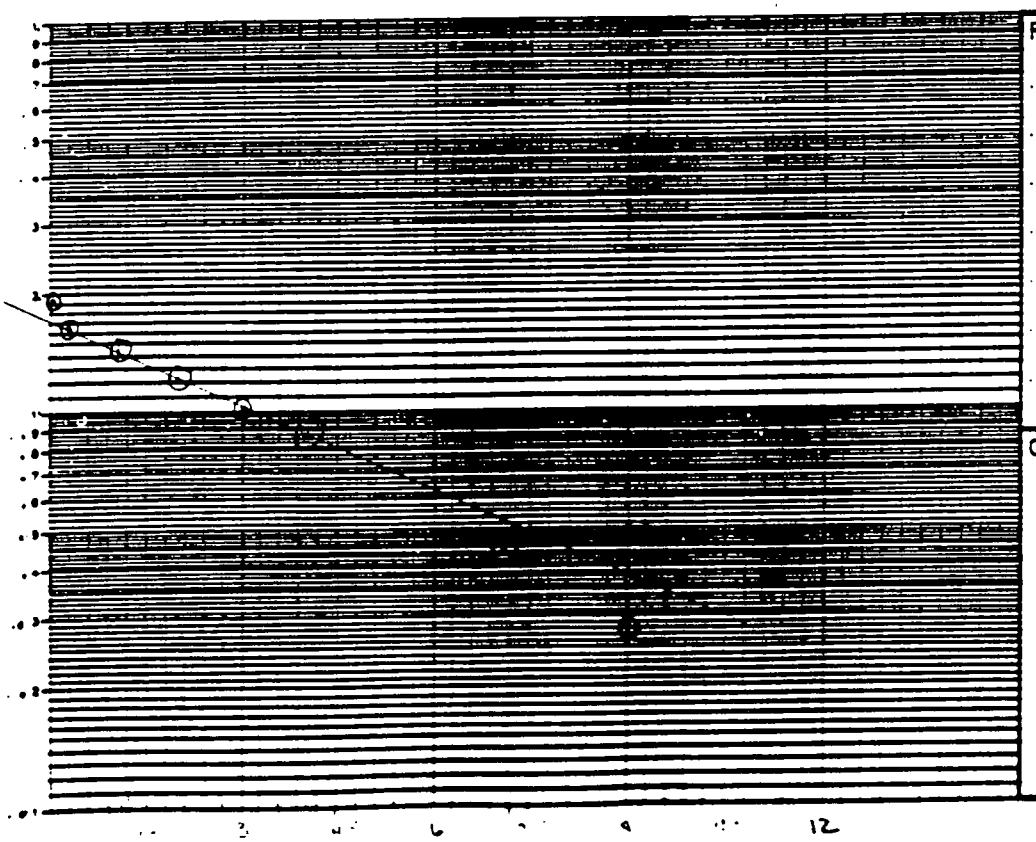
METHOD OF INDUCING WATER LEVEL CHANGE: Solid Slug Insertion — PAGE ___ OF ___

REFERENCE PT. FOR WL MEAS. (Top of Casing, Transducer, etc.): Top of PVC Casing

ELAPSED TIME (min or sec.)	MEASURED WATER LEVEL (feet)	DRAWDOWN OR HEAD (ΔH) (feet)	ELAPSED TIME (min. or sec.)	MEASURED WATER LEVEL (feet)	DRAWDOWN OR HEAD (ΔH) (feet)
.0400	1.92		1.00	1.44	
.0800	1.77		2.00	1.21	
.1200	1.74		3.00	1.03	
.1600	1.72		4.00	0.87	
.2000	1.70		5.00	0.72	
.2500	1.68		7.00	0.48	
.3000	1.65		9.00	0.28	
.3500	1.63		12.00	0.05	
.4500	1.59				
.5500	1.56				
.6500	1.53				
.7500	1.51				

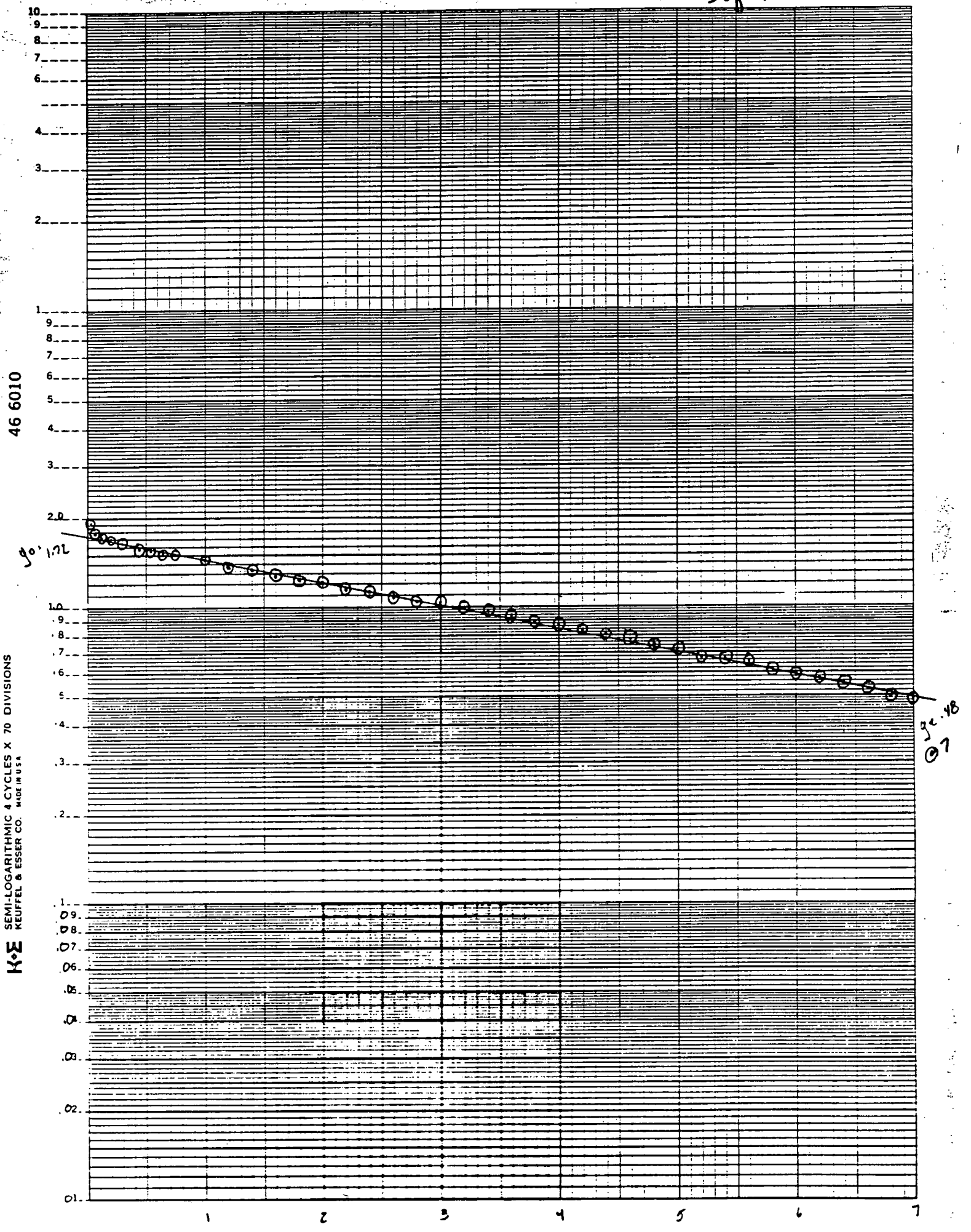
WELL SCHEMATIC





REMARKS:

CALCS, SKETCH MAPS, ETC.: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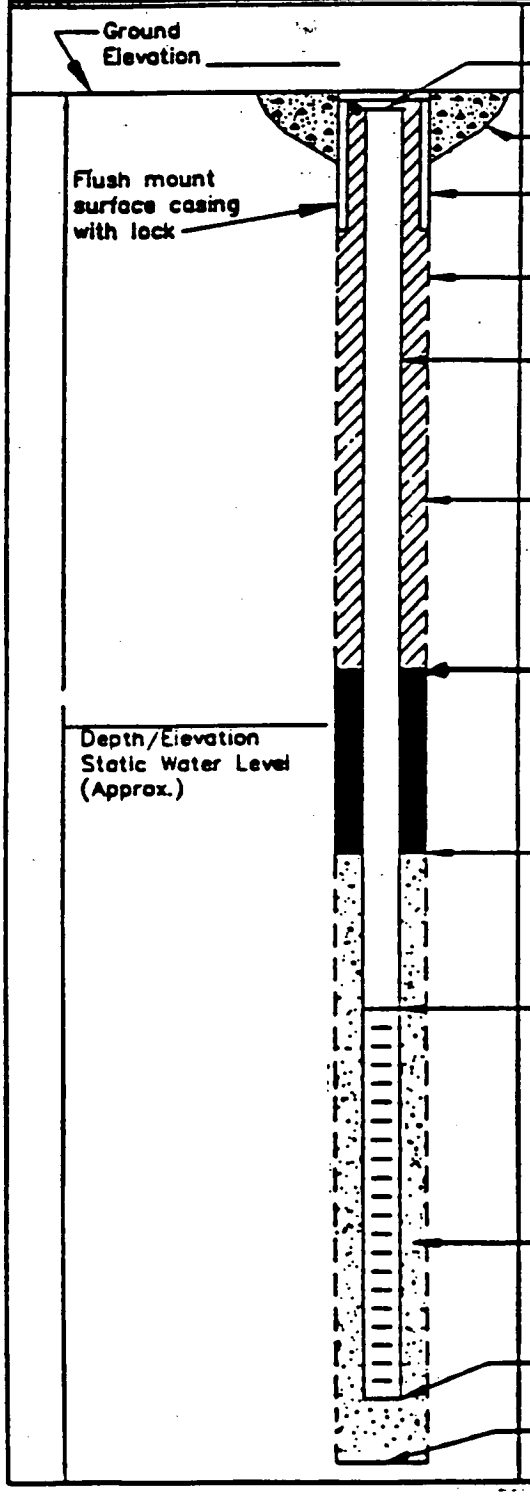
5-20-94

HALLIBURTON NUS
Environmental Corporation

WELL NO.: 15MW3S

OVERBURDEN MONITORING WELL SHEET

PROJECT: NSB-NLON
LOCATION: Groton CT
DRILLER: East Coast
PROJECT NO.: 9594
BORING: 15MW3S
DRILLING METHOD: HSA
ELEVATION:
DATE: 1-21-94
DEVELOPMENT METHOD:
FIELD GEOLOGIST: Tim Evans



ELEVATION TOP OF RISER:

TYPE OF SURFACE SEAL: Concrete

TYPE OF PROTECTIVE CASING: Steel

I.D. OF PROTECTIVE CASING: 4"

BOREHOLE DIAMETER: 8"

TYPE OF RISER PIPE: PVC

RISER PIPE I.D.: 2"

TYPE OF BACKFILL/SEAL: Grout

ELEVATION / DEPTH TOP OF SEAL: 12'

TYPE OF SEAL: Bentonite Chips

DEPTH/ELEVATION TOP OF SAND: 3'

DEPTH/ELEVATION TOP OF SCREEN: 5'

TYPE OF SCREEN: PVC

SLOT SIZE x LENGTH: 0.010 x 10'

TYPE OF SAND PACK: Silica Sand

DEPTH/ELEVATION BOTTOM OF SCREEN: 15'

DEPTH/ELEVATION BOTTOM OF SAND: 15'

DEPTH/ELEVATION BOTTOM OF HOLE: 15'

BACKFILL MATERIAL BELOW SAND: N/A

SE1000C
Environm ntal Logg r
03/21 10:43

Unit# 00143 Test 0

S tups:	INPUT 1
Type	Level (F)
Mode	TOC
I.D.	00000

Reference	0.000
Linearity	0.000
Scale factor	10.070
Offs t	0.000
Delay mSEC	50.000

St p 0 03/20 09:50:01

Elapsed Time	INPUT 1
0.0000	-2.457
0.0033	-2.778
0.0066	-2.511
0.0100	-2.177
0.0133	-1.675
0.0166	-0.006
0.0200	-1.141
0.0233	-2.228
0.0266	-2.368
0.0300	-1.872
0.0333	-1.541
0.0366	-1.726
0.0400	-1.923
0.0433	-1.872
0.0466	-1.761
0.0500	-1.757
0.0533	-1.812
0.0566	-1.815
0.0600	-1.786
0.0633	-1.780
0.0666	-1.786
0.0700	-1.786
0.0733	-1.780
0.0766	-1.773
0.0800	-1.773
0.0833	-1.773
0.0866	-1.770
0.0900	-1.767
0.0933	-1.764
0.0966	-1.761
0.1000	-1.761
0.1033	-1.757
0.1066	-1.754
0.1100	-1.754
0.1133	-1.754
0.1166	-1.748
0.1200	-1.748

0.1233	-1.745
0.1266	-1.745
0.1300	-1.742
0.1333	-1.738
0.1366	-1.735
0.1400	-1.732
0.1433	-1.732
0.1466	-1.732
0.1500	-1.729
0.1533	-1.726
0.1566	-1.726
0.1600	-1.722
0.1633	-1.722
0.1666	-1.719
0.1700	-1.716
0.1733	-1.716
0.1766	-1.713
0.1800	-1.713
0.1833	-1.710
0.1866	-1.707
0.1900	-1.707
0.1933	-1.703
0.1966	-1.703
0.2000	-1.700
0.2033	-1.700
0.2066	-1.697
0.2100	-1.697
0.2133	-1.694
0.2166	-1.691
0.2200	-1.694
0.2233	-1.691
0.2266	-1.688
0.2300	-1.688
0.2333	-1.684
0.2366	-1.684
0.2400	-1.681
0.2433	-1.678
0.2466	-1.678
0.2500	-1.678
0.2533	-1.675
0.2566	-1.675
0.2600	-1.672
0.2633	-1.672
0.2666	-1.672
0.2700	-1.668
0.2733	-1.668
0.2766	-1.665
0.2800	-1.665
0.2833	-1.662
0.2866	-1.662
0.2900	-1.662
0.2933	-1.659
0.2966	-1.659
0.3000	-1.656
0.3033	-1.656
0.3066	-1.653
0.3100	-1.653
0.3133	-1.649
0.3166	-1.653
0.3200	-1.649

0.3233	-1.646
0.3266	-1.646
0.3300	-1.646
0.3333	-1.643
0.3500	-1.637
0.3666	-1.630
0.3833	-1.624
0.4000	-1.618
0.4166	-1.608
0.4333	-1.602
0.4500	-1.595
0.4666	-1.592
0.4833	-1.589
0.5000	-1.583
0.5166	-1.573
0.5333	-1.570
0.5500	-1.564
0.5666	-1.560
0.5833	-1.554
0.6000	-1.548
0.6166	-1.545
0.6333	-1.538
0.6500	-1.532
0.6666	-1.529
0.6833	-1.525
0.7000	-1.519
0.7166	-1.516
0.7333	-1.510
0.7500	-1.506
0.7666	-1.500
0.7833	-1.497
0.8000	-1.490
0.8166	-1.487
0.8333	-1.484
0.8500	-1.481
0.8666	-1.475
0.8833	-1.471
0.9000	-1.465
0.9166	-1.462
0.9333	-1.455
0.9500	-1.449
0.9666	-1.446
0.9833	-1.443
1.0000	-1.440
1.2000	-1.376
1.4000	-1.332
1.6000	-1.287
1.8000	-1.246
2.0000	-1.208
2.2000	-1.169
2.4000	-1.131
2.6000	-1.096
2.8000	-1.061
3.0000	-1.026
3.2000	-0.995
3.4000	-0.960
3.6000	-0.928
3.8000	-0.896
4.0000	-0.867
4.2000	-0.832

4.4000	-0.807
4.6000	-0.778
4.8000	-0.750
5.0000	-0.724
5.2000	-0.699
5.4000	-0.670
5.6000	-0.645
5.8000	-0.616
6.0000	-0.594
6.2000	-0.569
6.4000	-0.546
6.6000	-0.521
6.8000	-0.499
7.0000	-0.480
7.2000	-0.457
7.4000	-0.435
7.6000	-0.413
7.8000	-0.394
8.0000	-0.375
8.2000	-0.356
8.4000	-0.337
8.6000	-0.317
8.8000	-0.298
9.0000	-0.282
9.2000	-0.267
9.4000	-0.248
9.6000	-0.228
9.8000	-0.216
10.0000	-0.200
12.0000	-0.057
14.0000	0.063
16.0000	0.162
18.0000	0.244
20.0000	0.314
22.0000	0.371
24.0000	0.422
26.0000	0.460
28.0000	0.499
30.0000	0.527
32.0000	0.553
34.0000	0.572
36.0000	0.594
38.0000	0.607
40.0000	0.626
42.0000	0.638
44.0000	0.645
46.0000	0.658
48.0000	0.664
50.0000	0.673
52.0000	0.680
54.0000	0.680
56.0000	0.686
58.0000	0.689
60.0000	0.693
62.0000	0.696
64.0000	0.699
66.0000	0.702
68.0000	0.705
70.0000	0.705
72.0000	0.708

74.0000	0.712
76.0000	0.712
78.0000	0.712
80.0000	0.712
82.0000	0.715
84.0000	0.712
86.0000	0.715

END

CALCULATION WORKSHEET

Order No. 19116 (01-91)

CLIENT	JOB NUMBER
NSB New London	2049 9594 0300
SUBJECT: Bouwer and Rice Slug Test Analysis - 15MW35 Rising Head Test	
BASED ON	DRAWING NUMBER

BY	CHECKED BY	APPROVED BY	DATE
JRF		WJB	4-4-94 4-8-94

STATIC WATER LEVEL = 2.75'

L_w = 13.60' - 2.85 = 10.85

L_e = 10'

r_c = 1" or .083

r_w = 4" or .333

H = 10.85

y_0 = 3.1

y_t = .3

Δt = 45

For H=L: $L_e/r_w = 14.92 \rightarrow C = 1.4$

$$\ln R_e/r_w = \frac{1}{\frac{1.1}{\ln(L_w/r_w)} + \frac{C}{(L_e/r_w)}}$$

$$\ln R_e/r_w = \frac{1}{\left(\frac{1.1}{\ln(10.85/.333)}\right) + \left(\frac{1.4}{10/.833}\right)} \rightarrow \frac{1}{\left(\frac{1.1}{3.42}\right) + \left(\frac{1.4}{30.03}\right)}$$

$$\ln R_e/r_w = \frac{1}{(.316 + .096)} = 2.76$$

$$K = \frac{(r_c)^2 \ln R_e/r_w}{2(L_e)} \frac{1}{t} \ln \frac{y_0}{y_t}$$

$$K = \frac{(.083)^2(2.76)}{2(10)} \frac{1}{(45)} \ln\left(\frac{3.1}{.3}\right)$$

$$K = \frac{(.007)(2.76)(.022)(2.33)}{(20)} = (.00096)(.022)(2.33) = 4.92 \times 10^{-5} \frac{ft}{min}$$

$$4.92 \times 10^{-5} \frac{ft}{min} \; \frac{1 \text{ min}}{60 \text{ sec}} = 8.20 \times 10^{-7} \frac{ft}{sec} \; \frac{12 \text{ in}}{1 \text{ ft}} \; \frac{2.54 \text{ cm}}{1 \text{ in}} \rightarrow 2.50 \times 10^{-5} \frac{cm}{sec}$$

= 0.071 ft/day

HYDRAULIC CONDUCTIVITY TESTING DATA SHEET — HALLIBURTON NUS CORPORATION

PROJECT NAME: NSB New London — WELL/BORING NO.: 15MW35

PROJECT NO.: 9594 — GEOLOGIST: J.R. Ferguson

WELL DIAMETER: 2" ϕ — SCREEN LENGTH/DEPTH: 10' 13.60 — TEST NO.: TO 51

STATIC WATER LEVEL (Depth/Elevation): 2.75' @ STEP START — DATE: 3-20-94

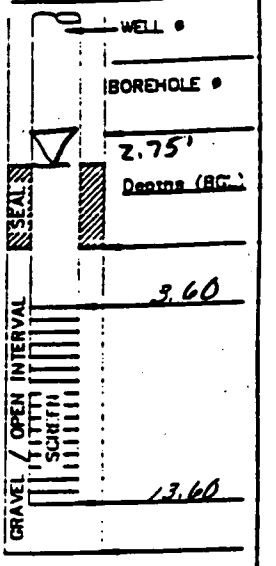
TEST TYPE (Rising/Falling/Constant Head): Rising Head — CHECKED:

METHOD OF INDUCING WATER LEVEL CHANGE: Solid Slug Removal — PAGE 2 OF 8

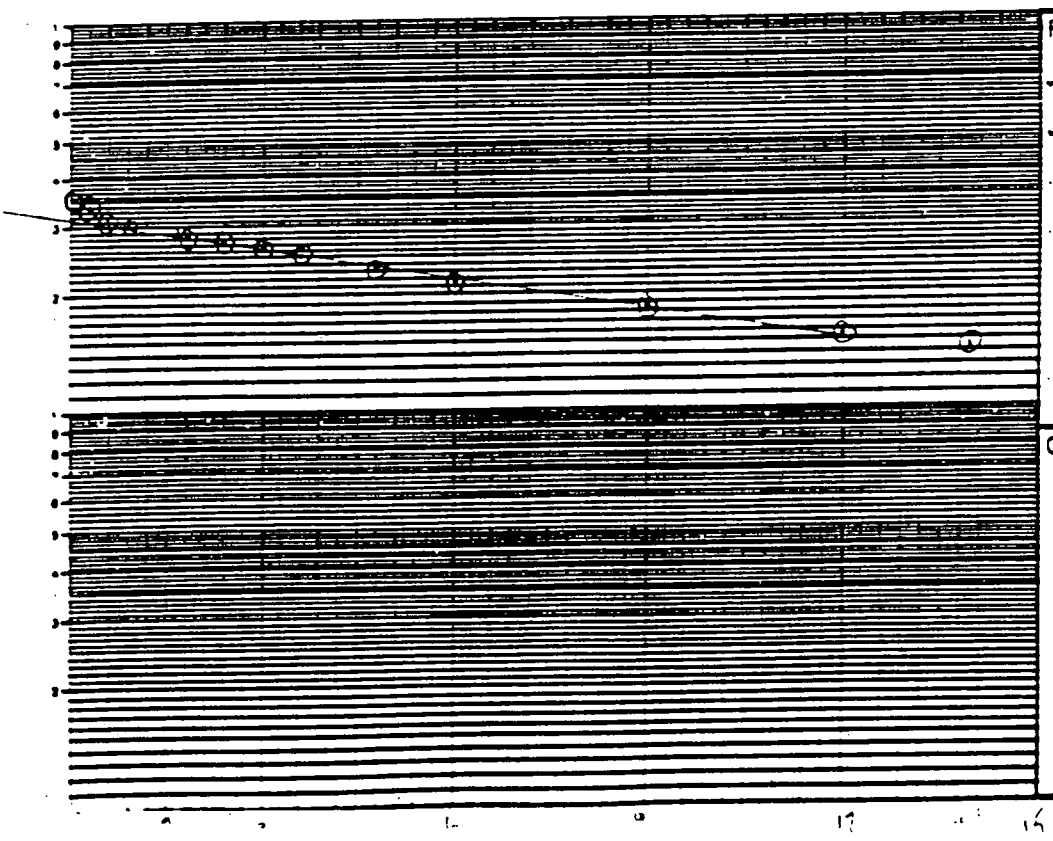
REFERENCE PT. FOR WL MEAS. (Top of Casing, Transducer, etc.): Top of PVC Casing

	ELAPSED TIME (min. or sec.)	MEASURED WATER LEVEL (feet)	DRAWDOWN OR HEAD (ΔH) (feet)	ELAPSED TIME (min. or sec.)	MEASURED WATER LEVEL (feet)	DRAWDOWN OR HEAD (ΔH) (feet)
x	.1300	3.54		12.00	1.57	
x	.3000	3.38		14.00	1.44	
x	.6000	3.23				
x	.9000	3.11				
x	1.200	3.01				
x	1.800	2.85				
x	2.400	2.73				
x	3.000	2.62				
x	3.600	2.51				
x	4.800	2.32				
x	6.00	2.16				
x	9.00	1.82				

WELL SCHEMATIC



Indicate SWL Depth on Drawing

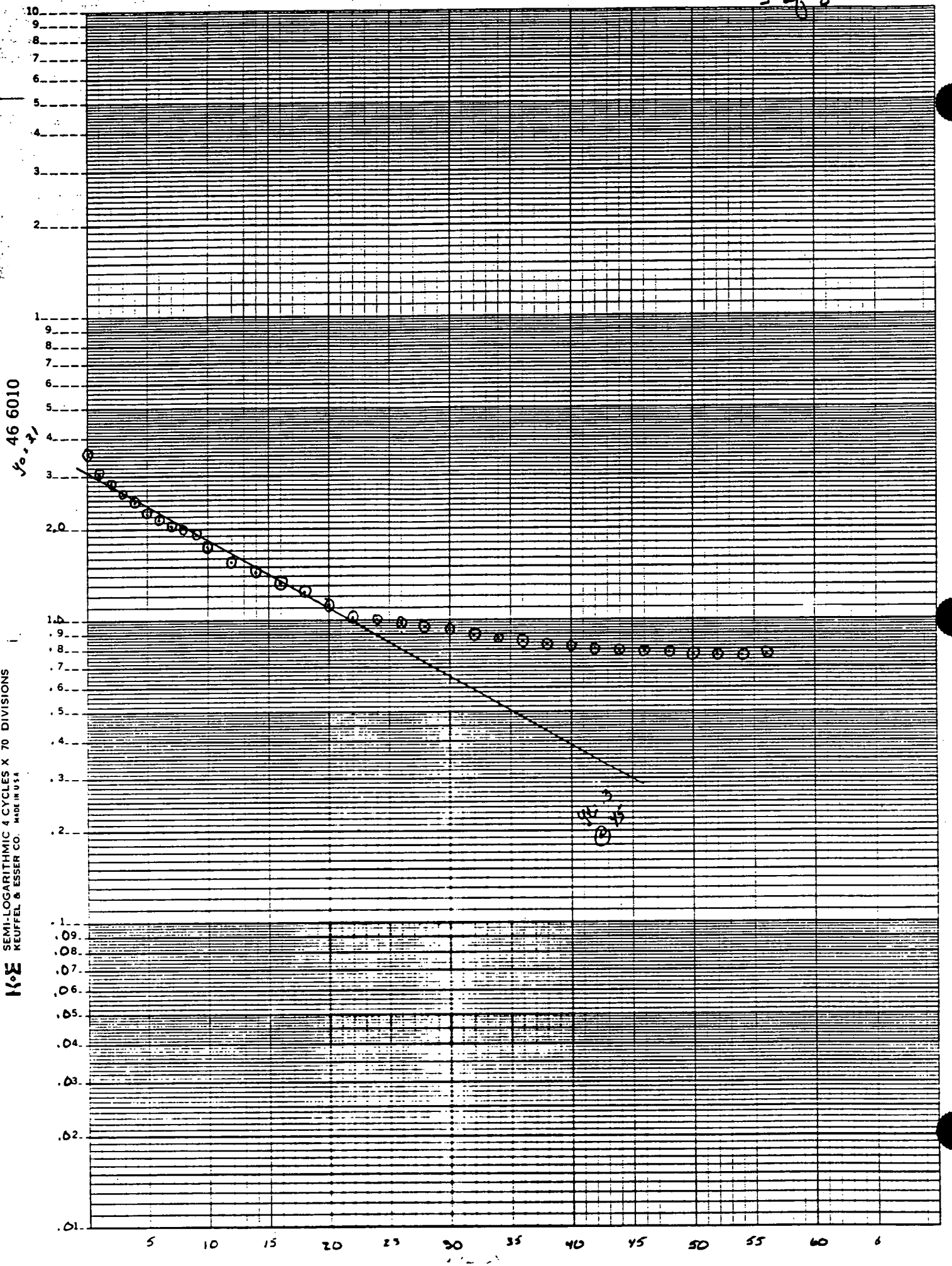


REMARKS:

Static Water Level at Start of Test O Step 1 = 2.75'

CALCS.SKETCH MAPS, ETC.:

3 of 8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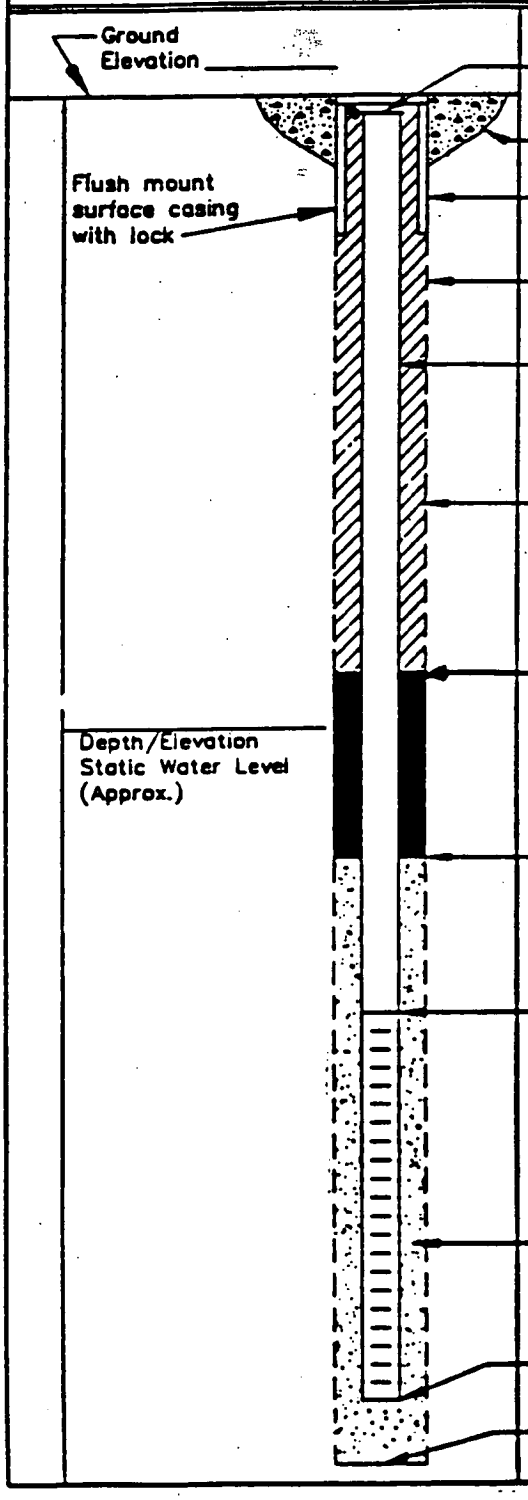
3-20-94
46 6010
K+E SEMI-LOGARITHMIC 4 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.

HALLIBURTON NUS
Environmental Corporation

WELL NO.: 15MW3S

OVERBURDEN MONITORING WELL SHEET

PROJECT: NSB-NLON
LOCATION: Groton CT
DRILLER: East Coast
PROJECT NO.: 9594
BORING: 15MW3S
DRILLING METHOD: HSA
ELEVATION:
DATE: 1-21-94
DEVELOPMENT METHOD:
FIELD GEOLOGIST: Tim Evans



ELEVATION TOP OF RISER:
TYPE OF SURFACE SEAL: Concrete
TYPE OF PROTECTIVE CASING: Steel
I.D. OF PROTECTIVE CASING: 4"
BOREHOLE DIAMETER: 8"
TYPE OF RISER PIPE: PVC
RISER PIPE I.D.: 2"
TYPE OF BACKFILL/SEAL: Grout
ELEVATION / DEPTH TOP OF SEAL: /2'
TYPE OF SEAL: Bentonite Chips
DEPTH/ELEVATION TOP OF SAND: 3'/
Field measurement
DEPTH/ELEVATION TOP OF SCREEN: 3.60 5'/
TYPE OF SCREEN: PVC
SLOT SIZE x LENGTH: 0.010 x 10'
TYPE OF SAND PACK: Silica Sand
Field measurement
DEPTH/ELEVATION BOTTOM OF SCREEN: 13.60 15'/
DEPTH/ELEVATION BOTTOM OF SAND: 15'/
DEPTH/ELEVATION BOTTOM OF HOLE: 15'/
BACKFILL MATERIAL BELOW SAND: N/A

3.8000	2.476
4.0000	2.444
4.2000	2.412
4.4000	2.384
4.6000	2.352
4.8000	2.320
5.0000	2.295
5.2000	2.266
5.4000	2.237
5.6000	2.212
5.8000	2.187
6.0000	2.158
6.2000	2.133
6.4000	2.110
6.6000	2.085
6.8000	2.059
7.0000	2.037
7.2000	2.015
7.4000	1.989
7.6000	1.967
7.8000	1.948
8.0000	1.926
8.2000	1.900
8.4000	1.881
8.6000	1.862
8.8000	1.843
9.0000	1.824
9.2000	1.805
9.4000	1.786
9.6000	1.767
9.8000	1.751
10.0000	1.732
12.0000	1.573
14.0000	1.440
16.0000	1.331
18.0000	1.236
20.0000	1.160
22.0000	1.096
24.0000	1.042
26.0000	0.995
28.0000	0.956
30.0000	0.925
32.0000	0.896
34.0000	0.874
36.0000	0.855
38.0000	0.836
40.0000	0.823
42.0000	0.807
44.0000	0.797
46.0000	0.791
48.0000	0.785
50.0000	0.778
52.0000	0.769
54.0000	0.766
56.0000	0.762

END

SE1000C
Environmental Logger
03/21 10:47

Unit# 00143 Test 0

Setups:	INPUT 1
Type	Level (F)
Mode	TOC
I.D.	00000
Reference	0.000
Linearity	0.000
Scal factor	10.070
Offset	0.000
Delay mSEC	50.000

Step 1 03/20 11:17:48

Elapsed Time	INPUT 1
0.0000	0.712
0.0033	0.712
0.0066	0.712
0.0100	0.712
0.0133	0.712
0.0166	0.712
0.0200	0.712
0.0233	0.712
0.0266	0.712
0.0300	0.712
0.0333	0.712
0.0366	0.708
0.0400	0.715
0.0433	0.712
0.0466	0.708
0.0500	0.715
0.0533	0.712
0.0566	1.001
0.0600	2.492
0.0633	1.872
0.0666	1.363
0.0700	0.953
0.0733	1.119
0.0766	3.169
0.0800	1.732
0.0833	3.709
0.0866	2.365
0.0900	3.894
0.0933	3.674
0.0966	3.643
0.1000	3.608
0.1033	3.608
0.1066	3.598
0.1100	3.611

0.1133	3.569
0.1166	3.665
0.1200	3.557
0.1233	3.531
0.1266	3.544
0.1300	3.544
0.1333	3.544
0.1366	3.538
0.1400	3.531
0.1433	3.528
0.1466	3.525
0.1500	3.522
0.1533	3.519
0.1566	3.512
0.1600	3.506
0.1633	3.503
0.1666	3.496
0.1700	3.493
0.1733	3.490
0.1766	3.487
0.1800	3.487
0.1833	3.480
0.1866	3.474
0.1900	3.471
0.1933	3.471
0.1966	3.468
0.2000	3.461
0.2033	3.458
0.2066	3.455
0.2100	3.452
0.2133	3.449
0.2166	3.449
0.2200	3.445
0.2233	3.442
0.2266	3.439
0.2300	3.436
0.2333	3.436
0.2366	3.433
0.2400	3.429
0.2433	3.429
0.2466	3.426
0.2500	3.423
0.2533	3.420
0.2566	3.417
0.2600	3.414
0.2633	3.410
0.2666	3.410
0.2700	3.407
0.2733	3.404
0.2766	3.401
0.2800	3.401
0.2833	3.398
0.2866	3.395
0.2900	3.395
0.2933	3.391
0.2966	3.388
0.3000	3.385
0.3033	3.385
0.3066	3.382
0.3100	3.382

0.3133	3.379
0.3166	3.375
0.3200	3.372
0.3233	3.369
0.3266	3.369
0.3300	3.366
0.3333	3.366
0.3500	3.356
0.3666	3.347
0.3833	3.334
0.4000	3.325
0.4166	3.315
0.4333	3.309
0.4500	3.302
0.4666	3.290
0.4833	3.283
0.5000	3.274
0.5166	3.264
0.5333	3.261
0.5500	3.251
0.5666	3.245
0.5833	3.236
0.6000	3.229
0.6166	3.223
0.6333	3.213
0.6500	3.207
0.6666	3.201
0.6833	3.194
0.7000	3.188
0.7166	3.182
0.7333	3.175
0.7500	3.169
0.7666	3.162
0.7833	3.156
0.8000	3.150
0.8166	3.143
0.8333	3.137
0.8500	3.134
0.8666	3.128
0.8833	3.121
0.9000	3.115
0.9166	3.112
0.9333	3.105
0.9500	3.099
0.9666	3.093
0.9833	3.089
1.0000	3.083
1.2000	3.007
1.4000	2.953
1.6000	2.902
1.8000	2.854
2.0000	2.810
2.2000	2.768
2.4000	2.727
2.6000	2.689
2.8000	2.651
3.0000	2.616
3.2000	2.578
3.4000	2.543
3.6000	2.511

APPENDIX C.2

PUMPING TEST CALCULATIONS

CLIENT	JOB NUMBER		
NSB-NLON			
SUBJECT: 2LPWIS PUMPING TEST			
BASED ON	DRAWING NUMBER		
BY: L. J. GROSS	CHECKED BY: DAY-1-9-95	APPROVED BY	DATE: 1/9/95

2LPWIS – NEUMAN METHOD (FROM KRUSEMAN & RIDDER)

FROM CURVE-MATCH OF LATE DATA

$\Gamma = 2.0$
$1/u_B = 10^0$
$W(u_B, \Gamma) = 1$
$t = 640$ min
$s = 0.44$

$$T = \frac{Q}{4\pi s} W(u_B, \Gamma)$$

$$= \frac{(2.0 \text{ gpm})\left(\frac{24 \cdot 60 \text{ m}}{\text{day}}\right)(1.0)}{4\pi\,(0.44 \text{ ft})}$$

$$= 521 \ \frac{\text{gal}}{\text{day-ft}} = 70.0 \ \text{ft}^2/\text{day}$$

$$S_y = \frac{4Tt\,u_B}{r^2} = \frac{4\,(70.0 \text{ ft}^2/\text{day})\left(640 \text{ min} \cdot \frac{1 \text{ day}}{24 \cdot 60 \text{ min}}\right)}{(10.5 \text{ ft})^2}$$

$$= 1.12$$

THE SPECIFIC YIELD ESTIMATION IS TOO HIGH BECAUSE OF THE CLOSE PROXIMITY OF THE OBSERVATION WELL, THE HIGH TRANSMISSIVITY, AND STRONG VERTICAL FLOW COMPONENTS

CURVE MATCH OF EARLY DATA

$\Gamma = 2.0$
$1/u_A = 1.0$
$W(u_A, \Gamma) = 1$
$t = 25.5$ min
$s = 0.395$ ft

CLIENT	JOB NUMBER		
NSB-NLON			
SUBJECT: 2LPWIS PUMPING TEST			
BASED ON	DRAWING NUMBER		
BY: L.J. GROSS	CHECKED BY: DAY 1-9-95	APPROVED BY	DATE: 1/9/95

2LOWIS - NEUMAN (CONT)

$$T = \frac{Q}{4\pi s} W(u_A, \Gamma)$$

$$= \frac{(2.0\ gpm)(24.60\ \frac{min}{day})(1.0)}{4\pi(0.395\ ft)}$$

$$= 581\ \frac{gal}{day\text{-}ft} = 77.6\ ft^2/day$$

$$S_A = \frac{4Tt u_A}{r^2} = \frac{4(77.6\ ft^2/day)(25.5\ min \cdot \frac{1\ day}{24.60\ min})}{(10.5\ ft)^2}$$

$$= 0.05$$

$$\frac{S_y}{S_A} = \frac{1.12}{0.05} = 22.4$$ ∴ CONDITION THAT $\frac{S_y}{S_A} > 10$ IS SATISFIED

$$K_H = \frac{T}{b} = \frac{(700 + 77.6)/2\ ft^2/day}{21\ ft}$$

$$= 3.5\ ft/day$$

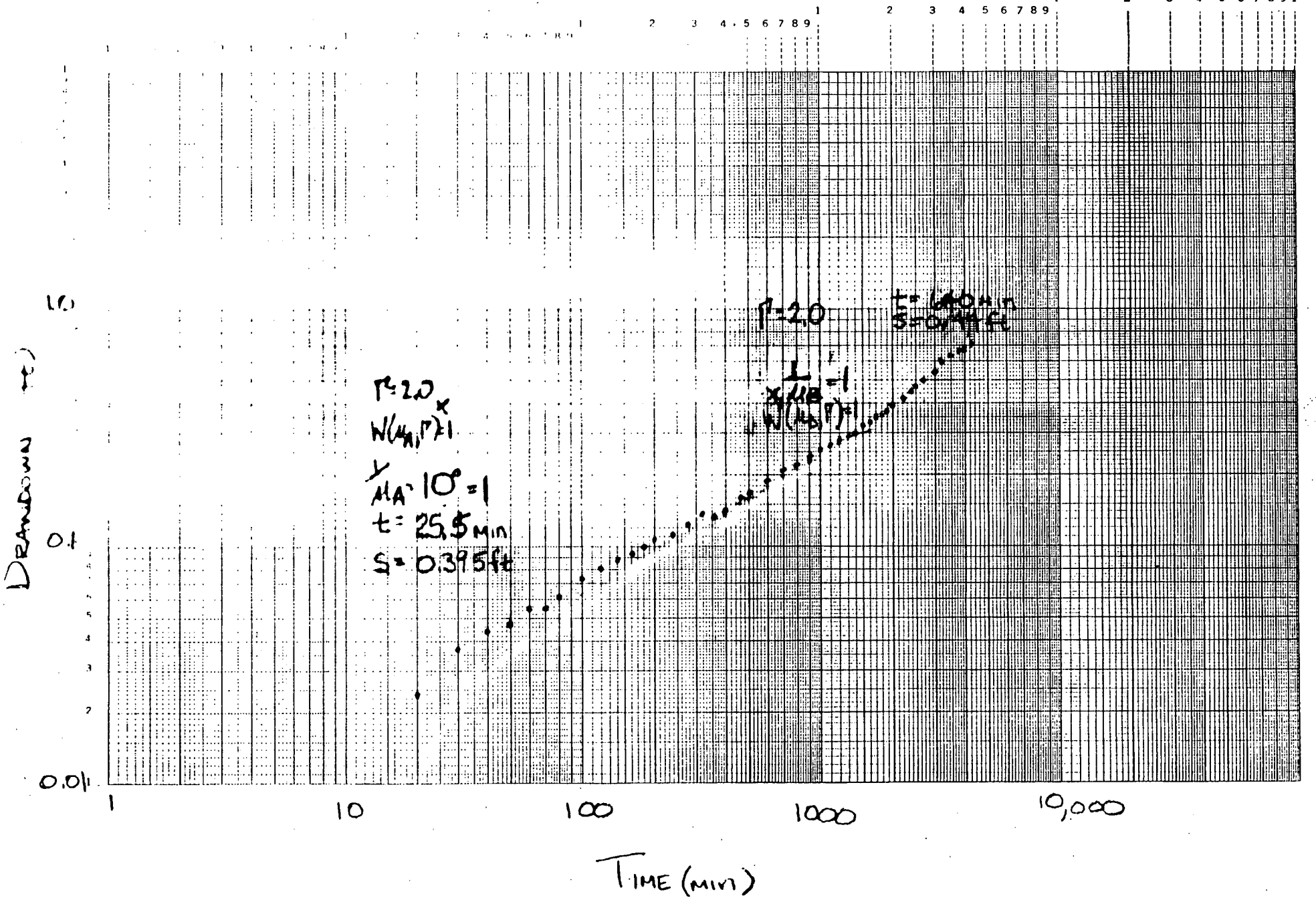
$$K_V = \frac{\Gamma b^2 K_H}{r^2} = \frac{(2.0)(21\ ft)^2(3.5\ ft/day)}{(10.5\ ft)^2}$$

$$= 28.1\ ft/day$$

K+E LOGARITHMIC 3 x 5 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.
46 7522

2LOWIS

2LOWIS - DRAWDOWN VS TIME



2LPWIS PUMPING TEST

3 OF 6

CLIENT NSB-NLON		JOB NUMBER	
SUBJECT 2LPWIS PUMPING TEST			
BASED ON		DRAWING NUMBER	
BY L.J. GROSS	CHECKED BY DAY 1-9-95	APPROVED BY	DATE 1/9/95

2LOW2S - NEUMAN METHOD

FROM LATE DATA

$1/u_B = 10^0 = 1$
$W(u_B, \Gamma) = 1$
$\Gamma = 3.0$
$t = 1050$ min
$s = 0.62$ ft

$$T = \frac{Q}{4\pi s} W(u_B, \Gamma)$$

$$= \frac{(2.0\,gpm)\left(\frac{24.60\,min}{day}\right)}{4\pi\,(0.63\,ft)}(1.0)$$

$$= 364\ \frac{gal}{day\text{-}ft} = 48.6\ ft^2/day$$

$$S_y = \frac{4Ttu}{r^2} = \frac{4(48.6\ ft^2/day)\left(1050\,min \cdot \frac{1\,day}{24.60\,min}\right)}{(24.5\,ft)^2}$$

$$= 0.24$$

FROM EARLY DATA

$\Gamma = 3.0$
$W(u_A, \Gamma) = 1$
$1/u_A = 1$
$t = 27$ min
$s = 0.80$ ft

$$T = \frac{Q}{4\pi s} W(u_A, \Gamma)$$

$$= \frac{(2.0\,gpm)\left(\frac{24.60\,min}{day}\right)}{4\pi\,(0.80\,ft)}(1.0)$$

$$= 286.6\ gal/day\text{-}ft = 38.3\ ft^2/day$$

CLIENT NSB-NLON	JOB NUMBER
SUBJECT 2LPWIS PUMPING TEST	
BASED ON	DRAWING NUMBER
BY L.J. GROSS / CHECKED BY DAY 1-9-95	APPROVED BY / DATE 1/5/95

$$S_A = \frac{4Ttu_A}{r^2} = \frac{4(38.3\ ft^2/day)(27\ min \cdot \frac{1\ day}{2460\ min})}{(24.5\ ft)^2}$$

$$= 4.79 \times 10^{-3}$$

$$= 0.0048$$

$$\frac{S_y}{S_A} = \frac{0.24}{0.0049} = 50.0$$

CONDITION THAT $\frac{S_y}{S_A} > 10$ IS MET

$$K_H = \frac{T}{b} = \frac{(48.6 + 38.3)/2\ ft^2/day}{21\ ft}$$

$$= 2.1\ ft/day$$

$$K_V = \frac{r^2 b^2 K_H}{r^2} = \frac{(3.0)(21\ ft)^2(2.1\ ft/day)}{(24.5\ ft)^2}$$

$$= 4.6\ ft/day$$

SE2000
Environmental Logger
05/01 14:00

Unit# 479 Test 0

Setups:	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5
Type	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)
Mode	Surface	Surface	Surface	Surface	Surface
I.D.	2LPW1S	2LOW1S	2LOW1D	2LOW2S	2LOW3S
Reference	0.000	0.000	0.000	0.000	0.000
SG	1.000	1.000	1.000	1.000	1.000
Linearity	0.027	0.122	0.114	0.113	0.073
Scale factor	10.020	20.114	50.764	50.617	50.316
Offset	-0.012	0.002	-0.025	-0.142	-0.104
Delay mSEC	50.000	50.000	50.000	50.000	50.000

DRAWDOWN DATA AT PUMP TEST 2LPW1S

Step 0 04/28 10:00:00

Elapsed Time	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5
		(SUBTRACT 0.012)		SUBTRACT 0.047	
0.0000	-0.003	0.012	0.032	0.047	0.000
0.0083	0.000	0.012	0.032	0.047	0.000
0.0166	0.000	0.012	0.032	0.047	0.000
0.0250	0.000	0.012	0.032	0.047	0.000
0.0333	-0.034	0.012	0.032	0.047	0.000
0.0416	0.000	0.012	0.032	0.047	0.000
0.0500	-0.031	0.012	0.032	0.047	0.000
0.0583	-0.050	0.012	0.032	0.047	0.000
0.0666	-0.050	0.012	0.032	0.047	0.000
0.0750	-0.053	0.012	0.032	0.047	0.000
0.0833	-0.063	0.012	0.032	0.047	0.000
0.0916	-0.060	0.012	0.032	0.047	0.000
0.1000	-0.060	0.012	0.032	0.047	0.000
0.1083	-0.075	0.012	0.032	0.047	0.000
0.1166	-0.065	0.012	0.032	0.047	0.000
0.1250	-0.086	0.012	0.032	0.047	0.000
0.1333	-0.101	0.012	0.032	0.047	0.000
0.1416	-0.101	0.012	0.032	0.047	0.000
0.1500	-0.104	0.012	0.032	0.047	0.000
0.1583	-0.101	0.012	0.032	0.047	0.000
0.1666	-0.101	0.012	0.032	0.047	0.000
0.1750	-0.104	0.012	0.032	0.047	0.000
0.1833	-0.126	0.012	0.032	0.047	0.000
0.1916	-0.132	0.012	0.032	0.047	0.000
0.2000	-0.145	0.012	0.032	0.047	0.000
0.2083	-0.149	0.012	0.032	0.047	0.000
0.2166	-0.151	0.012	0.032	0.047	0.000
0.2250	-0.149	0.012	0.032	0.047	0.000
0.2333	-0.145	0.012	0.032	0.047	0.000
0.2416	-0.154	0.012	0.032	0.047	0.000
0.2500	-0.154	0.012	0.032	0.047	0.000
0.2583	-0.154	0.012	0.032	0.047	0.000
0.2666	-0.161	0.012	0.032	0.047	0.000
0.2750	-0.154	0.012	0.032	0.047	0.000
0.2833	-0.167	0.012	0.032	0.047	0.000
0.2916	-0.17	0.012	0.032	0.047	0.000

0.3000	-0.177	0.012	0.032	0.047	0.000
0.3083	-0.180	0.012	0.032	0.031	0.000
0.3166	-0.180	0.012	0.032	0.047	0.000
0.3250	-0.180	0.012	0.032	0.047	0.000
0.3333	-0.189	0.012	0.032	0.047	0.000
0.3500	-0.208	0.012	0.032	0.047	0.000
0.3666	-0.202	0.012	0.032	0.047	0.000
0.3833	-0.218	0.012	0.032	0.047	0.000
0.4000	-0.218	0.012	0.032	0.047	0.000
0.4166	-0.202	0.012	0.032	0.047	0.000
0.4333	-0.208	0.012	0.032	0.047	0.000
0.4500	-0.218	0.012	0.032	0.047	0.000
0.4666	-0.211	0.012	0.032	0.047	0.000
0.4833	-0.230	0.012	0.032	0.047	0.000
0.5000	-0.221	0.012	0.032	0.047	0.000
0.5166	-0.230	0.012	0.032	0.047	0.000
0.5333	-0.243	0.012	0.032	0.047	0.000
0.5500	-0.240	0.012	0.032	0.047	0.000
0.5666	-0.256	0.012	0.032	0.047	0.000
0.5833	-0.246	0.012	0.032	0.047	0.000
0.6000	-0.246	0.012	0.032	0.047	0.000
0.6166	-0.256	0.012	0.032	0.047	0.000
0.6333	-0.246	0.012	0.032	0.047	0.000
0.6500	-0.249	0.012	0.032	0.047	0.000
0.6666	-0.252	0.012	0.032	0.047	-0.015
0.6833	-0.240	0.012	0.032	0.047	0.000
0.7000	-0.256	0.012	0.032	0.047	0.000
0.7166	-0.249	0.012	0.032	0.047	0.000
0.7333	-0.259	0.012	0.032	0.047	0.000
0.7500	-0.275	0.012	0.032	0.047	0.000
0.7666	-0.265	0.012	0.032	0.047	0.000
0.7833	-0.271	0.012	0.032	0.047	-0.015
0.8000	-0.275	0.012	0.032	0.047	0.000
0.8166	-0.256	0.012	0.032	0.047	0.000
0.8333	-0.265	0.012	0.032	0.047	0.000
0.8500	-0.256	0.012	0.032	0.047	0.000
0.8666	-0.259	0.012	0.032	0.047	0.000
0.8833	-0.268	0.012	0.032	0.047	0.000
0.9000	-0.259	0.012	0.032	0.047	0.000
0.9166	-0.271	0.012	0.032	0.047	0.000
0.9333	-0.271	0.012	0.032	0.047	0.000
0.9500	-0.271	0.012	0.032	0.047	0.000
0.9666	-0.281	0.012	0.032	0.047	0.000
0.9833	-0.278	0.012	0.032	0.047	0.000
1.0000	-0.290	0.012	0.032	0.047	0.000
1.0166	-0.287	0.012	0.032	0.047	-0.015
1.0333	-0.303	0.012	0.032	0.047	0.000
1.0500	-0.310	0.012	0.032	0.047	0.000
1.0666	-0.306	0.012	0.032	0.047	0.000
1.0833	-0.319	0.012	0.032	0.047	0.000
1.1000	-0.316	0.012	0.032	0.047	0.000
1.1166	-0.328	0.012	0.032	0.047	0.000
1.1333	-0.319	0.012	0.032	0.047	0.000
1.1500	-0.317	0.012	0.032	0.047	0.000
1.1666	-0.323	0.012	0.032	0.047	0.000
1.1833	-0.325	0.012	0.032	0.047	0.000
1.2000	-0.329	0.012	0.032	0.047	0.000
1.2166	-0.335	0.012	0.032	0.047	0.000
1.2333	-0.335	0.012	0.032	0.047	0.000
1.2500	-0.325	0.012	0.032	0.047	0.000

		2LONIS		2LONRS	
4.2000	-0.331	0.006	0.032	0.047	0.000
4.4000	-0.331	0.006	0.032	0.047	0.000
4.6000	-0.341	0.006	0.032	0.047	0.000
4.8000	-0.344	0.006	0.032	0.047	0.000
5.0000	-0.344	0.006	0.032	0.047	0.000
5.2000	-0.338	0.006	0.032	0.047	0.000
5.4000	-0.335	0.006	0.032	0.047	0.000
5.6000	-0.363	0.006	0.032	0.047	0.000
5.8000	-0.344	0.006	0.032	0.047	0.000
6.0000	-0.360	0.006	0.032	0.047	0.000
6.2000	-0.357	0.006	0.032	0.047	0.000
6.4000	-0.357	0.006	0.032	0.047	0.000
6.6000	-0.363	0.006	0.032	0.047	0.000
6.8000	-0.350	0.006	0.032	0.047	0.000
7.0000	-0.363	0.000	0.032	0.047	0.000
7.2000	-0.376	0.000	0.032	0.047	0.000
7.4000	-0.373	0.000	0.032	0.047	0.000
7.6000	-0.363	0.000	0.032	0.047	0.000
7.8000	-0.363	0.006	0.032	0.047	0.000
8.0000	-0.366	0.006	0.032	0.047	0.000
8.2000	-0.354	0.000	0.032	0.047	0.000
8.4000	-0.366	0.000	0.032	0.047	0.000
8.6000	-0.354	0.000	0.032	0.047	0.000
8.8000	-0.357	0.000	0.032	0.047	0.000
9.0000	-0.360	0.006	0.032	0.047	0.000
9.2000	-0.369	0.000	0.032	0.047	0.000
9.4000	-0.360	0.000	0.032	0.047	0.000
9.6000	-0.354	0.000	0.032	0.047	0.000
9.8000	-0.363	0.000	0.032	0.047	0.000
10.0000	-0.366	0.000	0.032	0.047	0.000
12.0000	-0.357	-0.011	0.018	0.015 -0.032	-0.015
14.0000	-0.366	-0.011	0.018	0.015	-0.031
16.0000	-0.366	-0.011	0.018	0.015	-0.031
18.0000	-0.369	-0.011	[illegible]	0.015	-0.031
20.0000	-0.369	-0.011	[illegible]	0.015	-0.031
22.0000	-0.388	[illegible]	[illegible]	0.015	-0.031
24.0000	-0.385	[illegible]	[illegible]	[illegible]	-0.031
26.0000	-0.395	[illegible]	[illegible]	[illegible] -0.047	-0.031
28.0000	-0.376	[illegible]	[illegible]	[illegible]	-0.031
30.0000	-0.398	[illegible]	[illegible]	[illegible]	-0.031
32.0000	-0.398	[illegible]	[illegible]	[illegible]	-0.031
34.0000	-0.395	[illegible]	[illegible]	[illegible]	-0.031
36.0000	-0.395	[illegible]	[illegible]	[illegible]	-0.031
38.0000	-0.392	[illegible]	[illegible]	[illegible]	-0.015
40.0000	-0.398	[illegible]	[illegible]		-0.031
42.0000	-0.392	[illegible]			-0.031
44.0000	-0.398	[illegible]			-0.031
46.0000	-0.395	[illegible]			-0.031
48.0000	-0.401	[illegible]			0.000
50.0000	-0.407	[illegible]			-0.031
52.0000	-0.420	[illegible]			-0.031
54.0000	-0.338	[illegible]			-0.031
56.0000	-0.414	[illegible]			-0.031
58.0000	-0.417	[illegible]			-0.031
60.0000	-0.420	[illegible]			-0.031
62.0000	-0.414	[illegible]			-0.031
64.0000	-0.423	[illegible]			-0.031
66.0000	-0.420	[illegible]			-0.031
68.0000	-0.433	[illegible]			-0.031
70.0000	-0.449	[illegible]			-0.031

2LOW15

72.0000	-0.496	-0.050	-0.016	0.000	-0.031
74.0000	-0.467	-0.038	0.016	0.031	0.000
76.0000	-0.464	-0.057	0.000	-0.015	-0.031
78.0000	-0.436	-0.050	0.016	0.000	-0.031
80.0000	-0.401	-0.050	0.000	0.000	-0.031
82.0000	-0.414	-0.044	0.032	0.031	0.000
84.0000	-0.407	-0.044	0.032	0.031	0.000
86.0000	-0.411	-0.044	0.032	0.031	0.000
88.0000	-0.417	-0.044	0.032	0.015	0.000
90.0000	-0.420	-0.057	0.016	0.000	-0.031
92.0000	-0.420	-0.044	0.032	0.031	0.000
94.0000	-0.417	-0.050	0.032	0.015	0.000
96.0000	-0.417	-0.057	0.016	0.000	-0.015
98.0000	-0.420	-0.057	0.016	-0.015 0.062	-0.031
100.000	-0.423	-0.063	0.016	-0.015	-0.031
120.000	-0.433	-0.069	0.016	-0.015	-0.031
140.000	-0.439	-0.076	0.016	-0.015	-0.031
160.000	-0.452	-0.082	0.016	-0.031 0.078	-0.031
180.000	-0.452	-0.088	0.016	-0.031	-0.031
200.000	-0.458	-0.095	0.016	-0.031	-0.031
220.000	-0.474	-0.095	0.016	-0.031	-0.031
240.000	-0.480	-0.101	0.016	-0.047	-0.031
260.000	-0.499	-0.107	0.016	-0.047 0.094	-0.031
280.000	-0.499	-0.114	0.016	-0.047	-0.031
300.000	-0.493	-0.114	[illegible]	-0.047	-0.031
320.000	-0.512	[illegible]	[illegible]	[illegible] -.110	-0.031
340.000	-0.509	[illegible]	[illegible]	[illegible]	-0.031
360.000	-0.515	[illegible]	[illegible]	[illegible]	0.000
380.000	-0.521	[illegible]	[illegible]	[illegible]	-0.031
400.000	-0.518	[illegible]	[illegible]	[illegible]	-0.031
420.000	-0.543	[illegible]	[illegible]	[illegible]	-0.031
440.000	-0.553	[illegible]	[illegible]	[illegible]	-0.031
460.000	-0.540	[illegible]	[illegible]	[illegible]	-0.031
480.000	-0.553	[illegible]	[illegible]	[illegible]	-0.031
500.000	-0.581	[illegible]	[illegible]	[illegible]	[illegible] -0.015
520.000	-0.575	[illegible]	[illegible]	[illegible]	-0.015
540.000	-0.578	[illegible]	[illegible]	[illegible]	-0.015
560.000	-0.594	[illegible]	[illegible]	[illegible]	-0.015
580.000	-0.588	[illegible]	[illegible]	[illegible]	-0.015
600.000	-0.607	[illegible]	[illegible]	[illegible]	[illegible] -0.015
620.000	-0.600	[illegible]	[illegible]	[illegible]	-0.015
640.000	-0.606	[illegible]	[illegible]	[illegible]	-0.000
660.000	-0.619	[illegible]	[illegible]	[illegible]	-0.015
680.000	-0.619	[illegible]	[illegible]	[illegible]	-0.015
700.000	-0.632	[illegible]	[illegible]	[illegible]	[illegible] -0.015
720.000	-0.635	[illegible]	[illegible]	[illegible]	-0.015
740.000	-0.635	[illegible]	[illegible]	[illegible]	-0.015
760.000	-0.638	[illegible]	[illegible]	[illegible]	-0.015
780.000	-0.654	[illegible]	[illegible]	[illegible]	-0.015
800.000	-0.667	[illegible]	[illegible]	[illegible]	-0.015
820.000	-0.664	[illegible]	[illegible]	[illegible]	-0.015
840.000	-0.676	[illegible]	[illegible]	[illegible]	-0.015
860.000	-0.680	[illegible]	[illegible]	[illegible]	-0.015
880.000	-0.680	[illegible]	[illegible]	[illegible]	-0.015
900.000	-0.679	[illegible]	[illegible]	[illegible]	-0.015
920.000	-0.686	[illegible]	[illegible]	[illegible]	-0.015
940.000	-0.693	[illegible]	[illegible]	[illegible]	-0.015
960.000	-0.625	[illegible]	[illegible]	[illegible]	-0.015
980.000	-0.700	[illegible]	[illegible]	[illegible]	-0.015
1000.00	-0.735	[illegible]	[illegible]	[illegible]	-0.015

SE2000
Environmental Logger
05/01 14:11

Unit# 479 Test 0

Setups:	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5
Type	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)
Mode	Surface	Surface	Surface	Surface	Surface
I.D.	2LPW1S	2LOW1S	2LOW1D	2LOW2S	2LOW3S
Reference	0.000	0.000	0.000	0.000	0.000
SG	1.000	1.000	1.000	1.000	1.000
Linearity	0.027	0.122	0.114	0.113	0.073
Scale factor	10.020	20.114	50.764	50.617	50.316
Offset	-0.012	0.002	-0.025	-0.142	-0.104
Delay mSEC	50.000	50.000	50.000	50.000	50.000

Step 0 04/28 10:00:00

Elapsed Time	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5
950.000	-0.708	-0.241	-0.032	-0.175	-0.015
1000.00	-0.708	-0.241	-0.018	-0.175	-0.015
1050.00	-0.720	-0.247	-0.018	-0.175	-0.015
1100.00	-0.749	-0.253	-0.032	-0.191 -0.238	0.015
1150.00	-0.768	-0.260	-0.032	-0.191	-0.015
1200.00	-0.803	-0.272	-0.032	-0.191	-0.015
1250.00	-0.834	-0.272	-0.032	-0.175	0.000
1300.00	-0.834	-0.272	-0.032	-0.191	0.000
1350.00	-0.869	[illegible]	[illegible]	-0.223 -0.27	0.015
1400.00	-0.894	[illegible]	[illegible]	-0.239	-0.015
1450.00	-0.913	[illegible]	[illegible]	-0.239	-0.015
1500.00	-0.935	[illegible]	[illegible]	-0.255	-0.015
1550.00	-0.954	[illegible]	[illegible]	-0.255	-0.015
1600.00	-1.002	[illegible]	[illegible]	[illegible] -0.318	-0.015
1650.00	-0.999	[illegible]	[illegible]	[illegible]	-0.015
1700.00	-1.033	[illegible]	[illegible]	[illegible] 334	-0.031
1750.00	-1.052	[illegible]	[illegible]	[illegible]	-0.015
1800.00	[illegible]	[illegible]	[illegible]	[illegible]	-0.015
1850.00	-1.106	[illegible]	[illegible]	[illegible] -0.35	-0.015
1900.00	[illegible]	[illegible]	[illegible]	[illegible]	-0.015
1950.00	[illegible]	[illegible]	[illegible]	[illegible] .366	-0.015
2000.00	-1.192	[illegible]	[illegible]	[illegible]	-0.015
2050.00	[illegible]	[illegible]	[illegible]	[illegible] -.382	-0.015
2100.00	-1.227	[illegible]	[illegible]	[illegible]	-0.015
2150.00	-1.243	[illegible]	[illegible]	[illegible]	-0.015
2200.00	-1.343	[illegible]	[illegible]	[illegible] -0.397	-0.015
2250.00	[illegible]	[illegible]	[illegible]	[illegible]	-0.015
2300.00	[illegible]	[illegible]	[illegible]	[illegible] -0.419	-0.015
2350.00	[illegible]	[illegible]	[illegible]	[illegible]	-0.015
2400.00	[illegible]	[illegible]	[illegible]	[illegible] -0.429	-0.015
2450.00	[illegible]	[illegible]	[illegible]	[illegible]	-0.015
2500.00	-1.507	[illegible]	[illegible]	[illegible]	-0.015
2550.00	-1.521	[illegible]	[illegible]	[illegible]	-0.015
2600.00	-1.555	[illegible]	[illegible]	[illegible] -0.445	-0.015
2650.00	[illegible]	[illegible]	[illegible]	[illegible]	-0.015
2700.00	-1.571	[illegible]	[illegible]	[illegible] -0.461	-0.015

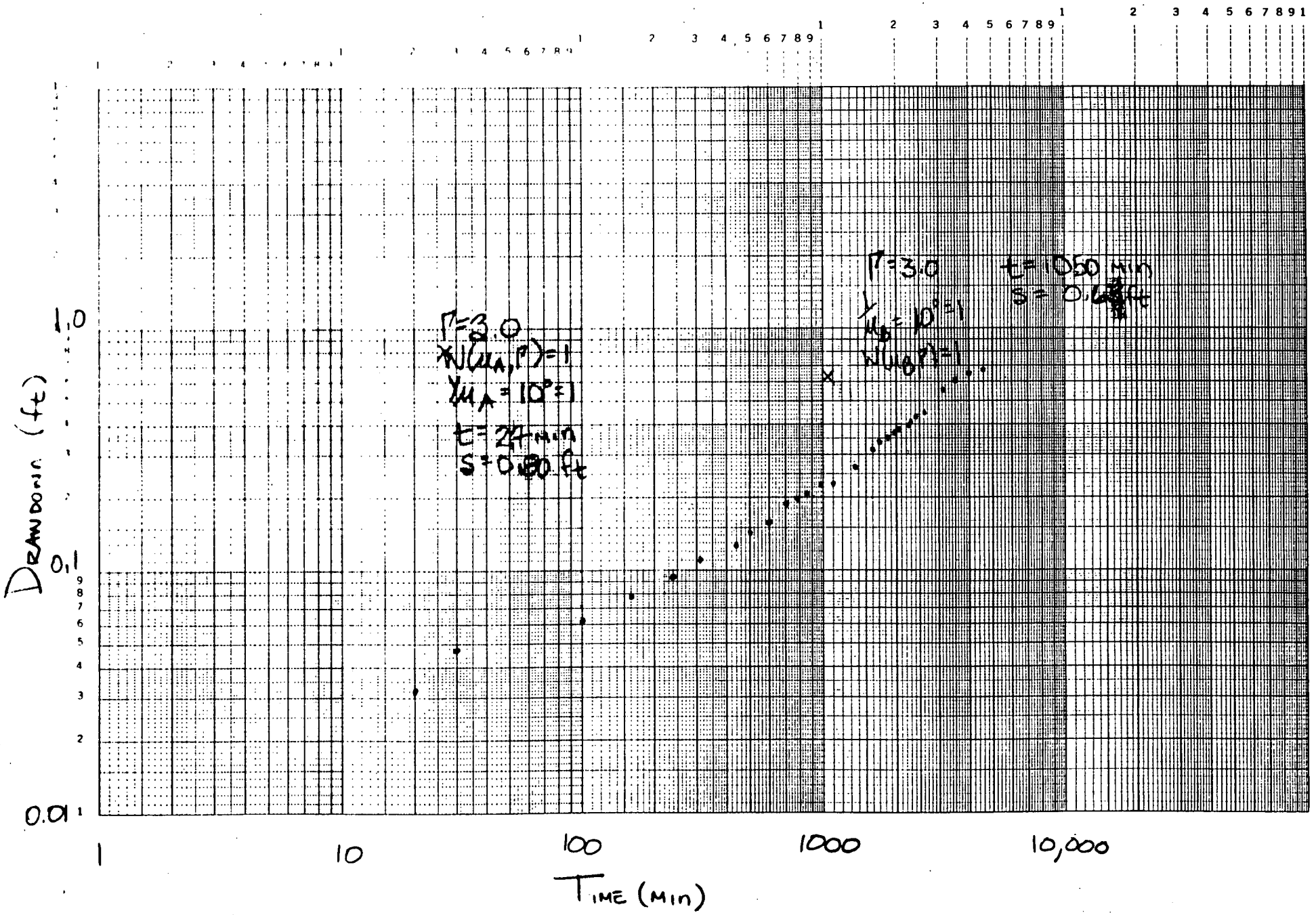
2750.00	-1.691	-0.501	-0.048	-0.398	0.000
2800.00	-1.726	-0.520	-0.064	-0.446 -0.493	0.015
2850.00	-1.760	-0.526	-0.064	-0.446	-0.031
2900.00	-1.801	-0.539	-0.064	-0.462	-0.031
2950.00	-1.827	-0.545	-0.064	-0.462	-0.031
3000.00	-1.890	-0.552	-0.064	-0.462 -0.509	0.015
3050.00	-1.947	-0.558	-0.064	-0.478	-0.031
3100.00	-1.982	-0.564	-0.064	-0.478	-0.015
3150.00	-2.143	-0.577	-0.064	-0.494	-0.015
3200.00	-2.180	-0.590	-0.064	-0.510 -.557	-0.015
3250.00	-2.247	-0.590	-0.080	-0.510	-0.015
3300.00	-2.332	-0.603	-0.080	-0.526	-0.015
3350.00	-2.316	-0.609	-0.080	-0.526	-0.015
3400.00	-2.408	-0.615	-0.080	-0.542 -.589	-0.015
3450.00	-2.465	-0.628	-0.080	-0.542	-0.015
3500.00	-2.914	-0.634	-0.080	-0.558	-0.015
3550.00	-2.958	-0.641	-0.096	-0.558	-0.015
3600.00	-3.185	-0.647	-0.096	-0.558 -0.605	0.015
3650.00	-3.574	-0.653	-0.096	-0.574	0.000
3700.00	-4.054	-0.660	-0.080	-0.574	0.000
3750.00	-4.029	-0.653	-0.064	-0.558	0.000
3800.00	-4.057	-0.672	-0.080	-0.590 -.637	-0.015
3850.00	-4.048	-0.672	-0.064	-0.590	0.000
3900.00	-4.048	-0.679	-0.064	-0.606	-0.015
3950.00	-4.054	-0.685	-0.064	-0.606	-0.015
4000.00	-4.064	-0.685	-0.064	-0.606 -0.653	0.015
4050.00	-4.073	-0.691	-0.064	-0.606	-0.015
4100.00	-4.095	-0.691	-0.064	-0.622	-0.015
4150.00	-4.073	-0.698	-0.080	-0.622	-0.015
4200.00	-4.061	-0.695	-0.080	-0.622	0.000
4250.00	-4.061	-0.698	-0.064	-0.606	0.015
4300.00	-4.064	-0.710	-0.080	-0.638 -0.685	0.015

END

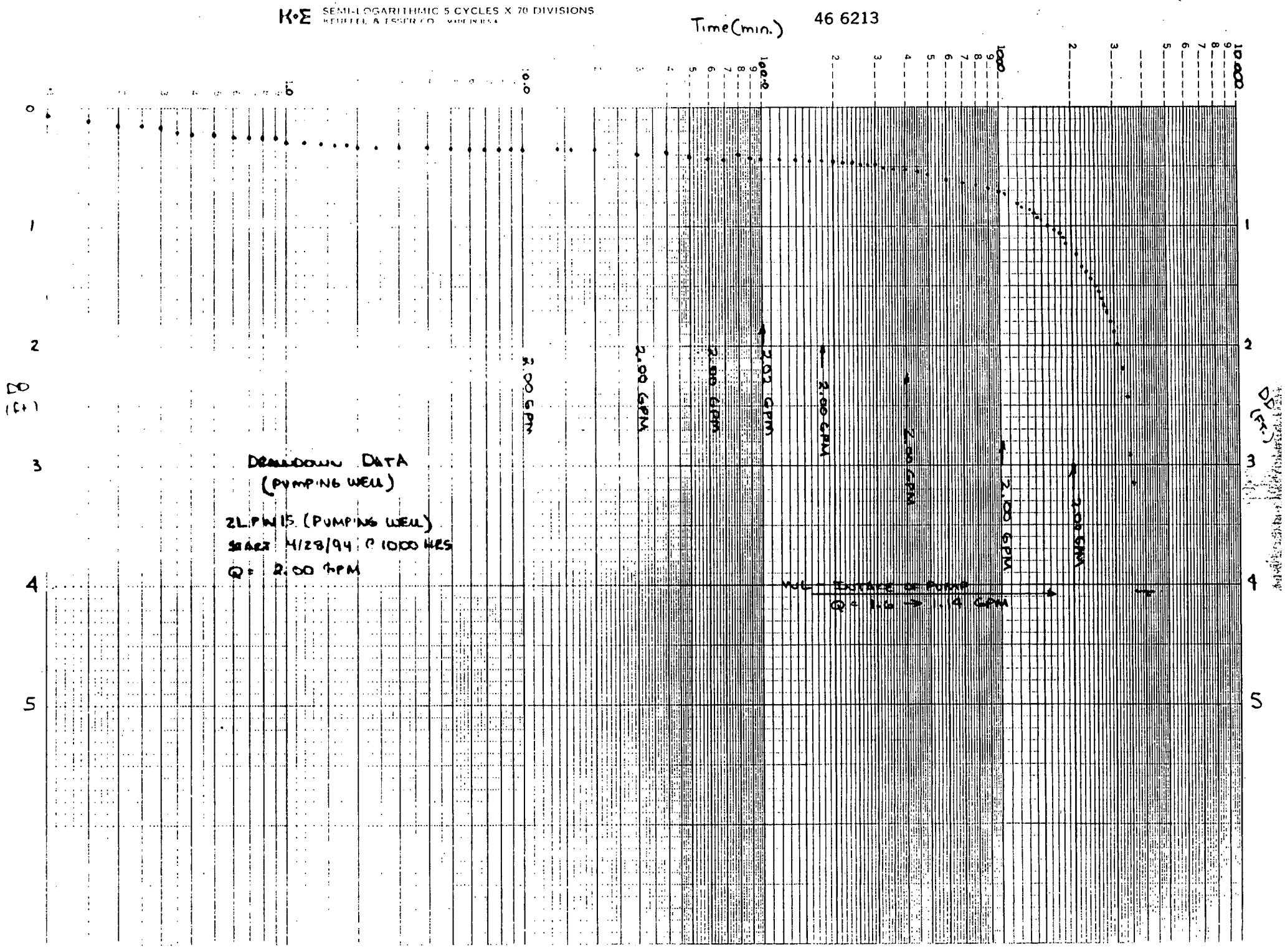
K+E LOGARITHMIC 3 x 5 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

46 7522

2LOW2S DRAWDOWN VS TIME

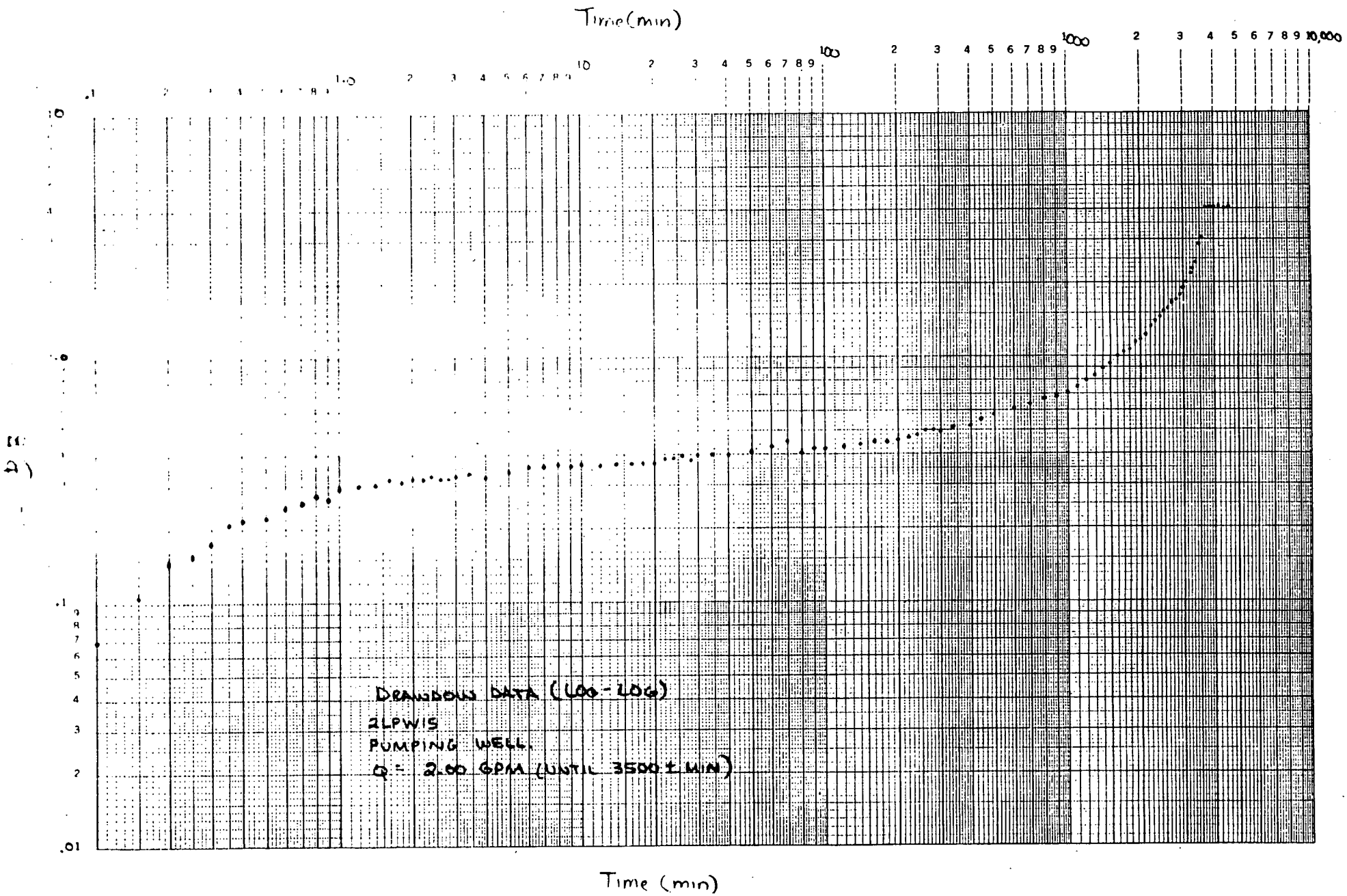


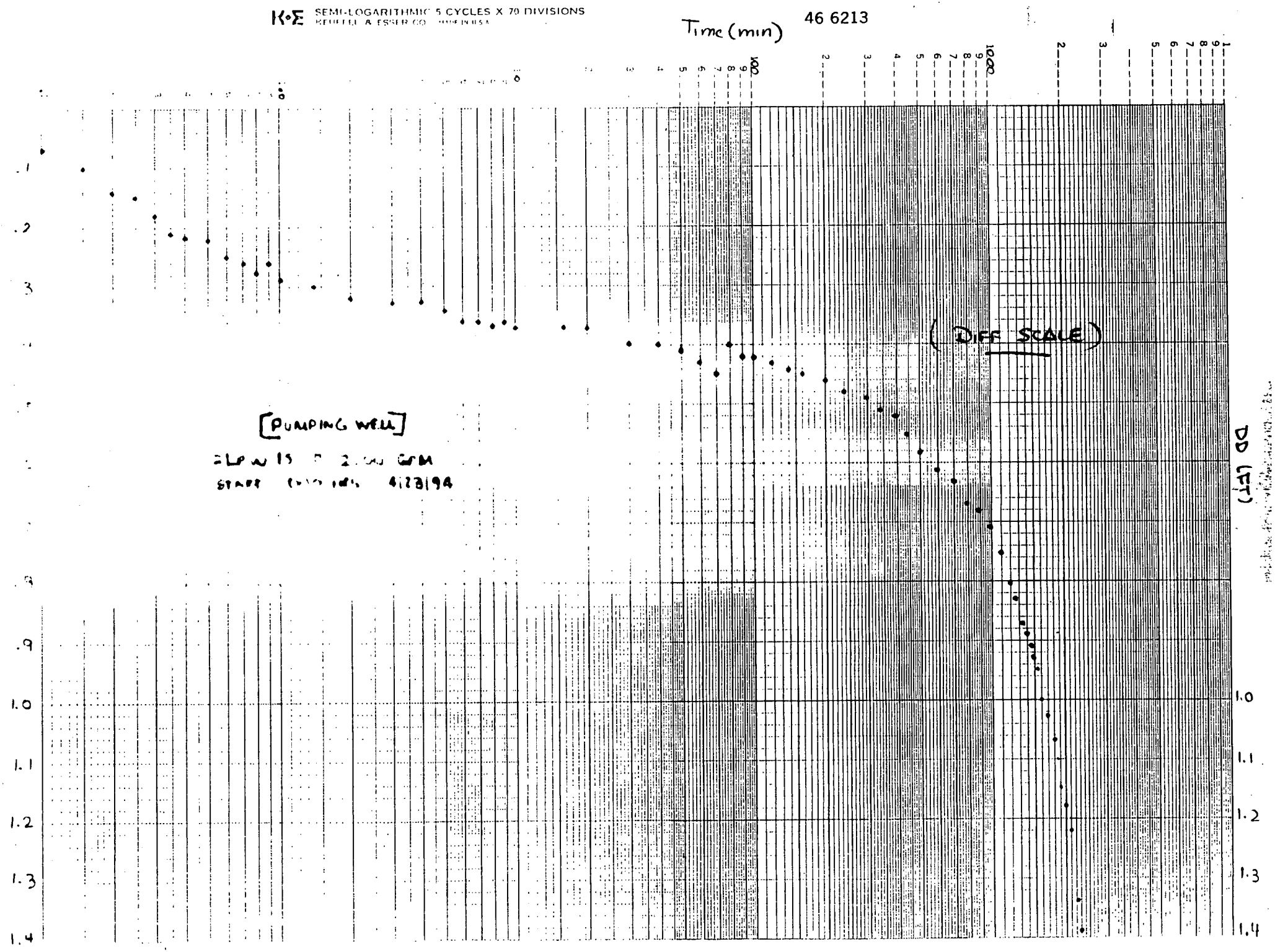
6 OF 6


K+E SEMI-LOGARITHMIC 5 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.
46 6213
Time (min.)
DD (ft)
DD (ft)
DRAWDOWN DATA
(PUMPING WELL)
ZL PW 15 (PUMPING WELL)
START 4/28/94 @ 1000 HRS
Q = 2.00 GPM
3.00 GPM
2.00 GPM
2.00 GPM
2.00 GPM
2.00 GPM
2.00 GPM
2.00 GPM
2.00 GPM
SOURCE OF PUMP
Q = 2.0 GPM

K+E LOGARITHMIC 3 x 5 CYCLES
KEUFFEL & ESSER CO. MADE IN U.S.A.

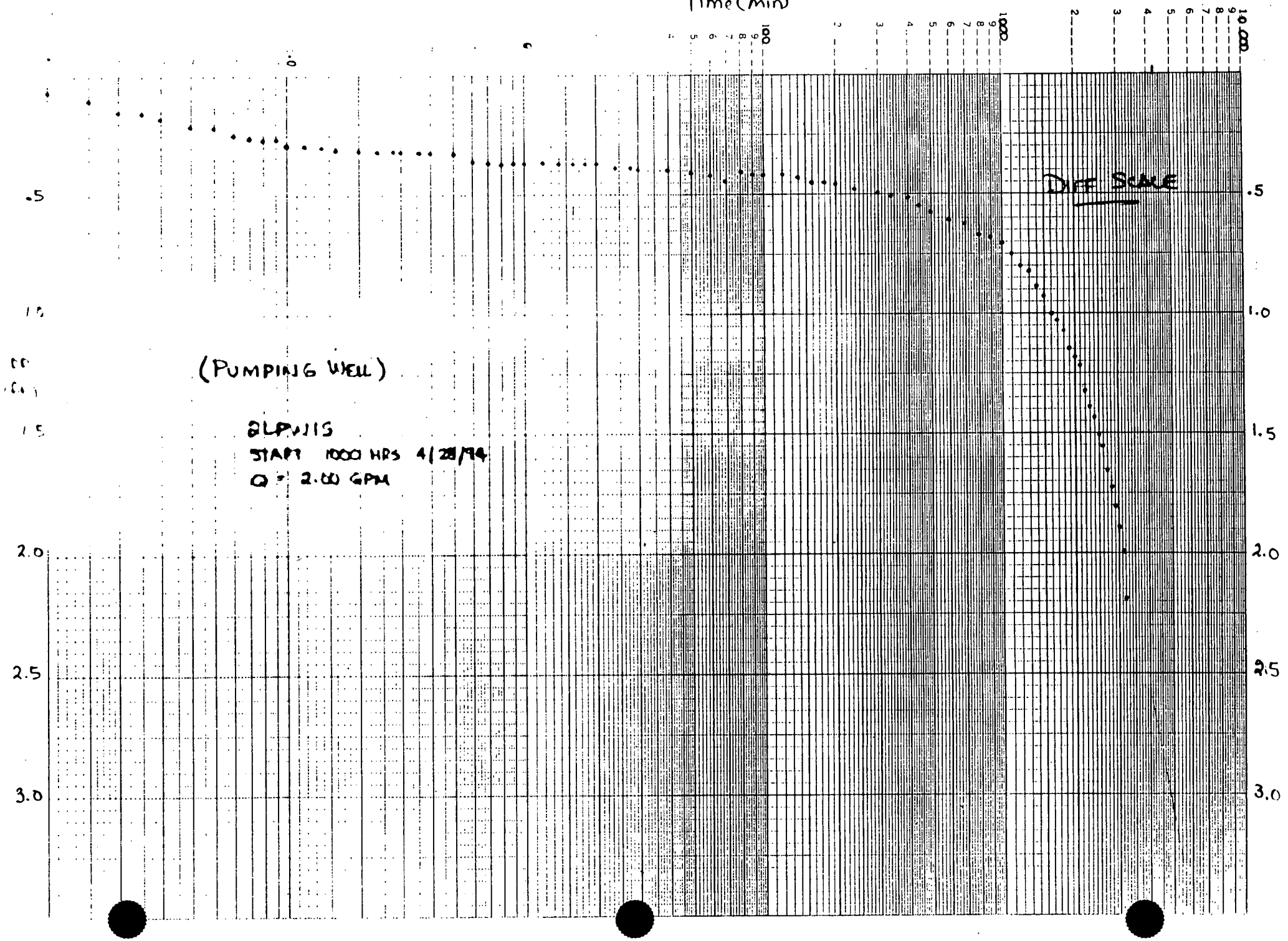
46 7522




K+E SEMI-LOGARITHMIC 5 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.
46 6213
Time (min)
(DIFF SCALE)
[PUMPING WELL]
FLOW 15 = 2.00 GPM
START 4/28/94
DD (FT)
.1
.2
.3
.9
1.0
1.1
1.2
1.3
1.4

K+E SEMI-LOGARITHMIC 5 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.

46 6213



INT - CORE w/ XD 1006.

PUMPING TEST DATA SHEET

HALLIBURTON NUS

PROJECT NAME: NSB - NLON
MEASURED WELL: 2LPW1S
PROJECT NO.: 9594
DATE: 4-28-94
PUMPING WELL: 2LPW1S
GEOLOGIST: CONTI / EVANS / SIMPSON
CHECKED:
TEST NO.:
DISTANCE FROM PUMPING WELL(ft.)(r):
PUMP SETTING, FEET BELOW MONITORING POINT:
STATIC H_2O LEVEL (ft.)(s_o): 11.36' TPVC (0944)
MONITORING POINT:
TIME PURGE START OR STOP (t_o):
ELEVATION OF MONITORING POINT (ft. above MSL):

	TIME	(t) MIN. SINCE PUMP START OR STOP	WATER LEVEL MEASUREMENTS (ft.) M-SCOPE DTW	STATIC WL	DD (FT.)	(s) DD Or RECOVERY (ft.) (XD)	PUMPING RATE (Q) GPM	REMARKS TOTAL DEPTH:
4/28	1000	0	11.36	11.36	0			
	1600	360	11.96	11.36	-.60	-.515		
	1740	460	11.90	11.36	-.54	-.540		
10:00	2200	720	12.09	11.36	-.73	-.635		
4/29	0340	1060	12.20	11.36	-.84	-.720		
	1330	1650	12.43	11.36	-1.07	-.999		sgc
	1730	1890	12.58	11.36	-1.22	-1.147		
	2330	2250	12.76	11.36	-1.40	-1.381		
4/30	0545	2600 ±	13.07	11.36	-1.71	-1.555		
	1250	3050	13.40	11.36	-2.04	-1.947		
	1700	3300	13.67	11.36	-2.31	-2.332		
	2300	3660	14.97	11.36	-3.61	-3.574		
	0140	4300	15.21	11.36	[illegible]	4.064		
5/1			PUMP	OFF @	1015	5-1-94		
	1015	0	15.21	11.36	-3.85	-4.164		
	1340	205	11.97	11.36	-0.61	-.639		
5/2	1240	1585	11.74	11.36	-0.38	-.417 e	1600 min XD	

Maximum Drawdown: ft.
Recovery Time: min.
Recovery Depth: ft.

Initial 20617 gal

2LPW1S

PUMPING TEST DATA SHEET **HALLIBURTON NUS**

PROJECT NAME: NSB - NLON MEASURED WELL: 2LOW1S
PROJECT NO.: 9594 DATE: 4-28-94 PUMPING WELL: 2LPW1S
GEOLOGIST: CONTI / EVANS / SIMPSON CHECKED: TEST NO.:
DISTANCE FROM PUMPING WELL(ft.)(r): PUMP SETTING, FEET BELOW MONITORING POINT:
STATIC H_2O LEVEL (ft.)(s_o): 10.78 TPVC (0946) MONITORING POINT:
TIME PURGE START OR STOP (t_o): ELEVATION OF MONITORING POINT (ft. above MSL):

TIME	(t) MIN. SINCE PUMP START OR STOP	WATER LEVEL MEASUREMENTS (ft.) M-SCOPE			(s) DD Or RECOVERY (ft.) (XD)	PUMPING RATE (Q) GPM	REMARKS SCREEN 2LOW1S: 4-14 G.S. TOTAL DEPTH:
		DTW	STATIC WL	DD (FT.)			
1000	0	10.78	10.78	0			ORG SILT e ≈ 12' (GR)
4/28 1604	364	10.89	10.78	-.11	-.12		b = 3.22' ~
1744	464	10.91	10.78	-.13	-.15		
2202	722	10.98	10.78	-.20	-.196		
4/29 0342	1062	11.02	10.78	-.24	-.247		
1331	1651	11.08	10.78	-.30	-.342		SJC
1731	1891	11.14	10.78	-.36	-.374		
2333	2253	11.17	10.78	-.39	-.431		
0546	(2600)	11.20	10.78	-.42	-.482		
1251	3051	11.32	10.78	-.54	-.558		
1701	3301	11.28	10.78	-.50	-.603		
2302	3662	11.43	10.78	-.65	-.653		
5/1 [illegible]	4302	11.47	10.78	-.69	-.710		
		PUMP OFF		1015	5-1-94		
1015	0	11.47	10.78	-.69	-.710		
1341	206	11.33	10.78	-.55	-.603		
5/2 1241	1586	11.13	10.78	-.35	-.387 e	1600 min (XD)	

Maximum Drawdown: ft. Recovery Time: min. Recovery Depth: ft.

2LOW1S

PUMPING TEST DATA SHEET **HALLIBURTON NUS**

PROJECT NAME: NSB - NLON MEASURED WELL: 2LOW2S
PROJECT NO.: 9594 DATE: 4-28-94 PUMPING WELL: 2LPW1S
GEOLOGIST: CONTI / EVANS / SIMPSON CHECKED: TEST NO.:
DISTANCE FROM PUMPING WELL(ft.)(r): PUMP SETTING, FEET BELOW MONITORING POINT:
STATIC H_2O LEVEL (ft.)(s_o): 11.41' TPVC (0949) MONITORING POINT:
TIME PURGE START OR STOP (t_o): ELEVATION OF MONITORING POINT (ft. above MSL):

	TIME	(t) MIN. SINCE PUMP START OR STOP	WATER LEVEL MEASUREMENTS (ft.) M-SCOPE DTW	STATIC WL	DD (FT.)	(s) DD Or RECOVERY (ft.) (XD)	PUMPING RATE (Q) GPM	REMARKS TOTAL DEPTH:
	1000	0	11.41	11.41	0			
4/28	1607	367	11.59	11.41	-.18	-.031		
	1750	470	11.52	11.41	-.11	-.079		
	2208	730	11.62	11.41	-.21	-.127		
4/29	0348	1068	11.69	11.41	-.28	-.175		
	1334	1654	11.69	11.41	-.28	-.271		sgr
	1734	1894	11.75	11.41	-.34	-.303		
	2337	2257	11.87	11.41	-.46	-.351		
4/30	0548	(2600)	11.87	11.41	-.46	-.398		
	1255	3055	11.89	11.41	-.48	-.478		
	1705	3305	11.95	11.41	-.54	-.526		
	2306	3666	11.98	11.41	-.57	-.574		
	0945	4305	11.98	11.41	-.57	-.638		
5/1			PUMP	OFF @	1015 -	5-1-94		
	1015	0	11.98	11.41	-.57	-.638		
	1343	208	11.86	11.41	-.45	-.577		
5/2	1243	1588	11.90	11.41	-.49	-.382	@1600 min	(XD)

Maximum Drawdown: ft. Recovery Time: min. Recovery Depth: ft.

2LOW2S

PUMPING TEST DATA SHEET **HALLIBURTON NUS**

PROJECT NAME: NSB - NLON MEASURED WELL: 2 LOW1D
PROJECT NO.: 9594 DATE: 4-28-94 PUMPING WELL: 2LPW1S
GEOLOGIST: CONTI/ EVANS/ SIMPSON CHECKED: TEST NO.:
DISTANCE FROM PUMPING WELL(ft.)(r): PUMP SETTING, FEET BELOW MONITORING POINT:
STATIC H_2O LEVEL (ft.)(s_o): 7.45' TPVC (0943) MONITORING POINT:
TIME PURGE START OR STOP (t_o): ELEVATION OF MONITORING POINT (ft. above MSL):

	TIME	(t) MIN. SINCE PUMP START OR STOP	WATER LEVEL MEASUREMENTS (ft.) M- SCOPE			(s) DD Or RECOVERY (ft.) (XD)	PUMPING RATE (Q) GPM	REMARKS
			DTW	STATIC WL	DD (FT.)			TOTAL DEPTH:
	1000	0	7.45	7.45	0	0		
4/28	1603	360	7.45	7.45	0	+ .032		
	1748	468	7.49	7.45	-0.04	- .016		
	2206	728	7.52	7.45	-0.07	- .048		
4/29	0346	1066	7.49	7.45	-0.04	-.016		
	1332	1652	7.50	7.45	-0.05	-.032		SJC
	1732	1892	7.50	7.45	-0.05	-.016		
	2335	2255	7.46	7.45	-0.01	0.00		
4/30	0547		7.44	7.45	+0.01	-.016		
	1252	3052	7.55	7.45	-.10	-.064		checked twice SJC
	1702	3302	7.54	7.45	-.09	-.080		
	2304	3664	7.56	7.45	-.11	-.096		
	0944	4304	7.55	7.45	-.10	-.080		
				PUMP	OFF	1015 -	5-1-94	
5/1	1015	0	7.55	7.45	-.10	-.080		
	1342	207	7.58	7.45	-.13	-.096		
5/2	1242	1587	7.71	7.45	-.26	-.208 e	1600 min	(XD)

Maximum Drawdown: ft. Recovery Time: min. Recovery Depth: ft.

2LOW1D

PUMPING TEST DATA SHEET **HALLIBURTON NUS**

PROJECT NAME: NSB - NLON MEASURED WELL: 2LOW3S
PROJECT NO.: 9594 DATE: 4-28-94 PUMPING WELL: 2LPW1S
GEOLOGIST: CONTI/ EVANS/ SIMPSON CHECKED: TEST NO.:
DISTANCE FROM PUMPING WELL(ft.)(r): PUMP SETTING, FEET BELOW MONITORING POINT:
STATIC H_2O LEVEL (ft.)(s_o): 11.73' TPIC (0947) MONITORING POINT:
TIME PURGE START OR STOP (t_o): ELEVATION OF MONITORING POINT (ft. above MSL):

	TIME	(t) MIN. SINCE PUMP START OR STOP	WATER LEVEL MEASUREMENTS (ft.) M-SCOPE DTW	STATIC WL	DD (FT.)	(s) DD Or RECOVERY (ft.) (XD)	PUMPING RATE (Q) GPM	REMARKS TOTAL DEPTH:
	1000	0	11.73	11.73	0			
4/28	1610	370	11.80	11.73	-.07	.000		
	1753	473	11.73	11.73	0	-.031		
	2211	733	11.85	11.73	-0.12	-.015		
4/29	0350	1070	11.81	11.73	-0.08	-.015		
	1335	1655	11.74	11.73	-0.01	-.015		
	1735	1895	11.79	11.73	-0.06	-.015		
	2339	2259 (2600)	11.81	11.73	-0.08	-.015		
	0550		11.74	11.73	-0.01	-.015		
4/30		4-30-94						
	940		11.73	11.73	0.00			SJC
	1256	3056	11.81	11.73	-0.08	-.031		SJC
	1706	3306	11.83	11.73	-0.10	-.015		
	2378	3668	11.81	11.73	[illegible]	[illegible]		
	0948	4305	11.78	11.73	[illegible]	-.015		
			PUMP OFF					
	1015	0	11.78	11.73	[illegible]			
5/1	1345	210	11.76	11.73	[illegible]			
	1245	1590	11.76	11.73	[illegible]	[illegible]		
5/2								

Maximum Drawdown: ft. Recovery Time: min. Recovery Depth: ft.

2LOW 3S

EVAL ≈ 600 min ± (5 WELLS) + 185, D (2) >

PUMPING TEST DATA SHEET

HALLIBURTON NUS

PROJECT NAME: NSB - NLON
MEASURED WELL: 1MW25
PROJECT NO.: 9594
DATE: 4-28-94
PUMPING WELL: 2LPW1S
GEOLOGIST: CONTI/ EVANS/ SIMPSON
CHECKED:
TEST NO.:
DISTANCE FROM PUMPING WELL(ft.)(r):
PUMP SETTING, FEET BELOW MONITORING POINT:
STATIC H_2O LEVEL (ft.)(s_o): 2.34 TPVC (0930)
MONITORING POINT:
TIME PURGE START OR STOP (t_o):
ELEVATION OF MONITORING POINT (ft. above MSL):

	TIME	(t) MIN. SINCE PUMP START OR STOP	WATER LEVEL MEASUREMENTS (ft.) M-SCOPE DTW	STATIC WL	DD (FT.)	(s) DD Or RECOVERY (ft.) (XD)	PUMPING RATE (Q) GPM	REMARKS TOTAL DEPTH:
4/28	1900	0	2.34	2.34	0			
8 PM	1940	580	2.39	2.34	-.05			
6 AM	0540	1180	2.39	2.34	-.05			
4/29	1540	1780	2.40	2.34	-.06			
14 AM	0140	2380	2.41	2.34	-.07			
4/30		SAT, APRIL 30, 1994,						
	1140	2980	2.43	2.34	-.09			
	2140	3580	2.42	2.34	-.06			
	0920	4280	2.41	2.34	-.07			
5/1			PUMP	OFF @ 1015	ON	5-1-94		LT. RAIN ON
	1015	0	2.41	2.34	-.07			AND OFF STARTS
	1315	180	2.42	2.34	-.08			AT 1145 5.1.94
5/2	1335	1640	2.54	2.34	-.20			

Maximum Drawdown: ft.
Recovery Time: min.
Recovery Depth: ft.

1MW25

PUMPING TEST DATA SHEET **HALLIBURTON NUS**

PROJECT NAME: NSB - NLON
MEASURED WELL: 2LMW8S
PROJECT NO.: 9594
DATE: 4-28-94
PUMPING WELL: 2LPW1S
GEOLOGIST: CONTI/ EVANS/ SIMPSON
CHECKED:
TEST NO.:
DISTANCE FROM PUMPING WELL(ft.)(r):
PUMP SETTING, FEET BELOW MONITORING POINT:
STATIC H_2O LEVEL (ft.)(s_o): 1.08' TPVC (0938)
MONITORING POINT:
TIME PURGE START OR STOP (t_o):
ELEVATION OF MONITORING POINT (ft. above MSL):

TIME	(t) MIN. SINCE PUMP START OR STOP	WATER LEVEL MEASUREMENTS (ft.) M- SCOPE			(s) DD Or RECOVERY (ft.) (XD)	PUMPING RATE (Q) GPM	REMARKS
		DTW	STATIC WL	DD (FT.)			TOTAL DEPTH:
1000	0	1.08	1.08	0			
1942	582	1.13	1.08	-.05			
7/29 0542	1182	1.12	1.08	-.04			
1542	1782	1.10	1.08	-.02			
2142	2382	1.12	1.08	-.04			
← 4/30				→			
142	2982	1.19	1.08	-.11			
2142	3582	1.18	1.08	-.10			
5/1 0922	4282	1.18	1.08	-.10			
		PUMP	OF	1015	ON	5.1.94	
15	0	1.18	1.08	-.10			
1317	182	1.17	1.08	-.09			
5/2 1337	1642	1.26	1.08	-.18			

Maximum Drawdown: ____ ft. Recovery Time: ____ min. Recovery Depth: ____ ft.

2LMW8S

PUMPING TEST DATA SHEET **HALLIBURTON NUS**

PROJECT NAME: NSB - NLON MEASURED WELL: 2LMW8D
PROJECT NO.: 9594 DATE: PUMPING WELL: 2LPW1S
GEOLOGIST: CONTI/ EVANS/ SIMPSON CHECKED: TEST NO.:
DISTANCE FROM PUMPING WELL(ft.)(r): PUMP SETTING, FEET BELOW MONITORING POINT:
STATIC H_2O LEVEL (ft.)(s_o): 0.00 'TOC (0937) MONITORING POINT:
TIME PURGE START OR STOP (t_o): ELEVATION OF MONITORING POINT (ft. above MSL):

TIME	(t) MIN. SINCE PUMP START OR STOP	WATER LEVEL MEASUREMENTS (ft.) M- SCOPE			(s) DD Or RECOVERY (ft.) (XD)	PUMPING RATE (Q) GPM	REMARKS
		DTW	STATIC WL	DD (FT.)			TOTAL DEPTH:
1000	0	0.00	0.00	–			Flowing
1941	581	0.00	"	0			"
4/29 0541	1181	0	0	0			"
1541	1781	0	0	0			"
4/30 0143	2383	0.00	0.00	0.00			"
4/30/94							"
1143	2983	0	0	0			"
2143	3583	0	0	0			
5/1 0923	4283	0	0	0			
PUMP OF 1015					5.1.94		
1015	0	0	0	0			
1318	183	0	0	0			
5/2 1338	1643	0	0	0			

Maximum Drawdown: ft. Recovery Time: min. Recovery Depth: ft.

2LMW8D

PUMPING TEST DATA SHEET **HALLIBURTON NUS**

PROJECT NAME: NSB - NLON MEASURED WELL: 2LMW18S
PROJECT NO.: 9594 DATE: 4-28-94 PUMPING WELL: 2LPW1S
GEOLOGIST: CONTI/ EVANS/ SIMPSON CHECKED: TEST NO.:
DISTANCE FROM PUMPING WELL(ft.)(r): PUMP SETTING, FEET BELOW MONITORING POINT:
STATIC H_2O LEVEL (ft.)(s_o): 5.87' TPVC (0921) MONITORING POINT:
TIME PURGE START OR STOP (t_o): ELEVATION OF MONITORING POINT (ft. above MSL):

TIME	(t) MIN. SINCE PUMP START OR STOP	WATER LEVEL MEASUREMENTS (ft.) M-SCOPE			(s) DD Or RECOVERY (ft.) (XD)	PUMPING RATE (Q) GPM	REMARKS
		DTW	STATIC WL	DD (FT.)			TOTAL DEPTH:
1000	0	5.87	5.87	0			
1945	585	5.88	5.87	-.01			
4/29 0545	1185	5.85	5.87	+.02			
1645	1785	5.78	5.87	+.09			
0145	2385	5.72	5.87	+.15			
1145	2985	5.79	5.87	+.08			
2145	3585	5.79	5.87	+.08			
5/1 0925	4285	5.77	5.87	+.10			
			PUMP OF	1015	5.1.94		
15	0	5.77	5.87	+.10			
1320	185	5.73	5.87	+.14			
5/2 1340	1645	5.84	5.87	+.03			

Maximum Drawdown: ft. Recovery Time: min. Recovery Depth: ft.

2LMW18S

PUMPING TEST DATA SHEET **HALLIBURTON NUS**

PROJECT NAME: NSB - NLON MEASURED WELL: 2LMW18D
PROJECT NO.: 9594 DATE: PUMPING WELL: 2LPW15
GEOLOGIST: CONTI / EVANS / SIMPSON CHECKED: TEST NO.:
DISTANCE FROM PUMPING WELL(ft.)(r): PUMP SETTING, FEET BELOW MONITORING POINT:
STATIC H_2O LEVEL (ft.)(s_o): 6.35' TOC (0922) MONITORING POINT:
TIME PURGE START OR STOP (t_o): ELEVATION OF MONITORING POINT (ft. above MSL):

	TIME	(t) MIN. SINCE PUMP START OR STOP	WATER LEVEL MEASUREMENTS (ft.) H- SCOPE DTW	STATIC WL	DD (FT.)	(s) DD Or RECOVERY (ft.) (XD)	PUMPING RATE (Q) GPM	REMARKS TOTAL DEPTH:
	1000	0	6.35	6.35	0	—		
	1946	586	6.46	6.35	-.11			
7/29	0546	1186	6.54	6.35	-.19			
	1646	1786	6.53	6.35	-.18			
	0146	2386	6.49	6.35	-.14			
	↓	4	30	94	↓			
	1146	2986	6.56	6.35	-.21			
	2146	3586	6.58	6.35	-.23			
	0926	4286	6.53	6.35	-.18			
5/1			PUMP OFF @		1015 @	5-1-94		
	1015	0	6.53	6.35	-.18			
	1322	187	6.54	6.35	-.19			
5/2	1342	1647	6.78	6.35	-.43			

Maximum Drawdown: ft. Recovery Time: min. Recovery Depth: ft.

2LMW18D

PUMPING TEST DATA SHEET **HALLIBURTON NUS**

PROJECT NAME: NSB - NLON MEASURED WELL: 2LMW13S
PROJECT NO.: 9594 DATE: 4-28-94 PUMPING WELL: 2LPW1S
GEOLOGIST: CONTI/ EVANS/ SIMPSON CHECKED: TEST NO.:
DISTANCE FROM PUMPING WELL(ft.)(r): PUMP SETTING, FEET BELOW MONITORING POINT:
STATIC H_2O LEVEL (ft.)(s_o): 14.56' TPVC (0901) MONITORING POINT:
TIME PURGE START OR STOP (t_o): ELEVATION OF MONITORING POINT (ft. above MSL):

	TIME	(t) MIN. SINCE PUMP START OR STOP	WATER LEVEL MEASUREMENTS (ft.) M-SCOPE DTW	STATIC WL	DD (FT.)	(s) DD Or RECOVERY (ft.) (XD)	PUMPING RATE (Q) GPM	REMARKS TOTAL DEPTH:
4/28	1000	0	14.56	14.56	0			
	1320	200	14.63	14.56	-.07			
440	1640	400	14.65	"	-.09			
800	2000	600*	14.68	"	-.12			
1120	2320	800	14.69	14.56	-.13			
4/29	~~0240~~	~~1000~~						
	0600	1200*	14.71	14.56	-.15			
	0920	1400	14.71	14.56	-.15			
1240PM	~~1240~~	~~1600~~						
400 PM	1600	1800*	14.64	14.56	-.08			14.52. Then rechecked it got 14.64 ?
7[illegible]	[illegible]20	2000	14.62	14.56	-.06			
1040	2240	2200	14.57	14.5[illegible]	-.01			
4/30	0200	2400*	14.5[illegible]	14.[illegible]	+.01			
	0600	264	14.53	14[illegible]	[illegible]			
	0840	2800	14.55	14.5[illegible]	-.0			
	1200	3000*	14.57	14.5[illegible]	-.01			
320	1520	3200	14.55	14.56	+.01			
640	1840	3400	14.55	14.[illegible]	+.0			
1000 PM	2200	3600*	14.56	14.[illegible]	[illegible]			
5/1 120	0120	3800						
	0620	4100	14.50	14.5[illegible]	[illegible]			
	0940	4300*	14.50	14.5[illegible]	-.0[illegible]			
				Pump [illegible]	[illegible]	= 0	5-1-94	
	1015	0	14.50	14.[illegible]	[illegible]			
5/1	1315	180	14.50	14.5[illegible]	[illegible]			
5/2	1315	1620	14.79	14.5[illegible]	-.[illegible]			

Maximum Drawdown: ft. Recovery Time: min. Recovery Depth: ft.

2LMW13S

PUMPING TEST DATA SHEET **HALLIBURTON NUS**

PROJECT NAME: NSB - NLON MEASURED WELL: 2LMW13D
PROJECT NO.: 9594 DATE: 4-28-94 PUMPING WELL: 2LPW15
GEOLOGIST: CONTI / EVANS / SIMPSON CHECKED: TEST NO.:
DISTANCE FROM PUMPING WELL(ft.)(r): PUMP SETTING, FEET BELOW MONITORING POINT:
STATIC H_2O LEVEL (ft.)(s_o): 5.51' TOC (0900) MONITORING POINT:
TIME PURGE START OR STOP (t_o): ELEVATION OF MONITORING POINT (ft. above MSL):

	TIME	(t) MIN. SINCE PUMP START OR STOP	WATER LEVEL MEASUREMENTS (ft.) M-SCOPE DTW	STATIC WL	DD (FT.)	(s) DD Or RECOVERY (ft.) (XD)	PUMPING RATE (Q) GPM	REMARKS TOTAL DEPTH:
	1000	0	5.51	5.51	0			
	1322	202	5.58	5.51	-.07			
	1642	402	5.59	"	-.08			
	2002	602	5.61	5.51	-.10			
	2322	802	5.63	5.51	-.12			
4/29								
	0602	1202	5.61	5.51	-.10			
	0922	1402	5.66	5.51	-.15			
	1602	1802	5.70	5.51	-.19			
	1922	2002	5.67	5.51	-.16			
	2242	2202	5.65	5.51	-.14			
4/30	0202	2402	5.66	5.51	-.15			
	0602	2642	5.66	5.51	-.15			
	0842	2802	5.58	5.51	-.07			
	1202	3002	5.73	5.51	-.22			
	1522	3202	5.73	5.51	-.22			
	1842	3402	5.74	5.51	-.23			
	2202	3602	5.75	5.51	-.24			
5-1	0222	4102	5.78	5.5[illegible]	-.2[illegible]			
	0942	4302	5.66	5.51				
			PUMP OFF		-.5		5-1-94	
	1015	0	5.66	5.51				
	1317	182	5.71	5.51	-.2[illegible]			
	1317	1622	6.03	5.51	-.52			
5/7								

Maximum Drawdown: ft. Recovery Time: min. Recovery Depth: ft.

2LMW13D

PUMPING TEST DATA SHEET **HALLIBURTON NUS**

PROJECT NAME: NSB - NLON
PROJECT NO.: 9594
DATE: 4-28-94
MEASURED WELL: 2LMW9S
PUMPING WELL: 2LPW1S
GEOLOGIST: CONTI / EVANS / SIMPSON
CHECKED:
TEST NO.:
DISTANCE FROM PUMPING WELL(ft.)(r):
PUMP SETTING, FEET BELOW MONITORING POINT:
STATIC H_2O LEVEL (ft.)(s_o): 9.87' TPVC (0902)
MONITORING POINT:
TIME PURGE START OR STOP (t_o):
ELEVATION OF MONITORING POINT (ft. above MSL):

	TIME	(t) MIN. SINCE PUMP START OR STOP	WATER LEVEL MEASUREMENTS (ft.) M-SCOPE DTW	STATIC WL	DD (FT.)	(s) DD Or RECOVERY (ft.) (XD)	PUMPING RATE (Q) GPM	REMARKS TOTAL DEPTH:
4/28	1000	0	9.87	9.87	0			
	1324	204	10.03	9.87				
	1645	405	10.05	9.87				
	2005	605	10.08	9.87				
	2323	803	10.08	9.87	-.21			
4/29								
	0603	1203	10.09	9.87	-.22			
	0923	1403	10.15	9.87	-.28			
	1603	1803	10.19	9.87	-.32			
	1903	2003	10.15	9.87	-.28			
	2243	2203	10.20	9.87	-.33			
4/30	0204	2404	10.28	9.87	-.41			
	0606	2646	10.22	9.87	-.35			
	0845	2805	10.12	9.87	-.25			
	1205	3005	10.32	9.87	-.45			
	1525	3205	10.26	9.87	-.39			
	1845	3405	10.30	9.87	-.43			
	2205	3605	10.41	9.87	-.54			
5-1	0625	4105	10.42	9.87	-.55			
	0945	4305	10.46	9.87	-.59			
			PUMP OFF		1015			
	1015	0	10.46	9.87	-.59			
	1319	184	10.47	9.87	-.60			
5/2	1319	1624	10.66	9.87	-.79			

Maximum Drawdown: ft. Recovery Time: min. Recovery Depth: ft.

2LMW9S

PUMPING TEST DATA SHEET **HALLIBURTON NUS**

PROJECT NAME: NSB - NLON MEASURED WELL: 2LMW9S-1
PROJECT NO.: 9594 DATE: 4-28-94 PUMPING WELL: 2LPW1S
GEOLOGIST: CONTI/ EVANS/ SIMPSON CHECKED: TEST NO.:
DISTANCE FROM PUMPING WELL(ft.)(r): PUMP SETTING, FEET BELOW MONITORING POINT:
STATIC H_2O LEVEL (ft.)(s_o): 9.98' TPVC (0904) MONITORING POINT:
TIME PURGE START OR STOP (t_o): ELEVATION OF MONITORING POINT (ft. above MSL):

	TIME	(t) MIN. SINCE PUMP START OR STOP	WATER LEVEL MEASUREMENTS (ft.) M-SCOPE DTW	STATIC WL	DD (FT.)	(s) DD Or RECOVERY (ft.) (XD)	PUMPING RATE (Q) GPM	REMARKS TOTAL DEPTH:
	1000	0	9.98	9.98	0			
	1325	205	10.03	9.98	-.05			
	1644	404	10.06	9.98	-.08			
	2006	606	10.08	9.98	-.10			
	2325	805	10.10	9.98	-.12			
4/29								
	0605	1205	10.16	9.98	-.18			
	0925	1405	10.11	9.98				
	1605	1805	10.25	9.98	-.27			
	1905	2005	10.27	9.98	-.29			
	2245	2205	10.28	9.98	-.30			
4/30	0205	2405	10.31	9.98	-.33			
	0609	2604	10.33	9.98	-.35			
	0846	2806	10.33	9.98	-.35			
	1206	3006	10.36	9.98	-.38			
	1526	3206	10.28	9.98	-.30			
	1946	3406	10.33	9.98	-.35			
	2206	3606	10.43	9.98	-.45			
5-1	[illegible]	4106	10.48	9.98	-.50			
	0946	4306	10.48	9.98	-.50			
			PUMP	OFF	0.5	5-1-94		
	1015	[illegible]	10.48	9.98	-.50			
	13[illegible]	15[illegible]	10.42	9.98	-.44			
5/2	1320	1625	10.69	9.98	-.71			

Maximum Drawdown: ft. Recovery Time: min. Recovery Depth: ft.

2LMW9S-1

PUMPING TEST DATA SHEET **HALLIBURTON NUS**

PROJECT NAME: NSB - NLON MEASURED WELL: 2LMW9D
PROJECT NO.: 9594 DATE: 4-28-94 PUMPING WELL: 2LPW1S
GEOLOGIST: CONTI / EVANS / SIMPSON CHECKED: TEST NO.:
DISTANCE FROM PUMPING WELL(ft.)(r): PUMP SETTING, FEET BELOW MONITORING POINT:
STATIC H_2O LEVEL (ft.)(s_o): 27.55' TOC (0905) MONITORING POINT:
TIME PURGE START OR STOP (t_o): ELEVATION OF MONITORING POINT (ft. above MSL):

TIME	(t) MIN. SINCE PUMP START OR STOP	WATER LEVEL MEASUREMENTS (ft.) M-SCOPE			(s) DD Or RECOVERY (ft.) (XD)	PUMPING RATE (Q) GPM	REMARKS
		DTW	STATIC WL	DD (FT.)			TOTAL DEPTH:
1000	0	27.55	27.55	0			
1327	207	27.57	27.55	-0.02			
1647	407	27.56	27.55	-0.01			
2007	607	27.65	27.55	-0.10			
2329	807	27.64	27.55	-0.09			
4/29							
0610	1210	27.60	27.55	-.05			
0930	1410	27.60	27.55	-.05			
1610	1810	27.52	27.55	+.03			
[illegible]10	2010	27.51	27.55	+.04			
2250	2210	27.45	27.55	+.10			
4/30 0206	2406	27.35	27.55	+.20			
0607	2147	27.43	27.[illegible]	+.12			
0847	2807	27.48	27.55	+.07			
1207	3007	27.46	27.55	+.09			
1527	3207	27.50	27.55	+.05			
1847	3407	27.49	27.55	+.06			
2207	3607	27.51	27.55	+.04			
5-1 0627	4107	27.40	27.55	+.15			
0947	4307	27.31	27.55	+.24			
[illegible]	[illegible]	[illegible]	PUMP OFF @	1015	5-1-94		
0	0	27.31	27.55	+.24			
1321	18[illegible]	27.32	27.55	+.23			
5/2 1321	1626	27.70	27.55	-.15			

Maximum Drawdown: ft. Recovery Time: min. Recovery Depth: ft.

2LMW9D

PUMPING TEST DATA SHEET **HALLIBURTON NUS**

PROJECT NAME: NSB - NLON MEASURED WELL: 2LOW 4S
PROJECT NO.: 9594 DATE: 4-28-94 PUMPING WELL: 2LPW1S
GEOLOGIST: CONTI / EVANS / SIMPSON CHECKED: TEST NO.:
DISTANCE FROM PUMPING WELL(ft.)(r): PUMP SETTING, FEET BELOW MONITORING POINT:
STATIC H_2O LEVEL (ft.)(s_o): 9.35' TPVC (0907) MONITORING POINT:
TIME PURGE START OR STOP (t_o): ELEVATION OF MONITORING POINT (ft. above MSL):

TIME	(t) MIN. SINCE PUMP START OR STOP	WATER LEVEL MEASUREMENTS (ft.) M-SCOPE DTW	STATIC WL	DD (FT.)	(s) DD Or RECOVERY (ft.) (XD)	PUMPING RATE (Q) GPM	REMARKS TOTAL DEPTH:
1000	0	9.35	9.35	0			
1330	210	9.42	9.35	-.07			
1650	410	9.42	9.35	-.07			
2010	610	9.41	9.35	-.06			
2330	810	9.43	9.35	-.08			
7/29							
0611	1211	9.43	9.35	-.08			
0931	1411	9.43	9.35	-.08			
1611	1811	9.41	9.35	-.06			
1911	2011	9.43	9.35	-.08			
2251	2211	9.42	9.35	-.07			
7/30 0208	2408	9.43	9.35	-.08			
0609	2649	9.38	9.35	-.03			
0849	2809	9.41	9.35	-.06			
1209	3009	9.41	9.35	-.06			
1529	3209	9.42	9.35	-.07			
1849	3409	9.42	9.35	-.07			
2209	3609	9.42	9.35	-.07			
7-1 0629	4109	9.39	9.35	-.04			
0949	4309	9.38	9.35	-.03			
		PUMP [illegible]				5-1-9	
1015	0	9.38	9.3[illegible]	[illegible]			
1322	187	9.40	9.35	-.05			
7/2 1322	1627	9.44	9.35	-.09			

Maximum Drawdown: ft. Recovery Time: min. Recovery Depth: ft.

2LOW 4S

PUMPING TEST DATA SHEET **HALLIBURTON NUS**

PROJECT NAME: NSB - NLON MEASURED WELL: 4MW2S
PROJECT NO.: 9594 DATE: 4-28-94 PUMPING WELL: 2LPW1S
GEOLOGIST: CONTI/ EVANS/ SIMPSON CHECKED: TEST NO.:
DISTANCE FROM PUMPING WELL(ft.)(r): PUMP SETTING, FEET BELOW MONITORING POINT:
STATIC H_2O LEVEL (ft.)(s_o): 5. ' TPVC (0913) MONITORING POINT:
TIME PURGE START OR STOP (t_o): ELEVATION OF MONITORING POINT (ft. above MSL):

TIME	(t) MIN. SINCE PUMP START OR STOP	WATER LEVEL MEASUREMENTS (ft.) M-SCOPE			(s) DD Or RECOVERY (ft.) (XD)	PUMPING RATE (Q) GPM	REMARKS
		DTW	STATIC WL	DD (FT.)			TOTAL DEPTH:
1000	0	5.19	5.19	0			
1332	212	5.25	5.19	-.06			
1653	413	5.28	"	-.09			
2013	613	5.30	"	-.11			
2333	813	5.33	5.19	-.14			
4/29							
0613	1213	5.36	5.19	-.17			
0933	1413	5.40	5.19	-.21			
1613	1813	5.45	5.19	-.26			
[illegible]13	2013	5.47	5.19	-.28			
2253	2213	5.48	5.19	-.29			
4/30 0210	2410	5.50	[illegible]	-.31			
0611	2654	5.53	[illegible]	[illegible]			
0852	2812	5.52	[illegible]	[illegible]			
1212	3012	5.58	[illegible]	-.39			
1532	3212	5.60	[illegible]	[illegible]			
1852	3412	5.62	[illegible]	[illegible]			
2212	3612	5.64	[illegible]	[illegible]			
5-1 0532	4112	5.67	[illegible]	[illegible]			
0952	4312	5.70	[illegible]	[illegible]			
		PUMP				5-1-94	
1015	0	5.70	[illegible]	[illegible]			
1326	191	5.71	[illegible]	[illegible]			
1326	1631	5.89	[illegible]	[illegible]			
5/2							

Maximum Drawdown: ft. Recovery Time: min. Recovery Depth: ft.

4MW2S

PUMPING TEST DATA SHEET **HALLIBURTON NUS**

PROJECT NAME: NSB - NLON MEASURED WELL: 4MW3S
PROJECT NO.: 9594 DATE: 4-28-94 PUMPING WELL: 2LPW1S
GEOLOGIST: CONTI/ EVANS/ SIMPSON CHECKED: TEST NO.:
DISTANCE FROM PUMPING WELL(ft.)(r): PUMP SETTING, FEET BELOW MONITORING POINT:
STATIC H_2O LEVEL (ft.)(s_o): 6.77' TPVC (0914) MONITORING POINT:
TIME PURGE START OR STOP (t_o): ELEVATION OF MONITORING POINT (ft. above MSL):

	TIME	(t) MIN. SINCE PUMP START OR STOP	WATER LEVEL MEASUREMENTS (ft.) M-SCOPE DTW	STATIC WL	DD (FT.)	(s) DD Or RECOVERY (ft.) (XD)	PUMPING RATE (Q) GPM	REMARKS TOTAL DEPTH:
	1000	0	6.77	6.77	0			
	1334	214	6.82	6.77	-.05			
	1455	415	6.85	6.77	-.08			
	2015	615	6.87	6.77	-.10			
	2315	815	6.83	6.77	-.06			
4/29								
	0615	1215	6.91	6.77	-.14			
	0935	1415	6.95	6.77	-.18			
	1615	1815	6.99	6.77	-.22			
	1915	2015	7.01	6.77	-.24			
	2255	2215	7.02	6.77	-.25			
4/30	0212	2412	7.04	6.77	-.27			
	0613	2653	7.07	6.77	-.30			
	0853	2813	7.10	6.77	-.33			
	1213	3013	7.11	6.77	-.34			
	1533	3213	7.13	6.77	-.36			
	1853	3413	7.15	6.77	-.38			
	2213	3613	7.17	6.77	-.40			
5-1	0613	4113	7.21	6.77	-.44			
	0953	4313	7.23	6.77	-.46			
	[illegible]		PUMP OFF	[illegible]			5-1-94	
	1015	0	7.23	6.77	-.46			
	[illegible]	192	7.26	6.77	-.49			
	1327	1632	7.34	6.77	-.57			
5/2								

Maximum Drawdown: ____ ft. Recovery Time: ____ min. Recovery Depth: ____ ft.

4MW3S

PUMPING TEST DATA SHEET **HALLIBURTON NUS**

PROJECT NAME: NSB - NLON MEASURED WELL: 4MW4S
PROJECT NO.: 9594 DATE: 4-28-94 PUMPING WELL: 2LPW1S
GEOLOGIST: CONTI / EVANS / SIMPSON CHECKED: TEST NO.:
DISTANCE FROM PUMPING WELL(ft.)(r): PUMP SETTING, FEET BELOW MONITORING POINT:
STATIC H_2O LEVEL (ft.)(s_o): 1.06' TOC (0915) MONITORING POINT:
TIME PURGE START OR STOP (t_o): ELEVATION OF MONITORING POINT (ft. above MSL):

	TIME	(t) MIN. SINCE PUMP START OR STOP	WATER LEVEL MEASUREMENTS (ft.) M-SCOPE DTW	STATIC WL	DD (FT.)	(s) DD Or RECOVERY (ft.) (XD)	PUMPING RATE (Q) GPM	REMARKS TOTAL DEPTH:
	1000	0	1.06	1.06	0			
	1336	216	1.07	1.06	-.01			
	1657	417	1.08	1.06	-.02			
	2017	617	1.08	1.06	-.02			
	2317	817	1.07	1.06	-.01			
4/29								
	0617	1217	1.10	1.06	-.04			
	0937	1417	1.11	1.06	-.05			
	1617	1817	1.11	1.06	-.05			
	[illegible]17	2017	1.12	1.06	-.06			
	2257	2217	1.12	1.06	-.06			
4/30	0214	2412	1.13	1.06	-.07			
	0615	2655	1.13	1.06	-.07			
	0854	2814	1.13	1.06	-.07			
	1214	3014	1.14	1.06	-.08			
	1534	3214	1.14	1.06	-.08			
	1854	3414	1.15	1.06	-.09			
	2214	3614	1.16	1.06	-.10			
5-1	0634	4114	1.17	1.06	-.11			
	0954	4314	1.18	1.06	-.12			
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]		
	1015	0	1.19	1.06	-.13			
	1377	194	1.18	1.06	-.12			
	1329	1634	1.20	1.06	-.14			
5/2								

Maximum Drawdown: ft. Recovery Time: min. Recovery Depth: ft.

4MW4S

PUMPING TEST DATA SHEET **HALLIBURTON NUS**

PROJECT NAME: NSB - NLON
MEASURED WELL: 4MW4D
PROJECT NO.: 9594
DATE:
PUMPING WELL: 2LPW1S
GEOLOGIST: CONTI/ EVANS/ SIMPSON
CHECKED:
TEST NO.:
DISTANCE FROM PUMPING WELL(ft.)(r): (
PUMP SETTING, FEET BELOW MONITORING POINT:
STATIC H_2O LEVEL (ft.)(s_o): 0.00' TPVC (0916)
MONITORING POINT:
TIME PURGE START OR STOP (t_o):
ELEVATION OF MONITORING POINT (ft. above MSL):

TIME	(t) MIN. SINCE PUMP START OR STOP	WATER LEVEL MEASUREMENTS (ft.) M- SCOPE			(s) DD Or RECOVERY (ft.) (XD)	PUMPING RATE (Q) GPM	REMARKS
		DTW	STATIC WL	DD (FT.)			TOTAL DEPTH:
1000	0	0.00	0.00	0			Flowing
1337	217	0.00	"	0			"
1657	417	0.00	"	0			"
2017	617	0.00	"	0			"
2318	818	0.00	0	0			
/29							
0618	1218	0	0	0			
0938	1418	0	0	0			"
1618	1818	0	0	0			"
1918	2018	0	0	0			"
2258	2218	0.00	0	0.00			"
7/30 0216	2416	0.00	0.00	0.00			"
0616	2656	0.00	0.00	0.00			"
0954	2814	"	"	"			"
1214	3014	"	"	"			"
1534	3214	"	"				"
1855	3415	"	"	"			"
2215	3615	"	"	"			"
5/1 0234	4104	"					"
0554	4314	"	"	"			"
		PUMP OFF					
1015	0	0.00	0.00	0			FLOWING
[illegible]	196	0.00	0.00	0			"
5/2 1329	1634	0.00	0.00	0			"

Maximum Drawdown: ____ ft. Recovery Time: ____ min. Recovery Depth: ____ ft.

4MW4D

PUMPING TEST DATA SHEET **HALLIBURTON NUS**

PROJECT NAME: NSB - NLON MEASURED WELL: 2LMW7D
PROJECT NO.: 9594 DATE: 4-28-94 PUMPING WELL: 2LPW15
GEOLOGIST: CONTI/ EVANS/ SIMPSON CHECKED: TEST NO.:
DISTANCE FROM PUMPING WELL(ft.)(r): PUMP SETTING, FEET BELOW MONITORING POINT:
STATIC H_2O LEVEL (ft.)(s_o): 6.00' TOC (0941) MONITORING POINT:
TIME PURGE START OR STOP (t_o): ELEVATION OF MONITORING POINT (ft. above MSL):

TIME	(t) MIN. SINCE PUMP START OR STOP	WATER LEVEL MEASUREMENTS (ft.) M-SCOPE DTW	STATIC WL	DD (FT.)	(s) DD Or RECOVERY (ft.) (XD)	PUMPING RATE (Q) GPM	REMARKS TOTAL DEPTH:
1000	0	6.00	6.00				
1340	220	6.01	"	-.01			
1700	420	6.02	"	-.02			
2020	620	6.06	"	-.06			
2340	820	6.07	6.00	-.07			
4/29							
0620	1220	6.06	6.00	-.06			
0940	1420	6.06	6.00	-.06			
1620	1820	6.03	6.00	-.03			
2020	2020	6.01	6.00	-.01			
2300	2220	6.00	6.00	.00			
4/30 0218	2418	6.00	6.00	.00			
0618	2658	6.02	6.00	-.02			
0857	2817	6.03	6.00	-.03			
1217	3017	6.05	6.00	-.05			
1537	3217	6.04	6.00	-.04			
1857	3417	6.04	6.00	-.04			
2217	3617	6.05	6.00	-.05			
5/1 0237	4117	6.01	6.00	-.01			
0957	4317	6.00	6.00	-.00			
		PUMP OFF @		0:5	ON	5-1-94	
1015	0	6.00	6.00	.00			
1330	195	6.02	6.00	-.02			
5/2 1330	1635	6.17	6.00	-.17			

Maximum Drawdown: ft. Recovery Time: min. Recovery Depth: ft.

2LMW7D

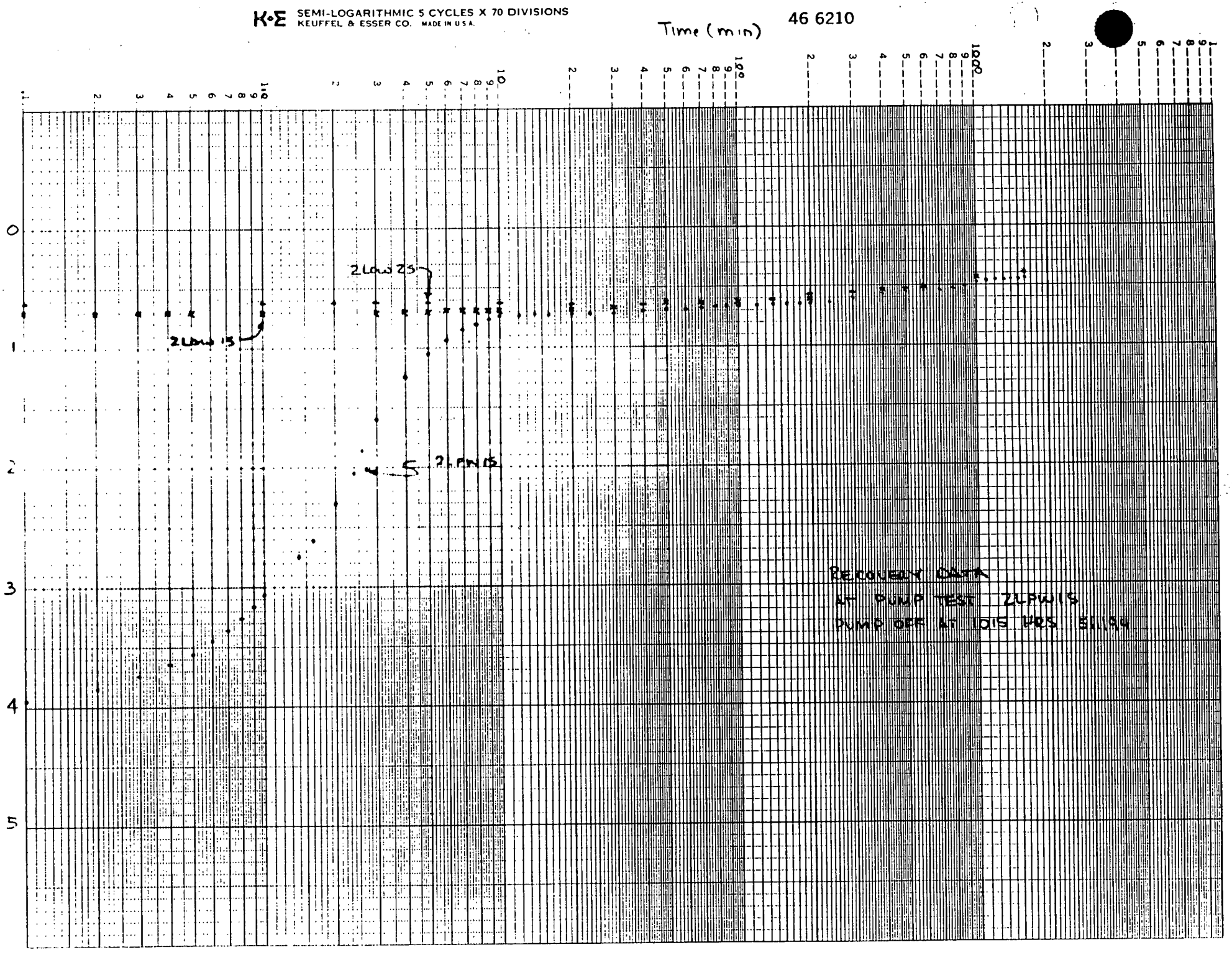
PUMPING TEST DATA SHEET **HALLIBURTON NUS**

PROJECT NAME: NSB - NLON MEASURED WELL: 2LMW7S
PROJECT NO.: 9594 DATE: PUMPING WELL: 2LPW1S
GEOLOGIST: CONTI / EVANS / SIMPSON CHECKED: TEST NO.:
DISTANCE FROM PUMPING WELL(ft.)(r): PUMP SETTING, FEET BELOW MONITORING POINT:
STATIC H_2O LEVEL (ft.)(s_o): 10.36' TOVC (0940) MONITORING POINT:
TIME PURGE START OR STOP (t_o): ELEVATION OF MONITORING POINT (ft. above MSL):

TIME	(t) MIN. SINCE PUMP START OR STOP	WATER LEVEL MEASUREMENTS (ft.) M-SCOPE			(s) DD Or RECOVERY (ft.) (XD)	PUMPING RATE (Q) GPM	REMARKS
		DTW	STATIC WL	DD (FT.)			TOTAL DEPTH:
1000	0	10.36	10.36	0			
1340	220	10.33	"	+ .03			
1659	419	10.38	10.36	- .02			
2019	619	10.39	10.36	- .03			
2341	821	10.39	10.36	- .03			
4/29							
0621	1221	10.42	10.36	- .06			
0941	1421	10.41	10.36	- .05			
1621	1821	10.38	10.36	- .02			
1921	2021	10.40	10.36	- .04			
2301	2221	10.37	10.36	- .01			
4/30 0219	2419	10.37	10.36	- .01			
0619	2619	10.38	10.36	- .02			
0858	2818	10.40	10.36	- .04			
1218	3018	10.41	10.36	- .05			
1538	3218	10.39	10.36	- .03			
1858	3418	10.41	10.36	- .05			
2218	3618	10.37	10.36	- .01			
5/1 0638	4118	10.34	10.36	+ .02			
0958	4318	10.29	10.36				
		- PUMP OFF @ 1015					
1015	0	10.29	10.36	+ .07			
1331	196	10.39	10.36	- .03			
1331	1636	10.50	10.36	- .14			
5/2							

Maximum Drawdown: ft. Recovery Time: min. Recovery Depth: ft.

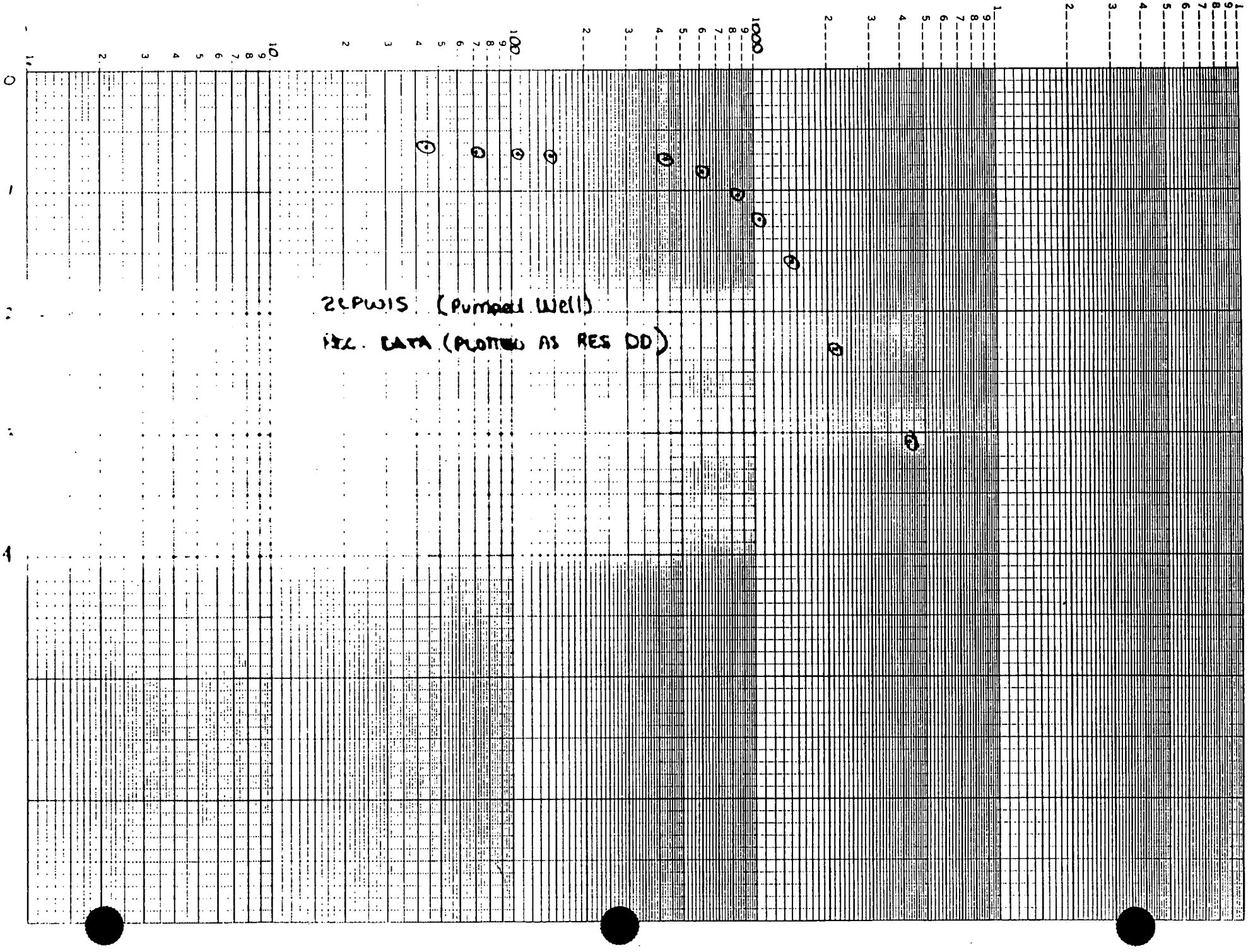
2LMW7S


K•E SEMI-LOGARITHMIC 5 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.
46 6210
Time (min)
2LOW 25
2LOW 15
2LPW15
RECOVERY DATA
AT PUMP TEST 2LPW15
PUMP OFF AT 1015 HRS 5/1/94

K·E SEMI-LOGARITHMIC 5 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.

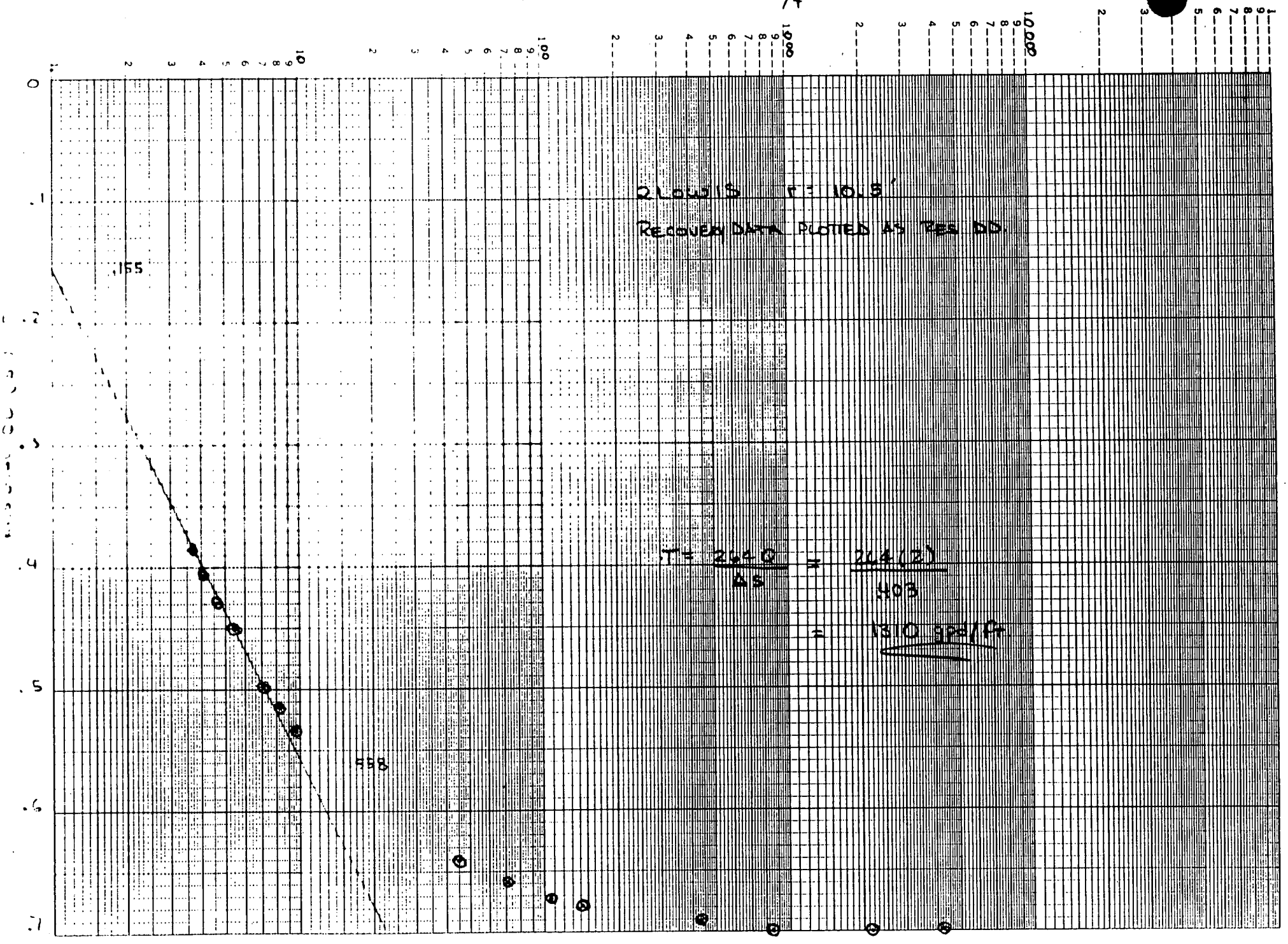
t/t'

46 6210



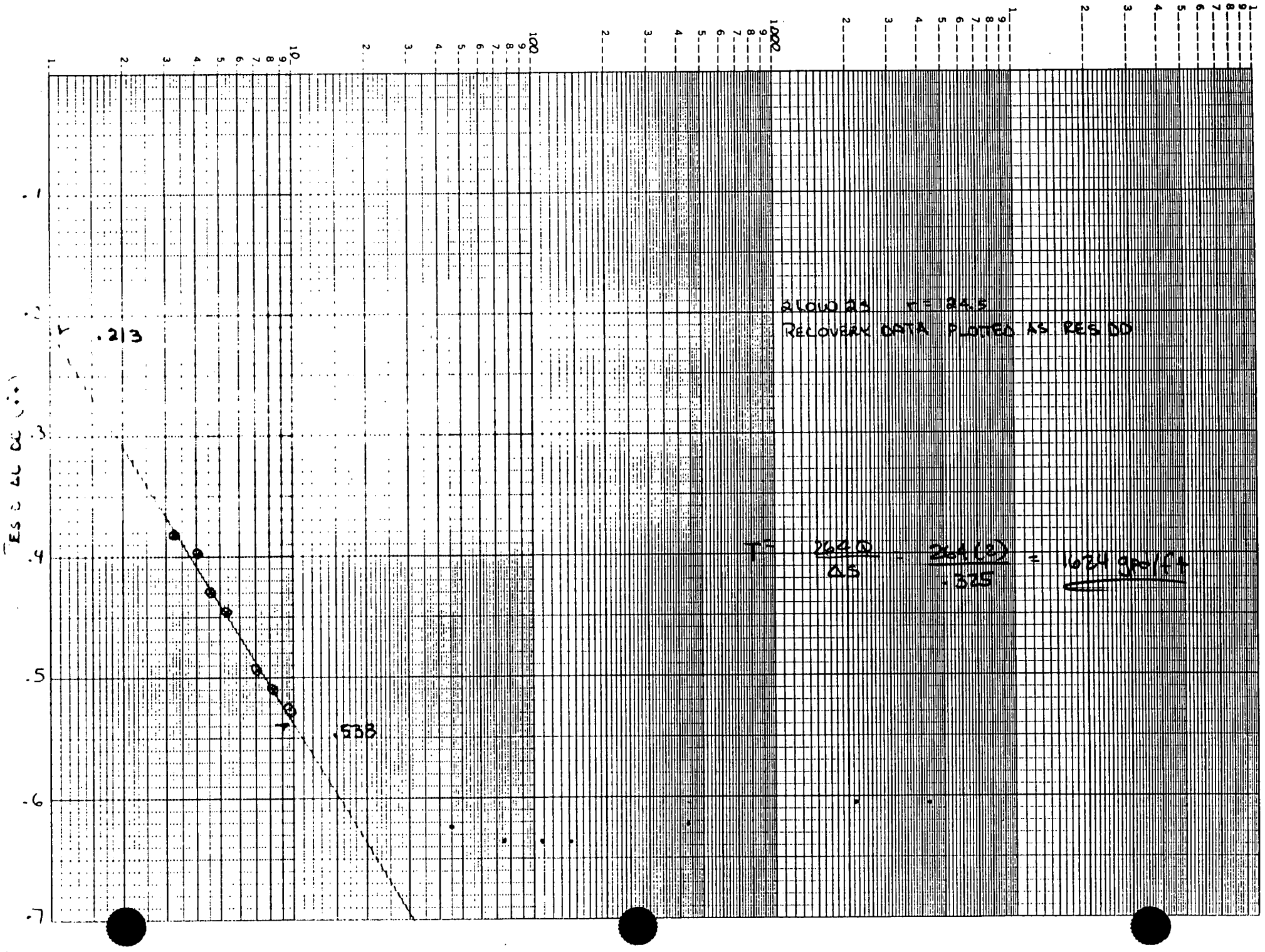
K+E SEMI-LOGARITHMIC 5 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.

Ratio t/t' 46 6210



K·Σ SEMI-LOGARITHMIC 5 CYCLES X 70 DIVISIONS
KEUFFEL & ESSER CO. MADE IN U.S.A.

Ratio t/t' 46 6210



SE2000
Environmental Logger
05/02 13:41

Unit# 479 Test 0

Setups:	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5
Type	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)
Mode	Surface	Surface	Surface	Surface	Surface
I.D.	2LPW1S	2LOW1S	2LOW1D	2LOW2S	2LOW3S
Reference	0.000	0.000	0.000	0.000	0.000
SG	1.000	1.000	1.000	1.000	1.000
Linearity	0.027	0.122	0.114	0.113	0.073
Scale factor	10.020	20.114	50.764	50.617	50.316
Offset	-0.012	0.002	-0.025	-0.142	-0.104
Delay mSEC	50.000	50.000	50.000	50.000	50.000

REC DATA @ PUMP TEST 2LPW1S

Step 1 05/01 10:15:01

Elapsed Time	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5
0.0000	-4.064	-0.698	-0.064	-0.606	0.015
0.0083	-4.086	-0.698	-0.064	-0.606	0.015
0.0166	-4.089	-0.698	-0.064	-0.606	0.015
0.0250	-4.070	-0.698	-0.064	-0.606	0.015
0.0333	-4.045	-0.698	-0.064	-0.606	0.015
0.0416	-4.035	-0.695	-0.064	-0.606	0.015
0.0500	-4.019	-0.698	-0.064	-0.606	0.015
0.0583	-4.010	-0.698	-0.064	-0.606	0.015
0.0666	-3.997	-0.698	-0.064	-0.606	0.000
0.0750	-3.985	-0.698	-0.064	-0.606	0.015
0.0833	-3.975	-0.698	-0.064	-0.606	0.015
0.0916	-3.966	-0.698	-0.064	-0.606	0.000
0.1000	-3.953	-0.698	-0.064	-0.606	0.015
0.1083	-3.940	-0.698	-0.064	-0.606	0.000
0.1166	-3.931	-0.697	-0.064	-0.606	0.015
0.1250	-3.922	[illegible]	[illegible]	-0.606	0.015
0.1333	-3.913	[illegible]	[illegible]	-0.606	0.015
0.1416	-3.903	[illegible]	[illegible]	-0.606	0.015
0.1500	-3.894	[illegible]	[illegible]	-0.606	0.000
0.1583	-3.884	[illegible]	[illegible]	[illegible]	0.000
0.1666	-3.871	[illegible]	[illegible]	[illegible]	0.015
0.1750	-3.861	[illegible]	[illegible]	[illegible]	0.015
0.1833	-3.851	[illegible]	[illegible]	[illegible]	0.015
0.1916	-3.843	[illegible]	[illegible]	[illegible]	0.015
0.2000	-3.836	[illegible]	[illegible]	[illegible]	0.015
0.2083	-3.827	[illegible]	[illegible]	[illegible]	0.015
0.2166	-3.821	[illegible]	[illegible]	[illegible]	0.015
0.2250	-3.814	[illegible]	[illegible]	[illegible]	0.015
0.2333	[illegible]	[illegible]	[illegible]	[illegible]	0.015
0.2416	-3.788	[illegible]	[illegible]	[illegible]	0.015
0.2500	-3.782	[illegible]	[illegible]	[illegible]	0.015
0.2583	-3.781	[illegible]	[illegible]	[illegible]	0.000
0.2666	-3.771	[illegible]	[illegible]	[illegible]	0.015
0.2750	-3.767	[illegible]	[illegible]	[illegible]	0.015
0.2833	-3.757	[illegible]	[illegible]	[illegible]	0.015
0.2916	-3.751	[illegible]	[illegible]	[illegible]	0.015

0.3000	-3.745	-0.698	-0.064	-0.606	0.015
0.3083	-3.735	-0.698	-0.064	-0.606	0.015
0.3166	-3.729	-0.698	-0.064	-0.606	0.015
0.3250	-3.723	-0.698	-0.064	-0.606	0.015
0.3333	-3.713	-0.698	-0.064	-0.606	0.015
0.3500	-3.700	-0.698	-0.064	-0.606	0.015
0.3666	-3.685	-0.698	-0.064	-0.606	0.015
0.3833	-3.669	-0.698	-0.064	-0.606	0.015
0.4000	-3.653	-0.698	-0.064	-0.606	0.000
0.4166	-3.637	-0.698	-0.064	-0.606	0.015
0.4333	-3.621	-0.698	-0.048	-0.606	0.015
0.4500	-3.606	-0.698	-0.064	-0.606	0.015
0.4666	-3.590	-0.698	-0.064	-0.606	0.015
0.4833	-3.574	-0.698	-0.064	-0.606	0.015
0.5000	-3.558	-0.698	-0.064	-0.606	0.015
0.5166	-3.542	-0.698	-0.064	-0.606	0.015
0.5333	-3.527	-0.698	-0.064	-0.606	0.015
0.5500	-3.511	-0.698	-0.064	-0.606	0.015
0.5666	-3.495	-0.698	-0.064	-0.606	0.015
0.5833	-3.479	-0.698	-0.048	-0.606	0.015
0.6000	-3.460	-0.698	-0.064	-0.606	0.000
0.6166	-3.445	-0.698	-0.064	-0.606	0.015
0.6333	-3.429	-0.698	-0.064	-0.606	0.015
0.6500	-3.413	-0.698	-0.064	-0.606	0.015
0.6666	-3.397	-0.698	-0.064	-0.606	0.015
0.6833	-3.381	-0.698	-0.064	-0.606	0.015
0.7000	-3.366	-0.698	-0.048	-0.606	0.015
0.7166	-3.347	-0.698	-0.064	-0.606	0.015
0.7333	-3.331	-0.698	-0.064	-0.606	0.015
0.7500	-3.315	-0.698	-0.064	-0.606	0.015
0.7666	-3.299	-0.698	-0.064	-0.606	0.015
0.7833	-3.283	-0.698	-0.048	-0.606	0.015
0.8000	-3.268	[illegible]	[illegible]	-0.606	0.015
0.8166	-3.252	[illegible]	[illegible]	-0.606	0.000
0.8333	-3.233	[illegible]	[illegible]	-0.606	0.000
0.8500	-3.217	[illegible]	[illegible]	[illegible]	0.015
0.8666	3.201	[illegible]	[illegible]	[illegible]	0.015
0.8833	-3.185	[illegible]	[illegible]	-0.606	0.015
0.9000	-3.170	[illegible]	[illegible]	[illegible]	0.000
0.9166	3.154	[illegible]	[illegible]	[illegible]	0.015
0.9333	3.138	[illegible]	[illegible]	[illegible]	0.000
0.9500	-3.122	[illegible]	[illegible]	[illegible]	0.015
0.9666	3.106	[illegible]	[illegible]	[illegible]	0.015
0.9833	3.091	[illegible]	[illegible]	[illegible]	0.015
1.0000	3.072	[illegible]	[illegible]	[illegible]	0.015
1.0500	2.895	[illegible]	[illegible]	[illegible]	0.015
1.1000	2.748	[illegible]	[illegible]	[illegible]	0.015
1.6000	-2.641	[illegible]	[illegible]	[illegible]	0.000
1.5000	2.456	[illegible]	[illegible]	[illegible]	0.015
2.0000	2.31[illegible]	[illegible]	[illegible]	[illegible]	0.000
2.5000	2.17[illegible]	[illegible]	[illegible]	[illegible]	0.000
2.6000	-2.028	[illegible]	[illegible]	[illegible]	0.015
2.8000	1.853	[illegible]	[illegible]	[illegible]	0.015
2.8000	-1.71[illegible]	[illegible]	[illegible]	[illegible]	0.015
3.0000	1.588	[illegible]	[illegible]	[illegible]	0.015
3.1000	-1.4[illegible]	[illegible]	[illegible]	[illegible]	0.015
3.4000	1.4[illegible]	[illegible]	[illegible]	[illegible]	0.015
3.6000	1.3[illegible]	[illegible]	[illegible]	[illegible]	0.015
3.8000	1.2[illegible]	[illegible]	[illegible]	[illegible]	0.015
4.0000	1.2[illegible]	[illegible]	[illegible]	[illegible]	0.000

4.2000	-1.176	-0.698	-0.048	-0.606	0.000
4.4000	-1.138	-0.698	-0.048	-0.606	0.000
4.6000	-1.100	-0.691	-0.048	-0.606	0.015
4.8000	-1.068	-0.691	-0.048	-0.606	0.015
5.0000	-1.036	-0.698	-0.048	-0.606	0.015
5.2000	-1.008	-0.691	-0.048	-0.606	0.015
5.4000	-0.983	-0.691	-0.048	-0.606	0.015
5.6000	-0.961	-0.691	-0.048	-0.606	0.000
5.8000	-0.938	-0.691	-0.048	-0.606	0.015
6.0000	-0.919	-0.691	-0.048	-0.606	0.015
6.2000	-0.904	-0.691	-0.048	-0.606	0.015
6.4000	-0.888	-0.691	-0.048	-0.606	0.015
6.6000	-0.872	-0.691	-0.048	-0.606	0.015
6.8000	-0.859	-0.691	-0.048	-0.606	0.000
7.0000	-0.847	-0.691	-0.048	-0.606	0.015
7.2000	-0.837	-0.691	-0.048	-0.606	0.015
7.4000	-0.825	-0.691	-0.048	-0.606	0.015
7.6000	-0.818	-0.691	-0.048	-0.606	0.015
7.8000	-0.809	-0.691	-0.048	-0.606	0.015
8.0000	-0.799	-0.691	-0.048	-0.606	0.015
8.2000	-0.793	-0.691	-0.048	-0.606	0.015
8.4000	-0.787	-0.691	-0.048	-0.606	0.015
8.6000	-0.780	-0.691	-0.048	-0.606	0.015
8.8000	-0.774	-0.691	-0.048	-0.606	0.015
9.0000	-0.771	-0.691	-0.048	-0.606	0.015
9.2000	-0.768	-0.691	-0.048	-0.606	0.015
9.4000	-0.761	-0.691	-0.048	-0.606	0.015
9.6000	-0.758	-0.691	-0.048	-0.606	0.015
9.8000	-0.755	-0.691	-0.048	-0.606	0.015
10.0000	-0.752	-0.691	-0.048	-0.622	0.000
12.0000	-0.736	[illegible]	[illegible]	-0.638	-0.015
14.0000	-0.730	[illegible]	[illegible]	-0.638	-0.015
16.0000	-0.723	[illegible]	[illegible]	-0.638	-0.015
18.0000	-0.720	[illegible]	[illegible]	[illegible]	-0.015
20.0000	-0.717	[illegible]	[illegible]	[illegible]	-0.015
22.0000	-0.714	[illegible]	[illegible]	[illegible]	-0.015
24.0000	-0.711	[illegible]	[illegible]	[illegible]	-0.015
26.0000	-0.711	[illegible]	[illegible]	[illegible]	0.000
28.0000	-0.708	[illegible]		[illegible]	-0.015
30.0000	-0.705	[illegible]		[illegible]	-0.015
32.0000	-0.705	[illegible]		[illegible]	-0.015
34.0000	-0.705	[illegible]		[illegible]	-0.015
36.0000	-0.705	[illegible]		[illegible]	-0.015
38.0000	-0.701	[illegible]		[illegible]	-0.015
40.0000	-0.696	[illegible]			-0.015
42.0000	-0.696	[illegible]			-0.015
44.0000	-0.695	[illegible]			-0.015
46.0000	-0.695	[illegible]			-0.015
48.0000	-0.692	[illegible]			-0.015
50.0000	-0.691	[illegible]			-0.015
52.0000	-0.691	[illegible]		[illegible]	-0.015
54.0000	-0.691	[illegible]		[illegible]	-0.015
56.0000	-0.690	[illegible]		[illegible]	-0.015
58.0000	-0.688	[illegible]			-0.015
60.0000	-0.688	[illegible]			-0.015
62.0000	-0.688	[illegible]		[illegible]	-0.015
64.0000	-0.691	[illegible]		[illegible]	-0.015
66.0000	-0.691				-0.015
68.0000	-0.679			[illegible]	0.015
70.000	-0.679			[illegible]	-0.015

72.0000	-0.679	-0.653	-0.080	-0.622	-0.015
74.0000	-0.676	-0.653	-0.080	-0.622	-0.015
76.0000	-0.676	-0.653	-0.080	-0.622	-0.015
78.0000	-0.676	-0.653	-0.096	-0.622	-0.015
80.0000	-0.676	-0.647	-0.096	-0.622	-0.015
82.0000	-0.673	-0.653	-0.096	-0.622	-0.015
84.0000	-0.670	-0.647	-0.096	-0.622	-0.015
86.0000	-0.667	-0.647	-0.096	-0.622	-0.015
88.0000	-0.670	-0.647	-0.096	-0.622	-0.015
90.0000	-0.667	-0.647	-0.080	-0.622	-0.015
92.0000	-0.667	-0.647	-0.080	-0.622	-0.015
94.0000	-0.667	-0.647	-0.080	-0.622	-0.015
96.0000	-0.667	-0.647	-0.080	-0.622	-0.015
98.0000	-0.663	-0.641	-0.080	-0.622	-0.015
100.000	-0.663	-0.641	-0.080	-0.622	-0.015
120.000	-0.657	-0.634	-0.080	-0.622	-0.015
140.000	-0.651	-0.628	-0.080	-0.606	-0.015
160.000	-0.641	-0.615	-0.080	-0.606	-0.015
180.000	-0.635	-0.609	-0.080	-0.590	-0.015
200.000	-0.629	-0.603	-0.096	-0.590	-0.015
220.000	-0.616	-0.583	[illegible]	-0.558	0.015
240.000	-0.613	-0.583	[illegible]	-0.558	0.000
260.000	-0.610	-0.583	[illegible]	-0.574	-0.015
280.000	-0.603	-0.577	[illegible]	-0.574	-0.015
300.000	-0.597	[illegible]	-0.111	-0.558	-0.015
320.000	-0.597	[illegible]	-0.111	-0.558	-0.015
340.000	-0.594	[illegible]	-0.111	-0.558	-0.015
360.000	-0.581	[illegible]	-0.111	-0.558	-0.015
380.000	-0.581	[illegible]	[illegible]	[illegible]	-0.015
400.000	-0.575	[illegible]	[illegible]	[illegible]	-0.015
420.000	-0.575	[illegible]	[illegible]	[illegible]	-0.015
440.000	-0.569	[illegible]	[illegible]	[illegible]	-0.015
460.000	-0.565	[illegible]	[illegible]	[illegible]	-0.015
480.000	-0.559	[illegible]	[illegible]	[illegible]	-0.015
500.000	0.553	[illegible]	[illegible]	[illegible]	-0.015
520.000	-0.550	[illegible]	[illegible]	[illegible]	-0.015
540.000	-0.546	[illegible]	[illegible]	[illegible]	-0.015
560.000	-0.543	[illegible]	[illegible]	[illegible]	-0.015
580.000	-0.543	[illegible]	[illegible]	[illegible]	0.015
600.000	-0.540	[illegible]	[illegible]	[illegible]	-0.015
620.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
640.000	-0.534	[illegible]	[illegible]	[illegible]	-0.015
660.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
680.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
700.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
720.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
740.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
760.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
780.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
800.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
820.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
840.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
860.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
880.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
900.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
920.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
940.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
960.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
980.000	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1000.00	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

1050.00	-0.477	-0.450	-0.208	-0.430	0.000
1100.00	-0.471	-0.444	-0.208	-0.430	0.000
1150.00	-0.464	-0.431	-0.208	-0.430	0.000
1200.00	-0.458	-0.431	-0.224	-0.430	0.000
1250.00	-0.455	-0.425	-0.240	-0.414	-0.015
1300.00	-0.455	-0.418	-0.240	-0.414	-0.015
1350.00	-0.448	-0.418	-0.240	-0.414	-0.015
1400.00	-0.439	-0.406	-0.224	-0.398	0.000
1450.00	-0.436	-0.399	-0.224	-0.398	-0.015
1500.00	-0.429	-0.399	-0.224	-0.398	0.000
1550.00	-0.423	-0.393	-0.224	-0.382	-0.015
1600.00	-0.417	-0.387	-0.208	-0.382	-0.015

END

SE1000C
Environmental Logger
05/02 14:16

Unit# 00143 Test 0

Setups:	INPUT 1
Type	Level (F)
Mode	Surface
I.D.	00018
Reference	0.000
Linearity	0.000
Scale factor	9.990
Offset	0.040
Delay mSEC	50.000

Step 0 04/25 15:00:01

Elapsed Time	INPUT 1
0.0000	-0.006
30.0000	0.018
60.0000	0.012
90.0000	0.006
120.000	-0.009
150.000	-0.009
180.000	-0.022
210.000	-0.012
240.000	-0.018
270.000	-0.009
300.000	-0.009
330.000	-0.003
360.000	-0.012
390.000	-0.022
420.000	-0.025
450.000	[illegible]
480.000	-0.015
510.000	[illegible]
540.000	[illegible]
570.000	[illegible]
600.000	[illegible]
630.000	[illegible]
660.000	0.015
690.000	[illegible]
720.000	[illegible]
750.000	[illegible]
780.000	[illegible]
810.000	[illegible]
840.000	[illegible]
870.000	[illegible]
900.000	[illegible]
930.000	[illegible]
960.000	[illegible]
990.000	[illegible]
1020.000	[illegible]
1050.000	[illegible]
1080.000	[illegible]

Trend Data
Pump Test @ 2LPW15

A: NSBPT.TRN - Header file
A: NSBTRN.NUM - Numeric file

Rec Data

A: NSBPT.REC - Header File
A: NSBREC.NUM - Numeric File

DD Data

A: NSBPT.DD - Header File
A: NSBDD.NUM - Numeric

4-25 MON (15:00) > 24 HRS
4-26 TUE > 24 HRS
4-27 WED
4-28 THURS (10:00)

[illegible] 20 [illegible]

1110.00	0.015
1140.00	0.018
1170.00	0.022
1200.00	0.028
1230.00	0.034
1260.00	0.034
1290.00	0.037
1320.00	0.034
1350.00	0.053
1380.00	0.056
1410.00	0.053
1440.00	0.063
1470.00	0.085
1500.00	0.078
1530.00	0.104
1560.00	0.107
1590.00	0.100
1620.00	0.091
1650.00	0.085
1680.00	0.082
1710.00	0.082
1740.00	0.072
1770.00	0.063
1800.00	0.069
1830.00	0.044
1860.00	0.047
1890.00	0.063
1920.00	0.050
1950.00	0.056
1980.00	0.069
2010.00	0.047
2040.00	0.059
2070.00	0.069
2100.00	0.075
2130.00	0.085
2160.00	0.100
2190.00	0.100
2220.00	0.107
2250.00	0.107
2280.00	0.113
2310.00	0.116
2340.00	0.113
2370.00	[illegible]
2400.00	[illegible]
2430.00	[illegible]
2460.00	[illegible]
2490.00	[illegible]
2520.00	[illegible]
2550.00	[illegible]
2580.00	[illegible]
2610.00	[illegible]
2640.00	[illegible]
2670.00	[illegible]
2700.00	[illegible]
2730.00	[illegible]
2760.00	[illegible]
2790.00	[illegible]
2820.00	[illegible]
2850.00	[illegible]
2880.00	[illegible]

2910.00	0.126
2940.00	0.148
2970.00	0.173
3000.00	0.163
3030.00	0.160
3060.00	0.138
3090.00	0.094
3120.00	0.119
3150.00	0.126
3180.00	0.113
3210.00	0.122
3240.00	0.094
3270.00	0.091
3300.00	0.075
3330.00	0.066
3360.00	0.069
3390.00	0.078
3420.00	0.082
3450.00	0.059
3480.00	0.050
3510.00	0.044
3540.00	0.040
3570.00	0.050
3600.00	0.056
3630.00	0.037
3660.00	0.022
3690.00	0.025
3720.00	-0.003
3750.00	-0.003
3780.00	-0.009
3810.00	-0.044
3840.00	-0.028
3870.00	-0.031
3900.00	-0.031
3930.00	-0.050
3960.00	-0.044
4000.00	-0.063
4020.00	-0.056
4050.00	-0.063
4080.00	-0.050
4110.00	-0.050
4140.00	-0.050
4170.00	-0.037
4200.00	-0.044
4230.00	-0.044
4260.00	-0.037
4290.00	-0.025
4320.00	-0.034
4350.00	-0.028
4380.00	-0.025
4410.00	-0.034
4440.00	-0.05
4470.00	-0.07
4500.00	-0.031
4530.00	-0.04
4560.00	-0.03
4590.00	-0.044
4620.00	-0.050
4650.00	-0.051
4680.00	-0.05

4710.00	-0.050
4740.00	-0.053
4770.00	-0.044
4800.00	-0.050
4830.00	-0.053
4860.00	-0.050
4890.00	-0.056
4920.00	-0.056
4950.00	-0.044
4980.00	-0.028
5010.00	-0.025
5040.00	-0.018
5070.00	-0.009
5100.00	-0.012
5130.00	-0.015
5160.00	-0.006
5190.00	-0.006
5220.00	0.003
5250.00	-0.015
5280.00	-0.009
5310.00	-0.009
5340.00	-0.006
5370.00	-0.006
5400.00	-0.003
5430.00	-0.003
5460.00	0.000
5490.00	0.009
5520.00	0.009
5550.00	0.012
5580.00	0.009
5610.00	0.009
5640.00	0.022
5670.00	0.003
5700.00	0.006
5730.00	0.006
5760.00	0.015
5790.00	0.031
5820.00	0.031
5850.00	0.040
5880.00	0.040
5910.00	0.031
5940.00	0.031
5970.00	[illegible]
6000.00	0.041
6030.00	0.031
6060.00	0.047
6090.00	0.047
6120.00	0.063
6150.00	0.063
6180.00	0.072
6210.00	[illegible]
6240.00	[illegible]
6270.00	[illegible]
6300.00	[illegible]
6330.00	[illegible]
6360.00	[illegible]
6390.00	[illegible]
6420.00	[illegible]
6450.00	[illegible]
6480.00	[illegible]

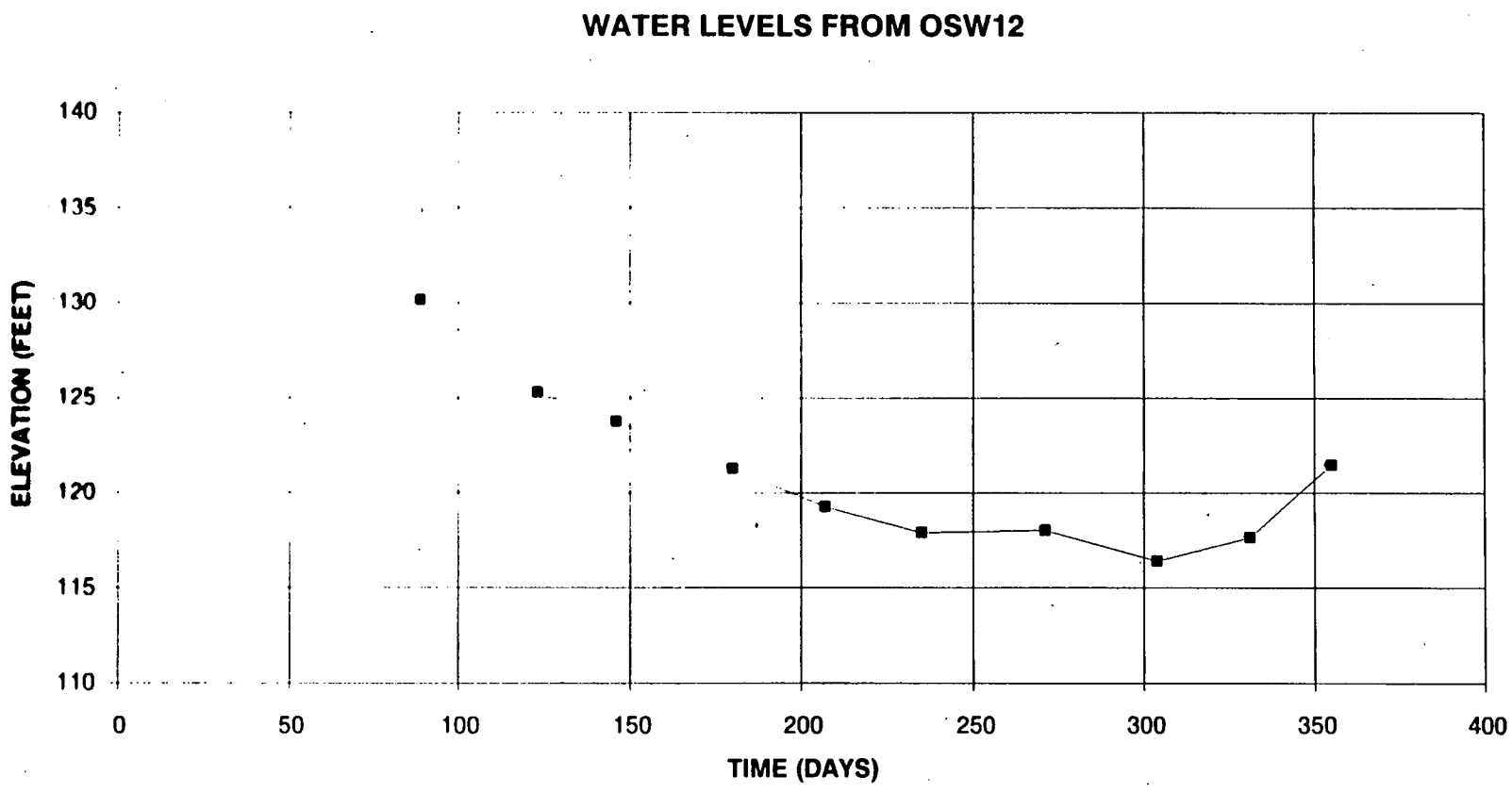
6510.00	0.122
6540.00	0.122
6570.00	0.138
6600.00	0.141
6630.00	0.138
6660.00	0.129
6690.00	0.113
6720.00	0.094
6750.00	0.078
6780.00	0.075
6810.00	0.082
6840.00	0.088
6870.00	0.085
6900.00	0.088
6930.00	0.094
6960.00	0.072
6990.00	0.063
7020.00	0.078
7050.00	0.078
7080.00	0.091
7110.00	0.069
7140.00	0.069
7170.00	0.069
7200.00	0.075
7230.00	0.059
7260.00	0.066
7290.00	0.066
7320.00	0.066
7350.00	0.063
7380.00	0.059
7410.00	0.059
7440.00	0.063
7470.00	0.059
7500.00	0.053
7530.00	0.053
7560.00	0.056
7590.00	0.056
7620.00	0.063
7650.00	[illegible]
7680.00	[illegible]
7710.00	.050
7740.00	0.063
7770.00	[illegible]
7800.00	[illegible]
7830.00	[illegible]
7860.00	.104
7890.00	.113
7920.00	[illegible]
7950.00	0.144
7980.00	.113
8010.00	.115
8040.00	.112
8070.00	.141
8100.00	.113
8130.00	.112
8160.00	.111
8190.00	[illegible]
8220.00	.121
8250.00	.11
8280.00	.111
8310.00	.104

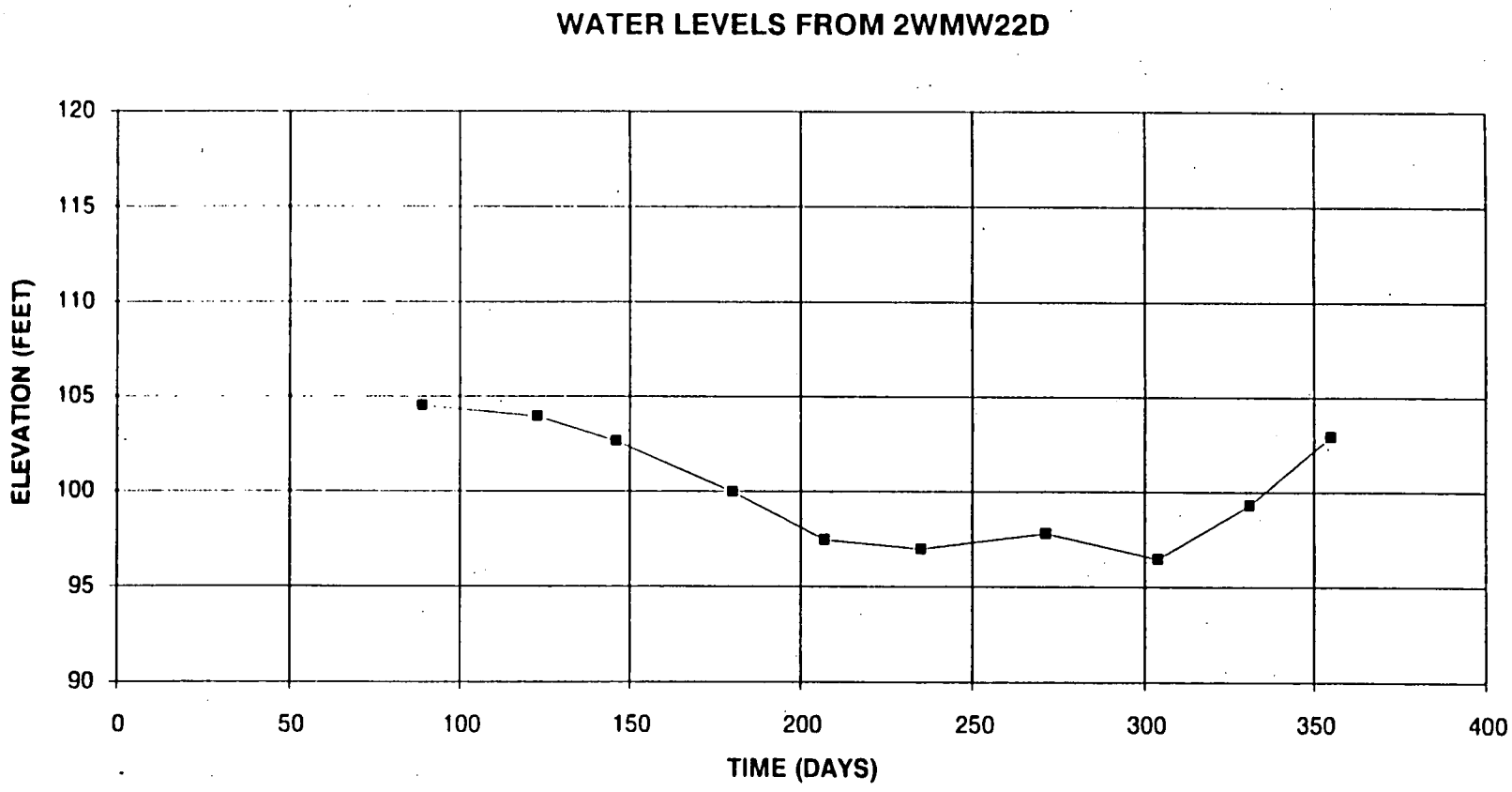
8310.00	0.094
8340.00	0.110
8370.00	0.104
8400.00	0.097
8430.00	0.145
8460.00	0.119
8490.00	0.116
8520.00	0.129
8550.00	0.116
8580.00	0.104
8610.00	0.122
8640.00	0.116
8670.00	0.116
8700.00	0.107
8730.00	0.097
8760.00	0.082
8790.00	0.075
8820.00	0.075
8850.00	0.053
8880.00	0.078
8910.00	0.063
8940.00	0.028
8970.00	0.015
9000.00	0.012
9030.00	0.015
9060.00	0.006
9090.00	0.000
9120.00	-0.015
9150.00	-0.025
9180.00	-0.028
9210.00	-0.028
9240.00	-0.034
9270.00	-0.028
9300.00	-0.018
9330.00	-0.009
9360.00	-0.028
9390.00	-0.037
9420.00	-0.037
9450.00	-0.047
9480.00	[illegible]
9510.00	[illegible]
9540.00	[illegible]
9570.00	[illegible]
9600.00	[illegible]
9630.00	[illegible]
9660.00	[illegible]
9690.00	[illegible]
9720.00	[illegible]
9750.00	[illegible]
9780.00	[illegible]
9810.00	[illegible]
9840.00	[illegible]
9870.00	[illegible]
9900.00	[illegible]
9930.00	[illegible]
9960.00	[illegible]

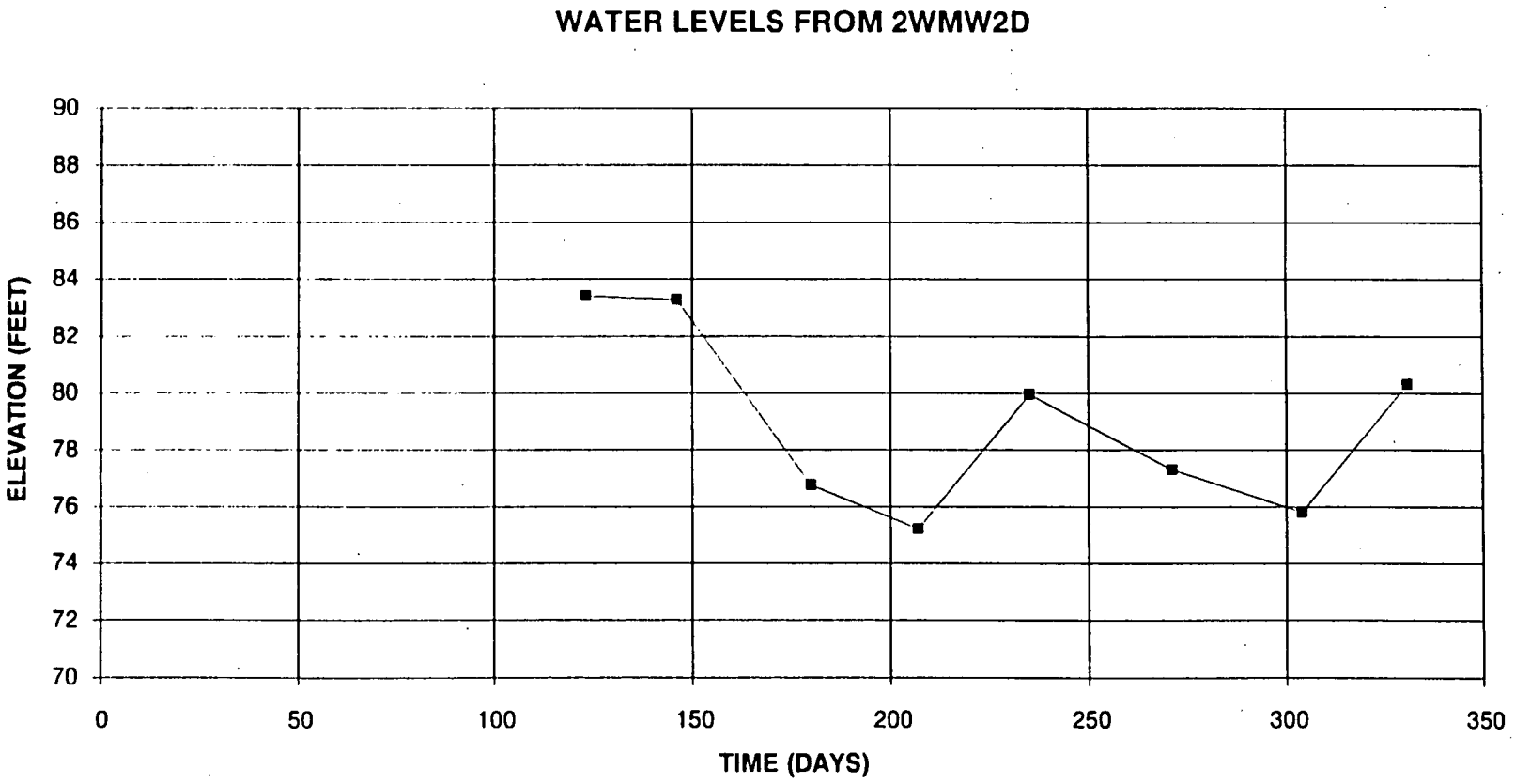
END

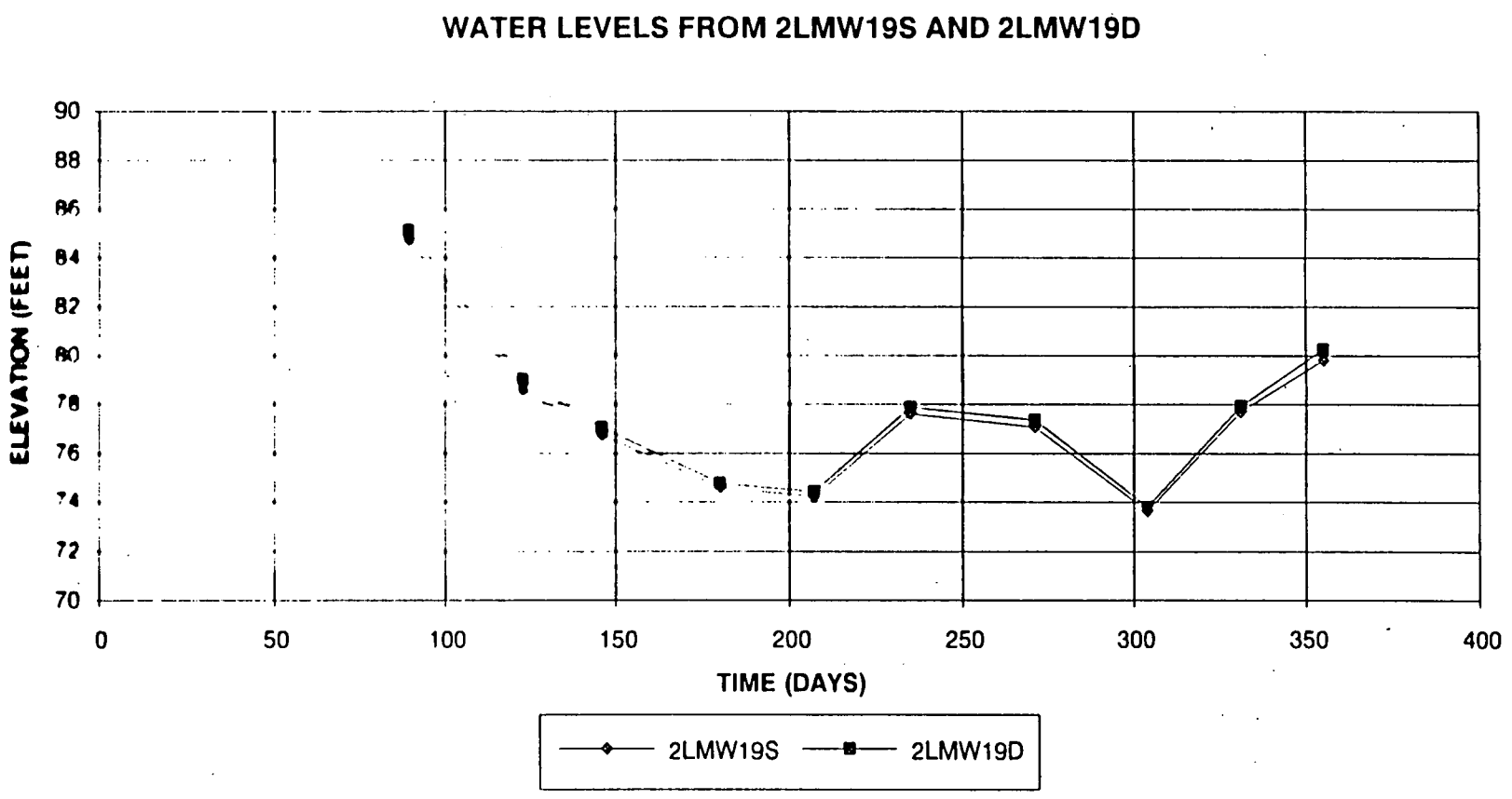
APPENDIX C.3

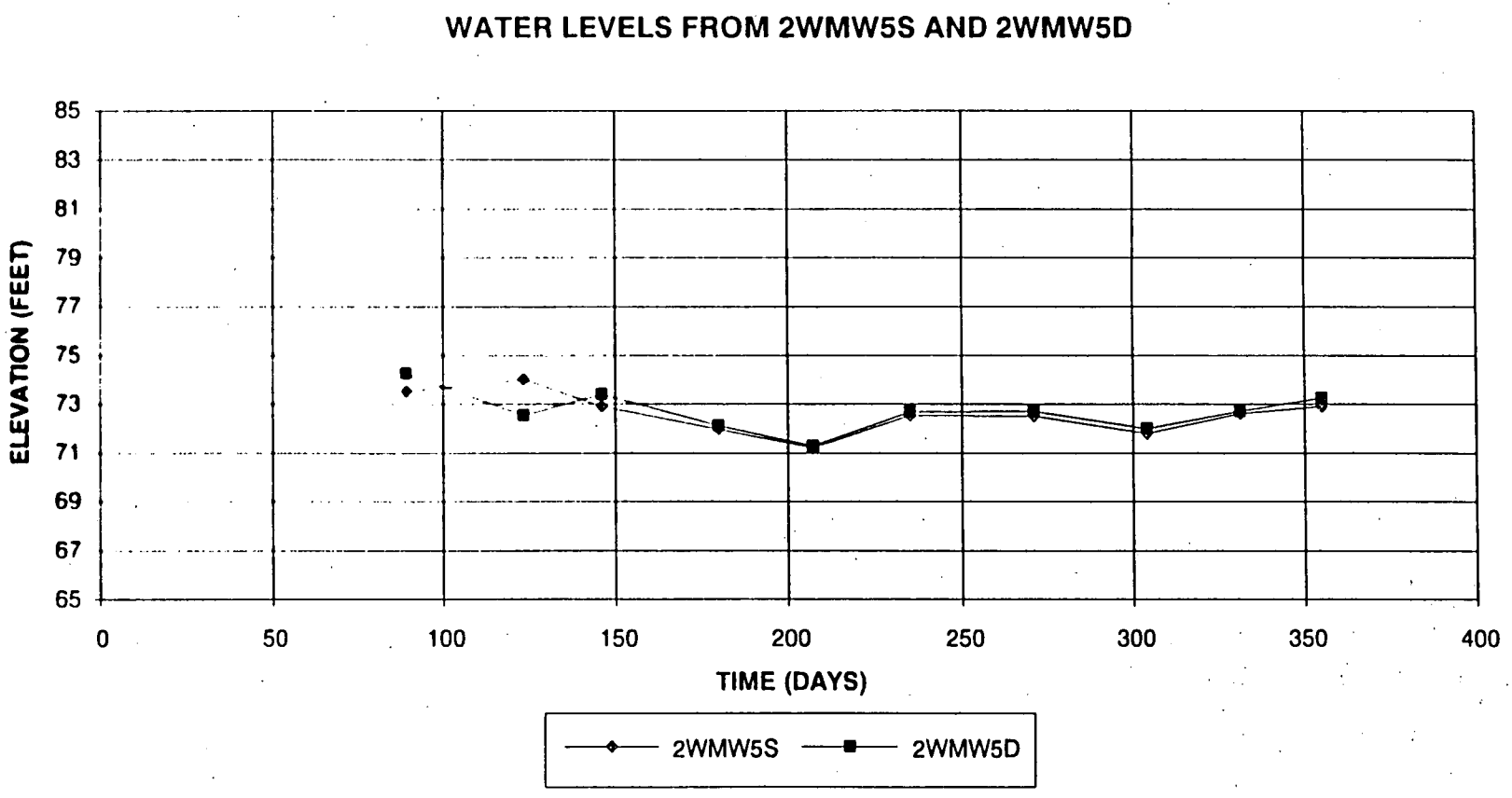
MONTHLY HYDROGRAPHS

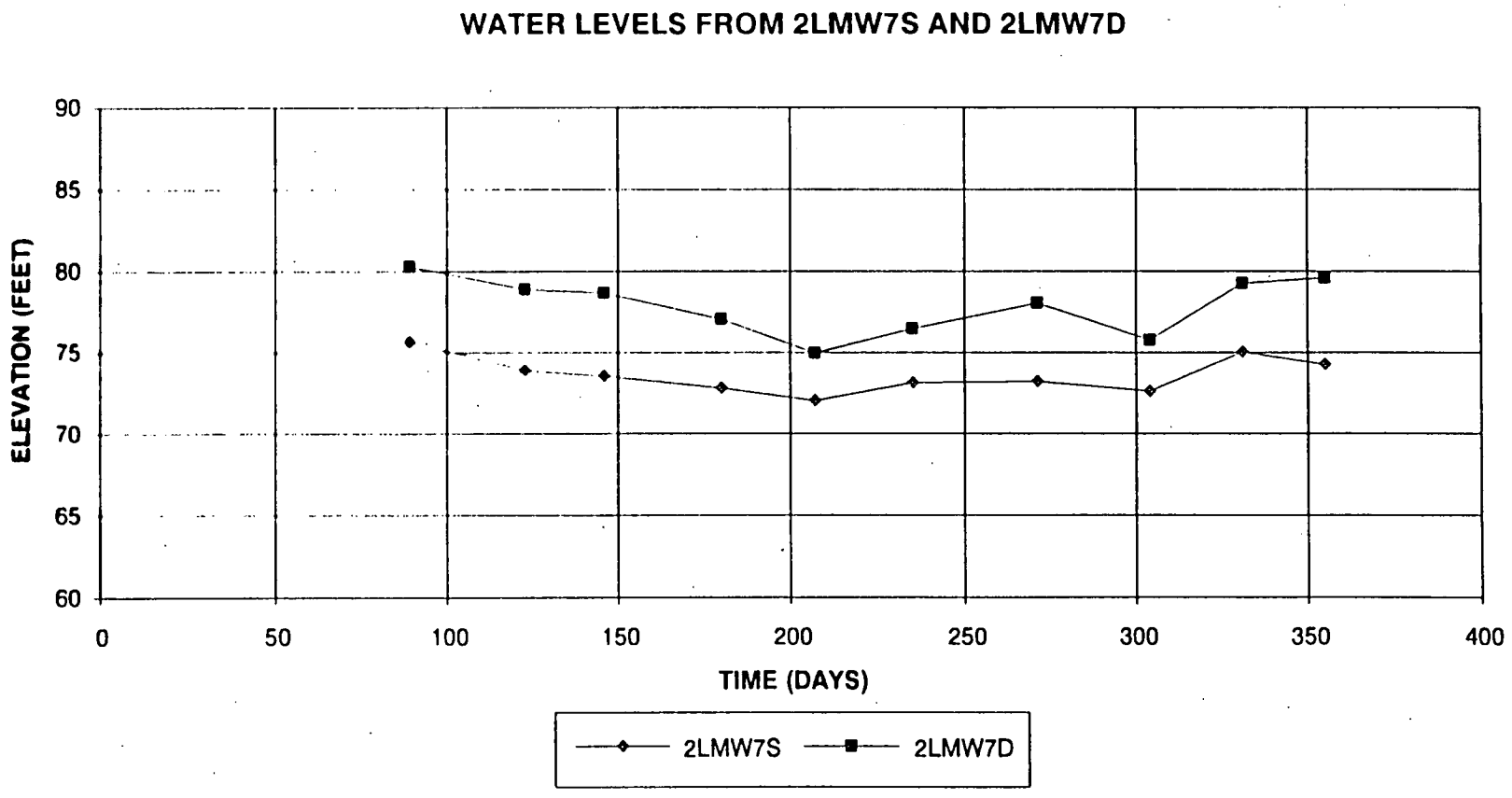

WATER LEVELS FROM OSW12
ELEVATION (FEET)
140
135
130
125
120
115
110
0
50
100
150
200
250
300
350
400
TIME (DAYS)

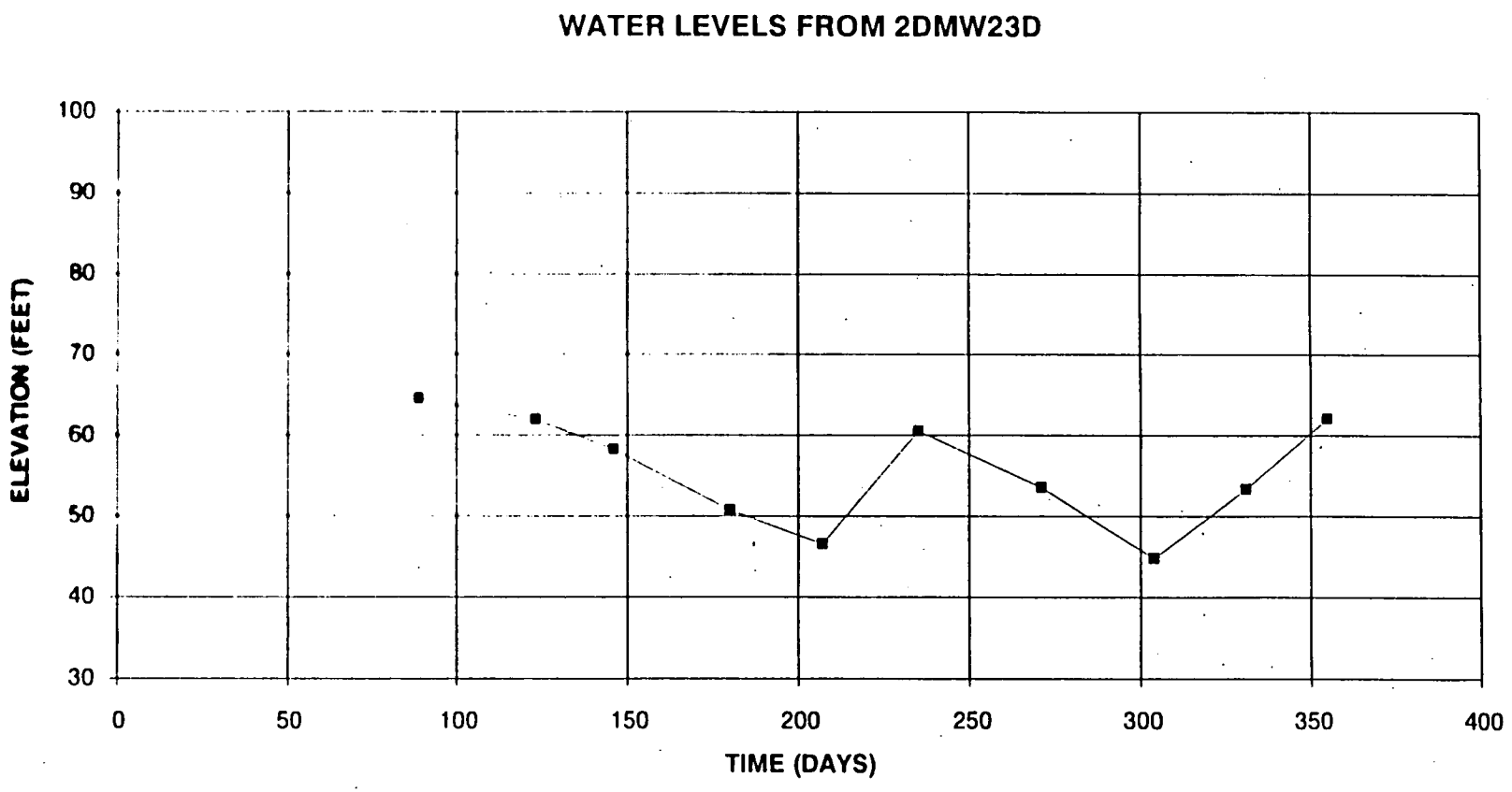

WATER LEVELS FROM 2WMW22D
ELEVATION (FEET)
120
115
110
105
100
95
90
0
50
100
150
200
250
300
350
400
TIME (DAYS)

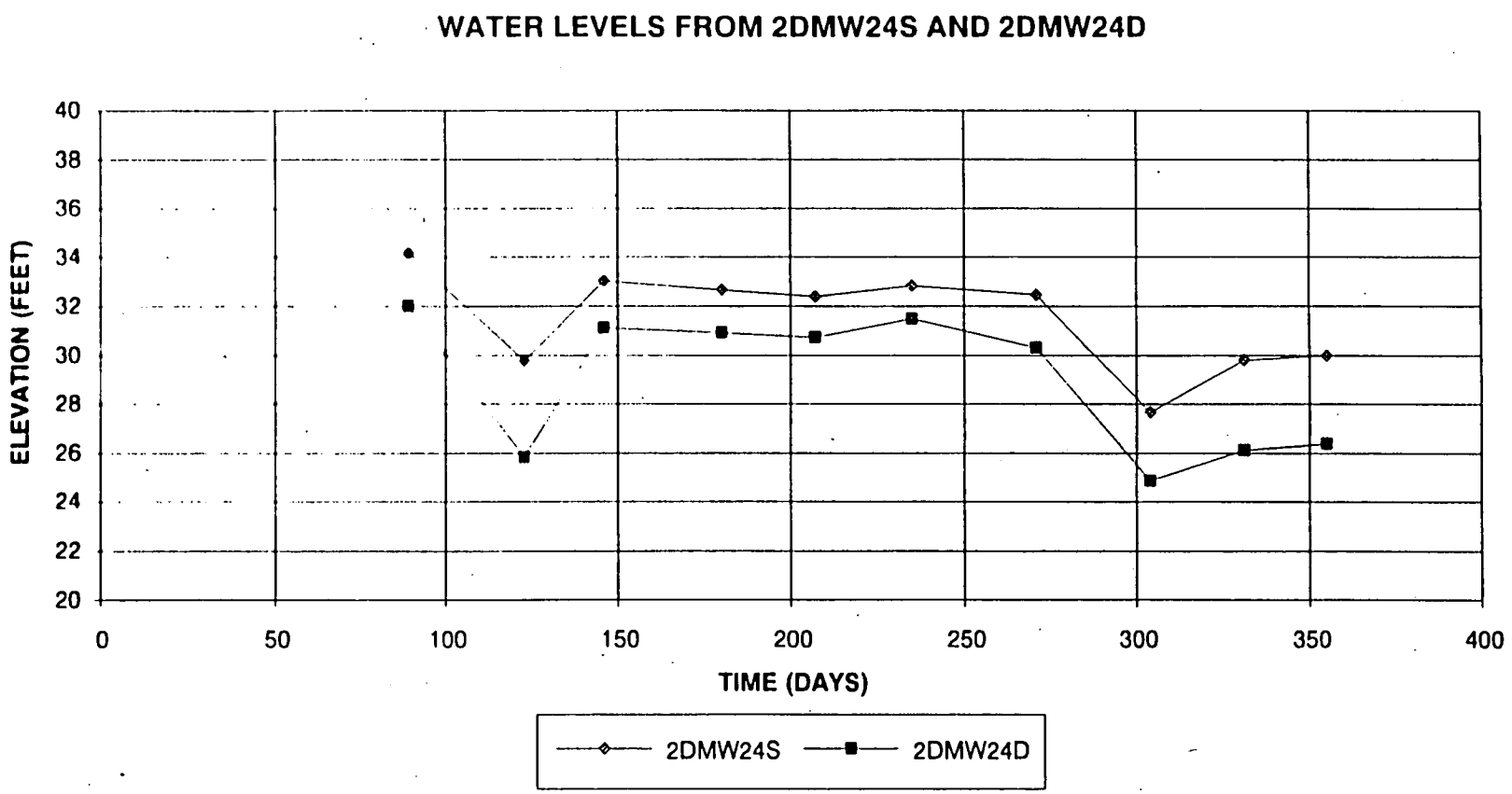

WATER LEVELS FROM 2WMW2D
ELEVATION (FEET)
90
88
86
84
82
80
78
76
74
72
70
0
50
100
150
200
250
300
350
TIME (DAYS)

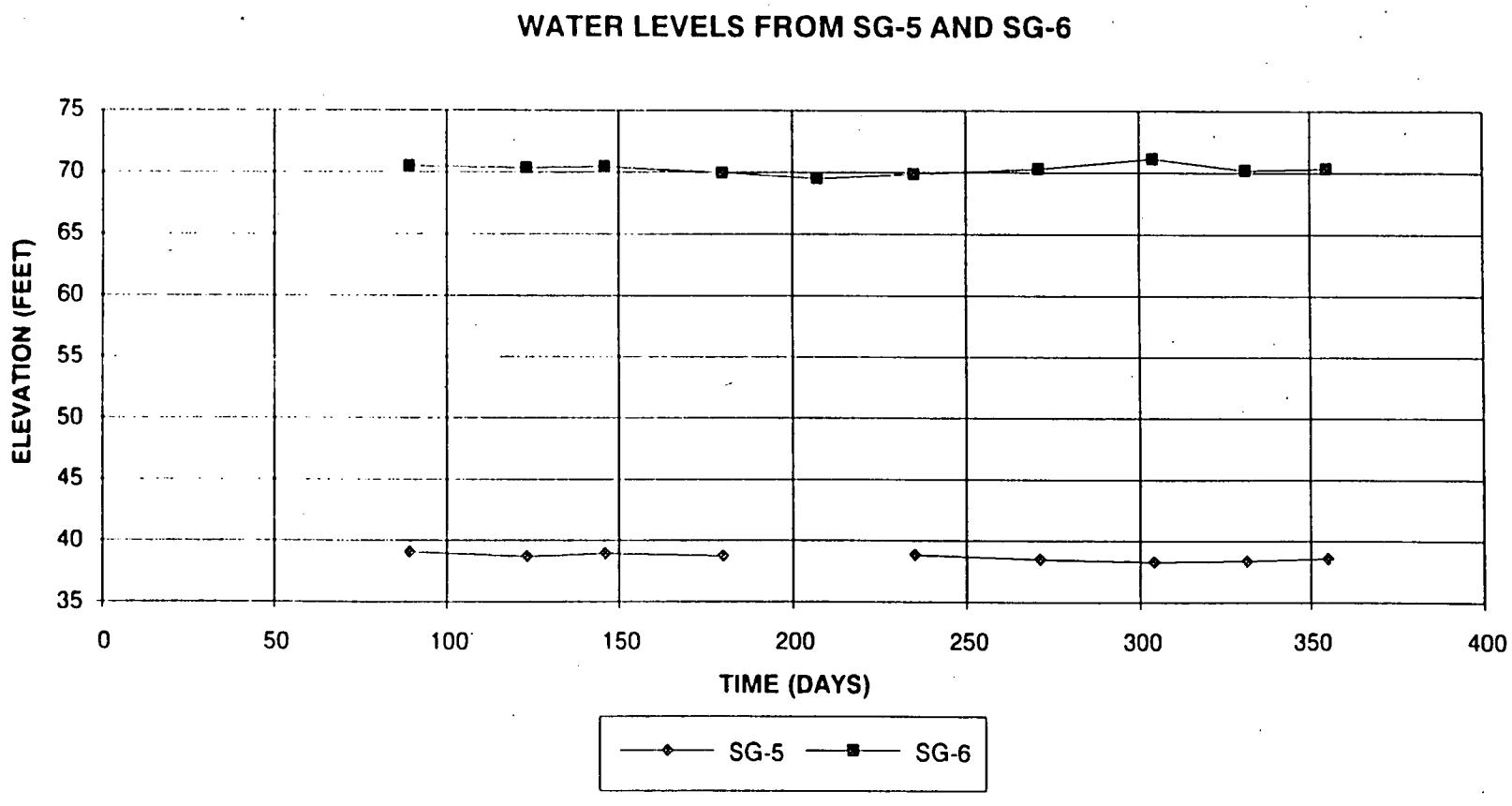

WATER LEVELS FROM 2LMW19S AND 2LMW19D
ELEVATION (FEET)
90
88
86
84
82
80
78
76
74
72
70
0
50
100
150
200
250
300
350
400
TIME (DAYS)
2LMW19S
2LMW19D


WATER LEVELS FROM 2WMW5S AND 2WMW5D
ELEVATION (FEET)
85
83
81
79
77
75
73
71
69
67
65
0
50
100
150
200
250
300
350
400
TIME (DAYS)
2WMW5S
2WMW5D

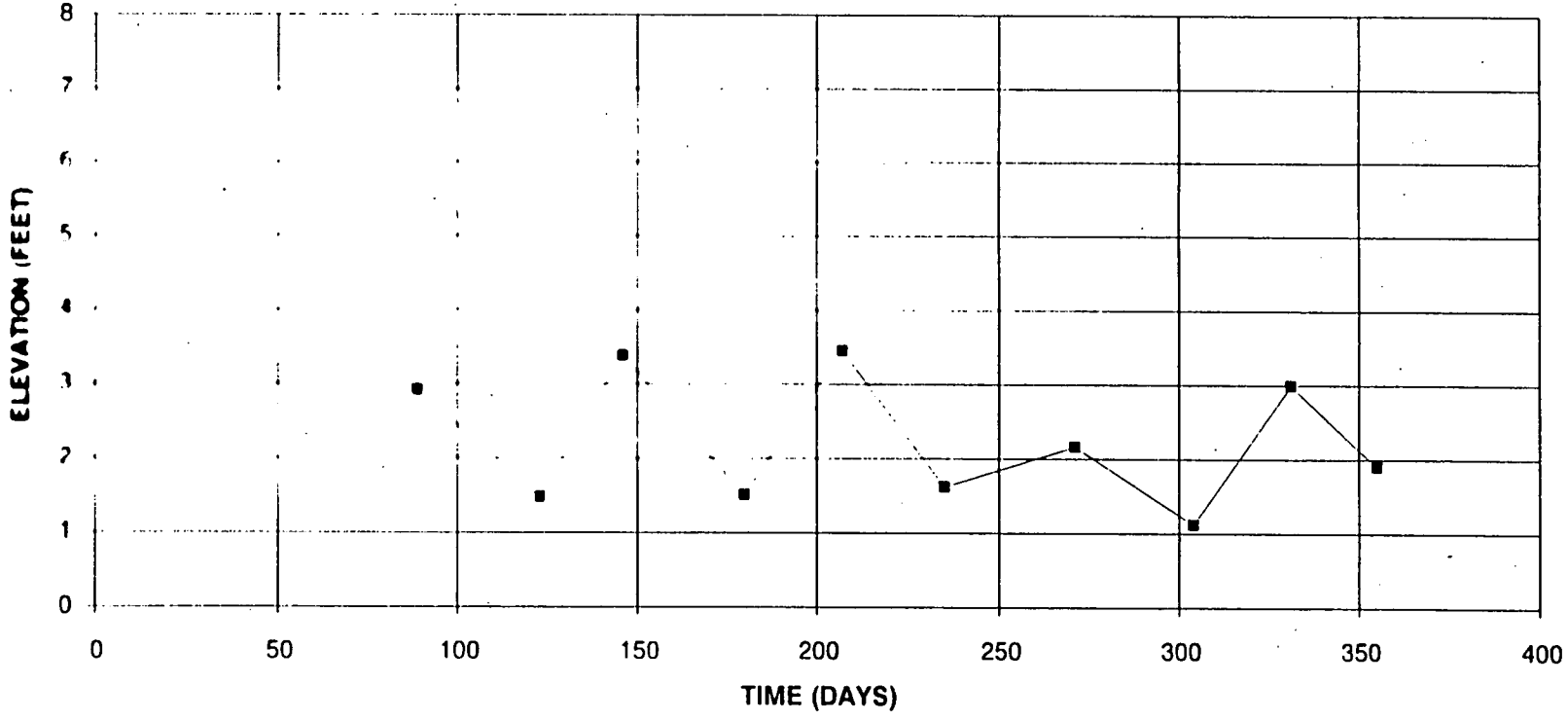

WATER LEVELS FROM 2LMW7S AND 2LMW7D
ELEVATION (FEET)
90
85
80
75
70
65
60
0
50
100
150
200
250
300
350
400
TIME (DAYS)
2LMW7S
2LMW7D

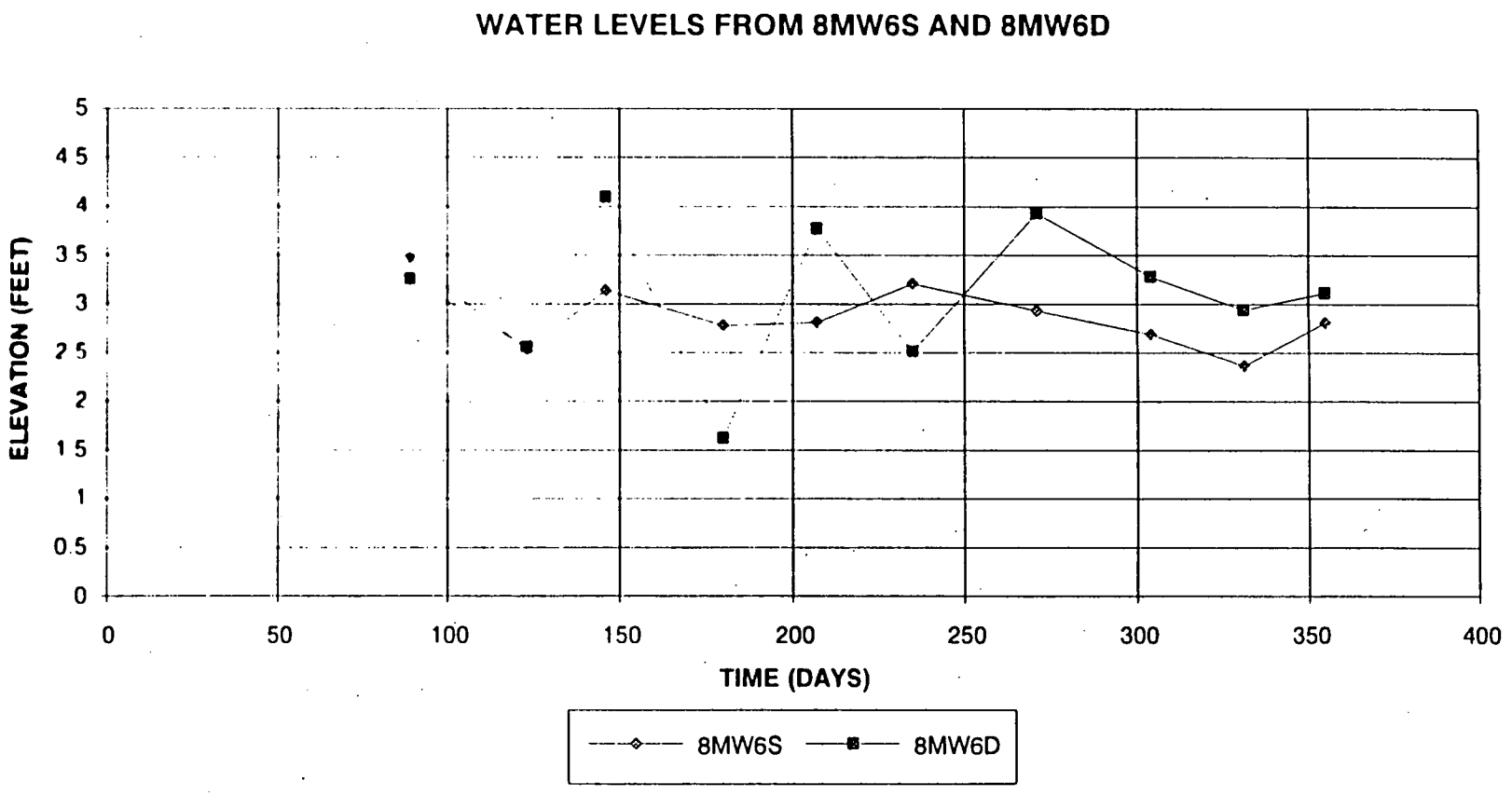

WATER LEVELS FROM 2DMW23D
ELEVATION (FEET)
100
90
80
70
60
50
40
30
0
50
100
150
200
250
300
350
400
TIME (DAYS)

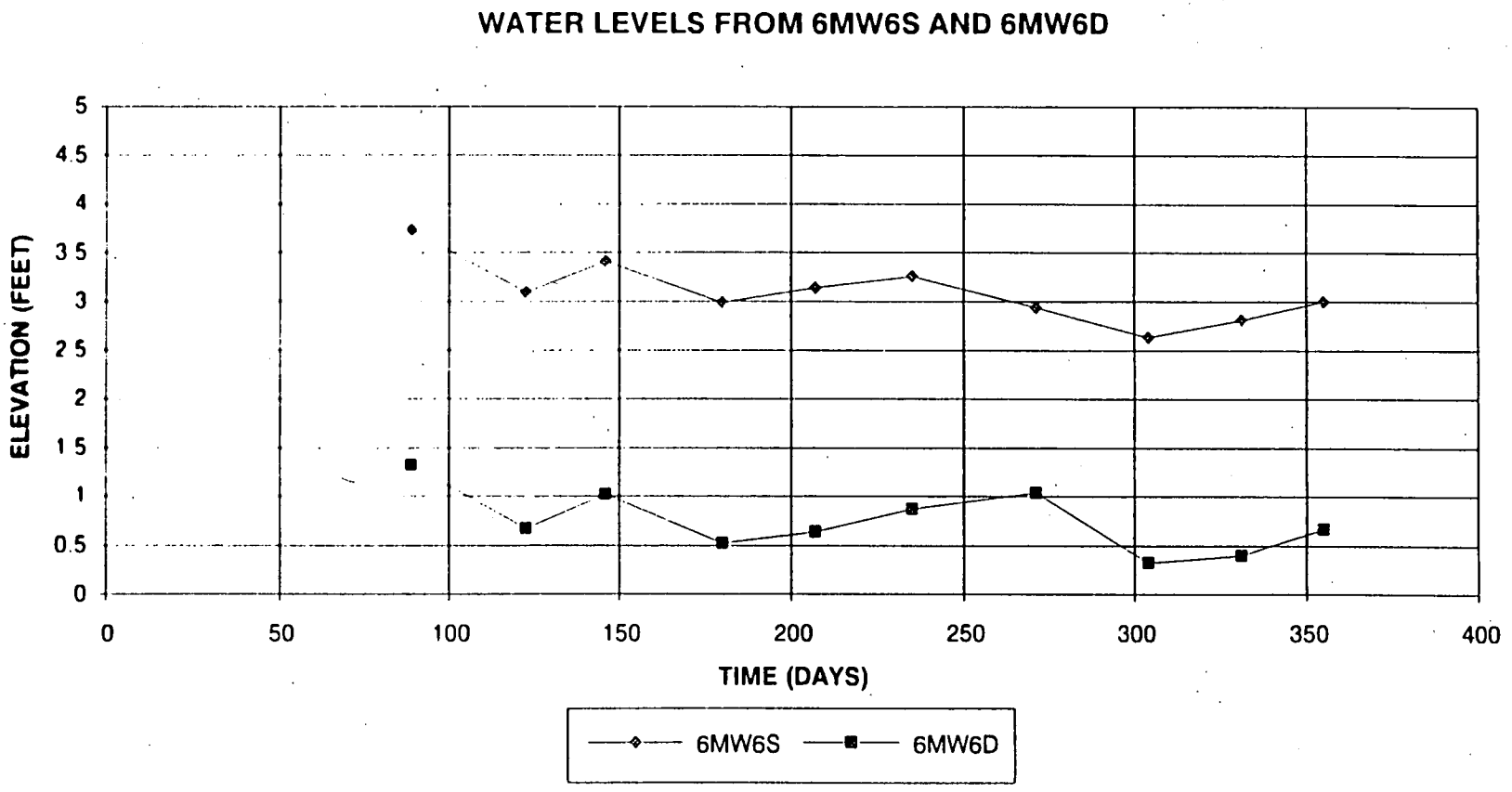

WATER LEVELS FROM 2DMW24S AND 2DMW24D
ELEVATION (FEET)
40
38
36
34
32
30
28
26
24
22
20
0
50
100
150
200
250
300
350
400
TIME (DAYS)
2DMW24S
2DMW24D


WATER LEVELS FROM SG-5 AND SG-6
ELEVATION (FEET)
75
70
65
60
55
50
45
40
35
0
50
100
150
200
250
300
350
400
TIME (DAYS)
SG-5
SG-6

WATER LEVELS FROM 13MW8




WATER LEVELS FROM 8MW6S AND 8MW6D
ELEVATION (FEET)
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
0
50
100
150
200
250
300
350
400
TIME (DAYS)
8MW6S
8MW6D

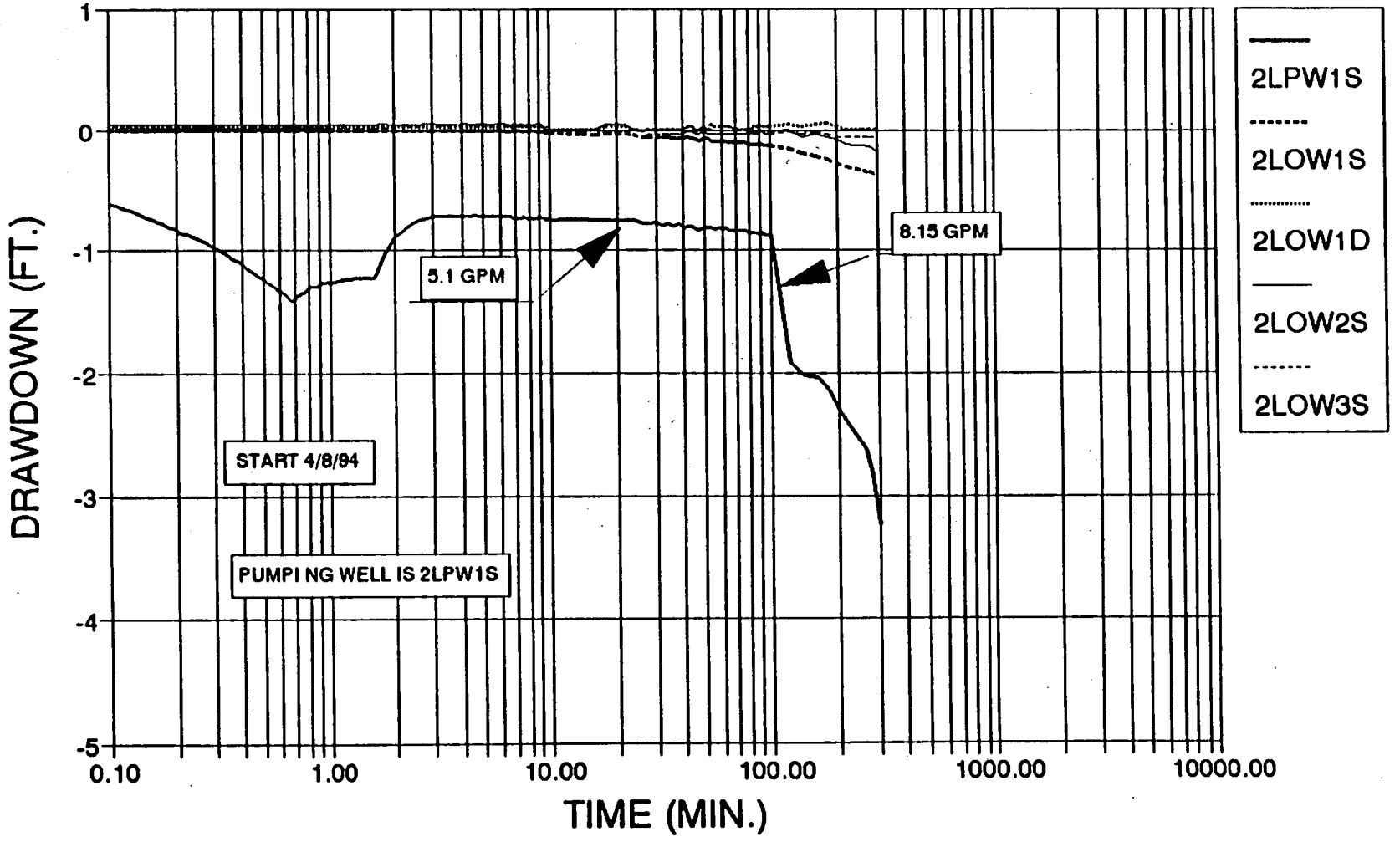

WATER LEVELS FROM 6MW6S AND 6MW6D
ELEVATION (FEET)
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
0
50
100
150
200
250
300
350
400
TIME (DAYS)
6MW6S
6MW6D

APPENDIX C.4

STEP DRAWDOWN TESTS

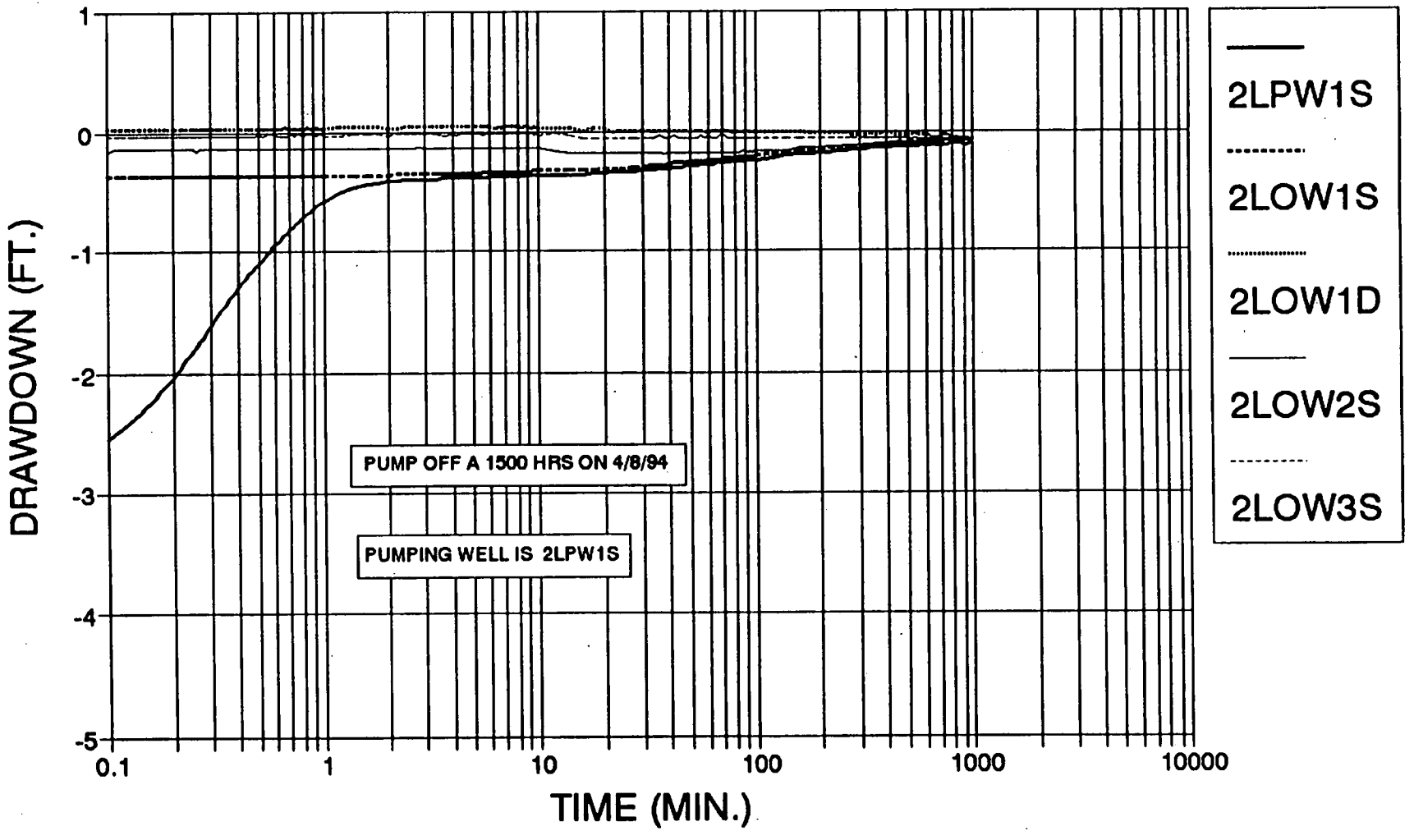
NSB NLON

STEP DRAWDOWN TEST

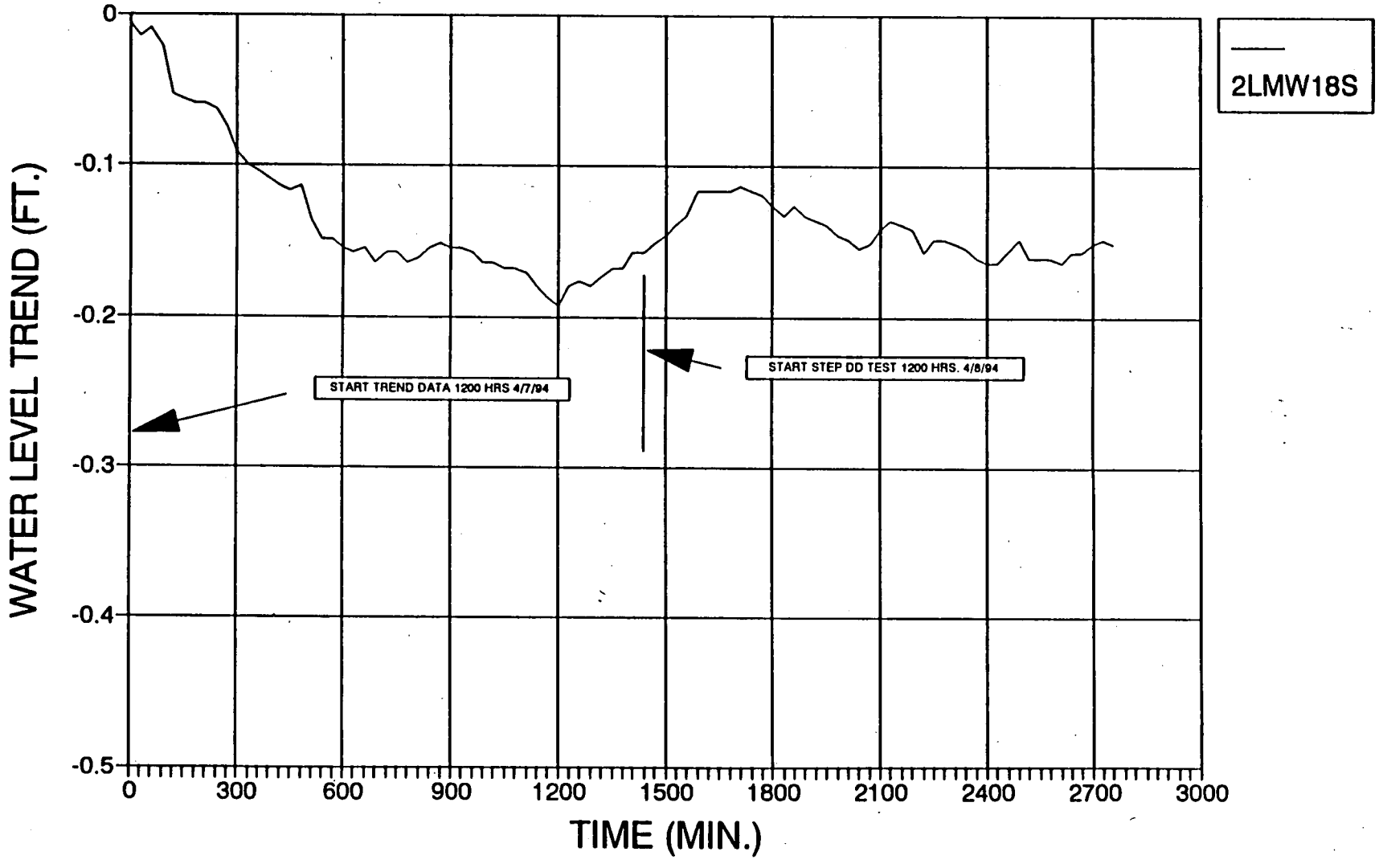


NSB NLON

STEP DRAWDOWN TEST RECOVERY



NSB NLON
TREND DATA



HEADER FILE
A: PWIS.DD

NUM.FILE DD
A: PWIS.NUM

85000
Environmental Lnstrm

04/08 17:08

Unit# 430 Test 0

Return:	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5
Type	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)
Mode	Surface	Surface	Surface	Surface	Surface
I.D.	2LPW1S	2LOW1S	2LOW1D	2LOW2S	2LOW3S
Reference	0.000	0.000	0.000	0.000	0.000
SG	1.000	1.000	1.000	1.000	1.000
Linearity	0.027	0.122	0.114	0.113	0.073
Scale factor	10.020	20.114	50.764	50.617	50.316
Offset	-0.012	0.002	-0.025	-0.142	-0.104
Delay mSEC	50.000	50.000	50.000	50.000	50.000

Step 0 04/08 12:00:00

Elapsed Time	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5
0.0000 5.1	-0.079	0.006	0.032	0.047	0.000
0.0083 GPM	-0.167	0.006	0.032	0.047	-0.015
0.0166	-0.259	0.006	0.032	0.047	-0.015
0.0250	-0.341	0.006	0.032	0.047	-0.015
0.0333	-0.414	0.006	0.032	0.047	-0.015
0.0416	-0.464	0.006	0.032	0.047	0.000
0.0500	-0.480	0.006	0.032	0.047	-0.015
0.0583	-0.509	0.006	0.032	0.047	-0.015
0.0666	-0.537	0.006	0.032	0.047	-0.015
0.0750	-0.565	0.006	0.032	0.047	-0.015
0.0833	-0.584	0.006	0.032	0.047	-0.015
0.0916	-0.600	0.006	0.032	0.047	-0.015
0.1000	-0.616	0.006	0.032	0.047	-0.015
0.1083	-0.635	0.006	0.032	0.047	-0.015
0.1166	-0.654	0.006	0.032	0.047	-0.015
0.1250	-0.670	0.006	0.032	0.047	-0.015
0.1333	-0.692	0.006	0.032	0.047	-0.015
0.1416	-0.711	0.006	0.032	0.047	-0.015
0.1500	-0.730	0.006	0.032	0.047	-0.015
0.1583	-0.749	0.006	0.032	0.047	-0.015
0.1666	-0.768	0.006	0.032	0.047	-0.015
0.1750	-0.774	0.006	0.032	0.047	-0.015
0.1833	-0.799	0.006	0.032	0.047	-0.015
0.1916	-0.812	0.006	0.032	0.047	-0.015
0.2000	-0.825	0.006	0.032	0.047	-0.015
0.2083	-0.847	0.006	0.032	0.047	-0.015
0.2166	-0.860	0.006	0.032	0.047	0.000
0.2250	-0.863	0.006	0.032	0.047	-0.015
0.2333	-0.878	0.006	0.032	0.047	-0.015
0.2416	-0.888	0.006	0.032	0.047	-0.015
0.2500	-0.904	0.006	0.032	0.047	-0.015
0.2583	-0.913	0.006	0.032	0.047	-0.015
0.2666	-0.920	0.006	0.032	0.047	-0.015
0.2750	-0.935	0.006	0.032	0.047	-0.015
0.2833	-0.951	0.006	0.032	0.047	-0.015
0.2916	-0.961	0.006	0.032	0.047	-0.015

STEP DD TEST
DD DATA

181

0.3000	-0.973	0.006	0.032	0.047	-0.015
0.3083	-0.983	0.006	0.032	0.047	0.000
0.3166	-0.992	0.006	0.032	0.047	-0.015
0.3250	-1.011	0.006	0.032	0.047	0.000
0.3333	-1.011	0.006	0.032	0.047	-0.015
0.3500	-1.049	0.006	0.032	0.047	-0.015
0.3666	-1.068	0.006	0.032	0.047	0.000
0.3833	-1.090	0.006	0.032	0.047	-0.015
0.4000	-1.106	0.006	0.032	0.047	0.000
0.4166	-1.138	0.006	0.032	0.047	-0.015
0.4333	-1.157	0.006	0.032	0.047	-0.015
0.4500	-1.179	0.006	0.032	0.047	-0.015
0.4666	-1.191	0.006	0.032	0.047	-0.015
0.4833	-1.223	0.006	0.032	0.047	0.000
0.5000	-1.236	0.006	0.032	0.047	-0.015
0.5166	-1.255	0.006	0.032	0.047	-0.015
0.5333	-1.270	0.006	0.032	0.047	-0.015
0.5500	-1.283	0.006	0.032	0.047	-0.015
0.5666	-1.302	0.006	0.032	0.047	-0.015
0.5833	-1.316	0.006	0.032	0.047	-0.015
0.6000	-1.334	0.006	0.032	0.047	-0.015
0.6166	-1.346	0.006	0.032	0.047	0.000
0.6333	-1.372	0.006	0.032	0.047	-0.015
0.6500	-1.384	0.006	0.032	0.047	-0.015
0.6666	-1.403	0.006	0.032	0.047	-0.015
0.6833	-1.403	0.006	0.032	0.047	0.000
0.7000	-1.391	0.000	0.032	0.047	-0.015
0.7166	-1.368	0.006	0.032	0.047	-0.015
0.7333	-1.365	0.000	0.032	0.047	-0.015
0.7500	-1.340	0.006	0.032	0.047	0.000
0.7666	-1.340	0.006	0.032	0.047	0.000
0.7833	-1.324	0.006	0.032	0.047	-0.015
0.8000	-1.308	0.006	0.032	0.047	-0.015
0.8166	-1.302	0.006	0.032	0.047	-0.015
0.8333	-1.296	0.006	0.032	0.047	-0.015
0.8500	-1.293	0.006	0.032	0.047	-0.015
0.8666	-1.289	0.006	0.032	0.047	-0.015
0.8833	-1.293	0.006	0.032	0.047	-0.015
0.9000	-1.277	0.006	0.032	0.047	0.000
0.9166	-1.270	0.000	0.032	0.047	-0.015
0.9333	-1.261	0.006	0.032	0.047	-0.015
0.9500	-1.270	0.006	0.032	0.047	-0.015
0.9666	-1.261	0.006	0.032	0.047	-0.015
0.9833	-1.255	0.006	0.032	0.047	-0.015
1.0000	-1.264	0.006	0.032	0.047	-0.015
1.2000	-1.233	0.006	0.032	0.047	-0.015
1.4000	-1.220	0.006	0.032	0.047	-0.015
1.6000	-1.214	0.006	0.032	0.047	-0.015
1.8000	-1.037	0.006	0.032	0.063	-0.015
2.0000	-0.882	0.000	0.032	0.047	-0.015
2.2000	-0.822	0.000	0.032	0.047	-0.015
2.4000	-0.771	0.000	0.032	0.047	-0.015
2.6000	-0.746	0.000	0.032	0.047	-0.015
2.8000	-0.730	0.000	0.032	0.063	-0.015
3.0000	-0.711	0.000	0.032	0.063	-0.015
3.2000	-0.714	0.000	0.032	0.047	-0.015
3.4000	-0.714	0.000	0.032	0.047	-0.015
3.6000	-0.717	0.000	0.032	0.047	-0.015
3.8000	-0.711	0.000	0.032	0.047	-0.015
4.0000	-0.714	0.000	0.032	0.047	-0.015

4.2000	-0.720	0.000	0.032	0.063	-0.015
4.4000	-0.717	0.000	0.032	0.047	0.000
4.6000	-0.705	-0.006	0.032	0.047	-0.015
4.8000	-0.717	0.000	0.032	0.063	-0.015
5.0000	-0.711	-0.006	0.032	0.047	-0.015
5.2000	-0.717	-0.006	0.032	0.063	-0.015
5.4000	-0.714	-0.006	0.032	0.047	-0.015
5.6000	-0.717	-0.006	0.032	0.047	-0.015
5.8000	-0.720	-0.006	0.032	0.063	0.000
6.0000	-0.714	0.000	0.032	0.063	0.000
6.2000	-0.717	-0.006	0.032	0.063	-0.015
6.4000	-0.720	-0.012	0.032	0.047	0.000
6.6000	-0.714	-0.012	0.032	0.047	-0.015
6.8000	-0.733	-0.006	0.032	0.047	0.000
7.0000	-0.724	-0.006	0.032	0.063	0.000
7.2000	-0.724	-0.006	0.032	0.047	0.000
7.4000	-0.730	-0.006	0.032	0.063	0.000
7.6000	-0.711	-0.012	0.032	0.047	-0.015
7.8000	-0.730	-0.006	0.032	0.047	-0.015
8.0000	-0.739	-0.012	0.032	0.047	-0.015
8.2000	-0.724	-0.006	0.032	0.047	-0.015
8.4000	-0.736	-0.006	0.032	0.047	-0.015
8.6000	-0.730	-0.006	0.032	0.047	0.000
8.8000	-0.724	-0.012	0.032	0.063	0.000
9.0000	-0.720	-0.006	0.032	0.063	0.000
9.2000	-0.727	-0.012	0.032	0.047	-0.015
9.4000	-0.727	-0.019	0.016	0.031	-0.031
9.6000	-0.746	-0.019	0.016	0.031	-0.031
9.8000	-0.724	-0.019	0.016	0.031	-0.031
10.0000	-0.746	-0.019	0.016	0.015	-0.031
12.0000	-0.739	-0.025	0.016	0.015	-0.031
14.0000	-0.743	-0.031	0.016	0.015	-0.031
16.0000	-0.755	-0.038	0.016	0.015	-0.031
18.0000	-0.752	-0.031	0.032	0.047	-0.015
20.0000	-0.758	-0.031	0.032	0.047	-0.015
22.0000	-0.758	-0.031	0.032	0.047	-0.015
24.0000	-0.752	-0.044	0.016	0.015	-0.031
26.0000	-0.774	-0.050	0.000	0.015	-0.047
28.0000	-0.771	-0.050	0.016	0.015	-0.031
30.0000	-0.765	-0.057	0.016	0.015	-0.031
32.0000	-0.787	-0.057	0.016	0.015	-0.031
34.0000	-0.771	-0.057	0.016	0.015	-0.031
36.0000	-0.796	-0.063	0.016	0.015	-0.031
38.0000	-0.780	-0.063	0.016	0.015	-0.031
40.0000	-0.812	-0.069	0.016	0.015	-0.031
42.0000	-0.799	-0.057	0.032	0.031	-0.015
44.0000	-0.803	-0.063	0.032	0.031	-0.015
46.0000	-0.822	-0.076	0.000	0.000	-0.031
48.0000	-0.828	-0.082	0.016	0.015	-0.031
50.0000	-0.815	-0.069	0.032	0.031	-0.015
52.0000	-0.815	-0.069	0.016	0.015	-0.031
54.0000	-0.812	-0.082	0.048	0.015	-0.031
56.0000	-0.822	-0.088	0.032	0.000	-0.031
58.0000	-0.815	-0.088	0.032	0.000	-0.031
60.0000	-0.825	-0.088	0.032	0.000	-0.031
62.0000	-0.818	-0.088	0.032	0.000	-0.031
64.0000	-0.834	-0.095	0.032	0.000	-0.031
66.0000	-0.841	-0.095	0.032	0.000	-0.031
68.0000	-0.837	-0.101	0.016	0.000	-0.031
70.0000	-0.834	-0.095	0.016	0.000	-0.031

72.0000		-0.837	-0.101	0.016	0.000	-0.031
74.0000		-0.841	-0.101	0.016	0.000	-0.031
76.0000		-0.844	-0.101	0.016	0.000	-0.031
78.0000		-0.837	-0.101	0.016	0.000	-0.031
80.0000		-0.860	-0.107	0.016	-0.015	-0.031
82.0000		-0.856	-0.114	0.016	-0.015	-0.031
84.0000		-0.856	-0.107	0.032	-0.015	-0.031
86.0000		-0.853	-0.114	0.032	-0.015	-0.031
88.0000		-0.872	-0.114	0.032	-0.015	-0.031
90.0000		-0.866	-0.107	0.048	0.015	-0.015
92.0000		-0.856	-0.114	0.032	0.000	-0.015
94.0000		-0.875	-0.120	0.032	-0.015	-0.031
96.0000		-0.872	-0.120	0.032	0.000	-0.031
98.0000		-0.872	-0.120	0.032	-0.015	-0.031
100.000	— 8.15	-0.869	-0.120	0.032	-0.015	-0.031
120.000	GPM	-1.918	-0.152	0.048	0.015	-0.015
140.000		-2.013	-0.190	0.032	-0.047	-0.031
160.000		-2.048	-0.215	0.048	-0.031	-0.015
180.000		-2.143	-0.241	0.064	-0.047	-0.031
200.000		-2.304	-0.272	0.032	-0.079	-0.047
220.000		-2.424	-0.298	0.016	-0.111	-0.047
240.000		-2.532	-0.317	0.016	-0.127	-0.047
260.000		-2.620	-0.336	0.016	-0.127	-0.047
280.000		-2.825	-0.349	0.016	-0.143	-0.047
300.000		-3.236	-0.368	0.016	-0.175	-0.047

END

RECOVERY FILES

A: PWIS.REC

A: PWIS.REC.NUM

SE2000
Environmental Logger
04/09 09:20

Unit# 479 Test 0

Setups:	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5
Type	Level (F)	Level (F)	Level (F)	Level (F)	Level (F)
Mode	Surface	Surface	Surface	Surface	Surface
I.D.	2LPW1S	2LOW1S	2LOW1D	2LOW2S	2LOW3S
Reference	0.000	0.000	0.000	0.000	0.000
SG	1.000	1.000	1.000	1.000	1.000
Linearity	0.027	0.122	0.114	0.113	0.073
Scale factor	10.020	20.114	50.764	50.617	50.316
Offset	-0.012	0.002	-0.025	-0.142	-0.104
Delay mSEC	50.000	50.000	50.000	50.000	50.000

Step 1 04/08 17:00:16

Elapsed Time	INPUT 1	INPUT 2	INPUT 3	INPUT 4	INPUT 5
0.0000	-3.107	-0.361	0.032	-0.143	-0.031
0.0083	-3.059	-0.361	0.032	-0.143	-0.031
0.0166	-3.012	-0.361	0.032	-0.143	-0.031
0.0250	-2.965	-0.361	0.032	-0.143	-0.031
0.0333	-2.917	-0.361	0.032	-0.143	-0.031
0.0416	-2.870	-0.361	0.032	-0.143	-0.031
0.0500	-2.822	-0.361	0.032	-0.143	-0.031
0.0583	-2.775	-0.361	0.032	-0.143	-0.031
0.0666	-2.728	-0.361	0.032	-0.143	-0.031
0.0750	-2.680	-0.361	0.032	-0.143	-0.031
0.0833	-2.636	-0.361	0.032	-0.143	-0.031
0.0916	-2.592	-0.361	0.032	-0.143	-0.031
0.1000	-2.547	-0.361	0.032	-0.159	-0.031
0.1083	-2.503	-0.361	0.032	-0.143	-0.031
0.1166	-2.456	-0.361	0.032	-0.143	-0.031
0.1250	-2.415	-0.361	0.032	-0.143	-0.031
0.1333	-2.370	-0.361	0.032	-0.143	-0.031
0.1416	-2.329	-0.361	0.032	-0.143	-0.031
0.1500	-2.285	-0.361	0.032	-0.143	-0.031
0.1583	-2.244	-0.361	0.032	-0.143	-0.031
0.1666	-2.200	-0.361	0.032	-0.143	-0.031
0.1750	-2.159	-0.361	0.032	-0.143	-0.031
0.1833	-2.118	-0.361	0.032	-0.143	-0.031
0.1916	-2.080	-0.361	0.032	-0.143	-0.031
0.2000	-2.039	-0.361	0.032	-0.143	-0.031
0.2083	-2.001	-0.361	0.032	-0.143	-0.031
0.2166	-1.960	-0.361	0.032	-0.143	-0.031
0.2250	-1.922	-0.361	0.032	-0.143	-0.031
0.2333	-1.884	-0.361	0.032	-0.143	-0.031
0.2416	-1.849	-0.361	0.032	-0.143	-0.031
0.2500	-1.811	-0.361	0.032	-0.143	-0.031
0.2583	-1.776	-0.361	0.032	-0.159	-0.031
0.2666	-1.741	-0.361	0.032	-0.143	-0.031
0.2750	-1.707	-0.361	0.032	-0.143	-0.031
0.2833	-1.675	-0.361	0.032	-0.143	-0.031
0.2916	-1.640	-0.361	0.032	-0.143	-0.031

STEP DD TEST
REC PORTION

0.3000	-1.609	-0.361	0.032	-0.143	-0.031
0.3083	-1.577	-0.361	0.032	-0.143	-0.031
0.3166	-1.545	-0.361	0.032	-0.143	-0.031
0.3250	-1.517	-0.361	0.032	-0.143	-0.031
0.3333	-1.489	-0.361	0.032	-0.143	-0.031
0.3500	-1.435	-0.361	0.032	-0.143	-0.031
0.3666	-1.384	-0.361	0.032	-0.143	-0.031
0.3833	-1.340	-0.361	0.032	-0.143	-0.031
0.4000	-1.299	-0.361	0.032	-0.143	-0.031
0.4166	-1.258	-0.361	0.032	-0.143	-0.031
0.4333	-1.223	-0.361	0.032	-0.143	-0.031
0.4500	-1.188	-0.361	0.032	-0.143	-0.031
0.4666	-1.157	-0.361	0.032	-0.143	-0.031
0.4833	-1.125	-0.361	0.032	-0.143	-0.031
0.5000	-1.097	-0.361	0.032	-0.143	-0.015
0.5166	-1.068	-0.361	0.032	-0.143	-0.031
0.5333	-1.043	-0.361	0.032	-0.143	-0.031
0.5500	-1.014	-0.361	0.032	-0.143	-0.015
0.5666	-0.992	-0.361	0.032	-0.143	-0.015
0.5833	-0.967	-0.361	0.032	-0.143	-0.015
0.6000	-0.942	-0.361	0.032	-0.143	-0.015
0.6166	-0.920	-0.361	0.032	-0.143	-0.031
0.6333	-0.897	-0.361	0.032	-0.143	-0.031
0.6500	-0.875	-0.361	0.032	-0.143	-0.031
0.6666	-0.853	-0.361	0.048	-0.143	-0.031
0.6833	-0.834	-0.361	0.032	-0.143	-0.031
0.7000	-0.815	-0.361	0.032	-0.143	-0.015
0.7166	-0.796	-0.361	0.032	-0.143	-0.015
0.7333	-0.780	-0.361	0.032	-0.143	-0.031
0.7500	-0.761	-0.361	0.032	-0.143	-0.015
0.7666	-0.746	-0.361	0.032	-0.143	-0.015
0.7833	-0.730	-0.361	0.032	-0.143	-0.015
0.8000	-0.717	-0.361	0.032	-0.143	-0.031
0.8166	-0.701	-0.361	0.032	-0.143	-0.031
0.8333	-0.686	-0.361	0.032	-0.143	-0.015
0.8500	-0.673	-0.361	0.048	-0.143	-0.015
0.8666	-0.663	-0.361	0.032	-0.143	-0.015
0.8833	-0.651	-0.361	0.032	-0.143	-0.015
0.9000	-0.638	-0.361	0.032	-0.143	-0.015
0.9166	-0.629	-0.355	0.032	-0.143	-0.015
0.9333	-0.618	-0.361	0.048	-0.143	-0.031
0.9500	-0.607	-0.361	0.032	-0.143	-0.015
0.9666	-0.597	-0.361	0.032	-0.143	-0.015
0.9833	-0.588	-0.361	0.032	-0.143	-0.015
1.0000	-0.581	-0.361	0.032	-0.143	-0.031
1.2000	-0.502	-0.355	0.048	-0.143	-0.031
1.4000	-0.458	-0.355	0.048	-0.143	-0.015
1.6000	-0.433	-0.355	0.048	-0.143	-0.015
1.8000	-0.420	-0.355	0.048	-0.143	-0.015
2.0000	-0.411	-0.355	0.032	-0.143	-0.031
2.2000	-0.404	-0.349	0.032	-0.143	-0.015
2.4000	-0.398	-0.349	0.048	-0.143	-0.015
2.6000	-0.398	-0.349	0.048	-0.143	-0.015
2.8000	-0.395	-0.349	0.048	-0.127	-0.015
3.0000	-0.392	-0.349	0.048	-0.143	-0.015
3.2000	-0.392	-0.349	0.048	-0.143	-0.015
3.4000	-0.392	-0.349	0.048	-0.143	-0.015
3.6000	-0.388	-0.349	0.048	-0.143	-0.031
3.8000	-0.388	-0.342	0.048	-0.143	-0.031
4.0000	-0.388	-0.342	0.048	-0.143	-0.015

4.2000	-0.385	-0.342	0.048	-0.143	-0.031
4.4000	-0.385	-0.342	0.048	-0.143	-0.015
4.6000	-0.385	-0.342	0.048	-0.143	-0.015
4.8000	-0.382	-0.342	0.048	-0.143	-0.015
5.0000	-0.382	-0.342	0.048	-0.143	-0.015
5.2000	-0.379	-0.342	0.048	-0.143	-0.015
5.4000	-0.379	-0.342	0.048	-0.143	-0.015
5.6000	-0.379	-0.336	0.048	-0.143	-0.031
5.8000	-0.379	-0.336	0.048	-0.143	-0.015
6.0000	-0.376	-0.336	0.048	-0.143	-0.015
6.2000	-0.376	-0.336	0.032	-0.143	-0.015
6.4000	-0.376	-0.336	0.032	-0.143	-0.015
6.6000	-0.376	-0.336	0.048	-0.143	-0.015
6.8000	-0.373	-0.336	0.032	-0.143	-0.015
7.0000	-0.373	-0.336	0.048	-0.143	-0.015
7.2000	-0.373	-0.330	0.048	-0.143	-0.015
7.4000	-0.369	-0.330	0.048	-0.143	-0.015
7.6000	-0.369	-0.330	0.048	-0.143	-0.015
7.8000	-0.369	-0.330	0.048	-0.143	-0.015
8.0000	-0.369	-0.330	0.048	-0.143	-0.015
8.2000	-0.369	-0.330	0.048	-0.143	-0.015
8.4000	-0.366	-0.330	0.032	-0.143	-0.015
8.6000	-0.369	-0.330	0.048	-0.143	-0.015
8.8000	-0.363	-0.330	0.048	-0.143	-0.015
9.0000	-0.363	-0.330	0.048	-0.143	-0.015
9.2000	-0.363	-0.330	0.032	-0.143	-0.015
9.4000	-0.363	-0.323	0.032	-0.143	-0.015
9.6000	-0.363	-0.323	0.048	-0.143	-0.031
9.8000	-0.363	-0.323	0.032	-0.143	-0.015
10.0000	-0.363	-0.323	0.032	-0.143	-0.031
12.0000	-0.357	-0.317	0.032	-0.159	-0.015
14.0000	-0.354	-0.323	0.032	-0.175	-0.031
16.0000	-0.354	-0.323	0.016	-0.175	-0.047
18.0000	-0.344	-0.317	0.032	-0.175	-0.047
20.0000	-0.344	-0.311	0.032	-0.175	-0.047
22.0000	-0.338	-0.304	0.000	-0.175	-0.047
24.0000	-0.335	-0.304	0.016	-0.175	-0.047
26.0000	-0.332	-0.298	0.016	-0.175	-0.047
28.0000	-0.328	-0.292	0.016	-0.175	-0.047
30.0000	-0.322	-0.292	0.016	-0.175	-0.047
32.0000	-0.319	-0.285	0.016	-0.175	-0.047
34.0000	-0.316	-0.285	0.016	-0.175	-0.047
36.0000	-0.313	-0.279	0.016	-0.175	-0.031
38.0000	-0.309	-0.279	0.016	-0.191	-0.047
40.0000	-0.306	-0.272	0.016	-0.175	-0.047
42.0000	-0.300	-0.266	0.016	-0.175	-0.031
44.0000	-0.297	-0.266	0.016	-0.175	-0.047
46.0000	-0.294	-0.260	0.016	-0.175	-0.047
48.0000	-0.287	-0.260	0.016	-0.175	-0.047
50.0000	-0.287	-0.260	0.016	-0.175	-0.047
52.0000	-0.284	-0.253	0.016	-0.175	-0.047
54.0000	-0.281	-0.253	0.016	-0.175	-0.047
56.0000	-0.278	-0.247	0.016	-0.175	-0.031
58.0000	-0.275	-0.247	0.000	-0.175	-0.047
60.0000	-0.275	-0.241	0.000	-0.175	-0.031
62.0000	-0.268	-0.241	0.016	-0.175	-0.047
64.0000	-0.268	-0.241	0.016	-0.175	-0.047
66.0000	-0.265	-0.234	0.016	-0.175	-0.047
68.0000	-0.262	-0.234	0.016	-0.175	-0.031
70.0000	-0.262	-0.234	0.000	-0.175	-0.031

72.0000	-0.259	-0.228	0.016	-0.175	-0.031
74.0000	-0.258	-0.228	0.016	-0.175	-0.047
76.0000	-0.258	-0.228	0.000	-0.175	-0.047
78.0000	-0.249	-0.222	0.000	-0.175	-0.047
80.0000	-0.249	-0.222	0.000	-0.175	-0.047
82.0000	-0.249	-0.222	0.000	-0.175	-0.047
84.0000	-0.246	-0.215	0.000	-0.175	-0.047
86.0000	-0.243	-0.215	0.000	-0.159	-0.047
88.0000	-0.243	-0.215	0.000	-0.159	-0.047
90.0000	-0.240	-0.215	0.016	-0.159	-0.047
92.0000	-0.237	-0.209	0.000	-0.175	-0.047
94.0000	-0.237	-0.209	0.000	-0.159	-0.047
96.0000	-0.233	-0.209	0.000	-0.175	-0.047
98.0000	-0.233	-0.209	0.000	-0.159	-0.047
100.000	-0.230	-0.203	0.000	-0.159	-0.047
120.000	-0.218	-0.190	0.000	-0.159	-0.047
140.000	-0.202	-0.177	0.000	-0.159	-0.047
160.000	-0.192	-0.165	0.000	-0.143	-0.047
180.000	-0.183	-0.158	-0.016	-0.143	-0.047
200.000	-0.177	-0.146	-0.016	-0.143	-0.047
220.000	-0.170	-0.139	-0.016	-0.127	-0.047
240.000	-0.164	-0.133	-0.016	-0.127	-0.047
260.000	-0.158	-0.126	-0.016	-0.111	-0.047
280.000	-0.154	-0.126	-0.032	-0.111	-0.047
300.000	-0.151	-0.120	-0.032	-0.111	-0.047
320.000	-0.146	-0.114	-0.032	-0.111	-0.047
340.000	-0.142	-0.114	-0.016	-0.111	-0.047
360.000	-0.142	-0.107	-0.032	-0.095	-0.047
380.000	-0.139	-0.107	-0.016	-0.095	-0.047
400.000	-0.135	-0.107	-0.016	-0.095	-0.047
420.000	-0.132	-0.101	-0.016	-0.095	-0.047
440.000	-0.129	-0.101	-0.032	-0.095	-0.047
460.000	-0.126	-0.101	-0.032	-0.079	-0.047
480.000	-0.126	-0.095	-0.032	-0.095	-0.047
500.000	-0.126	-0.095	-0.032	-0.095	-0.047
520.000	-0.123	-0.095	-0.032	-0.079	-0.063
540.000	-0.120	-0.095	-0.016	-0.095	-0.047
560.000	-0.120	-0.088	-0.032	-0.079	-0.063
580.000	-0.116	-0.088	-0.032	-0.079	-0.063
600.000	-0.116	-0.088	-0.032	-0.079	-0.063
620.000	-0.116	-0.082	-0.032	-0.079	-0.063
640.000	-0.113	-0.082	-0.048	-0.079	-0.063
660.000	-0.113	-0.082	-0.048	-0.079	-0.063
680.000	-0.113	-0.082	-0.048	-0.079	-0.063
700.000	-0.110	-0.082	-0.048	-0.079	-0.063
720.000	-0.107	-0.082	-0.032	-0.079	-0.063
740.000	-0.107	-0.076	-0.032	-0.079	-0.063
760.000	-0.107	-0.076	-0.032	-0.079	-0.063
780.000	-0.104	-0.076	-0.048	-0.079	-0.063
800.000	-0.104	-0.076	-0.048	-0.063	-0.063
820.000	-0.104	-0.076	-0.048	-0.063	-0.063
840.000	-0.104	-0.076	-0.048	-0.063	-0.063
860.000	-0.104	-0.076	-0.048	-0.063	-0.063
880.000	-0.104	-0.076	-0.064	-0.063	-0.063
900.000	-0.107	-0.076	-0.064	-0.079	-0.063
920.000	-0.107	-0.076	-0.064	-0.079	-0.063
940.000	-0.107	-0.076	-0.064	-0.079	-0.063
960.000	-0.104	-0.076	-0.048	-0.063	-0.079

END

SE1000C
Environmental Logger
04/09 10:31

Unit# 00143 Test 0

Setups:	INPUT 1
Type	Level (F)
Mode	Surface
I.D.	00018
Reference	0.000
Linearity	0.000
Scale factor	9.990
Offset	0.040
Delay mSEC	50.000

Step 0 04/07 12:00:01

Elapsed Time	INPUT 1
0.0000	-0.006
30.0000	-0.015
60.0000	-0.009
90.0000	-0.022
120.000	-0.053
150.000	-0.056
180.000	-0.059
210.000	-0.059
240.000	-0.063
270.000	-0.075
300.000	-0.091
330.000	-0.100
360.000	-0.104
390.000	-0.113
420.000	-0.113
450.000	-0.116
480.000	-0.113
510.000	-0.135
540.000	-0.148
570.000	-0.148
600.000	-0.154
630.000	-0.157
660.000	-0.154
690.000	-0.163
720.000	-0.157
750.000	-0.157
780.000	-0.163
810.000	-0.160
840.000	-0.154
870.000	-0.151
900.000	-0.154
930.000	-0.154
960.000	-0.157
990.000	-0.163
1020.00	-0.163
1050.00	-0.167
1080.00	-0.167

START STEP DD
@1200 HRS ON 4/8/94

TREND DATA AT WELL
2LMW 18S.

START 1200 HRS ON 4/7/94
PRIOR TO RUNNING STEP DD
TEST. HAD TO PULL XD AS
WE HAD TO RUN SLUG TESTS.

1110.00	-0.170
1140.00	-0.179
1170.00	-0.186
1200.00	-0.192
1230.00	-0.179
1260.00	-0.176
1290.00	-0.179
1320.00	-0.173
1350.00	-0.167
1380.00	-0.167
1410.00	-0.157
1440.00	-0.157 ← START STEP DD TEST
1470.00	-0.151
1500.00	-0.145
1530.00	-0.138
1560.00	-0.132
1590.00	-0.116
1620.00	-0.116
1650.00	-0.116
1680.00	-0.116
1710.00	-0.113
1740.00	-0.116
1770.00	-0.119
1800.00	-0.126
1830.00	-0.132
1860.00	-0.126
1890.00	-0.132
1920.00	-0.135
1950.00	-0.138
1980.00	-0.145
2010.00	-0.148
2040.00	-0.154
2070.00	-0.151
2100.00	-0.141
2130.00	-0.135
2160.00	-0.138
2190.00	-0.141
2220.00	-0.157
2250.00	-0.148
2280.00	-0.148
2310.00	-0.151
2340.00	-0.154
2370.00	-0.160
2400.00	-0.163
2430.00	-0.163
2460.00	-0.154
2490.00	-0.148
2520.00	-0.160
2550.00	-0.160
2580.00	-0.160
2610.00	-0.163
2640.00	-0.157
2670.00	-0.157
2700.00	-0.151
2730.00	-0.148
2760.00	-0.151

END

APPENDIX D

DATABASE

D.1 SITE 1 - CBU DRUM STORAGE AREA
D.2 SITE 2 - AREA A LANDFILL
D.3 SITE 2 - AREA A WETLANDS
D.4 SITE 2 - AREA A WEAPONS CENTER
D.5 SITE 2 - AREA A DOWNSTREAM
D.6 SITE 4 - RUBBLE FILL AT BUNKER A86
D.7 SITE 6 - DRMO
D.8 SITE 7 - TORPEDO SHOPS
D.9 SITE 8 - GOSS COVE LANDFILL
D.10 SITE 13 - LOWER SUBASE
D.11 SITE 14 - OBDANE
D.12 SITE 15 - SPENT ACID STORAGE AND DISPOSAL AREA
D.13 THAMES RIVER
D.14 SEDIMENT PHYSICAL PROPERTY DATA

APPENDIX D.1

SITE 1 - CBU DRUM STORAGE AREA

	Range	Frequency	1TB1-0002	1TB1-0608	1TB2-1214	1TB3-0002	1TB3-0507
SDG			17148	17148	17148	17148	17148
TCL Volatiles (UG/KG)							
METHYLENE CHLORIDE	28	1/5	11 U	16 U	13 U	11 U	28 J
2-BUTANONE	15-170	4/5	20	16	13 U	15	170 J
1,1,1-TRICHLOROETHANE	1	1/5	11 U	16 U	13 U	11 U	1 J
TRICHLOROETHENE	2-3	2/5	11 U	16 U	13 U	2 J	3 J
TETRACHLOROETHENE	2-4	2/5	11 UJ	16 U	13 U	2 J	4 J
ETHYLBENZENE	23-79	3/5	11 UJ	23	13 U	23 J	79 J
XYLENE (TOTAL)	1-380	5/5	38 J	97	1 J	29 J	380 J
SDG			17148	17148	17148	17148	17148
TCL Semivolatiles (UG/KG)							
1,4-DICHLOROBENZENE	110	1/5	110 J	520 U	430 U	370 U	3800 U
NAPHTHALENE	930-6,500	2/5	930	6500	430 U	370 U	3800 U
2-METHYLNAPHTHALENE	25-12,000	3/5	2100	12000	430 U	25 J	3800 U
ACENAPHTHYLENE	35	1/5	370 U	520 UJ	430 U	35 J	3800 U
ACENAPHTHENE	240-2,800	2/5	370 U	2800 J	430 U	370 U	240 J
DIBENZOFURAN	24-2,500	2/5	370 U	2500 J	430 U	24 J	3800 U
FLUORENE	43-3,600	4/5	260 J	3600 J	430 U	43 J	300 J
PHENANTHRENE	53-16,000	5/5	410	16000	53 J	430	2600 J
ANTHRACENE	86-2,800	4/5	190 J	2800 J	430 U	86 J	500 J
CARBAZOLE	35-700	3/5	370 U	700 J	430 U	35 J	240 J
DI-N-BUTYLPHTHALATE	460-970	2/5	970	460 J	430 U	370 U	3800 U
FLUORANTHENE	42-13,000	5/5	1300 J	13000	42 J	650	3300 J
PYRENE	37-9,000	5/5	1400	9000	37 J	560	2600 J
BUTYLBENZYLPHTHALATE	820	1/5	370 U	520 U	430 U	820 J	3800 U
BENZO(A)ANTHRACENE	230-2,300	4/5	680	2300	430 U	230 J	1100 J
CHRYSENE	290-1,900	4/5	1100	1900	430 U	290 J	1600 J
BENZO(B)FLUORANTHENE	29-2,200	5/5	630 J	1600	29 J	440	2200 J
BENZO(K)FLUORANTHENE	610	1/5	610 J	520 U	430 U	370 U	3800 U
BENZO(A)PYRENE	250-1,100	4/5	380 J	850	430 U	250 J	1100 J
INDENO(1,2,3-CD)PYRENE	200-950	4/5	200 J	290 J	430 U	210 J	950 J
DIBENZ(A,H)ANTHRACENE	59	1/5	370 UJ	520 U	430 U	59 J	3800 U
BENZO(G,H,I)PERYLENE	180-280	3/5	220 J	280 J	430 U	180 J	3800 U

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

CBU DRUM STORAGE AREA SOIL

	Range	Frequency	1TB1-0002	1TB1-0608	1TB2-1214	1TB3-0002	1TB3-0507
SDG			17148	17148	17148	17148	17148
TCL Pesticides/PCB (UG/KG)							
GAMMA-BHC (LINDANE)	1 8	1/5	19 U	1.8 J	22 UJ	19 U	20 U
HEPTACHLOR	3.4	1/5	19 U	3.4 J	22 UJ	19 U	20 U
ALDRIN	2.6	1/5	19 U	2.6 J	22 UJ	19 U	20 U
HEPTACHLOR EPOXIDE	27	1/5	19 U	27 J	22 UJ	19 U	20 U
DIELDRIN	29-31	2/5	29 J	31 J	43 UJ	37 U	38 U
4,4'-DDE	25-58	2/5	58 J	25 J	43 UJ	37 U	38 U
ENDRIN	3.5-4 1	2/5	4 1 J	3.5 J	43 UJ	37 U	38 U
4,4'-DDD	24-3900	3/5	3900	2100	24 J	37 U	38 U
4,4'-DDT	7 9-140	3/5	26 J	7.9 J	140 J	37 U	38 U
ALPHA-CHLORDANE	9.9-28	2/5	28	9.9 J	22 UJ	19 U	20 U
GAMMA-CHLORDANE	7.6	1/5	7 6 J	27 U	22 UJ	19 U	20 U
AROCLOR-1248	360	1/5	370 U	520 U	430 UJ	370 U	380 J
AROCLOR-1254	420	1/5	420 J	520 U	430 UJ	370 U	380 U
SDG			17148	17148	17148	17148	17148
TAL Metals (MG/KG)							
ALUMINUM	7110-18900	5/5	10100	18900	14800	7110	7760
ANTIMONY	5 3-17 4	5/5	6 8 J	17 4 J	5.5 J	5.3 J	11.8 J
ARSENIC	3 3-10 2	4/5	4 8	10 2	5.4	2.7 U	3.3 J
BARIUM	40 7-93 9	5/5	75 7 J	93.9 J	51.5 J	40.7 J	78.6 J
BERYLLIUM	0 36-1 6	5/5	1 J	0.87 J	0.68 J	0.36 J	1.6
BORON	14 6-19 7	2/5	11 4 U	19 7 J	13 U	11.4 U	14.6 J
CADMIUM	0 73-2 6	5/5	1 2 J	2 6 J	0.81 J	0.73 J	1.7 J
CALCIUM	1760-9130	5/5	3460 J	3520 J	1760 J	4240 J	9130 J
CHROMIUM III	14 7-42 9	5/5	34 1	42 9	19.1	14.7	34.7
COBALT	5-10	5/5	6 2 J	9 3 J	6.1 J	4.7 J	9.5 J
COPPER	14 1-164	5/5	115 J	147 J	14.1 J	31.3 J	164 J
IRON	12000-31200	5/5	19100	31200	15700	12000	15800
LEAD	5-366	5/5	104	366	32.4	4.8	207
MAGNESIUM	2490-5610	5/5	2880	5610	3240	2490	2680
MANGANESE	165-290	5/5	215	290	165	166.	191
MERCURY	0 15-0 61	4/5	0 21 J	0.18 U	0 15 J	0.47	0.61
NICKEL	9 1-47	5/5	33 8	23.8 J	9.6 J	9.1 J	46.6
POTASSIUM	1390-3550	5/5	1660 J	3550 J	1390 J	1750 J	1460 J
SODIUM	270-582	4/5	342 J	582 J	0.52 U	270 J	394 J
VANADIUM	19 1-186	4/5	186	55.4	0.52 U	19.1 J	25.9
ZINC	39.6-709	5/5	460 J	134 J	305 J	39.6 J	709 J
SDG			17148	17148	17148	17148	17148
TPH (MG/KG)	41-7510	5/5	2570	7510	67.6	514	41

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

Not applicable

Value is the average of duplicate sample results

CBU DRUM STORAGE AREA GROUNDWATER

	Range(Total)	Frequency(Total)	Range(Diss)	Frequency(Diss)	1GW2S	1GW2S DISS
SDG					17915	
TCL Volatiles (UG/L)						
CHLOROBENZENE	12	1/1	-	NA	12	NA
XYLENE (TOTAL)	24	1/1	-	NA	24	NA
SDG						
TCL Pesticides/PCB (UG/L)	-	0/1	-	NA	.05 U - 5.0 U	NA
SDG					17915	
TCL Semivolatiles (UG/L)						
4-METHYLPHENOL	1	1/1	-	NA	1 J	NA
NAPHTHALENE	9	1/1	-	NA	9 J	NA
2-METHYLNAPHTHALENE	1	1/1	-	NA	1 J	NA
ACENAPHTHENE	2	1/1	-	NA	2 J	NA
DIBENZOFURAN	2	1/1	-	NA	2 J	NA
DIETHYLPHTHALATE	1	1/1		NA	1 J	NA
FLUORENE	2	1/1		NA	2 J	NA
PHENANTHRENE	4	1/1		NA	4 J	NA
ANTHRACENE	1	1/1		NA	1 J	NA
CARBAZOLE	1	1/1		NA	1 J	NA
SDG					17933	D17933
TAL Metals (UG/L)						
ARSENIC	2.4	1/1	4.0	1/1	2.4 J	4.0 J
BARIUM	35.5	1/1	32.1	1/1	35.5 J	32.1
BORON	54.5	1/1	57.1	1/1	54.5 J	57.1 J
CALCIUM	29,900	1/1	29,600	1/1	29900	29600
IRON	13,400	1/1	13,300	1/1	13400	13300
MAGNESIUM	4,290	1/1	4,320	1/1	4290	4320
MANGANESE	409	1/1	406	1/1	409	406
POTASSIUM	3,490	1/1	2,940	1/1	3490	2940
SODIUM	17,400	1/1	17,900	1/1	17400	17900
ZINC		0/1	12.4	1/1	9.8 U	12.4
TPH (MG/L)	NA	0/1	NA	0/1	0.5 U	NA

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

CBU DRUM STORAGE AREA GROUNDWATER (ROUND 2)

	Range (Total)	Frequency (Total)	Range (Diss)	Frequency (Diss)	1GW2S-2	1GW2S-2 DISS
SDG					19197	
TCL Volatiles (UG/L)	-	0/1	-	NA	ND	NA
SDG					19197	
TCL Semivolatiles (UG/L)						
4-METHYLPHENOL	0.6	1/1	-	NA	0.6 J	NA
NAPHTHALENE	31	1/1	-	NA	31	NA
2-METHYLNAPHTHALENE	12	1/1	-	NA	12	NA
ACENAPHTHENE	8	1/1	-	NA	8 J	NA
DIBENZOFURAN	13	1/1	-	NA	13	NA
DIETHYLPHTHALATE	1	1/1	-	NA	1 J	NA
FLUORENE	13	1/1	-	NA	13	NA
PHENANTHRENE	22	1/1	-	NA	22	NA
ANTHRACENE	3	1/1	-	NA	3 J	NA
CARBAZOLE	19	1/1	-	NA	19	NA
DI-N-BUTYLPHTHALATE	0.6	1/1	-	NA	0.6 J	NA
FLUORANTHENE	3	1/1	-	NA	3 J	NA
PYRENE	1	1/1	-	NA	1 J	NA
SDG					19197	19197
TAL Metals (UG/L)						
ALUMINUM	94.9	1/1	-	0/1	94.9	22.7 U
ARSENIC	3.5	1/1	4.4	1/1	3.5	4.4
BARIUM	92.5	1/1	90.6	1/1	92.5	90.6
BORON	130	1/1	112	1/1	130	112
CALCIUM	68500	1/1	67700	1/1	68500	67700
CHROMIUM	1.6	1/1	-	0/1	1.6 J	3.0 U
IRON	27600	1/1	27100	1/1	27600	27100
MAGNESIUM	5400	1/1	5220	1/1	5400	5220
MANGANESE	527	1/1	520	1/1	527	520
POTASSIUM	3930	1/1	4060	1/1	3930	4060
SILVER	-	0/1	2.2	1/1	1.0 U	2.2
SODIUM	28300	1/1	27500	1/1	28300	27500
ZINC	8.0	1/1	2.8	1/1	8.0	2.8
SDG					19197	
TOTAL PETROLEUM HYDROCARBONS (MG/L)	1.2	1/1	-	NA	1.2	NA
SDG					19197	
HARDNESS as CaCO3 (MG/L)	180	1/1	-	NA	180	NA

NA: Not analyzed

ND: Not detected

J: Estimate value

U: Not detected at detection limit indicated

UJ: Not detected at estimated detection limit indicated

R: Value rejected during validation

-: Not applicable

*: Value is the average of duplicate sample results

APPENDIX D.2

SITE 2 - AREA A LANDFILL

AREA A LANDFILL SOIL

	Range	Frequency	2LTB13-0001	2LTB13-0001A	2LTB13-0102	2LTB13-0204	2LTB13-0406	2LTB13-0608	2LTB23-0002	2LTB23-0406
SDG			16703							16703
Dioxin (UG/KG)										
OCDD	1.7-2.5	2/2	2.5 J	NA	NA	NA	NA	NA	NA	1.7 J
SDG										
TCL PCB (Field Screening) (UG/KG)										
AROCLOR 1248	51-3700	8/10	NA	780	94	62	130	51	35.88 U	3700
AROCLOR 1254	110-19400	7/10	NA	263.6 U	200	110	241.08 U	130	340	19400

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

AREA A LANDFILL SOIL

	2LTB23-0608	2LTB23-0810	2LTB23-1012
SDG			
Dioxin (UG/KG)			
OCDD	NA	NA	NA
SDG			
TCL PCB (Field Screening) (UG/KG)			
AROCLOR 1248	390	165	26 8 U
AROCLOR 1254	1360	520	26 8 U

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

AREA A LANDFILL GROUNDWATER

	Range(Total)	Frequency (Total)	Range(Diss)	Frequency(Diss)	2LGW7D	2LGW7D DISS	2LGW7S	2LGW7S DISS	2LGW8D	2LGW8D DISS
SDG					17915	17915	17381	17381	17915	17915
TCL Volatiles (UG/L)										
ACETONE	10	1/18	-	NA	10 U	NA	10 U	NA	10 U	NA
CARBON DISULFIDE	1	3/18	-	NA	10 U	NA	10 U	NA	10 U	NA
1,2-DICHLOROETHENE (TOTAL)	2	2/18	-	NA	10 U	NA	10 U	NA	10 U	NA
TRICHLOROETHENE	4	1/18	-	NA	10 U	NA	10 U	NA	10 U	NA
BENZENE	6	1/18	-	NA	10 U	NA	10 U	NA	10 U	NA
1,1,2,2-TETRACHLOROETHANE	52	1/18	-	NA	10 U	NA	10 U	NA	10 U	NA
TOLUENE	2	1/18	-	NA	10 U	NA	10 U	NA	10 U	NA
CHLOROBENZENE	340	1/18	-	NA	10 U	NA	10 U	NA	10 U	NA
ETHYLBENZENE	38	1/18	-	NA	10 U	NA	10 U	NA	10 U	NA
XYLENE (TOTAL)	2-760	3/18	-	NA	10 U	NA	10 U	NA	10 U	NA
SDG					17915	17915	17381	17381	17915	17915
TCL Semivolatiles (UG/L)										
PHENOL	0.7-1	3/18	-	NA	10 U	NA	10 U	NA	10 U	NA
1,3-DICHLOROBENZENE	7	1/18	-	NA	10 U	NA	10 U	NA	10 U	NA
1,4-DICHLOROBENZENE	14	1/18	-	NA	10 U	NA	10 U	NA	10 U	NA
4-METHYLPHENOL	2-6	2/18	-	NA	10 U	NA	10 U	NA	10 U	NA
1,2,4-TRICHLOROBENZENE	7	1/18	-	NA	10 U	NA	10 U	NA	10 U	NA
NAPHTHALENE	1-42	3/18	-	NA	10 U	NA	10 U	NA	10 U	NA
2-METHYLNAPHTHALENE	6	1/18	-	NA	10 U	NA	10 U	NA	10 U	NA
ACENAPHTHENE	1	3/18	-	NA	10 U	NA	1 J	NA	10 U	NA
2,4-DINITROTOLUENE	7	1/18	-	NA	10 U	NA	7 J	NA	10 U	NA
DIETHYLPHTHALATE	0.6-1	4/18	-	NA	10 U	NA	1 J	NA	10 U	NA
FLUORENE	1	2/18	-	NA	10 U	NA	1 J	NA	10 U	NA
CARBAZOLE	2	1/18	-	NA	10 U	NA	10 UJ	NA	10 U	NA
DI-N-BUTYLPHTHALATE	1	1/18	-	NA	10 U	NA	10 U	NA	10 U	NA
BUTYLBENZYLPHTHALATE	1	1/18	-	NA	10 U	NA	10 U	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	1-54	3/18	-	NA	10 U	NA	1	NA	10 U	NA
DI-N-OCTYL PHTHALATE	2	1/18	-	NA	10 U	NA	10 U	NA	10 U	NA
BENZOIC ACID	0.9-14	5/18	-	NA	50 U	NA	10 UJ	NA	50 UJ	NA
SDG					17915	17915	17381	17381	17915	17915
TCL Pesticides (UG/L)										
AROCLOR-1260	710	1/1	-	NA	NA	NA	NA	NA	NA	NA

NA: Not analyzed

ND: Not detected

J: Estimate value

U: Not detected at detection limit indicated

UJ: Not detected at estimated detection limit indicated

R: Value rejected during validation

-: Not applicable

*: Value is the average of duplicate sample results

AREA A LANDFILL GROUNDWATER

	2LGW8S	2LGW8S DISS	2LGW9D	2LGW9D DISS	2LGW9S	2LGW9S DISS	2LGW13D	2LGW13D DISS	2LGW13S	2LGW13S DISS
SDG	17381	17381	17915	17915	17381	17381	17915	17915	17381	17381
TCL Volatiles (UG/L)										
ACETONE	10 U	NA	10 U	NA	10 J	NA	11 U	NA	10 U	NA
CARBON DISULFIDE	10 U	NA	10 U	NA	1 J	NA	10 U	NA	1 J	NA
1,2-DICHLOROETHENE (TOTAL)	10 U	NA	10 U	NA	10 U	NA	2 J	NA	2 J	NA
TRICHLOROETHENE	10 U	NA	10 U	NA	10 U	NA	4 J	NA	10 U	NA
BENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,1,2,2-TETRACHLOROETHANE	10 U	NA	10 U	NA	10 U	NA	52	NA	10 U	NA
TOLUENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
CHLOROBENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
ETHYLBENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
XYLENE (TOTAL)	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
SDG	17381	17381	17915	17915	17381	17381	17915	17915	17381	17381
TCL Semivolatiles (UG/L)										
PHENOL	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,3-DICHLOROBENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,4-DICHLOROBENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
4-METHYLPHENOL	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,2,4-TRICHLOROBENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
NAPHTHALENE	10 U	NA	10 U	NA	1 J	NA	10 U	NA	10 U	NA
2-METHYLNAPHTHALENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
ACENAPHTHENE	10 U	NA	10 U	NA	1 J	NA	10 U	NA	10 U	NA
2,4-DINITROTOLUENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DIETHYLPHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
FLUORENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
CARBAZOLE	10 UJ	NA	10 U	NA	10 UJ	NA	10 U	NA	10 UJ	NA
DI-N-BUTYLPHTHALATE	10 U	NA	10 U	NA	1 J	NA	10 U	NA	10 U	NA
BUTYLBENZYLPHTHALATE	1 J	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	54	NA	10 U	NA	1	NA	10 U	NA	20	NA
DI-N-OCTYL PHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZOIC ACID	1 J	NA	50 U	NA	10 UJ	NA	50 UJ	NA	1 J	NA
SDG	17381	17381	17915	17915	17381	17381	17915	17915	17381	17381
TCL Pesticides (UG/L)										
AROCLOR-1260	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA: Not analyzed

ND: Not detected

J: Estimate value

U: Not detected at detection limit indicated

UJ: Not detected at estimated detection limit indicated

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-: Not applicable

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	2LGW14D	2LGW14D DISS	2LGW17D	2LGW17D DISS	2LGW17S	2LGW17S DISS	2LGW18D	2LGW18D DISS	2LGW18S	2LGW18S DISS
SDG	17915	17915	17873	17873	17873	17873	17955	17955	17915	17915
TCL Volatiles (UG/L)										
ACETONE	10 U	NA	10 U	NA	10 U	NA	12 U	NA	49 U	NA
CARBON DISULFIDE	1 J	NA	10 U	NA	10 U	NA	10 U	NA	20 U	NA
1,2-DICHLOROETHENE (TOTAL)	10 U	NA	10 U	NA	10 U	NA	10 U	NA	20 U	NA
TRICHLOROETHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	20 U	NA
BENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	6 J	NA
1,1,2,2-TETRACHLOROETHANE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	20 U	NA
TOLUENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	2 J	NA
CHLOROBENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	340	NA
ETHYLBENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	38	NA
XYLENE (TOTAL)	10 U	NA	10 U	NA	10 U	NA	10 U	NA	760	NA
SDG	17915	17915	17873	17873	17873	17873	17955	17955	17915	17915
TCL Semivolatiles (UG/L)										
PHENOL	10 U	NA	10 U	NA	10 U	NA	0.70 J	NA	10 U	NA
1,3-DICHLOROBENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	7 J	NA
1,4-DICHLOROBENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	14	NA
4-METHYLPHENOL	10 U	NA	10 U	NA	10 U	NA	10 U	NA	6 J	NA
1,2,4-TRICHLOROBENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	7 J	NA
NAPHTHALENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	42	NA
2-METHYLNAPHTHALENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	6 J	NA
ACENAPHTHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	1 J	NA
2,4-DINITROTOLUENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DIETHYLPHTHALATE	10 U	NA	0.60 J	NA	10 U	NA	10 U	NA	1 J	NA
FLUORENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	1 J	NA
CARBAZOLE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	2 J	NA
DI-N-BUTYLPHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BUTYLBENZYLPHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DI-N-OCTYL PHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZOIC ACID	50 U	NA	50 UJ	NA	50 UJ	NA	2 J	NA	14 J	NA
SDG	17915	17915	17873	17873	17873	17873	17955	17955	17915	17915
TCL Pesticides (UG/L)										
AROCLOR-1260	NA	NA	NA	NA	NA	NA	NA	NA	710	NA

NA: Not analyzed

ND: Not detected

J: Estimate value

U: Not detected at detection limit indicated

UJ: Not detected at estimated detection limit indicated

R: Value rejected during validation

-: Not applicable

*: Value is the average of duplicate sample results

AREA A LANDFILL GROUNDWATER

	2LGW19D	2LGW19D DISS	2LGW19S	2LGW19S DISS	2LGW20D	2LGW20D DISS	2LGW20S	2LGW20S DISS	2LGW1S-X	2LPW1S
SDG	17955	17955	17308	17308	18102	18102	17308	17308	17463	18077
TCL Volatiles (UG/L)										
ACETONE	15 U	NA	10 U	NA	10 UJ	NA	10 U	NA	110 U	NA
CARBON DISULFIDE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,2-DICHLOROETHENE (TOTAL)	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
TRICHLOROETHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,1,2,2-TETRACHLOROETHANE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
TOLUENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
CHLOROBENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
ETHYLBENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
XYLENE (TOTAL)	2 J	NA	10 U	NA	10 U	NA	10 U	NA	9 J	NA
SDG	17955	17955	17308	17308	18102	18102	17308	17308	17463	18077
TCL Semivolatiles (UG/L)										
PHENOL	1 J	NA	10 U	NA	0.70 J	NA	10 U	NA	10 U	NA
1,3-DICHLOROBENZENE	10 UJ	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,4-DICHLOROBENZENE	10 UJ	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
4-METHYLPHENOL	10 UJ	NA	10 U	NA	10 U	NA	10 U	NA	2 J	NA
1,2,4-TRICHLOROBENZENE	10 UJ	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
NAPHTHALENE	10 UJ	NA	10 U	NA	10 U	NA	10 U	NA	2 J	NA
2-METHYLNAPHTHALENE	10 UJ	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
ACENAPHTHENE	10 UJ	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
2,4-DINITROTOLUENE	10 UJ	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DIETHYLPHTHALATE	10 UJ	NA	10 U	NA	10 U	NA	10 U	NA	1 J	NA
FLUORENE	10 UJ	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
CARBAZOLE	10 UJ	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DI-N-BUTYLPHTHALATE	10 UJ	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BUTYLBENZYLPHTHALATE	10 UJ	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	17 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DI-N-OCTYL PHTHALATE	2 J	NA	10 U	NA	10 U	NA	10 U	NA	10 UJ	NA
BENZOIC ACID	50 U	NA	50 U	NA	0.9 J	NA	50 U	NA	50 U	NA
SDG	17955	17955	17308	17308	18102	18102	17308	17308	17463	18077
TCL Pesticides (UG/L)										
AROCLOR-1260	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA: Not analyzed

ND: Not detected

J: Estimate value

U: Not detected at detection limit indicated

UJ: Not detected at estimated detection limit indicated

R: Value rejected during validation

-: Not applicable

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AREA A LANDFILL GROUNDWATER

	Range(Total)	Frequency (Total)	Range(Diss)	Frequency(Diss)	2LGW7D	2LGW7D DISS	2LGW7S	2LGW7S DISS	2LGW8D	2LGW8D DISS
SDG					17933	17933	17281	17381	17933	17933
TAL Metals (UG/L)										
ALUMINUM	24-89,300	7/17	-	0/17	80.5 U	54.1 U	79.6 U	14.0 U	122 U	65.2 U
ANTIMONY	20.6	1/16	17.2-34.12	2/17	15.0 U	15.0 UJ	15.0 U	15.0 U	15.0 U	15.0 UJ
ARSENIC	2.3-19.6	12/17	2.3-7.3	8/17	2.0 U	2.0 UJ	5.1 J	5.0 J	2.6 J	2.0 UJ
BARIUM	8.7-418	17/17	29.2-352	15/17	135	119	52.1	49.3	8.7 J	5.0 U
BERYLLIUM	1.5-4.2	2/17	1.4	1/17	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
BORON	52.5-360	4/17	51.7-751	6/17	57.8 J	57.3 J	719 U	751	50.0 U	50.0 U
CADMIUM	2 3	1/17	2.1	1/17	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
CALCIUM	10,800-174,000	17/17	19,200-181,000	16/17	27900	27000	56100	56400	44300	41600
CHROMIUM	32.5-142	2/17	-	0/17	3.0 UJ	3.0 U	5.4 U	5.9 U	3.0 UJ	3.0 U
COBALT	10-35.5	2/17	4.5	1/17	12.7 U	5.3 U	4.0 U	4.5	15.6 U	4.0 U
COPPER	2.5-125	6/18	2.7-4.2	2/17	8.0 U	2.0 U	2.5	2.7	2.0 U	2.0 U
IRON	55.1-144,000	17/17	46.4-142,000	15/17	44000	3520	18900	17600	24600	20.0 U
LEAD	2.6-51.1	4/18	-	0/17	2.0 U	2.0 UJ	1.0 UJ	1.0 UJ	2.0 U	2.0 UJ
MAGNESIUM	2,650-127,000	17/17	2,960-127,000	16/17	6700	6590	127000	127000	3010	2960
MANGANESE	92-2,570	17/17	9.1-1,810	17/17	235	76.4	301	292	92.0	12.1
MERCURY	0 32	1/17	0.20-0.29	2/17	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
NICKEL	14 6-80 9	5/18	11.8-34.9	3/17	17.8 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
POTASSIUM	1,930-43,000	16/17	1,650-43,700	15/17	5680	5580	43000	43700	1020 U	701 U
SILVER	2.5-3 5	2/16	-	0/17	2.5 J	2.0 UJ	2.0 U	2.2 U	2.0 UJ	2.0 UJ
SODIUM	12,700-1,070,000	17/17	12,300-1,060,000	16/17	123000	122000	1070000 J	1060000 J	12700	12300
VANADIUM	5 7-182	2/17	5 1-6 3	3/17	5.0 U	5.0 U	5.7	5.0 U	5.0 U	5.0 U
ZINC	2 8-211	11/18	2.4-68 9	10/17	14.7	3.8 J	2.0 U	2.0 U	2.0 U	2.4 J
SDG					17933	17933	17281	17381	17933	17933
Radiological (pCi/L)										
GROSS ALPHA	7-12	2/4	-	NA	NA	NA	3 U	NA	NA	NA
GROSS BETA	19-63	4/4	-	NA	NA	NA	43 J	NA	NA	NA
GROSS GAMMA (TOTAL)	250	1/4	-	NA	NA	NA	250	NA	NA	NA

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AREA A LANDFILL GROUNDWATER

	2LGW8S	2LGW8S DISS	2LGW9D	2LGW9D DISS	2LGW9S	2LGW9S DISS	2LGW13D	2LGW13D DISS	2LGW13S	2LGW13S DISS
SDG	17381	17381	17933	17933	17381	17381	17933	17933	17381	17381
TAL Metals (UG/L)										
ALUMINUM	47.5 U	14.0 U	133 U	57.0 U	82.7 U	14.0 U	255	24.3 U	89300	35.8 U
ANTIMONY	15.0 U	15.0 U	15.0 U	15.0 UJ	15.0 U	15.0 U	15.0 U	15.0 UJ	R	34.1
ARSENIC	2.0 UJ	2.0 UJ	2.4 J	3.0 J	4.1 J	5.3 J	2.0 U	2.0 UJ	19.6 J	7.3 J
BARIUM	39.0	5.0 U	105	105	251	261	63.0	61.5	418	37.4
BERYLLIUM	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	4.2	1.0 U
BORON	50.0 U	50.0 U	177	188 J	124 U	101 U	50.0 U	50.0 U	123 U	131 U
CADMIUM	2.0 U	2.0 U	2.3 J	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
CALCIUM	10800	157 U	36200	36900	49300	50200	50000	49900	41700	28300
CHROMIUM	3.0 U	3.0 U	3.0 UJ	3.0 U	3.0 U	3.0 U	3.0 UJ	3.0 U	142	3.0 U
COBALT	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	9.0 U	4.0 U	35.5	4.0 U
COPPER	2.0 U	2.0 U	3.0 U	2.0 U	3.0	2.0 U	2.0 U	2.0 U	125	4.2
IRON	3210	46.4	15400	11700	19000	19600	10800	4350	117000	43900
LEAD	1.0 UJ	1.0 UJ	2.0 U	2.0 UJ	1.0 U	1.0 UJ	2.0 U	2.0 UJ	51.1	1.0 UJ
MAGNESIUM	2650	106 U	36900	38100	6590	6880	6620	6570	31400	5910
MANGANESE	126	9.1	1350	1340	646	655	186	178	2570	1810
MERCURY	0.20 U	0.29	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.32	0.20 U
NICKEL	10.0 U	10.0 U	10.0 U	11.4 U	16.8	11.8	18.4 U	10.0 U	79.5	10.0 U
POTASSIUM	2490	1000 U	16900	17100	7880	7950	3100	3240	10700	2800
SILVER	2.0 U	2.0 U	2.0 UJ	2.5 U	2.0 U	2.0 U	2.0 UJ	2.0 UJ	2.0 U	2.0 U
SODIUM	15400	104 U	365000	378000	317000	332000	45600	45600	39600	39900
VANADIUM	5.0 U	5.6	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	182	5.0 U
ZINC	3.4 U	2.0 U	2.0 U	7.3	61.2	42.6 J	8.2 U	2.0 U	211	5.3 U
SDG	17381	17381	17933	17933	17381	17381	17933	17933	17381	17381
Radiological (pCi/L)										
GROSS ALPHA	NA	NA	7 J	NA	NA	NA	12 J	NA	NA	NA
GROSS BETA	NA	NA	22 J	NA	NA	NA	19 J	NA	NA	NA
GROSS GAMMA (TOTAL)	NA	NA	ND	NA	NA	NA	ND	NA	NA	NA

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AREA A LANDFILL GROUNDWATER

	2LGW14D	2LGW14D DISS	2LGW17D	2LGW17D DISS	2LGW17S	2LGW17S DISS	2LGW18D	2LGW18D DISS	2LGW18S	2LGW18S DISS
SDG	17943	17943	17873	17873	17873	17873	17955	17955	17933	17933
TAL Metals (UG/L)										
ALUMINUM	186	135 U	787	119 U	67.9 U	96.4 U	24.0 J	14.0 U	99.3 U	112 U
ANTIMONY	15.0 U	15.4 U	15.0 U	15.0 UJ	15.0 U	15.0 UJ	20.6 J	15.0 U	15.0 U	15.0 UJ
ARSENIC	3.0	2.0 U	3.6 J	2.0 U	2.3 J	2.3 J	3.2 J	3.1 J	2.3 J	5.0 J
BARIUM	111	111	62.3	59.1	30.8	29.2	58.10	56.0	383	352
BERYLLIUM	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
BORON	50.0 U	50.0 U	50.0 UJ	50.0 U	50.0 UJ	50.0 U	50.0 U	50.0 U	360	359 J
CADMIUM	2.0 UJ	2.0 UJ	2.1 U	2.0 UJ	2.0 U	2.0 UJ	2.0 U	2.1 J	2.0 U	6.1 U
CALCIUM	37200	37300	25200	25700	24300	25000	20100	20000	174000	161000
CHROMIUM	3.0 U	5.3 U	3.0 U	3.0 UJ	3.0 U	3.0 UJ	3.0 U	3.0 U	3.0 UJ	3.0 U
COBALT	17.0 U	14.9 U	4.0 U	4.0 U	4.0 U	8.9 U	13.7 U	7.7 U	11.4 U	10.4 U
COPPER	10.2 U	2.7 U	5.0	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	5.8 U	3.4 U
IRON	5020	1090	28000	1770	8820	8990	5530 J	5440 J	144000	142000
LEAD	2.0 U	2.0 U	2.0 UJ	2.0 U	2.0 UJ	2.0 U	2.0 UJ	2.0 UJ	2.0 U	2.0 UJ
MAGNESIUM	6340	6470	5940	6090	5290	5480	5230	5200	108000	97600
MANGANESE	1360	1350	510	493	443	456	495	483	1140	1070
MERCURY	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
NICKEL	10.0 UJ	10.0 UJ	10.0 U	14.5 U	10.0 U	11.7 U	10.0 U	10.0 U	21.4 U	28.0 U
POTASSIUM	2840	3200	1930	1650	2250	2220	1930	2270	36800	33900
SILVER	2.0 UJ	2.0 UJ	2.0 UJ	2.3 U	2.0 UJ	2.6 U	2.0 UJ	2.0 UJ	R	12.5 U
SODIUM	68600	68800	16500	15900	17100	17200	25200	25200	259000	227000
VANADIUM	5.0 U	6.3	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
ZINC	28.6	19.4	3.7 U	8.9 U	2.0 U	4.0 U	2.8 J	12.7	68.2	68.9
SDG	17943	17943	17873	17873	17873	17873	17955	17955	17933	17933
Radiological (pCi/L)										
GROSS ALPHA	NA	NA	NA	NA	NA	NA	NA	NA	1 UJ	NA
GROSS BETA	NA	NA	NA	NA	NA	NA	NA	NA	63 J	NA
GROSS GAMMA (TOTAL)	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA

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AREA A LANDFILL GROUNDWATER

	2LGW19D	2LGW19D DISS	2LGW19S	2LGW19S DISS	2LGW20D	2LGW20D DISS	2LGW20S	2LGW20S DISS	2LGW1S-X	2LPW1S
SDG	17955	17955	17308	17308	18109	18102	17308	17308	17463	18077
TAL Metals (UG/L)										
ALUMINUM	3340 J	14.0 U	124	100 U	172 U	41.5 U	116 U	26.2 U	NA	NA
ANTIMONY	15.0 U	15.0 U	15.0 U	17.2 J	13.0 U	13.0 U	15.0 U	15.0 U	NA	NA
ARSENIC	4.9 J	2.8 J	2.0 U	2.0 U	2.8 J	2.0 U	2.0 U	2.0 U	NA	NA
BARIUM	281	172	98.7	103	231	220	57.4	57.6	NA	NA
BERYLLIUM	1.5 J	1.4 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA	NA
BORON	50.0 U	50.0 U	50.0 UJ	51.7 J	31.2 U	50.0 U	52.5 J	52.4 J	NA	NA
CADMIUM	2.0 U	2.0 U	2.0 U	2.0 U	3.0 U	3.0 U	2.0 U	2.0 U	NA	NA
CALCIUM	80300	77600	18200 J	19200	40400	35000	35100 J	35900	NA	NA
CHROMIUM	32.5	3.0 U	3.0 U	3.0 U	4.0 U	4.0 U	3.0 U	3.0 U	NA	NA
COBALT	18.0 U	13.2 U	4.0 U	4.0 U	10.0 J	6.3 U	4.0 U	4.0 U	NA	NA
COPPER	42.7	2.0 U	2.0 U	2.0 U	5.0 U	5.0 U	2.0 U	2.0 U	NA	74.7
IRON	62200 J	2940 J	55.1 J	12.1 U	12100	1480	4390 J	4440	NA	NA
LEAD	21.6 J	2.0 UJ	1.0 U	1.0 U	2.6 J	2.0 UJ	1.0 U	1.0 U	NA	17.7
MAGNESIUM	13100	12200	4550	4690	8500	8470	6160	6190	NA	NA
MANGANESE	860	865	203	216	266	159	1060	1070	NA	NA
MERCURY	0.20 U	0.20	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	NA	NA
NICKEL	80.9	34.9	10.0 U	10.0 U	14.6 J	14.0	10.0 U	10.0 U	NA	16.2
POTASSIUM	7280	5910	2690	3050	3770 J	3660	4400	4560	NA	NA
SILVER	3.5 J	2.0 UJ	2.0 UJ	2.0 UJ	2.0 U	2.0 U	2.0 UJ	2.0 UJ	NA	NA
SODIUM	27600	26700	17500	18000	78200	78300	29600	29600	NA	NA
VANADIUM	5.0 U	5.0 U	5.0 U	5.0 U	4.0 U	4.0 U	5.0 U	5.1 J	NA	NA
ZINC	11.2 J	6.4	2.8 J	2.3 J	28.4	20.4 U	3.3 J	4.9 J	NA	132
SDG	17955	17955	17308	17308	18109	18102	17308	17308	17463	18077
Radiological (pCi/L)										
GROSS ALPHA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GROSS BETA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GROSS GAMMA (TOTAL)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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AREA A LANDFILL GROUNDWATER (ROUND 2)

	Range (Total)	Frequency (Total)	Range (Diss)	Frequency (Diss)	2LGW7S-2	2LGW7S-2 DISS	2LGW7D-2	2LGW7D-2 DISS	2LGW8S-2
SDG					19221		19221		19197
TCL Volatiles (UG/L)									
METHYLENE CHLORIDE	1-6.5*	2/14	-	NA	10 U	NA	10 U	NA	34 U
CARBON DISULFIDE	1-3	2/14	-	NA	3 J	NA	10 U	NA	10 U
1,2-DICHLOROETHENE(TOTAL)	1	1/14	-	NA	10 U	NA	10 U	NA	10 U
CHLOROFORM	16	1/14	-	NA	10 U	NA	10 U	NA	10 U
TRICHLOROETHENE	23	1/14	-	NA	10 U	NA	10 U	NA	10 U
BENZENE	32	1/14	-	NA	10 U	NA	10 U	NA	10 U
4-METHYL-2-PENTANONE	49	1/14	-	NA	10 U	NA	10 U	NA	10 U
TETRACHLOROETHENE	3	1/14	-	NA	10 U	NA	10 U	NA	10 U
1,1,2,2-TETRACHLOROETHANE	62	1/14	-	NA	10 U	NA	10 U	NA	10 U
CHLOROBENZENE	6-1200	2/14	-	NA	10 U	NA	10 U	NA	10 U
ETHYLBENZENE	100	1/14	-	NA	10 U	NA	10 U	NA	10 U
XYLENE (TOTAL)	2-510	3/14		NA	2 J	NA	10 U	NA	10 U
SDG					19221		19221		19197
TCL Semivolatiles (UG/L)									
PHENOL	6	1/14	-	NA	10 U	NA	10 U	NA	10 U
2-CHLOROPHENOL	12	1/14	-	NA	10 U	NA	10 U	NA	10 U
1,3-DICHLOROBENZENE	22	1/14		NA	10 U	NA	10 U	NA	10 U
1,4-DICHLOROBENZENE	98	1/14	-	NA	10 U	NA	10 U	NA	10 U
1,2-DICHLOROBENZENE	6	1/14	-	NA	10 U	NA	10 U	NA	10 U
4-METHYLPHENOL	0.6-6.0	2/14		NA	10 U	NA	10 U	NA	10 U
2,4-DICHLOROPHENOL	2	1/14	-	NA	10 U	NA	10 U	NA	10 U
2,4-DIMETHYLPHENOL	8	1/14	-	NA	10 U	NA	10 U	NA	10 U
1,2,4-TRICHLOROBENZENE	65	1/14	-	NA	10 U	NA	10 U	NA	10 U
NAPHTHALENE	2-17	2/14	-	NA	10 U	NA	10 U	NA	2 J
2-METHYLNAPHTHALENE	5	1/14	-	NA	10 U	NA	10 U	NA	10 U
4-CHLORO-3-METHYLPHENOL	8	1/14	-	NA	10 U	NA	10 U	NA	10 U
DIETHYL PHTHALATE	13-120	2/14	-	NA	10 U	NA	10 U	NA	10 U
N-NITROSODIPHENYLAMINE	2	1/14	-	NA	10 U	NA	10 U	NA	10 U
ANTHRACENE	0.5	1/14	-	NA	10 U	NA	10 U	NA	10 U
CARBAZOLE	0.8	1/14	-	NA	10 U	NA	10 U	NA	10 U
DI-N-BUTYLPHTHALATE	0.8-1	2/14	-	NA	10 U	NA	10 U	NA	10 U
BUTYLBENZYLPHTHALATE	0.5	1/14	-	NA	10 U	NA	10 U	NA	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	3-62	5/14	-	NA	62 J	NA	10 J	NA	10 U
BENZOIC ACID	0.5-2.0	4/14	-	NA	50 U	NA	50 U	NA	50 U
SDG									
TCL Pesticides (UG/L)									
AROCLOR-1016	7.5	1/1	-	NA	NA	NA	NA	NA	NA
AROCLOR-1260	290	1/1	-	NA	NA	NA	NA	NA	NA

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-: Not applicable

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AREA A LANDFILL GROUNDWATER (ROU

	2LGW8S-2 DISS	2LGW8D-2	2LGW8D-2 DISS	2LGW9D-2	2LGW9D-2 DISS	2LGW13D-2	2LGW13D-2 DISS	2LGW17S-2	2LGW17S-2 DISS
SDG		19197		192817		19302		19326	
TCL Volatiles (UG/L)									
METHYLENE CHLORIDE	NA	10 U	NA	10 U	NA	1 J	NA	17 U	NA
CARBON DISULFIDE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,2-DICHLOROETHENE(TOTAL)	NA	10 U	NA	10 U	NA	1 J	NA	10 U	NA
CHLOROFORM	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
TRICHLOROETHENE	NA	10 U	NA	10 U	NA	23	NA	10 U	NA
BENZENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
4-METHYL-2-PENTANONE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
TETRACHLOROETHENE	NA	10 U	NA	10 U	NA	3 J	NA	10 U	NA
1,1,2,2-TETRACHLOROETHANE	NA	10 U	NA	10 U	NA	82	NA	10 U	NA
CHLOROBENZENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
ETHYLBENZENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
XYLENE (TOTAL)	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
SDG		19197		192817		19302		19326	
TCL Semivolatiles (UG/L)									
PHENOL	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
2-CHLOROPHENOL	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,3-DICHLOROBENZENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,4-DICHLOROBENZENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,2-DICHLOROBENZENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
4-METHYLPHENOL	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
2,4-DICHLOROPHENOL	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
2,4-DIMETHYLPHENOL	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,2,4-TRICHLOROBENZENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
NAPHTHALENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
2-METHYLNAPHTHALENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
4-CHLORO-3-METHYLPHENOL	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DIETHYL PHTHALATE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
N-NITROSODIPHENYLAMINE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
ANTHRACENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
CARBAZOLE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DI-N-BUTYLPHTHALATE	NA	10 U	NA	1 J	NA	10 U	NA	10 U	NA
BUTYLBENZYLPHTHALATE	NA	0.5 J	NA	10 U	NA	10 U	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	17 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZOIC ACID	NA	50 U	NA	0.5 J	NA	2 J	NA	50 U	NA
SDG									
TCL Pesticides (UG/L)									
AROCLOR-1016	NA	NA	NA	NA	NA	NA	NA	NA	NA
AROCLOR-1260	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA: Not analyzed

ND: Not detected

J: Estimate value

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R: Value rejected during validation

-: Not applicable

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AREA A LANDFILL GROUNDWATER (ROU

	2LGW17D-2	2LGW17D-2 DISS	2LGW18S-2	2LGW18S-2 DISS	2LGW18D-2	2LGW18D-2 DISS	2LGW19S-2	2LGW19S-2 DISS	2LGW19D-2
SDG	**19326**		**19197**		**19197**		**19326**		**19167**
TCL Volatiles (UG/L)									
METHYLENE CHLORIDE	19 U	NA	100 U	NA	45 U	NA	17 U	NA	10 U
CARBON DISULFIDE	1 J	NA	100 U	NA	10 U	NA	10 U	NA	10 U
1,2-DICHLOROETHENE(TOTAL)	10 U	NA	100 U	NA	10 U	NA	10 U	NA	10 U
CHLOROFORM	10 U	NA	16 J	NA	10 U	NA	10 U	NA	10 U
TRICHLOROETHENE	10 U	NA	100 U	NA	10 U	NA	10 U	NA	10 U
BENZENE	10 U	NA	32 J	NA	10 U	NA	10 U	NA	10 U
4-METHYL-2-PENTANONE	49	NA	100 U	NA	10 U	NA	10 U	NA	10 U
TETRACHLOROETHENE	10 U	NA	100 U	NA	10 U	NA	10 U	NA	10 U
1,1,2,2-TETRACHLOROETHANE	10 U	NA	100 U	NA	10 U	NA	10 U	NA	10 U
CHLOROBENZENE	10 U	NA	1200	NA	6 J	NA	10 U	NA	10 U
ETHYLBENZENE	10 U	NA	100	NA	10 U	NA	10 U	NA	10 U
XYLENE (TOTAL)	2 J	NA	510	NA	10 U	NA	10 U	NA	10 U
SDG	**19326**		**19197**		**19197**		**19326**		**19167**
TCL Semivolatiles (UG/L)									
PHENOL	6 J	NA	10 U	NA	10 UJ	NA	10 U	NA	10 U
2-CHLOROPHENOL	20 U	NA	12	NA	10 UJ	NA	10 U	NA	10 U
1,3-DICHLOROBENZENE	20 U	NA	22	NA	10 UJ	NA	10 U	NA	10 U
1,4-DICHLOROBENZENE	20 U	NA	55	NA	10 UJ	NA	10 U	NA	10 U
1,2-DICHLOROBENZENE	20 U	NA	8 J	NA	10 UJ	NA	10 U	NA	10 U
4-METHYLPHENOL	6 J	NA	0.6 J	NA	10 UJ	NA	10 U	NA	10 U
2,4-DICHLOROPHENOL	20 U	NA	2 J	NA	10 UJ	NA	10 U	NA	10 U
2,4-DIMETHYLPHENOL	20 U	NA	8 J	NA	10 UJ	NA	10 U	NA	10 U
1,2,4-TRICHLOROBENZENE	20 U	NA	65	NA	10 UJ	NA	10 U	NA	10 U
NAPHTHALENE	20 U	NA	17	NA	10 UJ	NA	10 U	NA	10 U
2-METHYLNAPHTHALENE	20 U	NA	5 J	NA	10 UJ	NA	10 U	NA	10 U
4-CHLORO-3-METHYLPHENOL	20 U	NA	8 J	NA	10 UJ	NA	10 U	NA	10 U
DIETHYL PHTHALATE	120	NA	13	NA	10 UJ	NA	10 U	NA	10 U
N-NITROSODIPHENYLAMINE	20 U	NA	1 J	NA	10 UJ	NA	0	NA	10 U
ANTHRACENE	20 U	NA	0.5 J	NA	10 UJ	NA	10 U	NA	10 U
CARBAZOLE	20 U	NA	0.8 J	NA	10 UJ	NA	10 U	NA	10 U
DI-N-BUTYLPHTHALATE	20 U	NA	0.8 J	NA	10 UJ	NA	10 U	NA	10 U
BUTYLBENZYLPHTHALATE	20 U	NA	10 U	NA	10 UJ	NA	10 U	NA	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	8 J	NA	25	NA	10 U	NA	10 U	NA	3 J
BENZOIC ACID	50 U	NA	50 U	NA	50 U	NA	50 U	NA	50 U
SDG			**19197**						
TCL Pesticides (UG/L)									
AROCLOR-1016	NA	NA	7.5 J	NA	NA	NA	NA	NA	NA
AROCLOR-1260	NA	NA	290 J	NA	NA	NA	NA	NA	NA

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AREA A LANDFILL GR UNDWATER (ROU

	2LGW19D-2 DISS	2LGW20S-2	2LGW20S-2 DISS	2LGW20S-D-2	2LGW20S-2AVG.	2LGW20SD-2 DISS	2LGW20S-2 DISSAVG.	2LGW20D-2
SDG		19302		19302				19302
TCL Volatiles (UG/L)								
METHYLENE CHLORIDE	NA	10 U	NA	8 J	6.5 J	NA	NA	10 U
CARBON DISULFIDE	NA	10 U	NA	10 U	10 U	NA	NA	10 U
1,2-DICHLOROETHENE(TOTAL)	NA	10 U	NA	10 U	10 U	NA	NA	10 U
CHLOROFORM	NA	10 U	NA	10 U	10 U	NA	NA	10 U
TRICHLOROETHENE	NA	10 U	NA	10 U	10 U	NA	NA	10 U
BENZENE	NA	10 U	NA	10 U	10 U	NA	NA	10 U
4-METHYL-2-PENTANONE	NA	10 U	NA	10 U	10 U	NA	NA	10 U
TETRACHLOROETHENE	NA	10 U	NA	10 U	10 U	NA	NA	10 U
1,1,2,2-TETRACHLOROETHANE	NA	10 U	NA	10 U	10 U	NA	NA	10 U
CHLOROBENZENE	NA	10 U	NA	10 U	10 U	NA	NA	10 U
ETHYLBENZENE	NA	10 U	NA	10 U	10 U	NA	NA	10 U
XYLENE (TOTAL)	NA	10 U	NA	10 U	10 U	NA	NA	10 U
SDG		19302		19302				19302
TCL Semivolatiles (UG/L)								
PHENOL	NA	10 U	NA	10 U	10 U	NA	NA	10 U
2-CHLOROPHENOL	NA	10 U	NA	10 U	10 U	NA	NA	10 U
1,3-DICHLOROBENZENE	NA	10 U	NA	10 U	10 U	NA	NA	10 U
1,4-DICHLOROBENZENE	NA	10 U	NA	10 U	10 U	NA	NA	10 U
1,2-DICHLOROBENZENE	NA	10 U	NA	10 U	10 U	NA	NA	10 U
4-METHYLPHENOL	NA	10 U	NA	10 U	10 U	NA	NA	10 U
2,4-DICHLOROPHENOL	NA	10 U	NA	10 U	10 U	NA	NA	10 U
2,4-DIMETHYLPHENOL	NA	10 U	NA	10 U	10 U	NA	NA	10 U
1,2,4-TRICHLOROBENZENE	NA	10 U	NA	10 U	10 U	NA	NA	10 U
NAPHTHALENE	NA	10 U	NA	10 U	10 U	NA	NA	10 U
2-METHYLNAPHTHALENE	NA	10 U	NA	10 U	10 U	NA	NA	10 U
4-CHLORO-3-METHYLPHENOL	NA	10 U	NA	10 U	10 U	NA	NA	10 U
DIETHYL PHTHALATE	NA	10 U	NA	10 U	10 U	NA	NA	10 U
N-NITROSODIPHENYLAMINE	NA	10 U	NA	10 U	10 U	NA	NA	10 U
ANTHRACENE	NA	10 U	NA	10 U	10 U	NA	NA	10 U
CARBAZOLE	NA	10 U	NA	10 U	10 U	NA	NA	10 U
DI-N-BUTYLPHTHALATE	NA	10 U	NA	10 U	10 U	NA	NA	10 U
BUTYLBENZYLPHTHALATE	NA	10 U	NA	10 U	10 U	NA	NA	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	NA	10 U	NA	10 U	10 U	NA	NA	10 U
BENZOIC ACID	NA	1 J	NA	1 J	1 J	NA	NA	2 J
SDG								
TCL Pesticides (UG/L)								
AROCLOR-1016	NA	NA	NA	NA	NA	NA	NA	NA
AROCLOR-1260	NA	NA	NA	NA	NA	NA	NA	NA

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

Not applicable

* Value is the average of duplicate sample results

AREA A LANDFILL GROUNDWATER (ROU

	2LGW20D-2 DISS
SDG	
TCL Volatiles (UG/L)	
METHYLENE CHLORIDE	NA
CARBON DISULFIDE	NA
1,2-DICHLOROETHENE(TOTAL)	NA
CHLOROFORM	NA
TRICHLOROETHENE	NA
BENZENE	NA
4-METHYL-2-PENTANONE	NA
TETRACHLOROETHENE	NA
1,1,2,2-TETRACHLOROETHANE	NA
CHLOROBENZENE	NA
ETHYLBENZENE	NA
XYLENE (TOTAL)	NA
SDG	
TCL Semivolatiles (UG/L)	
PHENOL	NA
2-CHLOROPHENOL	NA
1,3-DICHLOROBENZENE	NA
1,4-DICHLOROBENZENE	NA
1,2-DICHLOROBENZENE	NA
4-METHYLPHENOL	NA
2,4-DICHLOROPHENOL	NA
2,4-DIMETHYLPHENOL	NA
1,2,4-TRICHLOROBENZENE	NA
NAPHTHALENE	NA
2-METHYLNAPHTHALENE	NA
4-CHLORO-3-METHYLPHENOL	NA
DIETHYL PHTHALATE	NA
N-NITROSODIPHENYLAMINE	NA
ANTHRACENE	NA
CARBAZOLE	NA
DI-N-BUTYLPHTHALATE	NA
BUTYLBENZYLPHTHALATE	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA
BENZOIC ACID	NA
SDG	
TCL Pesticides (UG/L)	
AROCLOR-1016	NA
AROCLOR-1260	NA

NA Not analyzed

ND Not detected

J Estimate value

U. Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R. Value rejected during validation

- Not applicable

*. Value is the average of duplicate sample results

AREA A LANDFILL GROUNDWATER (R UND 2)

	Range (Total)	Frequency (Total)	Range (Diss)	Frequency (Diss)	2LGW7S-2	2LGW7S-2 DISS	2LGW7D-2	2LGW7D-2 DISS	2LGW8S-2
SDG					**19221**	**19221**	**19221**	**19221**	**19197**
TAL Metals (UG/L)									
ALUMINUM	61.3-10300	8/14	12.8-62.5	4/14	3960 J	10.0 U	121 J	13.0 U	100 U
ANTIMONY	-	0/13	19.4	1/14	12.0 U	19.9 U	12.0 U	12.0 U	19.3 U
ARSENIC	2.3-37.0	7/14	2.5-3.6	3/14	37.0	20.0 U	3.6 J	3.6 J	3.6 U
BARIUM	9.7-564	14/14	32.6-523	12/14	61.5 J	48.0 U	142 J	118	45.6
BERYLLIUM	1.1	1/14	-	0/14	1.1 J	1.0 U	1.0 U	1.0 U	1.0 U
BORON	175-3010	3/14	11.8-2670	7/14	3010 J	2670	113 U	80.6 U	38.5 U
CADMIUM	1.7-2.7	3/12	-	0/13	R	UR	1.7 J	1.0 U	2.0 U
CALCIUM	19100-143000	14/14	19900-147000	14/14	143000	147000	30000	28300	19900
CHROMIUM	2.3-23.2	8/14	3.9-6.7	2/14	23.2 J	6.0 U	4.2 J	3.0 U	3.2 J
COBALT	3.2-24.8	4/14	14.4	1/14	4.0 U	3.0 U	3.5 U	1.5 U	7.4 U
COPPER	5.2-13.3	8/13	3.8-30.1	3/14	13.3	30.1 J	9.3	3.0 U	2.0 U
IRON	5350-193000	14/14	22.7-42700	14/14	51100	164 J	83900	20700	13900
LEAD	3.4-84.0	6/14	2.6-6.3	5/14	13.9	10.0 UJ	2.2 U	1.0 U	2.0 UJ
MAGNESIUM	3020-563000	14/14	2730-451000	14/14	563000	451000	7310	7010	4350
MANGANESE	175-1785	14/14	36.8-1920*	14/14	175 J	36.8	700 J	279	420
MERCURY	.32-.36	2/14	-	0/14	0.2 UJ	0.2 UJ	0.2 UJ	0.2 UJ	0.20 U
NICKEL	9.3-30.8	3/14	3.9-24.9	3/14	9.3	15.7 U	13.7	3.9	7.0 U
POTASSIUM	856-20800	14/14	1450-172000	12/14	208000	172000	6360	6420	3510
SODIUM	13700-5230000	14/14	12400-4570000	14/14	5230000	4570000	141000	135000	23300
THALLIUM	2.85*-4.0	2/14	4.15*	1/14	20.0 UJ	2.0 UJ	20.0 UJ	2.0 UJ	2.0 UJ
VANADIUM	24.7-47.3*	3/14	2.3*	1/14	24.7 J	11.4 U	3.0 U	3.0 U	3.0 U
ZINC	7.4-218.5	8/14	6.5-74.0	6/14	42.5 J	2.0 UJ	20.2 J	16.0	6.7 U
SDG					**19221**				
Radiological (pCi/L)									
GROSS ALPHA			-	NA	6 +/- 34	NA	NA	NA	NA
GROSS BETA			-	NA	85 +/- 48	NA	NA	NA	NA
GAMMA SPEC			-	NA	NA	NA	NA	NA	NA
SDG					**19221**		**19221**		**19197**
HARDNESS as CaCO3					2900	NA	100	NA	64

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AREA A LANDFILL GROUNDWATER (ROU

	2LGW8S-2 DISS	2LGW8D-2	2LGW8D-2 DISS	2LGW9D-2	2LGW9D-2 DISS	2LGW13D-2	2LGW13D-2 DISS	2LGW17S-2	2LGW17S-2 DISS
SDG	**19197**	**19197**	**19197**	**192817**	**192813**	**19302**	**19302**	**19326**	**19326**
TAL Metals (UG/L)									
ALUMINUM	12.8	61.3 J	16.7	64.8 U	46.3 U	240 U	61.9 U	93.8 U	84.8 U
ANTIMONY	12.0 U	3.0 U	19.4	12.0 U	12.0 U	17.9 U	12.0 U	12.0 U	12.0 U
ARSENIC	2.5	3.0	2.0 U	5.0 U	5.0 U	3.6 U	5.0 U	7.5 J	5.0 U
BARIUM	50.5	9.7	6.0 U	41.6	47.2	87.9	87.5	34.5	36.8
BERYLLIUM	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
BORON	50 U	50.0 U	23.3	175	170	40.9 U	28	39.5 U	35.7 U
CADMIUM	2.0 U	1.0 U	2.0 U	2.0 U	2.0 U	2.7 J	2.0 U	2.0 U	2.0 U
CALCIUM	21300	52800	38100	29500	30400	61300	65100	26900	28600
CHROMIUM	3.0 U	2.3	3.0 U	4.7 U	3.0 U	3.0 U	3.5 U	3.0 U	3.2 U
COBALT	5.6	3.2	3.0 U	4.2 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
COPPER	2.0 U	5.3 U	4.8	6.2 U	2.6 U	6.6	4.7 U	2.0 U	2.0 U
IRON	12600	53800	22.7	8030	2110	14100	3100	11700	12700 J
LEAD	2.0 U	2.0 UJ	2.0 U	4.6	2.6 J	3.6 J	2.0 U	2.0 UJ	6.3
MAGNESIUM	4630	3020	2730	37100	38400	8120	8470	6140	6290
MANGANESE	470	309	39.9	238	351	281	277	387	415
MERCURY	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 UJ	0.2 U	0.2 U	0.2 U
NICKEL	7.0 U	12.0 U	7.0 U	7.0 U	7.0 U	8.4 U	7.0 U	7.0 U	7.0 U
POTASSIUM	3290	865 J	1450	15600	15400	4390	4200	2990	2500 U
SODIUM	25100	13700	12400	355000	377000	60100	63300	21800	20900
THALLIUM	20.0 U	UR	2.0 U	5.0 U	5.0 U	4.0 J	5.0 U	5.0 U	5.0 U
VANADIUM	3.0 U	1.0 U	3.0 U	3.0 U	3.0 U	3.8 U	3.0 U	3.0 U	1.0 U
ZINC	8.1	8.4	6.5	11.6 U	9.8 U	12.3 U	12.6 U	7.2 U	9.6 U
SDG						**19302**			
Radiological (pCi/L)									
GROSS ALPHA	NA	NA	NA	NA	NA	20 +/- 3	NA	NA	NA
GROSS BETA	NA	NA	NA	NA	NA	1 +/- 1	NA	NA	NA
GAMMA SPEC	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDG		**19197**		**192817**		**19302**		**19326**	
HARDNESS as CaCO3	NA	132	NA	222	NA	182	NA	90	NA

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AREA A LANDFILL GROUNDWATER (ROU

	2LGW17D-2	2LGW17D-2 DISS	2LGW18S-2	2LGW18S-2 DISS	2LGW18D-2	2LGW18D-2 DISS	2LGW19S-2	2LGW19S-2 DISS	2LGW19D-2
SDG	**19326**	**19326**	**19197**	**19197**	**19197**	**19197**	**19326**	**19326**	**19167**
TAL Metals (UG/L)									
ALUMINUM	449	31.8 U	593	62.5	204	15.0	10300	116 U	90.0 U
ANTIMONY	12.0 U	12.0 U	12.0 UR	12.0 U	12.0 U	12.0 U	12.0 U	12.0 U	13.0 U
ARSENIC	7.0 J	5.0 U	6.2 U	2.6	4.4 U	2.0 U	5.0 J	5.0 U	2.3
BARIUM	32.2	32.6	564	523	64.9	63.4	503	386	257
BERYLLIUM	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
BORON	16.4 U	13.0 U	303 J	290	32.5 U	50.0 U	58.8 U	40.5 U	50.0 U
CADMIUM	2.2 J	2.0 U	UR	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	3.0 U
CALCIUM	21600	22600	58500	62800	19100	19900	90600	90900	94100
CHROMIUM	3.0 U	3.0 UJ	7.2	6.7	3.0 U	3.9	12.4	4.4 U	4.0 U
COBALT	3.0 U	3.0 U	14.4 U	14.4	3.0 U	3.0 U	9.2	3.1 U	5.0 U
COPPER	5.2	2.0 U	10.1 R	3.8	6.6	2.0 U	9.8	2.7 U	5.0 U
IRON	32600	2500 J	193000	193000	55800	42700	12600	96.8 J	5350
LEAD	3.9 U	2.0 U	84.0	2.0 U	2.7 U	2.0 U	9.3 U	2.0 U	2.0 UJ
MAGNESIUM	4640	4870	31200	30300	5180	5420	25400	20700	15200
MANGANESE	189	151	668	705	621	645	1620	1570	493
MERCURY	0.36 J	0.2 U	0.32 J	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
NICKEL	7.0 U	7.0 U	30.8	24.9	7.0 U	7.0 U	7.0 U	9.0 J	11.0 U
POTASSIUM	2030	2450 U	29800	29300	2430	2190	13000	10800	5850
SODIUM	16700	17200	251000	235000	26600	27800	43200	44100	31400
THALLIUM	5.0 U	5.0 U	UR	20.0 U	UR	20.0 U	5.0 U	5.0 U	10.0 UJ
VANADIUM	3.0 U	1.0 U	3.0 U	3.0 U	3.0 U	3.0 U	30.3	1.0 U	4.0 U
ZINC	17.1 U	4.5 U	218	74.0	21.2 U	8.6	61.7	9.1 U	7.4
SDG			**19197**						
Radiological (pCi/L)									
GROSS ALPHA	NA	NA	11 +/- 6	NA	NA	NA	NA	NA	NA
GROSS BETA	NA	NA	36 +/- 9	NA	NA	NA	NA	NA	NA
GAMMA SPEC	NA	NA	45+/-61	NA	NA	NA	NA	NA	NA
SDG	**19326**		**19197**		**19197**		**19326**		**19167**
HARDNESS as CaCO3	160	NA	84	NA	76	NA	322	NA	304

NA: Not analyzed

ND: Not detected

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UJ: Not detected at estimated detection limit indicated

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-: Not applicable

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AREA A LANDFILL GROUNDWATER (ROU

	2LGW19D-2 DISS	2LGW20S-2	2LGW20S-2 DISS	2LGW20S-D-2	2LGW20S-2AVG.	2LGW20SD-2 DISS	2LGW20S-2 DISSAVG.	2LGW20D-2
SDG	**19167**	**19302**	**19302**	**19302**		**19302**		**19302**
TAL Metals (UG/L)								
ALUMINUM	15.0 U	4650	72.3 U	4210	4430	41.8 U	57.05 U	205 U
ANTIMONY	13.0 U	12.0 U	12.0 U	12.0 U	12.0 U	12.0 U	12.0 U	12.0 U
ARSENIC	1.0 U	7.9 U	5.0 U	4.5 U	6.3 U	5.0 U	5.0 U	3.0 U
BARIUM	265	113	97.7	116	114.5	103	100.4	126
BERYLLIUM	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
BORON	50.0 U	52.9 U	39.3	62.4 U	57.65 U	49.1	44.2	34.7 U
CADMIUM	3.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
CALCIUM	97800	62600	65300	62400	62500	71400	68350	26700
CHROMIUM	4.0 U	6.6	3.0 U	4.9 J	5.75 J	4.2 U	3.6 U	5.0 J
COBALT	5.0 U	3.5 J	3.0 U	4.4 J	3.95 J	3.0 U	3.0 U	24.8
COPPER	5.0 U	8.2	2.0 U	7.8	8.0	2.0 U	2.0 U	11.8
IRON	304	18100	14800	18700	18400	15900	15350	49300
LEAD	2.0 UJ	9.4	2.4 J	9.4	9.4	6.2	4.3	3.4 J
MAGNESIUM	15800	10900	10900	11100	11000	11600	11250	5340
MANGANESE	484	1780	1830	1790	1785	2010	1920	705
MERCURY	0.2 U	0.2 UJ	0.2 U	0.2 UJ	0.2 UJ	0.2 U	0.2 U	0.2 UJ
NICKEL	14.0	8.3 U	7.0 U	11.2 U	9.75 U	7.0 U	7.0 U	59.2 U
POTASSIUM	6120	7120	6390	7250	7185	6710	6550	3540
SODIUM	32700	44600	44900	45200	44900	44100	44500	49900
THALLIUM	10.0 UJ	2.0 J	5.8 J	3.7 J	2.85 J	5.0 U	4.15 J	2.0 UJ
VANADIUM	4.0 U	48.8	3.0 U	45.8	47.3	3.1 J	2.3 J	3.8 U
ZINC	7.4	26.3 U	10.1 U	23.6 U	24.9 U	8.9 U	9.5 U	70.6
SDG								
Radiological (pCi/L)								
GROSS ALPHA	NA	NA	NA	NA		NA		NA
GROSS BETA	NA	NA	NA	NA		NA		NA
GAMMA SPEC	NA	NA	NA	NA		NA		NA
SDG		**19302**		**19302**				**19302**
HARDNESS as CaCO3	NA	196	NA	192		NA		84

NA: Not analyzed

ND: Not detected

J: Estimate value

U: Not detected at detection limit indicated

UJ: Not detected at estimated detection limit indicated

R: Value rejected during validation

-: Not applicable

*: Value is the average of duplicate sample results

AREA A LANDFILL GROUNDWATER (R U

	2LGW20D-2 DISS
SDG	19302
TAL Metals (UG/L)	
ALUMINUM	52.0 U
ANTIMONY	13.4 U
ARSENIC	5.0 U
BARIUM	119
BERYLLIUM	1.0 U
BORON	11.8 J
CADMIUM	2.0 U
CALCIUM	23400
CHROMIUM	3.0 U
COBALT	8.0 U
COPPER	2.0 U
IRON	20700
LEAD	2.0 U
MAGNESIUM	5370
MANGANESE	554
MERCURY	0.2 U
NICKEL	7.0 U
POTASSIUM	3140
SODIUM	52100
THALLIUM	5.0 U
VANADIUM	3.0 U
ZINC	16.1 U
SDG	
Radiological (pCi/L)	
GROSS ALPHA	NA
GROSS BETA	NA
GAMMA SPEC	NA
SDG	
HARDNESS as CaCO3	NA

NA: Not analyzed

ND: Not detected

J: Estimate value

U: Not detected at detection limit indicated

UJ: Not detected at estimated detection limit indicated

R: Value rejected during validation

-: Not applicable

*: Value is the average of duplicate sample results

APPENDIX D.3

SITE 2 - AREA A WETLANDS

AREA A WETLANDS GROUNDWATER

	Range (Total)	Frequency (Total)	Range (Diss)	Frequency (Diss)	2WGW2D	2WGW2D DISS	2WGW3D	2WGW3D DISS	2WGW3S	2WGW3S DISS
SDG					18102		17915		17915	
TCL Volatiles (UG/L)										
CARBON DISULFIDE	2	1/11	-	NA	10 U	NA	10 U	NA	10 U	NA
1,2-DICHLOROETHANE	1	1/11	-	NA	10 U	NA	10 U	NA	10 U	NA
TRICHLOROETHENE	2	1/11	-	NA	10 U	NA	10 U	NA	10 U	NA
1,1,2-TRICHLOROETHANE	2	1/11	-	NA	10 U	NA	10 U	NA	10 U	NA
4-METHYL-2-PENTANONE	12	1/11	-	NA	10 U	NA	10 U	NA	10 U	NA
2-HEXANONE	12	1/11	-	NA	10 U	NA	10 U	NA	10 U	NA
SDG					18102		17915		17915	
TCL Semivolatiles (UG/L)										
DIETHYLPHTHALATE	1	2/11	-	NA	10 U	NA	1 J	NA	1 J	NA
DI-N-BUTYLPHTHALATE	1	1/11	-	NA	10 U	NA	10 U	NA	1 J	NA
BIS(2-ETHYLHEXYL)PHTHALATE	11	1/11	-	NA	10 U	NA	11	NA	10 U	NA
DI-N-OCTYL PHTHALATE	0.60-3	3/11	-	NA	10 U	NA	3 J	NA	10 U	NA
BENZOIC ACID	0.50-7	4/11	-	NA	50 U	NA	50 U	NA	50 U	NA
SDG					18102	18102	17915	17915	17915	17915
TAL Metals (UG/L)										
ALUMINUM	216.8-810	6/11	28.8-7,520	4/11	150 U	120 U	1070	14.0 U	408	28.9
ANTIMONY		0/8	16.8	1/8	13.0 U	13.0 U	UR	15.0 U	15.0 U	UR
ARSENIC	2.3-108	7/10	2.6-138	6/11	2.0 UJ	2.0 UJ	4.6 J	2.9 J	5.3 J	22.1
BARIUM	15.5-804	11/11	13.8-805	11/11	15.5 J	13.9	904 J	805	187 J	707
BERYLLIUM	1.3-3.8	3/11	1.2-4.2	3/11	1.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
BORON	80.7-3,280	6/10	98.6-3,340	7/11	28.0 U	50.0 U	R	116	292 J	245 J
CADMIUM	6.3-10.8	3/11	5.2-30.8	3/10	3.0 U	3.0 U	10.9 J	18.1	4.3 J	30.6 J
CALCIUM	5,920-288,000	11/11	5,880-277,000	11/11	5920	5980	92500 J	92500	40400 J	137000
CHROMIUM	3.8	1/11		0/11	4.0 U	4.0 U	3.0 U	3.0 UJ	3.0 U	3.0 UJ
COBALT	7.2-37.5	6/11	40.8	1/11	5.0 U	5.0 U	4.0 U	4.0 UJ	19.9 U	4.0 UJ
COPPER	3.43-7	3/11	-	0/11	5.0 U	5.0 U	17.2 U	2.3 U	6.7 U	7.6 U
IRON	394-131,000	10/11	114-123,000	8/11	105 U	18.6 U	108000 J	73600 J	39700 J	123000 J
LEAD	1.3-9.8	8/11	2.1-6.7	2/11	9.8	6.7 J	3.8 J	2.1 J	2.4 J	2.0 UJ
MAGNESIUM	1,340-952,000	11/11	1,340-1,030,000	11/11	1340 J	1340	131000 J	130000	43000 J	194000
MANGANESE	18-7,920	11/11	11.8-7,870	11/11	21.1	21.7	5190	4900	7920	7490
NICKEL	48-116	2/11	12.1-101	3/11	11.0 U	11.0 U	11.1 U	10.0 U	10.0 U	12.1 J
POTASSIUM	557-815,000	11/11	488-843,000	11/11	557 J	488	44700 J	42500 J	15800 J	79000 J
SILVER	-	0/11	3.9-9.8	3/11	2.0 U	2.0 U	7.2 U	3.9 J	3.8 U	9.8 J
SODIUM	7,590-7,890,000	11/11	7,690-8,040,000	11/11	17900	17900	1290000 J	1280000 J	529000 J	1880000 J
THALLIUM	15.2	1/9	1.3-1.4	2/9	1.0 UJ	1.0 UJ	10.0 UJ	1.3 J	10.0 UJ	1.4 J
VANADIUM	26	1/11	32	1/11	4.0 U	4.0 U	5.0 UJ	5.0 U	5.0 UJ	5.0 UJ
ZINC	6.8-274	8/11	3.0-262	7/11	17.0 J	22.6	15.4	5.2	7.0 U	3.0 J
SDG										
Radiological (pCi/L)										
GROSS ALPHA	11	1/1	-	NA	NA	NA	NA	NA	NA	NA
GROSS BETA	5	1/1	-	NA	NA	NA	NA	NA	NA	NA
GROSS GAMMA (TOTAL)	-	0/1	-	NA	NA	NA	NA	NA	NA	NA

NA: Not Analyzed

AREA A WETLANDS GROUNDWATER

	2WGW4D	2WGW4D DISS	2WGW5D	2WGW5D DISS	2WGW5S	2WGW5S DISS	2WGW6D	2WGW6D DISS	2WGW6S	2WGW6S DISS
SDG	18102		18102		17915		17873		17873	
TCL Volatiles (UG/L)										
CARBON DISULFIDE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,2-DICHLOROETHANE	1 J	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
TRICHLOROETHENE	2 J	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,1,2-TRICHLOROETHANE	2 J	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
4-METHYL-2-PENTANONE	12 J	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
2-HEXANONE	12	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
SDG	18102		18102		17915		17873		17873	
TCL Semivolatiles (UG/L)										
DIETHYLPHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DI-N-BUTYLPHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	36 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DI-N-OCTYL PHTHALATE	2 J	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZOIC ACID	7 J	NA	0.9 J	NA	50 UJ	NA	0.5 J	NA	0.8 J	NA
SDG	18102	18102	18102	18102	17915	17915	17873	D17873	17873	D17873
TAL Metals (UG/L)										
ALUMINUM	182 U	19.2 U	70.2 U	54.3 U	267	14.0 U	9910	7520	2260	2180
ANTIMONY	13.0 U	16.9	13.0 U	13 U	UR	15.0 U	15.0 U	15.0 UJ	15.0 U	15.0 UJ
ARSENIC	2.0 U	2.0 U	4.4 J	5.5	4.9 J	3.2 J	2.3 J	2.0 U	UR	2.0 U
BARIUM	93.8 J	81.9	161 J	165	754 J	187	75.2	71.8	17.8	15.9
BERYLLIUM	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 UJ	3.6	4.2	1.6 J	2.3
BORON	35.9 U	50.0 U	207	214	253 J	293	403	400	90.7 J	98.8
CADMIUM	3.0 U	3.0 U	3.0 U	3.0 U	8.3 J	5.2	4.8 U	4.5 U	2.1 U	3.2 U
CALCIUM	33800	32400	42500	41800	142000 J	41700	127000	130000	27400	27600
CHROMIUM	4.0 U	4.0 U	4.0 U	4.0 U	3.0 U	3.0 UJ	3.0 U	3.0 UJ	3.0 U	3.0 UJ
COBALT	5.0 U	5.0 U	16.3 J	19.3 U	4.0 U	15.3 U	37.5	40.9	20.7	29.2 U
COPPER	5.0 U	5.0 U	5.0 U	5.0 U	9.5 U	2.0 U	4.2	2.0 U	3.0 J	2.0 U
IRON	3220	25.3 U	24900	26800	131000 J	39200 J	10100	1630	394	383
LEAD	2.7 J	2.0 UJ	2.0 UJ	2.0 UJ	1.3 J	2.0 UJ	2.0 UJ	2.0 U	2.0 UJ	2.0 U
MAGNESIUM	3100 J	3110	28300	29400	203000 J	43800	38500	38600	5880	5870
MANGANESE	56	33.6	5770	6050	7900	7870	3280	3240	665	664
NICKEL	11.0 U	11.0 U	11.0 U	11.0 U	14.4 U	12.8 J	116	101	48.0	45.5 U
POTASSIUM	1330 J	1390	8280	7950	86600 J	15700 J	11300	11900	6530	6590
SILVER	2.0 U	2.0 U	2.0 U	2.0 U	6.5 U	4.5	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ
SODIUM	8270	8420	344000	362000	521000 J	537000	74100	75600	21200	21300
THALLIUM	1.0 U	1.0 UJ	1.0 U	1.7 U	1.0 UJ	1.0 UJ	UR	UR	UR	UR
VANADIUM	4.0 U	4.0 U	4.0 U	4.0 U	5.0 UJ	5.0 U	5.0 U	7.0 U	5.0 U	8.0 U
ZINC	8.8 J	7.5 U	17.2 J	21.6	4.1 U	3.8 J	274	262	182	183
SDG	18102									
Radiological (pCi/L)										
GROSS ALPHA	11 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
GROSS BETA	5 J	NA	NA	NA	NA	NA	NA	NA	NA	NA
GROSS GAMMA (TOTAL)	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA: Not Analyzed

AREA A WETLANDS GROUNDWATER

	2WGW21D	2WGW21D DISS	2WGW21S	2WGW21S DISS	2WGW22D	2WGW22D DISS
SDG	18102		17915		18102	
TCL Volatiles (UG/L)						
CARBON DISULFIDE	10 U	NA	2 J	NA	10 U	NA
1,2-DICHLOROETHANE	10 U	NA	10 U	NA	10 U	NA
TRICHLOROETHENE	10 U	NA	10 U	NA	10 U	NA
1,1,2-TRICHLOROETHANE	10 U	NA	10 U	NA	10 U	NA
4-METHYL-2-PENTANONE	10 U	NA	10 U	NA	10 U	NA
2-HEXANONE	10 U	NA	10 U	NA	10 U	NA
SDG	18102		17915		18102	
TCL Semivolatiles (UG/L)						
DIETHYLPHTHALATE	10 U	NA	10 U	NA	10 U	NA
DI-N-BUTYLPHTHALATE	10 U	NA	10 U	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	NA	10 U	NA	10 U	NA
DI-N-OCTYL PHTHALATE	0.6 J	NA	10 U	NA	10 U	NA
BENZOIC ACID	50 U	NA	50 U	NA	50 U	NA
SDG	18102	18102	17915	17915	18102	18102
TAL Metals (UG/L)						
ALUMINUM	150 U	15.0 U	216	36.5	71.0 U	76.9 U
ANTIMONY	13.0 U	13.0 U	UR	UR	13.0 U	13.0 U
ARSENIC	3.4 J	2.6 J	109 J	138	2.0 U	2.0 U
BARIUM	52.6 J	44.8	263 J	252 J	107 J	102
BERYLLIUM	1.0 U	1.3 U	1.3 J	1.2 J	1.0 U	1.0 U
BORON	40.1 U	50.0 U	3260 J	3340 J	32.1 U	50.0 U
CADMIUM	3.0 U	3.0 U	3.0 UJ	R	3.0 U	3.0 U
CALCIUM	40300	39900	266000 J	277000	33200	33700
CHROMIUM	4.0 U	4.0 U	3.6 J	5.7 U	4.0 U	4.0 U
COBALT	7.2 J	5.0 U	5.7 U	5.8 U	5.0 U	5.7 U
COPPER	5.0 U	5.0 U	43.7	12.0 U	5.0 U	5.0 U
IRON	24300	7230	528 J	114 J	705	47 U
LEAD	5.2 J	2.0 UJ	2.4 J	2.0 UJ	2.5 J	2.0 UJ
MAGNESIUM	6250	6250	952000 J	1030000 J	3380 J	3460
MANGANESE	841	832	3030	2800	18.0	11.8
NICKEL	11.0 U	11.0 U	12.0 U	10.0 U	11.0 U	11.0 U
POTASSIUM	3060 J	3090	815000 J	843000 J	1180 J	1230
SILVER	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
SODIUM	51500	52300	7890000 J	8040000 J	7590	7690
THALLIUM	1.0 UJ	1.4 U	15.2 J	10.0 UJ	1.0 U	1.5 U
VANADIUM	4.0 U	4.0 U	26.0 J	32.0 J	4.0 U	4.0 U
ZINC	11.0 J	15.3 U	2.0 U	2.0 U	6.8 J	4.4 U
SDG						
Radiological (pCi/L)						
GROSS ALPHA	NA	NA	NA	NA	NA	NA
GROSS BETA	NA	NA	NA	NA	NA	NA
GROSS GAMMA (TOTAL)	NA	NA	NA	NA	NA	NA

NA: Not Analyzed

AREA A WETLANDS GROUNDWATER (ROUND 2)

	Range (Total)	Frequency (Total)	Range (Diss)	Frequency (Diss)	ZWGW2D-2	ZWGW2D-2 DISS	ZWGW3S-2	ZWGW3S-2 DISS
SDG					**19302**		**19197**	
TCL Volatiles (UG/L)								
2-BUTANONE	4	1/10	-	NA	10 U	NA	10 U	NA
SDG					**19302**		**19197**	
TCL Semivolatiles (UG/L)								
2-METHYLPHENOL	2	1/10	-	NA	10 U	NA	10 U	NA
4-METHYLPHENOL	3	1/10	-	NA	10 U	NA	10 U	NA
BENZOIC ACID	0.5-0.6	2/10	-	NA	0.6 J	NA	50 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	2-30.5	2/10	-	NA	10 U	NA	10 U	NA
PHENOL	14	1/10	-	NA	10 U	NA	10 U	NA
SDG					**19302**	**19302**	**19197**	**19197**
TAL Metals (UG/L)								
ALUMINUM	154-4160	7/10	62.3-69.5	2/10	690	80.7 U	181	62.3
ANTIMONY	-	0/8	-	0/8	12.0 U	12.0 U	3.0 U	12.0 U
ARSENIC	1.9-56.1	4/10	2.4-49.5	3/10	3.0 U	6.1 U	23.0	29.0
BARIUM	25.15*-312	10/10	20-286	10/10	29.9	21.8	243	263
BORON	89.7-3070	6/10	61.1-3010	6/10	43.0 U	32.8 U	188	161
CADMIUM	1.2-3.9	3/9	-	0/9	2.7 J	2.0 U	1.0 U	2.0 U
CALCIUM	19700-296000	10/10	18400-73900	10/10	19700	18400	57100	61700
CHROMIUM	2.9-13.8	4/10	-	0/10	3.0 U	3.0 U	2.9	3.0 U
COBALT	2.1-15.9	6/10	17.7	2/10	3.0 U	3.0 U	2.1	3.0 U
COPPER	2.8-44.6	8/10	3.7-37	2/10	10.6	3.7 J	1.1 U	2.0 U
IRON	1510-87600	10/10	1145*-56300	6/10	1510	58.2 U	53800	56300
LEAD	3.3-32.7	3/10	1.6-13.3	5/9	32.7	13.3	2.0 UJ	2.0 U
MAGNESIUM	3100-1080000	10/10	2840-319000	9/10	3100	2840	97700	84600
MANGANESE	47.4-9270	10/10	6.8-9360	10/10	47.4	6.8	3100	3290
NICKEL	14.25*	1/10	6.95*	1/10	15.2 U	7.0 U	12.0 U	7.0 U
POTASSIUM	1570-325000	8/10	1230-319000	7/10	1650 U	1230 U	31600	28400
SELENIUM	1.5	3/10	-	0/10	3.0 U	3.0 U	2.0 UJ	2.0 U
SILVER	2.0	1/10	-	0/10	2.0 U	2.0 U	1.5 J	2.0 U
SODIUM	7580-8500000	10/10	7560-8180000	10/10	39800	39400	932000	793000
THALLIUM	4.6-9.0	4/10	7.0-8.8	2/10	2.0 UJ	2.0 UJ	20.0 UR	20.0 U
VANADIUM	2.70-4.70	5/10	-	0/10	3.5 U	3.0 U	2.70	3.0 U
ZINC	8.3-48.35*	3/10	6.6-32.2*	2/10	26.7 U	21.6 U	8.3	2.0 U
SDG								
Radiological (pCi/L)								
GROSS ALPHA	20+/-3	1/1	-	NA	NA	NA	NA	NA
GROSS BETA	22+/-2	1/1	-	NA	NA	NA	NA	NA
GAMMA SPEC	-	-	-	NA	NA	NA	NA	NA
SDG					**19302**		**19197**	
HARDNESS as CaCO3					62	NA	556	NA

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

AREA A WETLANDS GROUNDWATER (ROUND 2)

	2WGW3D-2	2WGW3D-2 DISS	2WGW4D-2	2WGW4D-2 DISS	2WGW5S-2	2WGW5S-2 DISS	2WGW5D-2	2WGW5D-2 DISS
SDG	**19197**		**19326**		**19316**		**19316**	
TCL Volatiles (UG/L)								
2-BUTANONE	10 U	NA	4 J	NA	10 U	NA	10 U	NA
SDG	**19197**		**19326**		**19316**		**19316**	
TCL Semivolatiles (UG/L)								
2-METHYLPHENOL	10 U	NA	10 U	NA	10 U	NA	10 U	NA
4-METHYLPHENOL	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZOIC ACID	50 U	NA	50 U	NA	50 U	NA	50 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	NA	2 J	NA	10 U	NA	10 U	NA
PHENOL	10 U	NA	10 U	NA	10 U	NA	10 U	NA
SDG	**19197**	**19197**	**19326**	**19326**	**19316**	**19316**	**19316**	**19316**
TAL Metals (UG/L)								
ALUMINUM	2410	69.5	291	31.8 U	53.1 U	37.3 U	60.0 U	71.4 U
ANTIMONY	3.0 U	12.0 U	12.0 U	12.9 U	12.0 U	12.0 U	12.0 U	12.0 U
ARSENIC	1.9 J	2.4	5.0 UJ	5.0 U	2.0 U	2.0 U	2.0 U	2.0 U
BARIUM	312	286	135	113	207	210	193	189
BORON	89.7 J	61.1	17.3 U	15.2 U	313	310	243	223
CADMIUM	1.2 J	2.0 U	2.0 U	2.0 U	3.9 J	2.0 U	2.0 U	2.0 UJ
CALCIUM	71500	73900	40900	40700	46500	46800	44900	44400
CHROMIUM	4.9	3.0 U	3.0 U	3.0 UJ	3.0 U	3.0 U	3.0 U	3.0 U
COBALT	3.1	3.0 U	3.0 U	3.0 U	14.7	17.7	15.9	17.7
COPPER	8.3	2.0 U	3.9 J	2.0 U	6.1 J	2.0 UJ	2.8 J	2.0 U
IRON	87600	19200	7180	67.7 U	48100	48700	27600	26600
LEAD	2.5 U	2.0	5.0 U	2.0 U	3.3	1.0 U	1.0 U	1.6 J
MAGNESIUM	38100	36000	3520	3460	49600	50100	36800	36500
MANGANESE	1150	958	405	267	9270	9360	7160	7090
NICKEL	12.0 U	7.0 U	7.0 U	7.0 U	7.0 U	7.0 U	7.0 U	7.0 U
POTASSIUM	9880	9430	1570	1920 U	14700	15500	9080	9430
SELENIUM	2.0 UJ	2.0 U	6.0 J	5.0 UJ	3.0 UJ	3.0 UJ	3.0 J	3.0 UJ
SILVER	1.0 U	2.00 U	2.00 U	2.0 U	2.0 U	2.4 U	2.0 U	2.0 UJ
SODIUM	293000	292000.0	9010	9360	580000	583000	440000	432000
THALLIUM	20.0 UR	20.0 U	5.0 U	5.0 U	8.6 J	7.0 J	9.0 J	8.8 J
VANADIUM	4.70	3.0 U	3.0 U	1.0 U	3.3 U	3.0 U	3.0 U	3.5 U
ZINC	18.5	6.6	20.0 U	2.3 U	3.1 U	6.1 U	13.2 U	7.7 U
SDG								
Radiological (pCi/L)			**19326**					
GROSS ALPHA	NA	NA	20 +/- 3	NA	NA	NA	NA	NA
GROSS BETA	NA	NA	22 +/- 2	NA	NA	NA	NA	NA
GAMMA SPEC	NA	NA	NA	NA	NA	NA	NA	NA
SDG	**19197**		**19326**		**19316**		**19316**	
HARDNESS as CaCO3	400	NA	118	NA	328	NA	280	NA

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

-: Not applicable

* Value is the average of duplicate sample results

AREA A WETLANDS GROUNDWATER (ROUND 2)

	ZWGW6D-2	ZWGW6D-2 DISS	ZWGW6D-D-2	ZWGW6DD-2 DISS	ZWGW26D-2AVG	ZWGW26D-2 DISSAVG	ZWGW21S-2	ZWGW21S-2 DISS
SDG	19326		19326				19300	
TCL Volatiles (UG/L)								
2-BUTANONE	10 U	NA	10 U	NA	10 U	NA	10 U	NA
SDG	19326		19326				19300	
TCL Semivolatiles (UG/L)								
2-METHYLPHENOL	10 U	NA	10 U	NA	10 U	NA	10 UJ	NA
4-METHYLPHENOL	10 U	NA	10 U	NA	10 U	NA	10 UJ	NA
BENZOIC ACID	50 U	NA	50 U	NA	50 U	NA	25 UJ	NA
BIS(2-ETHYLHEXYL)PHTHALATE	30 J	NA	31 J	NA	30.5 J	NA	10 UJ	NA
PHENOL	10 U	NA	10 U	NA	10 U	NA	10 UJ	NA
SDG	19326	19326	19326	19326			19300	19300
TAL Metals (UG/L)								
ALUMINUM	668	84 8 U	689	86.2 U	678.5 J	85.5 U	4160 J	28.9 U
ANTIMONY	15 0 U	12 0 U	12 0 U	13.4 U	13.5 U	12.7 U	UR	UR
ARSENIC	6 5 J	5 0 U	5 0 UJ	5.0 U	4.5 J	5.0 U	56.1 J	49.5 J
BARIUM	25 0	20 3	25 3	19.9	25.15	20.1	168 J	143 J
BORON	163	166	167	161	165	163.5	3070 J	3010 J
CADMIUM	2 0 U	2 0 U	2.0 U	2.0 U	2.0 U	2.0 U	UR	UR
CALCIUM	40100	39600	39900	39500	40000	39550	296000 J	291000 J
CHROMIUM	3 0 U	3 5 U	3 0 U	3.0 UJ	3.0 U	3.25 U	13.8 J	3.0 U
COBALT	3 0 U	6 0 U	5 4 J	3.0 U	3.45 U	4.5 U	3.7 J	3.0 U
COPPER	10 2	2 6 U	9 8	2.7 U	10	2.65 U	44.6 J	37.0 J
IRON	23400	1170 J	25400	1120 J	24400	1145 J	7500 J	89.5 U
LEAD	3 4 U	2 0 U	3 7 U	2.0 U	3.55 U	2.0 U	15.1 U	UR
MAGNESIUM	9970	10100	9990	10000	9980	10050	1080000 J	1050000 J
MANGANESE	819	768	832	730	825.5	749	813 J	657 J
NICKEL	19 2	10 4 J	9.3 J	7.0 U	14.25	6.95 J	25.6 U	10.7 U
POTASSIUM	6960	6810	7120	6720	7040	6765	325000 J	319000 J
SELENIUM	5 0 UJ	5.0 UJ	5.1 J	5.0 UJ	3.8 J	5.0 UJ	5.0 UJ	5.0 UJ
SILVER	2 0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 UJ	2.0 UJ
SODIUM	69300	69000	69100	69100	69200	69050	8500000 J	8180000 J
THALLIUM	5 0 U	5 0 U	6.0 J	5.0 U	4.25 J	5.0 U	5.2 U	12.1 U
VANADIUM	3 0 U	1.0 U	3.0 U	1.0 U	3.0 U	1.0 U	25.1 J	11.3 U
ZINC	47 6	30.9	49.1	33.5	48.35	32.2	3.2 U	2.0 U
SDG								
Radiological (pCi/L)								
GROSS ALPHA	NA	NA	NA	NA	NA	NA	NA	NA
GROSS BETA	NA	NA	NA	NA	NA	NA	NA	NA
GAMMA SPEC	NA	NA	NA	NA	NA	NA	NA	NA
SDG	19326		19326				19300	
HARDNESS as CaCO3	144	NA	140	NA			6150	NA

NA: Not analyzed

ND: Not detected

J: Estimate value

U: Not detected at detection limit indicated

UJ: Not detected at estimated detection limit indicated

R: Value rejected during validation

-: Not applicable

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AREA A WETLANDS GROUNDWATER (ROUND 2)

	ZWGW21D-2	ZWGW21D-2 DISS	ZWGW22D-2	ZWGW22D-2 DISS
SDG	**19300**		**19302**	
TCL Volatiles (UG/L)				
2-BUTANONE	10 U	NA	10 U	NA
SDG	**19300**		**19302**	
TCL Semivolatiles (UG/L)				
2-METHYLPHENOL	10 U	NA	2 J	NA
4-METHYLPHENOL	10 U	NA	3 J	NA
BENZOIC ACID	25 UJ	NA	0.5 J	NA
BIS(2-ETHYLHEXYL)PHTHALATE	10 UJ	NA	10 U	NA
PHENOL	10 U	NA	14	NA
SDG	**19300**	**19300**	**19302**	**19302**
TAL Metals (UG/L)				
ALUMINUM	154	45.9 U	306 U	34.8 U
ANTIMONY	UR	UR	12.0 U	12.0 U
ARSENIC	5.0 U	5.0 U	3.0 U	3.0 U
BARIUM	41.3	33.6	84.0	72.3
BORON	32.5 U	36.7 U	21.3 U	21.2 U
CADMIUM	2.0 U	2.0 U	2.0 U	2.0 U
CALCIUM	52100	49800	25200	24900
CHROMIUM	3.5 J	3.0 U	3.0 U	3.0 U
COBALT	3.0 U	3.0 U	3.0 U	3.0 U
COPPER	2.8 J	2.0 UJ	2.0 U	2.0 U
IRON	19700	4960	9270	28.3 U
LEAD	8.4 U	3.5 J	10.1	4.4 J
MAGNESIUM	6890	6660	4880	4770
MANGANESE	730	645	149	65.3
NICKEL	7.0 U	7.0 U	7.0 U	7.0 U
POTASSIUM	4820	4820	2290 U	2510 U
SELENIUM	5.0 UJ	5.0 UJ	3.0 U	3.0 U
SILVER	2.0 UJ	2.0 UJ	2.0 U	2.0 U
SODIUM	59000	56300	7580	7560
THALLIUM	5.0 UJ	5.0 UJ	4.6 J	2.0 UJ
VANADIUM	3.0 U	3.0 U	3.9 U	3.0 U
ZINC	12.0 U	8.9 U	14.9 U	20.6 U
SDG				
Radiological (pCi/L)				
GROSS ALPHA	NA	NA	NA	NA
GROSS BETA	NA	NA	NA	NA
GAMMA SPEC	NA	NA	NA	NA
SDG	**19300**		**19302**	
HARDNESS as CaCO3	154	NA	82	NA

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

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AREA A WETLANDS SURFACE WATER

	Range(Total)	Frequency(Total)	Range(Diss)	Frequency(Diss)	2WSW1	2WSW1 DISS	2WSW2	2WSW2 DISS	2WSW6	2WSW6 DISS
SDG					16525	16525	16525	16525	16525	16525
TCL Volatiles (UG/L)										
TETRACHLOROETHENE	2	1/9	-	NA	10 U	NA	10 U	NA	10 U	NA
TCL Semivolatiles (UG/L)	-	0/1	-	NA	NA	NA	10 U - 25 U	NA	NA	NA
TCL Pesticides (UG/L)	-	0/9	-	NA	.050 U - 5.0 U	NA	.050 U - 5.0 U	NA	.050 U - 5.0 U	NA
TCL PCB (UG/L)	-	0/9	-	NA	1.0 U - 2.0 U	NA	1.0 U - 2.0 U	NA	1.0 U - 2.0 U	NA
TAL Metals (UG/L)										
ALUMINUM	66.9-20,900	8/9	86 3-20,800	5/6	20900	157	586	86.3	259	20800
ARSENIC	2 8-2.9	3/9	-	0/6	2.9	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
BARIUM	97 6-115	2/9	83 3-91 2	2/6	76 1 U	16.6 U	115	91.2	23.1 U	73.5 U
BORON	154-369	5/9	75 9-121	4/6	270	50.0 U	369	111	222	121
CALCIUM	272-46,500	9/9	256-45,300	5/6	29300	7420	36700	35600	7640	29800
COBALT	63 9	1/9	-	0/6	63 9	5.0 U	5.0 U	5.0 U	5.0 U	66.8
COPPER	6 1 29 3	3/9	4 5	1/6	29 3 J	2 0 UJ	3.1 U	5.3 U	2.0 UJ	16.8 U
IRON	548 11 300	6/9	110 19 400	6/6	9030	309	3320	699	548	10800
LEAD	2 0 4 5	3/4	1 8 6 1	3/6	2 0 J	1 8 J	2 1 J	1 0 U	R	5.0 J
MAGNESIUM	443 18 400	6/9	103 18 200	6/6	18500	2270	11600	10800	2410	18200
MANGANESE	63 7 1 860	6/9	9 6 1 870	6/6	1860	96 1	591	551	99.8	1870
MERCURY	0 21	1/7	0 22	1/6	0 20 U	0 20 U	0 20 U	0 20 U	0.20 U	0.20 U
NICKEL	11 1 84 7	2/9	82 1	1/6	84 7	11 0 U	11 1 J	11 0 U	11.0 U	82.1
POTASSIUM	447 15 100	9/9	542 14 700	6/6	7010	2450	15300	14700	2490	6810
SODIUM	20 800 143 000	7/9	18 700 133 000	5/6	20800	32300	143000	133000	34900	19700
VANADIUM	4 3	1/9	3 3	1/6	3 0 U	3 0 U	3 0 U	3 0 U	3.0 U	3 0 U
ZINC	27 7 318	6/9	29 6 334	3/6	318	31 4	47.6	29 6	27.7	334

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

AREA A WETLANDS SURFACE WATER

	2WSW7	2WSW7 DISS	2WSW8	2WSW9	2WSW10	2WSW11	2WSW11 DISS	2WSW12	2WSW12 DISS
SDG	16703	16703	16525	16525	16703	16525	16525	16525	16525
TCL Volatiles (UG/L)									
TETRACHLOROETHENE	10 U	NA	10 U	10 U	10 U	10 U	NA	2 J	NA
TCL Semivolatiles (UG/L)	NA	NA	NA	NA	NA	NA	NA	NA	NA
TCL Pesticides (UG/L)	050 U - 5 0 U	NA	050 U - 5 0 U	.050 U - 5 0 U	.050 U - 5.0 U	.050 U - 5.0 U	NA	.050 U - 5.0 U	NA
TCL PCB (UG/L)	1 0 U - 2.0 U	NA	1 0 U - 2 0 U	1.0 U - 2.0 U	1.0 U - 2.0 U	1.0 U - 2.0 U	NA	1.0 U - 2.0 U	NA
TAL Metals (UG/L)									
ALUMINUM	117 U	136 U	93 9	71 7 J	1200	99.8	94.7	66.9 J	95.4
ARSENIC	2 0 U	2 0 U	2 0 U	2 0 U	2.0 U	2.8	2 U	2.8	2 U
BARIUM	8 0 U	8 0 U	20 0 U	19 0 U	10.4 UJ	45.8 U	30.1 U	97.6	83.3
BORON	50 0 U	50 U	50 0 U	50 0 U	50.0 U	197	75.9 J	154	119
CALCIUM	272 J	256 J	9350	8900	1070	27000	25700	46500	45300
COBALT	5 0 UJ	5 0 UJ	5 0 U	5 0 U	5.0 UJ	5 U	5 U	5 U	5 U
COPPER	7 7 J	4 5 J	2 0 UJ	2 0 UJ	6.1 J	2 UJ	2 UJ	2 UJ	2 UJ
IRON	9 9 UJ	110	11 9 U	5 7 U	1070 J	7100	2860	11300	19400
LEAD	1 0 UJ	6 1 J	R	R	4.5 J	R	1.0 U	R	1.0 U
MAGNESIUM	94 U	103 J	2310	2260	443	8620	8190	10300	9630
MANGANESE	6 0 UJ	9 6 J	6 4 U	6 1 U	43 7 J	624	325	596	571
MERCURY	R	0 2 U	0 2 U	0 21 J	R	0 2 U	0.2 U	0.2 U	0.22 J
NICKEL	11 0 UJ	11 0 UJ	11 0 U	11 0 U	11.0 UJ	11 U	11 U	11 U	11 U
POTASSIUM	447 J	542 J	1860	2040	1170	8400	7990	10300	9800
SODIUM	1150 U	720 U	24200	23200	1640 U	87600	82100	111000	103000
VANADIUM	3 0 UJ	3 3 J	3 0 U	3 0 U	4.3 J	3.0 U	3.0 U	3.0 U	3.0 U
ZINC	9 7 UJ	17 9 UJ	3 0 U	3 3 U	60.3	14.4 U	17.9 U	16.9 U	3 U

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

AREA A WETLANDS SEDIMENT

	Range	Frequency	2WSD10	2WSD11	2WSD12	2WSD13	2WSD14	2WSD15	2WSD16	2WSD17	2WSD18
SDG							16470				
TCL Pesticides (UG/KG)											
HEPTACHLOR	3 1	1/6	NA	NA	NA	NA	2.5 UJ	NA	NA	NA	NA
DIELDRIN (Field Screening)	-	0/29	29 25 U	35 13 U	35 33 U	29.79 U	28.46 U	27.03 U	23.36 U	26.45 U	36.95 U
4,4'-DDE (Field Screening)	-	0/29	29 25 U	35 13 U	35.33 U	29.79 U	28.46 U	27.03 U	23.36 U	26.45 U	36.95 U
4,4'-DDD	12	1/6	NA	NA	NA	NA	4.9 UJ	NA	NA	NA	NA
4,4'-DDD (Field Screening)	-	0/29	29 25 U	35 13 U	35 33 U	29.79 U	28.46 U	27.03 U	23.36 U	26.45 U	36.95 U
4,4'-DDT	8-13	2/6	ND	NA	NA	NA	4.9 UJ	NA	NA	NA	NA
4,4'-DDT (Field Screening)	-	0/29	29 25 U	35 13 U	35.33 U	29.79 U	28.46 U	27.03 U	23.36 U	26.45 U	36.95 U
SDG											
TCLP Metals (UG/L)											
ARSENIC	61-5	1/1	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	15	1/1	NA	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	79 1	1/1	NA	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	110	1/1	NA	NA	NA	NA	NA	NA	NA	NA	NA
SILVER	41-8	1/1	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

' Value is the average of duplicate sample results

	2WSD19	2WSD20	2WSD21	2WSD22	2WSD27	2WSD28	2WSD29	2WSD30	2WSD31	2WSD32
SDG										
TCL Pesticides (UG/KG)										
HEPTACHLOR	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
DIELDRIN (Field Screening)	27 16 U	30 35 U	29 72 U	43.49 U	26.61 U	25.93 U	24.87 U	34.62 U	47.23 U	36.37 U
4,4'-DDE (Field Screening)	27 16 U	30 35 U	29 72 U	43.49 U	26.61 U	25.93 U	24.87 U	34.62 U	47.23 U	36.37 U
4,4'-DDD	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDD (Field Screening)	27 16 U	30 35 U	29 72 U	43.49 U	26.61 U	25.93 U	24.87 U	34.62 U	47.23 U	36.37 U
4,4'-DDT	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
4,4'-DDT (Field Screening)	27 16 U	30 35 U	29 72 U	43 49 U	26.61 U	25.93 U	24.87 U	34.62 U	47.23 U	36.37 U
SDG										
TCLP Metals (UG/L)										
ARSENIC	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

Not applicable

Value is the average of duplicate sample results

AREA A WETLANDS SEDIMENT

	2WSD33	2WSD34	2WSD35	2WSD36	2WSD37	2WSD38	2WSD39	2WSD40	2WSD41	2WSD42
SDG		16470				16470	16470	16470	16470	
TCL Pesticides (UG/KG)										
HEPTACHLOR	NA	3 1 J	NA	NA	NA	3.5 U	3.8 U	3.9 UJ	2 U	NA
DIELDRIN (Field Screening)	32 94 U	29.48 U	35 7 U	37.63 U	29.01 U	29.67 U	30.75 U	32.42 U	19.32 U	19.51 U
4,4'-DDE (Field Screening)	32 94 U	29.48 U	35 7 U	37.63 U	29.01 U	29.67 U	30.75 U	32.42 U	19.32 U	19.51 U
4,4'-DDD	NA	5.9 UJ	NA	NA	NA	6.9 U	7.3 U	7.5 UJ	12 J	NA
4,4'-DDD (Field Screening)	32 94 U	29 48 U	35 7 U	37 63 U	29.01 U	29.67 U	30.75 U	32.42 U	19.32 U	19.51 U
4,4'-DDT	NA	13 J	NA	NA	NA	6.9 U	7.3 U	7.5 UJ	8	NA
4,4'-DDT (Field Screening)	32 94 U	29 48 U	35 7 U	37 63 U	29.01 U	29.67 U	30.75 U	32.42 U	19.32 U	19.51 U
SDG							16524			
TCLP Metals (UG/L)										
ARSENIC	NA	NA	NA	NA	NA	NA	61.5	NA	NA	NA
CHROMIUM	NA	NA	NA	NA	NA	NA	15	NA	NA	NA
LEAD	NA	NA	NA	NA	NA	NA	79 1	NA	NA	NA
SELENIUM	NA	NA	NA	NA	NA	NA	110	NA	NA	NA
SILVER	NA	NA	NA	NA	NA	NA	41.8 J	NA	NA	NA

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

APPENDIX D.4

SITE 2 - AREA A WEAPONS CENTER

AREA A WEAPONS CENTER SOIL

	Range	Frequency	2WCMW1S-0002	2WCMW3S-1618	2WCM3S-1618-D	2WCMW3S-1618AVG	2WCTB1-0002	2WCTB2-0002	2WCTB2-0002-D
SDG			17148	17656	17656		17148	17308	17308
TCL Volatiles (UG/KG)									
CARBON DISULFIDE	8.5*	1/10	11 U	11 J	6 J	8.5 J	10 U	11 U	11 U
2-BUTANONE	40-240	3/10	11 U	17 U	17 U	17 U	10 U	11 U	11 U
TRICHLOROETHENE	3	1/10	11 U	17 U	17 U	17 U	10 U	11 U	11 U
TOLUENE	2-8	2/10	11 U	17 U	17 U	17 U	10 U	11 U	11 U
SDG			17148	17656	17656		17148	17308	17308
TCL Semivolatiles (UG/KG)									
2-METHYLNAPHTHALENE	38-54	2/10	350 U	560 U	560 U	560 U	54 J	750 U	1100 U
ACENAPHTHYLENE	31	1/10	350 U	560 U	560 U	560 U	31 J	750 U	1100 U
ACENAPHTHENE	140	1/10	350 U	560 U	560 U	560 U	350 U	140 J	1100 U
DIBENZOFURAN	31-84	2/10	350 U	560 U	560 U	560 U	31 J	84 J	1100 U
DIETHYLPHTHALATE	28-32	2/10	350 U	560 U	560 U	560 U	350 U	750 U	1100 U
FLUORENE	85-160*	2/10	350 U	560 U	560 U	560 U	85 J	180 J	140 J
PHENANTHRENE	54-3300*	6/10	350 U	560 U	560 U	560 U	440	2400	4200
ANTHRACENE	30-670*	4/10	350 U	560 U	560 U	560 U	66 J	540 J	800 J
CARBAZOLE	560*	1/10	350 U	560 U	560 U	560 U	350 U	400 J	720 J
FLUORANTHENE	38 5*4450*	7/10	350 U	32 J	45 J	38.5 J	550 J	3200	5700
PYRENE	56 5*-3250*	7/10	350 U	50 J	63 J	56.5 J	560	2500	4000
BENZO(A)ANTHRACENE	31-1700*	7/10	350 U	560 UJ	31 J	31 J	270 J	1300	2100
CHRYSENE	35-1850*	7/10	350 U	560 UJ	35 J	35 J	280 J	1400	2300
BIS(2-ETHYLHEXYL)PHTHALATE	360	1/10	350 U	560 U	560 U	560 U	350 U	750 U	400 U
DI-N-OCTYL PHTHALATE	29-89	3/10	350 U	560 U	560 UJ	560 U	350 U	750 U	1100 U
BENZO(B)FLUORANTHENE	27-2750*	7/10	350 U	560 UJ	29 J	29 J	270 J	2300	3200
BENZO(K)FLUORANTHENE	24-260	5/10	350 U	29 J	560 UJ	29 J	220 J	750 U	1100 U
BENZO(A)PYRENE	21-1550*	8/10	350 U	29 J	280 J	154.5 J	270 J	1300	1800
INDENO(1,2,3-CD)PYRENE	56-880*	5/10	350 U	560 U	560 U	560 U	170 J	760	1000 J
DIBENZ(A,H)ANTHRACENE	68-510*	2/10	350 U	560 U	560 U	560 U	350 U	450 J	570 J
BENZO(G,H,I)PERYLENE	60-865*	5/10	350 U	560 U	560 U	560 U	200 J	770	960 J
BENZOIC ACID	47-480	5/10	1700 U	77 J	56 J	66.5 J	1700 U	3600 UJ	5400 UJ
SDG			17148	17656	17656		17148	17308	17308
TCL Pesticides (UG/KG)									
4,4'-DDE	5.7*	1/6	NA	56 U	56 U	56 U	35 U	4 J	7.4 J
ENDRIN	11-12.5*	2/6	NA	56 U	56 U	56 U	11 J	11 J	14 J
ENDRIN ALDEHYDE	6.4-7	2/6	NA	56 U	56 U	56 U	35 U	7 J	37 U
SDG			17148	17656	17656		17148	17308	17308
TCL PCB (UG/KG)		0/6	NA	560 U - 2900 U	560 U - 2900 U	560 U - 2900 U	350 U - 1800 U	370 U - 1900 U	370 U - 1900 U

NA Not analyzed

ND Not detected

J Estimate value

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AREA A WEAPONS CENTER SOIL

	2WCTB2-0002AVG	2WCTB3-0406	2WCTB4-0204	2WCTB5-0608	2WCTB6-0810	2WCTB7-0810	2WCTB8-1012.6
SDG		17308	17148	17308	17308	17308	17656
TCL Volatiles (UG/KG)							
CARBON DISULFIDE	11 U	17 U	10 U	17 U	14 UJ	13 U	11 U
2-BUTANONE	11 U	46	10 U	40	240 J	13 U	11 U
TRICHLOROETHENE	11 U	17 U	10 U	17 U	3 J	13 U	11 U
TOLUENE	11 U	2 J	10 U	17 U	8 J	13 U	11 U
SDG		17308	17148	17308	17308	17308	17656
TCL Semivolatiles (UG/KG)							
2-METHYLNAPHTHALENE	925 U	550 U	38 J	570 U	480 U	420 U	360 U
ACENAPHTHYLENE	925 U	550 U	340 U	570 U	480 U	420 U	360 U
ACENAPHTHENE	140 J	550 U	340 U	570 U	480 U	420 U	360 U
DIBENZOFURAN	84 J	550 U	340 U	570 U	480 U	420 U	360 U
DIETHYLPHTHALATE	925 U	28 J	340 U	570 U	32 J	420 U	360 U
FLUORENE	160 J	550 U	340 U	570 U	480 U	420 U	360 U
PHENANTHRENE	3300 J	110 J	340 U	97 J	190 J	420 U	54 J
ANTHRACENE	670 J	30 J	340 U	570 U	50 J	420 U	360 U
CARBAZOLE	560 J	550 U	340 U	570 U	480 U	420 U	360 U
FLUORANTHENE	4450 J	220 J	340 U	160 J	400 J	420 U	83 J
PYRENE	3250 J	310 J	340 UJ	190 J	500	420 U	70 J
BENZO(A)ANTHRACENE	1700 J	140 J	340 UJ	79 J	220 J	420 U	33 J
CHRYSENE	1850 J	220 J	340 UJ	130 J	320 J	420 U	42 J
BIS(2-ETHYLHEXYL)PHTHALATE	575 U	550 U	490 U	570 U	480 U	420 U	360 J
DI-N-OCTYL PHTHALATE	925 U	550 U	89 J	29 J	69 J	420 U	360 UJ
BENZO(B)FLUORANTHENE	2750	210 J	340 UJ	200 J	370 J	420 U	27 J
BENZO(K)FLUORANTHENE	925 U	200 J	340 UJ	570 U	260 J	420 U	24 J
BENZO(A)PYRENE	1550	180 J	340 UJ	100 J	260 J	22 J	21 J
INDENO(1,2,3-CD)PYRENE	880 J	110 J	340 UJ	56 J	160 J	420 U	360 U
DIBENZ(A,H)ANTHRACENE	510 J	550 U	340 UJ	570 U	68 J	420 U	360 U
BENZO(G,H,I)PERYLENE	865 J	98 J	340 UJ	60 J	140 J	420 U	360 U
BENZOIC ACID	4500 UJ	370 J	1700 U	480 J	300 J	47 J	1800 UJ
SDG		17308	17148	17308	17308	17308	17656
TCL Pesticides (UG/KG)							
4,4'-DDE	5 7 J	NA	34 U	NA	NA	42 U	36 U
ENDRIN	12 5 J	NA	34 U	NA	NA	42 UJ	36 U
ENDRIN ALDEHYDE	7 J	NA	34 U	NA	NA	6.4 J	36 U
SDG		17308	17148	17308	17308	17308	17656
TCL PCB (UG/KG)	ND	NA	340 U - 1800 U	NA	NA	420 U - 2200 U	360 U - 1900 U

NA Not analyzed

ND Not detected

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AREA A WEAPONS CENTER SOIL

	Range	Frequency	2WCMW1S-0002	2WCMW3S-1618	2WCM3S-1618-D	2WCMW3S-1618AVG	2WCTB1-0002	2WCTB2-0002	2WCTB2-0002-D
SDG			17148	G17656	G17656		17148	17308	17308
TAL Metals (MG/KG)									
ALUMINUM	6,040-18,200	10/10	6040	17800	13400	15600	6360	9200	9560
ANTIMONY	4.7-5.4	2/9	4.7 J	18.8 U	15.7 U	17.25 U	5.4 J	9.8 U	6.7 U
ARSENIC	3-10.8	7/10	1.8 U	8.4	7.6	8	1.9 U	3	3.5
BARIUM	27.5-131	10/10	27.5 J	51.7	38.9	45.3	60.8 J	38.8	36.4
BERYLLIUM	0.23-0.84	10/10	0.32 J	0.84	0.6	0.72	0.23 J	0.41 J	0.48
BORON	16.6-45.55*	4/10	10.6 U	51.8	39.3 J	45.55 J	10.4 U	11.2 UJ	11.7 UJ
CADMIUM	0.43	1/10	0.43 J	0.68 U	0.47 U	0.575 U	0.42 U	0.45 U	0.47 U
CALCIUM	863-4285*	9/10	863 J	5050	3520	4285	1870 J	1330	1310 U
CHROMIUM	10.8-78.7	10/10	10.9	41.9	33.1	37.5	10.8	10.7	11.7
COBALT	3.2*-8.6	10/10	4.5 J	8.2	6.8	7.5	4.6 J	3.7	2.7
COPPER	8.6-41.4	10/10	8.6 J	17.9	14.9	16.4	10.8 J	9.9	11.3
IRON	9,200-28,600	10/10	9200	28000	21100	24550	10800	9680	9880
LEAD	2.4-66.1	10/10	3.5	17.2	12.7	14.95	8.3	12.3 J	13.7 J
MAGNESIUM	2,240-8,450	10/10	2240	8450	6310	7380	3520	2350	2280
MANGANESE	122-390	10/10	137	343 J	256 J	299.5 J	257	167	172
MERCURY	0.19-0.29	2/10	0.11 U	0.17 U	0.12 U	0.145 U	0.1 U	0.11 U	0.12 U
NICKEL	5.4-22.7	10/10	5.4 J	22.1	17.8	19.95	8.4 J	7.8	6.8
POTASSIUM	849-6,300	10/10	1390 J	4880	3610	4245	2900	1500 J	1310 J
SILVER	0.65-1.5	3/10	0.43 U	0.68 U	0.47 U	0.575 U	0.42 U	0.45 U	0.47 U
SODIUM	213-7,390	10/10	214 J	7390	5570	6480	213 J	267	268
VANADIUM	13.5-49.6	10/10	13.5 J	43.8	32.8	38.3	17.5 J	17.5	18.0
ZINC	17.8-69.3	10/10	17.8 J	69.3	53.2	61.25	46.5 J	28.7 J	30.1 J
SDG			17148	17656	17656		17148	17308	17308
TCLP Metals (UG/L)									
BARIUM	31.7	1/1	NA	NA	NA	NA	NA	NA	NA
CHROMIUM	4.3	1/1	NA	NA	NA	NA	NA	NA	NA
ARSENIC	31.7	1/1	NA	NA	NA	NA	NA	NA	NA
SELENIUM	209	1/1	NA	NA	NA	NA	NA	NA	NA

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AREA A WEAPONS CENTER SOIL

	2WCTB2-0002AVG	2WCTB3-0406	2WCTB4-0204	2WCTB5-0608	2WCTB6-0810	2WCTB7-0810	2WCTB8-1012.6
SDG		17308	17148	17308	17308	17308	G17656
TAL Metals (MG/KG)							
ALUMINUM	9380	18200	11100	16000	14400	15200	9560
ANTIMONY	8.25 U	24 U	R	22.2 U	20.9 U	13.2 U	11.3 U
ARSENIC	3 25	10 8	1.6 U	10.7	9.2	4.5	3.0
BARIUM	37 6	64 0	131	49.9	52.4	38.5	49.4
BERYLLIUM	0 45 J	0 68	0.33 J	0.67 J	0.54 J	0.57	0.41
BORON	11 45 UJ	25 9 J	10.4 U	30.7 J	16.6 J	13.1 UJ	12.2 U
CADMIUM	0 46 U	0 67 U	0 42 U	0.67 U	0.62 U	0.52 U	0.49 U
CALCIUM	1320 U	2700	2080 J	3020	1890	1650	1620
CHROMIUM	11 2	78 7	21.0	52.3	67.5	17.7	12.5
COBALT	3.2	6 6	8 6 J	6.9	5.6	4.4	4.5
COPPER	10 6	41 4	15.2 J	26.4	39.3	12.3	10.3
IRON	9780	28600	20800	26700	23900	12100	12900
LEAD	13 J	66 1 J	2.4 J	22.2 J	43.4 J	5.3 J	6.7
MAGNESIUM	2315	7170	6910	6900	5510	3070	3870
MANGANESE	169 5	276	390	229	198	122	230 J
MERCURY	0 12 U	0 29	0 1 U	0 17 U	0.19	0.13 U	0.12 U
NICKEL	7 3	22 7	9 4 J	22.7	17.1	13.7	8.6
POTASSIUM	1405 J	4560 J	6300	4300 J	3490 J	849 J	2470
SILVER	0 46 U	1 5	0.42 U	0.67 U	0.81 J	0.65 J	0.49 U
SODIUM	267 5	653	264 J	1450	1150	452	312
VANADIUM	17 75	49 6	46 1	46 1	38.2	23.5	21.8
ZINC	29 4 J	66 7 J	49.0 J	67.5 J	52.0 J	27.2 J	43.1
SDG		17308	17148	17308	17308	17308	17656
TCLP Metals (UG/L)							
BARIUM	NA	NA	NA	31.7	NA	NA	NA
CHROMIUM	NA	NA	NA	4.3 J	NA	NA	NA
ARSENIC	NA	NA	NA	31.7 J	NA	NA	NA
SELENIUM	NA	NA	NA	209	NA	NA	NA

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AREA A WEAPONS CENTER GROUNDWATER

	Range (Total)	Frequency (Total)	Range (Diss)	Frequency (Diss)	2WCGW1S	2WCGW1S DISS	2WCGW1S-D	2WCGW1S-D DISS	2WCGW1SAVG
SDG					18102		18102		
TCL Volatiles (UG/L)	-	0/3	-	NA	10 U	NA	10 U	NA	10 U
SDG					18102		18102		
TCL Semivolatiles (UG/L)									
1,3-DICHLOROBENZENE	0 6	1/3	-	NA	0.6 J	NA	10 U	NA	0.6 J
SDG					18119	18102	18119	18102	
TAL Metals (UG/L)									
ALUMINUM	2,335*-8,330	2/3	-	0/3	1700	36.5 U	2970	37.3 U	2335
ANTIMONY	-	0/3	15.2	1/3	13.0 U	13.0 U	13.0 U	13.0 U	13.0 U
ARSENIC	4.9-11 9	3/3	3 1-6.9*	3/3	6.0 J	7.3	7.8 J	6.5	6.9 J
BARIUM	72 4-98 5	3/3	46 5-73 7	3/3	86.0 J	73.4	89.9 J	71.0	87.95 J
BERYLLIUM	.85*-1 3	3/3	1.2	1/3	1.2 J	1.0 U	1.0 U	1.0 U	0.85 J
BORON	509*-1370	2/3	75.3-1,220	3/3	498	582	520	569	509
CALCIUM	41,000-119,000*	3/3	40,900-110,000	3/3	121000	110000	116000	110000	119000
CHROMIUM	5 45*-24 9	2/3	-	0/3	6.7 J	4.0 U	4.2 J	4.0 U	5.45 J
COBALT	6 9-15 1*	3/3	-	0/3	15.5 J	16.6 U	14.7 J	15.4 U	15.1 J
COPPER	7 25*-33 5	2/3	-	0/3	5 0 U	5.0 U	9.5 J	5.0 U	7.25 J
IRON	20,400-68 000	3/3	4,610-69,200	3/3	40000	35000	38800	35400	39400
LEAD	3 7*	1/3	-	0/3	2.7 J	2.0 UJ	4.7 J	2.0 UJ	3.7 J
MAGNESIUM	5,250 132 000	3/3	5,220-115,000	3/3	34000	35500	33900	34400	33950
MANGANESE	3,630-4 555*	3/3	3,070-5,095*	3/3	4490	5080	4620	5110	4555
NICKEL	20	1/3	9 75*	1/3	11 0 U	11.0 U	11.0 U	14.0	11.0 U
POTASSIUM	9,050 68 400	3/3	8 510-59,400	3/3	15600	17800	16300	17300	15950
SILVER		0/3	3 7	1/3	2 0 U	2.0 U	2.0 U	2.0 U	2 0 U
SODIUM	66,900-948 000	3/3	67,500-847,000	3/3	164000	198000	171000	188000	168000
THALLIUM	13 8	1/3	-	0/3	10 0 UJ	10.0 UJ	10.0 UJ	10.0 UJ	10.0 UJ
VANADIUM	21 6	1/3	-	0/3	4 0 U	4.0 U	4.0 U	4.0 U	4.0 U
ZINC	5 4-52	3/3	14 2	1/3	29.4	19.6 U	41.7	19.0 U	35.55

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ND Not detected

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AREA A WEAPONS CENTER GROUNDWATER

	2WCGW1S DISSAVG	2WCGW2S	2WCGW2S DISS	2WCGW3S	2WCGW3S DISS
SDG		18102		17955	
TCL Volatiles (UG/L)	NA	10 U	NA	10 U	NA
SDG		18102		17955	
TCL Semivolatiles (UG/L)					
1,3-DICHLOROBENZENE	NA	10 U	NA	10 U	NA
SDG		18119	18102	18045	18045
TAL Metals (UG/L)					
ALUMINUM	36.9 U	103 U	33.8 U	8330	40.5 U
ANTIMONY	13.0 U	13.0 U	13.0 U	13.0 U	15.2 J
ARSENIC	6.9	4.9 J	6.1	11.9	3.1 J
BARIUM	72.2	72.4 J	73.7	98.5 J	46.5 J
BERYLLIUM	1.0 U	1.3 J	1.2 U	1.0 J	1.20 J
BORON	575.5	75.1 U	75.3	1370	1220
CALCIUM	110000	41000	40900	104000	89100
CHROMIUM	4.0 U	4.0 U	4.0 U	24.9	4.0 U
COBALT	16.0 U	6.9 J	5.0 U	13.4 J	5.0 U
COPPER	5.0 U	5.0 U	5.0 U	33.5	5.0 U
IRON	35200	68000	69200	20400	4610
LEAD	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ
MAGNESIUM	34950	5250	5220	132000	115000
MANGANESE	5095	4530	4580	3630	3070
NICKEL	9.75 J	11.0 U	11.0 U	20.0 J	11.0 UJ
POTASSIUM	17550	9050	8510	68400	59400
SILVER	2.0 U	2.0 U	3.7	2.0 U	2.0 U
SODIUM	193000	66900	67500	948000	847000
THALLIUM	10.0 UJ	13.8 J	10.0 UJ	1.0 UJ	1.5 U
VANADIUM	4.0 U	4.0 U	4.0 U	21.6 J	4.0 U
ZINC	19.3 U	5.4	8.0 U	52.0	14.2 J

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-: Not applicable

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AREA A WEAPONS CENTER GROUNDWATER (ROUND 2)

	Range (Total)	Frequency (Total)	Range (Diss)	Frequency (Diss)	2WCGW1S-2	2WCGW1S-2 DISS	2WCGW2S-2
SDG					19326		19326
TCL Volatiles (UG/L)	-	0/3	-	-	ND	NA	ND
SDG					19326		19326
TCL Semivolatiles (UG/L)							
BIS(2-ETHYLHEXYL)PHTHALATE	2-3	2/3	-	-	3 J	NA	10 U
INDENO(1,2,3-CD)PYRENE	1	1/3	-	-	1 J	NA	10 U
DIBENZ(A,H)ANTHRACENE	0 8	1/3	-	-	0.8 J	NA	10 U
BENZO(G H I)PERYLENE	1	1/3	-	-	1 J	NA	10 U
SDG					19326	19326	19326
TAL Metals (UG/L)							
ALUMINUM	1080 [illegible]	2/3	-	0/3	1090 J	29.4 U	56.6 U
ARSENIC	[illegible]	2/3	7 3-8 4	2/3	8 7 J	7.3 J	5.0 UJ
BARIUM	[illegible]	3/3	44 3 210	3/3	189 J	210 J	42.3
BERYLLIUM	[illegible]	1/3		0/3	1 0 UJ	1 0 UJ	1.0 U
BORON	[illegible]	3/3	[illegible]	3/3	3550 J	3740 J	82.4
CALCIUM	[illegible]	3/3	[illegible]	3/3	108000 J	111000 J	26500
CHROMIUM	[illegible]	2/3	-	0/3	6 6 J	5.8 U	3.0 U
COBALT	[illegible]	2/3		0/3	4 8 J	11.0 U	3.0 U
COPPER	[illegible]	2/3	23 0	1/3	12 8 J	7.9 U	2.0 U
IRON	[illegible]	3/3	9340-43700	3/3	13800 J	9340 J	43100
LEAD	16 8	1/3	-	0/3	5.1 U	2.0 UJ	2.0 UJ
MAGNESIUM	3560-448000	3/3	3520-471000	3/3	186000 J	180000 J	3560
MANGANESE	2800-6500	3/3	2820-6540	3/3	4980 J	5220 J	2800
NICKEL	-	0/3	10 3	1/3	7.0 UJ	7.0 UJ	7.0 U
POTASSIUM	7150-173000	3/3	7190-182000	3/3	95700 J	97500 J	7150
SODIUM	43900-3570000	3/3	44000-3580000	3/3	1900000 J	1760000 J	43900
THALLIUM	5 6-5.7	2/3	-	0/3	5.6 J	5.0 UJ	5.0 U
VANADIUM	9.8-25.3	2/3	2.9-3.1	2/3	9.8 J	2.9 J	3.0 U
ZINC	30.5	1/3	-	0/3	7.4 U	2.0 UJ	3.4 U

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AREA A WEAPONS CENTER GROUNDWATER (RO

	2WCGW2S-2 DISS	2WCGW3S-2	2WCGW3S-2 DISS
SDG		19326	
TCL Volatiles (UG/L)	NA	ND	NA
SDG		19326	
TCL Semivolatiles (UG/L)			
BIS(2-ETHYLHEXYL)PHTHALATE	NA	2 J	NA
INDENO(1,2,3-CD)PYRENE	NA	10 U	NA
DIBENZ(A,H)ANTHRACENE	NA	10 U	NA
BENZO(G,H,I)PERYLENE	NA	10 U	NA
SDG	19326	19326	19326
TAL Metals (UG/L)			
ALUMINUM	45.9 U	9210 J	27.6 U
ARSENIC	5.0 U	19.9 J	8.4 J
BARIUM	44.3	158 J	125 J
BERYLLIUM	1.0 U	1.4 J	1.0 UJ
BORON	72.2	3540 J	3810 J
CALCIUM	26400	264000 J	298000 J
CHROMIUM	3.7 U	21.4 J	8.2 U
COBALT	3.0 U	5.9 J	3.0 UJ
COPPER	2.0 U	38.5 J	23.0 J
IRON	43700 J	22000 J	10300 J
LEAD	2.0 U	16.8 J	2.0 UJ
MAGNESIUM	3520	448000 J	471000 J
MANGANESE	2820	6500 J	6540 J
NICKEL	7.0 U	7.0 UJ	10.3 J
POTASSIUM	7190	173000 J	182000 J
SODIUM	44000	3570000 J	3580000 J
THALLIUM	5.0 U	5.7 J	5.0 UJ
VANADIUM	1.0 U	25.3 J	3.1 J
ZINC	3.7 U	30.5 J	2.0 UJ

NA Not analyzed

ND Not detected

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AREA A WEAPONS CENTER SURFACE WATER

	Range(Total)	Frequency(Total)	Range(Diss)	Frequency(Diss)	2WCSW3	2WCSW3 DISS	2WCSW5
SDG					16992	16992	16992
TCL Volatiles (UG/L)	-	0/2	-	NA	10 U	NA	10 U
TCL Semivolatiles (UG/L)							
BUTYLBENZYLPHTHALATE	2	1/2	-	NA	2 J	NA	10 U
DI-N-OCTYL PHTHALATE	1	1/2	-	NA	1 J	NA	10 U
TCL Pesticides/PCB (UG/L)	-	0/2	-	NA	.050 U - 5.0 U	NA	.050 U - 5.0 U
TAL Metals (UG/L)							
ARSENIC	2.6	1/2	2.1	1/1	2.6 J	2.1 J	2 U
BARIUM	6.8	1/2	-	0/1	5.0 U	5.0 U	6.8 J
CADMIUM	6.6	1/2	5.6	1/1	6.6	5.6	2.0 U
CALCIUM	1,490-3,310	2/2	1,540	1/1	1490	1540	3310
IRON	217-1,100	2/2	-	0/1	217	56.6 U	1100
LEAD	3.9-7.0	2/2	1.0	1/1	3.9	1.0 J	7.0
MAGNESIUM	366-618	2/2	344	1/1	366	344	618
MANGANESE	28.1-48.0	2/2	24.7	1/1	28.1	24.7	48.0
SODIUM	2,620-2,990	2/2	2,750	1/1	2620	2750	2990
ZINC	135	1/2	120	1/1	135	120	27.0 U

NA: Not analyzed

ND: Not detected

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R: Value rejected during validation

-: Not applicable

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AREA A WEAPONS CENTER SEDIMENTS

	Range	Frequency	2WCSD1	2WCSD2	2WCSD3	2WCSD4	2WCSD5	2WCSD6	2WCSD7	2WCSD8
SDG			17791	17791	17791	16992	16992	16992	16992	16992
TCL Volatiles (UG/KG)										
METHYLENE CHLORIDE	10-22	4/6	17 U	NA	17 U	22	10 J	NA	11	NA
TRICHLOROETHENE	22	1/6	17 U	NA	17 U	18 U	22	NA	11 U	NA
TETRACHLOROETHENE	8	1/6	17 UJ	NA	17 UJ	18 U	8 J	NA	11 U	NA
TOLUENE	2-4	2/6	2 J	NA	17 UJ	18 U	4 J	NA	11 U	NA
SDG			17791	17791	17791	16992	16992	16992	16992	16992
TCL Semivolatiles (UG/KG)										
PHENOL	32	1/15	550 U	720 U	570 U	600 U	630 U	700 U	350 U	530 U
NAPHTHALENE	36-160	3/15	550 U	720 U	570 U	87 J	160 J	700 U	36 J	530 U
2-METHYLNAPHTHALENE	31	1/15	550 U	720 U	570 U	31 J	630 U	700 U	350 U	530 U
ACENAPHTHYLENE	47-90	3/15	550 U	720 U	47 J	90 J	630 U	700 U	350 U	530 U
ACENAPHTHENE	36-79	5/15	550 U	36 J	79 J	38 J	630 U	700 U	43 J	530 U
DIBENZOFURAN	45-84.5*	3/15	550 U	720 U	86 J	600 U	630 U	700 U	45	530 U
FLUORENE	46-140	5/15	550 U	46 J	140 J	80 J	630 U	700 U	76	530 U
PHENANTHRENE	77-2,300*	13/15	160 J	660 J	2000	720	250 J	210 J	1300	77 J
ANTHRACENE	22-400	8/15	22 J	95 J	400 J	160 J	630 U	65 J	190	530 U
CARBAZOLE	31-645*	6/15	31 J	120 J	450 J	50 J	630 U	700 U	230	530 U
DI-N-BUTYLPHTHALATE	180	1/15	550 U	720 U	570 U	600 U	630 U	700 U	350 U	530 U
FLUORANTHENE	100-6,900	14/15	310 J	1400	6900	2800	470 J	330 J	1600	120 J
PYRENE	120-6,900	14/15	250 J	1200	6900	5200	610 J	530 J	2500	150 J
BUTYLBENZYLPHTHALATE	52	1/15	550 U	720 U	570 U	600 UJ	630 U	700 U	350 U	530 U
BENZO(A)ANTHRACENE	63-3,400	14/15	110 J	510 J	3400	2700 J	250 J	250 J	900	63 J
CHRYSENE	110-4,300	14/15	150 J	740	4300	3300 J	420 J	430 J	1100	110 J
BIS(2-ETHYLHEXYL)PHTHALATE	1,100	1/15	550 U	1000 U	1400 U	710 U	630 U	700 U	350 U	530 U
DI-N-OCTYL PHTHALATE	26-72	2/15	550 U	720 U	570 U	72 J	630 U	700 U	350 U	530 U
BENZO(B)FLUORANTHENE	140-4,900	14/15	160 J	820	4900	2500 J	220 J	320 J	990	150 J
BENZO(K)FLUORANTHENE	120-5,100	9/15	120 J	630 J	5100	2100 J	240 J	290 J	620	530 U
BENZO(A)PYRENE	73-4,400	12/15	120 J	610 J	4400	2400 J	210 J	700 U	800	78 J
INDENO(1,2,3-CD)PYRENE	86-3,300	14/15	86 J	500 J	3300	1200 J	98 J	200 J	480	51 J
DIBENZ(A,H)ANTHRACENE	52-830*	4/15	550 U	240 J	570 U	160 J	630 U	700 U	52	530 U
BENZO(G,H,I)PERYLENE	47-3,500	12/15	96 J	720 U	3500	760 J	54 J	240 J	260	47 J
BENZOIC ACID	61-190	10/15	81 J	102 J	164 J	190 J	110 J	700 U	150 J	530 U

NA Not analyzed

ND Not detected

J Estimate value

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AREA A WEAPONS CENTER SEDIMENTS

	2WCSD9	2WCSD10	2WCSD11	2WCSD12	2WCSD13	2WCSD14	2WCSD14D	2WCSD14AVG	2WCSD15
SDG	16992	17148	16992	16992	16992	16992	16992	-	16992
TCL Volatiles (UG/KG)									
METHYLENE CHLORIDE	NA	NA	12 J	NA	NA	NA	NA	NA	NA
TRICHLOROETHENE	NA	NA	12 U	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	NA	NA	12 U	NA	NA	NA	NA	NA	NA
TOLUENE	NA	NA	12 U	NA	NA	NA	NA	NA	NA
SDG	16992	17148	16992	16992	16992	16992	16992	-	16992
TCL Semivolatiles (UG/KG)									
PHENOL	430 U	510 U	32 J	560 U	600 U	660 U	600 U	630 U	690 U
NAPHTHALENE	430 U	510 U	410 U	560 U	600 U	660 U	600 U	630 U	690 U
2-METHYLNAPHTHALENE	430 U	510 U	410 U	560 U	600 U	660 U	600 U	630 U	690 U
ACENAPHTHYLENE	430 U	510 U	410 U	560 U	600 U	74 J	65 J	69.5 J	690 U
ACENAPHTHENE	430 U	510 U	410 U	560 U	600 U	70 J	60 J	65 J	690 U
DIBENZOFURAN	430 U	510 U	410 U	560 U	600 U	87 J	82 J	84.5 J	690 U
FLUORENE	430 U	510 U	410 U	560 U	600 U	110 J	110 J	110 J	690 U
PHENANTHRENE	430 U	110 J	230 J	120 J	600 U	2300	2300	2300	140 J
ANTHRACENE	430 U	510 U	410 UJ	560 U	600 U	290 J	290 J	290 J	51 J
CARBAZOLE	430 U	510 U	410 UJ	560 U	600 U	660	630	645	690 U
DI-N-BUTYLPHTHALATE	430 U	510 U	180 J	560 U	600 U	660 U	600 U	630 J	690 U
FLUORANTHENE	100 J	180 J	410 UJ	190 J	170 J	4600	5200	4900	270 J
PYRENE	120 J	270 J	410 UJ	210 J	270 J	4600	4000	4300	370 J
BUTYLBENZYLPHTHALATE	430 U	510 U	410 UJ	560 U	600 U	52 J	600 U	52 J	690 U
BENZO(A)ANTHRACENE	70 J	180 J	410 UJ	95 J	120 J	1800	1900	1850	160 J
CHRYSENE	130 J	660	410 UJ	190 J	160 J	3200	2900	3050	250 J
BIS(2-ETHYLHEXYL)PHTHALATE	430 U	530 U	1100 J	560 U	600 U	780 U	600 U	690 U	690 U
DI-N-OCTYL PHTHALATE	430 U	510 U	26 J	560 U	600 U	660 U	600 U	630 U	690 U
BENZO(B)FLUORANTHENE	160 J	350 J	410 UJ	220 J	140 J	4800	4400	4600	350 J
BENZO(K)FLUORANTHENE	430 U	510 U	410 UJ	560 U	120 J	2100	1800	1950	690 U
BENZO(A)PYRENE	73 J	140 J	410 UJ	110 J	130 J	2700	2500	2600	690 U
INDENO(1,2,3-CD)PYRENE	49 J	86 J	410 UJ	71 J	99 J	2200	2400	2300	160 J
DIBENZ(A,H)ANTHRACENE	430 U	510 U	410 UJ	560 U	600 U	790	870	830	690 U
BENZO(G,H,I)PERYLENE	47 J	510 U	410 UJ	59 J	100 J	1700	2400	2050	170 J
BENZOIC ACID	430 U	61 J	77 J	93 J	600 U	190 J	600 U	190 J	690 U

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AREA A WEAPONS CENTER SEDIMENTS

	Range	Frequency	2WCSD1	2WCSD2	2WCSD3	2WCSD4	2WCSD5	2WCSD6	2WCSD7	2WCSD8
SDG			17791	17791	17791	16992	16992	16992	16992	16992
TCL Pesticides/PCB (UG/KG)										
4,4'-DDE	52	1/8	52 J	NA	57 U	60 UJ	63 UJ	NA	35 UJ	NA
ENDRIN	10-18	3/8	55 U	NA	57 U	15 J	18 J	NA	35 UJ	NA
4,4'-DDD	6.5-32	3/8	32 J	NA	6.6 J	6.5 J	63 UJ	NA	35 UJ	NA
ENDOSULFAN SULFATE	6.8-7.6	2/8	55 U	NA	6.8 J	60 UJ	7.6 J	NA	35 UJ	NA
4,4'-DDT	10-60	4/8	24 J	NA	10 J	60 J	10 J	NA	35 UJ	NA
METHOXYCHLOR	37	1/8	280 U	NA	290 U	310 UJ	37 J	NA	180 UJ	NA
ENDRIN ALDEHYDE	59-140	2/8	55 U	NA	57 U	59 J	140 J	NA	35 UJ	NA
ALPHA-CHLORDANE	6.4	1/8	28 U	NA	29 U	31 UJ	6.4 J	NA	18 UJ	NA
GAMMA-CHLORDANE	7	1/8	28 U	NA	29 U	31 UJ	7 J	NA	18 UJ	NA
SDG			17791	17791	17791	16992	16992	16992	16992	16992
TAL Metals (MG/KG)										
ALUMINUM	2,560-22,450*	15/15	13100	18700	8860	15900	10600	16900	3510	12600
ANTIMONY	5.1-15	4/15	5.1	15.0	9.8	5.9 U	5.1 U	6.4 U	3.2 U	4.9 U
ARSENIC	1.2-13.5	15/15	4.6 J	6.4 J	5.1 J	6.9	5.6	13.5	1.2	6.7
BARIUM	17.0-93.2*	15/15	53.1	85.1	43.3	81.1	94.1	71.2	17.0	73.2
BERYLLIUM	0.53-1.1	4/15	0.62	1.1	0.75	1.5 U	1.5 U	1.0 U	0.55 U	1.2 U
BORON	11.0-39.7	9/15	16.4 UJ	28.2 UJ	14.7 UJ	39.7	27.8 J	34.9 J	11.0 J	29.3 J
CADMIUM	1.0-29.5	9/15	0.66 U	1.1 U	1.0	1.1 J	29.5	0.85 U	0.43 U	0.63 U
CALCIUM	690-3,290	15/15	1170	1950	1470	2340 J	3290 J	1920 J	922 J	2150 J
CHROMIUM	6.0-97.5	14/15	18.7	25.4	14.4	66.3	27.8	97.5	5.7 U	45.4
COBALT	2.2-14.4	15/15	6.7	10.0	7.1	5.6	14.4	6.2	2.2	5.6
COPPER	16.2-57.2	12/15	16.2	28 J	21.6 J	39.4	57.2	52.8	4.6 U	23.6
IRON	6,410-51,600	15/15	21800	51600	38400	32700	23700	31100	6940	31200
LEAD	3.5-204	15/15	20.4 J	53.7 J	48.8 J	49.9	204	69.6	3.5	22.6
MAGNESIUM	1,160-6,140	15/15	3410	4160	2790	5640	4310	6140	1160	4860
MANGANESE	79.8-2,640	15/15	315	473	141	220	2640	196	101	483
MERCURY	0.14-0.60	9/15	0.16 U	0.28 U	0.15 U	0.38	0.18	0.60	0.11 U	0.18
NICKEL	3.3-31.5	15/15	13.1	20.9	12.6	18.5	31.5	21.5	3.3 J	13.8
POTASSIUM	1,410-4,020	13/15	1510	1740	1410	3580	2060	4020	870 U	2640
SELENIUM	0.67	1/15	0.99 UJ	1.7 UJ	0.88 UJ	1 U	0.75 U	0.98 U	0.43 UJ	0.66 U
SILVER	1.7-1.9	2/15	0.66 U	1.9	1.7	0.79 UJ	1.1 U	0.85 UJ	0.43 UJ	0.63 UJ
SODIUM	163-1,120	6/15	163	314	216	580	156 U	1120	36 U	163 U
THALLIUM	0.28*-0.36	2/15	0.33 U	0.56 U	0.29 U	0.39 U	0.34 J	0.42 U	0.21 U	0.31 U
VANADIUM	8.0-56.7	15/15	24.8	31.1	18.9	44.5	56.7	54.9	12.8	33.4
ZINC	17.3-292	14/15	71.8	274	216	61.9	292	54.9	10.3 U	82.2
SDG			17791	17791	17791	16992	16992	16992	16992	16992
TCLP Metals (UG/L)										
BARIUM	248	1/1	NA	248	NA	NA	NA	NA	NA	NA
SDG			17791	17791	17791	16992	16992	16992	16992	16992
Dioxin (UG/KG)	-	0/1	NA	NA	NA	NA	NA	NA	NA	NA

NA Not analyzed

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- Not applicable

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AREA A WEAPONS CENTER SEDIMENTS

	2WCSD9	2WCSD10	2WCSD11	2WCSD12	2WCSD13	2WCSD14	2WCSD14D	2WCSD14AVG	2WCSD15
SDG	16992	17148	16992	16992	16992	16992	16992	-	16992
TCL Pesticides/PCB (UG/KG)									
4,4'-DDE	NA	NA	41 UJ	NA	NA	NA	NA	NA	NA
ENDRIN	NA	NA	10 J	NA	NA	NA	NA	NA	NA
4,4'-DDD	NA	NA	41 UJ	NA	NA	NA	NA	NA	NA
ENDOSULFAN SULFATE	NA	NA	41 UJ	NA	NA	NA	NA	NA	NA
4,4'-DDT	NA	NA	41 UJ	NA	NA	NA	NA	NA	NA
METHOXYCHLOR	NA	NA	210 UJ	NA	NA	NA	NA	NA	NA
ENDRIN ALDEHYDE	NA	NA	41 UJ	NA	NA	NA	NA	NA	NA
ALPHA-CHLORDANE	NA	NA	21 UJ	NA	NA	NA	NA	NA	NA
GAMMA-CHLORDANE	NA	NA	21 UJ	NA	NA	NA	NA	NA	NA
SDG	16992	17148	16992	16992	16992	16992	16992	-	16992
TAL Metals (MG/KG)									
ALUMINUM	4550	12200	2560	13700	12200	26400	18500	22450	16900
ANTIMONY	3.9 U	7.8 J	3.7 U	9.4 U	14.6 U	17.4 U	18.4 U	17.9 U	6.5 U
ARSENIC	1.6	6.2 J	1.4	8.4	11.4	11.5	9.0	10.25	9.6
BARIUM	56.5	78.8 J	17.9	72.9	50.0	103	83.4	93.2	57.8
BERYLLIUM	0.63 U	0.53 J	0.57 U	1.2 U	1.3 U	2.3 U	1.7 U	2.0 U	1.7 U
BORON	12.9 U	15.9 U	12.3 U	30.2 J	26.3 J	37.5 J	26.8 J	32.15 J	25.8 J
CADMIUM	0.51 U	0.64 U	0.49 U	0.73 U	0.74 U	0.8 U	0.72 U	0.76 U	0.82 U
CALCIUM	1440 J	1660 J	680 J	1800 J	1230 J	3250 J	2900 J	3075 J	1750 J
CHROMIUM	8.0	41.4	11.4	50.5	53.1	36.1	27.6	31.85	65.2
COBALT	2.2	7.1 J	2.3	5.3	4.8	13.4	9.3	11.35	4.3
COPPER	6.1 U	16.8 J	5.0 U	23.4	29.5	37.7	28.7	33.2	26.0
IRON	6920	23800	6430	24600	24600	40700	29000	34850	14700
LEAD	6.7	28	7.9	27.1	30.9	127	84.6	105.8	35.1
MAGNESIUM	2630	4720	1490	5080	5020	5310	4710	5010	5380
MANGANESE	79.8	153	150	168	160	1480	954	1217	172
MERCURY	0.14	0.27 J	0.12 U	0.29	0.42	0.2 U	0.18 U	0.19 U	0.52
NICKEL	4.7 J	13.1 J	5.6	15.5	14.0	25.8	18.7	22.25	16.3
POTASSIUM	2150	2350 J	822 U	3090	4020	3170	3050	3110	3920
SELENIUM	0.51 UJ	0.67 J	0.49 UJ	0.73 UJ	0.96 U	1.2 U	0.97 U	1.09 U	1.5 U
SILVER	0.51 UJ	0.64 U	0.49 UJ	0.73 UJ	0.74 UJ	0.8 UJ	0.72 UJ	0.76 UJ	0.82 UJ
SODIUM	69.3 U	356 J	28.4 U	209 U	273 U	169 U	162 U	165.5 U	334 U
THALLIUM	0.26 U	0.96 U	0.25 U	0.37 U	0.37 U	0.4 U	0.36 J	0.28 J	0.41 U
VANADIUM	17.5	47.1	8.0	41.5	37.2	62.2	45.3	53.75	38.1
ZINC	17.3	40.5 J	50.4	43.4	40.5	173	134	153.5	42.6
SDG	16992	17148	16992	16992	16992	16992	16992	-	16992
TCLP Metals (UG/L)									
BARIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDG	16992	17148	16992	16992	16992	16992	16992	-	16992
Dioxin (UG/KG)	NA	NA	0.050 U-0.560 U	NA	NA	NA	NA	NA	NA

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ND: Not detected

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APPENDIX D.5

SITE 2 - AREA A DOWNSTREAM

AREA A DOWNSTREAM GROUNDWATER

	Range(Total)	Frequency(Total)	Range(Diss)	Frequency(Diss)	2DGW10D	2DGW10D DISS	2DGW11D	2DGW11D DISS	2DGW11S	2DGW11S DISS
SDG					17955		17915		17915	
TCL Volatiles (UG/L)										
VINYL CHLORIDE	130	1/21	-	NA	10 U	NA	10 U	NA	10 U	NA
1,2-DICHLOROETHENE (TOTAL)	2-28	2/21	-	NA	10 U	NA	10 U	NA	10 U	NA
TRICHLOROETHENE	1-3	2/21	-	NA	10 U	NA	10 U	NA	10 U	NA
SDG					17955		17915		17915	
TCL Semivolatiles (UG/L)										
PHENOL	0.6	1/21	-	NA	10 U	NA	10 U	NA	10 U	NA
DIETHYLPHTHALATE	0.7-0.8	2/21	-	NA	10 U	NA	10 U	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	25*	1/21	-	NA	10 U	NA	10 U	NA	10 U	NA
DI-N-OCTYL PHTHALATE	1-5	2/21	-	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(B)FLUORANTHENE	1	1/21	-	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(K)FLUORANTHENE	1	1/21	-	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(A)PYRENE	1	1/21	-	NA	10 U	NA	10 U	NA	10 U	NA
DIBENZ(A,H)ANTHRACENE	3	1/21	-	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(G,H,I)PERYLENE	4	1/21	-	NA	10 U	NA	10 U	NA	10 U	NA
BENZOIC ACID	0.5-0.9	4/21	-	NA	50 U	NA	50 U	NA	50 U	NA
SDG					18045	18045	17943	17943	17943	17943
TAL Metals (UG/L)										
ALUMINUM	153-48,700	10/21	136-4,050	3/21	93.7 U	39.6 U	55.8 U	15.0 U	24.9 U	27.4 U
ANTIMONY	-	0/21	14.8-20.9	2/21	13.0 U	14.8 J	15.0 U	15.0 U	18.6 U	15.0 U
ARSENIC	2-8 6	8/21	2.7-5 5	6/21	2.0 U	2.0 UJ	5.7 J	5.5	2.0 U	2.0 U
BARIUM	11 3-362	21/21	10 6-363	19/21	64.2 J	64.7 J	93.0	93.0	31.0	31.0
BORON	53 8-347	12/21	53 8-349	12/21	130	136	109	120	221	216
CADMIUM	2 2-6 3	4/21	4 3	1/21	3.0 U	3.0 U	2.2 J	2.0 UJ	2.0 UJ	2.0 UJ
CALCIUM	9,020-145,000	21/21	8,120-149,000	21/21	36800	38000	45700	46300	49900	50800
CHROMIUM	4 1-59 3	4/21	-	0/21	4.0 U	4.0 U	4.4 U	3.0 U	3.0 U	3.0 U
COBALT	4.6-20.7	3/21	6.1	1/21	5.0 U	5.0 U	16.3 U	4.0 U	4.0 U	4.0 U
COPPER	2.8-56.1	6/21	-	0/21	5.0 U	5.0 U	7.6 U	2.2 U	2.0 U	2.2 U
IRON	77.3-49,200	19/21	134-17,200	13/21	3470	921	44500	17200	77.3 J	50.0 U
LEAD	1.5-27.2	3/21	4.5	1/21	2.0 UJ	2.0 UJ	2.0 U	2.0 U	2.0 U	2.0 U
MAGNESIUM	1,560-59,000	21/21	1,110-61,000	21/21	10300	10700	11700	12000	18400	18700
MANGANESE	5.6-7090*	21/21	6.5-6,940	21/21	162	168	2210	2140	1370	1390
MERCURY	1.1	1/21	0.4	1/21	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
NICKEL	10.5-61.5	4/21	11.1-17.1	2/21	11.0 UJ	11.0 UJ	10.0 UJ	10.0 UJ	10.0 UJ	10.0 UJ
POTASSIUM	2,850-20,000	20/21	2,510-20,900	20/21	7210	7160	7400	7860	8250	8180
SILVER	2.15*	1/21	-	0/21	2.0 U	2.0 U	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ
SODIUM	9,520-528,000	20/21	4,580-554,000	21/21	134000	141000	183000	188000	190000	194000
VANADIUM	6.9-89.7	2/21	-	0/21	4.0 U	4.0 U	5.0 U	5.0 U	5.0 U	5.0 U
ZINC	4.9-163	9/21	3.5-32.2	8/21	7.4 J	7.4 J	4.9	3.5 J	2.0 U	2.0 U

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AREA A DOWNSTREAM GROUNDWATER

	2DGW15D	2DGW15D DISS	2DGW16D	2DGW16D DISS	2DGW16S	2DGW16S DISS	2DGW23D	2DGW23D DISS	2DGW24D	2DGW24D DISS
SDG	17915		17873		17873		17915		17873	
TCL Volatiles (UG/L)										
VINYL CHLORIDE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,2-DICHLOROETHENE (TOTAL)	10 U	NA	2 J	NA	10 U	NA	10 U	NA	10 U	NA
TRICHLOROETHENE	10 U	NA	3 J	NA	10 U	NA	10 U	NA	1 J	NA
SDG	17915		17873		17873		17915		17873	
TCL Semivolatiles (UG/L)										
PHENOL	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DIETHYLPHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DI-N-OCTYL PHTHALATE	10 U	NA	10 U	NA	10 U	NA	1 J	NA	10 U	NA
BENZO(B)FLUORANTHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(K)FLUORANTHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(A)PYRENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DIBENZ(A,H)ANTHRACENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(G,H,I)PERYLENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZOIC ACID	50 U	NA	0.9 J	NA	50 U	NA	50 U	NA	50 UJ	NA
SDG	17915	17915	17873	17873	17873	17873	17933	17933	17873	17873
TAL Metals (UG/L)										
ALUMINUM	220	14.0 U	148 U	19.7 U	442 U	39.7 U	4050	15.5 U	32.8 U	27.2 U
ANTIMONY	15.0 U	15.0 U	15.0 U	15.0 UJ	15.0 U	15.0 UJ	15.0 U	20.9 J	15.0 U	15.0 UJ
ARSENIC	2.5 J	2.0 U	3.1 J	3.0 J	UR	2.0 U	2.0 U	2.0 UJ	UR	3.5 J
BARIUM	57.9 J	49.8	81.1	64.5	19.6	18.0	17.3	5.0 U	48.8	45.8
BORON	75.5 J	72.6 J	177	180	50.0 UJ	50.0 U	50 U	50.0 U	59.7 J	53.8
CADMIUM	3.0 UJ	2.0 U	2.0 U	6.1 U	2.0 U	2.0 UJ	2.0 U	2.0 U	2.0 U	2.0 UJ
CALCIUM	13900 J	17500	145000	149000	19500	19100	9020	8120	31300	31800
CHROMIUM	3.0 U	3.0 UJ	5.5 J	3.0 UJ	3.0 U	3.0 UJ	3.0 UJ	3.0 U	3.0 U	3.0 UJ
COBALT	4.0 U	4.7 U	11.6	10.6 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	7.3 U
COPPER	5.9 U	2.0 U	7.5	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
IRON	5140 J	62.1 U	21200	12000	927	226	2050	14.6 U	15000	11400
LEAD	1.5 J	2.0 UJ	2.0 UJ	2.0 U	2.0 UJ	2.0 U	2.0 UJ	2.0 UJ	2.0 UJ	2.0 U
MAGNESIUM	3440 J	3950	25400	25500	4910	4720	1560	1110	7170	7170
MANGANESE	109	71.5	2090	2070	310	301	130	16.9	1060	1120
MERCURY	0.20 UJ	0.40 J	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
NICKEL	10.0 U	17.1 J	61.5	18.1 U	10.0 U	10.0 UJ	12.4 U	10.7 U	10.0 U	10.0 UJ
POTASSIUM	5620 J	7050 J	11000	12300	2850	3040	1430 U	1170 U	3990	4410
SILVER	2.0 U	2.0 U	2.0 UJ	3.6 U	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ
SODIUM	48500 J	56600	289000	303000	49600	48000	4740 U	4580	81000	82000
VANADIUM	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 U	6.2 U	5.0 U	5.0 U	5.0 U	5.0 U
ZINC	6.3 U	2.0 U	11.1 U	4.1 U	9.0 U	7.5 U	5.7 U	2.0 U	13.4 U	9.8 U

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AREA A DOWNSTREAM GROUNDWATER

	2DGW24S	2DGW24S DISS	2DGW25D	2DGW25D DISS	2DGW25S	2DGW25S DISS	2DGW26D	2DGW26D DISS	2DGW26D-D	2DGW26D-D DISS
SDG	17873		17308		17308		17873		17873	
TCL Volatiles (UG/L)										
VINYL CHLORIDE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,2-DICHLOROETHENE (TOTAL)	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
TRICHLOROETHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
SDG	17873		17308		17308		17873		17873	
TCL Semivolatiles (UG/L)										
PHENOL	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DIETHYLPHTHALATE	10 U	NA	0.8 J	NA	0.7 J	NA	10 U	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	NA	10 U	NA	10 U	NA	38 J	NA	12 J	NA
DI-N-OCTYL PHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(B)FLUORANTHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(K)FLUORANTHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(A)PYRENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DIBENZ(A,H)ANTHRACENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(G,H,I)PERYLENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZOIC ACID	50 UJ	NA	0.5 J	NA	0.6 J	NA	50 U	NA	50 U	NA
SDG	17873	17873	W17308	W17308	W17308	W17308	17873	17873	17873	17873
TAL Metals (UG/L)										
ALUMINUM	14 0 U	4050	311	136	48700	81.6 U	704	16.4 U	599	23.9 U
ANTIMONY	15 0 U	15 0 UJ	15.0 U	15.0 U	15.0 U	15.0 U	15.0 U	15.0 UJ	15.0 U	15.0 UJ
ARSENIC	UR	4.1 J	2.8 J	2.0 U	8.6	2.0 U	2.0 J	2.0 U	UR	2.0 U
BARIUM	62.3	112	151	147	307	51.1	49.2	44.5	49.8	43.9
BORON	50 0 UJ	50.0 U	50.0 UJ	50.0 UJ	50.0 UJ	50.0 UJ	118 J	125	116	122
CADMIUM	2.0 U	2.0 UJ	2.0 U	2.0 U	2.8 J	2.0 U	2.6 U	2.9 U	2.0 U	2.0 UJ
CALCIUM	29000	30100	16900 J	17100	11200 J	8250	30800	32300	31500	33300
CHROMIUM	3.0 U	5.5 U	3.0 U	3.0 U	59.3	3.0 U	3.0 U	3.0 UJ	3.0 U	3.0 UJ
COBALT	4.0 U	14.7 U	4.0 U	4.0 U	20.7	4.0 U	4.0 U	10.6 U	4.0 U	4.0 U
COPPER	2.0 U	16.5 U	2.0 U	2.0 U	56.1	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
IRON	2220	6290	29600 J	1580	49200 J	393	3800	2170	3480	2240
LEAD	2.0 UJ	4.5 J	1.0 U	1.0 U	27.2	1.0 U	2.0 UJ	2.0 U	2.0 UJ	2.0 U
MAGNESIUM	8180	8980	3830	3800	15000	2210	8530	8760	8720	9010
MANGANESE	2180	2280	152	140	1640	880	4580	4180	4600	4350
MERCURY	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
NICKEL	10.0 U	10.0 UJ	10.0 U	10.0 U	30.7	10 U	10.0 U	10.0 UJ	10.0 U	10.0 UJ
POTASSIUM	3810	4720	3110	3560	12400	2510	5010	5390	5310	5450
SILVER	2.0 UJ	2.8 U	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ
SODIUM	69600	68800	62900	62000	32300	31100	53100	54200	54000	55500
VANADIUM	5.0 U	18.4 U	5.0 U	5.0 U	89.7	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
ZINC	2.0 U	17.7 U	18.4 J	16.7 J	183	4.5 J	16.3 U	10.6 U	8.9 U	10.6 U

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AREA A DOWNSTREAM GROUNDWATER

	2DGW26DAVG	2DGW26D DISSAVG	2DGW26S	2DGW26S DISS	2DGW27D	2DGW27D DISS	2DGW27S	2DGW27S DISS	2DGW28D
SDG			17873		17915		17873		17873
TCL Volatiles (UG/L)									
VINYL CHLORIDE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
1,2-DICHLOROETHENE (TOTAL)	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
TRICHLOROETHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
SDG			17873		17915		17873		17873
TCL Semivolatiles (UG/L)									
PHENOL	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
DIETHYLPHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	25	NA	10 U	NA	10 U	NA	10 U	NA	10 U
DI-N-OCTYL PHTHALATE	10 U	NA	10 U	NA	5 J	NA	10 U	NA	10 U
BENZO(B)FLUORANTHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
BENZO(K)FLUORANTHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
BENZO(A)PYRENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
DIBENZ(A,H)ANTHRACENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
BENZO(G,H,I)PERYLENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
BENZOIC ACID	50 U	NA	50 U	NA	50 U	NA	50 U	NA	50 U
SDG		17873	17873	17873	17915	17915	17873	17873	17873
TAL Metals (UG/L)									
ALUMINUM	651 5	20.15 U	15.1 U	18.3 U	1680	14.0 U	94.7 U	72.6 U	1860
ANTIMONY	15 0 U	15 0 UJ	15.0 U	16.8 U	15.0 U	15.0 U	15.0 U	15.0 UJ	15.0 U
ARSENIC	2 0 J	2 0 U	UR	2.0 U	2.1 J	2.0 U	UR	2.0 UJ	UR
BARIUM	49 5	44 2	19 6	17.8	11.3 J	5.0 U	362	363	32.0
BORON	117	124	73.8 J	67.9	50.0 U	50.0 U	50.0 UJ	50.0 U	50.0 UJ
CADMIUM	2 3 U	2 45 UJ	2.0 U	2.0 UJ	3.0 UJ	2.0 U	2.0 U	2.8 U	2.9 UJ
CALCIUM	31150	32800	21300	21200	35200 J	34000	60200	60800	53300
CHROMIUM	3 0 U	3 0 UJ	3.0 U	3.0 UJ	10.6	3.3 U	3.0 U	3.0 UJ	4.1 J
COBALT	4 0 U	7 3 U	4.0 U	4.0 U	4.0 U	4.0 UJ	6.7 U	7.8 U	4.0 U
COPPER	2.0 U	2.0 U	2.0 U	2.0 U	31.8	2.0 U	2.0 U	2.0 U	3.8 J
IRON	3640	2205	16.0 U	50.0 U	5280 J	14.1 U	149	134	4790
LEAD	2.0 UJ	2.0 U	2.0 UJ	2.0 U	9.6	2.0 UJ	2.0 UJ	2.0 U	2.0 UJ
MAGNESIUM	8625	8885	5250	5230	3580 J	2900	10100	10100	7190
MANGANESE	4590	4265	5.6	6.5	239	143	1730	1730	1800
MERCURY	0.20 U	0.20 U	0.20 U	0.20 U	0.20 UJ	0.20 UJ	0.20 U	0.20 U	0.20 U
NICKEL	10.0 U	10.0 UJ	10.0 U	12.8 U	10.0 U	10.0 U	10.0 U	10.0 UJ	10.0 U
POTASSIUM	5160	5420	4110	4150	3360 J	2680 J	8190	8710	4210
SILVER	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 U	2.0 U	2.0 UJ	3.7 U	2.0 UJ
SODIUM	53550	54850	43100	42700	23400 J	22600	284000	295000	9520
VANADIUM	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U	10.3
ZINC	12.6 U	10.6 U	2.0 U	2.0 U	38.5	2.0 U	7.8 U	6.5 U	22.9 U

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	2DGW28D DISS	2DGW28S	2DGW28S DISS	2DGW29S	2DGW29S DISS	2DGW30S	2DGW30S DISS	3GW12D	3GW12D DISS	3GW12D-D
SDG		17873		17308		17308		17915		17915
TCL Volatiles (UG/L)										
VINYL CHLORIDE	NA	10 U	NA	130	NA	10 U	NA	10 U	NA	10 U
1,2-DICHLOROETHENE (TOTAL)	NA	10 U	NA	28	NA	10 U	NA	10 U	NA	10 U
TRICHLOROETHENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
SDG		17873		17308		17308		17915		17915
TCL Semivolatiles (UG/L)										
PHENOL	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
DIETHYLPHTHALATE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
DI-N-OCTYL PHTHALATE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
BENZO(B)FLUORANTHENE	NA	10 U	NA	10 U	NA	10 U	NA	1 J	NA	10 UJ
BENZO(K)FLUORANTHENE	NA	10 U	NA	10 U	NA	10 U	NA	1 J	NA	10 UJ
BENZO(A)PYRENE	NA	10 U	NA	10 U	NA	10 U	NA	1 J	NA	10 UJ
DIBENZ(A,H)ANTHRACENE	NA	10 U	NA	10 U	NA	10 U	NA	3 J	NA	10 UJ
BENZO(G,H,I)PERYLENE	NA	10 U	NA	10 U	NA	10 U	NA	4 J	NA	10 UJ
BENZOIC ACID	NA	50 U	NA	0.7 J	NA	50 U	NA	50 U	NA	50 U
SDG	17873	17873	17873	W17308	W17308	W17308	W17308	17943	17943	17943
TAL Metals (UG/L)										
ALUMINUM	17.5 U	901	660	57.6 U	40.5 U	153	15.8 U	61.8 U	32.7 U	68.1 U
ANTIMONY	15.0 UJ	15.0 U	15.0 UJ	15.0 U	15.0 U	15.0 U	15.0 U	15.0 U	15.0 U	15.0 U
ARSENIC	2.0 UJ	UR	2.7 J	2.0 U	2.0 U	2.0 U	2.0 U	5.5 J	4.60 J	5.2 J
BARIUM	11.3	13.1	10.6	49.6	49.6	58.6	56.7	57.2	53.8	55.8
BORON	50.0 U	50.0 UJ	50.0 U	53.8 J	57.8 J	73.8 J	64.0 J	344	348	350
CADMIUM	2.5 U	2.0 U	2.0 UJ	2.0 U	2.0 U	2.0 U	2.0 U	7.3 J	2.0 UJ	5.3 J
CALCIUM	51000	24000	23900	28000 J	28400	29600 J	30200	75300	73600	74300
CHROMIUM	3.0 UJ	3.0 U	3.0 UJ	3.0 U	3.0 U	3.0 U	3.0 U	11.6 U	3.0 U	13.2 U
COBALT	4.0 U	4.0 U	4.6 U	4.6 J	6.1 J	4.0 U	4.0 U	48.7 U	21.7 U	44.9 U
COPPER	2.0 U	2.0 U	2.0 U	2.0 U	3.2 U	2.8 J	4.3 U	37.3	2.7 U	37.0
IRON	50.0 U	8.4 U	50.0 U	1890 J	2010	260 J	57.5 U	47000	16200	44900
LEAD	2.0 U	2.0 U	2.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U	2.0 UJ	2.0 UJ
MAGNESIUM	6190	1610	1610	5610	5640	7360	7350	52300	52700	52200
MANGANESE	1650	15.9	7.9	343	350	96.8	88.7	7110	6970	7070
MERCURY	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	1.1	0.20 U	0.20 U	0.20 U	0.20 U
NICKEL	10.0 UJ	10.0 U	10.0 UJ	10.5 J	11.1 J	10.0 U	10.0 U	14.0 U	10.0 UJ	22.4 J
POTASSIUM	3130	5810	6100	4930	5290	6240	6720	19000	19200	19000
SILVER	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	3.3 J
SODIUM	9370	38700	37600	94700	94500	129000	129000	519000	527000	518000
VANADIUM	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
ZINC	2.0 U	2.0 U	2.0 U	32.9 J	32.2 J	19.5 J	19.3 J	20.5	8.1	23.4

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AREA A DOWNSTREAM GROUNDWATER

	3GW12D-D DISS	3GW12DAVG	3GW12D DISSAV	3GW12S	3GW12S DISS
SDG				17915	
TCL Volatiles (UG/L)					
VINYL CHLORIDE	NA	10 U	NA	10 U	NA
1,2-DICHLOROETHENE (TOTAL)	NA	10 U	NA	10 U	NA
TRICHLOROETHENE	NA	10 U	NA	10 U	NA
SDG				17915	
TCL Semivolatiles (UG/L)					
PHENOL	NA	0.6 J	NA	10 U	NA
DIETHYLPHTHALATE	NA	10 U	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	10 U	NA	10 U	NA
DI-N-OCTYL PHTHALATE	NA	10 U	NA	10 U	NA
BENZO(B)FLUORANTHENE	NA	1 J	NA	10 U	NA
BENZO(K)FLUORANTHENE	NA	1 J	NA	10 U	NA
BENZO(A)PYRENE	NA	1 J	NA	10 U	NA
DIBENZ(A,H)ANTHRACENE	NA	3 J	NA	10 U	NA
BENZO(G,H,I)PERYLENE	NA	4 J	NA	10 U	NA
BENZOIC ACID	NA	50 U	NA	50 U	NA
SDG	17943			17943	17943
TAL Metals (UG/L)					
ALUMINUM	20 7 U	64 95 U	26 7 U	1160	15.5 U
ANTIMONY	15 0 U	15 0 U	15 0 U	15 0 U	24.0 U
ARSENIC	4 9	5 35 J	4 75 J	2 7 U	2.0 U
BARIUM	51 7	56 5	52 75	51 7	43.4
BORON	347	347	347 5	341	349
CADMIUM	2 0 UJ	6 3 J	2 0 U	4 7 J	4.3 J
CALCIUM	72800	74800	73200	69600	72400
CHROMIUM	3 3 U	12 4 U	3 15 U	3 0 U	3.0 U
COBALT	15 6 U	46 8 U	18 65 U	25 6 U	26.6 U
COPPER	2 0 U	37.15	2.35 U	11.5 U	4.5 U
IRON	15500	45950	15850	7030	4770
LEAD	2 0 U	2 0 U	2 0 UJ	2.0 U	2.0 UJ
MAGNESIUM	52200	52250	52450	59000	61000
MANGANESE	6910	7090	6940	6340	6590
MERCURY	0 20 U	0 20 U	0 20 U	0.20 U	0.20 U
NICKEL	10 0 UJ	14 7 J	10 0 UJ	10.0 UJ	10.0 UJ
POTASSIUM	19100	19000	19150	20000	20900
SILVER	2 0 UJ	2 15 J	2 0 UJ	2.0 UJ	2.0 UJ
SODIUM	519000	518500	523000	528000	554000
VANADIUM	5 0 U	5 0 U	5 0 U	6.9	5.0 U
ZINC	2 2 J	21 95	5.15 J	14.8	7.2

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ND: Not detected

J: Estimate value

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AREA A DOWNSTREAM GROUNDWATER (ROUND 2)

	Range (Total)	Frequency (Total)	Range (Diss)	Frequency (Diss)	2DGW10D-2	2DGW10D-2 DISS	2DGW11S-2	2DGW11S-2 DISS
SDG					**19340**		**19326**	
TCL Volatiles (UG/L)								
VINYL CHLORIDE	53	1/19	-	NA	10 U	NA	10 U	NA
METHYLENE CHLORIDE	7-11	3/19	-	NA	7 J	NA	10 U	NA
1,2-DICHLOROETHENE(TOTAL)	6-17	2/19	-	NA	10 U	NA	10 U	NA
CHLOROFORM	3-12	4/19	-	NA	10 U	NA	10 U	NA
BROMODICHLOROMETHANE	2	1/19	-	NA	10 U	NA	10 U	NA
TRICHLOROETHENE	7	1/19	-	NA	10 U	NA	10 U	NA
BENZENE	1	1/19	-	NA	10 U	NA	10 U	NA
SDG					**19340**		**19326**	
TCL Semivolatiles (UG/L)								
PHENOL	3	1/18	-	NA	10 U	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	2-20	5/18	-	NA	3 J	NA	10 U	NA
BENZOIC ACID	0 6	2/18	-	NA	50 U	NA	50 U	NA
SDG					**19340**	**19340**	**19326**	**19326**
TAL Metals (UG/L)								
ALUMINUM	147-42000	13/19	138-342	2/19	804	82.0 U	42.6 U	23.2 U
ARSENIC	1 4-13 2	11/19	2.7-6.0	5/19	2.1 J	2.0 U	5.0 UJ	5.0 U
BARIUM	10 3-505	17/19	7.4-155	17/19	89.9	81.6	27.6	28.9
BERYLLIUM	2 8	1/19	-	0/19	1.0 U	1.0 U	1.0 U	1.0 U
BORON	63 2-213	8/19	88.8-198	7/15	105	112	213	231
CADMIUM	3 5-6 7	2/19	2.5	1/19	6.7 J	2.0 U	2.0 U	2.0 U
CALCIUM	9390-174000	19/19	9340-176000	19/19	23500	24300	39900	43700
CHROMIUM	1 5-84 6	11/19	-	0/19	3.0 U	3.0 U	3.0 U	3.2 U
COBALT	4 9-33 3	6/19	27.4	1/19	3.1 U	3.0 U	3.0 U	3.0 U
COPPER	2 5-137	13/19	2.2-3.4	2/19	8.7	2.0 U	2.5 J	6.1 U
IRON	53 5-89850*	17/19	158-32600	13/19	70300	1340	53.5	16.3 U
LEAD	3.0-48.2	7/16	1.5-5.8	6/19	3.0 J	1.0 U	2.3 U	2.0 U
MAGNESIUM	1350-26000	19/19	1330-27100	19/19	6320	6720	15000	16000
MANGANESE	44.2-3310	18/19	11.1-3240	18/19	83.1	56.0	1060	1170
NICKEL	8 4-48.0	6/19	9.0-56.3	2/19	19.5 U	8.1 U	7.0 U	9.0 J
POTASSIUM	714-15900	19/19	745-12800	19/19	6210	6540	7940	7890
SELENIUM	4.1	1/16	-	0/19	3.0 U	3.0 U	5.0 UJ	5.0 UJ
SILVER	1.8-2 6	2/19	-	0/19	2.0 U	2.0 U	2.0 U	2.0 U
SODIUM	5250-322000	19/19	5240-3560000	19/19	126000	132000	168000	180000
THALLIUM	3.3-7.6	6/14	5.1-7.7	8/19	5.0 J	6.0 J	5.0 U	5.0 U
VANADIUM	3.8-113	8/19	-	0/19	3.0 U	3.0 U	3.8 J	1.0 U
ZINC	3.1-488	11/19	5.6	1/19	24.1 U	20.0 U	5.0 U	7.8 U
SDG							**19326**	
Radiological (pCi/L)								
GROSS ALPHA					NA	NA	6 +/- 4	NA
GROSS BETA					NA	NA	14 +/- 4	NA
GAMMA SPEC					NA	NA	NA	NA
SDG					**19340**		**19326**	
HARDNESS as CaCO3					80	NA	172	NA

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AREA A DOWNSTREAM GROUNDWATER (ROU

	2DGW11D-2	2DGW11D-2 DISS	2DGW15D-2	2DGW15D-2 DISS	2DGW15D-D-2	2DGW15DD-2 DISS	2DGW15D-2AVG
SDG	19326		19326		19326		
TCL Volatiles (UG/L)							
VINYL CHLORIDE	10 U	NA	10 U	NA	10 U	NA	10 U
METHYLENE CHLORIDE	10 U	NA	10 U	NA	10 U	NA	10 U
1,2-DICHLOROETHENE(TOTAL)	10 U	NA	10 U	NA	10 U	NA	10 U
CHLOROFORM	10 U	NA	10 U	NA	10 U	NA	10 U
BROMODICHLOROMETHANE	10 U	NA	10 U	NA	10 U	NA	10 U
TRICHLOROETHENE	10 U	NA	10 U	NA	10 U	NA	10 U
BENZENE	10 U	NA	10 U	NA	10 U	NA	10 U
SDG	19326		19326		19326		
TCL Semivolatiles (UG/L)							
PHENOL	10 U	NA	10 U	NA	10 U	NA	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	2 J	NA	4 J	NA	20 J	NA	12 J
BENZOIC ACID	50 U	NA	50 U	NA	50 U	NA	50 U
SDG	19326	19326	19326	19326	19326	19326	
TAL Metals (UG/L)							
ALUMINUM	53 6 U	51 6 U	4040	20 0 U	5380	48 5 U	4710
ARSENIC	5 0 UJ	5 0 U	5 0 UJ	5 0 U	5 0 UJ	5 0 U	5.0 UJ
BARIUM	76 1	80 0	260	77 3	336	69 8	308
BERYLLIUM	1 0 U	1 0 U	1 0 U	1 0 U	1 0 U	1 0 U	1.0 U
BORON	108	104	98 6	94 2	91 2 J	87 1	95.1 J
CADMIUM	2 0 U	2 0 U	2 0 U	2 0 U	2 0 UJ	2 0 U	2.0 UJ
CALCIUM	56100	40100	56800	18100	62900	16800	59850
CHROMIUM	3 0 U	4 6 U	15 6	3 2 U	22 1	4 3 U	19.0
COBALT	3 0 J	3 1 U	6 1	3 0 U	10 3	3 0 U	9.7
COPPER	3 6	3 3 U	35 4	2 1 U	40 2 J	2.0 U	37.8 J
IRON	80700	14500 J	78700	813 J	101000	511 J	89850
LEAD	3 6 U	3 0 U	7 0 U	2 2 J	7 1 U	2 0 U	7.05 U
MAGNESIUM	10100	10300	8320	4170	9560	4030	8940
MANGANESE	1690	1640	618	142	781	120	699.5
NICKEL	8 4 J	7 0 U	11 1 J	7.0 U	10.1 J	7.0 U	10.6 J
POTASSIUM	6870	7410	6170	4750	6770	4690	6470
SELENIUM	5 0 UJ	5 0 UJ	5 7 J	5.0 UJ	5.0 UJ	5.0 UJ	4.1 J
SILVER	2 1 J	2 0 U	2 0 U	2.0 U	2.8 J	2.0 U	1.8 J
SODIUM	177000	178000	61100	60400	61200	58900	61150
THALLIUM	5 0 U	5 0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
VANADIUM	3.0 U	1.0 U	8.7	1.0 U	13.1	1.0 U	10.9
ZINC	11.8 U	8.8 U	27.8 U	5.9 U	31.7	7.6 U	22.8 J
SDG	19326						
Radiological (pCi/L)							
GROSS ALPHA	6 +/- 4	NA	NA	NA	NA	NA	
GROSS BETA	15 +/- 5	NA	NA	NA	NA	NA	
GAMMA SPEC	NA	NA	NA	NA	NA	NA	
SDG	19326		19326		19326		
HARDNESS as CaCO3	140	NA	170	NA	190	NA	

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AREA A DOWNSTREAM ROUNDWATER (ROU

	2DGW15D-2 DISS2AVG	2DGW16S-2	2DGW16S-2 DISS	2DGW16D-2	2DGW16D-2 DISS	2DGW23D-2	2DGW23D-2 DISS	2DGW24S-2
SDG		**19316**		**19178**		**19167**		**19316**
TCL Volatiles (UG/L)								
VINYL CHLORIDE	NA	10 U	NA	10 U	NA	10 U	NA	10 U
METHYLENE CHLORIDE	NA	10 U	NA	10 U	NA	10 U	NA	10 U
1,2-DICHLOROETHENE(TOTAL)	NA	10 U	NA	6 J	NA	10 U	NA	10 U
CHLOROFORM	NA	10 U	NA	10 U	NA	10 U	NA	10 U
BROMODICHLOROMETHANE	NA	10 U	NA	10 U	NA	10 U	NA	10 U
TRICHLOROETHENE	NA	10 U	NA	7 J	NA	10 U	NA	10 U
BENZENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U
SDG		**19316**		**19178**		**19167**		**19316**
TCL Semivolatiles (UG/L)								
PHENOL	NA	10 U	NA	10 UJ	NA	10 U	NA	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	NA	10 U	NA	10 UJ	NA	10 U	NA	10 U
BENZOIC ACID	NA	50 U	NA	50 UJ	NA	50 U	NA	50 U
SDG		**19316**	**19316**	**19178**	**19178**	**19167**	**19167**	**19316**
TAL Metals (UG/L)								
ALUMINUM	38 8 U	28100	65 4 U	177	10.0 U	147	28.6 U	42000
ARSENIC	5 0 U	2 6 J	2 0 U	3.5 J	3.9	1.0 U	1.0 U	13.2
BARIUM	73 6	285	26 2	91.6 J	89.0	6.6 U	6.6 U	505
BERYLLIUM	1 0 U	1 0 U	1 0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.8
BORON	90 7	94 6	88 6	183 J	198	50.0 U	50.0 U	53.1 U
CADMIUM	2 0 U	2 0 U	2 5 J	2.0 U	2.0 U	3.0 U	3.0 U	2.0 U
CALCIUM	17450	38500	32500	174000 J	176000	9390	9340	50100
CHROMIUM	3 8 U	35 3	3 0 U	3.9 J	3.0 U	4.0 U	4.0 U	84.6
COBALT	3 0 U	21 8	3 0 U	4.0 U	3.0 U	5.0 U	5.0 U	33.3
COPPER	2 05 U	42 2 J	2 0 UJ	3.9 J	2.0 U	5.0 U	5.0 U	137 J
IRON	662 J	48400	2040	52000 J	32600 J	231	9.3 U	40200
LEAD	1 6 J	46 3	5 8	UR	2.0 UJ	2.0 UJ	2.0 UJ	48.2
MAGNESIUM	4100	19900	7210	26000 J	27100	1350	1330	15500
MANGANESE	131	2510	1160	1810	1830	44.2	11.1	1800
NICKEL	7 0 U	25 6	7 0 U	19.9 U	8.7 U	11.0 U	11.0 U	37.6
POTASSIUM	4720	15900	4630	12400	12800	714	745	9370
SELENIUM	5 0 UJ	3 0 UJ	3 0 UJ	UR	2.0 UJ	2.0 U	2.0 U	3.0 UJ
SILVER	2 0 U	2 4 U	3.1 U	2.0 U	2.0 U	2.0 U	2.0 U	2.6 U
SODIUM	59650	74900	83300	322000	3560000	5250	5240	59500
THALLIUM	5 0 U	3 0 UJ	6 5 J	UR	20.0 UJ	1.0 UJ	1.3 U	3.3 J
VANADIUM	1 0 U	77 7	3 0 U	4.5 J	3.0 U	4.0 U	4.0 U	113
ZINC	6 8 U	488	14.9 U	9.5 U	2.0 U	3.1 J	5.6 J	171
SDG								
Radiological (pCi/L)								
GROSS ALPHA		NA	NA	NA	NA	NA	NA	NA
GROSS BETA		NA	NA	NA	NA	NA	NA	NA
GAMMA SPEC		NA	NA	NA	NA	NA	NA	NA
SDG		**19316**				**19167**		**19316**
HARDNESS as CaCO3		140	NA	NA	NA	28	NA	160

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AREA A DOWNSTREAM GROUNDWATER (ROU

	2DGW24S-2 DISS	2DGW24D-2	2DGW24D-2 DISS	2DGW25S-2	2DGW25S-2 DISS	2DGW25D-2	2DGW25D-2 DISS	2DGW26S-2
SDG		**19178**		**19316**		**19178**		**19316**
TCL Volatiles (UG/L)								
VINYL CHLORIDE	NA	10 U	NA	10 U	NA	10 U	NA	10 U
METHYLENE CHLORIDE	NA	10 U	NA	10 U	NA	10 U	NA	10 U
1,2-DICHLOROETHENE(TOTAL)	NA	10 U	NA	10 U	NA	10 U	NA	10 U
CHLOROFORM	NA	10 U	NA	5 J	NA	3 J	NA	6 J
BROMODICHLOROMETHANE	NA	10 U	NA	10 U	NA	10 U	NA	10 U
TRICHLOROETHENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U
BENZENE	NA	10 U	NA	10 U	NA	10 U	NA	1 J
SDG		**19178**		**19316**		**19178**		**19316**
TCL Semivolatiles (UG/L)								
PHENOL	NA	3 J	NA	10 U	NA	10 UJ	NA	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	NA	10 UJ	NA	10 U	NA	10 UJ	NA	10 U
BENZOIC ACID	NA	50 UJ	NA	50 U	NA	50 UJ	NA	50 U
SDG	**19316**	**19178**	**19178**	**19316**	**19316**	**19178**	**19178**	**19316**
TAL Metals (UG/L)								
ALUMINUM	43 2 U	91 5 U	11.1 U	10600	138	1110	14.0 U	24.7 U
ARSENIC	2 0 U	3 4 J	2.7	4.8	2.0 U	3.4 J	3.7	2.0 U
BARIUM	46.1	38.4 U	34.6 U	134	88.7	172 J	155	10.4 J
BERYLLIUM	1 0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
BORON	40 0 U	45.9 U	54.0 U	26.2 U	29.4 U	24.4 U	34.3 U	43.6 U
CADMIUM	2 0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	3.5 J
CALCIUM	39100	16000 J	15000	11100	10700	16000 J	16200	12800
CHROMIUM	3 0 U	3 0 U	3.0 U	12.4	3.0 U	17.6	3.0 U	3.0 U
COBALT	3 0 U	3 0 U	3.0 U	4.9 J	3.0 U	3.0 U	3.0 U	3.0 U
COPPER	2 0 UJ	4.0	2.0 U	8.5 J	2.0 UJ	10.3	2.0 U	2.0 UJ
IRON	158	30600 J	9640 J	9000	45.3 U	74900 J	5000 J	25.6 U
LEAD	1.5 J	UR	2.0 UJ	8.0	1.5 J	UR	2.0 UJ	43.2
MAGNESIUM	7040	4450 J	4420	4790	2480	3790 J	4070	2650
MANGANESE	1040	1200	1040	171	49.5	300	253	2.7 U
NICKEL	7.0 U	7.0 U	7.1 U	9.2 J	7.0 U	15.3 U	11.8 U	7.0 U
POTASSIUM	4500	5410	5070	4740	2690 U	3500	3950	3500
SELENIUM	3.0 UJ	R	2.0 U	3.0 UJ	3.0 UJ	UR	2.0 U	3.0 UJ
SILVER	2.0 UJ	2.0 U	2.0 U	2.0 U	2.0 UJ	2.0 U	2.0 U	2.0 U
SODIUM	62400	69300	68400	43800	44900	61300	65900	24600
THALLIUM	5.1 J	UR	2.0 UJ	3.0 UJ	6.3 J	UR	20.0 UJ	5.1 J
VANADIUM	3.8 U	3.0 U	3.0 U	20.6	3.4 U	8.0	3.0 U	3.0 U
ZINC	6.6 U	59.0	3.3 U	44.6	11.6 U	75.7	11.7 U	11.6 U
SDG			**19178**					
Radiological (pCi/L)								
GROSS ALPHA	NA	NA	NA		NA			NA
GROSS BETA	NA	NA	NA		NA			NA
GAMMA SPEC	NA	NA	NA		NA			NA
SDG				**19316**				**19316**
HARDNESS as CaCO3	NA	NA	NA	44	NA	NA	NA	43

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AREA A DOWNSTREAM GROUNDWATER (ROU

	2DGW26S-2 DISS	2DGW26D-2	2DGW26D-2 DISS	3GW12S-2	3GW12S-2 DISS	3GW12D-2	3GW12D-2 DISS	2DGW27S-2
SDG		19316		19316		19316		19197
TCL Volatiles (UG/L)								
VINYL CHLORIDE	NA	10 U	NA	10 U	NA	10 U	NA	10 U
METHYLENE CHLORIDE	NA	10 U	NA	10 U	NA	10 U	NA	10 U
1,2-DICHLOROETHENE(TOTAL)	NA	10 U	NA	10 U	NA	10 U	NA	10 U
CHLOROFORM	NA	10 U	NA	10 U	NA	10 U	NA	10 U
BROMODICHLOROMETHANE	NA	10 U	NA	10 U	NA	10 U	NA	10 U
TRICHLOROETHENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U
BENZENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U
SDG		19316						19197
TCL Semivolatiles (UG/L)								
PHENOL	NA	NA	NA	10 U	NA	10 U	NA	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	NA	10 U	NA	10 J	NA	10 U
BENZOIC ACID	NA	NA	NA	50 U	NA	50 U	NA	50 U
SDG	19316	19316	19316	19316A	19316B	19316A	19316B	19197
TAL Metals (UG/L)								
ALUMINUM	87.3 U	734	135 U	4000	311 U	87 U	52.2 U	338
ARSENIC	3.0 U	3.0 U	2.0 U	6.0 J	5.0 U	5.0 UJ	5.0 U	1.5 J
BARIUM	11.4 J	48.4	30.3	81.4	52.5	53.2	56.3	92.2
BERYLLIUM	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
BORON	45.1 U	108	113	374	350	334	351	50.0 U
CADMIUM	3.0 U	3.0 U	3.0 U	5.5	2.0 U	2.0 U	2.0 U	1.0 U
CALCIUM	75800	79300	78600	73800	73200	72200	76800	45000
CHROMIUM	3.0 U	3.6 J	3.0 U	8.5	3.6 U	9.3	4.0 U	1.7 J
COBALT	3.0 U	3.0 U	3.0 U	22.0	17.7	38.8	6.8 U	28.0
COPPER	3.0 UJ	6.1 J	2.0 UJ	87.8	6.0 U	35.1	4.0 U	1.0 U
IRON	34.0 U	6610	3500	11600	5770 J	54200	35700 J	1670
LEAD	1.0 U	5.4	1.0 U	5.4 U	2.0 U	9.7 U	2.0 U	2.0 UJ
MAGNESIUM	3500	7580	7430	62200	60800	52000	55200	8560
MANGANESE	4.5 U	3310	3170	6710	6620	7090	7630	3180
NICKEL	7.0 U	7.0 U	7.0 U	7.0 U	7.0 U	35.3	7.0 U	48.0
POTASSIUM	3250	5560	5270	19700	18400	16300	16500	8260
SELENIUM	3.0 UJ	3.0 UJ	3.0 UJ	5.0 UJ	5.0 UJ	6.3 J	5.0 UJ	2.0 U
SILVER	2.0 UJ	2.0 U	2.0 UJ	2.0 U	2.0 U	2.3 J	2.0 U	1.0 U
SODIUM	24200	60300	59500	569000	564000	513000	528000	174000
THALLIUM	7.7 J	7.5 J	5.6 J	5 U	5 U	5 U	5.0 U	UR
VANADIUM	3.0 U	3.8 U	3.0 U	13.0	1.0 U	3.0 U	1.0 U	1.0 U
ZINC	11.8 U	40.3	18.6 U	25 U	8.8 U	21.3 U	12.4 U	8.2
SDG				19316				
Radiological (pCi/L)								
GROSS ALPHA	NA	NA	NA	89+/-24	NA	30+/-12	NA	NA
GROSS BETA	NA	NA	NA	64+/-17	NA	40+/-12	NA	NA
GAMMA SPEC	NA	NA	NA	NA	NA	NA	NA	NA
SDG				19316		19316		19197
HARDNESS as CaCO3	NA	NA	NA	448	NA	420	NA	160

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AREA A DOWNSTREAM GROUNDWATER (ROU

	2DGW27S-2 DISS	2DGW27D-2	2DGW27D-2 DISS	2DGW28S-2	2DGW28S-2 DISS	2DGW28D-2	2DGW28D-2 DISS	2DGW29S-2
SDG		**19197**		**19197**		**19197**		**19340**
TCL Volatiles (UG/L)								
VINYL CHLORIDE	NA	10 U	NA	10 U	NA	10 U	NA	10 UJ
METHYLENE CHLORIDE	NA	37 U	NA	10 U	NA	35 U	NA	11
1,2-DICHLOROETHENE(TOTAL)	NA	10 U	NA	10 U	NA	10 U	NA	10 UJ
CHLOROFORM	NA	10 U	NA	10 U	NA	10 U	NA	12 J
BROMODICHLOROMETHANE	NA	10 U	NA	10 U	NA	10 U	NA	2 J
TRICHLOROETHENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U
BENZENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U
SDG		**19197**		**19197**		**19197**		**19340**
TCL Semivolatiles (UG/L)								
PHENOL	NA	10 U	NA	10 U	NA	10 U	NA	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	NA	10 U	NA	10 U	NA	10 U	NA	6 J
BENZOIC ACID	NA	50 U	NA	50 U	NA	50 U	NA	0.6 J
SDG	**19197**	**19197**	**19197**	**19197**	**19197**	**19197**	**19197**	**19340**
TAL Metals (UG/L)								
ALUMINUM	10.0 U	236	13.2 U	461	342	544	12.4 U	116 U
ARSENIC	2.0 U	2.0 U	2.0 U	1.4 J	2.0 U	3.6 U	2.0 U	4.1
BARIUM	96.0	10.3 J	7.4 J	128	128	16.3	11.9 J	75.1
BERYLLIUM	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
BORON	UR	22.0 U	UR	50.0 U	UR	30.0 U	UR	57.5 U
CADMIUM	2.0 U	2.0 U	2.0 U	1.0 U	2.0 U	2.0 U	2.0 U	2.0 U
CALCIUM	44800	39100	40200	32600	35200	51800	54200	18800
CHROMIUM	3.0 U	3.0 U	3.0 U	1.5 J	3.0 U	3.8 J	3.0 U	3.4 J
COBALT	27.4	3.0 U	3.0 U	1.0 U	3.0 U	3.0 U	3.0 U	3.1 U
COPPER	2.0 U	2.9 J	3.4 J	1.0 U	2.0 U	4.6	2.2 J	2.0 U
IRON	1390	2050	17.2 U	16.0 U	31.9 U	19800	3170	9210
LEAD	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	7.0 J
MAGNESIUM	7560	3530	3630	3710	3290	6070	6250	5270
MANGANESE	3240	262	243	61.5	49.7	2120	2120	519
NICKEL	56.3	7.0 U	7.0 U	12.0 U	7.0 U	7.0 U	7.0 U	11.6 U
POTASSIUM	7290	4120	3610	5930	5450	4550	4510	4950
SELENIUM	2.0 UJ	2.0 U	2.0 U	2.0 U	2.0 UJ	2.0 U	2.0 UJ	3.0 U
SILVER	2.0 U	2.0 U	2.0 U	1.0 U	2.0 U	2.0 U	2.0 U	2.0 U
SODIUM	160000	38700	41100	166000	161000	11800	12900	139000
THALLIUM	20.0 UJ	20.0 U	20.0 U	UR	20.0 UJ	2.0 UJ	2.0 UJ	7.6 J
VANADIUM	3.0 U	4.1	3.0 U	1.0 U	3.0 U	3.0 U	3.0 U	3.0 U
ZINC	3.9 U	7.0 U	3.6 U	4.7	2.0 U	12.2 U	5.0 U	20.0 U
SDG				**19316**				
Radiological (pCi/L)								
GROSS ALPHA	NA	NA	NA	NA	NA	NA	NA	NA
GROSS BETA	NA	NA	NA	NA	NA	NA	NA	NA
GAMMA SPEC	NA	NA	NA	NA	NA	NA	NA	NA
SDG		**19197**		**19197**		**19197**		**19340**
HARDNESS as CaCO3	NA	108	NA	100	NA	148	NA	68

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

Not applicable

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AREA A DOWNSTREAM GROUNDWATER (ROU

	2DGW29S-2 DISS	2DGW29S-D-2	2DGW29SD-2 DISS	2DGW29S-2AVG	2DGW29S-2 DISSAVG	2DGW30S-2	2DGW30S-2 DISS
SDG		**19340**				**19316**	
TCL Volatiles (UG/L)							
VINYL CHLORIDE	NA	53 J	NA	29 J	NA	10 U	NA
METHYLENE CHLORIDE	NA	11	NA	11	NA	10 U	NA
1,2-DICHLOROETHENE(TOTAL)	NA	17 J	NA	11 J	NA	10 U	NA
CHLOROFORM	NA	10 UJ	NA	8.5 J	NA	10 U	NA
BROMODICHLOROMETHANE	NA	10 U	NA	6 J	NA	10 U	NA
TRICHLOROETHENE	NA	10 U	NA	10 U	NA	10 U	NA
BENZENE	NA	10 U	NA	10 U	NA	10 U	NA
SDG		**19340**				**19316**	
TCL Semivolatiles (UG/L)							
PHENOL	NA	10 U	NA	10 U	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	8 J	NA	7 J	NA	10 U	NA
BENZOIC ACID	NA	0.6 J	NA	0.6 J	NA	50 U	NA
SDG	**19340**	**19340**	**19340**			**19316**	**19316**
TAL Metals (UG/L)							
ALUMINUM	82 6 U	117 U	79.7 U	116.5 U	81.2 U	97400	39.1 U
ARSENIC	5 1	2.0 J	6.0	3.1 J	5.6	23.9	2.0 U
BARIUM	75 8	72.4	74.8	73.8	75.3	835	80.5
BERYLLIUM	1 0 U	1 0 U	1.0 U	1.0 U	1.0 U	4.4	1.0 U
BORON	57 2 U	63 2	58 4 U	45.9 J	57.8 U	83.1 J	79.5
CADMIUM	2 0 U	2 0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
CALCIUM	19600	18000	19000	18400	19300	45600	31500
CHROMIUM	3 0 U	3 0 U	3.0 U	2.5 J	3.0 U	77.9	3.0 U
COBALT	4 8 U	6 0 U	5.2 U	4.6 U	5.0 U	60.3	3.0 U
COPPER	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	370 J	2.2 J
IRON	9690	9000	9510	9105	9600	121000	21.4 U
LEAD	2.8	1.0 UJ	2.1	3.8 J	2.5	220	1.0 J
MAGNESIUM	5360	5070	5290	5170	5325	45300	7100
MANGANESE	517	499	514	509	513	5550	404
NICKEL	12.9 U	7.0 U	12.1 U	9.3 U	12.5	53.3	7.0 U
POTASSIUM	5160	4960	5040	4955	5100	46300	7100
SELENIUM	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.9 J	3.0 UJ
SILVER	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	5.7 U	2.0 UJ
SODIUM	140000	134000	137000	136500	138500	170000	169000
THALLIUM	6.5 J	5.8 J	6.8 J	6.7 J	6.7 J	3.0 UJ	7.3 J
VANADIUM	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	229	5.3 U
ZINC	23.5 U	27.6 U	23.7 U	23.8 U	23.6 U	800	39.3
SDG							
Radiological (pCi/L)							
GROSS ALPHA	NA	NA	NA			NA	NA
GROSS BETA	NA	NA	NA			NA	NA
GAMMA SPEC	NA	NA	NA			NA	NA
SDG		**19340**				**19316**	
HARDNESS as CaCO3	NA	72	NA			200	NA

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AREA A DOWNSTREAM SURFACE WATER

	Range(Total)	Frequency(Total)	Range(Diss)	Frequency(Diss)	2DSW2	2DSW3	2DSW4	2DSW5	2DSW5 DISS
SDG					16525	16525	16525	16525	16525
TCL Volatiles (UG/L)									
METHYLENE CHLORIDE	6-20	4/14	-	NA	6 J	6 J	10 U	20	NA
TCL Semivolatiles (UG/L)									
DI-N-BUTYLPHTHALATE	0.6	1/7	-	NA	NA	NA	NA	NA	NA
TCL Pesticides (UG/L)									
4,4'-DDD	0.10-1.3	5/14	-	NA	0.1 U	0.1 J	1.3	0.27	NA
TCL PCB (UG/L)	-	0/14	-	NA	ND	ND	ND	ND	NA
TAL Metals (UG/L)									
ALUMINUM	27.2-2,090	14/14	43.05*	1/1	453	438	781	90.7	90
BARIUM	80.5*-87.0	2/13	-	0/1	66.5 U	63 U	41.8 U	52 U	47.1 U
BORON	90.8-1,540	13/14	149*	1/1	147	134	90.8 J	152	149
CALCIUM	2,440-12,400	14/14	36,800*	1/1	25800	26100	22400	37400	36700
COBALT	5.4	1/14	-	0/1	5.0 U	5.0 U	5.4 J	5.0 U	5.0 U
COPPER	10.4	1/13	-	0/1	2.0 UJ	11.6 U	2.0 UJ	2.0 UJ	2.0 UJ
IRON	119-6,660	14/14	635*	1/1	807	878	6660	867	639
LEAD	1.2-13.6	8/8	-	0/1	R	R	2.8 J	R	1.0 U
MAGNESIUM	778-400,000	14/14	22,500*	1/1	10900	10800	8600	23000	22500
MANGANESE	21-1,720*	13/14	1,700*	1/1	459	488	1060	1740	1700
MERCURY	0.30	1/13	0.20*	1/1	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
NICKEL	12.9	1/14	-	0/1	11.0 U	11.0 U	11.0 U	11.0 U	11.0 U
POTASSIUM	1,490-175,000	14/14	8225*	1/1	14200	12900	4000	8520	8150
SODIUM	9,850-379,000	14/14	202,500*	1/1	138000	145000	81500	207000	202000
VANADIUM	5.7-8.1	2/14	-	0/1	3.0 U	3.0 U	4.6 U	3.0 U	3.0 U
ZINC	19.9-71.6	8/14	-	0/1	66.9	70.3	34.6	3.0 U	3.0 U

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AREA A DOWNSTREAM SURFACE WATER

	2DSW5D	2DSW5D DISS	2DSW5AVG	2DSW5 DISSAVG	2DSW7	2DSW9	2DSW9D	2DSW9AVG	2DSW10
SDG	16525	16525	-	-	16525	16525	16525	-	16525
TCL Volatiles (UG/L)									
METHYLENE CHLORIDE	17	NA	18.5	NA	10 U	10 U	10 U	10 U	10 U
TCL Semivolatiles (UG/L)									
DI-N-BUTYLPHTHALATE	NA	NA	NA	NA	10 U	10 U	10 U	5 U	NA
TCL Pesticides (UG/L)									
4,4'-DDD	0.27	NA	0.27	NA	0.15 J	0.12	0.1 UJ	0.085	0.1 U
TCL PCB (UG/L)	ND	NA	ND	NA	ND	ND	ND	ND	ND
TAL Metals (UG/L)									
ALUMINUM	93.7	96.1	92.2	93.05	396	259	323	291	175
BARIUM	47.3 U	45.9 U	49.65 U	46.5 U	87.0	77.5	83.5	80.5	7.3 U
BORON	146	149	149	149	234	234	238	236	170
CALCIUM	36200	36900	36800	36800	31900	29900	31800	30850	13700
COBALT	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
COPPER	2.0 UJ	5.8 U	2.0 UJ	3.9 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ
IRON	1040	631	953.5	635	554	298	317	307.5	255
LEAD	R	1.0 U	R	1.0 U	R	6.0 J	R	6.0 J	1.6 J
MAGNESIUM	22200	22500	22600	22500	13000	12200	13000	12600	1730
MANGANESE	1700	1700	1720	1700	533	305	323	314	28.6
MERCURY	0.20 U	0.29 J	0.20 U	0.20 J	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
NICKEL	11.0 U	11.0 U	11.0 U	11.0 U	12.9 J	11.0 U	11.0 U	11.0 U	11.0 U
POTASSIUM	8050	8300	8285	8225	14700	13900	15100	14500	1910
SODIUM	200000	203000	203500	202500	162000	149000	158000	153500	38700
VANADIUM	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
ZINC	3.0 U	3.0 U	3.0 U	3.0 U	71.6	58.3	60.5	59.4	6.3 U

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AREA A DOWNSTREAM SURFACE WATER

	2DSW11	2DSW14	2DSW15	2DSW30	2DSW31	2DSW32
SDG	16525	16703	16525	16525	16525	16525
TCL Volatiles (UG/L)						
METHYLENE CHLORIDE	10 U	10 U	10 U	10 U	10 U	10 U
TCL Semivolatiles (UG/L)						
DI-N-BUTYLPHTHALATE	10 U	NA	NA	10 U	10 U	10 U
TCL Pesticides (UG/L)						
4,4'-DDD	0.19	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
TCL PCB (UG/L)	ND	ND	ND	ND	ND	ND
TAL Metals (UG/L)						
ALUMINUM	104	2090	102	283	179	1670
BARIUM	44 2 U	20 7 U	36 0 U	6.4 U	6.6 U	46.6 U
BORON	276	50 U	285	151	215	165
CALCIUM	36600	2440	32800	12700	12800	13500
COBALT	5 0 U	5 0 UJ	5.0 U	5.0 U	5.0 U	5.0 U
COPPER	2 0 UJ	10 4 J	2.0 UJ	2.0 UJ	2.0 UJ	12.6 U
IRON	243	1990 J	776	337	153	2040
LEAD	R	13 6 J	R	1.2 J	1.6 J	10.6 J
MAGNESIUM	22700	778	18600	1620	1600	2220
MANGANESE	1140	95 3	410	21.0	15.8 U	84.2
MERCURY	0 20 U	R	0.20 U	0.20 U	0.20 U	0.20 U
NICKEL	11 0 U	11.0 UJ	11.0 U	11.0 U	11.0 U	11.0 U
POTASSIUM	8690	1490	9990	1800	1740	2240
SODIUM	207000	9850	118000	35600	36400	37200
VANADIUM	3.0 U	5.7 J	3.0 U	3.0 U	3.0 U	3.1 U
ZINC	6.7 U	58.3 J	31.3	10.3 U	4.9 U	19.9

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AREA A DOWNSTREAM SEDIMENTS

	Range	Frequency	2DSD30	2DSD31	2DSD32	3SD6
SDG			16470	16470	16470	
TCL Volatiles (UG/KG)						
METHYLENE CHLORIDE	8-14	3/3	14	8 J	12 J	NA
SDG						
TCL Pesticides (Field Screening) (UG/KG)						16470
DIELDRIN	33.5	1/1	NA	NA	NA	33.5 J
4,4'-DDE	20	1/1	NA	NA	NA	20 J
4,4'-DDD	62	1/1	NA	NA	NA	62 J
4,4'-DDT	25	1/1	NA	NA	NA	25 J
SDG			16524	16524	16524	
TAL Metals (MG/KG)						
ALUMINUM	2,060-3,200	3/3	2060	3200	2610	NA
ARSENIC	1.1-1.4	3/3	1.1 J	1.4 J	1.1	NA
BARIUM	10.1-23.3	3/3	10.1	14.6	23.3	NA
CALCIUM	527-1,060	3/3	544	1060	527	NA
CHROMIUM	4.2-12.0	3/3	4.2	12	4.7	NA
COPPER	7.0-11.3	3/3	7.0 J	11.3 J	8.8 J	NA
IRON	3,510-4,860	3/3	3510	4860	3880	NA
LEAD	4.0-9.1	3/3	4.6	9.1	4	NA
MAGNESIUM	811-1,100	3/3	811	1330	1100	NA
MANGANESE	52.9-71.0	3/3	52.9	53.1	71	NA
MERCURY	0.15-7.0	2/3	0.12 U	7	0.15	NA
NICKEL	5.2	1/3	2.6 U	5.2	2.8 U	NA
POTASSIUM	406-699	3/3	406	639	699	NA
VANADIUM	5.2-8.2	3/3	5.2	8.2	6.4	NA
ZINC	10.9-14.5	3/3	10.9	14.5	14.1	NA
SDG						16470
Dioxin (UG/KG)	-	0/1	NA	NA	NA	.040 U-1.3 U

NA: Not analyzed

ND: Not detected

J: Estimate value

U: Not detected at detection limit indicated

UJ: Not detected at estimated detection limit indicated

R: Value rejected during validation

-: Not applicable

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APPENDIX D.6

SITE 4 - RUBBLE FILL AT BUNKER A86

BUNKER A-86 SOIL

	Range	Frequency	4MW1S-0204.8	4MW2S-0204.5	4MW3S-0002	4MW4S-0002	4TB1-0406	4TB2-0002
SDG			17463	17463	17463	17463	17463	17463
TCL Volatiles (UG/KG)								
METHYLENE CHLORIDE	110	1/6	42 U	44 U	3 U	110 J	7 U	5 U
2-BUTANONE	18	1/6	11 U	11 U	13 U	13 U	18 J	13 U
TETRACHLOROETHENE	3	1/6	11 U	11 U	13 U	3 J	11 U	13 U
SDG			17463	17463	17463	17463	17463	17463
TCL Semivolatiles (UG/KG)								
NAPHTHALENE	50	1/6	50 J	370 U	420 U	420 U	1800 U	420 U
FLUORENE	23-260	2/6	380 U	370 U	23 J	420 U	260 J	420 U
PHENANTHRENE	89-3,100	5/6	120 J	89 J	310 J	200 J	3100	420 U
ANTHRACENE	23-490	4/6	23 J	370 U	49 J	32 J	490 J	420 U
CARBAZOLE	23-240	2/6	380 U	370 U	23 J	420 U	240 J	420 U
FLUORANTHENE	270-4,100	5/6	420	390	640	270 J	4100	420 U
PYRENE	500-5,200	5/6	560	550	850	500	5200	420 U
BENZO(A)ANTHRACENE	160-2,100	5/6	270 J	300 J	400 J	160 J	2100	420 U
CHRYSENE	240-2,500	5/6	330 J	380	490	240 J	2500	420 U
DI-N-OCTYL PHTHALATE	26	1/6	380 U	370 U	26 J	420 U	1800 U	420 UJ
BENZO(B)FLUORANTHENE	250-1,600	5/6	540	250 J	690	370 J	1600 J	420 UJ
BENZO(K)FLUORANTHENE	390-2,400	2/6	380 U	390 J	420 U	420 U	2400 J	420 UJ
BENZO(A)PYRENE	190-1,800	5/6	280 J	300 J	420 J	190 J	1800	420 UJ
INDENO(1,2,3-CD)PYRENE	120-810	5/6	130 J	140 J	230 J	120 J	810 J	420 UJ
DIBENZ(A,H)ANTHRACENE	30-190	4/6	32 J	30 J	50 J	420 U	190 J	420 UJ
BENZO(G,H,I)PERYLENE	130-850	5/6	150 J	140 J	230 J	130 J	850 J	420 UJ
BENZOIC ACID	290	1/6	1800 U	1900 U	2200 U	290 J	8700 U	2000 UJ
SDG			17463	17463	17463	17463	17463	17463
TCL Pesticides/PCB (UG/KG)								
HEPTACHLOR	2.4	1/6	20 U	19 U	22 U	2.4 J	18 U	22 U
4,4'-DDE	10-23	3/6	38 U	37 U	21 J	23 J	10 J	42 U
ENDOSULFAN II	7	1/6	38 U	37 U	42 U	42 U	7 J	42 U
4,4'-DDT	24-37	3/6	38 U	37 U	33 J	37 J	24 J	42 U

NA: Not analyzed

ND: Not detected

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-: Not applicable

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TABLE 6
BUNKER A-86 SOIL

	Range	Frequency	4MW1S-0204.8	4MW2S-0204.5	4MW3S-0002	4MW4S-0002	4TB1-0406	4TB2-0002
SDG			17463	17463	17463	17463	17463	17463
TAL Metals (MG/KG)								
ALUMINUM	7,770-22,900	6/6	7770	11000	16500	15900	9270	22900
ANTIMONY	4.1-5.9	6/6	4.8 J	4.7 J	5.9 J	4.4 J	4.2 J	4.1 J
ARSENIC	2.8-44.5	5/6	2.8	13.9 U	21.8	44.5	31.8	7.2
BARIUM	29.5-62	6/6	39.2	40.6	29.5	35.6	62	36.4
BERYLLIUM	0.38-0.85	6/6	0.38	0.56	0.77	0.66	0.47 J	0.85 J
CALCIUM	798-31,600	6/6	1250	905	880	2140	31600	798
CHROMIUM	10.3-16.1	6/6	10.4 J	10.3 J	16.1 J	15.9 J	13.2 J	16 J
COBALT	4.7-5.1	2/6	4.1 U	4.1 U	4.7	4.7 U	5.1	4.3 U
COPPER	8.0-77.4	6/6	14.1	77.4	11.5	12.1	37.9	8.0
IRON	8,810-18,200	6/6	8810	10200	13600	13700	9080	18200
LEAD	65.6-120	2/6	3.3 U	7.5 U	29.8 U	65.6 J	120 J	9.4 U
MAGNESIUM	2,400-2,760	6/6	2760	2670	2400	2480	2610	2550
MANGANESE	130-175	6/6	147	171 J	147 J	175	171 J	130 J
NICKEL	7.5-11.7	6/6	7.5	7.8	8.6	11.7	7.8	11.0 J
POTASSIUM	778-1,820	6/6	1820	1780	803	988	1400	778
SELENIUM	0.93	1/6	0.69 UJ	0.71 UJ	0.67 UJ	0.78 UJ	0.65 UJ	0.93 J
SODIUM	78.0-254	5/6	230	180	134	60.0 U	254	78.0
VANADIUM	17.7-40.2	6/6	17.7	19.9	28.1	40.2	18.8 J	34.2 J
ZINC	31.3-73.3	6/6	31.3	37.0	39.0	68.4	73.3	37.9
SDG			17463	17463	17463	17463	17463	17463
TCLP Metals (UG/L)								
BARIUM	109-124	1/2	NA	NA	NA	NA	124	109

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ND: Not detected

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BUNKER A-86 GROUNDWATER

	Range(Total)	Frequency(Total)	Range(Diss)	Frequency(Diss)	4GW1S	4GW1S DISS	4GW2S	4GW2S DISS	4GW3S	4GW3S DISS
SDG					18852	18852	17915	17933	17915	17933
TCL Volatiles (UG/L)										
CHLOROFORM	3-9	4/5	-	NA	9 J	NA	10 U	NA	3 J	NA
BROMODICHLOROMETHANE	1	1/5	-	NA	1 J	NA	10 U	NA	10 U	NA
4-METHYL-2-PENTANONE	5	1/5	-	NA	5 J	NA	10 U	NA	10 U	NA
XYLENE (TOTAL)	2	1/5	-	NA	10 U	NA	10 U	NA	10 U	NA
SDG					18852	18852	17915	17933	17915	17933
TCL Semivolatiles (UG/L)	-	0/5	-	NA	10 U - 25 U	NA	10 U - 50U	NA	10 U - 50 U	NA
SDG					18852	18852	17915	17933	17915	17933
TCL Pesticides/PCBs (UG/L)										
HEPTACHLOR	0 53	1/5	-	NA	0.05 U	NA	0.53 J	NA	0.1 U	NA
SDG					18852	18852	17933	17933	17933	17933
TAL Metals (UG/L)										
ALUMINUM	55 6 1 640	2/5	48 6	1/5	55 6 J	48 6	47.2 U	55.8 U	85.7 U	90.9 U
BARIUM	28 91 7	5/5	25 3 91 6	5/5	46 7 J	44 2 J	28 0	25.3	60.2	60.1
CALCIUM	15 000 28 600	5/5	14 500 27 500	5/5	15000	14500	27700	27200	24800	24100
COPPER	28 1	1/5	26 6	1/5	5 0 U	5 0 U	28 1	26 6	2.0 U	2.0 U
IRON	6 6 1 0 10	2/5	5 9	1/5	6 6 J	5 9 J	50 0 U	21 9 U	50.0 U	10.5 U
MAGNESIUM	2 280 4 860	5/5	2 160 4 870	5/5	2280	2160	4890	4870	4560	4380
MANGANESE	8 56 6	5/5	7 9 16 1	5/5	13 0 J	13 0 J	8 0	7 9	12.0	12.0
POTASSIUM	2 700 4 310	4/5	2 290 3 710	5/5	2700 J	2290 J	2410 U	2470	3480	3350
SODIUM	28 100 62 470	5/5	27 300 68 800	5/5	28100	27300	37600	37600	62400	66800
ZINC	14 5 32 6	4/5	10 4 10 7	5/5	14 5 J	10 4 J	10 9 U	11 7	14.5	14.4

NA Not analyzed

ND Not detected

J Estimate value

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- Not applicable

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BUNKER A-86 GROUNDWATER

	4GW4D	4GW4D DISS	4GW4S	4GW4S DISS
SDG	17915	17933	17933	17933
TCL Volatiles (UG/L)				
CHLOROFORM	3 J	NA	3 J	NA
BROMODICHLOROMETHANE	10 U	NA	10 U	NA
4-METHYL-2-PENTANONE	10 U	NA	10 U	NA
XYLENE (TOTAL)	10 U	NA	2 J	NA
SDG	17915	17933	17933	17933
TCL Semivolatiles (UG/L)	10 U - 50 U	NA	10 U - 50 U	NA
SDG	17915	17933	17933	17933
TCL Pesticides/PCBs (UG/L)				
HEPTACHLOR	0.1 U	NA	0.1 U	NA
SDG	17933	17933	17933	17933
TAL Metals (UG/L)				
ALUMINUM	1640	85.4 U	135 U	140 U
BARIUM	63.0	37.4	91.7	91.8
CALCIUM	28600	27500	24000	23700
COPPER	6.5 U	2.0 U	2.0 U	2.0 U
IRON	1030	29.9 U	50 U	13.6 U
MAGNESIUM	4830	4510	3530	3520
MANGANESE	56.6	18.1	16.1	16.1
POTASSIUM	4330	3710	3760	3700
SODIUM	52500	52000	55700	56100
ZINC	31.5	10.1	32.6	30.7

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RUBBLE FILL AT BUNKER A-86 GROUNDWATER (ROUND 2)

	Range (Total)	Frequency (Total)	Range (Diss)	Frequency (Diss)	4GW1S-2	4GW1S-2 DISS	4GW2S-2	4GW2S-2 DISS
SDG					18852		19243	
TCL Volatiles (UG/L)								
METHYLENE CHLORIDE	4-8	2/5	-	NA	8 J	NA	10 U	NA
CARBON DISULFIDE	2	1/5	-	NA	2 J	NA	10 U	NA
CHLOROFORM	11	1/5	-	NA	10 U	NA	10 U	NA
1,1,1-TRICHLOROETHANE	2	1/5	-	NA	10 U	NA	2 J	NA
BROMODICHLOROMETHANE	1	1/5	-	NA	10 J	NA	1 J	NA
SDG					18852		19243	
TCL Semivolatiles (UG/L)								
BIS(2-ETHYLHEXYL)PHTHALATE	2-11	2/5	-	NA	2 J	NA	11	NA
BENZOIC ACID	0.6-1	2/5	-	NA	1 J	NA	50 U	NA
SDG					18852		19243	
TCL Pesticides (UG/L)	-	-	-	NA	ND	NA	ND	NA
SDG					18852		19243	
TCL PCBs (UG/L)	-	-	-	NA	ND	NA	ND	NA
SDG					18852	18852	19243	19243
TAL Metals (UG/L)								
ALUMINUM	1260-3350	2/5	-	0/5	3350	64.9 U	49.0 U	52.5 U
ANTIMONY	-	0/5	6.8	1/5	12.0 U	12.0 U	5.0 U	5.0 U
BARIUM	28.0-74.1	5/5	24.8-51.3	5/5	74.1 J	41.0	28.0	26.6
BORON	26.6-34.4	2/5	16.7-49.1	4/5	23.6 U	50.3 U	34.4	24.7
CADMIUM	1.1-20.2	2/5	5.0	1/5	2.0 U	2.0 U	20.2	1.0 U
CALCIUM	14500-21300	5/5	14500-21200	5/5	16400	16200	18200	17200
CHROMIUM	12.6	1/5	-	0/5	12.6	3.0 U	1.0 U	1.0 U
COPPER	3.6-18.1	3/5	3.6-3.9	2/5	18.1	3.9 J	4.0	3.6
IRON	1800-4430	2/5	33.3	1/5	4430	14.1 U	17.0 U	33.3
LEAD	5.2-16.5	4/5	1.2-2.1	2/5	11.1 J	2.1	16.5	1.2
MAGNESIUM	2270-3810	5/5	2280-3590	5/5	3160	2300	2560	2470
MANGANESE	3.1-80.1	5/5	3.2-12.7	5/5	80.1	12.7	3.1	3.2
POTASSIUM	3180-3640	3/5	2460-3420	5/5	3640	2520	3180	3030
SODIUM	26900-58000	5/5	26700-55900	5/5	26900	26700	28700 J	27600 J
THALLIUM	5.6-5.8	2/5	5.7-6	2/5	5.6 J	6.0 J	2.0 UJ	2.0 UJ
VANADIUM	4.5	1/5	-	0/5	4.5 J	3.0 U	1.0 U	1.0 U
ZINC	10.4-58.5	3/5	1.6-9.6	2/5	58.5	21.0 U	16.5	1.6
SDG					18852		19243	
HARDNESS as CaCO3 (MG/L)	48.0-66.0	5/5	-	NA	60.0	NA	48.0	NA
SDG					18852		19243	
ENGINEERING								
AMMONIA (N) (UG/L)	-	0/1	-	NA	NA	NA	NA	NA
BIOCHEMICAL OXYGEN DEMAND (UG/L)	-	0/1	-	NA	NA	NA	NA	NA
CHEMICAL OXYGEN DEMAND (UG/L)	-	0/1	-	NA	NA	NA	NA	NA
OIL & GREASE (UG/L)	-	0/1	-	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON (UG/L)	-	0/1	-	NA	NA	NA	NA	NA
TOTAL PHOSPHORUS (UG/L)	-	0/1	-	NA	NA	NA	NA	NA
TOTAL SUSPENDED SOLIDS (UG/L)	-	0/1	-	NA	NA	NA	NA	NA

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RUBBLE FILL AT BUNKER A-86 GROUNDWATER (

	4GW3S-2	4GW3S-2 DISS	4GW4S2	4GW4S-2 DISS	4GW4D-2	4GW4D-2 DISS
SDG	19243		19302		19302	
TCL Volatiles (UG/L)						
METHYLENE CHLORIDE	10 U	NA	4 J	NA	10 U	NA
CARBON DISULFIDE	10 U	NA	10 U	NA	10 U	NA
CHLOROFORM	11	NA	10 U	NA	11 U	NA
1,1,1-TRICHLOROETHANE	10 U	NA	10 U	NA	10 U	NA
BROMODICHLOROMETHANE	10 U	NA	10 U	NA	10 U	NA
SDG	19243		19302		19302	
TCL Semivolatiles (UG/L)						
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	NA	10 U	NA	10 U	NA
BENZOIC ACID	50 U	NA	0.6 J	NA	25 U	NA
SDG	19243		19302		19302	
TCL Pesticides (UG/L)	ND	NA	ND	NA	ND	NA
SDG	19243		19302		19302	
TCL PCBs (UG/L)	ND	NA	ND	NA	ND	NA
SDG	19243	19243	19302	19302	19302	19302
TAL Metals (UG/L)						
ALUMINUM	72.0 U	51.0 U	115 U	69.9 U	1260	85.8 U
ANTIMONY	5.0 U	6.8	12.0 U	12.0 U	12.0 U	12.0 U
BARIUM	53.9	51.3	35.8	35.7	40.0	24.8
BORON	26.6	25.5	26.3 U	49.1	32.8 U	16.7
CADMIUM	1.1	1.0 U	2.0 U	2.0 U	2.0 U	5.0
CALCIUM	20400	19400	14500	14800	21300	21200
CHROMIUM	1.0 U	1.0 U	3.0 U	4.4 U	3.0 U	3.0 U
COPPER	3.0 U	3.0 U	2.0 U	2.0 U	10.4	3.3 U
IRON	17.0 U	17.0 U	34.3 U	16.9 U	1800	43.7 U
LEAD	15.3	1.0 U	2.0 UJ	2.0 U	5.2 J	2.0 U
MAGNESIUM	3810	3590	2270	2280	3440	3320
MANGANESE	7.7	7.6	11.2	9.3	33.4	9.3
POTASSIUM	3610	3420	2780 U	2470	2990 U	2460
SODIUM	58000 J	55900 J	28800	29800	31500	32400
THALLIUM	2.0 UJ	2.0 UJ	2.0 UJ	5.7 J	5.8 J	5.0 U
VANADIUM	1.0 U	1.0 U	3.0 U	3.0 U	5.0 U	3.0 U
ZINC	10.4	9.6	20.7 U	14.6 U	22.3 U	15.7 U
SDG	19243		19302		19302	
HARDNESS as CaCO3 (MG/L)	58.0	NA	52.0	NA	66.0	NA
SDG	19243		19302		19302	
ENGINEERING						
AMMONIA (N) (UG/L)	0.1 U	NA	NA	NA	NA	NA
BIOCHEMICAL OXYGEN DEMAND (UG/L)	2 U	NA	NA	NA	NA	NA
CHEMICAL OXYGEN DEMAND (UG/L)	10 U	NA	NA	NA	NA	NA
OIL & GREASE (UG/L)	0.5 U	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON (UG/L)	2 U	NA	NA	NA	NA	NA
TOTAL PHOSPHORUS (UG/L)	0.1 U	NA	NA	NA	NA	NA
TOTAL SUSPENDED SOLIDS (UG/L)	1 U	NA	NA	NA	NA	NA

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BUNKER A-86 SURFACE WATER

	Range(Total)	Frequency(Total)	Range(Diss)	Frequency (Diss)	4SW1	4SW2	4SW2-D	4SW2 AVG	4SW2 DISS
SDG					16703	16703	16703		16703
TCL Volatiles (UG/L)	-	0/3	-	NA	ND	ND	ND	ND	NA
SDG					16703	16703	16703		16703
TCL Semivolatiles (UG/L)									
BIS(2-ETHYLHEXYL)PHTHALATE	1	1/3	-	NA	1 J	10 U	10 U	10 U	NA
SDG					16703	16703	16703		16703
TCL Pesticides/PCB (UG/L)	-	0/3	-	NA	ND	ND	ND	ND	NA
SDG					16703	16703	16703		16703
TAL Metals (UG/L)									
ALUMINUM	829-1,555*	2/2	-	0/1	829	1400	1710	1555	139 U
ARSENIC	1 7	1/2	-	0/1	2.0 U	2.0 U	2.4 J	1.7 J	2.0 U
CALCIUM	368-690*	2/2	331.5	1/1	368	752	628	690	331
COPPER	4.6-16 25*	2/2	4.85*	1/1	4.6 J	23.4 J	9.1 J	16.25 J	8.7 J
IRON	600-1,460*	2/2	-	0/1	600 J	1210 J	1710 J	1460 J	15.0 U
LEAD	5-15 5*	2/2	-	0/1	5.0 J	15.7 J	15.3 J	15.5 J	1.0 UJ
MAGNESIUM	176-434*	2/2	-	0/1	176 J	385	483	434	94.0 U
MANGANESE	18 5-42 35*	2/2	-	0/1	18.5 J	40.2 J	44.5 J	42.35 J	4.2 UJ
POTASSIUM	710	1/2	653 5*	1/1	427 U	710 J	710 J	710 J	631 J
VANADIUM	4 55*	1/2	-	0/1	3.0 UJ	3.5 J	5.6 J	4.55 J	3.0 UJ
ZINC	21 5-41 8*	2/2	-	0/1	21.5 J	50.1 J	33.5 J	41.8 J	7.9 UJ

NA Not analyzed

ND Not detected

J Estimate value

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UJ Not detected at estimated detection limit indicated

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-: Not applicable

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BUNKER A-86 SURFACE WATER

	4SW2-D DISS	4SW2 DISSAVG
SDG	16703	
TCL Volatiles (UG/L)	NA	NA
SDG	16703	
TCL Semivolatiles (UG/L)		
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA
SDG	16703	
TCL Pesticides/PCB (UG/L)	NA	NA
SDG	16703	
TAL Metals (UG/L)		
ALUMINUM	127 U	133 U
ARSENIC	2 0 U	2 0 U
CALCIUM	332	331 5
COPPER	2 0 UJ	4 85 J
IRON	12 8 U	13 9 U
LEAD	1 0 UJ	1 0 UJ
MAGNESIUM	94 0 U	94 0 U
MANGANESE	4 2 UJ	4 2 UJ
POTASSIUM	[illegible] J	[illegible] J
VANADIUM	3 0 UJ	3 0 UJ
ZINC	8 3 UJ	8 8 UJ

NA Not analyzed

ND Not detected

J Estimated value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

Not applicable

Value is the average of duplicate sample results

BUNKER A-86 SEDIMENT

	Range	Frequency	4SD1	4SD2(1ST ROUND)	4SD2(2ND ROUND)	4SS4	4SS5	4SS6	4SS6-D	4SS6-AVG
SDG			16703	16703	16992	16703	16703	16703	16703	
TCL Volatiles (UG/KG)										
CHLOROMETHANE	5-22	6/10	7 J	10 J	11 U	10 U	11 J	12 U	12 U	12 U
BROMOMETHANE	3	1/10	12 U	19 U	11 U	13 UJ	20 U	12 U	12 U	12 U
METHYLENE CHLORIDE	14	1/10	12 U	19 U	14	13 U	20 U	12 U	12 U	12 U
ACETONE	610	1/10	26 U	42 U	11 UJ	61 U	20 U	12 U	38 U	25 U
1,1-DICHLOROETHENE	2	2/10	12 U	2 J	11 U	2 UJ	20 U	12 U	12 U	12 U
1,1-DICHLOROETHANE	12	1/10	12 U	12 J	11 U	13 UJ	20 U	12 U	12 U	12 U
1,2-DICHLOROETHENE (TOTAL)	1-12	3/10	12 U	12 J	11 U	13 UJ	20 U	12 U	12 U	12 U
CHLOROFORM	2-6	2/10	12 U	6 J	11 U	13 UJ	20 U	12 U	12 U	12 U
2-BUTANONE	16-70	3/10	16	45	11 U	13 UJ	20 U	12 U	12 U	12 U
BROMODICHLOROMETHANE	3-10	2/10	12 U	10 J	11 U	13 UJ	20 U	12 U	12 U	12 U
1,2-DICHLOROPROPANE	10	1/10	12 U	10 J	11 U	13 UJ	20 U	12 U	12 U	12 U
CIS-1,3-DICHLOROPROPENE	3-11	2/10	12 U	11 J	11 U	13 UJ	20 U	12 U	12 U	12 U
TRICHLOROETHENE	2-5	4/10	12 U	5 J	2 J	13 UJ	20 U	12 U	12 U	12 U
1,1,2-TRICHLOROETHANE	6-16	2/10	12 U	16 J	11 U	13 UJ	20 U	12 U	12 U	12 U
BENZENE	2-7	4/10	12 U	7 J	11 U	13 UJ	20 U	12 U	12 U	12 U
TRANS-1,3-DICHLOROPROPENE	4-12	2/10	12 U	12 J	11 U	13 UJ	20 U	12 U	12 U	12 U
BROMOFORM	9	1/10	12 U	9 J	11 U	13 UJ	20 U	12 U	12 U	12 U
4-METHYL-2-PENTANONE	12-36	2/10	12 U	36	11 U	13 UJ	20 U	12 U	12 U	12 U
TETRACHLOROETHENE	2-7	8/10	2 J	5 J	11 U	4 J	5 J	4 J	4 J	4 J
1,1,2,2-TETRACHLOROETHANE	3-19	2/10	12 U	19	11 U	13 UJ	20 U	12 U	12 U	12 U
CHLOROBENZENE	3-8	2/10	12 U	8 J	11 U	13 UJ	20 U	12 U	12 U	12 U
ETHYLBENZENE	2-4	2/10	12 U	4 J	11 U	13 UJ	20 U	12 U	12 U	12 U
STYRENE	2-8	2/10	12 U	8 J	11 U	13 UJ	20 U	12 U	12 U	12 U
XYLENE (TOTAL)	5-15	2/10	12 U	15 J	11 U	13 UJ	20 U	12 U	12 U	12 U
VINYL ACETATE	8-16	2/10	12 U	16 J	11 U	13 UJ	20 U	12 U	12 U	12 U

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	4SS7	4SS8	4SS9	4SS10
SDG	16703	16703	16703	16703
TCL Volatiles (UG/KG)				
CHLOROMETHANE	5 J	15 UJ	22	8 J
BROMOMETHANE	11 U	15 UJ	3 J	12 U
METHYLENE CHLORIDE	11 U	15 UJ	11 U	12 U
ACETONE	21 U	610 J	11 U	18 U
1,1-DICHLOROETHENE	2 J	15 UJ	11 U	12 U
1,1-DICHLOROETHANE	11 U	15 UJ	11 U	12 U
1,2-DICHLOROETHENE (TOTAL)	1 J	15 UJ	11 U	3 J
CHLOROFORM	11 U	15 UJ	11 U	2 J
2-BUTANONE	11 U	15 UJ	70	12 U
BROMODICHLOROMETHANE	11 U	15 UJ	11 U	3 J
1,2-DICHLOROPROPANE	11 U	15 UJ	11 U	12 U
CIS-1,3-DICHLOROPROPENE	11 U	15 UJ	11 U	3 J
TRICHLOROETHENE	2 J	15 UJ	11 U	2 J
1,1,2-TRICHLOROETHANE	11 U	15 UJ	11 U	6 J
BENZENE	2 J	15 UJ	2 J	2 J
TRANS-1,3-DICHLOROPROPENE	11 U	15 UJ	11 U	4 J
BROMOFORM	11 U	15 UJ	11 U	12 U
4-METHYL-2-PENTANONE	11 U	15 UJ	11 U	12
TETRACHLOROETHENE	2 J	15 UJ	2 J	3 J
1,1,2,2-TETRACHLOROETHANE	11 U	15 UJ	11 U	3 J
CHLOROBENZENE	11 U	15 UJ	11 U	3 J
ETHYLBENZENE	11 U	15 UJ	11 U	2 J
STYRENE	11 U	15 UJ	11 U	2 J
XYLENE (TOTAL)	11 U	15 UJ	11 U	5 J
VINYL ACETATE	11 U	15 UJ	11 U	8 J

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-: Not applicable

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TAB
BUNKER A-86 SEDIMENT

	Range	Frequency	4SD1	4SD2(1ST ROUND)	4SD2(2ND ROUND)	4SS4	4SS5	4SS6	4SS6-D	4SS6-AV
SDG			16703	16703	16992	16703	16703	16703	16703	
TCL Semivolatiles (UG/KG)										
2-METHYLPHENOL	110	1/10	110 J	380 U	3700 U	880 U	4200 U	390 U	400 UJ	395 UJ
NAPHTHALENE	50-380,000	3/10	77 J	380 U	380000	50 J	4200 U	390 U	400 UJ	395 UJ
2-METHYLNAPHTHALENE	45-54,000	3/10	48 J	380 U	54000 J	45 J	4200 U	390 U	400 UJ	395 UJ
DIMETHYL PHTHALATE	59000	1/10	800 U	380 U	59000 J	880 U	4200 U	390 U	400 UJ	395 UJ
ACENAPHTHYLENE	40-1,600	9/10	240 J	77 J	3700 U	250 J	1000 J	130 J	100 J	115 J
ACENAPHTHENE	28-410	6/10	290 J	35 J	3700 U	88 J	300 J	33 J	28 J	30.5 J
DIBENZOFURAN	24-240	3/10	240 J	24 J	3700 U	70 J	4200 U	390 U	400 UJ	395 UJ
FLUORENE	26-1,500	9/10	370 J	57 J	3700 U	240 J	620 J	110 J	73 J	91.5 J
PHENANTHRENE	300-21,000	9/10	3900	700 J	3700 U	3900	8800	1600	1300 J	1450 J
ANTHRACENE	40-3,400	9/10	950	180 J	3700 U	310 J	1200 J	430	200 J	315 J
CARBAZOLE	64-1500	8/10	520 J	100 J	3700 U	200 J	4200 U	160 J	120 J	140 J
DI-N-BUTYLPHTHALATE	42,000	1/10	800 U	380 U	42000 J	880 UJ	4200 U	390 U	400 UJ	395 UJ
FLUORANTHENE	250-38,000	10/10	5200	1400 J	250 J	4900	25000	3400	3200 J	3300 J
PYRENE	410-43,000	10/10	4400	1700 J	1000 J	6400 J	27000	3700	2300 J	3000 J
BUTYLBENZYLPHTHALATE	820,000	1/10	800 U	380 UJ	820000	880 UJ	4200 U	390 U	400 UJ	395 U
3,3'-DICHLOROBENZIDINE	100	1/10	800 U	380 UJ	3700 UJ	880 UJ	4200 U	390 U	400 UJ	395 UJ
BENZO(A)ANTHRACENE	150-14,000	9/10	2700	760 J	3700 UJ	1800 J	8700	1500	1500 J	1500 J
CHRYSENE	290-29,000	9/10	2900	1100 J	3700 UJ	2800 J	14000	1800	1900 J	1850 J
BIS(2-ETHYLHEXYL)PHTHALATE	120-610,000	4/10	970 J	1500 J	610000	120 J	4200 U	390 U	400 U	395 U
DI-N-OCTYL PHTHALATE	31-6,500	2/10	800 U	31 J	6500 J	880 UJ	4200 U	390 U	400 UJ	395 UJ
BENZO(B)FLUORANTHENE	160-13,000	9/10	3100	1000 J	3700 UJ	2300 J	13000	1200 J	1700	1450 J
BENZO(K)FLUORANTHENE	220-18,000	8/10	2200	760 J	3700 UJ	2400 J	12000	2100 J	400 U	1150 J
BENZO(A)PYRENE	160-14,000	9/10	2600	790 J	3700 UJ	2000 J	12000	1400	1100	1250
INDENO(1,2,3-CD)PYRENE	97-6,600	9/10	1200	390 J	3700 UJ	1100 J	6600	760	580	670
DIBENZ(A,H)ANTHRACENE	36-3,800	9/10	750 J	240 J	3700 UJ	570 J	3800 J	400	400 U	300 J
BENZO(G,H,I)PERYLENE	89-6,500	9/10	1200	230 J	3700 UJ	1000 J	6500	620	590	605
BENZOIC ACID	114*-170	2/10	800 UJ	380 UJ	18000 UJ	880 UJ	4200 U	28 J	400 U	114 J
TCL Pesticides/PCB (UG/KG)										
4,4'-DDE	14.5*-90	7/10	4.0 U	3.8 U	37 UJ	29 J	95 J	16 J	13 J	14.5 J
4,4'-DDT	28-380	8/10	28 J	20 U	13 UJ	56 J	260 J	59 J	42 J	50.5 J
ALPHA-CHLORDANE	2-11.35*	2/10	2.1 U	2.0 U	19 UJ	2.3 U	2.2 UJ	9.7 J	13 J	11.35 J
DIELDRIN	7.5*	1/10	4.0 U	3.8 U	37 UJ	4.4 U	2.2 UJ	6.5 J	8.5 J	7.5 J
ENDOSULFAN SULFATE	3.9-19	6/10	13 J	17 J	37 UJ	4.4 U	19 J	16 J	4 U	9 J
ENDRIN	7.2	1/10	4.0 U	3.8 U	7.2 J	4.4 U	4.2 UJ	3.9 U	4 U	3.95 U
ENDRIN ALDEHYDE	3.9*-16	2/10	4.0 U	2.0 U	16 J	4.4 U	4.2 UJ	5.8 J	4 U	3.9 J
ENDRIN KETONE	6.4-37	6/10	23 J	3.8 U	37 UJ	37 J	25 J	3.9 U	4 U	3.95 U
GAMMA-CHLORDANE	2.4-6.75*	3/10	2.4 J	2.4 U	19 UJ	2.3 U	2.4 J	5.5 J	8 J	6.75 J
HEPTACHLOR EPOXIDE	2.45*	1/10	2.1 U	2.0 U	19 UJ	2.3 U	2.2 UJ	2.4 J	2.5 J	2.45 J
HEPTACHLOR	1.0	1/10	2.1 U	2 U	19 UJ	2.3 U	2.2 UJ	2 U	2 U	2 U

NA: Not analyzed

ND: Not detected

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*: Value is the average of duplicate sample results

	4SS7	4SS8	4SS9	4SS10
SDG	16703	16703	16703	16703
TCL Semivolatiles (UG/KG)				
2-METHYLPHENOL	7300 U	500 U	7400 U	1900 U
NAPHTHALENE	7300 U	500 U	7400 U	1900 U
2-METHYLNAPHTHALENE	7300 U	500 U	7400 U	1900 U
DIMETHYL PHTHALATE	7300 U	500 U	7400 U	1900 U
ACENAPHTHYLENE	1200 J	40 J	1600 J	310 J
ACENAPHTHENE	7300 U	500 U	410 J	1900 U
DIBENZOFURAN	7300 U	500 U	7400 U	1900 U
FLUORENE	1000 J	26 J	1500 J	110 J
PHENANTHRENE	18000	300 J	21000	2000
ANTHRACENE	2700 J	40 J	3400 J	430 J
CARBAZOLE	1500 J	64 J	1200 J	240 J
DI-N-BUTYLPHTHALATE	7300 U	500 U	7400 U	1900 U
FLUORANTHENE	38000	460 J	32000	5700
PYRENE	38000	410 J	43000	5900
BUTYLBENZYLPHTHALATE	7300 U	500 U	7400 U	1900 U
3,3'-DICHLOROBENZIDINE	7300 U	500 U	7400 U	100 J
BENZO(A)ANTHRACENE	13000	150 J	14000	2600
CHRYSENE	29000 J	290 J	18000	3400
BIS(2-ETHYLHEXYL)PHTHALATE	7300 U	500 U	7400 U	1900 U
DI-N-OCTYL PHTHALATE	7300 U	500 U	7400 U	1900 U
BENZO(B)FLUORANTHENE	10000 J	160 J	13000	5400
BENZO(K)FLUORANTHENE	18000 J	220 J	15000	1900 U
BENZO(A)PYRENE	12000	160 J	14000	2900
INDENO(1,2,3-CD)PYRENE	6200 J	97 J	5500 J	1600 J
DIBENZ(A,H)ANTHRACENE	3300 J	36 J	3400 J	900 J
BENZO(G,H,I)PERYLENE	6500 J	89 J	5700 J	1700 J
BENZOIC ACID	7300 U	170 J	7400 UJ	1900 UJ
TCL Pesticides/PCB (UG/KG)				
4,4'-DDE	90 J	39 J	16 J	29 J
4,4'-DDT	380 J	47 J	81 J	94 J
ALPHA-CHLORDANE	2 J	2.6 UJ	1.9 UJ	2.0 UJ
DIELDRIN	3.7 U	5.0 UJ	3.7 UJ	3.9 UJ
ENDOSULFAN SULFATE	17 J	5.0 UJ	3.9 J	3.9 UJ
ENDRIN	3.7 U	5.0 UJ	3.7 UJ	3.9 UJ
ENDRIN ALDEHYDE	3.7 U	5.0 UJ	3.7 UJ	3.9 UJ
ENDRIN KETONE	43 J	5.0 UJ	18 J	6.4 J
GAMMA-CHLORDANE	1.9 U	2.6 UJ	1.9 UJ	2.0 UJ
HEPTACHLOR EPOXIDE	1.9 U	2.6 UJ	1.9 UJ	2.0 UJ
HEPTACHLOR	1.9 U	2.6 UJ	1.9 U	1.0 J

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*: Value is the average of duplicate sample results

TABL
BUNKER A-86 SEDIMENT

	Range	Frequency	4SD1	4SD2(1ST ROUND)	4SD2(2ND ROUND)	4SS4	4SS5	4SS6	4SS6-D	4SS6-AVG
SDG			16703	16703	16992	16703	16703	16703	16703	
TAL Metals (MG/KG)										
ALUMINUM	3,5100-19,100	10/10	8460	5750	3510	16800 J	11100 J	8360 J	11900 J	10130 J
ARSENIC	1.9-150	10/10	8.9 J	2.8 J	1.9	150	91.3	4.4	5.6	5
BARIUM	16.1-70.1	10/10	29	24.6	16.1	44.5	70.1	47	59.2	53.1
BERYLLIUM	0.28-0.78	7/10	0.29	0.24 U	0.64 U	0.78	0.35	0.3	0.34	0.32
BORON	16-17.4	2/9	11.8 UJ	11.8 UJ	11.0 U	R	16 J	11.9 UJ	11.9 UJ	11.9 UJ
CALCIUM	902-3,830	10/10	1300	1200	902 J	2140	3400	1250	1740	1495
CHROMIUM	9.6-19.5	10/10	18.3 J	12.3 J	9.6	16.8 J	19.5 J	13.5 J	18.1 J	15.8 J
COBALT	2.3-6.8	10/10	5.9	4	3.8	6.8	5.1	3.3	4	3.65
COPPER	14.55*-35.3	9/10	35.3 J	22.4 J	8.9 U	19.8	30.9	13.1	16	14.55
IRON	6,870-36,800	10/10	11300	9280	7080	36800 J	13800 J	9230 J	12400 J	10815 J
LEAD	13.9-87.2	10/10	66.6 J	30.1 J	13.9	73.6 J	87.2 J	47.5 J	46.1 J	46.8 J
MAGNESIUM	1,830-3,050	10/10	2650	2720	1870	2130	3050	2570	3310	2940
MANGANESE	115-336	10/10	200	168	115	336 J	305 J	149 J	184 J	166.5 J
MERCURY	0.17	1/10	0.12 U	0.12 U	0.11 U	0.14 U	0.13 U	0.12 U	0.12 U	0.12 U
NICKEL	4.4-15.6	10/10	11.3	9.3	4.4	15.6	14.9	8.4	11.1	9.75
POTASSIUM	697-2,005*	10/10	1230	1200	877	701	1870	1710	2300	2005
SELENIUM	0.75	1/10	0.47 UJ	0.47 UJ	0.44 UJ	0.75 J	0.53 UJ	0.48 UJ	0.48 UJ	0.48 UJ
SODIUM	57.13*-148	7/10	148	67	27.1 U	59.8 U	93.4	51.3 U	88.6	57.13 J
VANADIUM	10.6-89.6	10/10	37	24.2	10.6	47.6	42.1	18.6	25.8	22.2
ZINC	26.9-412	10/10	73.2 J	42.3 J	26.9	66.8	231	40.5	57.6	49.05

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

*. Value is the average of duplicate sample results

TABLE 8
BUNKER A-86 SEDIMENT

	4SS7	4SS8	4SS9	4SS10
SDG	16703	16703	16703	16703
TAL Metals (MG/KG)				
ALUMINUM	8990 J	19100 J	6440 J	6680 J
ARSENIC	67.3	15.4	15.2	7.1
BARIUM	46.4	39.6	28.4	32.9
BERYLLIUM	0.35	0.7	0.28	0.24 U
BORON	11.1 UJ	17.4 J	11.4 UJ	11.8 UJ
CALCIUM	1680	1010	3120	3830
CHROMIUM	12.5 J	15.9 J	11.1 J	11.2 J
COBALT	4.4	2.3	3.2	2.7
COPPER	22.1	17.4	26.4	16.8
IRON	9380 J	15800 J	8060 J	6870 J
LEAD	71.9 J	53.4 J	45.3 J	37.5 J
MAGNESIUM	2140	2010	1830	1830
MANGANESE	193 J	126 J	161 J	133 J
MERCURY	0.11 U	0.17	0.11 U	0.12 U
NICKEL	9.4	14.1	8.7	7.9
POTASSIUM	1210	697	995	953
SELENIUM	0.44 UJ	0.59 UJ	0.46 UJ	0.47 UJ
SODIUM	108	63.3 U	58	91
VANADIUM	20.4	89.6	27.5	15.3
ZINC	412	49.3	76.9	61.8

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ND: Not detected

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*: Value is the average of duplicate sample results

APPENDIX D.7

SITE 6 - DRMO

DRMO SOIL

	Range	Frequency	6MW2D-0406	6MW3D-0406	6MW7S-0709
SDG			16992	17148	17148
TCL Volatiles (UG/KG)					
METHYLENE CHLORIDE	17	1/3	17	11 U	11 U
1,2-DICHLOROETHENE (TOTAL)	2	1/3	2 J	11 U	11 U
TRICHLOROETHENE	29	1/3	29	11 U	11 U
SDG					
TCL Semivolatiles (UG/KG)			16992	17148	17148
PHENANTHRENE	79	1/2	NA	380 U	79 J
FLUORANTHENE	36-110	2/2	NA	36 J	110 J
PYRENE	47-190	2/2	NA	47 J	190 J
BENZO(A)ANTHRACENE	72	1/2	NA	380 UJ	72 J
CHRYSENE	100	1/2	NA	380 U	100 J
BENZO(B)FLUORANTHENE	24-120	2/2	NA	24 J	120 J
BENZO(K)FLUORANTHENE	20	1/2	NA	20 J	370 U
BENZO(A)PYRENE	74	1/2	NA	380 UJ	74 J
INDENO(1,2,3-CD)PYRENE	26	1/2	NA	380 UJ	26 J
BENZOIC ACID	32-220	2/2	NA	32 J	220 J
SDG			16992	17148	17148
TCL Pesticides/PCB (UG/KG)					
ENDRIN	4 4	1/3	4 4 J	38 UJ	37 U
SDG			16992	17148	17148
TAL Metals (MG/KG)					
ALUMINUM	8,060-10,100	3/3	8060	9800	10100
ANTIMONY	4 2-7 0	2/3	3 5 U	7 0 J	4.2 J
ARSENIC	2 3-5 4	3/3	2 3	5 4	5.2
BARIUM	54 1-136	3/3	66	54 1 J	136
BERYLLIUM	0 31-0 40	2/3	0 70 U	0 4 J	0.31 J
CADMIUM	0 94-2 8	2/3	2 8	0 94 J	0.45 U
CALCIUM	1,310-1,890	3/3	1310 J	1890 J	1620 J
CHROMIUM	11 8-17 7	3/3	11 4	13 8	17.7
COBALT	4 2-7 6	3/3	4 2	6 0 J	7.6 J
COPPER	21-50 6	3/3	21	50 6 J	29.5 J
IRON	11 300-18,300	3/3	11300	17500	18300
LEAD	12 2-50 7	3/3	12 2	13 9	50.7
MAGNESIUM	3,400-6 430	3/3	3400	3760	6430
MANGANESE	27 3-603	3/3	27 3	238	603
MERCURY	0 12-0 15	3/3	0 14	0 15 J	0.12 J
NICKEL	8 5-11 2	3/3	8 5	10 3 J	11.2 J
POTASSIUM	2,690-6,280	3/3	2720	2690	6280
SODIUM	512-984	3/3	512	984 J	640 J
VANADIUM	22 2-39 8	3/3	22 2	27 4	39.8
ZINC	61 3-88 1	3/3	79 4	61 3 J	88.1 J

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

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R Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

DRMO GROUNDWATER

	Range(Total)	Frequency(Total)	Range(Diss)	Frequency(Diss)	6GW1S	6GW1S DISS	6GW2D	6GW2D DISS	6GW2S
SDG					17148		17761		17148
TCL Volatiles (UG/L)									
CARBON DISULFIDE	3	1/9	-	NA	10 U	NA	3 J	NA	10 U
1,1-DICHLOROETHANE	3	1/9	-	NA	10 U	NA	10 U	NA	10 U
1,2-DICHLOROETHENE (TOTAL)	1-2	2/9	-	NA	10 U	NA	10 U	NA	10 U
TRICHLOROETHENE	2	1/9	-	NA	10 U	NA	10 U	NA	10 U
SDG					17148		17761		17148
TCL Semivolatiles (UG/L)									
1,4-DICHLOROBENZENE	0 5	1/8	-	NA	10 U	NA	10 U	NA	10 U
DIMETHYL PHTHALATE	0 9	1/8	-	NA	10 U	NA	10 U	NA	10 U
DIETHYLPHTHALATE	2 5*	1/8	-	NA	10 U	NA	10 U	NA	10 U
DI-N-BUTYLPHTHALATE	1	1/8	-	NA	10 U	NA	10 U	NA	10 U
DI-N-OCTYL PHTHALATE	5	1/8	-	NA	10 U	NA	10 U	NA	10 U
INDENO(1,2,3-CD)PYRENE	1	1/8	-	NA	10 U	NA	1 J	NA	10 U
BENZO(G,H,I)PERYLENE	1	1/8	-	NA	10 U	NA	1 J	NA	10 U
BENZOIC ACID	1	1/8	-	NA	50 U	NA	50 U	NA	50 U
SDG					17148	17148	17761	17761	17148
TAL Metals (UG/L)									
ALUMINUM	27 1*-19,300	5/8	-	0/8	92.3 U	32.0 U	19300	27.2 U	2090
ARSENIC	2-15 6	3/8	4.2	1/8	2.0 J	2.0 U	15.6 J	2.0 UJ	4.3
BARIUM	10 3-288	8/8	11.5-270	8/8	10.3	11 5	205 J	156 J	36.2 J
BORON	101-2370	7/8	89.8-2420	7/8	713	781	2370 J	2420 J	1580 J
CADMIUM	2 6	1/8	-	0/8	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
CALCIUM	23,400-274,000	8/8	22,600-275,000	8/8	71700 J	77200 J	258000	260000	140000 J
CHROMIUM	6 3-47 6	2/8	3 2	1/8	3.0 U	3.0 U	47.6	3.2 J	6.3
COBALT	4 6-14 3	2/8	-	0/8	4.0 U	4.0 U	14.3	4.0 U	4.0 U
COPPER	4 1-63 1	4/7	2.5-18	5/5	4.1	3.4 J	63.1 J	R	50.4 J
IRON	129*-39,400	8/8	144-3,990	5/8	634	50.0 U	39400	3920	3170
LEAD	1 6-52 7	5/8	2.4	1/8	1.6 J	1.0 UJ	50.9 J	10.0 U	52.7 J
MAGNESIUM	6,890-729,000	8/8	5630-726,000	8/8	178000	194000	688000	707000	411000
MANGANESE	14 3-1,340	7/8	5 5-1060	7/8	14.3	5.5	1340	986	73.3
MERCURY	0 21	1/8	0.20	1/8	0.20 U	0.20 J	0.20 U	0.20 U	0.21 J
NICKEL	19.8-32 9	2/8	10.4-12 9	3/8	10.0 U	10 0 U	32.9	10.0 U	10.0 U
POTASSIUM	4,440-364,000	8/8	4,000-373,000	8/8	67700	74500	364000	373000	187000
SODIUM	54,100-6,490,000	8/8	55,700-7,500,000	8/8	1560000	1740000	6100000	7370000	3800000
VANADIUM	28-64 2	3/7	12.6-19.5	2/6	5.0 U	5.0 U	64.2 J	R	42.4 J
ZINC	4.8-113	3/8	3 7-22 2	2/8	4.8	3.7 J	113	2.0 U	81.9
SDG					17148				
Radiological (pCi/L)									
GROSS ALPHA	-	0/1	-	0/1	17 UJ	NA	NA	NA	NA
GROSS BETA	97	1/1	97	1/1	97 J	NA	NA	NA	NA
GROSS GAMMA (TOTAL)	-	0/1	-	0/1	ND	NA	NA	NA	NA

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DRMO GROUNDWATER

	6GW2S DISS	6GW3D	6GW3D DISS	6GW3S	6GW3S DISS	6GW6D	6GW6D DISS	6GW6S	6GW6S DISS	6GW7S
SDG		17761		17761		17761		17761		17791
TCL Volatiles (UG/L)										
CARBON DISULFIDE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
1,1-DICHLOROETHANE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
1,2-DICHLOROETHENE (TOTAL)	NA	2 J	NA	1 J	NA	10 U	NA	10 U	NA	10 U
TRICHLOROETHENE	NA	10 U	NA	2 J	NA	10 U	NA	10 U	NA	10 U
SDG		17791		17761		17761		17761		17791
TCL Semivolatiles (UG/L)										
1,4-DICHLOROBENZENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
DIMETHYL PHTHALATE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA	0.9 J
DIETHYLPHTHALATE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA	3 J
DI-N-BUTYLPHTHALATE	NA	10 U	NA	1 J	NA	10 U	NA	10 U	NA	10 U
DI-N-OCTYL PHTHALATE	NA	5 J	NA	10 U	NA	10 U	NA	10 U	NA	10 UJ
INDENO(1,2,3-CD)PYRENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
BENZO(G,H,I)PERYLENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
BENZOIC ACID	NA	50 U	NA	1 J	NA	50 U	NA	50 U	NA	50 U
SDG	17148	17761	17761	17761	17761	17761	17761	17761	17761	17791
TAL Metals (UG/L)										
ALUMINUM	14 0 U	1140	14 0 U	222 U	14 0 U	56.5 U	20.1 U	1530	26.0 U	32.6 J
ARSENIC	4 2 J	2 0 UJ	2 0 UJ	2 0 UJ	2 0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ
BARIUM	26 1 J	288 J	270	45 3 J	42 6 U	29.1	25.3 U	75.4	73.3	24.1 J
BORON	1560 J	2320 J	2340 J	1110 J	1060 J	101	89.8 J	50.0 U	50.0 UJ	475
CADMIUM	2 0 U	2 0 U	2 0 U	2 0 U	2 0 U	2.0 U	2.0 U	2.6 J	2.0 U	2.0 U
CALCIUM	140000 J	274000	275000	108000	104000	23400	22600	24700	23900	42500
CHROMIUM	3 0 U	3 6 U	3 0 U	4 6 U	3 0 U	3.0 U	3.0 U	4.1 U	3.0 U	3.0 UJ
COBALT	4 0 U	4 0 U	4 0 U	4 0 U	4 0 U	4.6 J	4.0 U	4.0 U	4.0 U	4.0 U
COPPER	R	R	18 0 J	46 1 J	R	2.0 UJ	3.2 J	2.0 UJ	2.5 J	2.0 U
IRON	144	6880	3990	1720	536	16800	2670	669	21.3 U	148
LEAD	1 0 UJ	45 6	2 4 J	25.6	2 0 U	2.0 UJ	2.0 U	2.0 UJ	2.0 U	2.0 UJ
MAGNESIUM	411000	729000	726000	274000	270000	11000	10900	6890	5630	96800
MANGANESE	48 0	1070	1060	66 7	58.3	852	693	6.9 U	5.0 U	608
MERCURY	0.20 U	0 20 U	0 20 U	0 20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 UJ
NICKEL	10 0 U	10 0 U	10 8 J	10.0 U	10.4 J	19.8 J	12.9 J	10.0 U	10.0 U	10.0 U
POTASSIUM	184000	342000	346000	113000	109000	7450	6890	4440	4000	40000
SODIUM	3870000	6490000	7500000	2500000	2810000	87900	87400	54100	55700	863000
VANADIUM	12 6 J	R	R	28 0 J	19.5 J	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
ZINC	2 0 U	29 8 U	22 2	60.3 U	2 0 U	37.8 U	17.3 U	32.2 U	6.8 U	5.8 U
SDG										
Radiological (pCi/L)										
GROSS ALPHA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GROSS BETA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GROSS GAMMA (TOTAL)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA: Not analyzed

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- Not applicable

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	6GW7S DISS	6GW7S-D	6GW7S-D DISS	6GW7SAVG	6GW7S DISSAVG	6GW8S
SDG		17791				17761
TCL Volatiles (UG/L)						
CARBON DISULFIDE	NA	10 U	NA	10 U	NA	10 U
1,1-DICHLOROETHANE	NA	10 U	NA	10 U	NA	3 J
1,2-DICHLOROETHENE (TOTAL)	NA	10 U	NA	10 U	NA	10 U
TRICHLOROETHENE	NA	10 U	NA	10 U	NA	10 U
SDG		17791				
TCL Semivolatiles (UG/L)						
1,4-DICHLOROBENZENE	NA	0.5 J	NA	0.5 J	NA	NA
DIMETHYL PHTHALATE	NA	10 U	NA	0.9 J	NA	NA
DIETHYLPHTHALATE	NA	2 J	NA	2.50 J	NA	NA
DI-N-BUTYLPHTHALATE	NA	10 U	NA	10 U	NA	NA
DI-N-OCTYL PHTHALATE	NA	10 UJ	NA	10 U	NA	NA
INDENO(1,2,3-CD)PYRENE	NA	10 U	NA	10 U	NA	NA
BENZO(G,H,I)PERYLENE	NA	10 U	NA	10 U	NA	NA
BENZOIC ACID	NA	50 U	NA	50 U	NA	NA
SDG	17791	17791	17791			
TAL Metals (UG/L)						
ALUMINUM	14 0 U	21 5 J	14 0 U	27.1 J	14.0 U	NA
ARSENIC	2 0 UJ	2 0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	NA
BARIUM	26.4 J	24 1 J	25.8 J	24.1 J	26.1 J	NA
BORON	490	474	477	475	484	NA
CADMIUM	2 0 U	2 0 U	2.0 U	2.0 U	2.0 U	NA
CALCIUM	42900	42000	43900	42250	43400	NA
CHROMIUM	3 0 UJ	3 0 UJ	3.0 UJ	3.0 UJ	3.0 UJ	NA
COBALT	4 0 U	4 0 U	4.0 U	4.0 U	4.0 U	NA
COPPER	2 0 U	2.0 U	3.0 J	2.0 U	2.5 J	NA
IRON	50 0 U	110	50.0 U	129	50.0 U	NA
LEAD	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	NA
MAGNESIUM	101000	96200	97400	96500	99200	NA
MANGANESE	620	596	592	602	606	NA
MERCURY	0.20 UJ	0.20 UJ	0.20 UJ	0.20 UJ	0.20 UJ	NA
NICKEL	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	NA
POTASSIUM	41900	39900	40900	39950	41400	NA
SODIUM	885000	856000	871000	859500	878000	NA
VANADIUM	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	NA
ZINC	2 0 U	3 8 U	2.0 U	4.8 U	2.0 U	NA
SDG						
Radiological (pCi/L)						
GROSS ALPHA	NA	NA	NA	NA	NA	NA
GROSS BETA	NA	NA	NA	NA	NA	NA
GROSS GAMMA (TOTAL)	NA	NA	NA	NA	NA	NA

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DRMO GROUNDWATER (ROUND 2)

	Range (Total)	Frequency (Total)	Range (Diss)	Frequency (Diss)	6GW1S-2	6GW1S-D-2	6GW1S-2 DISS	6GW2D-2
SDG					**19178**			**19178**
TCL Volatiles (UG/L)								
VINYL CHLORIDE	5	1/9	-	NA	10 U	NA	NA	10 U
1,2-DICHLOROETHENE(TOTAL)	2-8	2/9	-	NA	10 U	NA	NA	10 U
TRICHLOROETHENE	3.5-6	3/9	-	NA	10 U	NA	NA	10 U
SDG					**19178**			**19178**
TCL Semivolatiles (UG/L)								
PHENOL	3	1/8	-	NA	10 U	NA	NA	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	.7	1/8	-	NA	10 U	NA	NA	10 U
SDG					**19178**		**19178**	**19178**
TAL Metals (UG/L)								
ALUMINUM	88.9-806	2/8	327	1/8	10.0 U	NA	10.0 UJ	806
ANTIMONY	-	0/5	5.7	1/8	UR	NA	5.0 U	12.0 U
ARSENIC	2.65*-21 0	5/8	12-14	2/8	20.0 J	NA	20.0 U	21.0 J
BARIUM	28.6*-242	4/8	13.35*-297	7/8	26.2 U	NA	25.5 J	170 J
BERYLLIUM	1 0	1/8	-	0/8	1.0 U	NA	1.0 U	1.0 U
BORON	87 4*-2340	8/8	85.5*-2410	8/8	1850 J	NA	1790 J	2340 J
CALCIUM	15150*-268000	8/8	13400*-326000	8/8	158000 J	NA	165000	266000 J
COBALT	11 6*	1/8	3.0-3.5	2/8	3.0 U	NA	1.0 U	3.0 U
COPPER	4 7-9 7	4/8	4.8-31.9	4/8	5.5	NA	3.0 U	9.7
IRON	8 7-44550*	8/8	5.7-14100	7/8	31.0 J	NA	17.0 U	5690 J
MAGNESIUM	4610-949000	8/8	4370-966000	8/8	488000 J	NA	602000	880000 J
MANGANESE	23-1440	8/8	1.2-1460	7/8	4.6 U	NA	1.2 J	1440
NICKEL	24.1*	1/8	17.5	1/8	9.6 U	NA	3.0 U	22.2 U
POTASSIUM	3010-313000	8/8	3220-317000	8/8	185000	NA	185000	313000
SODIUM	50600-7560000	8/8	11000*-7730000	8/8	4710000	NA	5210000 J	7030000
VANADIUM	5.45*-7.6	2/8	3.1-5.1	3/8	3.0 U	NA	1.0 U	R
ZINC	4.2-105*	3/8	7.1-16.1	2/8	2.0 U	NA	16.1	2.0 U
SDG					**19178**	**19178**		
Radioactivity (pCi/l)								
GROSS ALPHA-TOTAL	4+/-64	1/1	-	NA	4+ /- 64 J	23+ /- 35 J	NA	NA
GROSS BETA-TOTAL	180/-90	1/1	-	NA	180+ /- 90 J	260+ /- 90 J	NA	NA
K-40 @1460 eV	140/-70	1/1	-	NA	140+ /- 70	170+ /- 70	NA	NA
SDG								
HARDNESS as CaCO3					NA	NA	NA	NA

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DRMO GROUNDWATER (ROUND 2)

	6GW2D-2 DISS	6GW2S-2	6GW2S-2 DISS	6GW3D-2	6GW3D-2 DISS	6GW3S-2	6GW3S-2 DISS	6GW6D-2	6GW6D-2 DISS
SDG		**19178**		**19197**		**19178**		**19151**	
TCL Volatiles (UG/L)									
VINYL CHLORIDE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,2-DICHLOROETHENE(TOTAL)	NA	10 U	NA	10 U	NA	2 J	NA	10 U	NA
TRICHLOROETHENE	NA	10 U	NA	10 U	NA	6 J	NA	10 U	NA
SDG		**19178**		**19197**		**19178**		**19151**	
TCL Semivolatiles (UG/L)									
PHENOL	NA	10 U	NA	10 U	NA	10 U	NA	4 J	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	10 U	NA	10 U	NA	10 U	NA	0.6 J	NA
SDG	**19178**	**19178**	**19178**	**19197**	**19197**	**19178**	**19178**	**19151**	**19151**
TAL Metals (UG/L)									
ALUMINUM	10 0 U	10 0 U	327	42.0 U	10.0 U	12.7 U	10.0 UJ	88.3	15.0 U
ANTIMONY	12 0 U	12 0 U	12 0 U	UR	12.0 U	12.0 U	5.7 J	13.0 U	13.0 U
ARSENIC	12 0	11 0 J	14 0	10 0 U	20.0 U	10.0 J	2.0 UJ	2.7	1.0 U
BARIUM	184 J	25 8 U	26 5 U	242 J	297	67.3 U	59.7 J	28.6	13.5
BERYLLIUM	1 0 U	1 0 U	1 0 U	1 0 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
BORON	2360	1880 J	1940	2330 J	2410	1380 J	1370 J	88.2 J	87.4 J
CALCIUM	260000	178000 J	178000	268000	326000	130000 J	125000	15000	13400
COBALT	3 0 U	3 0 U	3 0 U	1 0 U	3.5	3.0 U	1.0 U	12.7	5.0 U
COPPER	5 2	6 8	4 8	1 0 U	21.2	4.7	3.0 U	5.0 U	5.0 U
IRON	5320 J	164 J	48 7 J	12200	14100	204 J	106	44300	45.0
MAGNESIUM	924000	538000 J	558000	949000	966000	333000 J	367000	8420	8190
MANGANESE	1390	23	23 2	1320	1460	70.0	65.6	645	21.4
NICKEL	7 0 U	11 9 U	12 7 U	12.0 U	17.5	7.0 U	3.0 U	28.3	11.0 U
POTASSIUM	317000	210000	224000	292000	291000	126000	119000	14700	14400
SODIUM	6940000	5160000	5540000	7560000	7730000	3230000	2600000 J	109000	110000
VANADIUM	R	R	R	1.0 U	3.1	7.6	5.1	5.2 J	4.0 U
ZINC	2 0 U	4 3 U	2.0 U	4.2	2.0 U	8.7 U	7.1	104	3.0 U
SDG									
Radioactivity (pCi/l)									
GROSS ALPHA-TOTAL	NA	NA	NA	NA	NA	NA	NA	NA	NA
GROSS BETA-TOTAL	NA	NA	NA	NA	NA	NA	NA	NA	NA
K-40 @1460 eV	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDG				**19197**				**19151**	
HARDNESS as CaCO3	NA	NA	NA	4700	NA	NA	NA	72	NA

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DRMO GROUNDWATER (ROUND 2)

	6GW6D-D-2	6GW6D-2AVG.	6GW6D-D2 DISS	6GW6D-2 DISSAVG	6GW6S-2	6GW6S-2 DISS	6GW7S-2	6GW7S-2 DISS	6GW8S-2
SDG	19151				19178		19197		19197
TCL Volatiles (UG/L)									
VINYL CHLORIDE	10 U	10 U	NA	NA	10 U	NA	10 U	NA	5 J
1,2-DICHLOROETHENE(TOTAL)	10 U	10 U	NA	NA	10 U	NA	10 U	NA	8 J
TRICHLOROETHENE	2 J	2 J	NA	NA	10 U	NA	10 U	NA	4 J
SDG	19151				19178		19197		
TCL Semivolatiles (UG/L)									
PHENOL	2 J	3 J	NA	NA	10 U	NA	10 U	NA	NA
BIS(2-ETHYLHEXYL)PHTHALATE	0.8 J	0.7 J	NA	NA	10 U	NA	10 U	NA	NA
SDG	19151		19151		19178	19178	19197	19197	
TAL Metals (UG/L)									
ALUMINUM	89 4	88 9	15 0 U	15.0 U	28.0 U	26.4 U	42.0 U	10.0 U	NA
ANTIMONY	13 0 U	13 0 U	17 0 U	15.0 U	12.0 U	12.0 U	UR	12.0 U	NA
ARSENIC	2 6	2 65	1 0 U	1.0 U	1.0 UJ	1.0 U	10.0 U	2.0 U	NA
BARIUM	28 6	28 6	13 2	13.35	57.2 U	56.8 U	94.4 J	116	NA
BERYLLIUM	1 0 U	1 0 U	1 0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	NA
BORON	86 6 J	87 4	83 6 J	85.5	42.8 U	57.4 U	1280	1360	NA
CALCIUM	15300	15150	13400	13400	19300 J	19200	135000	161000	NA
COBALT	10 5	11 6	5 0 U	5.0 U	3.0 U	3.0 U	1.0 U	3.0	NA
COPPER	5 0 U	5 0 U	5 0 U	5.0 U	2.0 U	2.0 U	1.0 U	31.9	NA
IRON	44800	44550	90 1	87.5	8.7 J	5.7 J	235	361	NA
MAGNESIUM	8560	8490	8030	8110	4610 J	4370	446000	419000	NA
MANGANESE	653	649	15 9	18.7	2.5 U	2.4 U	1010	1130	NA
NICKEL	19 9 J	24 1	11 0 U	11.0 U	7.0 U	7.0 U	12.0 U	7.0 U	NA
POTASSIUM	14300	14500	14600	14500	3010	3220	140000	140000	NA
SODIUM	110000	109500	110000	110000	50600	48200	3590000	3760000	NA
VANADIUM	5 7 J	5.45 J	4.0 U	4.0 U	3.0 U	3.0 U	1.0 U	4.9	NA
ZINC	106	105	3.0 U	3.0 U	2.9 U	2.0 U	11.0	2.0 U	NA
SDG									
Radioactivity (pCi/l)									
GROSS ALPHA-TOTAL	NA		NA		NA	NA	NA	NA	NA
GROSS BETA-TOTAL	NA		NA		NA	NA	NA	NA	NA
K-40 @1460 eV	NA		NA		NA	NA	NA	NA	NA
SDG	19151						19197		
HARDNESS as CaCO3	68		NA		NA	NA	2200.0	NA	NA

NA: Not analyzed

ND: Not detected

J: Estimate value

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-: Not applicable

*: Value is the average of duplicate sample results

APPENDIX D.8

SITE 7 - TORPEDO SHOPS

	Range	Frequency	7SO4S-0103	7MW5S-1011	7SO6S-0305	7SO6S-0507	7MW7S-0103	7MW8S-0408	7MW9S-0608	7MW9S-0608D
SDG			17788	17791	17788	17788	17788	17463	17463	17463
TCL Volatiles (UG/KG)										
METHYLENE CHLORIDE	5-420	10/18	11 J	14 J	12 U	11 U	11 U	420 J	62 J	60 J
ACETONE	11-27	2/18	11 J	11 UJ	12 U	11 U	11 U	270 U	28 U	43 U
1,1-DICHLOROETHENE	3	1/18	3 J	11 UJ	12 U	11 U	11 U	61 U	12 U	12 U
TETRACHLOROETHENE	3-18	5/18	11 J	11 UJ	12 U	11 U	11 U	18 J	5 J	6 J
TOLUENE	3-8	6/18	4 J	11 UJ	12 U	11 U	3 J	61 U	12 U	12 U
XYLENE (TOTAL)	3-11	2/18	11 J	11 UJ	12 U	11 U	11 U	61 U	12 U	12 U
SDG			17788	17791	17788	17788	17788	17463	17463	17463
TCL Semivolatiles (UG/KG)										
NAPHTHALENE	260-320	2/18	310 J	370 U	410 U	380 U	350 U	400 U	400 U	400 U
2-METHYLNAPHTHALENE	23-170	3/18	170 J	370 U	410 U	380 U	350 U	400 U	400 U	400 U
ACENAPHTHYLENE	20-55	3/18	28 J	370 U	410 U	380 U	350 U	400 U	400 U	400 U
ACENAPHTHENE	43-790	4/18	790	370 U	410 U	380 U	350 U	220 J	400 U	400 U
DIBENZOFURAN	27-350	3/18	350 J	370 U	410 U	380 U	350 U	400 U	400 U	400 U
DIETHYLPHTHALATE	14000	1/18	350 U	370 U	410 U	380 U	14000	400 U	400 U	400 U
FLUORENE	66-710	4/18	710	370 U	410 U	380 U	350 U	600	400 U	400 U
PHENANTHRENE	25-4300	7/18	4300 J	97 J	410 U	380 U	350 U	1800	400 U	400 U
ANTHRACENE	21-1300	5/18	1100	21 J	410 U	380 U	350 U	220 J	400 U	400 U
CARBAZOLE	27-660	4/18	660	370 U	410 U	380 U	350 U	400 U	400 U	400 U
DI-N-BUTYLPHTHALATE	20-25	4/18	20 J	370 U	410 U	380 U	350 U	400 U	400 U	400 U
FLUORANTHENE	18-3800	10/18	3700 J	130 J	410 U	380 U	18 J	210 J	400 U	400 U
PYRENE	21-4200	10/18	3900 J	110 J	410 U	380 U	23 J	230 J	400 U	400 U
BUTYLBENZYLPHTHALATE	26	1/18	350 U	370 U	410 U	380 U	350 U	400 U	400 U	400 U
BENZO(A)ANTHRACENE	36-2700	7/18	2400	55 J	410 U	380 U	350 U	89 J	400 U	400 U
CHRYSENE	25-2400	8/18	2000	58 J	410 U	380 U	350 U	94 J	400 U	400 U
BENZO(B)FLUORANTHENE	21-3200	8/18	2800	57 J	410 U	380 U	350 U	77 J	400 U	400 U
BENZO(K)FLUORANTHENE	24-520	6/18	350 U	49 J	24 J	380 U	350 U	84 J	400 U	400 U
BENZO(A)PYRENE	33-1900	9/18	1700	48 J	33 J	380 U	350 U	81 J	400 U	400 U
INDENO(1,23-CD)PYRENE	24-1200	8/18	1100 J	24 J	24 J	380 U	350 U	48 J	400 U	400 U
BENZO(G,H,I)PERYLENE	20-1300	8/18	1300 J	20 J	21 J	380 U	350 U	56 J	400 U	400 U
BENZOIC ACID	27-130	8/18	130 J	28 J	2000 U	1800 U	1700 U	2000 U	2000 U	2000 U

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

TORPEDO SHOPS SOIL

	7MW9S-0608AVG	7SO10-0103	7MW10S-0608	7MW11S-0507	7TB7-0406	7TB8-0202.9	7TB8-0202.9D	7TB8-0202.9AVG	7TB9-0002
SDG		17788	17463	17791	17873	17873	17873		17791
TCL Volatiles (UG/KG)									
METHYLENE CHLORIDE	61 J	11 U	12 U	10 J	11 U	13 U	23 U	15 U	5 J
ACETONE	35.5 U	11 U	12 U	24 U	11 U	44 U	13 U	25.25 U	11 UJ
1,1-DICHLOROETHENE	12 U	11 U	12 U	24 U	11 U	13 U	13 U	13 U	11 U
TETRACHLOROETHENE	5.5 J	11 U	12 U	24 U	11 U	13 U	13 U	13 U	11 U
TOLUENE	12 U	6 J	12 U	24 U	11 U	13 U	13 U	13 U	11 U
XYLENE (TOTAL)	12 U	11 U	12 U	24 U	11 U	13 U	13 U	13 U	11 U
SDG		17788	17463	17791	17873	17873	17873		17791
TCL Semivolatiles (UG/KG)									
NAPHTHALENE	400 U	260 J	380 U	470 U	380 U	420 U	420 U	420 U	360 U
2-METHYLNAPHTHALENE	400 U	110 J	380 U	470 U	380 U	420 U	420 U	420 U	360 U
ACENAPHTHYLENE	400 U	55 J	380 U	470 U	380 U	420 U	420 U	420 U	360 U
ACENAPHTHENE	400 U	720	380 U	470 U	380 U	420 U	420 U	420 U	360 U
DIBENZOFURAN	400 U	340 J	380 U	470 U	380 U	420 U	420 U	420 U	360 U
DIETHYLPHTHALATE	400 U	360 U	380 U	470 U	380 U	420 U	420 U	420 U	360 U
FLUORENE	400 U	660	380 U	470 U	380 U	420 U	420 U	420 U	360 U
PHENANTHRENE	400 U	4100 J	380 U	470 U	100 J	25 J	420 U	25 J	360 U
ANTHRACENE	400 U	1300	380 U	470 U	380 U	420 U	420 U	420 U	360 U
CARBAZOLE	400 U	640	380 U	470 U	27 J	420 U	420 U	420 U	360 U
DI-N-BUTYLPHTHALATE	400 U	360 U	380 U	470 U	22 J	25 J	25 J	25 J	360 U
FLUORANTHENE	400 U	3800 J	380 U	470 U	220 J	44 J	22 J	33 J	360 U
PYRENE	400 U	4200 J	380 U	470 U	180 J	40 J	22 J	31 J	360 U
BUTYLBENZYLPHTHALATE	400 U	360 U	380 U	470 U	26 J	420 U	420 U	420 U	360 U
BENZO(A)ANTHRACENE	400 U	2700	380 U	470 U	65 J	420 U	420 U	420 U	360 U
CHRYSENE	400 U	2400	380 U	470 U	120 J	25 J	420 U	25 J	360 U
BENZO(B)FLUORANTHENE	400 U	3200 J	380 U	470 U	120 J	21 J	420 U	21 J	360 U
BENZO(K)FLUORANTHENE	400 U	360 U	380 U	470 U	100 J	420 U	420 U	420 U	360 U
BENZO(A)PYRENE	400 U	1900	380 U	190 J	94 J	420 U	420 U	420 U	360 U
INDENO(1,23-CD)PYRENE	400 U	1200	380 U	470 U	40 J	420 U	420 U	420 U	360 U
BENZO(G,H,I)PERYLENE	400 U	1200	380 U	470 U	84 J	420 U	420 U	420 U	360 U
BENZOIC ACID	2000 U	110 J	2000 U	51 J	27 J	31 J	23 J	27 J	1700 U

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

TORPEDO SHOPS SOIL

	7TB12-0204	7TB13-01.503.5	7TB14-0507	7TB15-0608	7TB16-0305
SDG	17791	17791	17463	17463	17788
TCL Volatiles (UG/KG)					
METHYLENE CHLORIDE	8 J	8 J	60 J	60 J	13 U
ACETONE	11 U	27 J	48 U	29 U	13 U
1,1-DICHLOROETHENE	11 U	11 U	12 U	12 U	13 U
TETRACHLOROETHENE	11 U	11 U	4 J	3 J	13 U
TOLUENE	5 J	4 J	12 U	12 U	8 J
XYLENE (TOTAL)	3 J	11 U	12 U	12 U	13 U
SDG	17791	17791	17463	17463	17788
TCL Semivolatiles (UG/KG)					
NAPHTHALENE	380 U	380 U	390 U	400 U	430 U
2-METHYLNAPHTHALENE	380 U	23 J	390 U	400 U	430 U
ACENAPHTHYLENE	20 J	380 U	390 U	400 U	430 U
ACENAPHTHENE	43 J	380 U	390 U	400 U	430 U
DIBENZOFURAN	27 J	380 U	390 U	400 U	430 U
DIETHYLPHTHALATE	380 U	380 U	390 U	400 U	430 U
FLUORENE	66 J	380 U	390 U	400 U	430 U
PHENANTHRENE	570	63 J	390 U	400 U	430 U
ANTHRACENE	180 J	380 U	390 U	400 U	430 U
CARBAZOLE	92 J	380 U	390 U	400 U	430 U
DI-N-BUTYLPHTHALATE	380 U	22 J	390 U	400 U	430 U
FLUORANTHENE	960	70 J	390 U	400 U	21 J
PYRENE	860	64 J	390 U	400 U	21 J
BUTYLBENZYLPHTHALATE	380 U	380 U	390 U	400 U	430 U
BENZO(A)ANTHRACENE	650	36 J	390 U	400 U	430 U
CHRYSENE	720	38 J	390 U	400 U	430 U
BENZO(B)FLUORANTHENE	980	48 J	390 U	400 U	430 U
BENZO(K)FLUORANTHENE	520	35 J	390 U	400 U	430 U
BENZO(A)PYRENE	800	61 J	390 U	400 U	430 U
INDENO(1,23-CD)PYRENE	560	50 J	390 U	400 U	430 U
BENZO(G,H,I)PERYLENE	590	57 J	390 U	400 U	430 U
BENZOIC ACID	44 J	57 J	1900 U	2000 U	2100 U

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

TORPEDO SHOPS SOIL

	Range	Frequency	7SO4S 0103	7MW5S-1011	7SO6S 0305	7SO6S 0507	7MW7S-0103	7MW8S-0408	7MW9S-0608	7MW9S-0608D
SDG			17788	17791	17788	17788	17788	17463	17463	17463
TCL Pesticides/PCB (UG/KG)										
HEPTACHOR	4.7	1/14	4.7 J	19 U	21 UJ	19 U	18 U	21 U	NA	NA
4,4'-DDE	5.4-10	3/14	35 U	37 U	41 UJ	37 U	10 J	40 U	NA	NA
4,4'-DDD	4.4-25	4/14	35 U	37 U	41 UJ	37 U	25 J	40 U	NA	NA
ENDOSULFAN SULFATE	13-35	2/14	35 U	37 U	41 UJ	37 U	35 J	40 U	NA	NA
4,4'-DDT	4.9-26	5/14	6.7 J	4.9 J	41 UJ	37 U	5.4 J	40 U	NA	NA
METHOXYCHLOR	32	1/14	32 J	190 U	210 UJ	190 U	180 U	210 U	NA	NA
ENDRIN KETONE	6.8	1/14	6.8 J	37 U	41 UJ	37 U	35 U	40 U	NA	NA
ENDRIN ALDEHYDE	5.5	2/14	35 U	37 U	41 UJ	37 U	35 U	40 U	NA	NA
SDG			17788	17791	17788	17788	17788	17463	17463	17463
TAL Metals (MG/KG)										
ALUMINUM	3730-20,000	18/18	9480	8220	12600	20000	7450	11300	10700	11200
ANTIMONY	3.4-9.6	6/17	3.2 U	3.4	7.6 U	10 U	3.0 U	3.5 UJ	9.6 J	R
ARSENIC	0.82-8.1	16/18	1.6 J	2.0 J	1.1 J	0.82 J	1.8 J	3.0	8.1	7.5
BARIUM	17.4-506	18/18	99.6 J	98.6	102 J	506	104 J	31.6	34.3	39.9
BERYLLIUM	0.21-0.72	15/18	0.35	0.35	0.38 J	0.35 J	0.21 J	0.47	0.44	0.37
CADMIUM	0.47-0.67	4/18	0.48	0.45 U	0.67 J	0.64 J	0.4 U	0.71 U	0.75 UJ	0.74 U
CALCIUM	666-2,810	18/18	1960	1550	1910	2810	1970	1320	1830	1700
CHROMIUM	6.8-61.1	18/18	17.5	12	13.7	61.1	8.3 J	18.1 J	18.2 J	17.8 J
COBALT	4.7-19.2	13/18	6.6 J	6.8	7.2 J	19.2 J	4.7 J	3.9 U	5.6	5.9
COPPER	7.6-45	18/18	20.6	26.7	24.9	18.1	12.1	13.6	14.2	15.6
IRON	4,580-32,900	18/18	15200	14800	20800	32900	12100	8820	20800	16400
LEAD	3.3-27.5	13/18	11.7 J	14.7 J	3.3 J	3.7 J	4.0 J	9.1 U	4.4 U	3.6 U
MAGNESIUM	1,510-19,500	18/18	5390	4790	6260	19500	4370	3080	3370	3810
MANGANESE	60.7-725	18/18	367	317	437	725	215	106	161	140
MERCURY	0.11-1.2	5/18	0.11 UJ	0.11 U	0.28 J	0.16 J	0.11 J	0.12 UJ	0.12 UJ	0.12 UJ
NICKEL	5.1-42.1	18/18	8.0	8.4	9.4	42.1 J	5.4 J	10.0	12.9	12.9
POTASSIUM	744-18,400	18/18	4810 J	4540	5690 J	18400 J	3710 J	991	1490	1880
SILVER	0.50-1.4	5/18	0.65 U	0.88	0.47 UJ	0.4 UJ	0.4 UJ	0.47 U	0.73 U	0.5 UJ
SODIUM	60.9-708	17/18	708	109	221 J	240 J	207 J	270	252	265
THALLIUM	0.26-1	4/18	0.26	0.36 U	0.38 J	1.0 J	0.2 U	0.24 U	0.25 U	0.25 U
VANADIUM	7.7-86.7	13/18	31.9 U	24.8	38.4 U	86.7	28.9 U	23.6	21.9	21.3 J
ZINC	13.8-133	18/18	133 J	101	78.6 J	84.2 J	48.7 J	30.2	25.9	28.3
SDG			17788	17791	17788	17788	17788	17463	17463	17463
TCLP Volatiles (UG/L)	-	0/1	NA	NA	NA	NA	NA	ND	NA	NA
SDG			17788	17791	17788	17788	17788	17463	17463	17463
TCLP Semivolatiles (UG/L)	-	0/1	NA	NA	NA	NA	NA	ND	NA	NA
SDG	-		17788	17791	17788	17788	17788	17463	17463	17463
TCLP Metals (UG/L)										
BARIUM	145	1/1	NA	NA	NA	NA	NA	145	NA	NA
SDG	-		17788	17791	17788	17788	17788	17463	17463	17463
TCLP Herbicides (UG/L)	-	0/1	NA	NA	NA	NA	NA	ND	NA	NA
SDG			17788	17791	17788	17788	17788	17463	17463	17463
TCLP Pesticides (UG/L)	-	0/1	NA	NA	NA	NA	NA	ND	NA	NA
SDG			17788	17791	17788	17788	17788	17463	17463	17463
TPH (MG/KG)	160-898	3/9	NA	NA	NA	NA	NA	898 J	ND	ND

NA: Not analyzed
ND: Not detected
J: Estimate value
U: Not detected at detection limit indicated
UJ: Not detected at estimated detection limit indicated
R: Value rejected during validation
-: Not applicable
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TORPEDO SHOPS SOIL

	7MW9S-0608AVG	7SO10-0103	7MW10S-0608	7MW11S-0507	7TB7-0406	7TB8-0202.9	7TB8-0202.9D	7TB8-0202.9AVG	7TB9-0002
SDG		17788	17463	17791	17873	17873	17873		17791
TCL Pesticides/PCB (UG/KG)									
HEPTACHOR	NA	18 U	NA	24 U	19 U	22 U	22 U	22 U	18 U
4,4'-DDE	NA	36 U	NA	47 U	37 U	42 U	42 U	42 U	36 U
4,4'-DDD	NA	36 U	NA	47 U	37 U	42 U	42 U	42 U	36 U
ENDOSULFAN SULFATE	NA	13 J	NA	47 U	37 U	42 U	42 U	42 U	36 U
4,4'-DDT	NA	36 U	NA	47 U	37 U	42 U	42 U	42 U	36 U
METHOXYCHLOR	NA	180 U	NA	240 U	190 U	220 U	220 U	220 U	180 U
ENDRIN KETONE	NA	36 U	NA	47 U	37 U	42 U	42 U	42 U	36 U
ENDRIN ALDEHYDE	NA	36 U	NA	47 U	5.5 J	5.5 J	42 U	5.5 J	36 U
SDG		17788	17463	17791	17873	17873	17873		17791
TAL Metals (MG/KG)									
ALUMINUM	10950	4450	6990	18000	15800	19300	12700	16000	3730
ANTIMONY	9.6 J	3.0 U	3.4 UJ	8.6	3.4 UJ	3.7 UJ	3.4 UJ	3.55 UJ	3.3 U
ARSENIC	7.8	1.1 J	4.5	3.6 J	1.6 U	4.6 U	3.0 U	3.8 U	3.5 J
BARIUM	37.1	42.2	30.6	64.4	155	86.8	69.1	77.95	23.2
BERYLLIUM	0.405	0.2 U	0.23 U	0.72	0.44 J	0.79	0.51	0.65	0.22 U
CADMIUM	0.745 UJ	0.4 U	0.68 U	0.56 U	0.61 U	1.0 U	0.5 U	0.75 U	0.44 U
CALCIUM	1765	849 J	1110	1110	1240	2810	2070	2440	1230
CHROMIUM	18.0 J	7.0	9.1 J	25.6	26.6	23.3	16.9	20.1	6.8
COBALT	5.75	2.9 U	6.1	6.9	9.0	7.8	6.9	7.35	3.5 U
COPPER	14.9	10.6	11.7	10.0	45.0	37.4	32.0	34.7	9.2
IRON	18600	6950	6930	12500	19700	17300	14700	16000	4580
LEAD	4 U	10.5 J	2.5 U	7.8 J	15.8 J	22.4 J	22.2 J	22.3 J	4.5 J
MAGNESIUM	3590	2340	2200 J	3350	7310	5120	3790	4455	1510
MANGANESE	150.5	184	171	119	357 J	230 J	194 J	212 J	87.7
MERCURY	0.12 UJ	0.1 UJ	1.2 J	0.14 U	0.11 U	0.12 U	0.11 U	0.12 U	0.11 U
NICKEL	12.9	5.1	12.4	12.7	18.3	16.6	12.8	14.7	7.5
POTASSIUM	1585	2100 J	1380	809	5960	2910	2390	2650	1020
SILVER	0.615 UJ	0.4 UJ	0.46 U	0.56 U	1.4	0.97 J	0.46 U	0.6 J	0.5
SODIUM	258.5 J	340 J	103 U	203	187	204	212	208	60.9
THALLIUM	0.25 U	0.2 U	0.23 U	0.28 U	0.34 J	0.25 UJ	0.23 UJ	0.24 UJ	0.22 U
VANADIUM	21.6	14.3 U	12.3	26.8	56.0	37.9	26.0	31.95	7.7
ZINC	27.1	48.7 J	18.7	31.4	87.5	44.2	35.7	39.95	13.8
SDG		17788	17463	17791	17873	17873	17873		17791
TCLP Volatiles (UG/L)	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDG		17788	17463	17791	17873	17873	17873		17791
TCLP Semivolatiles (UG/L)	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDG		17788	17463	17791	17873	17873	17873		17791
TCLP Metals (UG/L)									
BARIUM	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDG		17788	17463	17791	17873	17873	17873		17791
TCLP Herbicides (UG/L)	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDG		17788	17463	17791	17873	17873	17873		17791
TCLP Pesticides (UG/L)	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDG		17788	17463	17791	17873	17873	17873		17791
TPH (MG/KG)	NA	NA	ND	ND	NA	NA	NA	NA	NA

NA Not analyzed
ND Not detected
J Estimated value
U Not detected at detection limit indicated
UJ Not detected at estimated detection limit indicated
R Value rejected during validation
Not applicable
Value is the average of duplicate sample results

TORPEDO SHOPS SOIL

	7TB12-0204	7TB13-01.503.5	7TB14-0507	7TB15-0608	7TB160305
SDG	17791	17791	17463	17463	17788
TCL Pesticides/PCB (UG/KG)					
HEPTACHOR	19 U	19 U	NA	NA	22 U
4,4'-DDE	6.4 J	37 U	NA	NA	5.4 J
4,4'-DDD	14 J	6.1 J	NA	NA	4.4 J
ENDOSULFAN SULFATE	37 U	37 U	NA	NA	43 U
4,4'-DDT	18 J	37 U	NA	NA	26 J
METHOXYCHLOR	190 U	190 U	NA	NA	220 U
ENDRIN KETONE	37 U	37 U	NA	NA	43 U
ENDRIN ALDEHYDE	37 U	37 U	NA	NA	43 U
SDG	17791	17791	17463	17463	17788
TAL Metals (MG/KG)					
ALUMINUM	13900	9830	5220	10900	7030
ANTIMONY	R	5.6	5.1 J	6.0 J	3.0 U
ARSENIC	3.4 J	3.0 J	3.3	4.3	2.0 J
BARIUM	154	58.1	17.4 J	42.2	18.8 J
BERYLLIUM	0.6	0.54	0.42 J	0.41 J	0.26 J
CADMIUM	0.47 U	0.46 U	0.72 U	0.74 U	0.47 J
CALCIUM	1670	1230	882	1420	666 J
CHROMIUM	23.5	14.0	9.3 J	20.2 J	10.7
COBALT	10.4	5.5	3.5 U	6.1	1.8 U
COPPER	39.9	31.1	8.7	16.2	7.6
IRON	18,200	11,200	8,210	12,300	6750
LEAD	27.5 J	16.8 J	4.7 U	4.6 U	4.7 J
MAGNESIUM	6910	3410	1460	4030	1780 J
MANGANESE	3.70	155	208	194	60.7
MERCURY	0.13	0.11 U	0.12 UJ	0.12 UJ	0.1 UJ
NICKEL	16.0 J	9.9	5.8	12.6 J	5.4
POTASSIUM	5110	1910	848	1990	744 J
SILVER	0.68 J	0.46 U	0.48 U	0.49 U	0.4 UJ
SODIUM	121 J	68.7	210	214	191 J
THALLIUM	0.44 U	0.23 U	0.24 U	0.25 UJ	0.2 U
VANADIUM	33.7	20.1	18.5 J	26.4 J	15.7 U
ZINC	66.0	48.7	23.5	33.4	47.4 J
SDG	17791	17791	17463	17463	17788
TCLP Volatiles (UG/L)	NA	NA	NA	NA	NA
SDG	17791	17791	17463	17463	17788
TCLP Semivolatiles (UG/L)	NA	NA	NA	NA	NA
SDG	17791	17791	17463	17463	17788
TCLP Metals (UG/L)					
BARIUM	NA	NA	NA	NA	NA
SDG	17791	17791	17463	17463	17788
TCLP Herbicides (UG/L)	NA	NA	NA	NA	NA
SDG	17791	17791	17463	17463	17788
TCLP Pesticides (UG/L)	NA	NA	NA	NA	NA
SDG	17791	17791	17463	17463	17788
TPH (MG/KG)	160	238	ND	ND	NA

NA Not analyzed
ND Not detected
J Estimate value
U Not detected at detection limit indicated
UJ Not detected at estimated detection limit indicated
R Value rejected during validation
Not applicable data
Value is the average of duplicate sample results

TORPEDO SHOPS GROUNDWATER

	Range(Total)	Frequency(Total)	Range(Diss)	Frequency(Diss)	7GW1D	7GW1D DISS	7GW2D	7GW2D DISS	7GW2S	7GW2S DISS
SDG					17955		18102		17955	
TCL Volatiles (UG/L)										
CARBON DISULFIDE	2	2/14	-	NA	10 U	NA	10 U	NA	10 U	NA
1,1-DICHLOROETHENE	2	1/14	-	NA	10 U	NA	10 U	NA	10 UJ	NA
1,1-DICHLOROETHANE	2-6	2/14	-	NA	10 U	NA	10 U	NA	10 U	NA
CHLOROFORM	4	1/14	-	NA	10 U	NA	10 U	NA	10 U	NA
1,1,1-TRICHLOROETHANE	2-3	3/14	-	NA	10 U	NA	10 U	NA	10 U	NA
TRICHLOROETHENE	1	1/14	-	NA	10 U	NA	10 U	NA	10 U	NA
4-METHYL-2-PENTANONE	21	1/14	-	NA	10 U	NA	10 U	NA	10 U	NA
SDG					17955		18102		17955	
TCL Semivolatiles (UG/L)										
PHENOL	0.8-2	2/14	-	NA	10 U	NA	10 U	NA	10 U	NA
1,3-DICHLOROBENZENE	3*	1/14	-	NA	10 U	NA	10 U	NA	10 U	NA
1,4-DICHLOROBENZENE	2	1/14	-	NA	10 U	NA	10 U	NA	10 U	NA
2-METHYLNAPHTHALENE	9	1/14	-	NA	10 U	NA	10 U	NA	10 U	NA
ACENAPHTHENE	4	1/14	-	NA	10 U	NA	10 U	NA	10 U	NA
DIBENZOFURAN	3	1/14	-	NA	10 U	NA	10 U	NA	10 U	NA
DIETHYLPHTHALATE	1	1/14	-	NA	10 U	NA	10 U	NA	10 U	NA
FLUORENE	5	1/14	-	NA	10 U	NA	10 U	NA	10 U	NA
PHENANTHRENE	6	1/14	-	NA	10 UJ	NA	10 U	NA	10 U	NA
ANTHRACENE	0.8	1/14	-	NA	10 UJ	NA	10 U	NA	10 U	NA
DI-N-BUTYLPHTHALATE	0.5-2	4/14	-	NA	10 UJ	NA	10 U	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	380	1/14	-	NA	10 U	NA	18 U	NA	10 U	NA
BENZOIC ACID	0.7-1	2/14	-	NA	50 U	NA	50 U	NA	50 U	NA
SDG					18045	18045	18119	18102	18045	18045
TAL Metals (UG/L)										
ALUMINUM	254.5*-56,200	7/14	-	0/14	377 J	28.3 U	3450	25.1 U	71.6 U	66.1 U
ANTIMONY	-	0/14	15.7-17.1	3/14	13 U	17.1 J	13 U	13 U	13 U	15.8 J
ARSENIC	2.1-112	7/14	2.6-4.5	2/14	5.6 J	2 U	2.1 J	2 U	4.6 J	4.5 J
BARIUM	10.8-585	12/14	9.3-116	12/14	18.5 J	9.3 U	51 J	13.9	10.4 U	10.1 U
BERYLLIUM	1.5-3.3	3/14	-	0/14	1 U	1 U	1.5 J	2.1 U	1 U	1 U
BORON	77.8-185	6/14	9.6-187	6/14	13.6 U	10.5 U	27.1 U	50 U	11.1 U	9.6
CADMIUM	3	1/14	-	0/14	3 U	3 U	3 U	3 U	3 U	3 U
CALCIUM	6,020-77,700	14/14	5,850-44,800	14/14	9450	8730	10400	9790	6020	5850
CHROMIUM	6.4-104	3/14	-	0/14	4 U	4 U	6.4 J	4 U	4 U	4 U
COBALT	6.2-41.7	4/14	13.6	1/14	5 U	5 U	5 U	5 U	11.7 J	13.6 J
COPPER	7.7-797	5/14	11.7	1/14	30.4	5 U	7.7 J	5 U	5 U	5 U
IRON	550-80,400	10/14	55.9-11,700	8/14	27400	90.8 J	3760	9.4 U	12200	11700
LEAD	2.4-84.1	5/14	-	0/14	9.3	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ
MAGNESIUM	821-29,300	14/14	778-10,300	14/14	821 J	778 J	3010 J	1760	1480 J	1460
MANGANESE	16.6-7,830	14/14	12.2-3,530	14/14	78.2	12.2 J	482	427	441	430
MERCURY	3	1/14	-	0/14	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
NICKEL	24.3-94	2/14	20.2-24.9	3/14	11 UJ	11 UJ	11 U	11 U	11 UJ	11 UJ
POTASSIUM	970-29,100	14/14	1080-8230	14/14	970 J	1080 J	2540 J	1550	1770 J	1620 J
SELENIUM	1.2-18.8	2/14	-	0/14	3 UJ	3 UJ	1 U	1 U	3 UJ	3 UJ
SILVER	5	1/14	-	0/14	2 U	2 U	2 U	2 U	2 U	2 U
SODIUM	3,250-153,000	14/14	3060-153,000	14/14	3780 J	3060 J	8780	8290	3250 J	3240 J
THALLIUM	10-11	2/14	-	0/14	1 UJ	1.3 U	1 UJ	1.2 U	1 UJ	1 UJ
VANADIUM	9.1-114	3/14	-	0/14	4 U	4 U	9.1 J	4 U	4 U	4 U
ZINC	6.4-412	12/14	5.1-77.2	5/14	152	77.2	18.7 J	9.1 U	7.2 J	5.1 J
SDG										
TPH (MG/L)	1.2	1/4			NA	NA	NA	NA	NA	NA

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TORPEDO SHOPS GROUNDWATER

	7GW3D	7GW3D DISS	7GW3S	7GW3S DISS	7GW4S	7GW4S DISS	7GW5D	7GW5D DISS	7GW5S	7GW5S DISS
SDG	18102		17955		17955		18102		18102	
TCL Volatiles (UG/L)										
CARBON DISULFIDE	10 U	NA	2 J	NA	10 U	NA	10 U	NA	10 U	NA
1,1-DICHLOROETHENE	10 U	NA	2 J	NA	10 U	NA	10 U	NA	10 U	NA
1,1-DICHLOROETHANE	10 U	NA	6 J	NA	10 U	NA	10 U	NA	10 U	NA
CHLOROFORM	10 U	NA	4 J	NA	10 U	NA	10 U	NA	10 U	NA
1,1,1-TRICHLOROETHANE	2 J	NA	3 J	NA	10 U	NA	10 U	NA	10 U	NA
TRICHLOROETHENE	10 U	NA	1 J	NA	10 U	NA	10 U	NA	10 U	NA
4-METHYL-2-PENTANONE	10 U	NA	10 U	NA	21	NA	10 U	NA	10 U	NA
SDG	18102		17955		17955		18102		18102	
TCL Semivolatiles (UG/L)										
PHENOL	2 J	NA	10 U	NA	10 U	NA	0.8 J	NA	10 U	NA
1,3-DICHLOROBENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,4-DICHLOROBENZENE	10 U	NA	2 J	NA	10 U	NA	10 U	NA	10 U	NA
2-METHYLNAPHTHALENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
ACENAPHTHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DIBENZOFURAN	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DIETHYLPHTHALATE	1 J	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
FLUORENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
PHENANTHRENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
ANTHRACENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DI-N-BUTYLPHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	68 U	NA	10 U	NA	10 U	NA	10 U	NA	380	NA
BENZOIC ACID	2 J	NA	50 U	NA	50 U	NA	0.7 J	NA	50 U	NA
SDG	18119	18102	18045	18045	18077	18077	18119	18102	18119	18102
TAL Metals (UG/L)										
ALUMINUM	18500	35.6 U	81.6 U	23.9 U	72.1 U	16.1 U	56200	20.4 U	26.3 U	22.3 U
ANTIMONY	13 U	13 U	13 U	13 U	15 U	27.4 U	13 U	15.7	13 U	13 U
ARSENIC	8.9 J	2 U	2 U	2 UJ	112	2 U	10.4 J	2 U	2 U	2 U
BARIUM	256	23.2	41.9 J	41.8 J	62.3	62.3	585	49.5	10.8 J	9.3
BERYLLIUM	2.1 J	1.5 U	1 U	1 U	1 U	1 U	3.3 J	1.90 U	1 U	1 U
BORON	185	187	136	129	110	105	97.6	50 U	20.5 U	50 U
CADMIUM	3 U	3 U	3 U	3 U	2 U	2 U	3	3 U	3 U	3 U
CALCIUM	45300	27400	22200	22100	45100	44800	77700	41000	7250	6790
CHROMIUM	35.2	4 U	4 U	4 U	3 U	3 U	104	4 U	4 U	4 U
COBALT	28.8 J	7.5 U	5 U	5 U	4 UJ	4 UJ	41.7 J	5.7 U	5 U	5 U
COPPER	38.9	5 U	5 U	5 U	6.9 U	6.2 U	797	5 U	5 U	5 U
IRON	19000	35.7 U	992	55.9 J	56.8 U	60.5 U	80400	380	67.5 U	11.6 U
LEAD	4.9 J	2 UJ	2 UJ	2 UJ	2.2 U	2 U	84.1	2 UJ	2 UJ	2 UJ
MAGNESIUM	18200	8900	8540	8490	9870	9760	29300	5080	923 J	890
MANGANESE	1510	808	1030	978	142	147	7830	3530	49.1	43.5
MERCURY	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	3	0.20 U	0.20 U	0.20 U
NICKEL	24.3 J	11 U	11 UJ	11 UJ	19.3 U	10 U	94	21	11 U	11 U
POTASSIUM	11600	4970	3180 J	3380 J	6950	6870	29100	4830	1170 J	1180
SELENIUM	1.0 UJ	1 U	3 U	3 UJ	18.8	3 UJ	1.2 J	1 UJ	1 U	1 U
SILVER	2.0 U	2 U	2 UJ	2 U	2 U	2 U	5 J	2 U	2 U	2 U
SODIUM	111000	112000	76800	77000	142000	141000	19500	14100	5100	4870
THALLIUM	1 UJ	1 UJ	1 UJ	1 UJ	10	10 U	10 UJ	10 UJ	1.3 U	1 U
VANADIUM	57.5	4 U	4 U	4 U	5 U	5 U	114	4 U	4 U	4 U
ZINC	74.2	7.9 U	6.4 J	3 U	67.9	58.7	412	9.2 U	11.5 J	14 U
SDG										
TPH (MG/L)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

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TORPEDO SHOPS GROUNDWATER

	7GW6S	7GW6S DISS	7GW7S	7GW7S DISS	7GW8S	7GW8S DISS	7GW9S	7GW9S DISS	7GW9S-D	7GW9S-D DISS
SDG	18102		18102		17955		17955		17955	
TCL Volatiles (UG/L)										
CARBON DISULFIDE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	2 J	NA
1,1-DICHLOROETHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,1-DICHLOROETHANE	2 J	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
CHLOROFORM	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,1,1-TRICHLOROETHANE	2 J	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
TRICHLOROETHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
4-METHYL-2-PENTANONE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
SDG	18102		18102		17955		17955		17955	
TCL Semivolatiles (UG/L)										
PHENOL	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,3-DICHLOROBENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,4-DICHLOROBENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
2-METHYLNAPHTHALENE	10 U	NA	10 U	NA	9 J	NA	10 U	NA	10 U	NA
ACENAPHTHENE	10 U	NA	10 U	NA	4 J	NA	10 U	NA	10 U	NA
DIBENZOFURAN	10 U	NA	10 U	NA	3 J	NA	10 U	NA	10 U	NA
DIETHYLPHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
FLUORENE	10 U	NA	10 U	NA	5 J	NA	10 U	NA	10 U	NA
PHENANTHRENE	10 U	NA	10 U	NA	6 J	NA	10 U	NA	10 U	NA
ANTHRACENE	10 U	NA	10 U	NA	0.80 J	NA	10 U	NA	10 U	NA
DI-N-BUTYLPHTHALATE	0 6 J	NA	10 U	NA	2 J	NA	10 U	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	62 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZOIC ACID	50 U	NA	50 U	NA	50 U	NA	50 U	NA	50 U	NA
SDG	18119	18102	18119	18102	18011	18011	18011	18011	18011	18011
TAL Metals (UG/L)										
ALUMINUM	956	18 2 U	20 3 U	20 7 U	1880	23.6 U	289	58.4 U	220	20.2 U
ANTIMONY	13 U	13 U	13 U	13 U	15 UJ	15 UJ	15 UJ	15 UJ	15 UJ	15 UJ
ARSENIC	2 2 J	2 6 J	2 UJ	2 UJ	2 U	2 U	2 U	2.1 J	2 U	2 U
BARIUM	61 8 J	55 7	23 2 J	24.7	99.5	92.6	45.60	45.6	49.7	47
BERYLLIUM	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U	1 U
BORON	113	107	39 3 U	50 U	50 UJ	50 UJ	50 UJ	50 UJ	50 UJ	50 UJ
CADMIUM	3 U	3 U	3 U	3 U	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ	2 UJ
CALCIUM	43100	44500	27900	28700	42700	43200	36000	35800	38700	35800
CHROMIUM	4 U	4 U	4 0 U	4 U	3 UJ	3 UJ	3 UJ	3 UJ	3 UJ	3 UJ
COBALT	5 U	6 7 U	6 2 J	5.6 U	10.30 U	11.4 U	4 U	8.6 U	10 U	5.30 U
COPPER	5 U	5 U	11 5 J	11.7	4.50 U	2.6 U	2 U	2 U	3.4 U	2 U
IRON	6170	5510	27 4 U	31.7 U	5540 J	3820 J	1150 J	397 J	748 J	384 J
LEAD	2 UJ	2 UJ	2 7 J	2 UJ	2.4 J	2 U	2 U	2 U	2 U	2 U
MAGNESIUM	10400	10300	3800 J	4010	4690	4250	6520	6570	6650	6530
MANGANESE	1760	1780	35 7	42.90	1160	1210	99.2	92.30	93.6	89.5
MERCURY	0 20 U	0 20 U	0 20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
NICKEL	11 U	11 U	11 U	20.2	10 UJ	24.90 J	10 UJ	10 UJ	10 UJ	10 UJ
POTASSIUM	8790	8230	3820 J	4040	6020	6000	5610	5400	5250	4980
SELENIUM	1 U	1 5 U	1 U	1 U	1 U	1 U	1.1 U	1 U	1 UJ	1 UJ
SILVER	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U	2 U
SODIUM	65700	67800	66300	69900	136000	138000	62200	63400	64600	63800
THALLIUM	1 UJ	10 UJ	1 UJ	1 UJ	10 UJ	1 UJ	10 U	10 U	10 U	10 U
VANADIUM	4 U	4 U	4 U	4 U	5.2 U	5 UJ	8.9 U	5 UJ	5.9 U	5 UJ
ZINC	7.5 J	9.5 U	40.1	43.9	8.3	2 U	2 U	2 U	2 U	2 U
SDG					17955		17955		17955	
TPH (MG/L)	NA	NA	NA	NA	1.2	NA	0.5 U	NA	0.5 U	NA

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TORPEDO SHOPS GROUNDWATER

	7GW9SAVG	7GW9S DISSAVG	7GW10S	7GW10S DISS	7GW11S	7GW11S DISS
SDG			17955		17955	
TCL Volatiles (UG/L)						
CARBON DISULFIDE	2.5 J	NA	10 U	NA	10 U	NA
1,1-DICHLOROETHENE	10 U	NA	10 U	NA	10 U	NA
1,1-DICHLOROETHANE	10 U	NA	10 U	NA	10 U	NA
CHLOROFORM	10 U	NA	10 U	NA	10 U	NA
1,1,1-TRICHLOROETHANE	10 U	NA	10 U	NA	10 U	NA
TRICHLOROETHENE	10 U	NA	10 U	NA	10 U	NA
4-METHYL-2-PENTANONE	10 U	NA	10 U	NA	10 U	NA
SDG			17955		17955	
TCL Semivolatiles (UG/L)						
PHENOL	10 U	NA	10 U	NA	10 U	NA
1,3-DICHLOROBENZENE	3 J	NA	10 U	NA	10 U	NA
1,4-DICHLOROBENZENE	10 U	NA	10 U	NA	10 U	NA
2-METHYLNAPHTHALENE	10 U	NA	10 U	NA	10 U	NA
ACENAPHTHENE	10 U	NA	10 U	NA	10 U	NA
DIBENZOFURAN	10 U	NA	10 U	NA	10 U	NA
DIETHYLPHTHALATE	10 U	NA	10 U	NA	10 U	NA
FLUORENE	10 U	NA	10 U	NA	10 U	NA
PHENANTHRENE	10 U	NA	10 U	NA	10 U	NA
ANTHRACENE	10 U	NA	10 U	NA	10 U	NA
DI-N-BUTYLPHTHALATE	10 U	NA	0.5 J	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	NA	10 U	NA	10 U	NA
BENZOIC ACID	50 U	NA	50 U	NA	50 U	NA
SDG			18011	18011	18077	18077
TAL Metals (UG/L)						
ALUMINUM	254.5	39.3 U	57.9 U	39.1 U	49.5 U	28.2 U
ANTIMONY	15 UJ	15 UJ	15 UJ	15 UJ	15 U	15 U
ARSENIC	2 U	2.05 U	2 U	2 U	2 U	2 U
BARIUM	47.65	46.3	115	116	76.1	74.7
BERYLLIUM	1 U	1 U	1 U	1 U	1 U	1 U
BORON	50 UJ	50 UJ	50 UJ	50 UJ	77.8 J	81.4 J
CADMIUM	2 UJ	2 UJ	2 UJ	2 UJ	2 U	2 U
CALCIUM	36350	35800	25500	25400	39000	39000
CHROMIUM	3 UJ	3 UJ	3 UJ	3 UJ	3 U	3 U
COBALT	7 U	6.95 U	4 U	4 U	4 UJ	4 UJ
COPPER	2.7 U	2 U	2 U	2 U	2.6 U	2 U
IRON	949 J	390.5 J	22.3 U	5.3 U	550	557
LEAD	2 U	2 U	2 U	2 U	2 U	2.2 U
MAGNESIUM	6585	6550	6750	6730	9490	9600
MANGANESE	96.4	90.9	16.6 J	16.6 J	824	841
MERCURY	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
NICKEL	10 UJ	10 UJ	10 UJ	10 UJ	10 U	10 U
POTASSIUM	5430	5190	5300	5530	6930	6900
SELENIUM	1.05 UJ	1 UJ	1 UJ	1 U	3 U	3 U
SILVER	2 U	2 U	2 U	2 U	2 U	2 U
SODIUM	63400	63600	153000	153000	90000	88400
THALLIUM	10 U	10 U	10 U	10 U	11	10 U
VANADIUM	7.4 U	5 UJ	5 UJ	5 UJ	5 U	5 U
ZINC	2 U	2 U	24.2	34.1	5 U	3.2 U
SDG			17955			
TPH (MG/L)	0.5 U	NA	0.5 U	NA	NA	NA

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TORPEDO SHOPS GROUNDWATER (ROUND 2)

	Range (Total)	Frequency (Total)	Range (Diss)	Frequency (Diss)	7GW1D-2	7GW1D-2 DISS	7GW2S-2	7GW2S-2 DISS	7GW2D-2
SDG					19302		19300		19300
TCL Volatiles (UG/L)									
METHYLENE CHLORIDE	1-4	3/14	-	NA	10 U	NA	10 U	NA	1 J
1,1-DICHLOROETHENE	2-3.5*	2/14	-	NA	10 U	NA	10 U	NA	10 U
1,1-DICHLOROETHANE	5.5*-6	2/14	-	NA	10 U	NA	10 U	NA	10 U
2-BUTANONE	10	1/14	-	NA	10 U	NA	10 U	NA	10 U
1,1,1-TRICHLOROETHANE	2-12	3/14	-	NA	10 U	NA	10 U	NA	10 U
CHLOROBENZENE	3	1/14	-	NA	10 U	NA	10 U	NA	10 U
SDG					19302		19300		19300
TCL Semivolatiles (UG/L)									
ACENAPHTHYLENE	5	1/14	-	NA	10 UJ	NA	10 U	NA	10 U
ACENAPHTHENE	2	1/14	-	NA	10 UJ	NA	10 U	NA	10 U
DIBENZOFURAN	1	1/14	-	NA	10 UJ	NA	10 U	NA	10 U
FLUORENE	2	1/14	-	NA	10 UJ	NA	10 U	NA	10 U
DI-N-BUTYL PHTHALATE	0.6	1/14	-	NA	10 UJ	NA	10 U	NA	10 U
BENZOIC ACID	5.3	5/14	-	NA	25 UJ	NA	25 U	NA	25 U
SDG					19302	19302	19300	19300	19300
TAL Metals (UG/L)									
ALUMINUM	105-18400	6/14	-	0/14	563	45.7 U	18500	33.3 U	105
ARSENIC	6.4	1/14	-	0/14	5.0 U	5.0 U	6.4	5.0 U	5.0 U
BARIUM	16.6-347	12/14	18.8-163	10/14	41.1	17.6 U	105	6.0 U	12.3 U
BORON	13.5-164	7/14	30-304	6/14	37.6 U	19.4 U	25.5 U	36.5 U	22.7 U
CADMIUM	3.7-3.8	2/14	3.1	1/14	2.0 U	3.1 J	2.0 U	2.0 U	2.0 U
CALCIUM	[illegible]	14/14	6750-81500	14/14	27600	25700	11800	6250	8880
CHROMIUM	7.1-33.6	5/14	-	0/14	3.0 U	3.0 U	21.6	3.0 U	3.0 U
COBALT	4.4-6.1	5/14	-	0/14	3.0 U	3.0 U	8.8	3.0 U	3.0 U
COPPER	3.3-164	6/14	8.3-67	2/14	32.5 J	2.0 UJ	33.6 J	2.0 UJ	2.0 UJ
IRON	171*-32700	11/14	68.1*-14200	6/14	81800	205	32700	14200	96.7 U
LEAD	1.65*-23	5/14	2.3-8.3	11/14	12.4 U	2.0 U	12.4 U	2.4 J	7.2 U
MAGNESIUM	1080-12800	14/14	1050-11700	14/14	2270	2000	5360	1410	1670
MANGANESE	8.3-2170	14/14	1.8-1430	14/14	308	51.3	704	431	237
MERCURY	0.99	1/14	-	0/14	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
POTASSIUM	2390-11500	11/14	2760-9200	10/14	2810 U	2110 U	5390	2060 U	2300 U
SELENIUM	6.1	1/14	-	0/14	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
SODIUM	5340-88200	14/14	3960-88200	14/14	6830	5570	5340	3960	7830
THALLIUM	2.8-4.0*	2/14	4.4*	2/14	5.8 U	5.0 UJ	5.0 UJ	5.0 UJ	6.8 U
VANADIUM	7.5-39.1	3/14	-	0/14	7.8 U	3.0 U	39.1	3.0 U	3.0 U
ZINC	44.5-280	7/14	34.1-70.9	5/14	280	40.2	47.7	7.5 U	9.3 U
SDG									
TOTAL PETROLEUM HYDROCARBONS (MG/L)	0.7	1/3	-	NA	NA	NA	NA	NA	NA

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TORPEDO SHOPS GROUNDWATER (ROUND 2)

	7GW2D-2 DISS	7GW3S-2	7GW3S-2 DISS	7GW3S-D-2	7GW3S-2 DISS(AVG)	7GW3S-D2DISS	7GW3S-2 DISS(AVG)	7GW3D-2	7GW3D-2 DISS
SDG		**19281**		**19281**				**19281**	
TCL Volatiles (UG/L)									
METHYLENE CHLORIDE	NA	10 U	NA	10 U	10 U	NA	NA	10 U	NA
1,1-DICHLOROETHENE	NA	2 J	NA	10 U	2 J	NA	NA	2 J	NA
1,1-DICHLOROETHANE	NA	8 J	NA	10 U	5.5 J	NA	NA	8 J	NA
2-BUTANONE	NA	10 U	NA	10 U	10 U	NA	NA	10 U	NA
1,1,1-TRICHLOROETHANE	NA	13 J	NA	2 J	2 J	NA	NA	12	NA
CHLOROBENZENE	NA	10 U	NA	10 U	10 U	NA	NA	3 J	NA
SDG		**19281**		**19281**				**19281**	
TCL Semivolatiles (UG/L)									
ACENAPHTHYLENE	NA	10 U	NA	10 U	10 U	NA	NA	10 U	NA
ACENAPHTHENE	NA	10 U	NA	10 U	10 U	NA	NA	10 UJ	NA
DIBENZOFURAN	NA	10 U	NA	10 U	10 U	NA	NA	10 UJ	NA
FLUORENE	NA	10 U	NA	10 U	10 U	NA	NA	10 UJ	NA
DI-N-BUTYL PHTHALATE	NA	10 U	NA	10 U	10 U	NA	NA	10 UJ	NA
BENZOIC ACID	NA	50 U	NA	50 U	50 U	NA	NA	0.6 J	NA
SDG	**19300**	**19281**	**19281**	**19281**		**19281**		**19281**	**19281**
TAL Metals (UG/L)									
ALUMINUM	12.9 U	98.4 U	55.0 U	113 U	105.7 U	63.1 U	59.1 U	2290	45.5 U
ARSENIC	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
BARIUM	10.1 U	43.3	43.3	43.3	43.3	41.3	42.3	51.9	29.4
BORON	28.0 U	138	135	138	138	137	136	184	184
CADMIUM	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
CALCIUM	8510	22800	22600	23100	22950	22000	22300	35000	33700
CHROMIUM	3.0 U	3.6 U	3.0 U	4.3 U	3.95 U	6.1 U	4.5 U	11.3 U	3.0 U
COBALT	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	5.0 U	4.0 U	6.0 U	4.5 U
COPPER	2.0 UJ	2.0 U	2.0 U	2.2 U	2.1 U	5.2 U	3.6 U	15.9	4.7 U
IRON	33.6 U	166	76.8 U	176	171	93.7	66.1 J	3230	51 U
LEAD	5.9	2.3 J	3.1 J	2.0 U	1.65 J	2.1 J	2.6 J	23.0	4.6
MAGNESIUM	1600	8890	8560	9050	8970	8310	8435	12800	11600
MANGANESE	224	1020	1000	1030	1025	978	989	1130	1080
MERCURY	0.20 U	0.20 U	0.20 U	0.20 U	0.2 U	0.20 U	0.2 U	0.20 U	0.20 U
POTASSIUM	1900 U	3370	3280	3690	3530	3810	3445	6520	5170
SELENIUM	5.0 UJ	5.0 UJ	5.0 U	5.0 UJ	5.0 UJ	5.0 UJ	5.0 U	5.0 UJ	5.0 UJ
SODIUM	7480	81900	81300	83400	82650	80900	81100	118000	115000
THALLIUM	6.0 U	5.0 UJ	5.0 UJ	5.5 J	4.0 J	6.4 J	4.45 J	5.0 UJ	5.0 U
VANADIUM	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3 U	7.5	3.0 U
ZINC	8.1 U	10.1 U	20.9 U	14.9 U	12.5 U	12.9 U	16.9 U	76.5	46.2
SDG									
TOTAL PETROLEUM HYDROCARBONS (MG/L)	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA: Not analyzed

ND: Not detected

J: Estimate value

U: Not detected at detection limit indicated

UJ: Not detected at estimated detection limit indicated

R: Value rejected during validation

-: Not applicable

*: Value is the average of duplicate sample results

TORPEDO SHOPS GROUNDWATER (ROUND 2)

	7GW4S-2	7GW4S-2 DISS	7GW5S-2	7GW5S-2 DISS	7GW5D-2	7GW5D-2 DISS	7GW6S-2	7GW6S-2 DISS	7GW7S-2
SDG	19302		19281		19302		19300		19300
TCL Volatiles (UG/L)									
METHYLENE CHLORIDE	10 U	NA	10 U	NA	1 J	NA	10 U	NA	10 U
1,1-DICHLOROETHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
1,1-DICHLOROETHANE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
2-BUTANONE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
1,1,1-TRICHLOROETHANE	10 U	NA	10 U	NA	2 J	NA	10 U	NA	10 U
CHLOROBENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
SDG	19302		19281		19302		19300		19300
TCL Semivolatiles (UG/L)									
ACENAPHTHYLENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
ACENAPHTHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
DIBENZOFURAN	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
FLUORENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
DI-N-BUTYL PHTHALATE	10 U	NA	0.6 J	NA	10 U	NA	10 U	NA	10 U
BENZOIC ACID	25 U	NA	0.5 J	NA	25 U	NA	25 U	NA	25 U
SDG	19302	19302	19281	19281	19302	19302	19300	19300	19300
TAL Metals (UG/L)									
ALUMINUM	70.8 U	38.9 U	59.8 U	37.2 U	16500	55 U	3380	59.5 U	73.5 U
ARSENIC	3.0 U	7.0 U	5.0 U	5.0 U	10.7 U	5.0 U	5.0 U	5.0 U	5.0 U
BARIUM	63.8	60.9	23.5	24.8	247	82.2	83.5	48.5	24.5 U
BORON	220.0 U	204.0	12.5 J	21.3	34.3 U	20	144	149	36.5 U
CADMIUM	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.9 J
CALCIUM	51100	50900	15900	16900	79600	81500	38000	36100	33400
CHROMIUM	3.0 U	3.0 U	4.1 U	4.1 U	22.6	4.8 U	7.1	3.0 U	3.0 U
COBALT	3.0 U	3.0 U	6.8 U	6.2 U	9.1	3.0 U	4.4 J	3.0 U	3.0 U
COPPER	8.6	9.2	6.3 U	7.1 U	164	2.0 U	6.1 J	2.0 UJ	10.2 J
IRON	357	397	566	661	21100	49.9 U	10700	5690	96.3 U
LEAD	2.0 UJ	3.0 J	2.0 U	4.9	19.6	2.0 U	3.7 U	2.0 U	2.0 U
MAGNESIUM	12000	11700	1730	1800	12500	7400	10500	9200	3460
MANGANESE	203	230	683	783	2170	1050	1480	1430	114
MERCURY	0.20 UJ	0.20 UJ	0.20 U	0.20 U	0.99	0.20 U	0.20 U	0.20 U	0.20 U
POTASSIUM	8520	8470	2390	2760	11500	5760	9200	7740	4800
SELENIUM	3.0 U	3.0 U	5.0 UJ	5.0 UJ	6.1	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
SODIUM	146000	143000	8410	8880	22200	22700	68500	67500	52400
THALLIUM	2.0 UJ	2.0 UJ	5.0 UJ	5.0 UJ	2.0 UJ	5.0 U	5.0 UJ	8.0 U	8.1 U
VANADIUM	3.0 U	6.1 U	3.0 U	3.0 U	36.5	3.0 U	12.4 U	3.0 U	3.0 U
ZINC	76.6	70.9	45.2	44.3	117	16.1 U	23.8 U	10.4 U	44.5
SDG									
TOTAL PETROLEUM HYDROCARBONS (MG/L)	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA: Not analyzed

ND: Not detected

J: Estimate value

U: Not detected at detection limit indicated

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TORPEDO SHOPS GROUNDWATER (ROUND 2)

	7GW7S-2 DISS	7GW8S-2	7GW8S-2 DISS	7GW9S-2	7GW9S-2DISS	7GW10S-2	7GW10S-2 DISS	7GW11S-2	7GW11S-2 DISS
SDG		**19302**		**19302**		**19302**		**19302**	
TCL Volatiles (UG/L)									
METHYLENE CHLORIDE	NA	4 J	NA	10 U	NA	10 U	NA	10 U	NA
1,1-DICHLOROETHENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,1-DICHLOROETHANE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
2-BUTANONE	NA	10	NA	10 U	NA	10 U	NA	10 U	NA
1,1,1-TRICHLOROETHANE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
CHLOROBENZENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
SDG		**19302**		**19302**		**19302**		**19302**	
TCL Semivolatiles (UG/L)									
ACENAPHTHYLENE	NA	0.5 J	NA	10 U	NA	10 U	NA	10 U	NA
ACENAPHTHENE	NA	2 J	NA	10 U	NA	10 U	NA	10 U	NA
DIBENZOFURAN	NA	1 J	NA	10 U	NA	10 U	NA	10 U	NA
FLUORENE	NA	2 J	NA	10 U	NA	10 U	NA	10 U	NA
DI-N-BUTYL PHTHALATE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZOIC ACID	NA	25 U	NA	0.5 J	NA	2 J	NA	1 J	NA
SDG	**19300**	**19302**	**19302**	**19302**	**19302**	**19302**	**19302**	**19302**	**19302**
TAL Metals (UG/L)									
ALUMINUM	51.9 U	344 U	63.4 U	99.6 U	67.7 U	90.6 U	65.3 U	44.2 U	51.5 U
ARSENIC	5.0 U	7.4 U	5.1 U	3.0 U	5.0 U	6.9 U	5.0 U	4.3 U	3.0 U
BARIUM	24.2 U	18.8	18.8	50.1	55.2	143	153	76.5	73.0
BORON	37 U	48.4 U	44.1 U	111	79.9	95.1	96.9	120	122
CADMIUM	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.7 J	2.0 U
CALCIUM	33000	9870	9950	39200	42100	31800	34600	40000	41400
CHROMIUM	3.0 U	3.0 U	3.0 U	3.0 U	5.1 U	3.0 U	5.1 U	3.0 U	3.0 U
COBALT	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
COPPER	9.7 J	2.0 U	2.0 U	2.0 U	2.0 U	2.3 J	3.8 U	2.0 U	2.0 U
IRON	67.5 U	752	503	1760	552	76.0 U	39 U	442	228
LEAD	2.0 J	2.0 UJ	5.8 J	2.0 UJ	2.3 J	9.1	7.7	2.3 J	8.3 J
MAGNESIUM	3360	1080	1050	7410	7690	8480	9230	9600	9680
MANGANESE	102	410	413	189	170	8.3	1.8 J	785	753
MERCURY	0.20 U	0.20 UJ	0.20 UJ	0.20 UJ	0.20 U	0.20 UJ	0.20 U	0.20 UJ	0.20 UJ
POTASSIUM	5210	3090 U	2760 U	7910	7900	8250	8720	7730	8130
SELENIUM	5.0 UJ	3.0 U	3.0 U	3.0 U	5.0 UJ	3.0 U	5.0 UJ	3.0 U	3.0 U
SODIUM	50100	54200	54700	82600	88200	194000	212000	74900	71700
THALLIUM	7.7 U	2.0 UJ	2.0 UJ	2.8 J	5.0 U	2.0 UJ	5.0 U	2.0 UJ	4.4 J
VANADIUM	3.0 U	5.6 U	3.2 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.5 U
ZINC	34.1	18.5 U	12.8 U	7.5 U	10.8 U	9.9 U	11.3 U	8.1 U	11.7 U
SDG		**19302**		**19302**		**19302**			
TOTAL PETROLEUM HYDROCARBONS (MG/L)	NA	0.7	NA	0.5 U	NA	0.5 U	NA	NA	NA

NA: Not analyzed

ND: Not detected

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TORPEDO SHOPS SURFACE WATER

	Range	Frequency	7SW1
SDG			17148
TCL Volatiles (UG/L)	-	0/1	10 U
TCL Semivolatiles (UG/L)			
DI-N-BUTYLPHTHALATE	0.6	1/1	0.6 J
TCL Pesticides/PCB (UG/L)	-	0/1	ND
TAL Metals (UG/L)			
BARIUM	18 7	1/1	18 7
CALCIUM	30,800	1/1	30800 J
COPPER	4.4	1/1	4.4
IRON	56 5	1/1	56.5 J
MAGNESIUM	2,650	1/1	2650
MANGANESE	10.5	1/1	10.5
POTASSIUM	3,000	1/1	3000
SODIUM	17,000	1/1	17000
ZINC	34 5	1/1	34 5

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

TORPEDO SHOPS SEDIMENTS

	Range	Frequency	7SD2	7SD3
SDG			17148	17148
TCL Volatiles (UG/KG)				
METHYLENE CHLORIDE	18	1/2	18	14 U
TCL Semivolatiles (UG/KG)				
PHENANTHRENE	68-98	2/2	98 J	68 J
FLUORANTHENE	88-210	2/2	210 J	88 J
PYRENE	81-240	2/2	240 J	81 J
BENZO(A)ANTHRACENE	72-140	2/2	140 J	72 J
CHRYSENE	90-180	2/2	180 J	90 J
BENZO(B)FLUORANTHENE	130	1/2	460 UJ	130 J
BENZO(K)FLUORANTHENE	130	1/2	130 J	470 UJ
BENZO(A)PYRENE	52-100	2/2	100 J	52 J
INDENO(1,2,3-CD)PYRENE	31-71	2/2	71 J	31 J
BENZOIC ACID	56-74	2/2	74 J	56 J
TCL Pesticides/PCB (UG/KG)				
4,4'-DDE	12	1/2	12 J	47 UJ
4,4'-DDD	93	1/2	93 J	47 UJ
TAL Metals (MG/KG)				
ALUMINUM	6,190-8,410	2/2	6190	8410
ANTIMONY	5 0	1/2	5 0 J	4.0 U
ARSENIC	13 6	1/2	1 8 U	13.6
BARIUM	37 4-40 5	2/2	40 5 J	37.4 J
BERYLLIUM	0 35-0 38	2/2	0 35 J	0.38 J
CADMIUM	0 52-0 63	2/2	0 52 J	0.63 J
CALCIUM	1,570-1,930	2/2	1930 J	1570 J
CHROMIUM	11 7-14 1	2/2	11.7	14.1
COBALT	3 7-4 2	2/2	3.7 J	4.2 J
COPPER	16-30 3	2/2	30.3 J	16.0 J
IRON	10,000-11,300	2/2	11300	10000
LEAD	25 4-119	2/2	25.4	119
MAGNESIUM	2,700-3,120	2/2	3120	2700
MANGANESE	156-173	2/2	173	156
MERCURY	0.24	1/2	0.24 J	0.13 U
NICKEL	7.0-7.9	2/2	7.0 J	7.9 J
POTASSIUM	1,330-1,560	2/2	1560 J	1330 J
SODIUM	229-248	2/2	248 J	229 J
VANADIUM	24.3-27.3	2/2	27.3	24.3 J
ZINC	54.5-101	2/2	101 J	54.5 J

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- Not applicable

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APPENDIX D.9

SITE 8 - GOSS COVE LANDFILL

	Range	Frequency	8MW2D-0103	8MW2D-0507	8MW5S-0103	8MW6D-0103	8MW6D-0406	8MW6S-0406	8MW7S-0002	8MW7S-1416
SDG			16703	16703	16829	16780	16780	16780	16780	16780
TCL Volatiles (UG/KG)										
CHLOROMETHANE	4-8	3/24	8 J	4 J	19 U	11 U	12 U	5 J	11 U	12 U
METHYLENE CHLORIDE	32*-38,000	4/24	19 U	17 U	19 U	11 U	10 U	11 U	11 U	12 U
ACETONE	53-23,000	7/24	40 U	63 U	210	25 U	160 U	120 U	41 U	130 U
CARBON DISULFIDE	2-5	3/24	12 U	11 U	19 U	11 U	12 U	11 U	11 U	2 J
1,2-DICHLOROETHENE (TOTAL)	24	1/24	12 U	11 U	19 U	11 U	12 U	11 U	11 U	12 U
2-BUTANONE	28-120	8/24	12 U	28	64	11 U	120 J	62 J	11 U	55 J
TRICHLOROETHENE	1-8	3/24	12 U	11 U	19 U	11 U	12 U	11 U	11 U	12 U
4-METHYL-2-PENTANONE	98*	1/24	12 U	11 U	19 U	11 U	12 UJ	11 U	11 U	12 U
TETRACHLOROETHENE	1-28	9/24	2 J	1 J	19 U	11 U	2 J	11 U	11 U	12 U
TOLUENE	1-15,000	9/24	12 U	11 U	3 J	11 U	12 U	11 U	11 U	12 U
ETHYLBENZENE	1-69,000	10/24	1 J	11 U	19 U	11 U	3 J	11 U	11 U	19 J
STYRENE	4	1/24	12 U	11 U	19 U	11 U	12 UJ	11 U	11 U	12 U
XYLENE (TOTAL)	4-480,000	15/24	12 U	11 U	6 J	11 U	5 J	11 U	11 U	40
SDG			16703	16703	16829	16780	16780	16780	16780	16780
TCL Semivolatiles (UG/KG)										
PHENOL	400-1,600,000	6/24	390 U	370 U	380 U	360 U	390 U	3700 U	360 U	4000 U
2-METHYLPHENOL	29-3,400	3/24	390 U	370 U	380 U	360 U	29 J	3700 U	360 U	4000 U
4-METHYLPHENOL	33-11,000	7/24	33 J	370 U	310 J	360 U	53 J	3700 U	360 U	4000 U
2,4-DIMETHYLPHENOL	140-160	2/24	390 U	370 U	380 U	360 U	390 U	3700 U	360 U	4000 U
NAPHTHALENE	27-99,000	20/24	160 J	110 J	120 J	360 U	140 J	3700 U	86 J	690 J
2-METHYLNAPHTHALENE	29-40,000	20/24	86 J	51 J	49 J	360 U	88 J	3700 U	30 J	380 J
ACENAPHTHYLENE	25-11,000	16/24	160 J	74 J	380 U	360 U	85 J	840 J	360 U	4000 U
ACENAPHTHENE	140-65,000	22/24	550	280 J	310 J	360 U	210 J	700 J	170 J	5000 J
DIBENZOFURAN	75-42,000	22/24	290 J	180 J	170 J	360 U	150 J	580 J	97 J	2900 J
DIETHYLPHTHALATE	22-12,000	5/24	390 U	370 U	380 U	360 U	390 U	3700 U	360 U	4000 U
FLUORENE	170-65,000	23/24	560	320 J	340 J	360 U	340 J	1800 J	200 J	6900 J
PHENANTHRENE	160-190,000	24/24	4200 J	1800	2200	160 J	2000	10000 J	1400	32000 J
ANTHRACENE	43-55,000	23/24	1300	620	630	43 J	470	3500 J	340 J	14000 J
CARBAZOLE	83-35,000	22/24	620	350 J	430	360 U	200 J	880 J	170 J	4700 J
DI-N-BUTYLPHTHALATE	20-190	5/24	390 U	370 U	190 J	360 U	390 U	3700 U	360 U	4000 U
FLUORANTHENE	420-110,000	24/24	5900 J	2000	5000 J	420	2100	15000 J	1400	45000 J
PYRENE	360-77,000	24/24	6200 J	2500	2700	360	2600 J	16000 J	1500	36000 J
BUTYLBENZYLPHTHALATE	28-30	2/24	390 U	370 U	380 U	360 U	390 U	3700 U	360 U	4000 U
BENZO(A)ANTHRACENE	190-490,000	24/24	3200 J	1400	1100	190 J	840	8400 J	840	21000 J
CHRYSENE	200-500,000	24/24	4400 J	1600	1300	200 J	720	9200 J	920	19000 J
BIS(2-ETHYLHEXYL)PHTHALATE	560-31,000	5/24	420 U	370 U	260 U	360 U	660 U	3700 U	360 U	4000 U
DI-N-OCTYL PHTHALATE	20	1/24	390 U	370 U	380 U	360 U	390 U	3700 U	360 U	4000 U
BENZO(B)FLUORANTHENE	180-40,000	24/24	4600 J	1600	2500 J	180 J	1800	7800 J	620	14000 J
BENZO(K)FLUORANTHENE	160-33,000	16/24	2200	910	380 U	160 J	390 U	6500 J	620	12000 J
BENZO(A)PYRENE	150-44,000	24/24	3200 J	1200	1500	150 J	970	6800 J	550	10000 J
INDENO(1,2,3-CD)PYRENE	100-25,000	24/24	2100	780	790	100 J	560	4000 J	350 J	5200 J
DIBENZ(A,H)ANTHRACENE	390-10,000	21/24	1300	410	430	360 U	390 J	1800 J	360 U	4200 J
BENZO(G,H,I)PERYLENE	97-7,500	22/24	840	210 J	220 J	360 U	120 J	820 J	97 J	890 J
BENZOIC ACID	63-420	6/24	63 J	180 J	1800 U	360 UJ	390 U	3700 U	360 U	4000 U

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	BMW8S-0002	BTB4-0.52.5	BTB4-0406	BTB5-1416	BTB5-1416-D	BTB5-1416AVG	BTB6-0002	BTB6-0809	BTB7-0406	BTB8-0.5 2.5
SDG	16780	16780	16780	16780	16780		16780	16780	16829	16829
TCL Volatiles (UG/KG)										
CHLOROMETHANE	30 U	14 U	11 U	1400 U	57 U	728.5 U	11 U	11 U	12 U	11 U
METHYLENE CHLORIDE	30 U	14 U	26 U	1400 U	57 U	728.5 U	22 U	11 U	11 U	11 U
ACETONE	30 U	190 U	220	4400 U	790 U	2595 U	42 U	130 U	30 U	29 U
CARBON DISULFIDE	30 U	14 U	11 U	1400 U	57 U	728.5 U	11 U	11 U	12 U	11 U
1,2-DICHLOROETHENE (TOTAL)	30 U	14 U	11 U	1400 U	57 U	728.5 U	11 U	11 U	12 U	11 U
2-BUTANONE	30 U	36	54	1400 U	57 U	728.5 U	11 U	11 U	12 U	11 U
TRICHLOROETHENE	30 U	14 U	11 U	1400 U	57 U	728.5 U	11 U	11 U	12 U	1 J
4-METHYL-2-PENTANONE	30 UJ	14 UJ	11 UJ	1400 U	57 UJ	728.5 U	11 UJ	11 U	12 U	11 U
TETRACHLOROETHENE	8 J	14 UJ	3 J	1400 U	57 U	728.5 U	1 J	11 U	12 U	1 J
TOLUENE	30 U	14 U	11 U	1400 U	57 U	728.5 U	11 U	11 U	6 J	2 J
ETHYLBENZENE	30 UJ	14 UJ	11 UJ	1400 U	57 U	728.5 U	11 UJ	11 U	19	11 U
STYRENE	4 J	14 UJ	11 UJ	1400 U	57 U	728.5 U	11 UJ	11 U	12 U	11 U
XYLENE (TOTAL)	18 J	9 J	4 J	400 J	57 UJ	214.25 J	11 UJ	11 U	120	11 U
SDG	16780	16780	16780	16780	16780		16780	16780	16829	16829
TCL Semivolatiles (UG/KG)										
PHENOL	20000	3700 U	3600 U	1600000 J	780000 J	1190000 J	3700 U	12000	380 U	350 U
2-METHYLPHENOL	12000 U	3700 U	3600 U	230000 UJ	3400 J	3400 J	3700 U	11000 U	380 U	350 U
4-METHYLPHENOL	12000 U	3700 U	3600 U	230000 U	11000 U	120500 U	3700 U	11000 U	380 U	350 U
2,4-DIMETHYLPHENOL	12000 U	3700 U	3600 U	230000 U	11000 U	120500 U	3700 U	11000 U	380 U	350 U
NAPHTHALENE	6600 J	430 J	2500 J	15000 J	4600 J	9800 J	3700 U	99000	11000	350 U
2-METHYLNAPHTHALENE	4400 J	460 J	720 J	230000 UJ	1600 J	1600 J	3700 U	40000	2300	100 J
ACENAPHTHYLENE	11000 J	2000 J	670 J	230000 UJ	1400 J	1400 J	360 J	1800 J	380 U	60 J
ACENAPHTHENE	4000 J	1300 J	3400 J	230000 UJ	2400 J	2400 J	3700 U	65000	7500	210 J
DIBENZOFURAN	5200 J	1200 J	760 J	230000 UJ	2400 J	2400 J	3700 U	42000	2400	75 J
DIETHYLPHTHALATE	12000 U	190 J	200 J	12000 J	11000 UJ	8750 J	3700 U	11000 U	380 U	350 U
FLUORENE	13000	3300 J	1500 J	12000 J	8200 J	10100 J	230 J	65000	5900	230 J
PHENANTHRENE	72000	20000	16000	84000 J	54000	69000 J	1000 J	190000	25000	1300
ANTHRACENE	18000	7700	5400	16000 J	7000 J	11500 J	440 J	55000	8100	340 J
CARBAZOLE	7200 J	2000 J	12000	230000 UJ	2200 J	2200 J	3700 U	35000 J	2100	260 J
DI-N-BUTYLPHTHALATE	12000 U	3700 U	3600 U	230000 U	11000 U	120500 U	3700 U	11000 U	380 U	350 U
FLUORANTHENE	90000	34000	18000	31000 J	22000	26500 J	2100 J	110000	2700 J	4000 J
PYRENE	77000	22000	38000	230000 UJ	30000	30000 J	990 J	73000	23000	4100 J
BUTYLBENZYLPHTHALATE	12000 U	3700 U	3600 U	230000 U	11000 U	120500 U	3700 U	11000 U	380 U	350 U
BENZO(A)ANTHRACENE	55000	28000	10000	490000 J	14000 J	252000 J	1500 J	26000	10000	1900
CHRYSENE	61000	26000	12000	500000 J	210000 J	355000 J	2200 J	31000	14000	1800
BIS(2-ETHYLHEXYL)PHTHALATE	1600 J	3700 U	3600 U	230000 U	11000 U	120500 U	3700 U	1800 J	480 U	150 U
DI-N-OCTYL PHTHALATE	12000 U	3700 U	3600 U	230000 U	11000 U	120500 U	3700 U	11000 U	380 U	350 UJ
BENZO(B)FLUORANTHENE	40000	28000	11000	230000 UJ	10000 J	10000 J	1500 J	11000 J	9200	2300 J
BENZO(K)FLUORANTHENE	33000	20000	9100	230000 UJ	6200 J	6200 J	1500 J	11000 J	6500 J	2400 J
BENZO(A)PYRENE	44000	8100	9300	230000 UJ	7400 J	7400 J	420 J	8500 J	5200 J	2100 J
INDENO(1,2,3-CD)PYRENE	25000	6000	4900	230000 UJ	3500 J	3500 J	450 J	3500 J	2300 J	1000 J
DIBENZ(A,H)ANTHRACENE	10000 J	5600	1600 J	230000 UJ	1900 J	1900 J	450 J	1800 J	1100 J	460 J
BENZO(G,H,I)PERYLENE	7500 J	480 J	700 J	230000 UJ	1300 J	1300 J	3700 U	880 J	460	220 J
BENZOIC ACID	12000 U	3700 U	3600 U	230000 U	11000 U	120500 U	3700 U	11000 U	1900 U	1700 UJ

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	8TB8-1012	8TB9-0406	8TB10-1820	8TB11-0002	8TB12-0507	8TB13-0406	8TB14-1214	8TB14-1214-D	8TB14-1214AV	8TB15-1113
SDG	16829	16829	16829	16829	16829	16829	16829	16829		16829
TCL Volatiles (UG/KG)										
CHLOROMETHANE	28000 U	60 U	12 U	11 U	1300 U	12 U	12 U	62 U	37 U	11 U
METHYLENE CHLORIDE	38000	58 J	3 U	14 U	1800	14 U	14 U	57 J	32 J	10 U
ACETONE	23000 J	300	53	33 U	1300 U	14 U	170	160	165	65
CARBON DISULFIDE	28000 U	60 U	3 J	11 U	1300 U	12 U	5 J	62 U	5 J	11 U
1,2-DICHLOROETHENE (TOTAL)	28000 U	24 J	12 U	11 U	1300 U	12 U	12 U	62 U	37 U	11 U
2-BUTANONE	28000 U	60 U	12 U	11 U	1300 U	12 U	49	62 U	40 J	11 U
TRICHLOROETHENE	28000 U	8 J	12 U	11 U	1300 U	1 J	12 U	62 U	37 U	11 U
4-METHYL-2-PENTANONE	28000 U	60 U	12 U	11 U	1300 U	12 U	12 U	190	98 J	11 U
TETRACHLOROETHENE	28000 U	60 U	12 U	2 J	1300 U	28	12 U	62 U	37 U	11 U
TOLUENE	15000 J	11 J	2 J	2 J	1300 U	1 J	4 J	10 J	7 J	11 U
ETHYLBENZENE	69000	30 J	81	2 J	3300	12 U	34	72	53	11 U
STYRENE	28000 U	60 U	12 U	11 U	1300 U	12 U	12 U	62 U	37 U	11 U
XYLENE (TOTAL)	480000	490	140	8 J	25000	8 J	140	270	205	11 U
SDG	16829	16829	16829	16829	16829	16829	16829	16829		16829
TCL Semivolatiles (UG/KG)										
PHENOL	2900 J	390 U	410 U	370 U	1100	400	390 U	4100 U	2245 U	380 U
2-METHYLPHENOL	7800 U	390 U	410 U	370 U	570	400 U	390 U	4100 U	2245 U	380 U
4-METHYLPHENOL	11000	390 U	170 J	370 U	2200	400 U	390 U	4100 U	2245 U	130 J
2,4-DIMETHYLPHENOL	7800 U	390 U	160 J	370 U	140 J	400 U	390 U	4100 U	2245 U	380 U
NAPHTHALENE	5200 J	3000	590	54 J	51 J	27 J	5200	4500	4850	190 J
2-METHYLNAPHTHALENE	1200 J	900	85 J	370 U	29 J	97 J	4200 J	5400	4800 J	120 J
ACENAPHTHYLENE	7800 U	110 J	410 UJ	25 J	29 J	75 J	280 J	4100 U	280 J	380 U
ACENAPHTHENE	6900 J	1100	280 J	160 J	140 J	210 J	9600	10000	9800	170 J
DIBENZOFURAN	2600 J	750	240 J	88 J	100 J	140 J	8600	8300	7450	140 J
DIETHYLPHTHALATE	7800 U	6500 J	410 UJ	22 J	350 U	400 U	390 U	4100 U	2245 U	380 U
FLUORENE	6400 J	1800	380 J	180 J	210 J	340 J	9800	8400	9100	170 J
PHENANTHRENE	46000	11000	160 J	1800	1500	1200	24000 J	30000	27000 J	1400 J
ANTHRACENE	17000	3300 J	1700	370 U	440	420	7100 J	4700	5900 J	520 J
CARBAZOLE	6600 J	950 J	220 J	230 J	140 J	83 J	2500 J	2700 J	2600 J	180 J
DI-N-BUTYLPHTHALATE	7800 U	390 U	410 U	42 J	46 J	20 J	38 J	4100 U	38 J	380 UJ
FLUORANTHENE	88000 J	22000 J	1900 J	2800	2200	1300	20000	22000	21000	2100 J
PYRENE	69000 J	12000 J	3100	3600	2700 J	2300 J	19000	19000	19000	4100
BUTYLBENZYLPHTHALATE	7800 U	390 UJ	410 U	30 J	350 UJ	28 J	390 UJ	4100 U	2245 U	380 UJ
BENZO(A)ANTHRACENE	44000	6400	510	2600	1600 J	1000 J	7800	7100	7450	1600 J
CHRYSENE	56000	8300	1500	2800	1800 J	1400 J	8400	6200	7300	2300 J
BIS(2-ETHYLHEXYL)PHTHALATE	7800 U	31000	620	220 U	270 U	380 U	850 J	560 J	705 J	270 U
DI-N-OCTYL PHTHALATE	7800 U	390 UJ	410 U	20 J	350 UJ	400 UJ	390 UJ	4100 U	2245 U	380 UJ
BENZO(B)FLUORANTHENE	32000	6200	1200	2800	2200 J	1900 J	7800 J	7800	7800 J	3000 J
BENZO(K)FLUORANTHENE	24000	4900	410 U	370 UJ	350 UJ	400 UJ	390 UJ	4100 U	2245 U	380 UJ
BENZO(A)PYRENE	18000	4500	2300	2300 J	1500 J	1200 J	5300 J	5000	5150 J	1800 J
INDENO(1,2,3-CD)PYRENE	6100 J	2400 J	600	1300 J	980 J	630 J	1900 J	2800 J	2350 J	920 J
DIBENZ(A,H)ANTHRACENE	5200 J	1400 J	410 U	770 J	580 J	430 J	1300 J	1800 J	1550 J	690 J
BENZO(G,H,I)PERYLENE	850 J	570 J	370 J	1300 J	940 J	630 J	1800 J	2600 J	2200 J	720 J
BENZOIC ACID	38100 U	1900 UJ	2000 U	110 J	420 J	110 J	1900 UJ	20000 U	10950 U	320 J

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GOSS COVE SOIL

	Range	Frequency	8MW2D-0103	8MW2D-0507	8MW5S-0103	8MW6D-0103	8MW6D-0406	8MW6S-0406	8MW7S-0002	8MW7S-1416
SDG			16703	16703	16829	16780	16780	16780	16780	16780
TCL Pesticides/PCB (UG/KG)										
ALPHA-BHC	2 1-3 4	2/24	20 U	19 U	19 U	19 U	20 U	19 U	19 U	21 U
GAMMA-BHC (LINDANE)	3-3 3	2/24	20 U	19 U	19 U	19 UJ	20 UJ	19 UJ	19 UJ	21 UJ
HEPTACHLOR	2-16 6*	11/24	20 U	19 U	19 U	2 7 J	20 U	19 U	19 U	21 U
ALDRIN	7 4-62	4/24	20 U	19 U	19 U	8 1 J	20 U	19 U	19 U	21 U
HEPTACHLOR EPOXIDE	3 2-92	5/24	20 U	19 U	19 U	19 U	20 U	19 U	19 U	21 U
DIELDRIN	4 2-130	7/24	39 U	37 U	37 U	10 J	10 J	5.1 J	4.2 J	19 J
4,4'-DDE	4 1-1200	17/24	39 U	37 U	7 J	10 J	7.1 J	5.4 J	6 J	39 J
ENDRIN	13-1450*	18/24	39 U	37 U	37 U	13 J	17 J	20 J	18 J	43 J
ENDOSULFAN II	7 4-280	7/24	39 U	37 U	37 U	19 J	8.6 J	9.7 J	7.4 J	17 J
4,4'-DDD	5 2-375*	15/24	39 U	37 U	67 J	35 J	13 J	21 J	12 J	38 J
ENDOSULFAN SULFATE	8-334 5*	4/24	39 U	37 U	37 U	8 J	39 U	37 U	36 U	40 U
4,4'-DDT	5 8-709 25*	20/24	39 U	37 U	5 8 J	32 J	42 J	13 J	36 J	37 J
METHOXYCHLOR	52-547 5*	4/24	200 U	190 U	190 U	190 U	200 U	190 U	190 U	52 J
ENDRIN KETONE	5-430	8/24	39 U	37 U	37 U	36 U	5 J	11 J	36 U	40 U
ENDRIN ALDEHYDE	4 4-547 5*	12/24	39 U	37 U	37 U	22 J	12 J	14 J	7.5 J	38 J
ALPHA-CHLORDANE	2 1-8 3	5/24	20 U	19 U	19 U	6 4 J	8.2 J	3.7 J	8.3 J	21 U
GAMMA-CHLORDANE	3-87 3*	9/24	20 U	19 U	19 U	3 J	8.8 J	6 J	6.7 J	17 J
AROCLOR-1248	17000*	1/24	390 U	370 U	370 U	360 U	390 U	370 U	360 U	400 U
AROCLOR-1254	98 0-29 000	8/24	130 J	370 U	370 U	360 U	390 U	370 U	360 U	1100 J
AROCLOR-1260	180 500	4/24	390 U	370 U	370 U	500 J	260 J	180 J	180 J	400 U
SDG			16703	16703	16829	16780	16780	16780	16780	16780
TAL Metals (MG/KG)										
ALUMINUM	4 540 12 900	24/24	9080 J	8410 J	10800	9000	11700	7350	8640	5880
ANTIMONY	5 2 43 3	5/19	41 8	12 3 U	R	4 2 U	42 J	3 9 U	4.3 U	43 3 J
ARSENIC	1 4 25 3	24/24	13 2	1 7	25 3	2 5	15.4	3.0	3.1	6.3
BARIUM	45 8 3252 5*	24/24	197	72 7	148	57 5	442	73.6	61.2	132
BERYLLIUM	0 29 4 2	13/24	4 2	0 38	0 76	0 35 U	1.3 J	0.42 U	0.49 U	0.30 U
BORON	11 5 25 4	11/16	R	13 6 J	R	12 4	R	13.9	14.6	R
CADMIUM	0 51-4 7	9/21	1 3 U	0 91 U	0 45 U	0 52 J	4 7 J	0.51 J	0.44 U	R
CALCIUM	1,360-14 400	24/24	6280	2090	2840	2130	8100	3720	1770	11500
CHROMIUM	8 8-298	24/24	80 6 J	61 1 J	89 J	17 1	84.7	17	21.2	63.0
COBALT	3 5 73 1	24/24	41 5	8	21 6	8 1	73.1	6 5	7.4	8.6
COPPER	26 4 3 980	24/24	1260	258	1390	38 6	1260	126	192	706
IRON	8 220-139 000	24/24	42200 J	14400 J	24600 J	14900	39300	13300	13300	59600
LEAD	28 8-3 540	24/24	895 J	100 J	513 J	43 5	960	163	170	2430
MAGNESIUM	1 710 4720	24/24	2430	2290	3020	3960	3460	2480	3620	3380
MANGANESE	131 5* 847	24/24	388 J	160 J	177 J	268	444	141	217	468
MERCURY	0 1* 63 6	23/24	3 1	1	63 6	0 11 U	1 1	0.26	0.54	0.32
NICKEL	3 7-183	24/24	108	20 2	35 0	14 5	183	19.3	17.7	62 4
POTASSIUM	705-2,900	24/24	1260	1500	2470	2430	2160	1390	2150	1000
SELENIUM	0 46-1 2	2/24	0 48 UJ	0 45 UJ	0 45 UJ	0 44 UJ	1.2 J	0.48 J	0.44 UJ	0 49 UJ
SILVER	0 51-6 5	14/24	4 7	0 64 U	1 6	0 44 U	6.1	0.51 J	0.44 U	4 1
SODIUM	95 6-1,660	12/22	534 J	332	359 J	344 U	1660 J	372 U	326 U	648 U
THALLIUM	0 23-0 30	2/24	0 71 U	0.68 U	0.22 U	0.22 U	0.23 J	0.22 U	0.22 U	0.25 UJ
VANADIUM	12 5-45 3	24/24	23 3 J	19 9	36 4 J	30 3	45.3	22.8	24.2	19.0
ZINC	41 0-5,550	24/24	5550	327	598 J	41	2980	180	241	872

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	8MW8S-0002	8TB4-0.52.5	8TB4-0406	8TB5-1416	8TB5-1416-D	8TB5-1416AVG	8TB6-0002	8TB6-0809	8TB7-0406	8TB8-0.5 2.5
SDG	16780	16780	16780	16780	16780		16780	16780	16829	16829
TCL Pesticides/PCB (UG/KG)										
ALPHA-BHC	20 U	19 U	19 U	19 U	20 U	19.5 U	19 U	19 U	20 U	18 U
GAMMA-BHC (LINDANE)	3 3 J	19 UJ	19 UJ	19 UJ	20 UJ	19.5 UJ	19 UJ	19 UJ	20 U	18 U
HEPTACHLOR	4 7 J	19 U	19 U	19 U	20 U	19.5 U	19 U	19 U	2.8 J	18 U
ALDRIN	8 7 J	19 U	19 U	19 U	20 U	19.5 U	19 U	62 J	7.4 J	18 U
HEPTACHLOR EPOXIDE	17 J	19 U	19 U	19 U	20 U	19.5 U	19 U	92 J	4.1 J	18 U
DIELDRIN	39 U	37 U	36 U	37 U	38 U	37.5 U	16 J	130 J	38 U	35 U
4,4'-DDE	8 1 J	37 U	5 7 J	37 U	38 U	37.5 U	7.4 J	270 J	14 J	35 U
ENDRIN	180 J	34 J	41 J	1400 J	1500 J	1450 J	20 J	800 J	270 J	13 J
ENDOSULFAN II	39 U	37 U	36 U	280 J	180 J	230 J	37 U	36 U	38 U	35 U
4,4'-DDD	39 U	37 U	36 U	330 J	420 J	375 J	37 U	170 J	38 U	35 U
ENDOSULFAN SULFATE	37 J	37 U	36 U	650 J	38 UJ	334.5 J	37 U	36 U	38 U	35 U
4,4'-DDT	120 J	37 U	35 J	37 UJ	1400 J	709.25 J	40 J	450 J	200	10 J
METHOXYCHLOR	200 U	190 U	190 U	190 UJ	1000 J	547.5 J	190 U	190 J	320 J	180 U
ENDRIN KETONE	78 J	17 J	36 U	37 U	38 U	37.5 U	13 J	430 J	62 J	35 U
ENDRIN ALDEHYDE	39 U	37 U	31 J	1000	38 UJ	509.5 J	37 U	36 U	38 U	35 U
ALPHA-CHLORDANE	20 U	19 U	19 U	19 U	20 U	19 5 U	19 U	19 U	2.1 J	18 U
GAMMA-CHLORDANE	20 U	19 U	19 U	19 U	20 U	19 5 U	4.6 J	19 U	20 U	18 U
AROCLOR-1248	390 U	370 U	360 U	19000 J	15000 J	17000 J	370 U	360 U	380 U	350 U
AROCLOR-1254	390 U	370 U	360 U	25000 J	33000 J	29000 J	370 U	360 U	380 U	96 J
AROCLOR-1260	390 U	370 U	360 U	370 U	380 U	375 U	370 U	360 U	380 U	350 U
SDG	16780	16780	16780	16780	16780		16780	16780	16829	16829
TAL Metals (MG/KG)										
ALUMINUM	8180	7640	7770	6220	6480	6350	5850	12900	8990	9120
ANTIMONY	4 2 U	6 9 U	5 3 U	4 1 U	5 2	3 63 J	5.9 U	5.2 U	R	3 8 UJ
ARSENIC	2 6	5 2	4 0	2 5	2 5	2 5	1.4	4.4	16.6	3.3 J
BARIUM	45 8	75 5	74 2	885 J	5620 J	3252 5 J	46.0	93.5	164	72 4
BERYLLIUM	0 33 U	0 54 U	0 55 U	0 28 U	0 28 U	0 28 U	0.26 U	0.58 U	0.66	0.55 J
BORON	11 5 U	11 5	11 6	11 4 U	11.5 U	11.45 U	11.1 U	11 7	R	15.3 J
CADMIUM	0 46 U	0 56 J	0 51 J	0 46 U	0 46 U	0 46 U	0.59 J	0 77 J	R	0.42 U
CALCIUM	1690	5660	4080	9490	10100	9795	1360	5980	4820	3200
CHROMIUM	10 1	21 1	20 6	12	11.8	11.9	8.8	18 7	80.1 J	22 4 J
COBALT	3 5	7 9	9 5	4 8 J	9.9 J	7 35 J	3.8	6 9	19.5	8.2
COPPER	37 4	227	250	55 9	65.0	60 45	26.4	227	652	185
IRON	8220	12200	12600	9270	8890	9080	12100	15300	52300 J	14800 J
LEAD	38 8	156	125	144	680	412	28.8	133	524 J	146 J
MAGNESIUM	2300	2160	2430	1980	2150	2065	3080	3410	3300	4720
MANGANESE	154	159	182	137	126	131 5	262	234	489 J	239 J
MERCURY	0 27	1 7	1 1	0 11 U	0.15 J	0 1 J	0.16	0.85	9.0	1.2
NICKEL	8 3	16 3	15 5	8 1	9.2	8 65	3.7 J	15.6	58	20.7
POTASSIUM	1230	1210	1330	1210	1260	1235	2900	1810	1660	2160
SELENIUM	0 46 UJ	0 44 UJ	0 44 UJ	0 46 UJ	0.46 UJ	0 46 UJ	0.44 UJ	0.46 UJ	0.46 UJ	0.42 UJ
SILVER	0 46 U	0 44 U	0 44 U	0 46 U	0.46 U	0 46 U	0.44 U	0.46 U	1.6	0.77
SODIUM	272 U	341 U	316 U	413 U	547 U	480 U	275 U	239 U	R	176
THALLIUM	0 23 U	0 22 U	0 22 U	0 23 U	0.23 U	0.23 U	0.22 U	0.23 U	0.23 U	0.3
VANADIUM	18 5	21 8	25 1	20 3	18.2	19.25	15.6	31.7	30.4 J	28.1
ZINC	50 6	236	274	74 7 J	139 J	106.85 J	78.1	262	1970 J	277 J

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GOSS COVE SOIL

	8TB8-1012	8TB9-0406	8TB10-1820	8TB11-0002	8TB12-0507	8TB13-0406	8TB14-1214	8TB14-1214-D	8TB14-1214AVG	8TB15-1113
SDG	16829	16829	16829	16829	16829	16829	16829	16829		16829
TCL Pesticides/PCB (UG/KG)										
ALPHA-BHC	3.4 J	20 U	21 U	19 U	18 U	20 U	2.1 J	21 U	2.1 J	20 U
GAMMA-BHC (LINDANE)	20 U	20 U	21 U	3 J	18 U	20 U	20 U	21 U	20.5 U	20 U
HEPTACHLOR	8 J	26 J	2.9 J	3.7 J	3.5 J	2.7 J	30 J	3.2 J	16.6 J	2 J
ALDRIN	20 U	20 U	21 U	19 U	18 U	20 U	20 U	21 U	20.5 U	20 U
HEPTACHLOR EPOXIDE	38 J	20 U	21 U	3.2 J	18 U	20 U	20 U	21 U	20.5 U	20 U
DIELDRIN	39 U	39 U	41 U	37 U	35 U	40 U	39 U	41 U	40 U	38 U
4,4'-DDE	80	39 J	20 J	37 U	5.9 J	40 U	1200	36 J	618 J	4.1 J
ENDRIN	47 J	39 U	41 U	66 J	35 U	40 U	170 J	4.5 J	87.25 J	38 U
ENDOSULFAN II	39 U	39 U	41 U	37 U	35 U	40 U	39 U	41 U	40 U	38 U
4,4'-DDD	110 J	43 J	29 J	5.2 J	29 J	40 U	110 J	23 J	66.5 J	27 J
ENDOSULFAN SULFATE	39 U	39 U	41 U	18 J	35 U	40 U	39 U	41 U	40 U	38 U
4,4'-DDT	170	39 U	27 J	37 J	16 J	11 J	910 J	44 J	477 J	15 J
METHOXYCHLOR	200 U	200 U	210 U	190 U	180 U	200 U	200 U	210 U	205 U	200 U
ENDRIN KETONE	39 U	39 U	41 U	81 J	35 U	40 U	39 U	41 U	40 U	38 U
ENDRIN ALDEHYDE	39 U	39 U	13 J	37 U	4.4 J	4.7 J	230 J	30 J	130 J	6.5 J
ALPHA CHLORDANE	20 U	20 U	21 U	19 U	18 U	20 U	20 U	21 U	20.5 U	20 U
GAMMA CHLORDANE	20 U	20 U	3.5 J	19 U	18 U	20 U	170 J	4.6 J	87.3 J	4.5 J
AROCLOR 1248	390 U	390 U	410 U	370 U	350 U	400 U	390 U	410 U	400 U	380 U
AROCLOR 1254	1800	390 J	210 J	370 U	350 U	400 U	27000	1100	14050	380 U
AROCLOR 1260	390 U	390 U	410 U	370 U	350 U	400 U	390 U	410 U	400 U	380 U
SDG	16829	16829	16829	16829	16829	16829	16829	16829		16829
TAL Metals (MG/KG)										
ALUMINUM	[illegible]	10700	6540	8460	9080	8980	5370	3880	4615	9090
ANTIMONY	R	24.3 J	R	4.1 UJ	3.9 UJ	4.3 UJ	R	5.2 U	5.2 U	R
ARSENIC	[illegible] J	12.6	6.9 J	9.0 J	4.5 J	3.0 J	8.1 J	4.3 J	6.2 J	5.3 J
BARIUM	190	70.1	147	90.5	73.8	50.8	176	75.0	125.5	122
BERYLLIUM	0.24 U	0.5 J	0.70 J	0.55 J	0.33 J	0.51 J	1.6	0.94	1.27	0.47 J
BORON	R	R	R	11.8 J	14.3 J	11.8 UJ	R	25.4 J	25.4 J	R
CADMIUM	0.48 U	3.6 J	R	0.48 U	0.84 J	0.47 UJ	0.49 UJ	0.48 UJ	0.49 UJ	0.47 UJ
CALCIUM	14100	14400	8660	1750	1790	2490	12300	11400	11850	2660
CHROMIUM	88.8 J	298 J	41.4 J	34.9 J	22.4 J	14.4 J	46.8 J	21.6 J	34.2 J	30.6 J
COBALT	8.9	12.9	7.8	7.5	6.1	6.4	25.1	13.6	19.35	7.2
COPPER	1190	3630	730	330	3980	139	886	714	800	292
IRON	139000 J	49400 J	40000 J	13000 J	13500 J	13700 J	46300 J	19000 J	32650 J	23600 J
LEAD	1790 J	3540 J	657 J	162 J	298 J	50.5 J	804 J	321 J	562.5 J	268 J
MAGNESIUM	4120	4530	3450	3360	1710	3160	5030	2380	3705	3230
MANGANESE	847 J	771 J	269 J	151 J	232 J	214 J	461 J	220 J	340.5 J	363 J
MERCURY	2.1	1.6	5.5	12.1	5.1	0.61	0.98	0.87	0.92	7.8
NICKEL	129	56.5	86.6	22.5	55.9	13.8	75.3	102	88.65	24.8
POTASSIUM	705	1790	1130	1120	1080	1340	1170	615	892.5	2220
SELENIUM	0.48 UJ	0.48 UJ	0.5 UJ	0.46 UJ	0.44 UJ	0.47 UJ	0.49 UJ	0.48 UJ	0.49 UJ	0.47 UJ
SILVER	3.6	6.5	2.3	0.67	1.2	0.47 U	3.0	1.3	2.15	3.5
SODIUM	R	812 J	577 J	120	235	95.6	922 J	372	647 J	576 J
THALLIUM	0.24 U	0.24 U	0.25 UJ	0.23 U	0.22 U	0.24 U	0.25 U	0.24 U	0.25 U	0.24 U
VANADIUM	12.5 J	24.2	35.6 J	30.5	16.1	22.4	28.4 J	34.6	31.5 J	20.1 J
ZINC	2910 J	2850 J	1740 J	299 J	780 J	209 J	2300 J	930 J	1615 J	480 J

NA Not analyzed
ND Not detected
J Estimate value
U Not detected at detection limit indicated
UJ Not detected at estimated detection limit indicated
R Value rejected during validation
- Not applicable
* Value is the average of duplicate sample results

	Range	Frequency	8MW2D-0103	8MW2D-0507	8MW5S-0103	8MW6D-0103	8MW6D-0406	8MW6S-0406	8MW7S-0002	8MW7S-1416
SDG			16703	16703	16829	16780	16780	16780	16780	16780
Dioxins (UG/KG)										
OCDD	2 195*	1/2	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Metals (UG/L)										
BARIUM	164-2,670	9/9	709	NA	494	NA	2210	NA	NA	1480
CADMIUM	5 2-109	4/9	13 0	NA	5.8	NA	109	NA	NA	2.0 U
LEAD	123-2,660	4/9	123 J	NA	631 J	NA	2330	NA	NA	50.0 U
MERCURY	-	0/9	R	NA	0.2 U	NA	2 U	NA	NA	2.0 U
SELENIUM	100-117	2/9	100 J	NA	85 UJ	NA	100 U	NA	NA	100 U
SILVER	8 6-24 6	2/9	3 0 UJ	NA	3 0 UJ	NA	2.0 U	NA	NA	2.0 U

NA Not analyzed

ND Not detected

J Estimate value

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R Value rejected during validation

Not duplicate data

Value is the average of duplicate sample results

	8MW8S-0002	8TB4-0.52.5	8TB4-0406	8TB5-1416	8TB5-1416-D	8TB5-1416AVG	8TB6-0002	8TB6-0809	8TB7-0406	8TB8-0.5 2.5
SDG	16780	16780	16780	16780	16780		16780	16780	16829	16829
Dioxins (UG/KG)										
OCDD	NA	NA	NA	1.55 J	2.84 J	2.195 J	NA	0.66 UJ	NA	NA
TCLP Metals (UG/L)										
BARIUM	NA	NA	449	667	552	609.5 J	NA	164	NA	NA
CADMIUM	NA	NA	2.0 U	2.0 U	2.0 U	2.0 U	NA	2.0 U	NA	NA
LEAD	NA	NA	50.0 U	50.0 U	50.0 U	50.0 U	NA	50.0 U	NA	NA
MERCURY	NA	NA	2.0 U	2.0 U	2.0 U	2.0 U	NA	2.0 U	NA	NA
SELENIUM	NA	NA	100 U	100 U	100 U	100 U	NA	100 U	NA	NA
SILVER	NA	NA	2.0 U	2.0 U	2.0 U	2.0 U	NA	2.0 U	NA	NA

NA Not analyzed

ND Not detected

J Estimate value

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UJ Not detected at estimated detection limit indicated

R Value rejected during validation

Not applicable

Value is the average of duplicate sample results

	8TB8-1012	8TB9-0406	8TB10-1820	8TB11-0002	8TB12-0507	8TB13-0406	8TB14-1214	8TB14-1214-D	8TB14-1214AVG	8TB15-1113
SDG	16829	16829	16829	16829	16829	16829	16829	16829		16829
Dioxins (UG/KG)										
OCDD	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
TCLP Metals (UG/L)										
BARIUM	2670	2650	NA	NA	NA	NA	NA	NA	NA	NA
CADMIUM	2 0 U	5 2	NA	NA	NA	NA	NA	NA	NA	NA
LEAD	35 0 UJ	2660 J	NA	NA	NA	NA	NA	NA	NA	NA
MERCURY	0 2 U	0 2 U	NA	NA	NA	NA	NA	NA	NA	NA
SELENIUM	85 UJ	117	NA	NA	NA	NA	NA	NA	NA	NA
SILVER	24 6 J	8 6 J	NA	NA	NA	NA	NA	NA	NA	NA

NA Not analyzed

ND Not detected

J Estimate value

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UJ Not detected at estimated detection limit indicated

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- Not applicable

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GOSS COVE GROUNDWATER

	Range(Total)	Frequency(Total)	Range(Diss)	Frequency(Diss)	8GW1S	8GW1S DISS	8GW2D	8GW2D DISS	8GW2S	8GW2S DISS
SDG					17656	17656	17656	17656	17148	17148
TCL Volatiles (UG/L)										
ACETONE	220	1/11	-	NA	16 U	NA	21 U	NA	16 U	NA
CARBON DISULFIDE	3	1/11	-	NA	10 U	NA	10 U	NA	10 U	NA
1,2-DICHLOROETHENE (TOTAL)	2-4	2/11	-	NA	10 U	NA	4 J	NA	10 U	NA
CHLOROFORM	18	1/11	-	NA	10 U	NA	10 U	NA	10 U	NA
BROMODICHLOROMETHANE	6	1/11	-	NA	10 U	NA	10 U	NA	10 U	NA
TRICHLOROETHENE	8	1/11	-	NA	10 U	NA	8 J	NA	10 U	NA
BENZENE	1-5	3/11	-	NA	10 U	NA	10 U	NA	2 J	NA
TETRACHLOROETHENE	1-3,700	9/11	-	NA	10	NA	5 J	NA	3 J	NA
TOLUENE	130	1/11	-	NA	10 U	NA	10 U	NA	11 U	NA
ETHYLBENZENE	2-110	5/11	-	NA	10 U	NA	2 J	NA	73	NA
XYLENE (TOTAL)	2-520	7/11	-	NA	10 U	NA	2 J	NA	180	NA
SDG					17656	17656	17656	17656	17148	17148
TCL Semivolatiles (UG/L)										
PHENOL	0.8-13	4/11	-	NA	10 U	NA	10 U	NA	13	NA
2-METHYLPHENOL	14-130	2/11	-	NA	10 U	NA	10 U	NA	14	NA
4-METHYLPHENOL	100-220	2/11	-	NA	10 U	NA	10 U	NA	100 J	NA
2,4-DIMETHYLPHENOL	0.6-320	6/11	-	NA	1 J	NA	10 U	NA	87	NA
NAPHTHALENE	2-42	6/11	-	NA	2 J	NA	3 J	NA	20	NA
2-METHYLNAPHTHALENE	1-8	6/11	-	NA	10 U	NA	1 J	NA	6 J	NA
ACENAPHTHYLENE	0 70	1/11	-	NA	10 U	NA	10 U	NA	10 U	NA
ACENAPHTHENE	2-6	5/11	-	NA	10 U	NA	4 J	NA	4 J	NA
DIBENZOFURAN	0.8-3	4/11	-	NA	10 U	NA	1 J	NA	10 U	NA
FLUORENE	0.8-6	6/11	-	NA	10 U	NA	3 J	NA	1 J	NA
N-NITROSODIPHENYLAMINE	1	1/11	-	NA	10 U	NA	10 U	NA	10 U	NA
PHENANTHRENE	0 7-14	6/11	-	NA	10 U	NA	6 J	NA	4 J	NA
ANTHRACENE	0 6-3	5/11	-	NA	10 U	NA	1 J	NA	1 J	NA
CARBAZOLE	2-16	5/11	-	NA	10 U	NA	5 J	NA	7 J	NA
DI-N-BUTYLPHTHALATE	0 6	1/11	-	NA	10 U	NA	10 U	NA	10 U	NA
FLUORANTHENE	0.6-15	5/11	-	NA	10 U	NA	10 U	NA	6 J	NA
PYRENE	0.6-11	5/11	-	NA	10 U	NA	10 U	NA	5 J	NA
BUTYLBENZYLPHTHALATE	0.70	1/11	-	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(A)ANTHRACENE	0.6-4	3/11	-	NA	10 U	NA	10 U	NA	2 J	NA
CHRYSENE	0.8-7	3/11	-	NA	10 U	NA	10 U	NA	3 J	NA
BIS(2-ETHYLHEXYL)PHTHALATE	1-140	6/11	-	NA	10 U	NA	10 U	NA	10 U	NA
DI-N-OCTYL PHTHALATE	0.70	1/11	-	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(B)FLUORANTHENE	2-4	2/11	-	NA	10 U	NA	10 U	NA	2 J	NA
BENZO(K)FLUORANTHENE	0.6-5	3/11	-	NA	10 U	NA	10 U	NA	1 J	NA
BENZO(A)PYRENE	0.6-4	3/11	-	NA	10 U	NA	10 U	NA	2 J	NA
INDENO(1,2,3-CD)PYRENE	2-4	2/11	-	NA	10 U	NA	10 U	NA	2 J	NA
DIBENZ(A,H)ANTHRACENE	1	1/11	-	NA	10 U	NA	10 U	NA	1 J	NA
BENZO(G,H,I)PERYLENE	2-4	2/11	-	NA	10 U	NA	10 U	NA	2 J	NA
BENZOIC ACID	1-2	6/11	-	NA	1 J	NA	1 J	NA	50 U	NA

NA Not analyzed

ND Not detected

J Estimate value

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- Not applicable

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GOSS COVE GROUNDWATER

	8GW3	8GW3 DISS	8GW4S	8GW4S DISS	8GW4S-D	8GW4S-D DISS	8GW4SAVG	8GW4S DISSAVG	8GW5S	8GW5S DISS
SDG	17148	17148	17148	17148	17148	17148			17656	17656
TCL Volatiles (UG/L)										
ACETONE	19 U	NA	10 U	NA	10 U	NA	10 U	NA	25 U	NA
CARBON DISULFIDE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,2-DICHLOROETHENE (TOTAL)	2 J	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
CHLOROFORM	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BROMODICHLOROMETHANE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
TRICHLOROETHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZENE	5 J	NA	1 J	NA	10 UJ	NA	1 J	NA	10 U	NA
TETRACHLOROETHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	1 J	NA
TOLUENE	130	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
ETHYLBENZENE	110	NA	8 J	NA	8 J	NA	8 J	NA	10 U	NA
XYLENE (TOTAL)	520	NA	21	NA	20	NA	20.5	NA	10 U	NA
SDG	17148	17148	17148	17148	17148	17148			17656	17656
TCL Semivolatiles (UG/L)										
PHENOL	10 U	NA	2 J	NA	10 UJ	NA	2 J	NA	10 U	NA
2-METHYLPHENOL	130	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
4-METHYLPHENOL	220	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
2,4-DIMETHYLPHENOL	320	NA	5 J	NA	10 UJ	NA	5 J	NA	10 U	NA
NAPHTHALENE	42	NA	6 J	NA	10 UJ	NA	5.5 J	NA	10 U	NA
2-METHYLNAPHTHALENE	8 J	NA	1 J	NA	10 UJ	NA	1 J	NA	10 U	NA
ACENAPHTHYLENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
ACENAPHTHENE	6 J	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DIBENZOFURAN	3 J	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
FLUORENE	6 J	NA	0.8 J	NA	10 UJ	NA	0.8 J	NA	10 U	NA
N-NITROSODIPHENYLAMINE	1 J	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
PHENANTHRENE	14	NA	10 U	NA	10 U	NA	10 U	NA	0.7 J	NA
ANTHRACENE	3 J	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
CARBAZOLE	16	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DI-N-BUTYLPHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 UJ	NA
FLUORANTHENE	15	NA	10 U	NA	10 U	NA	10 U	NA	0.8 J	NA
PYRENE	11	NA	10 U	NA	10 U	NA	10 U	NA	0.6 J	NA
BUTYLBENZYLPHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	0.7 J	NA
BENZO(A)ANTHRACENE	4 J	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
CHRYSENE	7 J	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	17 J	NA
DI-N-OCTYL PHTHALATE	0.7 J	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(B)FLUORANTHENE	4 J	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(K)FLUORANTHENE	5 J	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(A)PYRENE	4 J	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
INDENO(1,2,3-CD)PYRENE	4 J	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DIBENZ(A,H)ANTHRACENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(G,H,I)PERYLENE	4 J	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZOIC ACID	50 U	NA	50 U	NA	50 U	NA	50 U	NA	2 J	NA

NA: Not analyzed

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	8GW5S-D	8GW5S-D DISS	8GW5SAVG	8GW5S DISSAVG	8GW6D	8GW6D DISS	8GW6S	8GW6S DISS	8GW7S	8GW7S DISS
SDG	17656	17656			17656	17656	17656	17656	17656	17656
TCL Volatiles (UG/L)										
ACETONE	13 U	NA	19 U	NA	15 U	NA	18 U	NA	11 U	NA
CARBON DISULFIDE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	3 J	NA
1,2-DICHLOROETHENE (TOTAL)	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
CHLOROFORM	10 U	NA	10 U	NA	18	NA	10 U	NA	10 U	NA
BROMODICHLOROMETHANE	10 U	NA	10 U	NA	6 J	NA	10 U	NA	10 U	NA
TRICHLOROETHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
TETRACHLOROETHENE	10 U	NA	1 J	NA	9 J	NA	2 J	NA	2 J	NA
TOLUENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
ETHYLBENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 J	NA
XYLENE (TOTAL)	10 U	NA	10 U	NA	3 J	NA	10 U	NA	10	NA
SDG	17656	17656			17656	17656	17656	17656	17656	17656
TCL Semivolatiles (UG/L)										
PHENOL	10 U	NA	10 U	NA	10 U	NA	1 J	NA	10 U	NA
2-METHYLPHENOL	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
4-METHYLPHENOL	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
2,4-DIMETHYLPHENOL	10 U	NA	10 U	NA	10 U	NA	2 J	NA	0.6 J	NA
NAPHTHALENE	10 U	NA	10 U	NA	10 U	NA	4 J	NA	5 J	NA
2-METHYLNAPHTHALENE	10 U	NA	10 U	NA	10 U	NA	1 J	NA	1 J	NA
ACENAPHTHYLENE	10 U	NA	10 U	NA	10 U	NA	0.7 J	NA	10 U	NA
ACENAPHTHENE	10 U	NA	10 U	NA	10 U	NA	2 J	NA	3 J	NA
DIBENZOFURAN	10 U	NA	10 U	NA	10 U	NA	2 J	NA	0.8 J	NA
FLUORENE	10 U	NA	10 U	NA	10 U	NA	4 J	NA	2 J	NA
N-NITROSODIPHENYLAMINE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
PHENANTHRENE	10 UJ	NA	0.7 J	NA	10 U	NA	8 J	NA	2 J	NA
ANTHRACENE	10 U	NA	10 U	NA	10 U	NA	1 J	NA	1 J	NA
CARBAZOLE	10 U	NA	10 U	NA	10 U	NA	3 J	NA	2 J	NA
DI-N-BUTYLPHTHALATE	0.6 J	NA	0.6 J	NA	10 U	NA	10 U	NA	10 U	NA
FLUORANTHENE	10 UJ	NA	0.6 J	NA	10 U	NA	3 J	NA	2 J	NA
PYRENE	10 UJ	NA	0.6 J	NA	10 U	NA	2 J	NA	1 J	NA
BUTYLBENZYLPHTHALATE	10 UJ	NA	0.7 J	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(A)ANTHRACENE	10 U	NA	10 U	NA	10 U	NA	0.6 J	NA	10 U	NA
CHRYSENE	10 U	NA	10 U	NA	10 U	NA	0.8 J	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	3 J	NA	10 J	NA	1 J	NA	1 J	NA	1 J	NA
DI-N-OCTYL PHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(B)FLUORANTHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(K)FLUORANTHENE	10 U	NA	10 U	NA	10 U	NA	0.6 J	NA	10 U	NA
BENZO(A)PYRENE	10 U	NA	10 U	NA	10 U	NA	0.6 J	NA	10 U	NA
INDENO(1,2,3-CD)PYRENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DIBENZ(A,H)ANTHRACENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(G,H,I)PERYLENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZOIC ACID	2 J	NA	2 J	NA	50 U	NA	1 J	NA	2 J	NA

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GOSS COVE GROUNDWATER

	8GW8D	8GW8D DISS	8GW8S	8GW8S DISS
SDG	17656	17656	17656	17656
TCL Volatiles (UG/L)				
ACETONE	220 J	NA	10 U	NA
CARBON DISULFIDE	250 U	NA	10 U	NA
1,2-DICHLOROETHENE (TOTAL)	250 U	NA	10 U	NA
CHLOROFORM	250 U	NA	10 U	NA
BROMODICHLOROMETHANE	250 U	NA	10 U	NA
TRICHLOROETHENE	250 U	NA	10 U	NA
BENZENE	250 U	NA	10 U	NA
TETRACHLOROETHENE	3700	NA	100	NA
TOLUENE	250 U	NA	10 U	NA
ETHYLBENZENE	250 U	NA	10 U	NA
XYLENE (TOTAL)	58 J	NA	10 U	NA
SDG	17656	17656	17656	17656
TCL Semivolatiles (UG/L)				
PHENOL	0.8 J	NA	10 U	NA
2-METHYLPHENOL	10 U	NA	10 U	NA
4-METHYLPHENOL	10 U	NA	10 U	NA
2,4-DIMETHYLPHENOL	10 U	NA	10 U	NA
NAPHTHALENE	10 U	NA	10 U	NA
2-METHYLNAPHTHALENE	10 U	NA	10 U	NA
ACENAPHTHYLENE	10 U	NA	10 U	NA
ACENAPHTHENE	10 U	NA	10 U	NA
DIBENZOFURAN	10 U	NA	10 U	NA
FLUORENE	10 U	NA	10 U	NA
N-NITROSODIPHENYLAMINE	10 U	NA	10 U	NA
PHENANTHRENE	10 U	NA	10 U	NA
ANTHRACENE	10 U	NA	10 U	NA
CARBAZOLE	10 U	NA	10 U	NA
DI-N-BUTYLPHTHALATE	10 U	NA	10 U	NA
FLUORANTHENE	10 U	NA	10 U	NA
PYRENE	10 U	NA	10 U	NA
BUTYLBENZYLPHTHALATE	10 U	NA	10 U	NA
BENZO(A)ANTHRACENE	10 U	NA	10 U	NA
CHRYSENE	10 U	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	17	NA	140	NA
DI-N-OCTYL PHTHALATE	10 U	NA	10 U	NA
BENZO(B)FLUORANTHENE	10 U	NA	10 U	NA
BENZO(K)FLUORANTHENE	10 U	NA	10 U	NA
BENZO(A)PYRENE	10 U	NA	10 U	NA
INDENO(1,2,3-CD)PYRENE	10 U	NA	10 U	NA
DIBENZ(A,H)ANTHRACENE	10 U	NA	10 U	NA
BENZO(G,H,I)PERYLENE	10 U	NA	10 U	NA
BENZOIC ACID	1 J	NA	50 U	NA

NA: Not analyzed

ND: Not detected

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GOSS COVE GROUNDWATER

	Range	Frequency	Range(Diss)	Frequency(Diss)	8GW1S	8GW1S DISS	8GW2D	8GW2D DISS	8GW2S	8GW2S DISS
SDG					17656	17656	17656	17656	17148	17148
TAL Metals (UG/L)										
ALUMINUM	214-53,200	8/11	9,160	1/11	14.0 U	14.0 U	1990	14.0 UJ	528	14.0 U
ANTIMONY	17.8-157	2/10	53.5	1/11	17.8 J	15.0 U	R	15.0 UJ	15.0 U	15.0 U
ARSENIC	2.3-29.8	5/11	2.5-44.9	5/11	2.0 UJ	2.0 UJ	29.8 J	44.9 J	4.9	2.5 J
BARIUM	30.8-1,095*	11/11	30.55*-1,100	11/11	67.3	64.0	61.2 J	51.5 J	781	754
BERYLLIUM	3.2	1/11	1.6	1/11	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 UJ	1.0 UJ
BORON	74.3-3,360	11/11	58.4-3,530	11/11	1100	1100	2650	2750 J	608	581
CADMIUM	7	1/11	-	0/11	2.0 U	2.0 U	2.0 U	2.0 UJ	2.0 U	2.0 U
CALCIUM	30,100-228,000	11/11	35,100-232,000	11/11	62200	61000	105000	105000 J	175000 J	156000 J
CHROMIUM	3.1-221	8/11	71.9	1/11	3.0 UJ	3.0 U	5.5 J	3.0 UJ	8.9	3.0 U
COBALT	4.2-38	3/11	7.4-10.7	2/11	4.0 U	4.0 U	4.0 U	4.0 UJ	4.0 U	4.0 U
COPPER	2.8-3,850	11/11	3.1-17.6	7/11	3.5 J	3.1 J	33.5	4.2 J	104	2.0 U
IRON	235-141,000	11/11	99.5-86,600	8/11	570	507	11000	6860 J	6670	1840
LEAD	3.55*-1,600	7/11	2.5	1/11	1.0 UJ	1.0 UJ	26.0 J	1.0 UJ	98.0	1.0 UJ
MAGNESIUM	10,100-765,000	11/11	7,210-93,300	11/11	207000	23100	397000	93300 J	80400	53500
MANGANESE	56.8-3,250	11/11	47.6-3380	11/11	75.3	72.7	1220	1210 J	393	284
MERCURY	0.24-3.9	4/11	0.20-0.22	4/11	0.20 U	0.20 U	0.20 U	0.20 UJ	0.48	0.21 J
NICKEL	15.3-138	2/11	10.1-43.1	2/11	10.0 U	10.0 U	10.0 U	10.0 UJ	10.0 U	10.0 U
POTASSIUM	9,950-436,000	11/11	7,550-205,000	11/11	93900	93500	194000	205000 J	74500	70800
SELENIUM	-	0/11	1.0	1/11	1.0 UJ	10.0 UJ	10.0 UJ	10.0 UJ	2.0 UJ	2.0 UJ
SILVER	10.5	1/11	2.0-3.5	2/11	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 U	2.0 U
SODIUM	16,700-7,800,000	11/11	15,600-765,000	10/11	2060000	203000	3950000	774000 UJ	824000	765000
THALLIUM	10.2	1/11	1.0	1/11	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	10.0 UJ	10.0 UJ
VANADIUM	9.7-136	4/9	4.3-50.2	2/11	5.0 U	5.0 U	9.7 J	5.0 UJ	6.0 U	5.0 U
ZINC	5.4-4,530	9/11	6.1-1130	3/11	5.4	2.0 U	47.9	2.0 UJ	179	2.0 U
SDG										
Radiological (pCi/L)										
GROSS ALPHA	-	0/2	-	NA	NA	NA	NA	NA	NA	NA
GROSS BETA	28-32	2/2	-	NA	NA	NA	NA	NA	NA	NA
GROSS GAMMA (TOTAL)	-	0/2	-	NA	NA	NA	NA	NA	NA	NA

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	8GW3	8GW3 DISS	8GW4S	8GW4S DISS	8GW4S-D	8GW4S-D DISS	8GW4SAVG	8GW4S DISSAVG	8GW5S	8GW5S DISS
SDG	17148	17148	17148	17148	17148	17148			17656	17656
TAL Metals (UG/L)										
ALUMINUM	214	20.5 U	31.75 U	21.6 U	31.3 U	30.0 U	32.2 U	25.8 U	57.4 U	14.0 U
ANTIMONY	15.0 U	15.0 U	15.0 U	15.0 U	15.0 U	15.0 U	15.0 U	15.0 U	15.0 U	15.0 U
ARSENIC	2.3 J	2.0 U	4.3	3.5 J	4.3	3.8 J	4.3	3.65 J	2.0 UJ	2.0 UJ
BARIUM	741	745	1100	1070	1090	1130	1095	1100	30.8 J	30.0
BERYLLIUM	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	1.0 U
BORON	858	866	1010	966	1010	1010	1010	988	1180	1140
CADMIUM	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
CALCIUM	73800 J	72200 J	38800 J	37100 J	38900 J	37900 J	38850 J	37500 J	82200	80000
CHROMIUM	4.2 J	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 UJ	3.0 U
COBALT	4.2 J	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
COPPER	44.4	2.0 U	2.0 U	2.0 U	2.8 J	2.0 U	2.4 J	2.0 U	5.5 J	3.1 J
IRON	2540	50.0 U	3820	3300	3850	3490	3835	3395	235	94.6
LEAD	14.3	1.0 UJ	3.5 J	1.0 UJ	3.6 J	1.0 UJ	3.55 J	1.0 UJ	3.0 UJ	1.0 UJ
MAGNESIUM	58700	58600	30600	29400	30400	30500	30500	29950	274000	29600
MANGANESE	56.8	47.6	72.4	68.8	72.8	70.9	72.6	69.85	187	184
MERCURY	0.24 J	0.20 J	0.28 J	0.22 J	0.27 J	0.22 J	0.28 J	0.22 J	0.20 U	0.20 U
NICKEL	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
POTASSIUM	76200	76400	28100	27400	28000	28700	28050	28050	121000	121000
SELENIUM	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	10.0 UJ	1.0 UJ
SILVER	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 UJ	2.0 UJ
SODIUM	600000	603000	293000	286000	290000	300000	291500	293000	2690000	257000
THALLIUM	10.0 UJ	10.0 UJ	10.0 U	10.0 U	10.0 UJ	10.0 UJ	10.0 UJ	10.0 UJ	1.0 UJ	1.0 UJ
VANADIUM	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	R	5.0 U
ZINC	127	2.0 U	5.6	2.0 U	5.8	2.0 U	5.7	2.0 U	2.0 U	2.0 U
SDG			17148		17148					
Radiological (pCi/L)										
GROSS ALPHA	NA	NA	7 UJ	NA	5 UJ	NA	NA	NA	NA	NA
GROSS BETA	NA	NA	32	NA	28	NA	NA	NA	NA	NA
GROSS GAMMA (TOTAL)	NA	NA	ND	NA	ND	NA	NA	NA	NA	NA

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GOSS COVE GROUNDWATER

	8GW5S-D	8GW5S-D DISS	8GW5SAVG	8GW5S DISSAVG	8GW6D	8GW6D DISS	8GW6S	8GW6S DISS	8GW7S	8GW7S DISS
SDG	17656	17656			17656	17656	17656	17656	17656	17656
TAL Metals (UG/L)										
ALUMINUM	62 8 U	14 0 U	60 1 U	14 0 U	3920	14.0 U	236	14.0 U	53200	9160
ANTIMONY	R	15 0 U	15 0 U	15 0 U	15.0 U	15.0 U	15.0 U	15.0 U	157 J	53.5
ARSENIC	2 0 UJ	2.0 UJ	2 0 UJ	2.0 UJ	3.7 U	2.0 UJ	5.4 U	3.8 J	15.1 J	2.5
BARIUM	30 8 J	31.1	30 8 J	30 55	64.3	50.6 J	136.00	130 J	937	607
BERYLLIUM	1.0 U	1 0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	3.2	1.6
BORON	1160	1160	1170	1150	3360	3530	864	881	478	431
CADMIUM	2 0 U	2 0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	7.0 J	2.0
CALCIUM	82400	81500	82300	80750	228000	232000	30100	29900	76600	74400
CHROMIUM	3 0 UJ	3 0 U	3.0 UJ	3.0 U	3.1 J	3.0 U	5.2 J	3.0 U	221	71.9
COBALT	4.0 U	4.0 U	4.0 U	4.0 U	6.7 J	7.4 J	4.0 U	4.0 U	35.9	10.7
COPPER	R	3.5 J	5.5 J	3.3 J	27.9 J	17.6 J	18.9	2.0 U	3850	3.8
IRON	235	106	235	100.3	3940	137	1950	1100 U	141000	88600
LEAD	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	50.0 UJ	50.0 UJ	18.6 J	1.0 UJ	1600 J	2.5
MAGNESIUM	272000	30100	273000	29850	765000	20700	30100	31200	50300	36600
MANGANESE	187	193	187	188.5	3250	3380	298	287	2900	2210
MERCURY	0.20 U	0 20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	3.9	0.20
NICKEL	10 0 U	10 0 U	10 0 U	10 0 U	15.3 J	10.1 J	10.0 U	10.0 U	138	43.1
POTASSIUM	118000	122000	119500	121500	436000	468000	23600	24400	16100	12500
SELENIUM	10 0 UJ	1 0 UJ	10 0 UJ	1 0 UJ	10.0 UJ	10.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0
SILVER	2 0 UJ	2 0 UJ	2 0 UJ	2 0 UJ	2.0 UJ	3.5 J	2.0 UJ	2.0 UJ	10.5 J	2.0
SODIUM	2720000	263000	2705000	260000	7800000	174000	317000	336000	78100	79200
THALLIUM	1 0 UJ	1 0 UJ	1 0 UJ	1 0 UJ	10.00 UJ	1.0 UJ	1.0 UJ	1.7 UJ	10.2	1.0
VANADIUM	R	6 1 J	R	4 3 J	R	5.0 U	5.0 U	5.0 U	136	50.2
ZINC	2 0 U	2 0 U	2 0 U	2 0 U	2.0 U	2.0 U	31.8	2.0 U	4530	1130
SDG										
Radiological (pCi/L)										
GROSS ALPHA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GROSS BETA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
GROSS GAMMA (TOTAL)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

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GOSS COVE GROUNDWATER

	8GW8D	8GW8D DISS	8GW8S	8GW8S DISS
SDG	17656	17656	17656	17656
TAL Metals (UG/L)				
ALUMINUM	5410	21.6 U	5160	16.2 J
ANTIMONY	15.0 U	15.0 U	15.0 U	15.0 UJ
ARSENIC	4.1 U	2.0 UJ	3.8 U	2.0 UJ
BARIUM	117	51.9	105	39.8 J
BERYLLIUM	1.0 U	1.0 U	1.0 U	1.0 UJ
BORON	74.3	58.4	84.20	64.6 J
CADMIUM	2.0 U	2.0 U	2.0 U	2.0 UJ
CALCIUM	40800	35100	53700	48500 J
CHROMIUM	9.9 J	3.0 U	3.5 J	3.0 UJ
COBALT	4.0 U	4.0 U	4.0 U	4.0 UJ
COPPER	71.3	4.2	20.1	6.6 J
IRON	7870	99.5 J	7090	50.0 UJ
LEAD	49.6 J	1.7 U	2.1 U	1.0 UJ
MAGNESIUM	10100	7320	10500	7210 J
MANGANESE	757	523	316	107 J
MERCURY	0.20 U	0.20 U	0.20 U	0.20 UJ
NICKEL	10.0 U	10.0 U	10.0 U	10.0 UJ
POTASSIUM	9950	7550	11000	7580 J
SELENIUM	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
SILVER	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ
SODIUM	53000	50400	16700	15600 J
THALLIUM	1.0 UJ	1.1 U	1.0 U	1.0 UJ
VANADIUM	18.6	5.0 U	15.9	5.0 UJ
ZINC	113	56.4	37.6	6.1 J
SDG				
Radiological (pCi/L)				
GROSS ALPHA	NA	NA	NA	NA
GROSS BETA	NA	NA	NA	NA
GROSS GAMMA (TOTAL)	NA	NA	NA	NA

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GOSS COVE GROUNDWATER (ROUND 2)

	Range (Total)	Frequency (Total)	Range (Diss)	Frequency (Diss)	6GW1S-2	6GW1S-D-2	6GW1S-2AVG.	6GW1S-2 DISS
SDG					19221	19221		
TCL Volatiles (UG/L)								
CARBON DISULFIDE	1-58	4/11	-	NA	10 U	10 U	10 U	NA
1,2-DICHLOROETHENE(TOTAL)	2-3	3/11	-	NA	10 U	10 U	10 U	NA
2-BUTANONE	5	1/11	-	NA	10 U	10 U	10 U	NA
1,1,1-TRICHLOROETHANE	1	1/11	-	NA	10 U	10 U	10 U	NA
TRICHLOROETHENE	7	1/11	-	NA	10 U	10 U	10 U	NA
BENZENE	1-3	2/11	-	NA	10 U	10 U	10 U	NA
4-METHYL-2-PENTANONE	2-11	2/11	-	NA	10 U	10 U	10 U	NA
2-HEXANONE	49	1/11	-	NA	10 U	10 U	10 U	NA
TOLUENE	120-400	2/11	-	NA	10 U	10 U	10 U	NA
TETRACHLOROETHENE	15-5600	3/11	-	NA	10 U	10 U	10 U	NA
ETHYLBENZENE	1-99	5/11	-	NA	10	11	10.5	NA
XYLENE (TOTAL)	2-390	5/11	-	NA	4 J	4 J	4 J	NA
SDG					19221	19221		
TCL Semivolatiles (UG/L)								
PHENOL	17	1/11	-	NA	10 U	10 U	10 U	NA
2-METHYLPHENOL	5-70	5/11	-	NA	10 U	10 U	10 U	NA
4-METHYLPHENOL	4-53	5/11	-	NA	10 U	10 U	10 U	NA
2,4-DIMETHYLPHENOL	6-300	4/11	-	NA	4 J	10 U	4 J	NA
NAPHTHALENE	4-13	5/11	-	NA	10 U	10 U	10 U	NA
2-METHYLNAPHTHALENE	1-8	6/11	-	NA	2 J	10 U	2 J	NA
ACENAPHTHENE	1-5	4/11	-	NA	2 J	10 U	2 J	NA
DIBENZOFURAN	1-5	5/11	-	NA	1 J	10 U	1 J	NA
FLUORENE	0.6-4	7/11	-	NA	2 J	2 J	2 J	NA
PHENANTHRENE	3-4	6/11	-	NA	3 J	3 J	3 J	NA
ANTHRACENE	1	1/11	-	NA	10 U	10 U	10 U	NA
CARBAZOLE	4-8	5/11	-	NA	10 U	10 U	10 U	NA
DI-N-BUTYL PHTHALATE	0.5	1/11	-	NA	10 U	10 U	10 U	NA
FLUORANTHENE	0.6-7	6/11	-	NA	10 U	10 U	10 U	NA
PYRENE	0.5-4	4/11	-	NA	10 U	10 U	10 U	NA
BUTYLBENZYL PHTHALATE	0.6*	1/11	-	NA	10 U	10 U	10 U	NA
BENZO(A)ANTHRACENE	1	1/11	-	NA	10 U	10 U	10 U	NA
CHRYSENE	2	2/11	-	NA	10 U	10 U	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	8-63	4/11	-	NA	10 U	10 U	10 U	NA
BENZO(B)FLUORANTHENE	1	2/11	-	NA	10 U	10 U	10 U	NA
BENZO(K)FLUORANTHENE	2	2/11	-	NA	10 U	10 U	10 U	NA
BENZO(G,H,I)PERYLENE	1	1/11	-	NA	10 U	10 U	10 U	NA
INDENO(1,2,3-CD)PYRENE	.9	1/11	-	NA	10 U	10 U	10 U	NA
BENZO(A)PYRENE	1	1/11	-	NA	10 U	10 U	10 U	NA
BENZOIC ACID	.8-21	3/11	-	NA	6 J	50 U	6 J	NA

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GOSS COVE GROUNDWATER (ROUND 2)

	8GW1S-D-2 DISS	8GW1S-2 DISSAVG.	8GW2S-2	8GW2S-2 DISS	8GW2D-2	8GW2D-2 DISS	8GW3-2	8GW3-2 DISS
SDG			192437		192214		192218	
TCL Volatiles (UG/L)								
CARBON DISULFIDE	NA	NA	10 U	NA	10 U	NA	10 U	NA
1,2-DICHLOROETHENE(TOTAL)	NA	NA	10 U	NA	2 J	NA	3 J	NA
2-BUTANONE	NA	NA	10 U	NA	10 U	NA	10 U	NA
1,1,1-TRICHLOROETHANE	NA	NA	10 U	NA	10 U	NA	10 U	NA
TRICHLOROETHENE	NA	NA	10 U	NA	7 J	NA	10 U	NA
BENZENE	NA	NA	1 J	NA	10 U	NA	3 J	NA
4-METHYL-2-PENTANONE	NA	NA	10 U	NA	10 U	NA	2 J	NA
2-HEXANONE	NA	NA	10 U	NA	10 U	NA	10 U	NA
TOLUENE	NA	NA	10 U	NA	10 U	NA	120	NA
TETRACHLOROETHENE	NA	NA	10 U	NA	10 U	NA	16	NA
ETHYLBENZENE	NA	NA	36	NA	2 J	NA	99	NA
XYLENE (TOTAL)	NA	NA	78	NA	2 J	NA	390	NA
SDG			192437		192214		192218	
TCL Semivolatiles (UG/L)								
PHENOL	NA	NA	17	NA	10 U	NA	50 U	NA
2-METHYLPHENOL	NA	NA	5 J	NA	10 U	NA	70	NA
4-METHYLPHENOL	NA	NA	33	NA	10 U	NA	52	NA
2,4-DIMETHYLPHENOL	NA	NA	25	NA	10 U	NA	200	NA
NAPHTHALENE	NA	NA	16 J	NA	10 U	NA	33 J	NA
2-METHYLNAPHTHALENE	NA	NA	3 J	NA	10 U	NA	6 J	NA
ACENAPHTHENE	NA	NA	5 J	NA	2 J	NA	50 U	NA
DIBENZOFURAN	NA	NA	3 J	NA	10 U	NA	50 U	NA
FLUORENE	NA	NA	3 J	NA	1 J	NA	4 J	NA
PHENANTHRENE	NA	NA	4 J	NA	4 J	NA	50 U	NA
ANTHRACENE	NA	NA	1 J	NA	10 U	NA	50 U	NA
CARBAZOLE	NA	NA	4 J	NA	10 U	NA	8 J	NA
DI-N-BUTYL PHTHALATE	NA	NA	0.5 J	NA	10 U	NA	50 U	NA
FLUORANTHENE	NA	NA	7 J	NA	5 J	NA	50 U	NA
PYRENE	NA	NA	4 J	NA	3 J	NA	50 U	NA
BUTYLBENZYL PHTHALATE	NA	NA	10 U	NA	10 U	NA	50 U	NA
BENZO(A)ANTHRACENE	NA	NA	1 J	NA	10 U	NA	50 U	NA
CHRYSENE	NA	NA	2 J	NA	10 U	NA	50 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	8 J	NA	63 J	NA	50 U	NA
BENZO(B)FLUORANTHENE	NA	NA	1 J	NA	10 U	NA	50 U	NA
BENZO(K)FLUORANTHENE	NA	NA	2 J	NA	10 U	NA	50 U	NA
BENZO(G,H,I)PERYLENE	NA	NA	1 J	NA	10 U	NA	50 U	NA
INDENO(1,2,3-CD)PYRENE	NA	NA	0.9 J	NA	10 U	NA	50 U	NA
BENZO(A)PYRENE	NA	NA	1 J	NA	10 U	NA	50 U	NA
BENZOIC ACID	NA	NA	50 U	NA	50 U	NA	250 U	NA

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

B Value reported during validation

Not applicable

* Value is the average of duplicate sample results

GOSS COVE GROUNDWATER (ROUND 2)

	SGW4-2	SGW4-2 DISS	SGW5S-2	SGW5S-2 DISS	SGW6S-2	SGW6S-2 DISS	SGW6D-2	SGW6D-2 DISS	SGW7S-2
SDG	192212		192215		192217		192216		192435
TCL Volatiles (UG/L)									
CARBON DISULFIDE	10 U	NA	1 J	NA	10 U	NA	10 U	NA	10 U
1,2-DICHLOROETHENE(TOTAL)	3 J	NA	10 U	NA	10 U	NA	10 U	NA	10 U
2-BUTANONE	10 U	NA	10 U	NA	10 U	NA	5 J	NA	10 U
1,1,1-TRICHLOROETHANE	10 U	NA	10 U	NA	1 J	NA	10 U	NA	10 U
TRICHLOROETHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
BENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
4-METHYL-2-PENTANONE	10 U	NA	10 U	NA	10 U	NA	11	NA	10 U
2-HEXANONE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
TOLUENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
TETRACHLOROETHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
ETHYLBENZENE	10 U	NA	10 U	NA	10 U	NA	1 J	NA	10 U
XYLENE (TOTAL)	10 U	NA	10 U	NA	10 U	NA	6 J	NA	10 U
SDG	192212		192215		192217		192216		192435
TCL Semivolatiles (UG/L)									
PHENOL	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
2-METHYLPHENOL	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
4-METHYLPHENOL	10 U	NA	10 U	NA	10 U	NA	4 J	NA	10 U
2,4-DIMETHYLPHENOL	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
NAPHTHALENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	4 J
2-METHYLNAPHTHALENE	10 U	NA	10 U	NA	10 U	NA	3 J	NA	1 J
ACENAPHTHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	4 J
DIBENZOFURAN	10 U	NA	10 U	NA	10 U	NA	10 U	NA	1 J
FLUORENE	10 U	NA	10 U	NA	0.8 J	NA	2 J	NA	2 J
PHENANTHRENE	2 J	NA	10 U	NA	10 U	NA	10 J	NA	2 J
ANTHRACENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
CARBAZOLE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
DI-N-BUTYL PHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
FLUORANTHENE	2 J	NA	10 U	NA	1 J	NA	6 J	NA	0.8 J
PYRENE	10 U	NA	10 U	NA	10 U	NA	4 J	NA	10 U
BUTYLBENZYL PHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	0.6 J
BENZO(A)ANTHRACENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
CHRYSENE	10 U	NA	10 U	NA	10 U	NA	2 J	NA	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	NA	10 U	NA	10 U	NA	56 J	NA	21
BENZO(B)FLUORANTHENE	10 U	NA	10 U	NA	10 U	NA	1 J	NA	10 U
BENZO(K)FLUORANTHENE	10 U	NA	10 U	NA	10 U	NA	2 J	NA	10 U
BENZO(G,H,I)PERYLENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
INDENO(1,2,3-CD)PYRENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
BENZO(A)PYRENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
BENZOIC ACID	50 U	NA	50 U	NA	50 U	NA	21 J	NA	50 U

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

Not applicable

* Value is the average of duplicate sample results

GOSS COVE GROUNDWATER (ROUND 2)

	8GW7S-D-2	8GW7S-2AVG.	8GW7S-2 DISS	8GW7S-D-2 DISS	8GW7S-2 DISSAVG.	8GW8D-2	8GW8D-2 DISS	8GW8S-2
SDG	192436					192213		192432
TCL Volatiles (UG/L)								
CARBON DISULFIDE	2 J	2 J	NA	NA	NA	58 J	NA	7 J
1,2-DICHLOROETHENE(TOTAL)	10 U	10 U	NA	NA	NA	400 U	NA	10 U
2-BUTANONE	10 U	10 U	NA	NA	NA	400 U	NA	10 U
1,1,1-TRICHLOROETHANE	10 U	10 U	NA	NA	NA	400 U	NA	10 U
TRICHLOROETHENE	10 U	10 U	NA	NA	NA	400 U	NA	10 U
BENZENE	10 U	10 U	NA	NA	NA	400 U	NA	10 U
4-METHYL-2-PENTANONE	10 U	10 U	NA	NA	NA	400 U	NA	10 U
2-HEXANONE	10 U	10 U	NA	NA	NA	49 J	NA	10 U
TOLUENE	10 U	10 U	NA	NA	NA	400	NA	10 U
TETRACHLOROETHENE	10 U	10 U	NA	NA	NA	5600	NA	120
ETHYLBENZENE	10 U	10 U	NA	NA	NA	400 U	NA	10 U
XYLENE (TOTAL)	10 U	10 U	NA	NA	NA	400 U	NA	10 U
SDG	192436					192213		192432
TCL Semivolatiles (UG/L)								
PHENOL	10 U	10 U	NA	NA	NA	10 U	NA	10 U
2-METHYLPHENOL	10 U	10 U	NA	NA	NA	10 U	NA	10 U
4-METHYLPHENOL	10 U	10 U	NA	NA	NA	10 U	NA	10 U
2,4-DIMETHYLPHENOL	0.8 J	0.8 J	NA	NA	NA	10 U	NA	10 U
NAPHTHALENE	4 J	4 J	NA	NA	NA	10 U	NA	10 U
2-METHYLNAPHTHALENE	1 J	1 J	NA	NA	NA	10 U	NA	10 U
ACENAPHTHENE	5 J	4.5 J	NA	NA	NA	10 U	NA	10 U
DIBENZOFURAN	1 J	1 J	NA	NA	NA	10 U	NA	10 U
FLUORENE	2 J	2 J	NA	NA	NA	10 U	NA	10 U
PHENANTHRENE	2 J	2 J	NA	NA	NA	10 U	NA	10 U
ANTHRACENE	10 U	10 U	NA	NA	NA	10 U	NA	10 U
CARBAZOLE	4 J	4 J	NA	NA	NA	10 U	NA	10 U
DI-N-BUTYL PHTHALATE	10 U	10 U	NA	NA	NA	10 U	NA	10 U
FLUORANTHENE	0.8 J	0.8 J	NA	NA	NA	10 U	NA	10 U
PYRENE	0.5 J	0.5 J	NA	NA	NA	10 U	NA	10 U
BUTYLBENZYL PHTHALATE	10 U	0.6 J	NA	NA	NA	10 U	NA	10 U
BENZO(A)ANTHRACENE	10 U	10 U	NA	NA	NA	10 U	NA	10 U
CHRYSENE	10 U	10 U	NA	NA	NA	10 U	NA	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	13	NA	NA	NA	10 U	NA	10 U
BENZO(B)FLUORANTHENE	10 U	10 U	NA	NA	NA	10 U	NA	10 U
BENZO(K)FLUORANTHENE	10 U	10 U	NA	NA	NA	10 U	NA	10 U
BENZO(G,H,I)PERYLENE	10 U	10 U	NA	NA	NA	10 U	NA	10 U
INDENO(1,2,3-CD)PYRENE	10 U	10 U	NA	NA	NA	10 U	NA	10 U
BENZO(A)PYRENE	10 U	10 U	NA	NA	NA	10 U	NA	10 U
BENZOIC ACID	0.8 J	0.8 J	NA	NA	NA	50 U	NA	50 U

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

*, Value is the average of duplicate sample results

GOSS COVE GROUNDWATER (ROUND 2)

	8GW8S-2 DISS
SDG	
TCL Volatiles (UG/L)	
CARBON DISULFIDE	NA
1,2-DICHLOROETHENE(TOTAL)	NA
2-BUTANONE	NA
1,1,1-TRICHLOROETHANE	NA
TRICHLOROETHENE	NA
BENZENE	NA
4-METHYL-2-PENTANONE	NA
2-HEXANONE	NA
TOLUENE	NA
TETRACHLOROETHENE	NA
ETHYLBENZENE	NA
XYLENE (TOTAL)	NA
SDG	
TCL Semivolatiles (UG/L)	
PHENOL	NA
2-METHYLPHENOL	NA
4-METHYLPHENOL	NA
2,4-DIMETHYLPHENOL	NA
NAPHTHALENE	NA
2-METHYLNAPHTHALENE	NA
ACENAPHTHENE	NA
DIBENZOFURAN	NA
FLUORENE	NA
PHENANTHRENE	NA
ANTHRACENE	NA
CARBAZOLE	NA
DI-N-BUTYL PHTHALATE	NA
FLUORANTHENE	NA
PYRENE	NA
BUTYLBENZYL PHTHALATE	NA
BENZO(A)ANTHRACENE	NA
CHRYSENE	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA
BENZO(B)FLUORANTHENE	NA
BENZO(K)FLUORANTHENE	NA
BENZO(G,H,I)PERYLENE	NA
INDENO(1,2,3-CD)PYRENE	NA
BENZO(A)PYRENE	NA
BENZOIC ACID	NA

NA: Not analyzed

ND: Not detected

J: Estimate value

U: Not detected at detection limit indicated

UJ: Not detected at estimated detection limit indicated

R: Value rejected during validation

-: Not applicable

*: Value is the average of duplicate sample results

GOSS COVE GROUNDWATER (ROUND 2)

	Range (Total)	Frequency (Total)	Range (Diss)	Frequency (Diss)	8GW1S-2	8GW1S-D-2	8GW1S-2AVG.	8GW1S-2 DISS
SDG					19221	19221		19221
TAL Metals (UG/L)								
ALUMINUM	198-13700	5/11	-	0/11	13.7 U	10.0 U	11.85 U	10.0 U
ANTIMONY		0/11	4 55*-9 4	3/11	12.0 U	12.0 U	12.0 U	26.2 U
ARSENIC	3 6*-24	6/11	3 35*-20	5/11	20 0 U	20.0 U	20.0 U	20.0 U
BARIUM	41 8-1340	11/11	37 6-1340	11/11	150 J	153 J	151.5 J	178
BORON	59 4-2230	10/11	63 5-2590	10/11	1710 J	1790 J	1750 J	1770
CADMIUM	1 0-8 1	2/9	-	0/9	1 0 U	1.0 U	1.0 U	UR
CALCIUM	36000-190000	11/11	29900-294000	11/11	129000	134000	131500	148000
CHROMIUM	1 1-16 3	3/9	1 1	1/11	3 0 U	3 0 U	3.0 U	3.0 U
COBALT	1 2-3	1/11	-	0/11	1 0 U	1 0 U	1.0 U	3.0 U
COPPER	3 55*-137	7/11	3 4-47 8	6/11	3 6 J	3 0 U	2.55	13.7 J
IRON	241*-18300	11/11	207-8530	8/11	410	334	372	586 J
LEAD	1 1-38 1	7/11	-	0/11	10 0 U	10 0 U	10.0 U	10.0 UJ
MAGNESIUM	7230-[illegible]100*	11/11	184-585000	11/11	555000	577000	566000	509000
MANGANESE	53 8-1110*	11/11	24 6-1035*	10/11	73 4 J	74.7 J	74.1 J	79.7
NICKEL	4 8-13 3	4/11		0/11	3 0 U	3.0 U	3.0 U	7.0 U
POTASSIUM	8100-203000*	11/11	7110-203000	11/11	199000	207000	203000	188000
SODIUM	19000-4945000*	11/11	18700-5050000	11/11	4840000	5050000	4945000	4840000
VANADIUM	1 1-46 3	3/11	[illegible]-1 1	1/11	3.0 U	3.0 U	3.0 U	3.0 U
ZINC	7 05*-165	10/11	1 6*-17 5	4/11	18.9 J	14.2 J	16.5 J	2.0 UJ
SDG								
ENGINEERING								
AMMONIA (N)					NA	NA		NA
BIOCHEMICAL OXYGEN DEMAND					NA	NA		NA
CHEMICAL OXYGEN DEMAND					NA	NA		NA
TOTAL ORGANIC CARBON					NA	NA		NA
TOTAL SUSPENDED SOLIDS					NA	NA		NA

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

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GOSS COVE GROUNDWATER (ROUND 2)

	8GW1S-D-2 DISS	8GW1S-2 DISSAVG.	8GW2S-2	8GW2S-2 DISS	8GW2D-2	8GW2D-2 DISS	8GW3-2	8GW3-2 DISS
SDG	192221		192437	192433	192214	192219	192218	192213
TAL Metals (UG/L)								
ALUMINUM	10 0 U	10 U	65.5 U	30.9 U	720 J	10.0 U	14.4 U	10.0 U
ANTIMONY	26.1 U	26.15 U	5 0 U	9.4	12.0 U	12.0 U	12.0 U	18.2 U
ARSENIC	20.0 U	20 0 U	4.4	1.0 U	24.0	20.0	2.0 U	2.0 U
BARIUM	183	180 5	417	39.8	48.2 J	37.6 J	943 J	928
BORON	1830	1800	899	63.5	2230 J	2590	688 J	610
CADMIUM	UR	UR	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	2.0 U
CALCIUM	155000	151500	138000	53100	86900	91900	82100	78100
CHROMIUM	3 0 U	3 0 U	1.8	1.0 U	4.6 R	3.0 U	3.0 U	3.0 U
COBALT	3 0 U	3.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.2 U	3.0 U
COPPER	18 2 J	15.95 J	5	7	137	29.1	3.0 U	3.4 J
IRON	165 J	375.5 J	4750	17 U	9020	2600	1430	561 J
LEAD	10 0 UJ	10 UJ	2.7 J	1.0 U	36.1	10.0 U	2.2 U	1.0 U
MAGNESIUM	526000	517500	68900	7230	389000	446000	64600	61800
MANGANESE	77 9	78 8	594	50.7	860 J	910	154 J	141
NICKEL	7 0 U	7.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	7.0 U
POTASSIUM	196000	192000	67100	6490	151000	170000	53200	48100
SODIUM	4980000	4910000	568000 J	18700 J	3500000	4010000	675000	569000
VANADIUM	3.0 U	3.0 U	1.1	1.1	3.0 U	3.0 U	3.0 U	3.0 U
ZINC	2.0 UJ	2 UJ	36.5	6	165 J	7.2 U	3.6 U	2.0 UJ
SDG								
ENGINEERING								
AMMONIA (N)	NA		NA	NA	NA	NA	NA	NA
BIOCHEMICAL OXYGEN DEMAND	NA		NA	NA	NA	NA	NA	NA
CHEMICAL OXYGEN DEMAND	NA		NA	NA	NA	NA	NA	NA
TOTAL ORGANIC CARBON	NA		NA	NA	NA	NA	NA	NA
TOTAL SUSPENDED SOLIDS	NA		NA	NA	NA	NA	NA	NA

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

GOSS C VE GROUNDWATER (ROUND 2)

	8GW4-2	8GW4-2 DISS	8GW5S-2	8GW6S-2 DISS	8GW6S-2	8GW6S-2 DISS	8GW6D-2	8GW6D-2 DISS	8GW7S-2
SDG	192212	192217	192215	192210	192217	192212	192216	192211	192435
TAL Metals (UG/L)									
ALUMINUM	10.0 U	10.0 U	10.0 U	10.0 U	198 J	10.0 U	419 J	10.0 U	84.7 U
ANTIMONY	12.0 U	21.5 U	12.0 U	12.0 U	12.0 U	23.7 U	12.0 U	35.9 U	5.0 U
ARSENIC	4.6	4.7	20.0 U	20.0 U	5.3	5.0	2.0 U	2.0 U	3.7
BARIUM	1340 J	1380	41.8 J	44.6 J	402 J	160	239 J	213	355
BORON	1130 J	1040	1660 J	1860	643 J	590	215 J	219 J	449
CADMIUM	1.0 U	2.0 U	R	1.0 U	1.0 U	2.0 U	1.6 R	2.0 UR	1.0 U
CALCIUM	72100	71900	141000	149000	80000	76300	360000	294000	70400
CHROMIUM	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	6.5 R	10.1 U	1.0 U
COBALT	2.1 U	3.0 U	1.0 U	1.0 U	2.8 U	3.0 U	1.9 U	3.0 U	1.0 U
COPPER	3.0 U	2.0 U	3.0 U	3.0 U	13.8	7.4	69.1	47.8 J	3.0 U
IRON	9610	9530 J	241	207	5890	273 J	846	57.7 U	10400
LEAD	1.1 U	1.0 U	10.0 U	10.0 U	14.5	1.0 U	26.9	1.0 UJ	2.1
MAGNESIUM	38300	38600	558000	585000	37800	36200	34600	184 J	27300
MANGANESE	299 J	303	105 J	113	417 J	116	125 J	2.2 U	1130
NICKEL	13.2	14.1 U	3.0 U	3.0 U	4.8 J	7.5 U	5.0 J	9.5 U	3.0 U
POTASSIUM	26800	25700	193000	203000	25300	24000	40900	40100	12800
SODIUM	241000	228000	4770000	5050000	307000	294000	447000	516000	61600 J
VANADIUM	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	5.6 U	3.0 U	3.0 U	1.0 U
ZINC	61.2 J	9.2 U	17.6 J	6.7 U	42.8 J	2.6 U	123 J	2.0 UJ	7.5
SDG									
ENGINEERING									
AMMONIA (N)	NA	NA	NA	NA	NA	NA	NA	NA	2.2
BIOCHEMICAL OXYGEN DEMAND	NA	NA	NA	NA	NA	NA	NA	NA	2.1
CHEMICAL OXYGEN DEMAND	NA	NA	NA	NA	NA	NA	NA	NA	22
TOTAL ORGANIC CARBON	NA	NA	NA	NA	NA	NA	NA	NA	4
TOTAL SUSPENDED SOLIDS	NA	NA	NA	NA	NA	NA	NA	NA	22

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

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R Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

GOSS COVE GROUNDWATER (ROUND 2)

	8GW7S-D-2	8GW7S-2AVG.	8GW7S-2 DISS	8GW7S-D-2 DISS	8GW7S-2 DISSAVG.	8GW8D-2	8GW8D-2 DISS	8GW8S-2
SDG	192436		192431	192432		192213	192218	192432
TAL Metals (UG/L)								
ALUMINUM	61.9 U	73.3 U	22.7 U	25.9 U	24.3 U	13700 J	14.7 U	1090
ANTIMONY	5.0 U	5.0 U	6.6	5.0 U	4.55	12.0 U	12.0 U	5.0 U
ARSENIC	3.5	3.6	3.2	3.5	3.35	6.1	2.0 U	1.0 U
BARIUM	347	351	343	336	339.5	182 J	44.6	45.3
BORON	440	444.5	459	432	445.5	51.4 U	44.8 U	59.4
CADMIUM	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 J	1.0 U	8.1
CALCIUM	68300	69350	67400	65000	132400	36000	29900	52200
CHROMIUM	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	16.3 J	3.0 U	1.1
COBALT	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	12.5	1.0 U	1.0 U
COPPER	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	30.9	3.0 U	6.8
IRON	10100	10250	8970	6810	8890	19300	17.0 U	1120
LEAD	2.3	2.2	1.0 U	1.0 U	1.0 U	19.5	1.0 UJ	1.1
MAGNESIUM	26800	27050	26500	25600	26050	11600	5010	7530
MANGANESE	1090	1110	1050	1020	1035	635 J	24.9 J	53.8
NICKEL	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	12.1	3.0 U	3.0 U
POTASSIUM	12600	12700	12600	12200	12400	11700	7110	6700
SODIUM	59000 J	60300	62000 J	60000 J	61000	46700	46000	19000 J
VANADIUM	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	46.3 J	3.0 U	3.9
ZINC	6.6	7.05	2.2	1.0	1.6	101 J	17.5	13.9
SDG								
ENGINEERING								
AMMONIA (N)	NA		NA	NA		NA	NA	NA
BIOCHEMICAL OXYGEN DEMAND	NA		NA	NA		NA	NA	NA
CHEMICAL OXYGEN DEMAND	NA		NA	NA		NA	NA	NA
TOTAL ORGANIC CARBON	NA		NA	NA		NA	NA	NA
TOTAL SUSPENDED SOLIDS	NA		NA	NA		NA	NA	NA

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

GOSS COVE GROUNDWATER (ROUND 2)

	8GW8S-2 DISS
SDG	192438
TAL Metals (UG/L)	
ALUMINUM	15 4 U
ANTIMONY	5 8
ARSENIC	4 1
BARIUM	408
BORON	853
CADMIUM	1 0 U
CALCIUM	124000
CHROMIUM	1 1
COBALT	1 0 U
COPPER	3 U
IRON	3810
LEAD	1 0 UJ
MAGNESIUM	65600
MANGANESE	536
NICKEL	3 0 U
POTASSIUM	63200
SODIUM	523000 J
VANADIUM	1 0 U
ZINC	1.8
SDG	
ENGINEERING	
AMMONIA (N)	NA
BIOCHEMICAL OXYGEN DEMAND	NA
CHEMICAL OXYGEN DEMAND	NA
TOTAL ORGANIC CARBON	NA
TOTAL SUSPENDED SOLIDS	NA

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

GOSS COVE SURFACE WATER

	Range(Total)	Frequency(Total)	Range(Diss)	Frequency(Diss)	8SW2	8SW3	8SW4	8SW4 DISS	8SW4-D	8SW4-D DISS
SDG					16876	16876	16703	16703	16703	16703
TCL Volatiles (UG/L)										
TRICHLOROETHENE	3	1/5	-	NA	3 J	10 U	10 U	NA	10 U	NA
SDG					16876	16876	16703	16703	16703	16703
TCL Semivolatiles (UG/L)										
BUTYLBENZYLPHTHALATE	3*	1/5	-	NA	10 U	10 U	1 J	NA	5 J	NA
SDG					16876	16876	16703	16703	16703	16703
TCL Pesticides/PCB (UG/L)										
HEPTACHLOR	0.05	1/5	-	NA	0.05 U	0.05 U	0.05 U	NA	0.05 U	NA
SDG					16876	16876	W16703	W16703	W16703	W16703
TAL Metals (UG/L)										
ALUMINUM	15.7-1326	3/5		0/1	15.7 J	14.0 U	276 U	71.8 U	213 U	123 U
BORON	842*-2,150	5/5	580*	1/1	1930 J	1860 J	878	230 J	808	930 J
CALCIUM	70,850*-172,000	5/5	79,700*	1/1	158000	152000	73400	81400	68300	78000
COPPER	10.25*	1/1	5.65*	1/1	R	R	12.5 J	5.8 J	8.0 J	5.5 J
IRON	90.6-389.5*	5/5	78.85*	1/1	90.6 J	92.9 J	452 J	80.5	327 J	77.2
LEAD	2.5*	1/5	-	0/1	10.0 UJ	10.0 UJ	3.3 J	1.0 UJ	1.7 J	1.0 UJ
MAGNESIUM	209,000-539,000	5/5	237,000*	1/1	502000	492000	217000	241000	201000	233000
MANGANESE	17.7-47.2*	5/5	39.2*	1/1	18.4	17.7	46.9	40.7 J	47.5	37.7 J
NICKEL	12.6-13.7	2/5	-	0/1	10.0 UJ	10.0 UJ	11.0 UJ	11.0 UJ	11.0 UJ	11.0 UJ
POTASSIUM	72,100*-236,000	5/5	81950*	1/1	236000	229000	75000	83300	69200	80600
SODIUM	483,000-5,260,000	5/5	2,205,000*	1/1	484000	483000	2090000	2290000	1830000	2120000
VANADIUM	3.7*-5.0	2/5	3.4*	1/1	5.0 J	5.0 UJ	4.3 J	3.5 J	3.0 J	3.3 J

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

GOSS CC.. SURFACE WATER

	8SW4AVG	8SW4 DISS AVG	8SW5	8SW6
SDG			16829	16829
TCL Volatiles (UG/L)				
TRICHLOROETHENE	10 U	NA	10 U	10 U
SDG			16829	16829
TCL Semivolatiles (UG/L)				
BUTYLBENZYLPHTHALATE	3 J	NA	10 U	10 U
SDG			16829	16829
TCL Pesticides/PCB (UG/L)				
HEPTACHLOR	0 05 U	NA	0 05 J	0 05 U
SDG			16829	16829
TAL Metals (UG/L)				
ALUMINUM	244 5 U	97 4 U	136	82 1
BORON	842	580 J	2050 J	2150 J
CALCIUM	70850	79700	187000	172000
COPPER	10 25 J	5 65 J	R	R
IRON	389 5 J	78 85	204	141
LEAD	[illegible]	[illegible]	[illegible]	[illegible]
MAGNESIUM	[illegible]	[illegible]	[illegible]	539000
MANGANESE	[illegible]	[illegible]	[illegible]	[illegible]
NICKEL	[illegible]	[illegible]	[illegible]	[illegible]
POTASSIUM	[illegible]	[illegible]	[illegible]	[illegible]
SODIUM	[illegible]	[illegible]	[illegible]	[illegible]
VANADIUM	[illegible]	[illegible]	[illegible]	[illegible]

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

Not applicable

Value is the average of duplicate sample results

GOSS COVE SEDIMENTS

	Range	Frequency	8SD2	8SD3	8SD4	8SD4-D	8SD4AVG	8SD5	8SD6
SDG			16876	16876	16703	16703		16829	16829
TCL Volatiles (UG/KG)									
CHLOROMETHANE	31*	1/5	29 U	62 U	49 J	13 J	31 J	33 U	17 U
METHYLENE CHLORIDE	37-71	2/5	37	71	63 U	43 U	42.25 U	33 U	16 U
ACETONE	110-740	3/5	570	740	280 U	180 U	230 U	110	17 U
CARBON DISULFIDE	77	1/5	29 U	77	50 UJ	43 U	46.5 UJ	33 U	17 U
2-BUTANONE	120	1/5	120	62 U	50 UJ	43 U	46.5 UJ	33 U	17 U
TETRACHLOROETHENE	4-7	2/5	7 J	62 U	50 UJ	43 U	46.5 UJ	33 UJ	4 J
SDG			16876	16876	16703	16703		16829	16829
TCL Semivolatiles (UG/KG)									
NAPHTHALENE	74	1/5	74 J	2100 U	3300 U	2900 U	3100 U	1100 U	5500 U
2-METHYLNAPHTHALENE	57	1/5	57 J	2100 U	3300 U	2900 U	3100 U	1100 U	5500 U
ACENAPHTHYLENE	82-255*	2/5	82 J	2100 U	290 J	220 J	255 J	1100 U	5500 U
ACENAPHTHENE	130	1/5	130 J	2100 U	3300 U	2900 U	3100 U	1100 U	5500 U
DIBENZOFURAN	140	1/5	140 J	2100 U	3300 U	2900 U	3100 U	1100 U	5500 U
FLUORENE	120-270	2/5	270 J	120 J	3300 U	2900 U	3100 U	1100 U	5500 U
PHENANTHRENE	260-3,300	4/5	3300	1700 J	1000 J	1100 J	1050 J	260 J	5500 U
ANTHRACENE	98-340	3/5	970 U	340 J	330 J	2900 U	330 J	98 J	5500 U
CARBAZOLE	160-220	2/5	220 J	160 J	3300 U	2900 U	3100 U	1100 UJ	5500 U
FLUORANTHENE	730-7,000	4/5	7000	4200	2700 J	2800 J	2650 J	730 J	5500 U
PYRENE	370-8,000	5/5	8000	3800	3100 J	3000	3050 J	1300 J	370 J
BENZO(A)ANTHRACENE	510-3,000	4/5	3000	1400 J	1500 J	1200 J	1350 J	510 J	5500 U
CHRYSENE	1,000-2,700	4/5	2700	2800	2000 J	1800 J	1900 J	1000 J	5500 U
DI-N-OCTYL PHTHALATE	410	1/5	970 U	410 J	3300 U	2900 U	3100 U	1100 UJ	5500 U
BENZO(B)FLUORANTHENE	320-3,300	5/5	3300	3000	1800 J	1600 J	1700 J	1100 J	320 J
BENZO(K)FLUORANTHENE	1,800*	1/5	970 U	2100 U	1800 J	1700 J	1800 J	1100 UJ	5500 U
BENZO(A)PYRENE	720-4,000	4/5	4000	2000 J	1700 J	1400 J	1550 J	720 J	5500 U
INDENO(1,2,3-CD)PYRENE	560-1,400	4/5	1400	1200 J	1100 J	890 J	995 J	560 J	5500 U
DIBENZ(A,H)ANTHRACENE	350-560	3/5	350 J	2100 U	560 J	2900 U	560 J	350 J	5500 U
BENZO(G,H,I)PERYLENE	460-710	4/5	640 J	460 J	870 J	500 J	685 J	710 J	5500 U
BENZOIC ACID	580-680	2/5	4700 U	10000 U	3300 U	680 J	680 J	580 J	27000 U

NA Not analyzed

ND Not detected

J Estimate value

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UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

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GOSS COVE SEDIMENTS

	Range	Frequency	SSD2	SSD3	SSD4	SSD4-D	SSD4AVG	SSD5	SSD6
SDG			16876	16876	16703	16703		16829	16829
TCL Pesticides/PCB (UG/KG)									
HEPTACHLOR	8.3-22	2/5	50 U	22 J	85 U	74 U	79.5 U	8.3 J	28 U
DIELDRIN	19-24	2/5	19 J	24 J	160 UJ	140 U	150 U	110 U	55 U
4,4'-DDE	16-35	2/5	16 J	210 U	160 U	140 U	150 U	35 J	55 U
ENDRIN	9.4	1/5	9.4 J	210 U	160 U	140 U	150 U	110 U	55 U
ENDOSULFAN II	16	1/5	97 U	210 U	160 U	140 U	150 U	16 J	55 U
4,4'-DDD	110-200	3/5	140	110 J	160 U	140 U	150 U	200 J	55 U
4,4'-DDT	43-63	3/5	63 J	60 J	160 UJ	140 U	150 U	43 J	55 U
ENDRIN ALDEHYDE	24-64	3/5	24 J	27 J	160 U	140 U	150 U	64 J	55 U
ALPHA-CHLORDANE	21-36	3/5	25 J	36 J	85 U	74 U	79.5 U	21 J	28 U
GAMMA-CHLORDANE	15-22	3/5	16 J	22 J	85 U	74 U	79.5 U	15 J	28 U
AROCLOR-1260	540-900	4/5	730 J	900 J	750 J	1000 J	875 J	540 J	550 U
SDG			16876	16876	16703	16703		16829	16829
TAL Metals (MG/KG)									
ALUMINUM	1,970-21,000	5/5	21000	11900	8520	5890	7105	9520	1970
ARSENIC	1.2-124.9*	3/5	6.8 U	8.1 U	247 J	2.8 J	124.9 J	4.5 J	1.2 J
BARIUM	16.0-79.3	5/5	79.3	70.8	38.1	24.3	30.2	23.8 J	16 J
BERYLLIUM	0.42	1/5	1.8 U	1.7 U	0.81 U	0.39 U	0.5 U	0.74 U	0.42 J
BORON	22.48*-72.2	2/5	72.2	50 U	35.2 J	19.5 UJ	22.48 J	37 UJ	12.7 UJ
CADMIUM	2.7	1/5	1.8 UJ	2.7 J	2.7 U	1.2 U	1.95 U	1.5 UJ	0.51 UJ
CALCIUM	1,890-58,600	5/5	58600	4520	2360	1440	1900	1850	15400
CHROMIUM	8.0-51.2	5/5	38.4	51.2	32 J	18.5 J	25.25 J	28.6 J	9.0 J
COBALT	4.05-5.9	5/5	4.1 J	5.9 J	4.8	3.3	4.05	4.2	5.1
COPPER	60.1-188	5/5	89.3	188	111 J	78.1 J	93.55 J	74.1	60.1
IRON	4,640-19,800	5/5	16800 J	19800 J	13300	8180	10740	14600 J	4640 J
LEAD	71.9-646	5/5	370 J	646 J	388 J	124 J	245 J	216 J	71.9 J
MAGNESIUM	1,160-27,700	5/5	27700	8640	5040	3040	4040	5800	1160
MANGANESE	86.2-308	5/5	308	189	126	104	116	211 J	86.2 J
MERCURY	0.17-1.2	5/5	0.87	1.2	0.62	0.39	0.51	1.1	0.17
NICKEL	11.7-38.1	5/5	24.2	38.1	14.5	12.3	13.4	14.5	11.7
POTASSIUM	556-4,540	5/5	4540 J	4380 J	2920	1880	2400	3280	556
SILVER	0.58	1/4	1.6 U	3.2 U	R	0.79 U	0.79 U	1.5 UJ	0.58
SODIUM	2,540-10,755*	3/5	18000 U	34400 U	14900	6610	10755	10200	2540
VANADIUM	6.6-38.7	5/5	32.8	38.7	28.0	18.3	23.15	29.4	6.6
ZINC	131-320	5/5	149	292	186 J	110 J	148 J	131 J	320 J
SDG				16876					
TCLP Metals (UG/L)									
BARIUM	13.5	1/1	NA	13.5	NA	NA	NA	NA	NA
CHROMIUM	4.5	1/1	NA	4.5 J	NA	NA	NA	NA	NA
LEAD	16.9	1/1	NA	16.9	NA	NA	NA	NA	NA
SELENIUM	44.3	1/1	NA	44.3	NA	NA	NA	NA	NA

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

APPENDIX D.10

SITE 13 - LOWER SUBASE

LOWER SUBASE SOIL

	Range	Frequency	13MW18-0911	13TB2A-0406	13TB2A-0608	13TB2A-0406-X	13TB3A-2.5-4.5	13TB3A-2.5-4.5D	13TB3A-2.5-4.5AVG	13TB3A-0608
SDG			17381	17308	17308	17308	17308	17308		17381
TAL LEAD (MG/KG)	2.6-10,600	27/27	2.6	1880 J	NA	2080 J	8240 J	4770 J	6505 J	NA
SDG			17381	17308	17308	17308	17308	17308		17381
TCLP Metals (UG/L)										
ARSENIC	30.9-37.5	3/22	26.0 U	26.0 U	NA	NA	37.5 J	35.4 J	36.5 J	26.0 U
BARIUM	24.6-408	22/22	89.9	125	NA	NA	408	379	393.5	246
CADMIUM	2.2-10 6	5/22	2.0 U	2.0 U	NA	NA	2.0 U	2.0 U	2.0 U	2.2 J
CHROMIUM	3.2-12.5	13/22	3.0 UJ	11.2	NA	NA	3.0 U	3.0 U	3.0 U	3.0 UJ
LEAD	20.0-150,000	14/22	20.0 U	14.0 UJ	NA	NA	150000 J	109000 J	129500 J	21300
SELENIUM	25.0-64 4	6/22	24.0 U	24.0 U	NA	NA	24.0 U	24.0 U	24.0 U	45.3 J
SILVER	2 0	1/22	2 0	2 0 U	NA	NA	2.0 U	2.0 U	2.0 U	2.0 U
SDG			17381	17308	17308	17308	17308	17308		17381
TPH (MG/KG)	23 8 51,600	21/21	51600 J	383	11800	NA	321 J	69 2 J	195 1 J	NA

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

Not applicable

Value is the average of duplicate sample results

LOWER SUBASE SOIL

	13TB3A-0608-X	13TB4A-0002	13TB4A-0002-X	13TB5A-1.5-3.5	13TB5A-1.5-3.5X	13TB6-0507	13TB7-0103	13TB8-0103	13TB9-0103	13TB11-0406
SDG	17308	17308	17308	17308	17308	17308	17308	17381	17381	17381
TAL LEAD (MG/KG)	1990 J	280 J	1810 J	151 J	113 J	98.9 J	36.8 J	149	150	404
SDG	17308	17308	17308	17308	17308	17308	17308	17381	17381	17381
TCLP Metals (UG/L)										
ARSENIC	NA	26.0 U	NA	26.0 U	NA	26.0 U	26.0 U	26.0 U	26.0 U	26.0 U
BARIUM	NA	291	NA	211	NA	24.6	237	303	275	171
CADMIUM	NA	2.4 J	NA	2.0 U	NA	2.0 U	2.0 U	2.0 U	2.6 J	2.0 U
CHROMIUM	NA	8.7	NA	6.1	NA	3.0 U	12.5	3.2 J	3.0 UJ	3.0 UJ
LEAD	NA	909 J	NA	429 J	NA	57.8 U	266 J	110	104	3430
SELENIUM	NA	24.0 U	NA	24.0 U	NA	24.0 U	24.0 U	24.0 U	24.0 U	24.0 U
SILVER	NA	2.0 U	NA	2.0 U	NA	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
SDG	17308	17308	17308	17308	17308	17308	17308	17381	17381	17381
TPH (MG/KG)	NA	3440	NA	552	NA	970	65.2	856 J	26.8 J	169 J

NA: Not analyzed

ND: Not detected

J: Estimate value

U: Not detected at detection limit indicated

UJ: Not detected at estimated detection limit indicated

R: Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

LOWER SUBASE SOIL

	13TB12-0204-X	13TB12-0406	13TB12-0608-X	13TB13-0305	13TB13-0911	13TB15-0305	13TB15-0709	13TB16-0204	13TB16-0810	13TB17-0406
SDG		17308		17381	17381	17381	17381	17381	17381	17381
TAL LEAD (MG/KG)	567 J	282 J	107 J	26.7	3.6	112	6.4	24.2	87	62.5
SDG		17308		17381	17381	17381	17381	17381	17381	17381
TCLP Metals (UG/L)										
ARSENIC	NA	26.0 U	NA	26.0 U	26.0 U	26.0 U	26.0 U	26.0 U	36.2	26.0 U
BARIUM	NA	63.2	NA	254	81	106	45.3	235	243	284
CADMIUM	NA	2.0 U	NA	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.5 J
CHROMIUM	NA	4.7 J	NA	9.3 J	3.7 J	5.0 J	3.0 UJ	3.0 UJ	4.7 J	7.3 J
LEAD	NA	651 J	NA	51.2	20.0 U	20.0 U	20.0 U	20.0	380	194
SELENIUM	NA	24.0 U	NA	26.9 J	24.0 U	24.0 U	26.9 J	25.0 J	64.4	24.0 U
SILVER	NA	2.0 U	NA	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
SDG		17308		17381	17381	17381	17381	17381	17381	17381
TPH (MG/KG)	NA	138	NA	263 J	686 J	213 J	788 J	23.8 J	610 J	546 J

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

LOWER SUBASE SOIL

	13TB17-0608	13TB18-0103	13WE4A-0002
SDG	17381	17463	17308
TAL LEAD (MG/KG)	3.4	1320 J	10600 J
SDG	17381	17463	17308
TCLP Metals (UG/L)			
ARSENIC	26.0 U	50.0 U	30.9 J
BARIUM	50.8	264	166
CADMIUM	2.0 U	3.0 UJ	10.6
CHROMIUM	5.4 J	6.2 U	8.6
LEAD	20.0 U	50.0 U	143000 J
SELENIUM	33.5 J	24.0 U	24.0 U
SILVER	2.0 U	9.0 UJ	2.0 U
SDG	17381	17463	17308
TPH (MG/KG)	45 J	NA	925

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

LOWER BASE GROUNDWATER

	Range(Total)	Frequency(Total)	Range(Diss)	Frequency(Diss)	13GW1	13GW1 DISS	13GW2	13GW2 DISS	13GW3	13GW3 DISS
SDG					17788		17788		17788	
TCL Volatiles (UG/L)										
CARBON DISULFIDE	1	1/24	-	NA	10 U	NA	10 U	NA	10 U	NA
1,1-DICHLOROETHENE	4	1/24	-	NA	10 U	NA	10 U	NA	10 U	NA
1,1-DICHLOROETHANE	3	2/24	-	NA	10 U	NA	10 U	NA	10 U	NA
CHLOROFORM	1	1/24	-	NA	10 U	NA	10 U	NA	10 U	NA
1,1,1-TRICHLOROETHANE	3	1/24	-	NA	10 U	NA	10 U	NA	10 U	NA
BENZENE	3	1/24	-	NA	10 U	NA	3 J	NA	10 U	NA
TETRACHLOROETHENE	2	1/24	-	NA	10 U	NA	10 U	NA	10 U	NA
ETHYLBENZENE	2-11	2/24	-	NA	10 U	NA	10 U	NA	10 U	NA
XYLENE (TOTAL)	5-44	3/24	-	NA	10 U	NA	10 U	NA	10 U	NA
SDG					17788		17788		17788	
TCL Semivolatiles (UG/L)										
4-METHYLPHENOL	1-4	2/24	-	NA	10 U	NA	10 U	NA	10 U	NA
NAPHTHALENE	0.60-28	5/24	-	NA	10 U	NA	28	NA	10 U	NA
2-METHYLNAPHTHALENE	1-47	3/24	-	NA	10 U	NA	47	NA	10 U	NA
ACENAPHTHYLENE	1	1/24	-	NA	10 U	NA	1 J	NA	10 U	NA
ACENAPHTHENE	0.6-10	6/24	-	NA	10 U	NA	10 J	NA	10 U	NA
DIBENZOFURAN	1-11	2/24	-	NA	10 U	NA	11	NA	10 U	NA
DIETHYLPHTHALATE	3	1/24	-	NA	3 J	NA	10 U	NA	10 U	NA
FLUORENE	1-15	2/24	-	NA	10 U	NA	15	NA	10 U	NA
PHENANTHRENE	1-9	3/24	-	NA	10 U	NA	9 J	NA	10 U	NA
ANTHRACENE	2	1/24		NA	10 U	NA	2 J	NA	10 U	NA
CARBAZOLE	1	2/24	-	NA	10 U	NA	1 J	NA	10 U	NA
DI-N-BUTYLPHTHALATE	0.6-1	3/24		NA	10 U	NA	0.6 J	NA	10 U	NA
FLUORANTHENE	1-2	5/24		NA	10 U	NA	2 J	NA	10 U	NA
PYRENE	0.6-2	1/24		NA	10 U	NA	1 J	NA	10 U	NA
BENZO(A)ANTHRACENE	1	1/24		NA	10 U	NA	10 U	NA	10 U	NA
CHRYSENE	0.9	1/24		NA	10 U	NA	10 U	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	10	2/24	-	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(B)FLUORANTHENE	0.6	1/24		NA	10 U	NA	10 U	NA	10 U	NA
BENZO(K)FLUORANTHENE	1	1/24		NA	10 U	NA	10 U	NA	10 U	NA
BENZO(A)PYRENE	0.8	1/24	-	NA	10 U	NA	10 U	NA	10 U	NA
INDENO(1,2,3-CD)PYRENE	0.7	1/24	-	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(G,H,I)PERYLENE	1	1/24	-	NA	10 U	NA	10 U	NA	10 U	NA
BENZOIC ACID	0.5-1	2/24	-	NA	0.60 J	NA	50 U	NA	50 U	NA

NA: Not analyzed

ND: Not detected

J: Estimate value

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LOWER BASE GROUNDWATER

	13GW6	13GW6 DISS	13GW8	13GW8 DISS	13GW9	13GW9 DISS	13GW10	13GW10 DISS	13GW11	13GW11 DISS
SDG	17788		17788		17788		17788		17788	
TCL Volatiles (UG/L)										
CARBON DISULFIDE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,1-DICHLOROETHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,1-DICHLOROETHANE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
CHLOROFORM	10 U	NA	10 U	NA	10 U	NA	1 J	NA	10 U	NA
1,1,1-TRICHLOROETHANE	3 J	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
TETRACHLOROETHENE	2 J	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
ETHYLBENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
XYLENE (TOTAL)	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
SDG	17788		17788		17788		17788		17788	
TCL Semivolatiles (UG/L)										
4-METHYLPHENOL	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
NAPHTHALENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
2-METHYLNAPHTHALENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
ACENAPHTHYLENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
ACENAPHTHENE	10 U	NA	2 J	NA	5 J	NA	10 U	NA	10 U	NA
DIBENZOFURAN	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DIETHYLPHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
FLUORENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
PHENANTHRENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
ANTHRACENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
CARBAZOLE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DI-N-BUTYLPHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
FLUORANTHENE	10 U	NA	1 J	NA	10 U	NA	10 U	NA	10 U	NA
PYRENE	10 U	NA	0.6 J	NA	0.6 J	NA	10 U	NA	10 U	NA
BENZO(A)ANTHRACENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
CHRYSENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(B)FLUORANTHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(K)FLUORANTHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(A)PYRENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
INDENO(1,2,3-CD)PYRENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(G,H,I)PERYLENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZOIC ACID	50 U	NA	50 U	NA	50 U	NA	50 U	NA	50 U	NA

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ND: Not detected

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LOWER BASE GROUNDWATER

	13GW12	13GW12 DISS	13GW13	13GW13 DISS	13MW14	13MW14 DISS	13GW15	13GW15 DISS	13MW16	13MW16 DISS
SDG	17791		17791		17788		17791		17788	
TCL Volatiles (UG/L)										
CARBON DISULFIDE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,1-DICHLOROETHENE	10 U	NA	4 J	NA	10 U	NA	10 U	NA	10 U	NA
1,1-DICHLOROETHANE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
CHLOROFORM	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,1,1-TRICHLOROETHANE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
TETRACHLOROETHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
ETHYLBENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
XYLENE (TOTAL)	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
SDG	17791		17791		17788		17791		17788	
TCL Semivolatiles (UG/L)										
4-METHYLPHENOL	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
NAPHTHALENE	10 U	NA	10 U	NA	10 U	NA	0.8 J	NA	0.6 J	NA
2-METHYLNAPHTHALENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
ACENAPHTHYLENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
ACENAPHTHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	1 J	NA
DIBENZOFURAN	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DIETHYLPHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
FLUORENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
PHENANTHRENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
ANTHRACENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
CARBAZOLE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DI-N-BUTYLPHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
FLUORANTHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
PYRENE	10 U	NA	10 U	NA	10 U	NA	1 J	NA	10 U	NA
BENZO(A)ANTHRACENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
CHRYSENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 J	NA	10 U	NA
BENZO(B)FLUORANTHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(K)FLUORANTHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(A)PYRENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
INDENO(1,2,3-CD)PYRENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(G,H,I)PERYLENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZOIC ACID	50 U	NA	50 U	NA	50 U	NA	50 U	NA	50 U	NA

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ND: Not detected

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- Not applicable

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LOWER BASE GROUNDWATER

	13GW17	13GW17 DISS	13GW17D	13GW17D DISS	13GW17AVG	13GW17 DISSAVG	13MW18	13MW18 DISS	13MW19	13MW19 DISS
SDG	17788		17788				17761		17761	
TCL Volatiles (UG/L)										
CARBON DISULFIDE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	1 J	NA
1,1-DICHLOROETHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,1-DICHLOROETHANE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	3 J	NA
CHLOROFORM	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,1,1-TRICHLOROETHANE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
TETRACHLOROETHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
ETHYLBENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	11	NA
XYLENE (TOTAL)	10 U	NA	10 U	NA	10 U	NA	10 U	NA	44	NA
SDG	17788		17788				17761		17761	
TCL Semivolatiles (UG/L)										
4-METHYLPHENOL	10 U	NA	10 U	NA	10 U	NA	10 U	NA	4 J	NA
NAPHTHALENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	1 J	NA
2-METHYLNAPHTHALENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	1 J	NA
ACENAPHTHYLENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
ACENAPHTHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DIBENZOFURAN	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DIETHYLPHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
FLUORENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
PHENANTHRENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
ANTHRACENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
CARBAZOLE	10 U	NA	10 U	NA	10 U	NA	10 UJ	NA	10 UJ	NA
DI-N-BUTYLPHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
FLUORANTHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
PYRENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(A)ANTHRACENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
CHRYSENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(B)FLUORANTHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(K)FLUORANTHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(A)PYRENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
INDENO(1,2,3-CD)PYRENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(G,H,I)PERYLENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZOIC ACID	50 U	NA	50 U	NA	50 U	NA	50 UJ	NA	50 U	NA

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LOWER BASE GROUNDWATER

	13MW20	13MW20 DISS	13MW20-D	13MW20-D DISS	13MW20AVG	13MW20 DISSAVG	13MW21	13MW21 DISS	NES04	NES04 DISS
SDG	17761		17761				17761		17788	
TCL Volatiles (UG/L)										
CARBON DISULFIDE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,1-DICHLOROETHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,1-DICHLOROETHANE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
CHLOROFORM	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,1,1-TRICHLOROETHANE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
TETRACHLOROETHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
ETHYLBENZENE	10 U	NA	10 U	NA	10 U	NA	2 J	NA	10 U	NA
XYLENE (TOTAL)	10 U	NA	10 U	NA	10 U	NA	8 J	NA	10 U	NA
SDG	17761		17761				17761		17788	
TCL Semivolatiles (UG/L)										
4-METHYLPHENOL	10 U	NA	10 U	NA	10 U	NA	1 J	NA	10 U	NA
NAPHTHALENE	1 J	NA	1 J	NA	1 J	NA	10 U	NA	10 U	NA
2-METHYLNAPHTHALENE	1 J	NA	1 J	NA	1 J	NA	10 U	NA	10 U	NA
ACENAPHTHYLENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
ACENAPHTHENE	1 J	NA	1 J	NA	1 J	NA	10 U	NA	0.6 J	NA
DIBENZOFURAN	1 J	NA	1 J	NA	1 J	NA	10 U	NA	10 U	NA
DIETHYLPHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
FLUORENE	1 J	NA	1 J	NA	1 J	NA	10 U	NA	10 U	NA
PHENANTHRENE	1 J	NA	1 J	NA	1 J	NA	10 U	NA	10 U	NA
ANTHRACENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
CARBAZOLE	1 J	NA	1 J	NA	1 J	NA	10 UJ	NA	10 U	NA
DI-N-BUTYLPHTHALATE	10 U	NA	10 U	NA	10 U	NA	1 J	NA	10 U	NA
FLUORANTHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
PYRENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(A)ANTHRACENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
CHRYSENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(B)FLUORANTHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(K)FLUORANTHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(A)PYRENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
INDENO(1,2,3-CD)PYRENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZO(G,H,I)PERYLENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZOIC ACID	50 UJ	NA	50 UJ	NA	50 UJ	NA	50 U	NA	50 U	NA

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LOWER BASE GROUNDWATER

	NES06	NES06 DISS	NESO10	NESO10 DISS	NESO11	NESO11 DISS	WE-1	WE-1 DISS	WE-5	WE-5 DISS
SDG	17761		17791		17791		17791		17791	
TCL Volatiles (UG/L)										
CARBON DISULFIDE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,1-DICHLOROETHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,1-DICHLOROETHANE	10 U	NA	3 J	NA	10 U	NA	10 U	NA	10 U	NA
CHLOROFORM	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,1,1-TRICHLOROETHANE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
TETRACHLOROETHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
ETHYLBENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
XYLENE (TOTAL)	10 U	NA	10 U	NA	10 U	NA	10 U	NA	5 J	NA
SDG	17761		17791		17791		17791		17791	
TCL Semivolatiles (UG/L)										
4-METHYLPHENOL	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
NAPHTHALENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
2 METHYLNAPHTHALENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
ACENAPHTHYLENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
ACENAPHTHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DIBENZOFURAN	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DIETHYLPHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
FLUORENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
PHENANTHRENE	10 U	NA	10 U	NA	1 J	NA	10 U	NA	10 U	NA
ANTHRACENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
CARBAZOLE	10 UJ	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DI-N-BUTYLPHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
FLUORANTHENE	10 U	NA	10 U	NA	2 J	NA	10 U	NA	10 U	NA
PYRENE	10 U	NA	10 U	NA	2 J	NA	10 U	NA	10 U	NA
BENZO(A)ANTHRACENE	10 U	NA	10 U	NA	1 J	NA	10 U	NA	10 U	NA
CHRYSENE	10 U	NA	10 U	NA	0 9 J	NA	10 U	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	NA	10 U	NA	10 J	NA	10 U	NA	10 U	NA
BENZO(B)FLUORANTHENE	10 U	NA	10 U	NA	0 6 J	NA	10 U	NA	10 U	NA
BENZO(K)FLUORANTHENE	10 U	NA	10 U	NA	1 J	NA	10 U	NA	10 U	NA
BENZO(A)PYRENE	10 U	NA	10 U	NA	0 8 J	NA	10 U	NA	10 U	NA
INDENO(1,2,3-CD)PYRENE	10 U	NA	10 U	NA	0 7 J	NA	10 U	NA	10 U	NA
BENZO(G,H,I)PERYLENE	10 U	NA	10 U	NA	1 J	NA	10 U	NA	10 U	NA
BENZOIC ACID	1 J	NA	50 U	NA	50 U	NA	50 U	NA	50 U	NA

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LOWER BASE GROUNDWATER

	Range(Total)	Frequency(Total)	Range(Diss)	Frequency(Diss)	13GW1	13GW1 DISS	13GW2	13GW2 DISS	13GW3	13GW3 DISS
SDG					17788	17788	17788	17788	17788	17788
TAL Metals (UG/L)										
ALUMINUM	18.2-40,800	6/24	7,160-18,700	2/24	14.0 U	14.0 U	14.0 U	30.1 U	47.1 U	14.7 U
ANTIMONY	-	0/24	15.1	1/24	15.0 U	15.0 U	15.0 U	15.0 U	15.0 U	15.0 U
ARSENIC	2.1-29.6	11/24	2.3-24.8	6/24	2.7 J	2.0 U	4.0 J	3.2 J	2.0 U	2.0 U
BARIUM	9.8-283	14/24	9.2-95.0	10/24	31.6 U	34.5 U	80.5 J	77.1 J	57.6 J	55.2 J
BERYLLIUM	1.3-2.6	2/24	1.0	1/24	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
BORON	60.8-1,890	20/24	53.3-1,900	20/24	50.0 U	50.0 U	50.0 U	50.0 U	61.5	61.9
CADMIUM	3.3-20.9	3/24	-	0/24	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ
CALCIUM	6,510-181,000	24/24	5,810-180,000	24/24	23900	26200	61900	58800	39200	37800
CHROMIUM	116	1/24	3.3-9.3	3/24	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
COBALT	6.8-25.6	2/24	-	0/24	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
COPPER	2.6-649	10/23	1.65*-44.2	14/23	2.6 J	2.3 J	2.0 U	2.0 U	2.0 U	2.0 U
IRON	78.5-36,700	20/24	272-7520	17/24	2970	2740	8050	7520	729	662
LEAD	1.3-2,760	11/24	1.05*-13.5	4/24	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
MAGNESIUM	3,330-567,000	21/24	195-574,000	24/24	4330 J	4700 J	6340	6080	5490	5290
MANGANESE	21.5-1,980	19/24	40.1-1,730	17/24	471	457	560	539	169	173
MERCURY	0.43-0.97	3/24	0.31-0.35	2/24	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
NICKEL	10.4-80.0	6/24	-	0/24	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
POTASSIUM	4,300-259,000	24/24	4,120-26,300	24/24	4300 J	4340 J	7210 J	7160 J	6390 J	6350 J
SELENIUM	-	0/24	3.2	1/24	3.0 UJ	3.0 UJ	3.0 UJ	3.0 UJ	3.0 UJ	3.0 UJ
SODIUM	27,800-5,630,000	24/24	30,100-463,000	24/24	27800	30100	58900	58700	49800	48300
VANADIUM	5.1-689	6/24	205-593	2/24	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
ZINC	14.4-924	7/24	11.1-20.6	3/24	21.2	15.7 U	5.8 U	3.3 U	10.2 U	4.0 U
SDG					17788		17788		17788	
TPH (MG/L)	0.50-2.1	8/24	-	NA	0.50 U	NA	1.1	NA	1.5	NA

NA: Not analyzed

ND: Not detected

J: Estimate value

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LOWER BASE GROUNDWATER

	13GW6	13GW6 DISS	13GW8	13GW8 DISS	13GW9	13GW9 DISS	13GW10	13GW10 DISS	13GW11	13GW11 DISS
SDG	17788	17788	17788	17788	17788	17788	17788	17788	17788	17788
TAL Metals (UG/L)										
ALUMINUM	14.0 U	19.2 U	14.0 U	25.2 U	14.0 U	14.0 U	35.4 U	14.0 U	67.5 U	20.6 U
ANTIMONY	15.0 U	15.0 U	15.0 U	15.0 U	15.0 U	15.0 U	15.0 U	15.0 U	15.0 U	15.1
ARSENIC	2.0 U	2.0 U	2.0 U	2.0 U	2.1 J	2.0 U	2.0 U	2.0 U	4.6 J	3.1 J
BARIUM	22.6 U	21.9 U	21.4 U	5.4 U	40.6 U	40.3 U	5.6 U	5.0 U	26.0 U	23.6 U
BERYLLIUM	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
BORON	60.8	57.0	118	206	1010 J	982 J	297	291	50.0 U	50.0 U
CADMIUM	2.0 UJ	2.0 UJ	5.0 U	2.0 UJ	2.0 UJ	2.0 UJ	3.3 J	2.0 UJ	2.0 UJ	2.0 UJ
CALCIUM	35900	34400	11700	23400	127000	124000	39800	39300	21600	21900
CHROMIUM	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
COBALT	4.0 U	4.0 U	6.8	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
COPPER	2.0 U	2.2 J	2.0 U	2.0 U	2.7 J	3.4 J	4.0 J	3.4 J	34.7	2.5 J
IRON	27.4 U	12.7 U	82.1 J	710	40.5 U	47.6 U	78.5 J	15.1 U	6620	3320
LEAD	1.0 UJ	1.0 UJ	2.5 J	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	1.0 U	23.2 J	1.0 UJ
MAGNESIUM	5810	5600	23800	28700	277000	270000	76400	75200	7260	7330
MANGANESE	2.0 U	2.0 U	32.7	1730	213	209	3.0 U	2.8 U	276	249
MERCURY	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U
NICKEL	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
POTASSIUM	5960 J	6040 J	7450 J	11700 J	107000 J	103000 J	30200 J	30000 J	5980 J	5910 J
SELENIUM	3.0 UJ	3.0 UJ	3.0 UJ	3.0 UJ	3.0 UJ	3.0 UJ	3.0 UJ	3.0 UJ	3.0 UJ	3.0 UJ
SODIUM	56800	55300	175000	311000	2720000	2430000	677000	672000	127000	130000
VANADIUM	5.0 U	5.0 U	8.3 J	5.0 U	5.0 UJ	5.0 UJ	5.0 U	5.0 U	5.0 U	5.0 U
ZINC	3.2 U	3.2 U	7.2 U	2.0 U	2.0 U	2.0 U	23.3	14.5 U	20.1	4.2 U
SDG	17788		17788		17788		17788		17788	
TPH (MG/L)	0.60	NA	0.50 U	NA	0.50 U	NA	0.50 U	NA	0.60	NA

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LOWER BASE GROUNDWATER

	13GW12	13GW12 DISS	13GW13	13GW13 DISS	13MW14	13MW14 DISS	13GW15	13GW15 DISS	13MW16	13MW16 DISS
SDG	17791	17791	17791	17791	17788	17788	17791	17791	17788	17788
TAL Metals (UG/L)										
ALUMINUM	14.0 U	14.0 U	18.2 J	14.0 U	14.0 U	14.0 U	244	14.0 U	14.0 U	14.0 U
ANTIMONY	15.0 U	20.2 U	15.0 U	15.0 U	15.0 U	15.0 U	15.0 UJ	15.0 UJ	15.0 U	15.0 U
ARSENIC	2.0 UJ	2.0 UJ	9.3 J	2.0 UJ	2.0 U	2.0 U	20.0 UJ	20.0 UJ	20.0 U	20.0 U
BARIUM	56.9 J	54.1 J	10.8 J	11.4 J	29.7 U	29.9 U	33.7 J	32.5 J	37.6 U	39.1 U
BERYLLIUM	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
BORON	50 U	50.0 U	99.4	99.7	1110 J	1080	1890	1900	1530 J	1590 J
CADMIUM	2.0 U	2.0 U	2.0 U	2.0 U	2.0 UJ	2.0 UJ	2.0 U	2.0 U	2.0 UJ	2.0 UJ
CALCIUM	28000	27300	39500	40400	110000	107000	181000	180000	145000	148000
CHROMIUM	3.0 UJ	3.0 UJ	3.0 UJ	3.0 UJ	3.0 U	3.0 U	3.0 UJ	3.0 UJ	3.0 U	3.0 U
COBALT	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
COPPER	2.0 U	2.0 U	2.0 U	2.0 U	8.1 J	9.5 J	R	R	5.6 J	5.0 J
IRON	5480	5200	3210	694	95.2 J	28.8 U	1520	999	2930	2900
LEAD	2.2 J	2.0 UJ	2.0 UJ	2.0 UJ	11.3	5.2 UJ	20.0 UJ	20.0 UJ	1.6 J	1.0 UJ
MAGNESIUM	3330 J	3290 J	6350	6450	305000	295000	567000	574000	435000	451000
MANGANESE	329	321	172	173	11.9 U	10.9 U	44.9	40.1	48.8	48.8
MERCURY	0.20 UJ	0.20 UJ	0.20 UJ	0.20 UJ	0.20 U	0.20 U	0.20 UJ	0.20 UJ	0.20 U	0.20 U
NICKEL	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	11.6	10.0 U
POTASSIUM	6110	6100	6930	7080	123000 J	118000 J	259000	263000	189000 J	202000 J
SELENIUM	3.0 UJ	3.2 J	3.0 UJ	3.0 UJ	30.0 UJ	3.0 UJ	3.0 UJ	3.0 UJ	30.0 UJ	30.0 UJ
SODIUM	89700	87700	81500	85700	3090000	2850000	5630000	1310000	4800000	4830000
VANADIUM	5.0 U	5.0 U	5.0 U	5.0 U	5.0 UJ	5.0 U	5.0 UJ	5.0 UJ	5.3 J	5.0 UJ
ZINC	3.7 U	9.9 U	7.0 U	12.0 J	23.7	17.1 U	2.0 U	2.0 U	10.0 U	2.0 U
SDG	17791		17791		17788		17791		17788	
TPH (MG/L)	0.50 U	NA	0.50 U	NA	0.50 U	NA	0.50 U	NA	0.80	NA

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

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- Not applicable

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LOWER BASE GROUNDWATER

	13GW17	13GW17 DISS	13GW17D	13GW17D DISS	13GW17AVG	13GW17 DISSAV	13MW18	13MW18 DISS	13MW19	13MW19 DISS
SDG	17788	17788	17788	17788			17761	17761	17761	17761
TAL Metals (UG/L)										
ALUMINUM	14.0 U	17.3 U	14.0 U	17.9 U	14.0 U	17.6 U	16.5 U	42.3 U	26100	18700
ANTIMONY	15.0 U	15.0 U	15.0 U	15.0 U	15.0 U	15.0 U	15.0 U	15.0 U	15.0 U	15.0 U
ARSENIC	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 UJ	2.0 UJ	13.9 J	24.8 J
BARIUM	10.3 U	5.5 U	6.5 U	5.4 U	8.4 U	5.45 U	111	95.0	24.3	7.1 U
BERYLLIUM	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.3 J	1.0 J
BORON	116	111	116	112	116	112	65.1 J	53.3 J	172	160
CADMIUM	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 U	2.0 U	2.0 U	2.0 U
CALCIUM	27200	25900	27400	26400	27300	26150	88000	78600	8680	5810
CHROMIUM	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	4.4 U	3.0 U	14.0 U	9.3
COBALT	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4 U
COPPER	2.0 U	2.0 U	2.0 U	2.3 J	2.0 U	1.65 J	2.0 UJ	2.4 J	68.4 J	44.2
IRON	18.6 U	8.1 U	15.2 U	9.6 U	16.9 U	8.85 U	2880	3090	3060	537
LEAD	1.3 J	1.0 UJ	1.3 J	1.6 J	1.3 J	1.05 J	2.0 UJ	2.0 U	39.3 J	12.8
MAGNESIUM	24300	23100	24500	23300	24400	23200	11600	10300	1260 U	251
MANGANESE	2.0 U	2.7 U	2.0 U	2.0 U	2.0 U	2.4 U	380	359	73.4	10.6 U
MERCURY	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.97	0.31 J
NICKEL	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	18.5 J	10.0 U	14.8 J	10.0 U
POTASSIUM	10000 J	9780 J	10400 J	10000 J	10200 J	9890 J	9590	8100	5260	4520
SELENIUM	3.0 UJ	3.0 UJ	3.0 UJ	3.0 UJ	3.0 UJ	3.0 UJ	3.0 UJ	3.0 U	30.0 UJ	3.0 U
SODIUM	196000	187000	198000	189000	197000	188000	223000	192000	307000	289000
VANADIUM	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	689	593
ZINC	5.65 U	5.8 U	5.8 U	4.7 U	5.65 U	5.3 U	13.2 U	9.3 U	121	20.0
SDG	17788		17788				17761		17761	
TPH (MG/L)	0.50 U	NA	0.50 U	NA	0.50 U	NA	0.50	NA	2.1	NA

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LOWER BASE GROUNDWATER

	13MW20	13MW20 DISS	13MW20-D	13MW20-D DISS	13MW20AVG	13MW20 DISSAVG	13MW21	13MW21 DISS	NES04	NES04 DISS
SDG	17761	17761	17761	17761			17761	17761	17788	17788
TAL Metals (UG/L)										
ALUMINUM	307 U	83 5 U	342 U	88.7 U	324.5 U	86.1 U	9550 J	7160	14.0 U	35.8 U
ANTIMONY	15 0 U	15 0 U	15.0 U	15 0 U	15.0 U	15 0 U	15.0 U	15.0 U	15.0 U	15.0 U
ARSENIC	2 0 UJ	2 0 UJ	2 0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	16.8 J	12.8 J	2.0 U	2.0 U
BARIUM	32.2	29 90 U	32.3	28.2 U	32.25	29.05 U	9.6	5.0 U	15.8 U	15.7 U
BERYLLIUM	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
BORON	116	116 J	116	102 J	116	109 J	110	105 J	119	145
CADMIUM	2 0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U	20.9 J	2.0 UJ
CALCIUM	30400	30400	30600	30300	30500	30350	6510	5730	25800	24500
CHROMIUM	3.0 U	3.0 J	3.0 U	3.8 J	3.0 U	3.4 J	3.3 U	3.3 J	3.0 U	3.0 U
COBALT	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
COPPER	3.7 J	3.5 J	7.0 J	4.4	5.35 J	3.95	53.3 J	20.6	2.0 U	2.0 U
IRON	428	204	459	339	443.5	272	771	299	532	484
LEAD	4.3 J	2.0 U	5.5 J	2.0 U	4.9 J	2.0 U	36.1	13.5	1.0 UJ	1.0 UJ
MAGNESIUM	5800 U	5710	5710 U	5580	5755 U	5645	399 U	195	17600	16800
MANGANESE	316	298	317	292	316.5	295	21.5	8.3 U	354	338
MERCURY	0.20 U	0 20 U	0.20 U	0.20 U	0.20 U	0.20 U	0.43	0.35 J	0.20 U	0.20 U
NICKEL	10 0 U	10 0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.4 J	10.0 U	10.0 U	10.0 U
POTASSIUM	7090	6560	6790	6930	6940	6745	4360	4120	9850 J	9370 J
SELENIUM	3 0 UJ	3.0 U	3.0 UJ	3.0 U	3.0 UJ	3.0 U	30.0 UJ	3.0 UJ	3.0 UJ	3.0 UJ
SODIUM	199000	193000	197000	191000	198000 U	192000	266000	262000	191000	186000
VANADIUM	5 1 J	5 0 U	5 0 U	5.0 U	3.8 J	5.0 U	210	205	5.0 U	5.0 U
ZINC	9 3 U	4 7 U	14 3 U	5.0 U	11.8 U	4.85 U	26.5 U	8.7 U	6.2 U	3.9 U
SDG	17761		17761				17761		17788	
TPH (MG/L)	0 50 U	NA	0.50 U	NA	0.50 U	NA	0.70	NA	0.50 U	NA

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LOWER BASE GROUNDWATER

	NES06	NES06 DISS	NESO10	NESO10 DISS	NESO11	NESO11 DISS	WE-1	WE-1 DISS	WE-5	WE-5 DISS
SDG	17761	17761	17791	17791	17791	17791	17791	17791	17791	17791
TAL Metals (UG/L)										
ALUMINUM	14.0 U	20.3 U	14.0 U	14.0 U	40800	14.0 U	14.0 U	14.0 U	116 J	14.0 U
ANTIMONY	15.0 U	15.0 U	15.0 U	17.5 U	57.9 U	22.3 U	15.0 U	15.9 U	15.0 U	15.0 U
ARSENIC	2.0 UJ	2.0 UJ	5.4 J	2.0 UJ	17.1 J	2.0 UJ	5.2 J	4.4 J	29.6 J	2.3 J
BARIUM	18.4	17.3 U	89.0 J	81.6 J	283	39.7 J	10.2 J	9.2 J	50.7 J	34.3 J
BERYLLIUM	1.0 U	1.0 U	1.0 U	1.0 U	2.6 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
BORON	103	101 J	458	442	155	156	80.8	79.5	192	195
CADMIUM	2.0 U	2.0 U	2.0 U	2.0 U	13.2	2.0 U	2.0 U	2.0 U	2.0 U	2.0 U
CALCIUM	58500	57400	91400	89100	59100	52300	30700	31200	25200	24500
CHROMIUM	3.0 U	3.0 U	3.0 UJ	3.0 UJ	116	3.0 UJ	3.0 UJ	3.0 UJ	3.0 UJ	3.0 UJ
COBALT	4.0 U	4.0 U	4.0 U	4.0 U	25.6 J	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
COPPER	2.0 UJ	5.3	2.0 U	2.0 U	649	3.5 J	2.0 U	2.0 U	2.0 U	2.0 U
IRON	46.3 U	32.8 U	8570	3390	36700	50.0 U	1630	1320	28900	2780
LEAD	2.0 UJ	2.0 U	2.0 UJ	2.0 UJ	2760 J	10.9 J	2.0 UJ	2.0 UJ	140 J	2.0 UJ
MAGNESIUM	27000	26700	128000	124000	11100	2900 J	8360	8740	4810 J	4740 J
MANGANESE	7.3 U	4.9 U	458	454	1980	44.3	148	150	759	611
MERCURY	0.20 U	0.20 U	0.20 UJ	0.20 UJ	0.47 J	0.20 UJ	0.20 UJ	0.20 UJ	0.20 UJ	0.20 UJ
NICKEL	12.4 J	10.0 U	10.0 U	10.0 U	80.0	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
POTASSIUM	13400	12800	52000	50400	12400	8000	6770	7400	7660	7540
SELENIUM	3.0 UJ	3.0 U	3.0 UJ	3.0 UJ	3.0 UJ	3.0 UJ	3.0 UJ	3.0 UJ	3.0 UJ	3.0 UJ
SODIUM	274000	272000	1130000	1110000	81600	81800	65300	67900	58100	57500
VANADIUM	5.0 U	5.0 U	5.0 U	5.0 U	105	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
ZINC	10.5 U	6.4 U	14.4 J	20.6	924	11.1 J	2.0 U	4.8 U	7.7 U	3.3 U
SDG	17761		17791		17791		17791		17791	
TPH (MG/L)	0.50 U	NA	0.50 U	NA	0.50 U	NA	0.50 U	NA	0.50 U	NA

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LOWER SUBASE GROUNDWATER (ROUND 2)

	Range (Total)	Frequency (Total)	Range (Diss)	Frequency (Diss)	13GW1-2	13GW1-2 DISS	13GW2-2	13GW2-2 DISS	13GW3-2
SDG					19151		19151		19151
TCL Volatiles (UG/L)									
VINYL CHLORIDE	5	1/24	-	NA	10 U	NA	10 U	NA	10 U
METHYLENE CHLORIDE	9	1/24	-	NA	10 U	NA	10 U	NA	10 U
CARBON DISULFIDE	3	1/24	-	NA	10 U	NA	10 U	NA	10 U
1,1-DICHLOROETHENE	21	1/24	-	NA	10 U	NA	10 U	NA	10 U
1,1-DICHLOROETHANE	2-6	3/24	-	NA	10 U	NA	10 U	NA	10 U
BENZENE	3	1/24	-	NA	10 U	NA	3 J	NA	10 U
ETHYLBENZENE	8	1/24	-	NA	10 U	NA	10 U	NA	10 U
XYLENE (TOTAL)	27	1/24	-	NA	10 U	NA	10 U	NA	10 U
SDG					19151		19151		19151
TCL Semivolatiles (UG/L)									
PHENOL	28	1/24	-	NA	10 U	NA	10 U	NA	28 J
1,3-DICHLOROBENZENE	0.5	2/24	-	NA	10 U	NA	10 U	NA	0.5 J
4-METHYLPHENOL	2-6	2/24	-	NA	10 U	NA	10 U	NA	6 J
1,2,4-TRICHLOROBENZENE	0.7	1/24	-	NA	10 U	NA	10 U	NA	10 UJ
NAPHTHALENE	13	1/24	-	NA	10 U	NA	13	NA	10 UJ
2-METHYLNAPHTHALENE	1-24	2/24	-	NA	10 U	NA	24	NA	10 UJ
ACENAPHTHENE	0.8-3	5/24	-	NA	10 U	NA	3 J	NA	10 UJ
DIBENZOFURAN	4	2/24	-	NA	10 U	NA	4 J	NA	10 UJ
DIETHYLPHTHALATE	0.6-2	3/24	-	NA	2 J	NA	1 J	NA	0.6 J
FLUORENE	1-6	4/24	-	NA	10 U	NA	6 J	NA	10 UJ
PHENANTHRENE	4	1/24	-	NA	10 U	NA	4 J	NA	10 UJ
ANTHRACENE	1	1/24	-	NA	10 U	NA	1 J	NA	10 UJ
CARBAZOLE	1	1/24	-	NA	10 U	NA	10 U	NA	10 UJ
DI-N-BUTYLPHTHALATE	0.6	1/24	-	NA	10 U	NA	10 U	NA	10 UJ
FLUORANTHENE	0.7-0.9	2/24	-	NA	10 U	NA	0.9 J	NA	10 UJ
PYRENE	0.5-1	4/24	-	NA	10 U	NA	0.7 J	NA	10 UJ
BIS(2-ETHYLHEXYL)PHTHALATE	0.6-3	7/24	-	NA	3 J	NA	10 U	NA	0.8 J

NA: Not analyzed

ND: Not detected

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LOWER SUBASE GROUNDWATER (ROUND 2)

	13GW3-2 DISS	13GW8-2	13GW82 DISS	13GW8-2	13GW8-2 DISS	13MW9-2	13MW9-2 DISS	13GW10-2	13GW10-2 DISS
SDG		19192		19167		19192		19167	
TCL Volatiles (UG/L)									
VINYL CHLORIDE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
METHYLENE CHLORIDE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
CARBON DISULFIDE	NA	10 U	NA	10 U	NA	3 J	NA	10 U	NA
1,1-DICHLOROETHENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
1,1-DICHLOROETHANE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BENZENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
ETHYLBENZENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
XYLENE (TOTAL)	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
SDG		19192		19167		19192		19167	
TCL Semivolatiles (UG/L)									
PHENOL	NA	10 U	NA	10 U	NA	10 UJ	NA	10 U	NA
1,3-DICHLOROBENZENE	NA	10 U	NA	10 U	NA	10 UJ	NA	10 U	NA
4-METHYLPHENOL	NA	10 U	NA	10 U	NA	10 UJ	NA	10 U	NA
1,2,4-TRICHLOROBENZENE	NA	10 U	NA	10 U	NA	10 UJ	NA	10 U	NA
NAPHTHALENE	NA	10 U	NA	10 U	NA	10 UJ	NA	10 U	NA
2-METHYLNAPHTHALENE	NA	10 U	NA	10 U	NA	10 UJ	NA	10 U	NA
ACENAPHTHENE	NA	10 U	NA	2 J	NA	2 J	NA	10 U	NA
DIBENZOFURAN	NA	10 U	NA	10 U	NA	10 UJ	NA	10 U	NA
DIETHYLPHTHALATE	NA	10 U	NA	10 U	NA	10 UJ	NA	10 U	NA
FLUORENE	NA	10 U	NA	10 U	NA	10 UJ	NA	10 U	NA
PHENANTHRENE	NA	10 U	NA	10 U	NA	10 UJ	NA	10 U	NA
ANTHRACENE	NA	10 U	NA	10 U	NA	10 UJ	NA	10 U	NA
CARBAZOLE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	NA
DI-N-BUTYLPHTHALATE	NA	10 U	NA	10 U	NA	10 UJ	NA	10 U	NA
FLUORANTHENE	NA	10 U	NA	10 U	NA	10 UJ	NA	10 U	NA
PYRENE	NA	10 U	NA	10 U	NA	1 J	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	10 U	NA	10 U	NA	10 U	NA	0.8 J	NA

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ND: Not detected

J: Estimate value

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LOWER SUBASE GROUNDWATER (ROUND 2)

	13GW11-2	13GW11-2 DISS	13GW12-2	13GW12-2 DISS	13GW12-D-2	13GW12D-2 DISS	13GW12-2-AVG	13GW12-2 DISS AVG	13GW13-2
SDG	19197		19187		19187				19192
TCL Volatiles (UG/L)									
VINYL CHLORIDE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	5 J
METHYLENE CHLORIDE	70 U	NA	10 U	NA	10 U	NA	10 U	NA	11 U
CARBON DISULFIDE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
1,1-DICHLOROETHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	21
1,1-DICHLOROETHANE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
BENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
ETHYLBENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
XYLENE (TOTAL)	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
SDG	19197		19187		19187				19192
TCL Semivolatiles (UG/L)									
PHENOL	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
1,3-DICHLOROBENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
4-METHYLPHENOL	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
1,2,4-TRICHLOROBENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
NAPHTHALENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
2-METHYLNAPHTHALENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
ACENAPHTHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
DIBENZOFURAN	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
DIETHYLPHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
FLUORENE	10 U	NA	1 J	NA	1 J	NA	1 J	NA	10 U
PHENANTHRENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
ANTHRACENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
CARBAZOLE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
DI-N-BUTYLPHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
FLUORANTHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
PYRENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	NA	0.6 J	NA	1 J	NA	0.8 J	NA	10 U

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LOWER SUBASE GROUNDWATER (ROUND 2)

	13GW13-2 DISS	13GW14-2	13GW14-2 DISS	13GW15-2	13GW15-2 DISS	13GW16-2	13GW16-2 DISS	13MW17-2	13MW17-D-2
SDG		19197		19197		19197		19192	19192
TCL Volatiles (UG/L)									
VINYL CHLORIDE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	10 U
METHYLENE CHLORIDE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	10 U
CARBON DISULFIDE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	10 U
1,1-DICHLOROETHENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	10 U
1,1-DICHLOROETHANE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	10 U
BENZENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	10 U
ETHYLBENZENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	10 U
XYLENE (TOTAL)	NA	10 U	NA	10 U	NA	10 U	NA	10 U	10 U
SDG		19197		19197		19197		19192	19192
TCL Semivolatiles (UG/L)									
PHENOL	NA	10 U	NA	10 U	NA	10 U	NA	10 U	10 U
1,3-DICHLOROBENZENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	10 U
4-METHYLPHENOL	NA	10 U	NA	10 U	NA	10 U	NA	10 U	10 U
1,2,4-TRICHLOROBENZENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	10 U
NAPHTHALENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	10 U
2-METHYLNAPHTHALENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	10 U
ACENAPHTHENE	NA	10 U	NA	10 U	NA	0.8 J	NA	10 U	10 U
DIBENZOFURAN	NA	10 U	NA	10 U	NA	10 U	NA	10 U	10 U
DIETHYLPHTHALATE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	10 U
FLUORENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	10 U
PHENANTHRENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	10 U
ANTHRACENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	10 U
CARBAZOLE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	10 U
DI-N-BUTYLPHTHALATE	NA	10 U	NA	10 U	NA	0.6 J	NA	10 U	10 U
FLUORANTHENE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	10 U
PYRENE	NA	10 U	NA	1 J	NA	10 U	NA	10 U	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	NA	10 U	NA	10 U	NA	10 U	NA	10 U	10 U

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ND: Not detected

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LOWER SUBASE GROUNDWATER (ROUND 2)

	13MW17-2 DISS	13MW17D-2 DISS	13MW17-2-AVG	13MW17-2 DISS AVG	13GW18-2	13GW18-2 DISS	13GW19-2	13GW19-2 DISS
SDG					19151		19167	
TCL Volatiles (UG/L)								
VINYL CHLORIDE	NA	NA	10 U	NA	10 U	NA	10 U	NA
METHYLENE CHLORIDE	NA	NA	10 U	NA	10 U	NA	10 U	NA
CARBON DISULFIDE	NA	NA	10 U	NA	10 U	NA	10 U	NA
1,1-DICHLOROETHENE	NA	NA	10 U	NA	10 U	NA	10 U	NA
1,1-DICHLOROETHANE	NA	NA	10 U	NA	10 U	NA	10 U	NA
BENZENE	NA	NA	10 U	NA	10 U	NA	10 U	NA
ETHYLBENZENE	NA	NA	10 U	NA	10 U	NA	10 U	NA
XYLENE (TOTAL)	NA	NA	10 U	NA	10 U	NA	10 U	NA
SDG					19151		19167	
TCL Semivolatiles (UG/L)								
PHENOL	NA	NA	10 U	NA	10 UJ	NA	10 U	NA
1,3-DICHLOROBENZENE	NA	NA	10 U	NA	10 UJ	NA	10 U	NA
4-METHYLPHENOL	NA	NA	10 U	NA	10 UJ	NA	2 J	NA
1,2,4-TRICHLOROBENZENE	NA	NA	10 U	NA	10 UJ	NA	10 U	NA
NAPHTHALENE	NA	NA	10 U	NA	10 UJ	NA	10 U	NA
2-METHYLNAPHTHALENE	NA	NA	10 U	NA	10 UJ	NA	10 U	NA
ACENAPHTHENE	NA	NA	10 U	NA	10 UJ	NA	10 U	NA
DIBENZOFURAN	NA	NA	10 U	NA	10 UJ	NA	10 U	NA
DIETHYLPHTHALATE	NA	NA	10 U	NA	1 J	NA	10 U	NA
FLUORENE	NA	NA	10 U	NA	10 UJ	NA	10 U	NA
PHENANTHRENE	NA	NA	10 U	NA	10 UJ	NA	10 U	NA
ANTHRACENE	NA	NA	10 U	NA	10 UJ	NA	10 U	NA
CARBAZOLE	NA	NA	10 U	NA	10 UJ	NA	10 U	NA
DI-N-BUTYLPHTHALATE	NA	NA	10 U	NA	10 UJ	NA	10 U	NA
FLUORANTHENE	NA	NA	10 U	NA	10 UJ	NA	10 U	NA
PYRENE	NA	NA	10 U	NA	10 UJ	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	NA	10 U	NA	10 UJ	NA	10 U	NA

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LOWER SUBASE GROUNDWATER (ROUND 2)

	13GW20-2	13GW20-2 DISS	13GW21-2	13GW21-2 DISS	NES04-2	NES04-2 DISS	NES06-2	NES06-2 DISS	NES010-2
SDG	19151		19151		19192		19178		19167
TCL Volatiles (UG/L)									
VINYL CHLORIDE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
METHYLENE CHLORIDE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
CARBON DISULFIDE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
1,1-DICHLOROETHENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
1,1-DICHLOROETHANE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	3 J
BENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
ETHYLBENZENE	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
XYLENE (TOTAL)	10 U	NA	10 U	NA	10 U	NA	10 U	NA	10 U
SDG	19151		19151		19192		19178		19167
TCL Semivolatiles (UG/L)									
PHENOL	10 U	NA	10 U	NA	10 U	NA	10 UJ	NA	10 U
1,3-DICHLOROBENZENE	10 U	NA	10 U	NA	0.5 J	NA	10 UJ	NA	10 U
4-METHYLPHENOL	10 U	NA	10 U	NA	10 U	NA	10 UJ	NA	10 U
1,2,4-TRICHLOROBENZENE	10 U	NA	10 U	NA	0.7 J	NA	10 UJ	NA	10 U
NAPHTHALENE	10 U	NA	10 U	NA	10 U	NA	10 UJ	NA	10 U
2-METHYLNAPHTHALENE	1 J	NA	10 U	NA	10 U	NA	10 UJ	NA	10 U
ACENAPHTHENE	3 J	NA	10 U	NA	10 U	NA	10 UJ	NA	10 U
DIBENZOFURAN	4 J	NA	10 U	NA	10 U	NA	10 UJ	NA	10 U
DIETHYLPHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 UJ	NA	10 U
FLUORENE	4 J	NA	10 U	NA	10 U	NA	10 UJ	NA	10 U
PHENANTHRENE	10 U	NA	10 U	NA	10 U	NA	10 UJ	NA	10 U
ANTHRACENE	10 U	NA	10 U	NA	10 U	NA	10 UJ	NA	10 U
CARBAZOLE	1 J	NA	10 U	NA	10 U	NA	10 U	NA	10 U
DI-N-BUTYLPHTHALATE	10 U	NA	10 U	NA	10 U	NA	10 UJ	NA	10 U
FLUORANTHENE	0.7 J	NA	10 U	NA	10 U	NA	10 UJ	NA	10 U
PYRENE	0.5 J	NA	10 U	NA	10 U	NA	10 UJ	NA	10 U
BIS(2-ETHYLHEXYL)PHTHALATE	0.9 J	NA	10 U	NA	10 U	NA	10 UJ	NA	10 U

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LOWER SUBASE GROUNDWATER (ROUND 2)

	NES010-2 DISS	NES011-2	NES011-2 DISS	WE1-2	WE1-2 DISS	WE5-2	WE5-2 DISS
SDG		19167		19167		19340	
TCL Volatiles (UG/L)							
VINYL CHLORIDE	NA	10 U	NA	10 U	NA	10 U	NA
METHYLENE CHLORIDE	NA	10 U	NA	10 U	NA	9 J	NA
CARBON DISULFIDE	NA	10 U	NA	10 U	NA	10 U	NA
1,1-DICHLOROETHENE	NA	10 U	NA	10 U	NA	10 U	NA
1,1-DICHLOROETHANE	NA	2 J	NA	6 J	NA	10 U	NA
BENZENE	NA	10 U	NA	10 U	NA	10 U	NA
ETHYLBENZENE	NA	10 U	NA	8 J	NA	10 U	NA
XYLENE (TOTAL)	NA	10 U	NA	27	NA	10 U	NA
SDG		19167		19167		19340	
TCL Semivolatiles (UG/L)							
PHENOL	NA	10 U	NA	10 U	NA	10 U	NA
1,3-DICHLOROBENZENE	NA	10 U	NA	10 U	NA	10 U	NA
4-METHYLPHENOL	NA	10 U	NA	10 U	NA	10 U	NA
1,2,4-TRICHLOROBENZENE	NA	10 U	NA	10 U	NA	10 U	NA
NAPHTHALENE	NA	10 U	NA	10 U	NA	10 U	NA
2-METHYLNAPHTHALENE	NA	10 U	NA	10 U	NA	10 U	NA
ACENAPHTHENE	NA	10 U	NA	10 U	NA	10 U	NA
DIBENZOFURAN	NA	10 U	NA	10 U	NA	10 U	NA
DIETHYLPHTHALATE	NA	10 U	NA	10 U	NA	10 U	NA
FLUORENE	NA	10 U	NA	10 U	NA	10 U	NA
PHENANTHRENE	NA	10 U	NA	10 U	NA	10 U	NA
ANTHRACENE	NA	10 U	NA	10 U	NA	10 U	NA
CARBAZOLE	NA	10 U	NA	10 U	NA	10 U	NA
DI-N-BUTYLPHTHALATE	NA	10 U	NA	10 U	NA	10 U	NA
FLUORANTHENE	NA	10 U	NA	10 U	NA	10 U	NA
PYRENE	NA	10 U	NA	10 U	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	NA	10 U	NA	1 J	NA	10 U	NA

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	Range (Total)	Frequency (Total)	Range (Diss)	Frequency (Diss)	13GW1-2	13GW1-2 DISS	13GW2-2	13GW2-2 DISS	13GW3-2
SDG					19151	19151	19151	19151	19151
TAL Metals (UG/L)									
ALUMINUM	11.0-1360	11/24	20.0-740	5/24	33.5	15.0 U	23.5 J	20.0 J	76.1
ANTIMONY	-	0/23	5.2-14.8	6/24	13.0 U	15.6 U	13.0 U	13.0 U	13.0 U
ARSENIC	1.0-19.0	17/24	1.2-11.0	13/24	2.8	1.9 J	1.5 J	1.2 J	1.6 J
BARIUM	6.0-134	18/24	6.3-139	20/24	56.2	57.6	52.6	52.4	47.5
BERYLLIUM	1.1	1/24	-	0/24	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
BORON	52.0-2070	21/24	50.0-2150	18/22	59.8 J	53.6 J	52.9 J	52.9 J	52.0 J
CADMIUM	1.0-8.0	3/23	-	0/24	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
CALCIUM	15500-179000	24/24	15500-238000	24/24	35300	36300	35700	36400	37500
CHROMIUM	0.75*-1.4	3/24	0.75*-3.5	4/24	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
COPPER	5.0	1/24	3.0-20.4	3/23	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
IRON	18.75*-12400	18/24	56.2-8490	17/24	2810	2460	3190	3160	1140
LEAD	2.0-48.9	8/22	2.5-14.1	4/18	2.0 U	7.7 J	2.0 U	2.0 UJ	2.0 U
MAGNESIUM	3025*-776000	24/24	2950*-781000	24/24	5630	5780	4090	4130	5040
MANGANESE	3.4-2290	22/24	0.75*-1930	24/24	366	369	167	167	169
POTASSIUM	4050-256000	24/24	4300-252000	24/24	6220	6480	6460	6870	6570
SELENIUM	-	0/20	2.0-3.0	3/19	2.0 UJ	2.0 UJ	2.0 UJ	2.0 U	2.0 UJ
SODIUM	44500-6310000	24/24	41200-6470000	24/24	61200	63000	75600	75800	44500
THALLIUM	6.5	1/19	6.8	1/16	10.0 U	10.0 U	1.0 UJ	1.0 UJ	10.0 U
VANADIUM	3.0-19.2	5/24	2.0-20.3	6/24	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U
ZINC	4.0-37.6	16/24	3.4-37.7	12/24	18.3	18.2	4.0 J	3.4 J	6.1
SDG					19151		19151.0		19151
TOTAL PETROLEUM HYDROCARBONS					0.5 U	NA	0.6	NA	1.3
SDG					19151		19151.0		19151
ENGINEERING									
AMMONIA (N)					NA	NA	NA	NA	NA
CHEMICAL OXYGEN DEMAND					NA	NA	NA	NA	NA
TOTAL SUSPENDED SOLIDS					NA	NA	NA	NA	NA
HARDNESS as CaCO3					110	NA	112	NA	108

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	13GW3-2 DISS	13GW6-2	13GW62 DISS	13GW8-2	13GW8-2 DISS	13MW9-2	13MW9-2 DISS	13GW10-2	13GW10-2 DISS
SDG	19151	19192	19192	19167	19167	19192	19192	19167	19167
TAL Metals (UG/L)									
ALUMINUM	15.0 U	24.0	25.0 U	46.5 U	23.8 U	10.0 U	10.0 UJ	18.5 U	15.0 U
ANTIMONY	13.0 U	5.0 U	8.0 J	13.0 U	13.0 U	5.0 U	5.0 U	13.0 U	13.0 U
ARSENIC	1.8 J	2.0 U	2.0 U	3.5	2.5	2.0 UJ	2.0 UJ	10.0 U	10.0
BARIUM	43.8	23.0	25.0 J	6.0 U	4.1 U	62.0 J	61.0 J	21.7	21.7
BERYLLIUM	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
BORON	90.0 J	79.0	78.0 U	230	214	1430	1410 J	630	627
CADMIUM	3.0 U	1.0 U	1.0 U	3.0 U	3.0 U	1.0 J	1.0 U	3.0 U	3.0 U
CALCIUM	38100	35100	37400	34300	32200	138000	138000	113000	113000
CHROMIUM	4.0 U	1.0 U	1.0 U	4.0 U	4.0 U	1.0 U	1.0 J	4.0 U	4.0 U
COPPER	5.0 U	3.0 U	3.0 U	5.0 U	5.0 U	3.0 U	3.0 U	5.0 U	5.0 U
IRON	1110	17.0 U	17.0 U	1130	687	17.0 U	17.0 U	80.3 U	37.8 U
LEAD	2.0 U	6.0 J	UR	2.0 UJ	2.0 UJ	UR	UR	2.0 UJ	2.0 UJ
MAGNESIUM	67[illegible]	57[illegible]	61[illegible]	[illegible]	61[illegible]	64[illegible]	[illegible]	215000	212000
MANGANESE	141	1.0 U	3.0 J	2700	[illegible]	[illegible]	140	22.6	22.2
POTASSIUM	6270	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	68800	68100
SELENIUM	2.0 U	2.0 U	3.0 J	2.0 U	2.0 U	20.0 UJ	UR	2.0 UJ	2.0 UJ
SODIUM	41[illegible]	[illegible] J	[illegible] J	[illegible]	[illegible]	[illegible] J	[illegible] J	1860000	1880000
THALLIUM	10.0 U	2.0 UJ	UR	10.0 UJ	1.0 UJ	20.0 UJ	UR	10.0 UJ	10.0 UJ
VANADIUM	4.0 U	1.0 U	1.0 U	4.0 U	4.0 U	1.0 U	2.0 J	4.0 U	4.0 U
ZINC	3.7 J	3.0 U	4.0 U	5.9 J	6.0 J	4.0 U	4.0 U	37.8	37.7
SDG		19192.0		19167.02		19192.0		19167.00	
TOTAL PETROLEUM HYDROCARBONS	NA	0.5 U	NA	0.5 U	NA	0.5 U	NA	0.5 U	NA
SDG				19167.02		19192.0		19167.00	
ENGINEERING									
AMMONIA (N)	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHEMICAL OXYGEN DEMAND	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL SUSPENDED SOLIDS	NA	NA	NA	NA	NA	NA	NA	NA	NA
HARDNESS as CaCO3	NA	NA	NA	268	NA	NA	NA	1240	NA

NA: Not analyzed

ND: Not detected

J: Estimate value

U: Not detected at detection limit indicated

UJ: Not detected at estimated detection limit indicated

R: Value rejected during validation

-: Not applicable

*: Value is the average of duplicate sample results

	13GW11-2	13GW11-2 DISS	13GW12-2	13GW12-2 DISS	13GW12-D-2	13GW12D-2 DISS	13GW12-2-AVG	13GW12-2 DISS AVG	13GW13-2
SDG	19197	19197	19167	19167	19167	19167			19192
TAL Metals (UG/L)									
ALUMINUM	42.0 U	33.9 U	15.0 U	19.7 U	16.5 U	15.0 U	15.8 U	17.35 U	35.0
ANTIMONY	3.0 U	13.2 U	13.0 U	13.0 U	13.0 U	13.0 U	13.0 U	13.0 U	5.0 U
ARSENIC	4.7	3.8 U	2.6	3.2	2.8	2.6	2.7	2.9	14.0
BARIUM	41.8	44.3	47.0	46.3	48.1	46.3	47.55 U	46.3	6.0
BERYLLIUM	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
BORON	108	105 U	50.0 U	50.0 U	50.0 U	50.0 U	50.0 U	50.0 U	108
CADMIUM	1.0 U	2.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	2.0 J
CALCIUM	34100	36500	24400	24000	25200	24100	24800	24050	30300
CHROMIUM	1.2 J	3.5 J	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	1.0 U
COPPER	2.0 U	2.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	3.0 U
IRON	5470	5070	5930	5800	6040	5800	5885	5850	8550
LEAD	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ
MAGNESIUM	15700	15500	2960	2940	3070	2960	3025	2950	7570
MANGANESE	356	387	284	282	291	286	288	284	64.0
POTASSIUM	9500	9800	6460	6380	6570	6040	6515	6215	7250
SELENIUM	2.0 U	2.0 UJ	2.0 UJ	2.0 U	2.0 U	2.0 UJ	2.0 UJ	2.0 UJ	2.0 U
SODIUM	171000	172000	88400	87000	82400	88800	80800	88800	81000 J
THALLIUM	UR	UR	10.0 U	1.0 UJ	10.0 U	1.0 UJ	10.0 U	1.0 UJ	2.0 UJ
VANADIUM	1.0 U	3.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	1.0 U
ZINC	5.0	4.5	3.0 U	5.1 J	3.0 U	3.0 U	3.0 U	3.3	6.0 U
SDG	19197.2		19167.1		19167.1				19192.6
TOTAL PETROLEUM HYDROCARBONS	0.5 U	NA	0.5 U	NA	0.5 U	NA	0.5 U	NA	0.5 U
SDG	19197.2		19167.1		19167.1				
ENGINEERING									
AMMONIA (N)	0.4	NA	NA	NA	NA	NA			NA
CHEMICAL OXYGEN DEMAND	18.0	NA	NA	NA	NA	NA			NA
TOTAL SUSPENDED SOLIDS	8.0	NA	NA	NA	NA	NA			NA
HARDNESS as CaCO3	144.0	NA	72.0	NA	72.0	NA			NA

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ND: Not detected

J: Estimate value

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	13GW13-2 DISS	13GW14-2	13GW14-2 DISS	13GW15-2	13GW15-2 DISS	13GW16-2	13GW16-2 DISS	13MW17-2	13MW17-D-2
SDG	19192	19197	19197	19197	19198	19197	19197	19192	19192
TAL Metals (UG/L)									
ALUMINUM	12.0 U	42.0 U	10.0 U	42.0 U	10.0 U	42.0 U	11.0 U	10.0 U	17.0
ANTIMONY	8.0 J	3.0 UJ	14.8 J	UR	12.0 UJ	3.0 UJ	12.0 UJ	5.0 U	5.0 U
ARSENIC	12.0 U	10.0 U	20.0 U	11.0 J	20.0 U	10.0 U	20.0 U	2.0 U	2.0 U
BARIUM	6.0 J	49.4 J	62.9 J	39.3 J	53.5 J	94.0 J	124 J	37.0	36.0
BERYLLIUM	1.0 U	1.0 U	1.0 U	1.1 J	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
BORON	110 J	1730 J	R	2070 J	R	1910 J	2150	317	306
CADMIUM	1.0 U	1.0 U	2.0 U	R	2.0 UJ	1.0 U	2.0 UJ	1.0 U	1.0 U
CALCIUM	30900	168000	208000	179000	238000	179000	230000	77000	76500
CHROMIUM	1.0 U	1.0 U	3.0 U	1.4 J	3.0 U	1.0 U	3.0 U	1.0 U	1.0 J
COPPER	3.0 U	4.3 U	11.7 J	1.0 U	R	1.0 U	20.4 J	3.0 U	3.0 U
IRON	8460	16.0 U	56.2	3490	4530	650	901	17.0 U	29.0 J
LEAD	UR	26.5 J	20.0 UJ	20.0 UJ	2.0 UJ	20.0 UJ	20.0 UJ	2.0 UJ	3.0 J
MAGNESIUM	7650	663000	575000	776000	686000	727000	781000	90500	88600
MANGANESE	65.0	3.4	6.1	51.5	63.3	28.9	36.7	10.0	10.0
POTASSIUM	7470	214000	202000	256000	252000	230000	243000	28200	28100
SELENIUM	UR	UR	UR	UR	10.0 UJ	UR	10.0 UJ	2.0 UJ	2.0 UJ
SODIUM	79100 J	5430000	5360000	6310000	6470000	5810000	6350000	749000 J	716000 J
THALLIUM	UR	UR	20.0 U	UR	20.0 UJ	UR	UR	20.0 UJ	20.0 UJ
VANADIUM	1.0 U	1.0 U	3.0 U	1.0 U	3.0 U	1.0 U	5.7 J	1.0 U	1.0 U
ZINC	4.0 U	27.8	8.5	10.3	2.0 U	20.2	2.0 U	17.0	16.0
SDG		19197.21		19197.22		19197.2		19192.0	19192.0
TOTAL PETROLEUM HYDROCARBONS	NA	0.5 U	NA	0.5 U	NA	0.7	NA	0.5 U	0.5 U
SDG		19197.21		19197.22		19197.2			
ENGINEERING									
AMMONIA (N)	NA	NA	NA	NA	NA	NA	NA	NA	NA
CHEMICAL OXYGEN DEMAND	NA	NA	NA	NA	NA	NA	NA	NA	NA
TOTAL SUSPENDED SOLIDS	NA	NA	NA	NA	NA	NA	NA	NA	NA
HARDNESS as CaCO3	NA	3200	NA	5900	NA	3700	NA	NA	NA

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	13MW17-2 DISS	13MW17D-2 DISS	13MW17-2-AVG	13MW17-2 DISS AVG	13GW18-2	13GW18-2 DISS	13GW19-2	13GW19-2 DISS
SDG	19192	19192			19151	19151	19167	19167
TAL Metals (UG/L)								
ALUMINUM	10.0 UJ	15.0 U	11.0 UJ	12.5 UJ	88.7 J	26.2 J	1360	740
ANTIMONY	6.0 J	5.0 U	5.0 U	4.25 J	13.0 UJ	13.0 U	13.0 U	13.0 U
ARSENIC	2.0 U	2.0 U	2.0 U	2.0 U	4.4 J	4.3	2.6	2.3
BARIUM	37.0 J	38.0 J	36.5	37.5 J	29.2 J	26.6	2.9 U	1.4 U
BERYLLIUM	1.0 U	1.0 U	1.0 U	1.0 U	1.0 UJ	1.0 U	1.0 U	1.0 U
BORON	307 J	326 J	311	316.5 J	50.0 UJ	50.0 U	99.4 J	97.0 J
CADMIUM	1.0 U	1.0 U	1.0 U	1.0 U	3.0 UJ	3.0 U	3.0 U	3.0 U
CALCIUM	77300	77900	78750	77600	23600 J	25900	15500	15500
CHROMIUM	1.0 J	1.0 U	0.75 J	0.75 J	4.0 UJ	4.0 U	4.0 U	4.0 U
COPPER	3.0 U	3.0 U	3.0 U	3.0 U	5.0 UJ	5.0 U	5.0 U	5.0 U
IRON	17.0 U	17.0 U	18.5 J	17.0 U	7350 J	7350	311	127
LEAD	UR	UR	2.0 J	UR	2.0 UJ	2.0 U	2.0 UJ	2.0 UJ
MAGNESIUM	90200	91100	89550	90650	3800 J	3950	5050	4990
MANGANESE	1.0 J	1.0 U	10.0	0.75 J	347 J	348	12.5	8.4
POTASSIUM	28900	29000	28150	28950	4050 J	4300	6440	6860
SELENIUM	3.0 J	UR	2.0 UJ	3.0 J	2.0 UJ	2.0 UJ	2.0 U	2.0 U
SODIUM	755000 J	771000 J	732500	763000	69200 J	70500	253000	256000
THALLIUM	UR	UR	20.0 UJ	UR	10.0 UJ	10.0 U	10.0 U	10.0 U
VANADIUM	1.0 U	1.0 U	1.0 U	1.0 U	5.1 J	4.7 J	17.9	15.4
ZINC	14	15.0	16.5	14.5	7.3 J	6.4 J	6.5	3.0 U
SDG					19151		19167.04	
TOTAL PETROLEUM HYDROCARBONS	NA	NA	0.5 U	NA	1.1	NA	0.5 U	NA
SDG					19151		19167.04	
ENGINEERING								
AMMONIA (N)	NA	NA			NA	NA	NA	NA
CHEMICAL OXYGEN DEMAND	NA	NA			NA	NA	NA	NA
TOTAL SUSPENDED SOLIDS	NA	NA			NA	NA	NA	NA
HARDNESS as CaCO3	NA	NA			76	NA	60	NA

NA: Not analyzed

ND: Not detected

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	13GW20-2	13GW20-2 DISS	13GW21-2	13GW21-2 DISS	NES04-2	NES04-2 DISS	NES06-2	NES06-2 DISS	NES010-2
SDG	19151	19151	19151	19151	19192	19192	19178	19178	19187
TAL Metals (UG/L)									
ALUMINUM	159	30.5	219	63.4	36.0	28.0 U	12.0 U	14.2 U	35.2 U
ANTIMONY	13.0 U	13.0 U	13.0 U	13.0 U	6.0 U	6.0 J	12.0 U	5.2 J	13.0 U
ARSENIC	2.7	2.0 J	1.8 J	2.0	2.0 U	2.0 U	1.0 J	2.0 U	19.0
BARIUM	28.1	28.1	4.0 U	3.3 U	14.0	14.0 J	6.0 UJ	6.3 J	134
BERYLLIUM	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
BORON	129	131	61.1 J	56.1 J	197	173 J	73.0 U	85.1 J	804
CADMIUM	3.0 U	3.0 U	3.0 U	3.0 U	8.0	1.0 U	3.0 U	1.0 U	3.0 U
CALCIUM	19900	19900	39900	38400	31500	32000	53400 J	56000	104000
CHROMIUM	4.0 U	4.0 U	4.0 U	4.0 U	1.0 U	1.0 J	3.0 U	1.0 U	4.0 U
COPPER	5.0 U	5.0 U	5.0 U	5.0 U	3.0 U	3.0 J	2.0 U	3.0 U	5.0 U
IRON	563	375	43.1	24.8 U	903	886	4.0 UJ	17.0 U	5270
LEAD	2.6 J	2.0 UJ	2.0 J	2.0 UJ	3.0 J	UR	UR	UR	2.0 UJ
MAGNESIUM	4480	4590	4820	4790	23900	23700	12900 J	13200	201000
MANGANESE	385	383	10.7	10.4	322	321	4.0 U	2.0 J	249
POTASSIUM	6840	7430	4700	4920	12200	12600	9030	9530	72000
SELENIUM	2.0 UJ	2.0 U	2.0 U	2.0 U	2.0 U	UR	UR	UR	2.0 UJ
SODIUM	176000	181000	88900	88200	239000 J	231000 J	123000	134000 J	1850000
THALLIUM	10.0 U	10.0 U	1.0 UJ	10.0 U	20.0 UJ	UR	UR	UR	10.0 UJ
VANADIUM	4.0 U	4.0 U	19.2	20.3	3.0	3.0	3.0 U	1.0 U	4.6 J
ZINC	7.9	3.0 U	3.0 U	3.0 U	14.0	7.0 U	5.0 U	4.5 U	33.2
SDG	19151		19151.0		19192.0		19178.1		19187.00
TOTAL PETROLEUM HYDROCARBONS	0.6	NA	0.5 U	NA	0.5 U	NA	0.5 U	NA	0.5 U
SDG	19151		19151.0						19187.00
ENGINEERING									
AMMONIA (N)	NA	NA	NA	NA					NA
CHEMICAL OXYGEN DEMAND	NA	NA	NA	NA					NA
TOTAL SUSPENDED SOLIDS	NA	NA	NA	NA					NA
HARDNESS as CaCO3	64	NA	112.0	NA	NA	NA	NA	NA	1180

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ND: Not detected

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	NES010-2 DISS	NES011-2	NES011-2 DISS	WE1-2	WE1-2 DISS	WE5-2	WE5-2 DISS
SDG	19167	19167	19167	19167	19167	19340	19340
TAL Metals (UG/L)							
ALUMINUM	15.0 U	17.6 U	23.2 U	15.0 U	15.0 U	78.7 U	37.6 U
ANTIMONY	13.0 U	13.0 U	13.0 U	13.0 U	13.0 U	12.0 U	12.0 U
ARSENIC	11.0	1.3 J	1.0 U	5.3	5.6	11.8	4.9
BARIUM	139	39.6	42.4	10.9 U	9.6 U	41.4	43.1
BERYLLIUM	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
BORON	625	242	230	81.9 J	78.8 J	129	131
CADMIUM	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	2.0 U	2.0 U
CALCIUM	107000	60600	62300	31200	29000	25000	27800
CHROMIUM	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	3.0 U	3.0 U
COPPER	5.0 U	5.0 J	5.0 U	5.0 U	5.0 U	2.0 U	2.0 U
IRON	3320	40.6 U	17.8 U	1310	1170	12400	8490
LEAD	20.0 UJ	11.4 J	14.1	2.0 UJ	11.2	48.9 J	2.5
MAGNESIUM	208000	3560	3430	8490	7720	4720	4980
MANGANESE	258	182	188	127	118	522	536
POTASSIUM	75300	9480	9570	7450	6950	7680	7870
SELENIUM	2.1 J	2.0 U	2.0 U	2.0 U	2.0 U	3.0 U	3.0 U
SODIUM	1970000	57800	57800	60500	56200	63400	67500
THALLIUM	10.0 UJ	10.0 U	10.0 UJ	1.0 UJ	1.0 UJ	5.5 J	6.8 J
VANADIUM	4.0 U	4.0 U	4.0 U	4.0 U	4.0 U	3.0 U	3.0 U
ZINC	13.9	16.2	14.4	3.0 U	3.0 U	2.0 U	7.5 U
SDG		19167.1		19167.1		19340.0	
TOTAL PETROLEUM HYDROCARBONS	NA	0.5 U	NA	0.5	NA	0.5 U	NA
SDG		19167.1		19167.1		19340.0	
ENGINEERING							
AMMONIA (N)	NA						
CHEMICAL OXYGEN DEMAND	NA						
TOTAL SUSPENDED SOLIDS	NA						
HARDNESS as CaCO3	NA	164	NA	106.0	NA	90.0	0 0

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APPENDIX D.11

SITE 14 - OBDANE

	Range	Frequency	14MW1S-0002	14MW1S-0204	14TB1-0002	14TB1-0810	14TB2A-0002	14TB2A-0204
SDG			17721	17721	17656	17656	17721	17721
TCL Volatiles (UG/KG)								
METHYLENE CHLORIDE	7	1/6	18 U	15 U	11 U	11 U	14 U	7 J
TOLUENE	18	1/6	18	15 U	11 U	11 U	14 U	12 U
SDG			17721	17721	17656	17656	17721	17721
TCL Semivolatiles (UG/KG)								
PHENANTHRENE	37-40	3/6	37 J	480 U	39 J	40 J	450 U	400 U
FLUORANTHENE	27-100	4/6	61 J	480 U	98 J	100 J	25 J	400 U
PYRENE	29-90	4/6	78 J	480 U	90 J	90 J	28 J	400 U
BENZO(A)ANTHRACENE	36-86	3/6	36 J	480 U	64 J	86 J	450 U	400 U
CHRYSENE	53-110	3/6	53 J	480 U	82 J	110 J	450 U	400 U
BENZO(B)FLUORANTHENE	82-97	3/6	82 J	480 U	82 J	97 J	450 U	400 U
BENZO(K)FLUORANTHENE	74-93	2/6	600 U	480 U	74 J	93 J	450 U	400 U
BENZO(A)PYRENE	43-110	3/6	43 J	480 U	85 J	110 J	450 U	400 U
INDENO(1,2,3-CD)PYRENE	60-76	2/6	600 U	480 U	60 J	76 J	450 U	400 U
BENZO(G,H,I)PERYLENE	57-75	2/6	600 U	480 U	57 J	75 J	450 U	400 U
BENZOIC ACID	26-40	3/6	40 J	29 J	26 J	1800 UJ	2200 U	1900 U
SDG			17721	17721	G17656	G17656	17721	17721
TAL Metals (MG/KG)								
ALUMINUM	7,840-18,100	6/6	18100	13900	10000	11300	18900	7840
ANTIMONY	4 9	1/5	R	4.6 U	13.7 U	12.6 U	4.9 J	3.7 U
ARSENIC	2-10 4	6/6	10.4	2.0	2.5	3.2	2.8	2.3
BARIUM	13-84 1	6/6	69.2	21.5	84.1	67.2	33.7	13.0
BERYLLIUM	0 3-0 6	6/6	0 59 J	0 61 J	0.34	0.4	0.6	0.33 J
CADMIUM	0 6-0 9	2/6	0 74 U	0.89 J	0.47 U	0.45 U	0.64 J	0.49 U
CALCIUM	490-1,950	6/6	1950	490	1450	1140	549	705
CHROMIUM	10 2-61 8	6/6	61 8	24	15.4	15.5	15.5	10.2
COBALT	2 6-6 7	6/6	6 7	4.2	5.9	5.1	4.0	2.6
COPPER	6 4-24 5	6/6	24 5	6.4	9.1	11.7	9.7	7.5
IRON	8,310-38,000	6/6	38000	8310	14200	14600	17500	9540
LEAD	9-15 4	3/6	193 U	10.4	15.4	9	160 U	2.9 U
MAGNESIUM	1,400-6,750	6/6	6750	1490	4910	4420	1850	1400
MANGANESE	55 1-330	6/6	214	55.1	330 J	260 J	113	75.4
NICKEL	7.4-18.8	6/6	18.8	7.4	11.3	10.4	8.8	7.4
POTASSIUM	491-4,190	6/6	3860	632 J	4190	3360	513	491
SODIUM	181-418	4/6	418	231 U	202	181	186 U	151 U
THALLIUM	0.34	1/6	0.37 U	0.34 U	0.23 U	0.22 U	0.27 U	0.24 U
VANADIUM	15.4-56.3	6/6	56.3	25.1	27.0	27.5	31.3	15.4
ZINC	13.7-52.8	6/6	52.8	19.7	45.6	40.3	34.9	13.7
SDG			17721	17721	17656	17656	17721	17721
TCLP Metals (UG/L)								
LEAD	30.6	1/2	30.6	14 UJ	NA	NA	NA	NA
CHROMIUM	3.2	1/2	3.2 J	3 U	NA	NA	NA	NA

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*: Value is the average of duplicate sample results

OBDANE GROUNDWATER

	Range(Total)	Frequency(Total)	Range(Diss)	Frequency(Diss)	14GW1S	14GW1S DISS
SDG					17915	17915
TCL Volatiles (UG/L)						
CARBON DISULFIDE	1	1/1	-	NA	1 J	NA
SDG						
TCL Semivolatiles (UG/L)	-	0/1	-	NA	10 U - 50 U	NA
SDG					17943	19943
TAL Metals (UG/L)						
ALUMINUM	171	1/1	-	0/1	171	64.5 U
ARSENIC	-	0/1	2.1	1/1	2.0 U	2.1
BARIUM	39	1/1	37.9	1/1	39.3	37.9
BORON	89	1/1	99.8	1/1	89.3 J	99.8 J
CALCIUM	6,600	1/1	6,730	1/1	6600	6730
IRON	2,260	1/1	2,040	1/1	2260	2040
MAGNESIUM	3,700	1/1	3,800	1/1	3700	3800
MANGANESE	770	1/1	779	1/1	770	779
POTASSIUM	4,460	1/1	4,510	1/1	4460	4510
SODIUM	43,800	1/1	44,000	1/1	43800	44000
VANADIUM	-	0/1	8.9	1/1	5.0 U	8.9
ZINC	9	1/1	6.5	1/1	9.1	6.5

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

OBDANE GROUNDWATER (ROUND 2)

	Range (Total)	Frequency (Total)	Range (Diss)	Frequency (Diss)	14GW1S-2	14GW1S-2 DISS
SDG					19326	
TCL Volatiles (UG/L)	-	0/1	-	NA	ND	NA
SDG					19326	
TCL Semivolatiles (UG/L)						
BIS(2-ETHYLHEXYL)PHTHALATE	1	1/1	-	NA	1 J	NA
SDG					19326	19326
TAL Metals (UG/L)						
BARIUM	35.5	1/1	35.1	1/1	35.5	35.1
BORON	130	1/1	120	1/1	130	120
CALCIUM	4190	1/1	4430	1/1	4190	4430
COBALT	7.0	1/1	-	0/1	7.0	5.9 U
IRON	4430	1/1	4680	1/1	4430	4680 J
LEAD	-	0/1	2.2	1/1	2.0 UJ	2.2 J
MAGNESIUM	2780	1/1	2820	1/1	2780	2820
MANGANESE	458	1/1	476	1/1	458	476
POTASSIUM	4080	1/1	4390	1/1	4080	4390
SODIUM	45800	1/1	47400	1/1	45800	47400
SDG					19326	
HARDNESS as CaCO3 (MG/L)	24.0	1/1	-	NA	24	NA

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

OBDANE SEDIMENT

	Range	Frequency	14SS3
SDG			16703
TCL Volatiles (UG/KG)			
CHLOROMETHANE	8	1/1	8 J
1,1-DICHLOROETHENE	2	1/1	2 J
CIS-1,3-DICHLOROPROPENE	2	1/1	2 J
BROMODICHLOROMETHANE	2	1/1	2 J
1,1,2-TRICHLOROETHANE	3	1/1	3 J
BENZENE	2	1/1	2 J
TETRACHLOROETHENE	3	1/1	3 J
1,1,2,2-TETRACHLOROETHANE	2	1/1	2 J
XYLENE (TOTAL)	2	1/1	2 J
SDG			16703
TCL Semivolatiles (UG/KG)			
PHENANTHRENE	26	1/1	26 J
FLUORANTHENE	42	1/1	42 J
PYRENE	45	1/1	45 J
BENZO(A)ANTHRACENE	27	1/1	27 J
CHRYSENE	44	1/1	44 J
BENZOIC ACID	64	1/1	64 J
SDG			16703
TCL Pesticides (UG/KG)			
4,4'-DDE	74	1/1	74 J
4,4'-DDD	11	1/1	11 J
4,4'-DDT	400	1/1	400 J
SDG			16703
TAL Metals (MG/KG)			
ALUMINUM	13400	1/1	13400 J
ARSENIC	16 3	1/1	16 3
BARIUM	63 2	1/1	63 2
BERYLLIUM	0 36	1/1	0 36
BORON	27 6	1/1	27 6 J
CALCIUM	1050	1/1	1050
CHROMIUM	41 1	1/1	41 1 J
COBALT	5 7	1/1	5 7
COPPER	21 8	1/1	21.8
IRON	31600	1/1	31600 J
LEAD	403	1/1	403 J
MAGNESIUM	5580	1/1	5580
MANGANESE	172	1/1	172 J
NICKEL	16 7	1/1	16 7
POTASSIUM	3480	1/1	3480
SODIUM	197	1/1	197
VANADIUM	49 1	1/1	49.1
ZINC	44 7	1/1	44 7

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

APPENDIX D.12

SITE 15 - SPENT ACID STORAGE AND DISPOSAL AREA

SPENT ACID STORAGE AND DISPOSAL AREA SOIL

	Range	Frequency	15MW1S-0607	15MW2S-0.52.5	15MW3S-0204	15MW4S-0103
SDG			17308	17308	17308	17148
TCL Volatiles (UG/KG)						
TOLUENE	1-3	2/4	12 U	3 J	1 J	12 U
TRICHLOROETHENE	2	1/4	12 U	2 J	11 U	12 U
SDG			17308	17308	17308	17148
TCL Semivolatiles (UG/KG)						
NAPHTHALENE	37	1/4	400 U	37 J	350 U	410 U
2-METHYLNAPHTHALENE	29	1/4	400 U	29 J	350 U	410 U
ACENAPHTHENE	54	1/4	400 U	54 J	350 U	410 U
DIBENZOFURAN	82	1/4	400 U	82 J	350 U	410 U
FLUORENE	150	1/4	400 U	150 J	350 U	410 U
PHENANTHRENE	18-1,000	2/4	400 U	1000	18 J	410 U
ANTHRACENE	240	1/4	400 U	240 J	350 U	410 U
CARBAZOLE	70	1/4	400 U	70 J	350 U	410 U
FLUORANTHENE	39-970	2/4	400 U	970	39 J	410 U
PYRENE	36-680	2/4	400 U	680	36 J	410 U
BENZO(A)ANTHRACENE	25-330	2/4	400 U	330 J	25 J	410 U
CHRYSENE	33-380	2/4	400 U	380 J	33 J	410 U
BENZO(B)FLUORANTHENE	62-300	2/4	400 U	300 J	62 J	410 U
BENZO(K)FLUORANTHENE	280	1/4	400 U	280 J	350 U	410 U
BENZO(A)PYRENE	26-320	2/4	400 U	320 J	26 J	410 U
INDENO(1,2,3-CD)PYRENE	200	1/4	400 U	200 J	350 U	410 U
DIBENZ(A,H)ANTHRACENE	91	1/4	400 U	91 J	350 U	410 U
BENZO(G,H,I)PERYLENE	19-210	2/4	400 U	210 J	19 J	410 U
BENZOIC ACID	32-40	2/4	40 J	32 J	1700 U	2000 U
SDG			17308	17308	17308	17148
TCL Pesticides/PCB (UG/KG)	-	0/4	ND	ND	ND	ND

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

SPENT ACID STORAGE AND DISPOSAL AREA SOIL

	Range	Frequency	15MW1S-0607	15MW2S-0.52.5	15MW3S-0204	15MW4S-0103
SDG			17308	17308	17308	17148
TAL Metals (MG/KG)						
ALUMINUM	11,500-15,900	4/4	11600	15900	11500	14200
ANTIMONY	4.3	1/4	10.8 U	11 U	14.4 U	4.3 J
ARSENIC	1.8-6.3	4/4	4.1	6.3	1.8	4.7 J
BARIUM	31.4-101	4/4	32.6	56.2	101	31.4 J
BERYLLIUM	0.32-0.64	4/4	0.45 J	0.64	0.32 J	0.62 J
CADMIUM	0.70-0.72	2/4	0.72 J	0.70 J	0.43 U	0.49 U
CALCIUM	918-2,550	4/4	1740	1560	2550	918 J
CHROMIUM	14.7-19.3	4/4	18.7	15.1	14.7	19.3
COBALT	2.9-6.0	4/4	6.0	2.9	5.3	5.8 J
COPPER	11.4-23.4	4/4	16.1	12.3	23.4	11.4 J
IRON	11,300-14,700	4/4	11300	13600	14700	14000
LEAD	8.5-64.0	4/4	27.5 J	52.5 J	64.0 J	8.5
MAGNESIUM	1,830-4,980	4/4	3740	1830	4980	2900
MANGANESE	128-327	4/4	214	153	327	128
MERCURY	0.14	1/4	0.12 U	0.12 U	0.11 U	0.14 J
NICKEL	8.6-11.4	4/4	11.4	8.6	9.1	10.1 J
POTASSIUM	339-4,170	4/4	1190 J	339 J	4170 J	789 J
SILVER	0.46	1/4	0.50 U	0.47 U	0.46 J	0.49 U
SODIUM	229-357	3/4	325	239 U	357	229 J
THALLIUM	0.32	1/4	0.25 U	0.24 U	0.32 J	7.4 U
VANADIUM	23.7-28.7	4/4	23.7	24.6	28.7	27.0
ZINC	22.0-53.4	4/4	31.4 J	53.3 J	53.4 J	22.0 J

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

SPENT ACID STORAGE AND DISPOSAL AREA GROUNDWATER

	Range(Total)	Frequency(Total)	Range(Diss)	Frequency(Diss)	15GW1D	15GW1D DISS	15GW1S	15GW1S DISS	15GW2S	15GW2S DISS
TCL Volatiles (UG/L)										
CARBON DISULFIDE	3	1/5	-	NA	3 J	NA	10 U	NA	10 U	NA
TCL Semivolatiles (UG/L)										
NAPHTHALENE	1	1/5	-	NA	10 U	NA	10 U	NA	10 U	NA
PHENANTHRENE	0.60	1/5	-	NA	10 U	NA	10 U	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	0.60-45	4/5	-	NA	45	NA	0.6 J	NA	5 J	NA
TCL Pesticides/PCBs (UG/L)										
HEPTACHLOR	0 05	1/5	-	NA	0.05 U	NA	0.05 U	NA	0.05 U	NA
TAL Metals (UG/L)										
ALUMINUM	114-4,210	5/5	2,160	1/5	912	14.0 U	228	14.0 U	2250	2160
BARIUM	34.2-125	5/5	29.0-52.9	5/5	45.8	35.2	54.6	52.7	52.3 J	52.9 J
BORON	50.2	1/5	50.2	1/5	50.0 U	50.0 U	50.0 U	50.0 U	50.0 U	50.0 U
CADMIUM	4.9	1/5	4 4	1/5	2.0 U	2.0 U	2.0 U	2.0 U	4.9 J	4.4 J
CALCIUM	12,600-31,900	5/5	12,700-28,300	5/5	28100	28100	27400	28300	12600	12700
CHROMIUM	5 9	1/5	-	0/5	3.0 UJ	3.0 U	3.0 UJ	3.0 U	3.0 UJ	3.0 UJ
COBALT	8 3	2/5	8 9	1/5	4.0 U	4.0 U	4.0 U	4.0 U	8.3 U	10.6 U
COPPER	2 4-10 1	3/5	2 3-6 4	5/5	2.0 U	2.8 J	2.0 U	2.9 J	2.4 J	2.3 J
IRON	101-7,110	5/5	2,720	1/5	1310	50.0 U	182	50.0 U	532	50.0 U
LEAD	2 1-21 2	4/5	-	0/5	1.0 UJ	1.0 UJ	2.1 J	1.0 U	3.1 J	2.0 UJ
MAGNESIUM	2,390-9,490	5/5	2,160-9,340	5/5	9490	9340	3090	3170	2680 J	2770 J
MANGANESE	186-3,080	5/5	129-3,080	5/5	1020	1040	338	346	264	271
NICKEL	10 6	1/5	-	0/5	10.0 U	10.0 U	10.0 U	10.0 U	10.6 J	10.0 U
POTASSIUM	1,550-7,020	5/5	1,500-6,640	5/5	7020	6640	3830	3950	1550 J	1500 J
SELENIUM	3	1/5	-	0/5	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ	3.0 J	3.0 UJ
SODIUM	24,600-67,400	5/5	25,600-68,900	5/5	67400	68900	39100	40400	24600	25600
VANADIUM	9 3	1/5	-	0/5	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U	5.0 U
ZINC	2 9-423	5/5	422	1/5	4.3	2.0 U	2.9 J	4.2 U	423	422

NA: Not analyzed

ND: Not detected

J: Estimate value

U: Not detected at detection limit indicated

UJ: Not detected at estimated detection limit indicated

R: Value rejected during validation

-: Not applicable

*: Value is the average of duplicate sample results

	15GW3S	15GW3S DISS	15GW4S	15GW4S DISS
TCL Volatiles (UG/L)				
CARBON DISULFIDE	10 U	NA	10 U	NA
TCL Semivolatiles (UG/L)		NA		
NAPHTHALENE	1 J	NA	10 U	NA
PHENANTHRENE	0.60 J	NA	10 U	NA
BIS(2-ETHYLHEXYL)PHTHALATE	10 U	NA	2 J	NA
TCL Pesticides/PCBs (UG/L)				
HEPTACHLOR	0.05 J	NA	0.05 U	NA
TAL Metals (UG/L)				
ALUMINUM	4210	14.0 U	114	14.6 U
BARIUM	125	86.1	34.2	29.0
BORON	50.2	50.2	50.0 U	50.0 U
CADMIUM	2.0 U	2.0 U	2.0 U	2.0 U
CALCIUM	31900	31100	28500	27800
CHROMIUM	5.9 J	3.0 U	3.0 UJ	3.0 U
COBALT	8.3	8.9	4.0 U	4.0 U
COPPER	10.1	3.1 J	6.8	6.4
IRON	7110	2720	101	50 U
LEAD	21.2 J	1.5 U	8.1 J	2.1 U
MAGNESIUM	6630	5620	2390	2160
MANGANESE	3080	3080	186	129
NICKEL	10.0 U	10.0 U	10.0 U	10.0 U
POTASSIUM	6240	4900	3540	2690
SELENIUM	1.0 UJ	1.0 UJ	1.0 UJ	1.0 UJ
SODIUM	29500	29500	30800	31300
VANADIUM	9.3 J	5.0 U	5.0 U	5.0 U
ZINC	20.3	6.4 U	32.8	6.2 U

NA: Not analyzed

ND: Not detected

J: Estimate value

U: Not detected at detection limit indicated

UJ: Not detected at estimated detection limit indicated

R: Value rejected during validation

-: Not applicable

*: Value is the average of duplicate sample results

SPENT ACID STORAGE AND DISPOSAL AREA GROUNDWATER (ROUND 2)

	Range (Total)	Frequency (Total)	Range (Diss)	Frequency (Diss)	15GW1S-2	15GW1S-2 DISS	15GW1D-2	15GW1D2DISS	15GW1D-D-2
SDG					19197		19197		
TCL Volatiles (UG/L)	-	0/6	-	NA	ND	NA	ND	NA	ND
SDG					19197		19197		
TCL Semivolatiles (UG/L)									
1,4-DICHLOROBENZENE	1	1/6	-	NA	10 U	NA	10 U	NA	10 U
DI-N-BUTYLPHTHALATE	0.5-0.9	5/6	-	NA	0.5 J	NA	0.6 J	NA	0.9 J
PHENANTHRENE	0.5	1/6	-	NA	10 U	NA	10 U	NA	10 U
SDG					19197A	19197B	19197A	19197B	
TAL Metals (UG/L)									
ALUMINUM	122-2940	5/6	2980	1/6	530	26.4 U	164	16.8 U	122
ANTIMONY	3 6	1/6	-	0/6	3.0 U	12.0 U	3.0 U	12.0 U	3.0 U
ARSENIC	1 2-1 7	3/6	-	0/6	1.0 U	2.0 U	1.7 J	2.0 U	1.2 J
BARIUM	31 6-86 1	6/6	28 3-76 3	6/6	61.0	60.3	32.0	28.3	31.6
BERYLLIUM	-	0/6	1 5	1/6	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U
BORON	51 9-73 2	2/6	-	0/6	50.0 U	43.7 U	50.0 U	37.0 U	51.9 J
CADMIUM	1 4-5 3	4/6	5 5	1/6	1.4 J	2.0 U	1.0 U	2.0 U	1.0 U
CALCIUM	11700-28300	6/6	11800-29600	6/6	18700	19800	27400	27000	28100
CHROMIUM	1 4-3 4	3/6	3 1-3 4	2/6	1.6 J	3.0 U	1.4 J	3.0 U	1.0 U
COBALT	1 1-10 8	5/6	-	0/6	1.4 J	3.5 U	1.8 J	3.0 U	1.1 J
COPPER	9 2-12 6	2/6	4 1-11	2/6	1.3 U	2.0 U	1.9 U	2.0 U	1.0 U
IRON	83 1-3120	5/6	736	1/6	406	41.0 U	233	26.9 U	184
MAGNESIUM	2490-9270	6/6	2350-8710	6/6	2580	2430	9100	8600	9270
MANGANESE	27 4-1050	6/6	26 9-999	6/6	32.8	28.0	1030	983	1050
NICKEL	-	0/6	10 6	1/6	12.0 U	7.0 U	12.0 U	7.0 U	12.0 U
POTASSIUM	1800-6430	6/6	1700-6280	6/6	4110	4750	6260	6160	6430
SILVER	1 9	1/6	-	0/6	1.0 U	2.0 U	1.9 J	2.0 UJ	1.0 U
SODIUM	26600-71000	6/6	25600-68400	6/6	34200	33700	70300	67400	71000
VANADIUM	1-3 5	4/6	-	0/6	1.0 J	3.0 U	2.7	3.0 U	1.4 J
ZINC	3 4-453	6/6	26.4	2/6	5.3	6.5 U	4.7	3.4 U	3.4 J
SDG					19197		19197		
Engineering (UG/L)									
CHEMICAL OXYGEN DEMAND	11	1/1	-	NA	11	NA	NA	NA	NA
TOTAL SUSPENDED SOLIDS	17	1/1	-	NA	17	NA	NA	NA	NA
SDG					19197				
Hardness (UG/L)									
HARDNESS as CaCO3	36-104	6/6	-	NA	72	NA	104	NA	104

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

* Value reported during validation

Not applicable

* Value is the average of duplicate sample results

SPENT ACID STORAGE AND DISPOSAL AR

	15GW1DD-2 DISS	15GW2S-2	15GW2S-2 DISS	15GW3S-2	15GW3S-2 DISS	15GW4S-2	15GW4S-2 DISS
SDG		19197		19197		19197	
TCL Volatiles (UG/L)	NA	ND	NA	ND	NA	ND	NA
SDG		19197		19197		19197	
TCL Semivolatiles (UG/L)							
1,4-DICHLOROBENZENE	NA	1 J	NA	10 U	NA	10 U	NA
DI-N-BUTYLPHTHALATE	NA	10 U	NA	0.5 J	NA	0.5 J	NA
PHENANTHRENE	NA	10 U	NA	0.5 J	NA	10 U	NA
SDG		19197A	19197B	19197A	19197B	19197A	19197B
TAL Metals (UG/L)							
ALUMINUM	13.4 U	2940	2980	1870	32.4 U	42.0 U	27.9 U
ANTIMONY	12.0 U	3.6 J	12.0 U	3.0 U	14.3 U	3.0 U	12.0 U
ARSENIC	2.0 U	1.0 U	2.0 U	1.5 J	2.0 U	1.0 UJ	2.0 U
BARIUM	76.3	65.9	64.3	86.1	76.3	40.7	36.6
BERYLLIUM	1.0 U	1.0 U	1.6 J	1.0 U	1.0 U	1.0 U	1.0 U
BORON	43.5	50.0 U	16.0 U	73.2 J	62.3 U	50.0 U	47.5 U
CADMIUM	3.0 U	5.3	5.6	1.9 J	2.0 U	2.0	2.0 U
CALCIUM	27400	11700	11800	28300	29600	20600	20200
CHROMIUM	3.0 U	1.0 U	3.0 U	3.4	3.1 J	1.0 U	3.4 J
COBALT	3.0 U	10.8	6.0 U	4.1	3.6 U	1.0 U	3.0 U
COPPER	3.0 U	17.8	11.0	9.2	4.1	1.3 U	2.0 U
IRON	16.0 U	83.1	38.2 U	3120	736	16.0 U	15.0 U
MAGNESIUM	6710	3610	3580	5150	4790	2490	2350
MANGANESE	806	311	311	780	806	27.4	26.9
NICKEL	7.0 U	12.0 U	16.6 J	12.0 U	7.0 U	12.0 U	7.0 U
POTASSIUM	6360	1800	1700	4720	4560	3410	3360
SILVER	2 UJ	1.0 U	2.0 UJ	1.0 U	2.0 U	1.0 U	2.0 U
SODIUM	66400	33100	33200	34000	35100	26600	25600
VANADIUM	3.0 U	1.0 U	3.0 U	3.5	3.0 U	1.0 U	3.0 U
ZINC	3.4 U	453	450	20.5	11.0 U	32.3	26.4
SDG							
Engineering (UG/L)							
CHEMICAL OXYGEN DEMAND	NA	NA	NA	NA	NA	NA	NA
TOTAL SUSPENDED SOLIDS	NA	NA	NA	NA	NA	NA	NA
SDG		19197		19197		19197	
Hardness (UG/L)							
HARDNESS as CaCO3	NA	36	NA	84	NA	60	NA

NA: Not analyzed

ND: Not detected

J: Estimate value

U: Not detected at detection limit indicated

UJ: Not detected at estimated detection limit indicated

R: Value rejected during validation

-: Not applicable

*: Value is the average of duplicate sample results

SPENT ACID STORAGE AND DISPOSAL AREA SEDIMENT

	Range	Frequency	15SD1
SDG			17791
TCL Volatiles (UG/KG)	-	0/1	12 U
SDG			17791
TCL Semivolatiles (UG/KG)			
DIMETHYL PHTHALATE	990	1/1	990
PHENANTHRENE	210	1/1	210 J
ANTHRACENE	25	1/1	25 J
CARBAZOLE	22	1/1	22 J
DI-N-BUTYLPHTHALATE	140	1/1	140 J
FLUORANTHENE	250	1/1	250 J
PYRENE	200	1/1	200 J
BENZO(A)ANTHRACENE	100	1/1	100 J
CHRYSENE	120	1/1	120 J
DI-N-OCTYL PHTHALATE	37	1/1	37 J
BENZO(B)FLUORANTHENE	100	1/1	100 J
BENZO(K)FLUORANTHENE	90	1/1	90 J
BENZO(A)PYRENE	75	1/1	75 J
INDENO(1,2,3-CD)PYRENE	78	1/1	78 J
BENZO(G,H,I)PERYLENE	71	1/1	71 J
BENZOIC ACID	760	1/1	760 J
SDG			17791
TCL Pesticides/PCB (UG/KG)			
HEPTACHLOR	2.5	1/1	2.5 J
ENDOSULFAN SULFATE	10	1/1	10 J
4,4'-DDT	8	1/1	8 J
SDG			17791
TAL Metals (MG/KG)			
ALUMINUM	2160	1/1	2160
ARSENIC	1.2	1/1	1.2 J
BARIUM	24.2	1/1	24.2
BERYLLIUM	0.26	1/1	0.26
CALCIUM	1200	1/1	1200
CHROMIUM	7.7	1/1	7.7
COPPER	6.9	1/1	6.9
IRON	4500	1/1	4500
LEAD	18.1	1/1	18.1 J
MAGNESIUM	1400	1/1	1400
MANGANESE	75.7	1/1	75.7
NICKEL	5.0	1/1	5.0
POTASSIUM	731	1/1	731
SODIUM	217	1/1	217
VANADIUM	5.3	1/1	5.3
ZINC	22.8	1/1	22.8

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

APPENDIX D.13

THAMES RIVER

THAMES RIVER SURFACE WATER

	Range(Total)	Frequency(Total)	Range(Diss)	Frequency(Diss)	T3SW1AB	T3SW1AS	T3SW1AS DISS	T3SW1AS-D	T3SW1AS-D DISS
SDG					16876	16876		16876	
TCL Volatiles (UG/L)									
TRICHLOROETHENE	3	1/14	-	NA	10 U	10 U	NA	10 U	NA
SDG					16876	16876		16876	
TCL Semivolatiles (UG/L)									
DI-N-BUTYLPHTHALATE	0.6	2/14	-	NA	10 U	10 U	NA	10 U	NA
BUTYLBENZYLPHTHALATE	0.5	1/14	-	NA	10 U	10 U	NA	10 U	NA
SDG					16876	16876		16876	
TCL Pesticides (UG/L)									
ENDRIN ALDEHYDE	0.14	1/14	-	NA	0.1 U	0.1 U	NA	0.1 U	NA
SDG					16876	16876	16876	16876	16876
TAL Metals (MG/KG)									
ALUMINUM	16.3-79.6	7/14	14	1/5	14.0 U	29.4 J	14.0 U	26.0 J	14.0 U
BARIUM	25.9	1/1	5.2-7.35*	5/5	R	R	6.9 J	R	7.6 J
BORON	518-3,330	14/14	1,560-3,210	5/5	3130 J	1720 J	1650 J	1560 J	1600 J
CADMIUM	10.2	1/14	-	0/5	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ
CALCIUM	50,900-249,000	14/14	130,000-258,000	5/5	243000	140000	135000	128000	133000
CHROMIUM	-	0/14	3.1-3.4	2/5	3.0 U	3.0 U	3.0 UJ	3.0 U	3.0 UJ
IRON	51-425	14/14	-	0/5	57.0 J	132	90.6 U	122	113 U
LEAD	1.0-2.0	3/14	-	0/5	10.0 UJ	1.5 J	2.0 UJ	1.5 J	2.0 UJ
MAGNESIUM	128,000-858,000	14/14	411,000-852,000	5/5	801000	444000	431000	410000	421000
MANGANESE	6.2-148	14/14	16.2-25.9	4/5	6.6 J	24.7	25.2	23.3	25.5
MERCURY	0.024-0.41	14/14	-	0/5	0.30	0.26	0.20 U	0.25	0.20 U
POTASSIUM	46,700-480,000	14/14	183,000-499,000	5/5	457000	202000	194000 J	162000	188000 J
SODIUM	117,000-3,711,500*	14/14	-	-	872000	426000	R	397000	R
VANADIUM	4.7-6.7	5/14	4.05*-5.8	2/5	5.0 UJ	6.9 J	5.0 UJ	5.0 UJ	5.6 J
ZINC	6.7	1/14	-	0/5	2.0 UJ	2.0 UJ	2.0 U	2.0 UJ	2.0 U

NA: Not analyzed

ND: Not detected

J: Estimate value

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-: Not applicable

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THAMES RIVER SURFACE WATER

	T3SW1ASAVG	T3SW1AS DISSAVG	T3SW1BB	T3SW1BB-D	T3SW1BBAVG	T3SW1BS	T3SW1S	T3SW2B	T3SW2S	T3SW3B
SDG			16876	16876		16876	16876	16876	16876	16876
TCL Volatiles (UG/L)										
TRICHLOROETHENE	10 U	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
SDG			16876	16876		16876	16876	16876	16876	16876
TCL Semivolatiles (UG/L)										
DI-N-BUTYLPHTHALATE	10 U	NA	10 U	10 U	10 U	10 U	0.6 J	10 U	10 U	10 U
BUTYLBENZYLPHTHALATE	10 U	NA	10 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
SDG			16876	16876		16876	16876	16876	16876	16876
TCL Pesticides (UG/L)										
ENDRIN ALDEHYDE	0.1 U	NA	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U	0.14	0.1 U	0.1 U
SDG			16876	16876		16876	16876	16876	16876	16876
TAL Metals (MG/KG)										
ALUMINUM	27 7 J	14 0 U	14.0 U	14.0 U	14.0 U	19.1 J	79.6 J	14.0 U	16.3	14.0 U
BARIUM	R	7 35 J	R	R	R	R	25.9 J	R	R	R
BORON	1640 J	1625 J	2480 J	2430 J	2455 J	1620 J	518	3100 J	1980 J	3210 J
CADMIUM	2 0 UJ	2.0 UJ	2 0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ
CALCIUM	134000	134000	193000	191000	192000	129000	50900	240000	157000	249000
CHROMIUM	3 0 U	3 0 UJ	3 0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U	3.0 U
IRON	127	101 8 U	90 2 J	86.1 J	88.15 J	128	425	70.3 J	106	71.3 J
LEAD	1 5 J	2 0 UJ	10 0 UJ	10.0 UJ	10.0 UJ	1.0 J	1.0 UJ	10.0 UJ	10.0 UJ	10.0 UJ
MAGNESIUM	427000	426000	639000	630000	634500	416000	128000	800000	517000	826000
MANGANESE	24	25 35	15 7	12.8 J	14.25 J	23.4	148	6.7 J	19.4	7.7 J
MERCURY	0 255	0 20 U	0 33	0 29	0.31	0.30	0.25	0.39	0.41	0.36
POTASSIUM	192000	191000 J	333000	324000	328500	185000	46700	462000	248000	480000
SODIUM	411500	R	693000	6730000	3711500	482000	118000	867000	540000	117000
VANADIUM	4 7 J	4 05 J	5 0 J	6.9 J	5.95 J	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ	5.0 UJ
ZINC	2 0 UJ	2 0 U	2 0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	6.7 J	2.0 UJ	2.0 UJ	2.0 UJ

NA Not analyzed

ND Not detected

J Estimate value

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- Not applicable

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THAMES RIVER SURFACE WATER

	T3SW3S	2DSW13	6SW1B	6SW1B DISS	6SW1S	6SW1S DISS	8SW1B	8SW1B DISS	8SW1S	8SW1S DISS
SDG	16876	16876	16876	16876	16876	16876	16876	16876	16876	16876
TCL Volatiles (UG/L)										
TRICHLOROETHENE	10 U	10 U	10 U	NA	3 J	NA	10 U	NA	10 U	NA
SDG	16876	16876	16876	16876	16876	16876	16876	16876	16876	16876
TCL Semivolatiles (UG/L)										
DI-N-BUTYLPHTHALATE	10 U	0 6 J	10 U	NA	10 U	NA	10 U	NA	10 U	NA
BUTYLBENZYLPHTHALATE	10 U	10 U	10 U	NA	0.5 J	NA	10 U	NA	10 U	NA
SDG	16876	16876	16876	16876	16876	16876	16876	16876	16876	16876
TCL Pesticides (UG/L)										
ENDRIN ALDEHYDE	0.1 U	0 1 U	0.1 U	NA	0.1 U	NA	0.1 U	NA	0.1 U	NA
SDG	16876	16876	16876	16876	16876	16876	16876	16876	16876	16876
TAL Metals (MG/KG)										
ALUMINUM	14.0 U	27.2 J	14.0 U	14.0 U	24.8 J	14.0 J	14.0 U	14.0 U	29.5 J	14.0 U
BARIUM	R	R	R	5.2 J	R	6.1 J	R	5.2 J	R	5.8 J
BORON	2210 J	1540 J	2540	2580 J	1450 J	1560 J	3330 J	3210 J	2110 J	2160 J
CADMIUM	2.0 UJ	2.0 UJ	2 0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	2.0 UJ	10.2 J	2.0 UJ
CALCIUM	176000	124000	198000	208000	116000	130000	261000	258000	169000	177000
CHROMIUM	3 0 U	3.0 U	3 0 U	3.4 J	3.0 U	3.0 UJ	3.0 U	3.0 UJ	3.0 U	3.1 J
IRON	95 9 J	119	81.9 J	53.7 U	120	74.1 U	51.0 J	37.6 U	114	65.1 U
LEAD	10 0 UJ	2 0 J	10.0 UJ	20.0 UJ	1.0 UJ	2.0 UJ	10.0 UJ	20.0 UJ	10.0 UJ	20.0 UJ
MAGNESIUM	575000	400000	658000	680000	372000	411000	858000	852000	549000	578000
MANGANESE	16 7	22 7	11.7 J	16.2	22.0	25.9	6.2 J	8.6 U	17.6	19.9
MERCURY	0 31	0 30	0.26	0.20 U	0.24	0.20 U	0.32	0.20 U	0.49	0.20 U
POTASSIUM	288000	175000	344000	363000 J	159000	183000 J	503000	499000 J	268000	269000 J
SODIUM	596000	379000	685000	R	345000	R	890000	R	565000	R
VANADIUM	5.3 J	6.1 J	5 0 UJ	6.1 UJ	5.0 UJ	5.0 UJ	6.7 J	5.0 UJ	5.0 UJ	5.8 J
ZINC	2 0 UJ	2.0 UJ	2 0 UJ	2.0 U	2.0 UJ	2.0 U	2.0 UJ	2.0 U	2.0 UJ	2.0 U

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	Range	Frequency	T1SD1	T1SD2	T2SD1	T2SD2	T3SD1	T3SD1-D	T3SD1AVG	T3SD2
SDG			16338	16338	16338	16338	16338	16338		16338
TCL Volatiles (UG/KG)										
CARBON DISULFIDE	7	1/1	NA	NA	NA	NA	26 U	7 J	7 J	NA
2-BUTANONE	32.5*	1/1	NA	NA	NA	NA	26 U	52	32.5 J	NA
SDG			16338	16338	16338	16338	16338	16338		16338
TCL Semivolatiles (UG/KG)										
ACENAPHTHYLENE	82-170	7/16	1800 U	100 J	170 J	100 J	1700 U	1700 U	1700 U	1600 U
ACENAPHTHENE	140	1/16	1800 U	1200 U	1600 U	1400 U	1700 U	1700 U	1700 U	1600 U
DIBENZOFURAN	110	1/16	1800 U	1200 U	1600 U	1400 U	1700 U	1700 U	1700 U	1600 U
FLUORENE	190	1/16	1800 U	1200 U	1600 U	1400 U	1700 U	1700 U	1700 U	1600 U
PHENANTHRENE	215*-2,100	14/16	380 J	540 J	400 J	550 J	380 J	390 J	385 J	430 J
ANTHRACENE	94.5*-680	14/16	130 J	160 J	150 J	190 J	150 J	130 J	140 J	150 J
CARBAZOLE	76-140	3/16	1800 U	81 J	1600 U	76 J	1700 U	1700 U	1700 U	1600 U
DI-N-BUTYLPHTHALATE	88-160	2/16	1800 U	1200 U	1600 U	1400 U	1700 U	88 J	88 J	1600 U
FLUORANTHENE	430*-5,300	14/16	680 J	1000 J	580 J	1100 J	680 J	920 J	800 J	830 J
PYRENE	525*-5,300	14/16	790 J	1000 J	1000 J	1100 J	1100 J	820 J	960 J	790 J
BENZO(a)ANTHRACENE	265*-2,000	15/16	410 J	500 J	480 J	470 J	460 J	460 J	460 J	460 J
CHRYSENE	270*-2,000	15/16	570 J	680 J	460 J	660 J	610 J	570 J	590 J	680 J
BIS(2-ETHYLHEXYL) PHTHALATE	90	1/16	1800 U	1200 U	1600 U	1400 U	1700 U	1700 U	1700 U	1600 U
BENZO(b)FLUORANTHENE	175*-1,800	15/16	880 J	1100 J	340 J	1400 U	600 J	670 J	635 J	450 J
BENZO(k)FLUORANTHENE	210*-980	12/16	1800 U	1200 U	980 J	1400 U	460 J	300 J	380 J	470 J
BENZO(a)PYRENE	88-1,400	15/16	510 J	620 J	780 J	1400 U	570 J	490 J	530 J	520 J
INDENO(1,2,3-cd)PYRENE	130*-850	14/16	470 J	500 J	640 J	1400 U	410 J	460 J	435 J	420 J
DIBENZ(a,h)ANTHRACENE	350	1/16	1800 U	1200 U	350 J	1400 U	1700 U	1700 U	1700 U	1600 U
BENZO(g,h,i)PERYLENE	96*-660	14/16	380 J	370 J	610 J	1400 U	320 J	410 J	365 J	400 J
SDG			16338	16338	16338	16338	16338	16338		16338
TCL Pesticides /PCB (UG/KG)										
GAMMA-BHC (LINDANE)	3.8	1/16	92 U	64 U	81 U	71 U	87 U	87 U	87 U	83 U
HEPTACHLOR	3.6-14	9/16	14 J	64 U	9.8 J	10 J	4.5 J	87 U	4.5 J	83 U
ALDRIN	5.1-10	2/16	92 U	64 U	81 U	71 U	10 J	87 U	10 J	83 U
DIELDRIN	4.8-14	4/16	14 J	5.3 J	5.0 J	140 U	170 U	170 U	170 U	160 U
4,4'-DDE	5.3-7.8	8/16	6.3 J	7.8 J	6.5 J	5.9 J	170 U	170 U	170 U	160 U
ENDRIN	40	1/16	180 U	120 U	160 U	140 U	40 J	170 U	40 J	160 U
4,4'-DDD	3.1-35	9/16	14 J	17 J	11 J	12 J	6.3 J	170 U	6.3 J	160 U
4,4'-DDT	37.5*-46	2/16	180 U	120 U	160 U	140 U	64 J	11 J	37.5 J	160 U
ENDRIN ALDEHYDE	7.5-14	4/16	180 U	7.5 J	7.6 J	8.7 J	170 U	170 U	170 U	160 U
ALPHA-CHLORDANE	3.1	1/16	92 U	3.1 J	81 U	71 U	87 U	87 U	87 U	83 U
GAMMA-CHLORDANE	11	1/16	92 U	11 J	81 U	71 U	87 U	87 U	87 U	83 U

NA Not analyzed

ND Not detected

J Estimate value

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R Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

	T3SD3	T3SD4	T4SD1	T4SD2	T4SD3	T4SD4	T5SD1	T5SD2	T5SD3	T5SD4
SDG	16338	16338	16338	16338	16338	16338	16338	16338	16338	16338
TCL Volatiles (UG/KG)										
CARBON DISULFIDE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
2-BUTANONE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
SDG	16338	16338	16338	16338	16338	16338	16338	16338	16338	16338
TCL Semivolatiles (UG/KG)										
ACENAPHTHYLENE	1800 U	1500 U	100 J	170 J	1900 U	1600 U	130 J	780 U	82 J	930 U
ACENAPHTHENE	1800 U	1500 U	1900 U	140 J	1900 U	1600 U	1600 U	780 U	1600 UJ	930 U
DIBENZOFURAN	1800 U	1500 U	1900 U	110 J	1900 U	1600 U	1600 U	780 U	1600 UJ	930 U
FLUORENE	1800 U	1500 U	1900 U	190 J	1900 U	1600 U	1600 U	780 U	1600 UJ	930 U
PHENANTHRENE	520 J	400 J	480 J	2100 J	420 J	490 J	540 J	780 U	460 U	290 J
ANTHRACENE	250 J	170 J	190 J	680 J	180 J	130 J	230 J	780 U	130 U	140 J
CARBAZOLE	1800 U	1500 U	1900 U	140 J	1900 U	1600 U	1600 U	780 U	1600 U	930 U
DI-N-BUTYLPHTHALATE	1800 U	1500 U	1900 U	160 J	1900 U	1600 U	1600 U	780 U	1600 U	930 U
FLUORANTHENE	1500 J	1100 J	1100 J	5300	1300 J	640 J	1200 J	780 U	1100 U	560 J
PYRENE	970 J	1000 J	930 J	5300 J	980 J	530 J	940 J	780 U	860 U	720 J
BENZO(a)ANTHRACENE	560 J	500 J	760 J	2000 J	520 J	300 J	560 J	780 U	390 J	360 J
CHRYSENE	600 J	650 J	800 J	2000 J	700 J	340 J	700 J	780 U	540 J	350 J
BIS(2-ETHYLHEXYL) PHTHALATE	1800 U	1500 U	1900 U	2100 U	1900 U	1600 U	1600 U	90 J	1600 U	930 U
BENZO(b)FLUORANTHENE	760 J	480 J	630 J	1800 J	610 J	200 J	680 J	780 U	420 J	230 J
BENZO(k)FLUORANTHENE	480 J	640 J	540 J	880 J	430 J	280 J	460 J	780 U	650 J	230 J
BENZO(a)PYRENE	600 J	570 J	710 J	1400 J	620 J	320 J	670 J	88 J	620 J	400 J
INDENO(1,2,3-cd)PYRENE	350 J	360 J	500 J	850 J	440 J	160 J	550 J	780 U	450 J	170 J
DIBENZ(a,h)ANTHRACENE	1800 UJ	1500 U	1900 U	2100 U	1900 U	1600 U	1600 U	780 U	1600 UJ	930 U
BENZO(g,h,i)PERYLENE	240 J	210 J	420 J	660 J	300 J	140 J	480 J	780 U	350 J	130 J
SDG	16338	16338	16338	16338	16338	16338	16338	16338	16338	16338
TCL Pesticides /PCB (UG/KG)										
GAMMA-BHC (LINDANE)	94 U	76 U	97 U	3.8 J	100 U	81 U	81 U	81 U	81 U	48 U
HEPTACHLOR	94 U	4.2 J	5.6 J	110 U	100 U	81 U	5.5 J	81 U	5.9 J	48 U
ALDRIN	94 U	76 U	97 U	110 U	5.1 J	81 U	81 U	81 U	81 U	48 U
DIELDRIN	180 U	150 U	190 U	210 U	190 U	160 U	160 U	160 U	160 U	93 U
4,4'-DDE	180 U	7.7 J	190 U	210 U	6.3 J	160 U	7.2 J	160 U	5.3 J	93 U
ENDRIN	180 U	150 U	190 U	210 U	190 U	160 U	160 U	160 U	160 U	93 U
4,4'-DDD	5.4 J	35 J	190 U	210 U	18 J	160 U	160 U	160 U	3.1 J	93 U
4,4'-DDT	180 U	46 J	190 U	210 U	190 U	160 U	160 U	160 U	160 U	93 U
ENDRIN ALDEHYDE	180 U	150 U	190 U	210 U	14 J	160 U	160 U	160 U	160 U	93 U
ALPHA-CHLORDANE	94 U	76 U	97 U	110 U	100 U	81 U	81 U	81 U	81 U	48 U
GAMMA-CHLORDANE	94 U	76 U	97 U	110 U	100 U	81 U	81 U	81 U	81 U	48 U

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

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R Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

	T5SD4-D	T5SD4AVG
SDG	16338	
TCL Volatiles (UG/KG)		
CARBON DISULFIDE	NA	NA
2-BUTANONE	NA	NA
SDG	16338	
TCL Semivolatiles (UG/KG)		
ACENAPHTHYLENE	900 U	915 U
ACENAPHTHENE	900 U	915 U
DIBENZOFURAN	900 U	915 U
FLUORENE	900 U	915 U
PHENANTHRENE	140 J	215 J
ANTHRACENE	49 J	94.5 J
CARBAZOLE	900 U	915 U
DI-N-BUTYLPHTHALATE	900 U	915 U
FLUORANTHENE	300 J	430 J
PYRENE	330 J	525 J
BENZO(a)ANTHRACENE	170 J	265 J
CHRYSENE	190 J	270 J
BIS(2-ETHYLHEXYL)PHTHALATE	900 U	915 U
BENZO(b)FLUORANTHENE	120 J	175 J
BENZO(k)FLUORANTHENE	190 J	210 J
BENZO(a)PYRENE	200 J	300 J
INDENO(1,2,3-cd)PYRENE	80 J	110 J
DIBENZ(a,h)ANTHRACENE	900 U	915 U
BENZO(g,h,i)PERYLENE	62 J	88 J
SDG	16338	
TCL Pesticides /PCB (UG/KG)		
GAMMA-BHC (LINDANE)	47 U	47.5 U
HEPTACHLOR	3.6 J	3.6 J
ALDRIN	47 U	47.5 U
DIELDRIN	4.8 J	4.8 J
4,4'-DDE	90 U	91.5 U
ENDRIN	90 U	91.5 U
4,4'-DDD	90 U	91.5 U
4,4'-DDT	90 U	91.5 U
ENDRIN ALDEHYDE	90 U	91.5 U
ALPHA-CHLORDANE	47 U	47.5 U
GAMMA-CHLORDANE	47 U	47.5 U

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R: Value rejected during validation

-: Not applicable

*: Value is the average of duplicate sample results

	Range	Frequency	T1SD1	T1SD2	T2SD1	T2SD2	T3SD1	T3SD1-D	T3SD1AVG	T3SD2
SDG			16338	16338	16338	16338	16338	16338		16338
TAL Metals (MG/KG)										
ALUMINUM	5,615*-19,100	16/16	13700	11500	13800	13300	15900	17000	16450	16400
ANTIMONY	10.9*-41.15*	16/16	38.1 J	27.0 J	39.0	36.1 J	39.6 J	42.7 J	41.15 J	40.9 J
ARSENIC	2.45*-13.2	16/16	10.9 J	8.3 J	11.2	10.4 J	6.4 J	7.1 J	6.75 J	6.9 J
BARIUM	20.0*-73.0	16/16	48.5	41.6	73.0	57.9	60.4	65.6	63.0	63.5
BERYLLIUM	0.19*-1.3	16/16	0.69	0.55	1.3	0.72	0.57	0.73	0.65	0.63
BORON	129	1/16	151 U	72.9 U	129	96.8 U	97.8 U	111 U	104.4 U	134 U
CADMIUM	0.51	1/16	0.56 UJ	0.42 UJ	0.51	0.47 UJ	0.5 UJ	0.5 UJ	0.5 UJ	0.51 UJ
CALCIUM	3,230-9,840	16/16	5110 J	3230 J	4910	4600 J	9150 J	8100 J	8625 J	8010 J
CHROMIUM	22.0*-91.5	16/16	79.6 J	69.0 J	81.6	64.2 J	64.3 J	67.6 J	65.95 J	65.6 J
COBALT	3.2*-9.9	16/16	7.0	6.4	8.5	7.2	7.6	8.1	7.9	7.5
COPPER	18.6*-151	16/16	83.7	70.8	151	77.5	81.5	86.3	83.9	80.5
IRON	7,820*-30,500	16/16	23800	18500	25400	22600	26000	27600	26800	26500
LEAD	12.7-186	16/16	85.6	91.2	186	120	91.2	98.5	94.85	95.7
MAGNESIUM	3,150*-10,200	16/16	7490	6120	6850	7160	8400	8720	8560	8480
MANGANESE	92.15*-356	16/16	234 J	190 J	256 J	249 J	285 J	304 J	294.5 J	287 J
MERCURY	0.12*-0.66	14/16	0.50 J	0.48 J	0.44 J	0.38 J	0.49 J	0.56 J	0.53 J	0.63 J
NICKEL	9.3*-34.3	16/16	22.6	23.0	31.1	34.0	31.1	33.4	32.25	32.1
POTASSIUM	1,380*-5,220	16/16	3590	2720	3600	3590	4460	4640	4550	4840
SELENIUM	0.51	1/16	0.56 UJ	0.76 U	0.51	0.64 U	0.72 U	0.6 U	0.66 U	0.68 U
SILVER	1.2	1/16	1.4 U	1.3 U	1.2	1.7 U	2.3 U	2.4 U	2.35 U	1.8 U
SODIUM	4,040*-26,700	16/16	16400	11100	12100	13900	16400	16200	16300	16300
THALLIUM	0.76	1/16	0.85 UJ	0.63 UJ	0.76	0.71 UJ	0.76 UJ	0.75 UJ	0.76 UJ	0.76 UJ
VANADIUM	16.45*-54.2	16/16	38.7	33.4	36.5	37.7	42.3	45.0	43.65	43.1
ZINC	35.5*-297	16/16	130 J	119 J	297	163 J	133 J	142 J	137.5 J	139 J

NA Not analyzed

ND Not detected

J Estimate value

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- Not applicable

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	T3SD3	T3SD4	T4SD1	T4SD2	T4SD3	T4SD4	T5SD1	T5SD2	T5SD3	T5SD4
SDG	16338	16338	16338	16338	16338	16338	16338	16338	16338	16338
TAL Metals (MG/KG)										
ALUMINUM	15100	19100	14600	17600	15100	7470	14000	15200	16400	6120
ANTIMONY	32.7 J	42.3 J	37.6 J	41.1 J	36.3 J	14.9 J	31.8 J	30.4 J	32.5 J	12 J
ARSENIC	10.2 J	12.6 J	11.1 J	13.2 J	13.2 J	4.9 J	10.7 J	7.8 J	11.3 J	2.2 J
BARIUM	69.3	84.2	63.9	70.0	58.2	24.5	52.5	41.8	54.1	21.6
BERYLLIUM	0.68	0.80	0.50	0.78	0.71	0.26	0.53	0.54	0.70	0.22
BORON	159 U	200 U	120 U	160 U	115 U	66.4 U	122 U	185 U	121 U	43.5 U
CADMIUM	0.52 UJ	0.76 UJ	0.45 UJ	0.65 UJ	0.6 UJ	0.29 UJ	0.48 UJ	0.55 UJ	0.49 UJ	0.29 UJ
CALCIUM	6480 J	6000 J	5880 J	6550 J	6010 J	4910 J	5140 J	9840 J	7790 J	2010 J
CHROMIUM	59.8 J	89.9 J	58.6 J	83.5 J	73.3 J	27.8 J	91.5 J	37.1 J	77.7 J	23.6 J
COBALT	8.1	9.9	7.2	8.3	8.1	3.6	6.0	7.3	7.3	3.4
COPPER	80.8	119	66.1	118	90.7	28.3	91.7	22.6	76.7	20.3
IRON	25500	30500	23300	28800	27200	11400	23000	22400	23700	8490
LEAD	62.2	123	79.3	139	94.0	28.2 J	117	12.7	101	20.8
MAGNESIUM	8620	10200	7540	9460	8760	4090	6980	7930	7470	3320
MANGANESE	335 J	293 J	245 J	356 J	336 J	137 J	238 J	245 J	271 J	99.5 J
MERCURY	0.43 J	0.62 J	0.35 J	0.56 J	0.41 J	0.14 UJ	0.66 J	0.28 UJ	0.37 J	0.14 UJ
NICKEL	25.2	28.6	27.8	34.3	26.3	11.1	25.5	18.8	25.2	10.1
POTASSIUM	5220	5160	3910	4940	4200	1900	3500	4330	3900	1460
SELENIUM	0.52 U	0.76 UJ	0.74 U	0.65 UJ	0.60 UJ	0.29 U	0.87 U	0.55 UJ	0.49 UJ	0.29 U
SILVER	1.3 U	2.3 U	1.4 U	2.2 U	1.4 U	0.43 UJ	1.9 U	1.1 U	1.4 U	0.5 U
SODIUM	15000	26700	12700	21500	18600	5330	13400	16500	14100	4060
THALLIUM	0.78 UJ	1.1 UJ	0.68 UJ	0.97 UJ	0.89 UJ	0.43 UJ	3.6 UJ	0.83 UJ	0.74 UJ	0.43 UJ
VANADIUM	46.3	54.2	39.3	51.0	44.7	20.7	40.8	40.7	45.0	17.6
ZINC	132 J	173 J	121 J	194 J	143 J	38.5 J	153 J	59.6 J	135 J	38.6 J

NA Not analyzed

ND Not detected

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	T5SD4-D	T5SD4AVG
SDG	16338	
TAL Metals (MG/KG)		
ALUMINUM	5110	5615
ANTIMONY	9 8 J	10 9 J
ARSENIC	2 7 J	2 45 J
BARIUM	18 4	20 0
BERYLLIUM	0 16	0 19
BORON	59 3 U	51 4 U
CADMIUM	0 29 UJ	0 29 UJ
CALCIUM	4730 J	3370 J
CHROMIUM	20 4 J	22 0 J
COBALT	3 0	3 2
COPPER	18 9	18 8
IRON	7150	7820
LEAD	17 4	19 1
MAGNESIUM	2980	3150
MANGANESE	84 8 J	92 15 J
MERCURY	0 17 J	0 12 J
NICKEL	8 5	9 3
POTASSIUM	1300	1380
SELENIUM	0 29 U	0 29 U
SILVER	0 47 U	0 49 U
SODIUM	4000	4040
THALLIUM	0 43 UJ	0 43 UJ
VANADIUM	15 3	16 45
ZINC	32 4 J	35 5 J

NA Not analyzed

ND Not detected

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	Range	Frequency	BVO1	BVO2	BVO3	BVO3-D	BVO3AVG	BVO4	BVC1	BVC2
SDG										
TCL Volatiles (UG/KG)										
METHYLENE CHLORIDE	4-26*	5/5	NA	NA	NA	NA	NA	NA	NA	NA
ACETONE	62 5*-235*	3/5	NA	NA	NA	NA	NA	NA	NA	NA
CARBON DISULFIDE	27-156*	5/5	NA	NA	NA	NA	NA	NA	NA	NA
2-BUTANONE	28*	1/5	NA	NA	NA	NA	NA	NA	NA	NA
BENZENE	3 5*-8*	5/5	NA	NA	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	2	1/5	NA	NA	NA	NA	NA	NA	NA	NA
TOLUENE	3 5*-15*	5/5	NA	NA	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	1*-5*	5/5	NA	NA	NA	NA	NA	NA	NA	NA
STYRENE	1	1/5	NA	NA	NA	NA	NA	NA	NA	NA
XYLENE (TOTAL)	5*-25 5*	5/5	NA	NA	NA	NA	NA	NA	NA	NA
SDG			16504	16504	16504	16504		16504	16504	16504
TCL Semivolatiles (UG/KG)										
2-METHYLPHENOL	44	1/18	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
2-METHYLNAPHTHALENE	20	1/18	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
ACENAPHTHENE	20	1/18	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
DIBENZOFURAN	20	1/18	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
FLUORENE	20	1/18	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
PHENANTHRENE	92	1/18	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
FLUORANTHENE	16-120	3/18	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
PYRENE	17-130	4/18	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
BIS(2-ETHYLHEXYL)PHTHALATE	46*-160	9/18	89 J	98 J	330 U	330 U	330 U	160 J	330 U	82 J
DI-N-OCTYL PHTHALATE	18-35	3/18	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
BENZYL ALCOHOL	70-570	2/18	330 U	330 U	330 U	330 U	330 U	330 U	330 U	570
BENZOIC ACID	76*-870	5/18	800 U	800 U	800 U	800 U	800 U	800 U	800 U	5400 U
SDG			16504	16504	16504	16504		16504	16504	16504
TCL Pesticides/PCB (UG/KG)										
ALPHA-BHC	1 8	1/18	17 U	17 U	17 U	17 U	17 U	17 U	17 U	17 U
BETA-BHC	1 43*-36	4/18	17 U	17 U	17 U	17 U	17 U	17 U	17 U	17 U
GAMMA-BHC (LINDANE)	1 52*	1/18	17 U	17 U	17 U	17 U	17 U	17 U	17 U	17 U
HEPTACHLOR	1 28*-4 5	16/18	2 2 J	2 3 J	2.1 J	2 J	2.05 J	3.1 J	2.1 J	17 U
ALDRIN	2 4-2 58*	2/18	17 U	17 U	17 U	17 U	17 U	17 U	17 U	17 U
4,4'-DDE	3 18*-16	6/18	33 U	33 U	33 U	33 U	33 U	33 U	33 U	33 U
4,4'-DDD	5	1/18	33 U	33 U	33 U	33 U	33 U	33 U	33 U	33 U
ENDRIN ALDEHYDE	2 58*	1/18	33 U	33 U	33 U	33 U	33 U	33 U	33 U	33 U
GAMMA-CHLORDANE	1 28*-13	5/18	17 U	17 U	17 U	17 U	17 U	17 U	2.1 J	17 U
SDG			16504	16504	16504	16504		16504	16504	16504
TAL Metals (MG/KG)										
ALUMINUM	5 6-111	15/18	37.9	37.2	40.6	21 1 U	25.58 J	33.6	12 1 U	25.3 U
ARSENIC	0 61-6 7	18/18	0 95 J	1.2 J	1.5 J	0.9 J	1.2 J	1.2 J	4.1 J	6.7 J
BARIUM	0 5-1 4	11/18	1 2	1.3	1.5	0 84	1.17	0.83	0.72	0.50
BORON	3 0-77 5	7/18	3 7 U	3.4 U	3.9 U	4.5 U	4.2 U	3.3 U	3.4 U	2.7 U
CADMIUM	0 11-0 94	11/18	0 61	0.86	0.9	0 71	0.81	0.92	0.14	0.59
CALCIUM	132-3,150*	18/18	1400	2720	3470	2830	3150	981	1470	885
CHROMIUM	0 485*-4 1	15/18	1 3	1.4	1.5	1 1	1.3	1.0	0.98	4.1
COPPER	1 8-253	18/18	99 2 J	253 J	169 J	62 9 J	115.95 J	139 J	7.5 J	6.6 J
IRON	21 55*-207	18/18	79 1 J	75 J	75.7 J	48.3 J	62 J	64.3 J	36.3 J	48 J
LEAD	0 0425*-2 0	9/18	0 16 U	0 18 U	0.1 U	0 14 U	0.12 U	0.1 U	0.35 U	0.85 U
MAGNESIUM	289-850	18/18	646	548	549	776	662.5	578	790	726
MANGANESE	0 825*-15 1	18/18	3 0	2.3	3.8	2 6	3.2	3.2	8.1	15.1
MERCURY	0 825*	1/18	0 1 U	0 1 U	0.1 U	0 1 U	0.1 U	0.1 U	0.10 U	0.1 U
NICKEL	0 6-1 7	10/18	0 84	0.8	1.1	0 82	0.96	0.67	1.1	1.7
POTASSIUM	519-2330*	18/18	2070	2330	2480	1760	2120	1800	2020	1990
SELENIUM	0 17-1 1	15/18	0 32	0 33	0.42	0.4	0.41	0.38	0.27	0.95
SILVER	0 365*-2 5	10/18	2 2 J	1.9 J	1.3 J	0 79 J	1.05 J	2.5 J	0.1 UJ	1.1 J
SODIUM	2,020-6,310	18/18	3920 J	2920 J	2720 J	5020 J	3870 J	3470 J	4740 J	4390 J
VANADIUM	0 16-0 58	7/18	0 16	0.2	0.15 U	0.15 U	0.15 U	0.15 U	0.15 U	0.58
ZINC	4 6-2,960	18/18	1760 J	2960 J	2080 J	1210 J	1645 J	1830 J	19.8 J	34.6 J

NA Not analyzed

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- Not applicable

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	BVC3	CMU1	CMU1-R	CMU1[illegible]	CMU2	CMU2-R	CMU2AVG	CMU3	CMU4	[illegible]4-R
SDG		16704	16704		16704	16704		16704	16704	16704
TCL Volatiles (UG/KG)										
METHYLENE CHLORIDE	NA	28 J	12 J	20 J	20	18	19	4 J	34 J	18 J
ACETONE	NA	160 U	R	160 U	480 U	R	480 U	98	170	300
CARBON DISULFIDE	NA	120 J	14 J	67 J	280 J	32 J	156 J	27	32 J	60 J
2-BUTANONE	NA	10 UJ	10 U	10 UJ	30	26	28	10 U	10 U	10 U
BENZENE	NA	6 J	2 J	4 J	12 J	4 J	8 J	4 J	8 J	7 J
TETRACHLOROETHENE	NA	10 UJ	10 U	10 UJ	2 J	10 U	2 J	10 U	10 UJ	10 U
TOLUENE	NA	12 J	4 J	8 J	24 J	8 J	15 J	9 J	10	13
ETHYLBENZENE	NA	10 UJ	1 J	1 J	8 J	2 J	5 J	2 J	10 UJ	5
STYRENE	NA	10 UJ	10 U	10 UJ	1 J	10 U	1 J	10 U	10 UJ	10 U
XYLENE (TOTAL)	NA	10 J	7 J	8.5 J	40 J	11 J	25.5 J	13	8 J	24 J
SDG	16504	16704	16704		16704	16704		16704	16704	16704
TCL Semivolatiles (UG/KG)										
2-METHYLPHENOL	330 U	330 U	330 U	330 U	330 U	330 U	330 U	44 J	330 U	330 U
2-METHYLNAPHTHALENE	330 U	330 U	330 U	330 U	330 U	330 U	330 U	20 J	330 U	330 U
ACENAPHTHENE	330 U	330 U	330 U	330 U	330 U	330 U	330 U	20 J	330 U	330 U
DIBENZOFURAN	330 U	330 U	330 U	330 U	330 U	330 U	330 U	20 J	330 U	330 U
FLUORENE	330 U	330 U	330 U	330 U	330 U	330 U	330 U	20 J	330 U	330 U
PHENANTHRENE	330 U	330 U	330 U	330 U	330 U	330 U	330 U	92 J	330 U	330 U
FLUORANTHENE	330 U	330 U	330 U	330 U	330 U	330 U	330 U	120 J	18 J	330 U
PYRENE	330 U	330 U	330 U	330 U	24 J	330 U	24 J	130 J	17 J	330 U
BIS(2-ETHYLHEXYL)PHTHALATE	59 J	330 U	330 U	330 U	330 U	330 U	330 U	74 J	330 U	330 U
DI-N-OCTYL PHTHALATE	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
BENZYL ALCOHOL	330 U	330 U	330 U	330 U	330 U	330 U	330 U	70 J	330 U	330 U
BENZOIC ACID	1800 U	116 J	106 J	106 J	140 J	38 J	89 J	870	78 J	89 J
SDG	16504	16704	16704		16704	16704		16704	16704	16704
TCL Pesticides/PCB (UG/KG)										
ALPHA-BHC	17 U	1.7 UJ	1.7 UJ	1.7 UJ	1.7 UJ	1.7 UJ	1.7 UJ	1.8 J	1.7 UJ	1.7 UJ
BETA-BHC	17 U	1.7 UJ	1.7 UJ	1.7 UJ	3.4 J	3 J	3.2 J	3.8 J	3 J	1.8 J
GAMMA-BHC (LINDANE)	17 U	1.7 UJ	1.7 UJ	1.7 UJ	1.7 UJ	1.7 UJ	1.7 UJ	1.7 UJ	1.7 UJ	2.2 J
HEPTACHLOR	3 J	1.7 UJ	1.7 J	1.38 J	1.9 J	2 J	1.95 J	2.1 J	1.9 J	1.7 UJ
ALDRIN	17 U	1.7 UJ	1.7 UJ	1.7 UJ	1.7 UJ	1.7 UJ	1.7 UJ	1.7 UJ	1.7 UJ	4.3 J
4,4'-DDE	33 U	3.3 UJ	3.3 UJ	3.3 UJ	8.5 J	3.3 UJ	4.08 J	6.1 J	3.3 UJ	4.7 J
4,4'-DDD	33 U	3.3 UJ	3.3 UJ	3.3 UJ	3.3 UJ	3.3 UJ	3.3 UJ	3.3 UJ	3.3 UJ	3.3 UJ
ENDRIN ALDEHYDE	33 U	3.3 UJ	3.3 UJ	3.3 UJ	3.5 J	3.3 UJ	2.58 J	3.3 UJ	3.3 UJ	3.3 UJ
GAMMA-CHLORDANE	17 U	1.7 UJ	1.7 UJ	1.7 UJ	1.7 J	1.7 UJ	1.28 J	1.7 UJ	1.7 UJ	1.7 UJ
SDG	16504	16704	16704		16704	16704		16704	16704	16704
TAL Metals (MG/KG)										
ALUMINUM	18.7 U	14.0	10.8	12.3	18.5	3.2 J	9.85 J	5.6	8.1	24.9
ARSENIC	5.3 J	1.0 J	1.0 J	1.0 J	0.8 J	0.83 J	0.815 J	0.61 J	0.69 J	0.83 J
BARIUM	0.88	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.30 U	0.35 U
BORON	2.9 U	4.1 J	4.4 J	4.25 J	5.1	5.8	5.45	3 J	3.4 J	4.2 J
CADMIUM	0.11	0.18 U	0.11 U	0.145 U	0.10 U	0.13 U	0.115 U	0.10 U	0.14 U	0.10 U
CALCIUM	2580	253	307	280	237	413	325	132	237	262
CHROMIUM	1.4	0.67	0.41	0.54	0.59	0.54	0.565	0.60	0.37	0.68
COPPER	2.9 J	3.0	3.6	3.3	2.4	2.5	2.45	2.2	2.1	1.5
IRON	40.2 J	46	50.9	48.45	29.7	13.4	21.55	38.6	48.2	66.7
LEAD	0.39 U	0.12 J	0.13 J	0.125 J	0.08 J	0.05 UJ	0.0425 J	0.09 J	0.08 J	0.15 J
MAGNESIUM	757	542	603	572.5	548	501	524.5	289	464	481
MANGANESE	5.1	1.6	1.3	1.5	0.9	0.89	0.895	0.88	0.8	1.8
MERCURY	0.10 U	0.10 U	0.10 U	0.10 U	0.10 U	1.6	0.825 J	0.10 U	0.10 U	0.10 U
NICKEL	1.4	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U	0.55 U
POTASSIUM	1960	694	924	809	745	706	725.5	519	635	620
SELENIUM	0.36	0.28 J	0.37 J	0.325 J	0.28 J	0.28 J	0.28 J	0.17 J	0.22 J	0.25 J
SILVER	0.10 UJ	1.2 J	1.8 J	1.5 J	0.69 J	1.4 J	1.045 J	0.44 J	0.58 J	0.20 J
SODIUM	4420 J	3930	4380	4155	4200	3610	3905	2020	3010	3170
VANADIUM	0.22	0.18 U	0.35 U	0.18 U	0.21 U	0.15 U	0.18 U	0.15 U	0.22 U	0.15 U
ZINC	18.1 J	8.6	12.6	10.45	8.7	7.9	7.3	4.6	6.7	7.1

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THAMES RIVER BIOTA

	CMU4AVG	CMU5	CMU5-R	CMU5AVG	MU-1	MU-2	MU-3	MU-4	MU-5	MU-6
SDG		16704	16704							
TCL Volatiles (UG/KG)										
METHYLENE CHLORIDE	26	5 J	15 J	10 J	NA	NA	NA	NA	NA	NA
ACETONE	235	75	100 U	62.5 J	NA	NA	NA	NA	NA	NA
CARBON DISULFIDE	46	40 J	110 J	75 J	NA	NA	NA	NA	NA	NA
2-BUTANONE	10 U	10 U	10 UJ	10 UJ	NA	NA	NA	NA	NA	NA
BENZENE	6.5 J	3 J	4 J	3.5 J	NA	NA	NA	NA	NA	NA
TETRACHLOROETHENE	10 U	10 U	10 UJ	10 UJ	NA	NA	NA	NA	NA	NA
TOLUENE	11.5	4 J	3 J	3.5 J	NA	NA	NA	NA	NA	NA
ETHYLBENZENE	5 J	1 J	10 UJ	1 J	NA	NA	NA	NA	NA	NA
STYRENE	10 U	10 U	10 UJ	10 UJ	NA	NA	NA	NA	NA	NA
XYLENE (TOTAL)	18 J	6 J	4 J	5 J	NA	NA	NA	NA	NA	NA
SDG		16704	16704		16504	16504	16504	16983	16983	16983
TCL Semivolatiles (UG/KG)										
2-METHYLPHENOL	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
2-METHYLNAPHTHALENE	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
ACENAPHTHENE	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
DIBENZOFURAN	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
FLUORENE	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
PHENANTHRENE	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
FLUORANTHENE	18 J	330 U	330 U	330 U	330 U	330 U	330 U	330 U	32 J	330 U
PYRENE	17 J	330 U	330 U	330 U	330 U	330 U	330 U	330 U	28 J	330 U
BIS(2-ETHYLHEXYL)PHTHALATE	330 U	39 J	53 J	46 J	130 J	330 U	120 J	330 U	330 U	330 U
DI-N-OCTYL PHTHALATE	330 U	330 U	330 U	330 U	18 J	330 U	330 U	330 U	35 J	30 J
BENZYL ALCOHOL	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U	330 U
BENZOIC ACID	82.5 J	71 J	100 J	85.5 J	1300 U	800 U	800 U	1600 U	1600 U	1600 U
SDG		16704	16704		16504	16504	16504	16983	16983	16983
TCL Pesticides/PCB (UG/KG)										
ALPHA-BHC	17.85 UJ	1.7 UJ	1.7 UJ	1.7 UJ	17 U	17 U	17 U	17 U	17 U	17 U
BETA-BHC	2.4 J	1.7 UJ	2 J	1.43 J	17 U	17 U	17 U	17 U	17 U	17 U
GAMMA-BHC (LINDANE)	1.52 J	1.7 UJ	1.7 UJ	1.7 UJ	17 U	17 U	17 U	17 U	17 U	17 U
HEPTACHLOR	1.38 J	1.7 UJ	1.7 UJ	1.7 UJ	2.1 J	2 J	4.5 J	2.5 J	3.1 J	3.1 J
ALDRIN	2.58 J	1.7 UJ	1.7 UJ	1.7 UJ	17 U	17 U	17 U	2.4 J	17 U	17 U
4,4'-DDE	3.18 J	3.3 UJ	3.3 UJ	3.3 UJ	33 U	33 U	33 U	7.1 J	18 J	11 J
4,4'-DDD	3.3 UJ	3.3 UJ	3.3 UJ	3.3 UJ	33 U	33 U	5 J	33 U	33 U	33 U
ENDRIN ALDEHYDE	3.3 UJ	3.3 UJ	3.3 UJ	3.3 UJ	33 U	33 U	33 U	33 U	33 U	33 U
GAMMA-CHLORDANE	1.7 UJ	1.7 UJ	1.7 UJ	1.7 UJ	17 U	17 U	3.5 J	13 J	17 U	3.2 J
SDG		16704	16704		16504	16504	16504	16983	16983	16983
TAL Metals (MG/KG)										
ALUMINUM	18.5	9.9	10.8	10.35	82.8	100	50	14.0	111	81.2
ARSENIC	0.66 J	1.0 J	0.66 J	0.83 J	2.2 J	2.0 J	2.4 J	1.4	1.1	2.5
BARIUM	0.325 U	0.37 U	0.3 U	0.335 U	0.84	1.4	0.83	1.2	1.2 U	1.2 U
BORON	3.8 J	5.1	2.9 J	4 J	5.4 U	4.5 U	4.0 U	10.0 U	70.9	77.5
CADMIUM	0.12 U	0.17 U	0.14 U	0.155 U	0.45	0.45	0.41	0.4 UJ	0.4 UJ	0.94 J
CALCIUM	249.5	320	288	304	445	378	448	447	774	474
CHROMIUM	0.525	0.59	0.38	0.485	1.1	1.5	1.0	0.6 U	0.6 U	0.6 U
COPPER	1.8	2.0	1.8	1.9	4.0 J	3.3 J	3.4 J	1.8	1.8	2.4
IRON	57.45	44.3	47	45.65	207 J	186 J	106 J	127	137	67.1
LEAD	0.115 J	0.10 J	0.11 J	0.105 J	0.10 U	2 J	1.6 U	1.5	0.78	0.86
MAGNESIUM	472.5	369	479	424	850	766	771	698	735	843
MANGANESE	1.2	1.2	0.88	1.04	6.4	6.0	3.8	1.5	3.0	1.8
MERCURY	0.1 U	0.10 U	0.10 U	0.10 U	0.10 U	0.1 U	0.1 U	0.1 U	0.1 U	0.1 U
NICKEL	0.55 U	0.55 U	0.55 U	0.55 U	0.75	1.3	0.95	2.2 U	2.2 U	2.2 U
POTASSIUM	627.5	581	727	654	1630	1560	1490	777	1050	819
SELENIUM	0.235 J	0.40 J	0.22 J	0.31 J	1.1	0.83	0.98	0.53 U	0.74 U	0.92 U
SILVER	0.38 J	0.51 J	0.22 J	0.365 J	0.10 UJ	0.10 UJ	0.10 UJ	0.40 U	0.40 U	0.40 U
SODIUM	3090	2200	3240	2720	5820 J	4760 J	5310 J	5360	5560	6310
VANADIUM	0.185 U	0.15 U	0.18 U	0.155 U	0.45	0.45	0.28	0.60 U	0.60 U	0.60 U
ZINC	6.9	9.2	6.6	7.9	45.7 J	45.1 J	47.6 J	15.8	15.7	33.1

NA Not analyzed

ND Not detected

J Estimate value

U Not detected at detection limit indicated

UJ Not detected at estimated detection limit indicated

R Value rejected during validation

- Not applicable

* Value is the average of duplicate sample results

APPENDIX D.14

SEDIMENT PHYSICAL PROPERTY DATA

Halliburton NUS
CORPORATION

NUS LABORATORY
Two Marquis Office Plaza, Suite 200
5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

January 25, 1994
Report No.: 00019043

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: 2WCSD5
NUS SAMPLE NO: P0258395
P.O. NO.: CTO# 129

DATE SAMPLED: 20-DEC-93
DATE RECEIVED: 22-DEC-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNIT
1	T45	Grain Size - Sieve & Hydrometer		
		f. 3/8 inch sieve	100.0	% Passed
		g. Sieve No. 4	97.4	% Passed
		h. Sieve No. 10	85.8	% Passed
		i. Sieve No. 20	65.2	% Passed
		j. Sieve No. 40	47.3	% Passed
		k. Sieve No. 60	34.9	% Passed
		l. Sieve No. 140	24.9	% Passed
		m. Sieve No. 200	22.5	% Passed
		n. Particle Size .022 mm	18.2	% Passed
		o. Particle Size .007 mm	9.5	% Passed
		p. Particle Size .001 mm	2.6	% Passed
2	T55	Moisture Content	59.0	%
3	T70	Specific gravity f-grn	2.61	
4	T63	Organic Content of Soil	93.2	%
5	ACECS	Cation Exchange Capacity (CEC)	27	meq/100 g
6	I490S	Non-aqueous sample pH in water	6.4	
7	I107S	Carbon, Total Organic (as C)	16000	mg/kg
8	I620Z	Percent Solids at 103C	60.3	%

COMMENTS:

Results are reported on a wet weight basis for all analyses except radiochemical and geotechnical determinations.

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January 25, 1994
Report No.: 00019043

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: 2WCSD1~~6~~1
NUS SAMPLE NO: P0258396
P.O. NO.: CTO# 129

DATE SAMPLED: 20-DEC-93
DATE RECEIVED: 22-DEC-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	T45	Grain Size - Sieve & Hydrometer		
		g. Sieve No. 4	100.0	% Passed
		h. Sieve No. 10	96.6	% Passed
		i. Sieve No. 20	80.5	% Passed
		j. Sieve No. 40	44.7	% Passed
		k. Sieve No. 60	14.7	% Passed
		l. Sieve No. 140	2.2	% Passed
		m. Sieve No. 200	1.5	% Passed
		n. Particle Size .021 mm	^	
		o. Particle Size .006 mm	^	
		p. Particle Size .001 mm	^	
2	T55	Moisture Content	30.1	%
3	T70	Specific gravity f-grn	2.70	
4	T63	Organic Content of Soil	99.6	%
5	ACECS	Cation Exchange Capacity (CEC)	2.7	meq/100 g
6	1490S	Non-aqueous sample pH in Water	6.3	
7	1107S	Carbon, Total Organic (as C)	510	mg/kg
8	1620Z	Percent Solids at 103C	75.3	%

COMMENTS:

Results are reported on a wet weight basis for all analyses except radiochemical and geotechnical determinations.

1 ^ Insufficient quantity of fines to accurately measure.

SAMPLE TEST SUMMARY

Client: Halliburton NUS
Location: New London, Groton, CT

Project Name: Naval Submarine Base
GTX #: 510

Sample ID: 4MW2S-0204.5
Depth: ---

Type: 2 jars
Date Received: March 14, 1994

Visual Description: Wet gravelly sand with few nails

8 oz glass jar			
As Received Moisture Content	ASTM D2216	%	13.8
Organic Content	ASTM D2974	%	0.98
32 oz glass jar			
Gradation, ASTM D422	Passing #4	%	76
	Passing #200	%	37
	D85	mm	27.505
	D60	mm	0.796
	D50	mm	0.329
	D15	mm	0.042
	D10	mm	0.026
	Uniformity Coefficient		30.6
As Received Moisture Content	ASTM D2216	%	19.4
pH	ASTM D4972		5.92
Specific Gravity	ASTM D854		2.64
Cation Exchange Capacity	EPA 9081	meq/100g	8.63
Total Organic Carbon	EPA 9060	mg/Kg(dry)	11,400

April 5, 1994

SAMPLE TEST SUMMARY

Client: Halliburton NUS
Location: New London, Groton, CT

Project Name: Naval Submarine Base
GTX #: 510

Sample ID: 4MW3S-0002
Depth: ---

Type: 2 jars
Date Received: March 14, 1994

Visual Description: Gray clayey silt with some gravel

8 oz glass jar			
As Received Moisture Content	ASTM D2216	%	25.6
Organic Content	ASTM D2974	%	3.47
32 oz glass jar			
Gradation, ASTM D422	Passing #4	%	82
	Passing #200	%	45
	D85	mm	8.7499
	D60	mm	0.3088
	D50	mm	0.1176
	D15	mm	0.0213
	D10	mm	0.0144
	Uniformity Coefficient		21.4
As Received Moisture Content	ASTM D2216	%	23.6
pH	ASTM D4972		5.72
Specific Gravity	ASTM D854		2.63
Cation Exchange Capacity	EPA 9081	meq/100g	10.0
Total Organic Carbon	EPA 9060	mg/Kg(dry)	13,100

April 5, 1994

GeoTesting Express
Concord, MA

Halliburton NUS CORPORATION

NUS LABORATORY
Two Marquis Office Plaza, Suite 200
5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

January 25, 1994
Report No.: 00019039

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: 4SD1
NUS SAMPLE NO: P0256700
P.O. NO.: CTO# 129

DATE SAMPLED: 05-DEC-93
DATE RECEIVED: 08-DEC-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	T45	Grain Size - Sieve & Hydrometer		
		f. 3/8 inch sieve	100.0	% Passed
		g. Sieve No. 4	99.7	% Passed
		h. Sieve No. 10	98.7	% Passed
		i. Sieve No. 20	94.5	% Passed
		j. Sieve No. 40	84.3	% Passed
		k. Sieve No. 60	69.3	% Passed
		l. Sieve No. 140	37.3	% Passed
		m. Sieve No. 200	28.1	% Passed
		n. Particle Size .024 mm	15.3	% Passed
		o. Particle Size .007 mm	7.1	% Passed
		p. Particle Size .001 mm	3.1	% Passed
2	T55	Moisture Content	36.6	%
3	T70	Specific gravity f-grn	2.52	
4	T63	Organic Content of Soil	97.0	%
5	ACECS	Cation Exchange Capacity (CEC)	12	meq/100 g
6	I490S	Non-aqueous sample pH in Water	4.8	
7	I107S	Carbon, Total Organic (as C)	9300	mg/kg
8	I620Z	Percent Solids at 103C	69.9	%

COMMENTS:

Results are reported on a wet weight basis for all analyses except radiochemical and geotechnical determinations.

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Two Marquis Office Plaza, Suite 200
5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

January 25, 1994
Report No.: 00019039

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: 4SD2
NUS SAMPLE NO: P0256699
P.O. NO.: CTO# 129

DATE SAMPLED: 05-DEC-93
DATE RECEIVED: 08-DEC-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNIT
1	T45	Grain Size - Sieve & Hydrometer		
		g. Sieve No. 4	100.0	% Passed
		h. Sieve No. 10	99.3	% Passed
		i. Sieve No. 20	94.1	% Passed
		j. Sieve No. 40	80.3	% Passed
		k. Sieve No. 60	57.8	% Passed
		l. Sieve No. 140	27.1	% Passed
		m. Sieve No. 200	20.0	% Passed
		n. Particle Size .024 mm	16.9	% Passed
		o. Particle Size .007 mm	7.8	% Passed
		p. Particle Size .001 mm	3.4	% Passed
2	T55	Moisture Content	46.0	%
3	T70	Specific gravity f-grn	2.06	
4	T63	Organic Content of Soil	95.0	%
5	ACECS	Cation Exchange Capacity (CEC)	14	meq/100 g
6	I490S	Non-aqueous sample pH in Water	6.2	
7	I107S	Carbon, Total Organic (as C)	10000	mg/kg
8	I620Z	Percent Solids at 103C	68.0	%

COMMENTS:

Results are reported on a wet weight basis for all analyses except radiochemical and geotechnical determinations.

Halliburton NUS CORPORATION

NUS LABORATORY
Two Marquis Office Plaza, Suite 200
5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

January 25, 1994
Report No.: 00019043

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: 4SD2
NUS SAMPLE NO: P0258397
P.O. NO.: CTO# 129

DATE SAMPLED: 20-DEC-93
DATE RECEIVED: 22-DEC-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	T45	Grain Size - Sieve & Hydrometer		
		d. 3/4 inch sieve	100.0	% Passed
		e. 1/2 inch sieve	98.6	% Passed
		f. 3/8 inch sieve	98.4	% Passed
		g. Sieve No. 4	95.6	% Passed
		h. Sieve No. 10	90.2	% Passed
		i. Sieve No. 20	79.3	% Passed
		j. Sieve No. 40	60.7	% Passed
		k. Sieve No. 60	38.1	% Passed
		l. Sieve No. 140	12.3	% Passed
		m. Sieve No. 200	8.8	% Passed
		n. Particle Size .023 mm	4.1	% Passed
		o. Particle Size .007 mm	2.3	% Passed
		p. Particle Size .001 mm	1.4	% Passed
2	T55	Moisture Content	15.2	%
3	T70	Specific gravity f-grn	2.58	
4	T63	Organic Content of Soil	98.4	%
5	ACECS	Cation Exchange Capacity (CEC)	4.4	meq/100 g
6	I490S	Non-aqueous sample pH in Water	5.4	
7	I107S	Carbon, Total Organic (as C)	7900	mg/kg
8	I620Z	Percent Solids at 103C	87.2	%

COMMENTS:

Results are reported on a wet weight basis for all analyses except radiochemical and geotechnical determinations.

7 This sample was analysed as a matrix spike. Recovery of the spike was 26.6 % which indicates the presence of a matrix interference. This should be considered in evaluating the data.

Halliburton NUS CORPORATION

NUS LABORATORY
Two Marquis Office Plaza, Suite 200
5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

February 04, 1994
Report No.: 00019205

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: ~~5~~6MW3D-0406
NUS SAMPLE NO: P0259454
P.O. NO.: CTO# 129

DATE SAMPLED: 05-JAN-94
DATE RECEIVED: 07-JAN-94
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNIT
1	T45	Grain Size - Sieve & Hydrometer		
		c. 1.0 inch sieve	100.0	% Passed
		d. 3/4 inch sieve	90.3	% Passed
		e. 1/2 inch sieve	80.0	% Passed
		f. 3/8 inch sieve	74.0	% Passed
		g. Sieve No. 4	63.9	% Passed
		h. Sieve No. 10	54.2	% Passed
		i. Sieve No. 20	45.7	% Passed
		j. Sieve No. 40	35.9	% Passed
		k. Sieve No. 60	27.7	% Passed
		l. Sieve No. 140	17.2	% Passed
		m. Sieve No. 200	13.6	% Passed
		n. Particle Size .022 mm	5.9	% Passed
		o. Particle Size .007 mm	2.7	% Passed
		p. Particle Size .001 mm	1.1	% Passed
2	T55	Moisture Content	15.8	%
3	T70	Specific gravity f-grn	2.71	
4	T63	Organic Content of Soil	99.0	%
5	ACECS	Cation Exchange Capacity (CEC)	4.9	meq/100 g
6	I490S	Non-aqueous sample pH in Water	7.1	
7	I107S	Carbon, Total Organic (as C)	600	mg/kg
8	I620Z	Percent Solids at 103C	88.4	%

COMMENTS:

SAMPLE TEST SUMMARY

Client: Halliburton NUS
Location: New London, Groton, CT

Project Name: Naval Submarine Base
GTX #: 510

Sample ID: 7MW4S-0103
Depth: ---

Type: 2 jars
Date Received: March 16, 1994

Visual Description: Black silty sand with gravel, organics

8 oz glass jar			
As Received Moisture Content	ASTM D2216	%	6.04
Organic Content	ASTM D2974	%	1.87
32 oz glass jar			
Gradation, ASTM D422	Passing #4	%	63
	Passing #200	%	13
	D85	mm	19.085
	D60	mm	3.807
	D50	mm	1.800
	D15	mm	0.095
	D10	mm	0.029
	Uniformity Coefficient		131
As Received Moisture Content	ASTM D2216	%	5.91
pH	ASTM D4972		7.20
Specific Gravity	ASTM D854		2.71
Cation Exchange Capacity	EPA 9081	meq/100g	1.93
Total Organic Carbon	EPA 9060	mg/Kg(dry)	18,800

April 5, 1994

SAMPLE TEST SUMMARY

Client: Halliburton NUS
Location: New London, Groton, CT

Project Name: Naval Submarine Base
GTX #: 510

Sample ID: 7MW5S-1011
Depth: ---

Type: 2 jars
Date Received: March 16, 1994

Visual Description: Dark brown sandy gravel with silt

8 oz glass jar			
As Received Moisture Content	ASTM D2216	%	9.26
Organic Content	ASTM D2974	%	0.80
32 oz glass jar			
Gradation, ASTM D422	Passing #4	%	47
	Passing #200	%	15
	D85	mm	30.091
	D60	mm	12.654
	D50	mm	7.102
	D15	mm	0.075
	D10	mm	0.026
	Uniformity Coefficient		489
As Received Moisture Content	ASTM D2216	%	8.00
pH	ASTM D4972		6.93
Specific Gravity	ASTM D854		2.72
Cation Exchange Capacity	EPA 9081	meq/100g	2.56
Total Organic Carbon	EPA 9060	mg/Kg(dry)	9,370

April 5, 1994

SAMPLE TEST SUMMARY

Client: Halliburton NUS
Location: New London, Groton, CT

Project Name: Naval Submarine Base
GTX #: 510

Sample ID: 7MW8S-0408
Depth: ---
Visual Description: Wet gray/brown silty sand

Type: 2 jars
Date Received: March 14, 1994

8 oz glass jar			
As Received Moisture Content	ASTM D2216	%	17.5
Organic Content	ASTM D2974	%	0.95
32 oz glass jar			
Gradation, ASTM D422	Passing #4	%	99
	Passing #200	%	50
	D85	mm	0.244
	D60	mm	0.104
	D50	mm	0.075
	D15	mm	0.020
	D10	mm	0.012
	Uniformity Coefficient		8.67
As Received Moisture Content	ASTM D2216	%	18.0
pH	ASTM D4972		6.75
Specific Gravity	ASTM D854		2.68
Cation Exchange Capacity	EPA 9081	meq/100g	3.42
Total Organic Carbon	EPA 9060	mg/Kg(dry)	2,740

April 5, 1994

SAMPLE TEST SUMMARY

Client: Halliburton NUS
Location: New London, Groton, CT

Project Name: Naval Submarine Base
GTX #: 510

Sample ID: 7TB12-0204
Depth: ---
Visual Description: Brown silty sand with gravel

Type: 2 jars
Date Received: March 16, 1994

8 oz glass jar			
As Received Moisture Content	ASTM D2216	%	8.30
Organic Content	ASTM D2974	%	0.75
32 oz glass jar			
Gradation, ASTM D422	Passing #4	%	67
	Passing #200	%	25
	D85	mm	17.480
	D60	mm	2.204
	D50	mm	0.775
	D15	mm	0.045
	D10	mm	0.030
	Uniformity Coefficient		73.5
As Received Moisture Content	ASTM D2216	%	9.30
pH	ASTM D4972		7.18
Specific Gravity	ASTM D854		2.78
Cation Exchange Capacity	EPA 9081	meq/100g	3.18
Total Organic Carbon	EPA 9060	mg/Kg(dry)	8,390

April 5, 1994

GeoTesting Express
Concord, MA

SAMPLE TEST SUMMARY

Client: Halliburton NUS
Location: New London, Groton, CT

Project Name: Naval Submarine Base
GTX #: 510

Sample ID: 7TB13-0001
Depth: ---

Type: 2 jars
Date Received: March 16, 1994

Visual Description: Brown silty sand with gravel

8 oz glass jar			
As Received Moisture Content	ASTM D2216	%	16.9
Organic Content	ASTM D2974	%	0.91
32 oz glass jar			
Gradation, ASTM D422	Passing #4	%	95
	Passing #200	%	40
	D85	mm	1.063
	D60	mm	0.203
	D50	mm	0.126
	D15	mm	0.048
	D10	mm	0.030
	Uniformity Coefficient		6.77
As Received Moisture Content	ASTM D2216	%	18.8
pH	ASTM D4972		5.97
Specific Gravity	ASTM D854		2.74
Cation Exchange Capacity	EPA 9081	meq/100g	3.08
Total Organic Carbon	EPA 9060	mg/Kg(dry)	4,740

April 5, 1994

Halliburton NUS CORPORATION

NUS LABORATORY
Two Marquis Office Plaza, Suite 200
5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

February 04, 1994
Report No.: 00019205
Section A Page 2

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: 7SD2
NUS SAMPLE NO: P0259455
P.O. NO.: CTO# 129

DATE SAMPLED: 06-JAN-94
DATE RECEIVED: 07-JAN-94
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	T45	Grain Size - Sieve & Hydrometer		
		b. 1.5 inch sieve	100.0	% Passed
		c. 1.0 inch sieve	96.0	% Passed
		d. 3/4 inch sieve	92.4	% Passed
		e. 1/2 inch sieve	88.8	% Passed
		f. 3/8 inch sieve	85.1	% Passed
		g. Sieve No. 4	77.5	% Passed
		h. Sieve No. 10	70.1	% Passed
		i. Sieve No. 20	62.0	% Passed
		j. Sieve No. 40	48.3	% Passed
		k. Sieve No. 60	38.3	% Passed
		l. Sieve No. 140	29.8	% Passed
		m. Sieve No. 200	25.2	% Passed
		n. Particle Size .021 mm	9.8	% Passed
		o. Particle Size .006 mm	5.9	% Passed
		p. Particle Size .001 mm	2.6	% Passed
2	T55	Moisture Content	44.3	%
3	T70	Specific gravity f-grn	3.03	
4	T63	Organic Content of Soil	97.4	%
5	ACECS	Cation Exchange Capacity (CEC)	2.8	meq/100 g
6	I490S	Non-aqueous sample pH in Water	6.4	
7	I107S	Carbon, Total Organic (as C)	2700	mg/kg
8	I620Z	Percent Solids at 103C	59.8	%

COMMENTS:

Halliburton NUS CORPORATION

NUS LABORATORY
Two Marquis Office Plaza, Suite 200
5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

February 04, 1994
Report No.: 00019205

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: 7SD3
NUS SAMPLE NO: P0259456
P.O. NO.: CTO# 129

DATE SAMPLED: 06-JAN-94
DATE RECEIVED: 07-JAN-94
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	T45	Grain Size - Sieve & Hydrometer		
		d. 3/4 inch sieve	100.0	% Passed
		e. 1/2 inch sieve	99.2	% Passed
		f. 3/8 inch sieve	99.2	% Passed
		g. Sieve No. 4	98.8	% Passed
		h. Sieve No. 10	98.4	% Passed
		i. Sieve No. 20	96.8	% Passed
		j. Sieve No. 40	92.3	% Passed
		k. Sieve No. 60	83.9	% Passed
		l. Sieve No. 140	64.1	% Passed
		m. Sieve No. 200	49.7	% Passed
		n. Particle Size .021 mm	12.0	% Passed
		o. Particle Size .006 mm	4.6	% Passed
		p. Particle Size .001 mm	1.9	% Passed
2	T55	Moisture Content	42.5	%
3	T70	Specific gravity f-grn	2.94	
4	T63	Organic Content of Soil	98.2	%
5	ACECS	Cation Exchange Capacity (CEC)	3.2	meq/100 g
6	I490S	Non-aqueous sample pH in Water	6.2	
7	I107S	Carbon, Total Organic (as C)	2600	mg/kg
8	I620Z	Percent Solids at 103C	61.7	%

COMMENTS:

Halliburton NUS
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NUS LABORATORY
Two Marquis Office Plaza, Suite 200
5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

January 25, 1994
Report No.: 00019039

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: 8MW2D-0103
NUS SAMPLE NO: P0256702
P.O. NO.: CTO# 129

DATE SAMPLED: 06-DEC-93
DATE RECEIVED: 08-DEC-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	T45	Grain Size - Sieve & Hydrometer		
		d. 3/4 inch sieve	100.0	% Passed
		e. 1/2 inch sieve	96.3	% Passed
		f. 3/8 inch sieve	93.9	% Passed
		g. Sieve No. 4	85.7	% Passed
		h. Sieve No. 10	71.4	% Passed
		i. Sieve No. 20	52.3	% Passed
		j. Sieve No. 40	37.2	% Passed
		k. Sieve No. 60	26.8	% Passed
		l. Sieve No. 140	16.2	% Passed
		m. Sieve No. 200	13.3	% Passed
		n. Particle Size .023 mm	9.3	% Passed
		o. Particle Size .007 mm	5.0	% Passed
		p. Particle Size .001 mm	2.1	% Passed
2	T55	Moisture Content	7.8	%
3	T70	Specific gravity f-grn	2.67	
4	T63	Organic Content of Soil	97.6	%
5	ACECS	Cation Exchange Capacity (CEC)	6.9	meq/100 g
6	1490S	Non-aqueous sample pH in Water	7.4	
7	1107S	Carbon, Total Organic (as C)	4800	mg/kg
8	1620Z	Percent Solids at 103C	91.4	%

COMMENTS:

Results are reported on a wet weight basis for all analyses except radiochemical and geotechnical determinations.

Halliburton NUS CORPORATION

NUS LABORATORY
Two Marquis Office Plaza, Suite 200
5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

January 25, 1994
Report No.: 00019039

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: 8MW2D-0507
NUS SAMPLE NO: P0256701
P.O. NO.: CTO# 129

DATE SAMPLED: 06-DEC-93
DATE RECEIVED: 08-DEC-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	T45	Grain Size - Sieve & Hydrometer		
		c. 1.0 inch sieve	100.0	% Passed
		d. 3/4 inch sieve	97.3	% Passed
		e. 1/2 inch sieve	94.8	% Passed
		f. 3/8 inch sieve	92.2	% Passed
		g. Sieve No. 4	86.4	% Passed
		h. Sieve No. 10	79.4	% Passed
		i. Sieve No. 20	68.9	% Passed
		j. Sieve No. 40	58.2	% Passed
		k. Sieve No. 60	48.5	% Passed
		l. Sieve No. 140	29.3	% Passed
		m. Sieve No. 200	24.1	% Passed
		n. Particle Size .023 mm	11.9	% Passed
		o. Particle Size .007 mm	5.6	% Passed
		p. Particle Size .001 mm	2.4	% Passed
2	T55	Moisture Content	13.8	%
3	T70	Specific gravity f-grn	2.64	
4	T63	Organic Content of Soil	97.3	%
5	ACECS	Cation Exchange Capacity (CEC)	10	meq/100 g
6	I490S	Non-aqueous sample pH in Water	7.1	
7	I107S	Carbon, Total Organic (as C)	4000	mg/kg
8	I620Z	Percent Solids at 103C	88.1	%

COMMENTS:

Results are reported on a wet weight basis for all analyses except radiochemical and geotechnical determinations.

Halliburton NUS
CORPORATION

NUS LABORATORY
Two Marquis Office Plaza, Suite 200
5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

January 25, 1994
Report No.: 00019041

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: 8MW5S-0103
NUS SAMPLE NO: P0257391
P.O. NO.: CTO# 129

DATE SAMPLED: 11-DEC-93
DATE RECEIVED: 15-DEC-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	T45	Grain Size - Sieve & Hydrometer		
		b. 1.5 inch sieve	100.0	% Passed
		c. 1.0 inch sieve	92.7	% Passed
		d. 3/4 inch sieve	91.2	% Passed
		e. 1/2 inch sieve	86.6	% Passed
		f. 3/8 inch sieve	81.8	% Passed
		g. Sieve No. 4	76.1	% Passed
		h. Sieve No. 10	69.1	% Passed
		i. Sieve No. 20	59.3	% Passed
		j. Sieve No. 40	47.0	% Passed
		k. Sieve No. 60	37.4	% Passed
		l. Sieve No. 140	24.6	% Passed
		m. Sieve No. 200	20.1	% Passed
		n. Particle Size .022 mm	11.9	% Passed
		o. Particle Size .007 mm	4.9	% Passed
		p. Particle Size .001 mm	2.1	% Passed
2	T55	Moisture Content	10.8	%
3	T70	Specific gravity f-grn	2.72	
4	T63	Organic Content of Soil	98.4	%
5	ACECS	Cation Exchange Capacity (CEC)	7.7	meq/100 g
6	I490S	Non-aqueous sample pH in Water	7.7	
7	I107S	Carbon, Total Organic (as C)	3200	mg/kg
8	I620Z	Percent Solids at 103C	89.4	%

COMMENTS:

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CORPORATION

NUS LABORATORY
Two Marquis Office Plaza, Suite 200
5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

January 25, 1994
Report No.: 00019040

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: 8MW6S-0406
NUS SAMPLE NO: P0257013
P.O. NO.: CTO# 129

DATE SAMPLED: 07-DEC-93
DATE RECEIVED: 10-DEC-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNIT
1	T45	Grain Size - Sieve & Hydrometer		
		c. 1.0 inch sieve	100.0	% Passed
		d. 3/4 inch sieve	90.4	% Passed
		e. 1/2 inch sieve	83.8	% Passed
		f. 3/8 inch sieve	81.7	% Passed
		g. Sieve No. 4	75.6	% Passed
		h. Sieve No. 10	68.5	% Passed
		i. Sieve No. 20	61.7	% Passed
		j. Sieve No. 40	51.4	% Passed
		k. Sieve No. 60	40.6	% Passed
		l. Sieve No. 140	27.6	% Passed
		m. Sieve No. 200	23.8	% Passed
		n. Particle Size .022 mm	12.9	% Passed
		o. Particle Size .007 mm	6.1	% Passed
		p. Particle Size .001 mm	2.0	% Passed
2	T55	Moisture Content	11.1	%
3	T70	Specific gravity f-grn	2.69	
4	T63	Organic Content of Soil	98.3	%
5	ACECS	Cation Exchange Capacity (CEC)	14	meq/100 g
6	I490S	Non-aqueous sample pH in Water	7.8	
7	I107S	Carbon, Total Organic (as C)	4400	mg/kg
10	I620Z	Percent Solids at 103C	89.3	%

COMMENTS:

Results are reported on a wet weight basis for all analyses except radiochemical and geotechnical determinations.

Halliburton NUS CORPORATION

NUS LABORATORY
Two Marquis Office Plaza, Suite 200
5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

January 25, 1994
Report No.: 00019040

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: 8MW6D-0406
NUS SAMPLE NO: P0257014
P.O. NO.: CTO# 129

DATE SAMPLED: 08-DEC-93
DATE RECEIVED: 10-DEC-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	T45	Grain Size - Sieve & Hydrometer		
		b. 1.5 inch sieve	100.0	% Passed
		c. 1.0 inch sieve	93.8	% Passed
		d. 3/4 inch sieve	93.8	% Passed
		e. 1/2 inch sieve	92.2	% Passed
		f. 3/8 inch sieve	88.7	% Passed
		g. Sieve No. 4	81.3	% Passed
		h. Sieve No. 10	73.0	% Passed
		i. Sieve No. 20	62.0	% Passed
		j. Sieve No. 40	48.4	% Passed
		k. Sieve No. 60	38.7	% Passed
		l. Sieve No. 140	29.0	% Passed
		m. Sieve No. 200	25.3	% Passed
		n. Particle Size .022 mm	13.7	% Passed
		o. Particle Size .006 mm	7.9	% Passed
		p. Particle Size .001 mm	3.6	% Passed
2	T55	Moisture Content	14.6	%
3	T70	Specific gravity f-grn	2.71	
4	T63	Organic Content of Soil	97.5	%
5	ACECS	Cation Exchange Capacity (CEC)	15	meq/100 g
6	I490S	Non-aqueous sample pH in Water	7.6	
7	I107S	Carbon, Total Organic (as C)	4800	mg/kg
8	I620Z	Percent Solids at 103C	88.8	%

COMMENTS:

Results are reported on a wet weight basis for all analyses except radiochemical and geotechnical determinations.

Halliburton NUS CORPORATION

NUS LABORATORY
Two Marquis Office Plaza, Suite 200
5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

January 25, 1994
Report No.: 00019040
Section A Page 3

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: 8MW7S-1416
NUS SAMPLE NO: P0257015
P.O. NO.: CTO# 129

DATE SAMPLED: 09-DEC-93
DATE RECEIVED: 10-DEC-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	T45	Grain Size - Sieve & Hydrometer		
		c. 1.0 inch sieve	100.0	% Passed
		d. 3/4 inch sieve	97.4	% Passed
		e. 1/2 inch sieve	93.3	% Passed
		f. 3/8 inch sieve	88.0	% Passed
		g. Sieve No. 4	77.4	% Passed
		h. Sieve No. 10	67.7	% Passed
		i. Sieve No. 20	46.7	% Passed
		j. Sieve No. 40	32.9	% Passed
		k. Sieve No. 60	23.8	% Passed
		l. Sieve No. 140	14.1	% Passed
		m. Sieve No. 200	11.1	% Passed
		n. Particle Size .022 mm	7.3	% Passed
		o. Particle Size .006 mm	6.0	% Passed
		p. Particle Size .001 mm	2.0	% Passed
2	T55	Moisture Content	27.6	%
3	T70	Specific gravity f-grn	2.74	
4	T63	Organic Content of Soil	95.5	%
5	ACECS	Cation Exchange Capacity (CEC)	9.0	meq/100 g
6	I490S	Non-aqueous sample pH in Water	7.9	
7	I107S	Carbon, Total Organic (as C)	7200	mg/kg
8	I620Z	Percent Solids at 103C	75.3	%

COMMENTS:

Results are reported on a wet weight basis for all analyses except radiochemical and geotechnical determinations.

Halliburton NUS CORPORATION

NUS LABORATORY
Two Marquis Office Plaza, Suite 200
5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

January 25, 1994
Report No.: 00019041
Section A Page 1

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: 8MW8S-0002
NUS SAMPLE NO: P0257390
P.O. NO.: CTO# 129

DATE SAMPLED: 10-DEC-93
DATE RECEIVED: 15-DEC-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNIT
1	T45	Grain Size - Sieve & Hydrometer		
		c. 1.0 inch sieve	100.0	% Passed
		d. 3/4 inch sieve	97.9	% Passed
		e. 1/2 inch sieve	94.1	% Passed
		f. 3/8 inch sieve	90.2	% Passed
		g. Sieve No. 4	82.5	% Passed
		h. Sieve No. 10	74.7	% Passed
		i. Sieve No. 20	64.4	% Passed
		j. Sieve No. 40	54.3	% Passed
		k. Sieve No. 60	45.3	% Passed
		l. Sieve No. 140	32.1	% Passed
		m. Sieve No. 200	27.5	% Passed
		n: Particle Size .024 mm	16.9	% Passed
		o. Particle Size .007 mm	10.5	% Passed
		p. Particle Size .001 mm	4.0	% Passed
2	T55	Moisture Content	17.0	%
3	T70	Specific gravity f-grn	2.31	
4	T63	Organic Content of Soil	95.3	%
5	ACECS	Cation Exchange Capacity (CEC)	18	meq/100 g
6	I490S	Non-aqueous sample pH in Water	6.7	
7	I107S	Carbon, Total Organic (as C)	18000	mg/kg
8	I620Z	Percent Solids at 103C	95.2	%

COMMENTS:

Halliburton NUS CORPORATION

NUS LABORATORY
Two Marquis Office Plaza, Suite 200
5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

January 25, 1994
Report No.: 00019042
Section A Page 1

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: 8SD2
NUS SAMPLE NO: P0257716
P.O. NO.: CTO# 129

DATE SAMPLED: 15-DEC-93
DATE RECEIVED: 16-DEC-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNIT
1	T45	Grain Size - Sieve & Hydrometer		
		d. 3/4 inch sieve	100.0	% Passed
		e. 1/2 inch sieve	94.6	% Passed
		f. 3/8 inch sieve	94.6	% Passed
		g. Sieve No. 4	92.1	% Passed
		h. Sieve No. 10	91.1	% Passed
		i. Sieve No. 20	80.1	% Passed
		j. Sieve No. 40	73.2	% Passed
		k. Sieve No. 60	66.7	% Passed
		l. Sieve No. 140	53.4	% Passed
		m. Sieve No. 200	46.4	% Passed
		n. Particle Size .022 mm	41.5	% Passed
		o. Particle Size .007 mm	24.1	% Passed
		p. Particle Size .001 mm	12.6	% Passed
2	T55	Moisture Content	488.5	%
3	T70	Specific gravity f-grn	2.40	
4	T63	Organic Content of Soil	76.8	%
5	ACECS	Cation Exchange Capacity (CEC)	50	meq/100 g
6	I490S	Non-aqueous sample pH in Water	7.6	
7	I107S	Carbon, Total Organic (as C)	18000	mg/kg
8	I620Z	Percent Solids at 103C	25.7	%

COMMENTS:

Results are reported on a wet weight basis for all analyses except radiochemical and geotechnical determinations.

Halliburton NUS CORPORATION

NUS LABORATORY
Two Marquis Office Plaza, Suite 200
5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

January 25, 1994
Report No.: 00019042
Section A Page 2

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: 8SD3
NUS SAMPLE NO: P0257717
P.O. NO.: CTO# 129

DATE SAMPLED: 15-DEC-93
DATE RECEIVED: 16-DEC-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	T45	Grain Size - Sieve & Hydrometer		
		f. 3/8 inch sieve	100.0	% Passed
		g. Sieve No. 4	99.9	% Passed
		h. Sieve No. 10	99.3	% Passed
		i. Sieve No. 20	93.1	% Passed
		j. Sieve No. 40	87.9	% Passed
		k. Sieve No. 60	52.1	% Passed
		l. Sieve No. 140	69.3	% Passed
		m. Sieve No. 200	63.0	% Passed
		n. Particle Size .021 mm	51.7	% Passed
		o. Particle Size .007 mm	25.3	% Passed
		p. Particle Size .001 mm	15.2	% Passed
2	T55	Moisture Content	21.8	%
3	T70	Specific gravity f-grn	2.53	
4	T63	Organic Content of Soil	87.2	%
5	ACECS	Cation Exchange Capacity (CEC)	64	meq/100 g
6	I490S	Non-aqueous sample pH in Water	7.1	
7	I107S	Carbon, Total Organic (as C)	20000	mg/kg
8	I620Z	Percent Solids at 103C	15.9	%

COMMENTS:

Results are reported on a wet weight basis for all analyses except radiochemical and geotechnical determinations.

Halliburton NUS
CORPORATION

NUS LABORATORY
Two Marquis Office Plaza, Suite 200
5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

January 25, 1994
Report No.: 00019039

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: 8SD4
NUS SAMPLE NO: P0256703
P.O. NO.: CTO# 129

DATE SAMPLED: 07-DEC-93
DATE RECEIVED: 08-DEC-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	T45	Grain Size - Sieve & Hydrometer		
		b. 1.5 inch sieve	100.0	% Passed
		c. 1.0 inch sieve	89.4	% Passed
		d. 3/4 inch sieve	86.0	% Passed
		e. 1/2 inch sieve	84.8	% Passed
		f. 3/8 inch sieve	79.6	% Passed
		g. Sieve No. 4	68.1	% Passed
		h. Sieve No. 10	61.1	% Passed
		i. Sieve No. 20	47.5	% Passed
		j. Sieve No. 40	36.9	% Passed
		k. Sieve No. 60	29.5	% Passed
		l. Sieve No. 140	21.4	% Passed
		m. Sieve No. 200	19.1	% Passed
		n. Particle Size .024 mm	15.0	% Passed
		o. Particle Size .007 mm	9.5	% Passed
		p. Particle Size .001 mm	5.9	% Passed
2	T55	Moisture Content	147.6	%
3	T70	Specific gravity f-grn	2.36	
4	T63	Organic Content of Soil	94.3	%
5	ACECS	Cation Exchange Capacity (CEC)	68	meq/100 g
6	I490S	Non-aqueous sample pH in Water	7.5	
7	I107S	Carbon, Total Organic (as C)	9800	mg/kg
12	I620Z	Percent Solids at 103C	16.0	%

COMMENTS:

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5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

January 25, 1994
Report No.: 00019039

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: 8SD4-D
NUS SAMPLE NO: P0256704
P.O. NO.: CTO# 129

DATE SAMPLED: 07-DEC-93
DATE RECEIVED: 08-DEC-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	T45	Grain Size - Sieve & Hydrometer		
		h. Sieve No. 10	100.0	% Passed
		i. Sieve No. 20	91.4	% Passed
		j. Sieve No. 40	87.5	% Passed
		k. Sieve No. 60	83.7	% Passed
		l. Sieve No. 140	69.3	% Passed
		m. Sieve No. 200	61.4	% Passed
		n. Particle Size .021 mm	53.6	% Passed
		o. Particle Size .007 mm	28.4	% Passed
		p. Particle Size .001 mm	17.9	% Passed
2	T55	Moisture Content	551.5	%
3	T70	Specific gravity f-grn	2.45	
4	T63	Organic Content of Soil	85.0	%
5	ACECS	Cation Exchange Capacity (CEC)	45	meq/100 g
6	I490S	Non-aqueous sample pH in Water	7.6	
7	I107S	Carbon, Total Organic (as C)	7900	mg/kg
8	I620Z	Percent Solids at 103C	21.0	%

COMMENTS:

Results are reported on a wet weight basis for all analyses except radiochemical and geotechnical determinations.

SAMPLE TEST SUMMARY

Client: Halliburton NUS
Location: New London, Groton, CT

Project Name: Naval Submarine Base
GTX #: 510

Sample ID: 15SD1
Depth: ---

Type: 2 jars
Date Received: March 16, 1994

Visual Description: Saturated sand with some gravel, organics

8 oz glass jar			
As Received Moisture Content	ASTM D2216	%	23.9
Organic Content	ASTM D2974	%	1.05
32 oz glass jar			
Gradation, ASTM D422	Passing #4	%	99
	Passing #200	%	4
	D85	mm	2.015
	D60	mm	0.826
	D50	mm	0.595
	D15	mm	0.186
	D10	mm	0.151
	Uniformity Coefficient		5.47
As Received Moisture Content	ASTM D2216	%	34.0
pH	ASTM D4972		7.45
Specific Gravity	ASTM D854		2.67
Cation Exchange Capacity	EPA 9081	meq/100g	0.88
Total Organic Carbon	EPA 9060	mg/Kg(dry)	8,890

April 5, 1994

Halliburton NUS CORPORATION

NUS LABORATORY
Two Marquis Office Plaza, Suite 200
5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

January 04, 1994
Report No.: 00018741

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: T1SD1-E
NUS SAMPLE NO: P0254426
P.O. NO.:

DATE SAMPLED: 12-NOV-93
DATE RECEIVED: 13-NOV-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	T45	Grain Size - Sieve & Hydrometer		
		f. 3/8 inch sieve	100.0	%
		g. Sieve No. 4	99.2	%
		h. Sieve No. 10	98.5	%
		i. Sieve No. 20	96.0	%
		j. Sieve No. 40	94.6	%
		k. Sieve No. 60	93.6	%
		l. Sieve No. 140	88.2	%
		m. Sieve No. 200	81.2	%
		n. Particle Size .020 mm	55.8	%
		o. Particle Size .006 mm	23.8	%
		p. Particle Size .001 mm	11.9	%
2	T55	Moisture Content	174.5	%
3	T70	Specific gravity f-grn	2.58	
4	T63	Organic Content of Soil	91.7	%
5	ACECS	Cation Exchange Capacity (CEC)	51	meq/100 g
6	I490S	Non-aqueous sample pH in Water	7.5	
7	I107S	Carbon, Total Organic (as C)	13000	mg/kg

COMMENTS:

Results are reported on a wet weight basis for all analyses except radiochemical and geotechnical determinations.

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CORPORATION

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5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

January 04, 1994
Report No.: 00018741

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: T1SD2-E
NUS SAMPLE NO: P0254425
P.O. NO.:

DATE SAMPLED: 12-NOV-93
DATE RECEIVED: 13-NOV-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNIT
1	T45	Grain Size - Sieve & Hydrometer		
		h. Sieve No. 10	100.0	%
		i. Sieve No. 20	99.9	%
		j. Sieve No. 40	99.5	%
		k. Sieve No. 60	99.0	%
		l. Sieve No. 140	87.8	%
		m. Sieve No. 200	73.8	%
		n. Particle Size .021 mm	48.5	%
		o. Particle Size .006 mm	24.2	%
		p. Particle Size .001 mm	12.1	%
2	T55	Moisture Content	123.3	%
3	T70	Specific gravity f-grn	2.61	
4	T63	Organic Content of Soil	92.5	%
5	ACECS	Cation Exchange Capacity (CEC)	38	meq/100 g
6	I490S	Non-aqueous sample pH in Water	7.4	
7	I107S	Carbon, Total Organic (as C)	15000	mg/kg

COMMENTS:

Results are reported on a wet weight basis for all analyses except radiochemical and geotechnical determinations.

Halliburton NUS CORPORATION

NUS LABORATORY
Two Marquis Office Plaza, Suite 200
5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

January 04, 1994
Report No.: 00018741

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: T2SD1-E
NUS SAMPLE NO: P0254428
P.O. NO.:

DATE SAMPLED: 12-NOV-93
DATE RECEIVED: 13-NOV-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	T45	Grain Size - Sieve & Hydrometer		
		f. 3/8 inch sieve	100.0	%
		g. Sieve No. 4	99.4	%
		h. Sieve No. 10	98.6	%
		i. Sieve No. 20	94.8	%
		j. Sieve No. 40	89.7	%
		k. Sieve No. 60	85.3	%
		l. Sieve No. 140	80.9	%
		m. Sieve No. 200	79.4	%
		n. Particle Size .019 mm	65.8	%
		o. Particle Size .006 mm	29.9	%
		p. Particle Size .001 mm	11.9	%
2	T55	Moisture Content	134.4	%
3	T70	Specific gravity f-grn	2.62	
4	T63	Organic Content of Soil	93.5	%
5	ACECS	Cation Exchange Capacity (CEC)	42	meq/100 g
6	I490S	Non-aqueous sample pH in Water	7.3	
7	I107S	Carbon, Total Organic (as C)	13000	mg/kg

COMMENTS:

Results are reported on a wet weight basis for all analyses except radiochemical and geotechnical determinations.

Halliburton NUS CORPORATION

NUS LABORATORY
Two Marquis Office Plaza, Suite 200
5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

January 04, 1994
Report No.: 00018741

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: T2SD2-E
NUS SAMPLE NO: P0254427
P.O. NO.:

DATE SAMPLED: 12-NOV-93
DATE RECEIVED: 13-NOV-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	T45	Grain Size - Sieve & Hydrometer		
		h. Sieve No. 10	100.0	%
		i. Sieve No. 20	99.9	%
		j. Sieve No. 40	99.9	%
		k. Sieve No. 60	99.8	%
		l. Sieve No. 140	98.3	%
		m. Sieve No. 200	95.3	%
		n. Particle Size .019 mm	70.7	%
		o. Particle Size .006 mm	30.3	%
		p. Particle Size .001 mm	12.1	%
2	T55	Moisture Content	148.7	%
3	T70	Specific gravity f-grn	2.62	
4	T63	Organic Content of Soil	94.3	%
5	ACECS	Cation Exchange Capacity (CEC)	57	meq/100 g
6	I490S	Non-aqueous sample pH in Water	7.5	
7	I107S	Carbon, Total Organic (as C)	12000	mg/kg

COMMENTS:

Results are reported on a wet weight basis for all analyses except radiochemcial and geotechnical determinations.

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NUS LABORATORY
Two Marquis Office Plaza, Suite 200
5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

January 04, 1994
Report No.: 00018740

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: T3SD1-E
NUS SAMPLE NO: P0254336
P.O. NO.:

DATE SAMPLED: 09-NOV-93
DATE RECEIVED: 12-NOV-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNIT
1	T45	Grain Size - Sieve & Hydrometer		
		h. Sieve No. 10	100.0	%
		i. Sieve No. 20	99.7	%
		j. Sieve No. 40	99.3	%
		k. Sieve No. 60	98.9	%
		l. Sieve No. 140	96.8	%
		m. Sieve No. 200	91.9	%
		n. Particle Size .020 mm	64.6	%
		o. Particle Size .006 mm	32.3	%
		p. Particle Size .001 mm	14.1	%
2	T55	Moisture Content	152.7	%
3	T70	Specific gravity f-grn	2.62	
4	T63	Organic Content of Soil	92.2	%
5	ACECS	Cation Exchange Capacity (CEC)	37	meq/100 g
6	I490S	Non-aqueous sample pH in Water	7.4	
7	I107S	Carbon, Total Organic (as C)	15000	mg/kg

COMMENTS:

Results are reported on a wet weight basis for all analyses except radiochemical and geotechnical determinations.

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NUS LABORATORY
Two Marquis Office Plaza, Suite 200
5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

January 04, 1994
Report No.: 00018740

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: T3SD2-E
NUS SAMPLE NO: P0254339
P.O. NO.:

DATE SAMPLED: 09-NOV-93
DATE RECEIVED: 12-NOV-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	T45	Grain Size - Sieve & Hydrometer		
		h. Sieve No. 10	100.0	%
		i. Sieve No. 20	99.7	%
		j. Sieve No. 40	97.5	%
		k. Sieve No. 60	96.3	%
		l. Sieve No. 140	92.8	%
		m. Sieve No. 200	90.4	%
		n. Particle Size .019 mm	74.7	%
		o. Particle Size .006 mm	36.4	%
		p. Particle Size .001 mm	16.2	%
2	T55	Moisture Content	204.9	%
3	T70	Specific gravity f-grn	2.58	
4	T63	Organic Content of Soil	90.5	%
5	ACECS	Cation Exchange Capacity (CEC)	53	meq/100 g
6	I490S	Non-aqueous sample pH in Water	7.6	
7	I107S	Carbon, Total Organic (as C)	12000	mg/kg

COMMENTS:

Results are reported on a wet weight basis for all analyses except radiochemical and geotechnical determinations.

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Two Marquis Office Plaza, Suite 200
5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

January 04, 1994
Report No.: 00018740

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: T3SD3-E
NUS SAMPLE NO: P0254345
P.O. NO.:

DATE SAMPLED: 11-NOV-93
DATE RECEIVED: 12-NOV-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	T45	Grain Size - Sieve & Hydrometer		
		f. 3/8 inch sieve	100.0	%
		g. Sieve No. 4	99.6	%
		h. Sieve No. 10	98.7	%
		i. Sieve No. 20	94.5	%
		j. Sieve No. 40	81.1	%
		k. Sieve No. 60	65.1	%
		l. Sieve No. 140	47.4	%
		m. Sieve No. 200	44.7	%
		n. Particle Size .020 mm	49.4 *	%
		o. Particle Size .006 mm	19.7	%
		p. Particle Size .001 mm	9.9	%
2	T55	Moisture Content	104.1	%
3	T70	Specific gravity f-grn	2.64	
4	T63	Organic Content of Soil	95.7	%
5	ACECS	Cation Exchange Capacity (CEC)	34	meq/100 g
6	I490S	Non-aqueous sample pH in Water	7.9	
7	I107S	Carbon, Total Organic (as C)	10000	mg/kg

COMMENTS:

Results are reported on a wet weight basis for all analyses except radiochemical and geotechnical determinations.

1 * Foam affected the accuracy of this reading.

Halliburton NUS CORPORATION

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5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

January 04, 1994
Report No.: 00018740
Section A Page 7

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: T3SD4-E
NUS SAMPLE NO: P0254342
P.O. NO.:

DATE SAMPLED: 11-NOV-93
DATE RECEIVED: 12-NOV-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	T45	Grain Size - Sieve & Hydrometer		
		g. Sieve No. 4	100.0	%
		h. Sieve No. 10	99.7	%
		i. Sieve No. 20	98.9	%
		j. Sieve No. 40	98.1	%
		k. Sieve No. 60	97.4	%
		l. Sieve No. 140	94.5	%
		m. Sieve No. 200	89.6	%
		n. Particle Size .020 mm	67.8	%
		o. Particle Size .007 mm	30.8	%
		p. Particle Size .001 mm	16.4	%
2	T55	Moisture Content	263.7	%
3	T70	Specific gravity f-grn	2.49	
4	T63	Organic Content of Soil	88.7	%
5	ACECS	Cation Exchange Capacity (CEC)	62	meq/100 g
6	I490S	Non-aqueous sample pH in Water	7.4	
7	I107S	Carbon, Total Organic (as C)	14000	mg/kg

COMMENTS:

Results are reported on a wet weight basis for all analyses except radiochemical and geotechnical determinations.

Halliburton NUS CORPORATION

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Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

January 04, 1994
Report No.: 00018740

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: T4SD1-E
NUS SAMPLE NO: P0254337
P.O. NO.:

DATE SAMPLED: 09-NOV-93
DATE RECEIVED: 12-NOV-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	T45	Grain Size - Sieve & Hydrometer		
		g. Sieve No. 4	100.0	%
		h. Sieve No. 10	99.8	%
		i. Sieve No. 20	99.4	%
		j. Sieve No. 40	98.8	%
		k. Sieve No. 60	97.9	%
		l. Sieve No. 140	88.8	%
		m. Sieve No. 200	77.3	%
		n. Particle Size .020 mm	55.9	%
		o. Particle Size .006 mm	29.9	%
		p. Particle Size .001 mm	12.0	%
2	T55	Moisture Content	52.1	%
3	T70	Specific gravity f-grn	2.63	
4	T63	Organic Content of Soil	93.7	%
5	ACECS	Cation Exchange Capacity (CEC)	27	meq/100 g
6	I490S	Non-aqueous sample pH in Water	7.3	
7	I107S	Carbon, Total Organic (as C)	12000	mg/kg

COMMENTS:

Results are reported on a wet weight basis for all analyses except radiochemical and geotechnical determinations.

Halliburton NUS CORPORATION

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January 04, 1994
Report No.: 00018740

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: T4SD2-E
NUS SAMPLE NO: P0254340
P.O. NO.:

DATE SAMPLED: 09-NOV-93
DATE RECEIVED: 12-NOV-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	T45	Grain Size - Sieve & Hydrometer		
		h. Sieve No. 10	100.0	%
		i. Sieve No. 20	99.5	%
		j. Sieve No. 40	99.0	%
		k. Sieve No. 60	98.6	%
		l. Sieve No. 140	95.6	%
		m. Sieve No. 200	91.6	%
		n. Particle Size .019 mm	70.7	%
		o. Particle Size .006 mm	30.3	%
		p. Particle Size .001 mm	14.1	%
2	T55	Moisture Content	198.4	%
3	T70	Specific gravity f-grn	2.59	
4	T63	Organic Content of Soil	91.1	%
5	ACECS	Cation Exchange Capacity (CEC)	49	meq/100 g
6	I490S	Non-aqueous sample pH in Water	7.3	
7	I107S	Carbon, Total Organic (as C)	16000	mg/kg

COMMENTS:

Results are reported on a wet weight basis for all analyses except radiochemical and geotechnical determinations.

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LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: T4SD3-E
NUS SAMPLE NO: P0254346
P.O. NO.:

DATE SAMPLED: 11-NOV-93
DATE RECEIVED: 12-NOV-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	T45	Grain Size - Sieve & Hydrometer		
		h. Sieve No. 10	100.0	%
		i. Sieve No. 20	99.8	%
		j. Sieve No. 40	99.7	%
		k. Sieve No. 60	99.5	%
		l. Sieve No. 140	97.3	%
		m. Sieve No. 200	92.7	%
		n. Particle Size .019 mm	71.4	%
		o. Particle Size .006 mm	34.7	%
		p. Particle Size .001 mm	16.3	%
2	T55	Moisture Content	204.3	%
3	T70	Specific gravity f-grn	2.57	
4	T63	Organic Content of Soil	91.1	%
5	ACECS	Cation Exchange Capacity (CEC)	57	meq/100 g
6	1490S	Non-aqueous sample pH in Water	7.7	
7	1107S	Carbon, Total Organic (as C)	14000	mg/kg

COMMENTS:

Results are reported on a wet weight basis for all analyses except radiochemical and geotechnical determinations.

Halliburton NUS CORPORATION

NUS LABORATORY
Two Marquis Office Plaza, Suite 200
5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

January 04, 1994
Report No.: 00018740
Section A Page 8

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: T4SD4-E
NUS SAMPLE NO: P0254343
P.O. NO.:

DATE SAMPLED: 11-NOV-93
DATE RECEIVED: 12-NOV-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	T45	Grain Size - Sieve & Hydrometer		
		g. Sieve No. 4	100.0	%
		h. Sieve No. 10	99.8	%
		i. Sieve No. 20	99.6	%
		j. Sieve No. 40	98.7	%
		k. Sieve No. 60	96.8	%
		l. Sieve No. 140	85.5	%
		m. Sieve No. 200	65.9	%
		n. Particle Size .022 mm	27.6	%
		o. Particle Size .007 mm	9.9	%
		p. Particle Size .001 mm	5.9	%
2	T55	Moisture Content	44.4	%
3	T70	Specific gravity f-grn	2.70	
4	T63	Organic Content of Soil	98.3	%
5	ACECS	Cation Exchange Capacity (CEC)	14	meq/100 g
6	I490S	Non-aqueous sample pH in Water	7.6	
7	I107S	Carbon, Total Organic (as C)	7600	mg/kg

COMMENTS:

Results are reported on a wet weight basis for all analyses except radiochemical and geotechnical determinations.

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Report No.: 00018740

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: T5SD1-E
NUS SAMPLE NO: P0254338
P.O. NO.:

DATE SAMPLED: 09-NOV-93
DATE RECEIVED: 12-NOV-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	T45	Grain Size - Sieve & Hydrometer		
		g. Sieve No. 4	100.0	%
		h. Sieve No. 10	99.7	%
		i. Sieve No. 20	97.7	%
		j. Sieve No. 40	96.5	%
		k. Sieve No. 60	95.9	%
		l. Sieve No. 140	92.0	%
		m. Sieve No. 200	83.9	%
		n. Particle Size .020 mm	49.9	%
		o. Particle Size .006 mm	23.9	%
		p. Particle Size .001 mm	10.0	%
2	T55	Moisture Content	130.9	%
3	T70	Specific gravity f-grn	2.63	
4	T63	Organic Content of Soil	92.7	%
5	ACECS	Cation Exchange Capacity (CEC)	35	meq/100 g
6	I490S	Non-aqueous sample pH in Water	7.2	
7	I107S	Carbon, Total Organic (as C)	15000	mg/kg

COMMENTS:

Results are reported on a wet weight basis for all analyses except radiochemical and geotechnical determinations.

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Two Marquis Office Plaza, Suite 200
5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

January 04, 1994
Report No.: 00018740

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: T5SD2-E
NUS SAMPLE NO: P0254341
P.O. NO.:

DATE SAMPLED: 09-NOV-93
DATE RECEIVED: 12-NOV-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	T45	Grain Size - Sieve & Hydrometer		
		f. 3/8 inch sieve	100.0	%
		g. Sieve No. 4	99.5	%
		h. Sieve No. 10	96.7	%
		i. Sieve No. 20	88.8	%
		j. Sieve No. 40	81.5	%
		k. Sieve No. 60	77.4	%
		l. Sieve No. 140	72.9	%
		m. Sieve No. 200	70.4	%
		n. Particle Size .020 mm	58.6	%
		o. Particle Size .006 mm	29.3	%
		p. Particle Size .001 mm	11.7	%
2	T55	Moisture Content	148.4	%
3	T70	Specific gravity f-grn	2.59	
4	T63	Organic Content of Soil	94.1	%
5	ACECS	Cation Exchange Capacity (CEC)	41	meq/100 g
6	I490S	Non-aqueous sample pH in Water	7.4	
7	I107S	Carbon, Total Organic (as C)	11000	mg/kg

COMMENTS:

Results are reported on a wet weight basis for all analyses except radiochemical and geotechnical determinations.

Halliburton NUS
CORPORATION

NUS LABORATORY
Two Marquis Office Plaza, Suite 200
5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

January 04, 1994
Report No.: 00018740

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: T5SD3-E
NUS SAMPLE NO: P0254347
P.O. NO.:

DATE SAMPLED: 11-NOV-93
DATE RECEIVED: 12-NOV-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	T45	Grain Size - Sieve & Hydrometer		
		g. Sieve No. 4	100.0	%
		h. Sieve No. 10	99.9	%
		i. Sieve No. 20	99.6	%
		j. Sieve No. 40	99.1	%
		k. Sieve No. 60	98.2	%
		l. Sieve No. 140	91.9	%
		m. Sieve No. 200	76.2	%
		n. Particle Size .020 mm	56.5	%
		o. Particle Size .006 mm	24.2	%
		p. Particle Size .001 mm	12.1	%
2	T55	Moisture Content	153.6	%
3	T70	Specific gravity f-grn	2.59	
4	T63	Organic Content of Soil	93.5	%
5	ACECS	Cation Exchange Capacity (CEC)	38	meq/100 g
6	I490S	Non-aqueous sample pH in Water	7.5	
7	I107S	Carbon, Total Organic (as C)	14000	mg/kg

COMMENTS:

Results are reported on a wet weight basis for all analyses except radiochemcial and geotechnical determinations.

Halliburton NUS CORPORATION

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Two Marquis Office Plaza, Suite 200
5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

January 04, 1994
Report No.: 00018740

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: T5SD4-E
NUS SAMPLE NO: P0254344
P.O. NO.:

DATE SAMPLED: 11-NOV-93
DATE RECEIVED: 12-NOV-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNITS
1	T45	Grain Size - Sieve & Hydrometer		
		e. 1/2 inch sieve	100.0	%
		f. 3/8 inch sieve	99.8	%
		g. Sieve No. 4	98.8	%
		h. Sieve No. 10	96.5	%
		i. Sieve No. 20	95.2	%
		j. Sieve No. 40	93.7	%
		k. Sieve No. 60	91.6	%
		l. Sieve No. 140	59.0	%
		m. Sieve No. 200	34.6	%
		n. Particle Size .022 mm	19.1	%
		o. Particle Size .007 mm	9.6	%
		p. Particle Size .001 mm	5.7	%
2	T55	Moisture Content	48.1	%
3	T70	Specific gravity f-grn	2.69	
4	T63	Organic Content of Soil	97.7	%
5	ACECS	Cation Exchange Capacity (CEC)	13	meq/100 g
6	I490S	Non-aqueous sample pH in Water	7.7	
7	I107S	Carbon, Total Organic (as C)	7200	mg/kg

COMMENTS:

Results are reported on a wet weight basis for all analyses except radiochemical and geotechnical determinations.

Halliburton NUS CORPORATION

NUS LABORATORY
Two Marquis Office Plaza, Suite 200
5313 Campbells Run Road
Pittsburgh, Pennsylvania 15205

(412) 747-2580
FAX: (412) 747-2684

January 04, 1994
Report No.: 00018742
Section A Page 1

LABORATORY ANALYSIS REPORT

CLIENT NAME: NAVY CLEAN - C/O HALLIBURTON NUS
ADDRESS: 661 ANDERSEN DRIVE
PITTSBURGH, PA 15220-0000
ATTENTION: MR. MATT COCHRAN

NUS CLIENT NO: 1495 0022
WORK ORDER NO: 9594
VENDOR NO:

Carbon Copy:

SAMPLE ID: 2WSD39
NUS SAMPLE NO: P0255400
P.O. NO.: CTO# 129

DATE SAMPLED: 21-NOV-93
DATE RECEIVED: 23-NOV-93
APPROVED BY: Kieda, Chuck

LN	TEST CODE	DETERMINATION	RESULT	UNIT
1	T45	Grain Size - Sieve & Hydrometer		
		h. Sieve No. 10	100.0	%
		i. Sieve No. 20	99.9	%
		j. Sieve No. 40	99.6	%
		k. Sieve No. 60	99.3	%
		l. Sieve No. 140	97.4	%
		m. Sieve No. 200	94.3	%
		n. Particle Size .019 mm	74.7	%
		o. Particle Size .006 mm	40.4	%
		p. Particle Size .001 mm	16.2	%
2	T55	Moisture Content	123.2	%
3	T70	Specific gravity f-grn	2.58	
4	T63	Organic Content of Soil	93.4	%
5	ACECS	Cation Exchange Capacity (CEC)	30	meq/100 g
6	I490S	Non-aqueous sample pH in Water	7.3	
7	I107S	Carbon, Total Organic (as C)	14000	mg/kg

COMMENTS:

Results are reported on a wet weight basis for all analyses except radiochemical and geotechnical determinations.

APPENDIX E

TOXICOLOGICAL PROFILES

1.0 ALDRIN

1.1 Noncancer T xicity

Aldrin and dieldrin are both toxic to the reproductive system and teratogenic. Reproductive effects include decreased fertility, increased fetal death, and effects on gestation; while teratogenic effects include cleft palate, webbed foot, and skeletal anomalies. Chronic effects attributed to aldrin and dieldrin include liver toxicity and central nervous system abnormalities. Both chemicals are acutely toxic; the oral LD_{50} is around 50 mg/kg, and the dermal LD_{50} is about 100 mg/kg (Clement, 1985).

1.2 Carcinogenicity

Both aldrin and dieldrin are carcinogens, causing increases in a variety of tumors in rats at low but not at high doses and producing a higher incidence of liver tumors in mice. The reason for this reversed dose-response relationship is unclear. Neither appears to be mutagenic when tested in a number of systems (Clement, 1985).

2.0 ANTIMONY

2.1 Pharmacokinetics

Ingested antimony is absorbed slowly and incompletely from the gastrointestinal (GI) tract (Iffland, 1988). Within a few days of acute exposure, highest tissue concentrations are found in the liver, kidney, and thyroid. Organs of storage include skin, bone, and teeth. Highest concentrations in deceased smelter workers (inhalation exposure) occurred in the lungs and skeleton. Excretion is largely via the urine or feces, although some is incorporated into the hair.

2.2 Noncancer Toxicity

Acute intoxication from ingestion of large doses of antimony induces GI disturbances, dehydration, and cardiac effects in humans (Iffland, 1988). Chronic effects from occupational exposure include irritation of the respiratory tract, pneumoconiosis, pustular eruptions of the skin called "antimony spots," allergic contact dermatitis, and cardiac effects, including abnormalities of the electrocardiograph (ECG) and myocardial changes. Cardiac effects were also observed in rats and rabbits exposed by inhalation for six weeks and in animals (dogs, and possibly other species) treated by intravenous injection (Elinder and Friberg, 1986).

Chronic oral exposure studies in laboratory animals include two briefly reported lifetime drinking water studies in rats and mice (USEPA, December 1994). The only dose tested, 5 ppm potassium antimony tartrate, resulted in reduced longevity in both species and in reduced mean heart weight in the rats. The USEPA (December 1994) verified an RfD of 0.0004 mg/kg/day for chronic oral exposure to antimony from the LOAEL of 5 ppm potassium antimony tartrate (0.35 mg antimony/kg body weight-day) in the lifetime study in rats (USEPA, December 1994). An uncertainty factor of 1000 was applied; factors of 10 each for inter- and intraspecies variation and to estimate an NOAEL from an LOAEL. The heart is considered a likely target organ for chronic oral exposure of humans.

2.3 Carcinogenicity

Data were not located regarding the carcinogenicity of antimony to humans. Antimony fed to rats did not produce an excess of tumors (Goyer, 1991), but a high frequency of lung tumors was observed in rats exposed by inhalation to antimony trioxide for one year (Elinder and Friberg, 1986). Antimony is classified

in USEPA cancer weight-of-evid nce Group D (not classifiable as to carcinogenicity to humans) (USEPA, 1987a).

3.0 AROCLOR

3.1 Noncancer Toxicity

Epidemiologic studies of women in the United States associated oral PCB exposure with low birth weight or retarded musculoskeletal or neurobehavioral development of their infants (ATSDR, 1991a). Oral studies in animals established the liver as the target organ in all species, and the thyroid as an additional target organ in the rat. Effects observed in monkeys included gastritis, anemia, chloracne-like dermatitis, and immunosuppression. Oral treatment of animals induced developmental effects, including retarded neurobehavioral and learning development in monkeys. Neither subchronic nor chronic oral RfD values were located for any of the aroclors.

Occupational exposure to PCBs was associated with upper respiratory tract and ocular irritation, loss of appetite, liver enlargement, increased serum concentrations of liver enzymes, skin irritation, rashes and chloracne, and, in heavily exposed female workers, decreased birth weight of their infants (ATSDR 1991). Concurrent exposure to other chemicals confounded the interpretation of the occupational exposure studies. Laboratory animals exposed by inhalation to Aroclor-1254 vapors exhibited moderate liver degeneration, decreased body weight gain and slight renal tubular degeneration. Neither subchronic nor chronic inhalation RfC values were available.

Target organs for PCBs include the skin, liver, fetus, and neonate.

3.2 Carcinogenicity

The USEPA (December 1994) classifies the PCBs as USEPA cancer weight-of-evidence Group B2 substances (probable human carcinogens), based on inadequate data in humans and sufficient data in animals. The human data consist of several epidemiologic occupational and accidental oral exposure studies with serious limitations, including poorly quantified concentrations of PCBs and durations of exposure, and probable exposures to other potential carcinogens.

The animal data consist of several oral studies in rats and mice with various aroclors, kanechlors, or clophens (commercial PCB mixtures manufactured in the United States, Japan and Germany, respectively) that reported increased incidence of liver tumors in both species (USEPA, December 1994).

The USEPA (December 1994) presents a verified oral slope factor of 7.7 per mg/kg/day for all PCBs based on liver tumors in rats treated with Aroclor-1260.

4.0 ARSENIC

4.1 Pharmacokinetics

Several studies confirm that soluble inorganic arsenic compounds and organic arsenic compounds are almost completely (>90 percent) absorbed from the GI tract in both animals and humans (Ishinishi et al., 1986). The absorption efficiency of insoluble inorganic arsenic compounds depends on particle size and stomach pH. Initial distribution of absorbed arsenic is to the liver, kidneys, and lungs, followed by redistribution to hair, nails, teeth, bone, and skin, which are considered tissues of accumulation. Arsenic has a longer half-life in the blood of rats, compared with other animals and humans, because of firm binding to the hemoglobin in erythrocytes.

Metabolism of inorganic arsenic includes reversible oxidation-reduction so that both arsenite (valence of 3) and arsenate (valence of 5) are present in the urine of animals treated with arsenic of either valence (Ishinishi et al., 1986). Arsenite is subsequently oxidized and methylated by a saturable mechanism to form mono- or dimethylarsenate; the latter is the predominant metabolite in the urine of animals or humans. Organic arsenic compounds (arsenilic acid, cacodylic acid) are not readily converted to inorganic arsenic. Excretion of organic or inorganic arsenic is largely via the urine, but considerable species variation exists. Continuously exposed humans appear to excrete 60 to 70 percent of their daily intake of arsenate or arsenite via the urine.

4.2 Noncancer Toxicity

A lethal dose of arsenic trioxide in humans is 70 to 180 mg (approximately 50 to 140 mg arsenic; Ishinishi et al., 1986). Acute oral exposure of humans to high doses of arsenic produce liver swelling, skin lesions, disturbed heart function, and neurological effects. The only noncancer effects in humans clearly attributable to chronic oral exposure to arsenic are dermal hyperpigmentation and keratosis, as revealed by studies of several hundred Chinese exposed to naturally occurring arsenic in well water (USEPA, December 1994). Similar effects were observed in persons exposed to high levels of arsenic in water in Utah and the northern part of Mexico (USEPA, December 1994). Occupational (predominantly inhalation) exposure is also associated with neurological deficits, anemia, and cardiovascular effects (Ishinishi et al., 1986), but concomitant exposure to other chemicals cannot be ruled out. The USEPA (December 1994) derived an RfD of 0.3 μg/kg/day for chronic oral exposure, based on an NOAEL of 0.8 μg/kg/day for skin lesions from the Chinese data. The principal target organ for arsenic appears to be the skin. The nervous system and cardiovascular systems appear to be less significant target organs. Inorganic arsenic may be an essential nutrient, exerting beneficial effects on growth, health, and feed conversion efficiency (Underwood, 1977).

4.3 Carcinogenicity

Inorganic arsenic is clearly a carcinogen in humans. Inhalation exposure is associated with increased risk of lung cancer in persons employed as smelter workers, in arsenical pesticide applicators, and in a population residing near a pesticide manufacturing plant (USEPA, December 1994). Oral exposure to high levels in well water is associated with increased risk of skin cancer (USEPA, December 1994). Extensive animal testing with various forms of arsenic given by many routes of exposure to several species, however, has not demonstrated the carcinogenicity of arsenic. The USEPA (December 1994) classifies inorganic arsenic in cancer weight-of-evidence Group A (human carcinogen), and recommends an oral unit risk of 0.00005 μg/L in drinking water, based on the incidence of skin cancer. The USEPA (December 1994) notes that the uncertainties associated with the oral unit risk are considerably less than those for most carcinogens, so that the unit risk might be reduced an order of magnitude. An inhalation unit risk of 0.0043 per $\mu g/m^3$ was derived for inorganic arsenic from the incidence of lung cancer in occupationally exposed men (USEPA, December 1994), which is equivalent to a CSF of 15 per mg/kg/day.

5.0 BARIUM

5.1 Noncancer Toxicity

Barium is a naturally occurring alkaline earth metal that comprises approximately 0.04 percent of the earth's crust (Reeves, 1986a). Acute oral toxicity was manifested by GI upset, altered cardiac performance, and transient hypertension, convulsions, and muscular paralysis. Repeated oral exposures were associated with hypertension. Occupational exposure to insoluble barium sulfate induced benign pneumoconiosis (ACGIH, 1991). The USEPA (December 1994) presented a verified chronic oral RfD of 0.07 mg/kg/day, based on an NOAEL of 0.21 mg/kg/day in a ten-week study in humans exposed to barium in drinking water and an uncertainty factor of 3. The USEPA (March 1993) presented the same value as a provisional RfD for

subchronic oral exposure. A provisional chronic inhalation RfC of 0.0005 mg/m^3 and a provisional subchronic inhalation RfC of 0.005 were based on an NOEL for fetotoxicity in a four-month intermittent-exposure inhalation study in rats (USEPA, March 1993). Uncertainty factors of 1000 and 100 were used for the chronic and subchronic RfC values, respectively. The chronic and subchronic inhalation RfC values are equivalent to 0.0001 and 0.001 mg/kg/day, assuming a human inhalation rate of 20 m^3/day and body weight of 70 kg. Barium is principally a muscle toxin. Its targets are the GI system, skeletal muscle, the cardiovascular system, and the fetus.

5.2 Carcinogenicity

The USEPA (December 1994) classifies barium as a cancer weight-of-evidence Group D substance (not classifiable as to carcinogenicity in humans). Cancer risk is not estimated for Group D substances.

6.0 BENZENE

6.1 Noncancer Toxicity

In humans, short-term inhalation exposure to benzene induced CNS effects such as drowsiness, dizziness, and headaches; long-term exposure induced anemia (ACGIH, 1991). Oral dosing in animals induced hematopoietic effects (ATSDR, 1989a). Neither oral nor inhalation RfD or RfC values were located for benzene. The CNS and the hematopoietic system are the target organs of benzene.

6.2 Carcinogenicity

The USEPA (December 1994) classifies benzene in cancer weight-of-evidence Group A (human carcinogen) based on several studies of increased risk of nonlymphocytic leukemia associated with occupational exposure, supported by an increased incidence of neoplasia in rats and mice exposed by inhalation and gavage. A verified oral slope factor of 0.029 per mg/kg/day and inhalation unit risk of 8.3E-06 μg/m^3 is based on the increased incidence of leukemia in several occupational (inhalation exposure) studies. The inhalation unit risk is equivalent to 0.029 per mg/kg/day, assuming an inhalation rate of 20 m^3/day and a body weight of 70 kg for humans.

7.0 BERYLLIUM

7.1 Noncancer Toxicity

Beryllium has a low order of toxicity when ingested because it is poorly absorbed from the GI tract (Reeves, 1986b). Occupational exposure was associated with dermatitis, acute pneumonitis, and chronic pulmonary granulomatosis (berylliosis). Berylliosis was also observed in humans living in the vicinity of a beryllium plant. Similar pulmonary effects were observed in laboratory animals subjected to inhalation exposure. A verified chronic oral RfD value of 0.005 mg/kg/day was based on a NOAEL in a lifetime drinking water study in rats and an uncertainty factor of 100 (USEPA, December 1994). The USEPA (March 1992) also presented the same value as a provisional subchronic oral RfD. The target organ for inhalation exposure appears to be the lung; a target organ is not identified for oral exposure.

7.2 Carcinogenicity

The USEPA (December 1994) classifies beryllium as a Group B2 carcinogen (probable human carcinogen) based on inadequate human (occupational) cancer data and sufficient animal data. A significant increase in lung tumors occurred in rats and in rhesus monkeys subjected to inhalation exposure or intratracheal instillation of a variety of beryllium compounds. Osteogenic sarcomas were induced in rabbits and mice,

but not in rats or guinea pigs, injected intravenously with various beryllium compounds. Oral studies in animals yielded inconclusive results. The USEPA (December 1994) derived an oral slope factor of 4.3 per mg/kg/day from a statistically nonsignificant increase in total tumors in a lifetime drinking water study in rats. An inhalation unit risk of 0.0024 per $\mu g/m^3$, equivalent to 8.4 per mg/kg/day (assuming an inhalation rate of 20 m^3/day and body weight of 70 kg for humans) was derived from an occupational study.

8.0 BIS(2-ETHYLHEXYL)PHTHALATE (DI[2-ETHYLHEXYL]PHTHALATE)

8.1 Noncancer Toxicity

The acute oral toxicity of bis(2-ethylhexyl)phthalate is very low; oral $LD_{50/30}$ (lethal dose to 50 percent of population within 30 days without medical treatment) values in rats and mice were 33,800 and 26,300 mg/kg, respectively (ACGIH, 1991). Repeated high-dose oral exposures were associated with decreased growth, altered organ weights, testicular degeneration, and developmental effects. The USEPA (March 1994) presented a verified chronic oral RfD of 0.02 mg/kg/day based on an LOAEL for increased relative liver weight in guinea pigs and an uncertainty factor of 1000. The USEPA (March 1992) adopted the chronic oral RfD as the provisional subchronic oral RfD. The principal target organs for the toxicity of bis(2-ethylhexyl)phthalate are the liver and testis.

8.2 Carcinogenicity

The USEPA (December 1994) classifies bis(2-ethylhexyl)phthalate in cancer weight-of-evidence Group B2 (probable human carcinogen), based on inadequate human cancer data (one limited occupational study) and sufficient cancer data in laboratory animals. A USEPA oral slope factor of 0.014 per mg/kg/day was based on the increased incidence of liver tumors in a dietary study in male mice.

9.0 BORON

9.1 Noncarcinogenicity

Acute exposure to boron compounds was associated with GI irritation and CNS depression (ACGIH, 1991). Occupational exposure induced respiratory tract irritation. Several dietary and drinking water studies with boron (chemical form not specified) in dogs, rats, and mice identified testicular atrophy and impaired spermatogenesis as the critical effect of oral exposure (USEPA, December 1994). Other effects included reduced body and organ weights, reduced ovulation in female rats, and possibly increased extramedullary hematopoiesis in the spleen. The USEPA (December 1994) presented a verified RfD of 0.09 mg/kg/day for chronic oral exposure to boron, based on an NOAEL in a two-year dietary study in dogs (form of boron not specified). An uncertainty factor of 100 was used. USEPA (March 1993) presents an inhalation RfC of 0.02 mg/m^3 based on respiratory effects in humans. This is equivalent to an RfD of 0.0057 mg/kg/day. The chronic oral RfD was adopted as the provisional subchronic oral RfD (USEPA, March 1992). The principal target organs of boron are the testis, respiratory mucosa, and CNS.

9.2 Carcinogenicity

Data were not located regarding the carcinogenicity of boron.

10.0 BROMODICHLOROMETHANE

10.1 Noncanc r Toxicity

Chronic gavage treatment with bromodichloromethane induced histopathologic evidence of degeneration of the liver and kidney in rats and mice, and hyperplastic lesions of the thyroid in the mice (USEPA, December 1994). The USEPA (December 1994) presented a verified chronic oral RfD of 0.02 mg/kg/day based on an NOAEL for kidney effects in mice and an uncertainty factor of 1000. The USEPA (March 1992) presented the same value as a provisional subchronic oral RfD. The principal target organs of bromodichloromethane are the liver and kidney; the thyroid may be a target in mice.

10.2 Carcinogenicity

The USEPA (December 1994) classifies bromodichloromethane in cancer weight-of-evidence Group B2 (probable human carcinogen), based on inadequate human data and sufficient animal data. The human data consist of epidemiologic studies that associate chlorination of drinking water with increased risk of several different types of cancer. Bromodichloromethane is one of several trihalogenated methanes formed from the interaction of chlorine with organic matter in water. Animal studies associated treatment with several different tumor types in rats and mice. The USEPA (Novemer 1994) presented a verified oral slope factor of 0.13 per mg/kg/day, based on the increased incidence of liver tumors in mice treated by gavage. An inhalation risk estimate was not derived.

11.0 CADMIUM

11.1 Pharmacokinetics

Estimates of cadmium uptake by the respiratory tract range from 10 to 50 percent; uptake is greatest for fumes and small particles and least for large dust particles (Friberg et al., 1986; Goyer, 1991). GI absorption of ingested cadmium is ordinarily 5 to 8 percent, but may reach 20 percent in cases of serious dietary iron deficiency. Highest tissue levels are normally found in the kidneys followed by the liver, although levels in the liver may exceed those in the kidneys of persons suffering from cadmium-induced renal dysfunction. The half-life of cadmium in the kidneys and liver may be as long as 10-30 years. Fecal and urinary excretion of cadmium are approximately equivalent in normal humans exposed to small amounts. Urinary excretion increases markedly in humans with cadmium-induced renal disease.

11.2 Noncancer Toxicity

Acute inhalation exposure to fumes or particles of cadmium induces respiratory symptoms, general weakness, and, in severe cases, respiratory insufficiency, shock, and death (Friberg et al., 1986). Acute oral exposure induces GI disturbances. Chronic inhalation exposure induces pulmonary emphysema, and chronic exposure by either route consistently produces renal tubular disease in humans and laboratory animals. Proteinuria is a reliable early indicator of cadmium-induced kidney disease. The combination of pulmonary emphysema and renal tubular disease, if severe, may result in early mortality. Painful osteomalacia and osteoporosis may arise from altered metabolism of bone minerals secondary to renal damage. The combination of renal and skeletal damage is called itai-itai disease in Japan. Cadmium exposure has been associated with liver damage, but the liver appears to be less sensitive than the kidney. The kidney is the primary target organ of cadmium toxicity. The USEPA (December 1994) derived chronic oral RfD values of 0.5 μg/kg/day for cadmium ingested in water and 1 μg/kg/day for cadmium ingested in food, based on a toxicokinetic model that predicted NOAELs from renal cortical concentrations of cadmium. The different RfD values reflect assumed differences in GI absorption of cadmium from water (5 percent) and food (2.5 percent).

11.3 Carcin genicity

Carcinogenicity data in humans consist of several occupational studies that associate cadmium exposure with lung cancer, but concomitant exposure to other carcinogenic chemicals and smoking were not adequately controlled. Other occupational studies reported significantly increased risk of prostatic cancer, but this effect was not observed in the largest occupational study of workers exposed to high levels (USEPA, December 1994). The animal data consist of an inhalation study in rats that showed a significant increase in lung tumors, and several parenteral injection studies that produced injection site tumors. No evidence of carcinogenicity, however, was observed in seven oral studies in rats and mice. The USEPA (December 1994) classifies cadmium a cancer weight-of-evidence Group B1 substance for inhalation exposure on the basis of limited evidence of carcinogenicity in humans and sufficient evidence in animals. The data were insufficient to classify cadmium as carcinogenic to humans exposed by the oral route. The USEPA (December 1994) derived an inhalation unit risk of 0.0018 $\mu g/m^3$ (6.3 per mg/kg/day) from an occupational exposure study.

12.0 CARBAZOLE

12.1 Noncancer Toxicity

Carbazole is a poison by intraperitoneal route. It is moderately toxic by ingestion (Sax and Lewis, 1989).

12.2 Carcinogenicity

The USEPA (March 1992) has published a CSF of 2.0E-02 for the oral route of exposure. The USEPA (Novmeber 1994) has classified carbazole in cancer weight-of-evidence Group B2 (Probable Human Carcinogen, sufficient evidence of carcinogenicity in animals with inadequate or lack of evidence in humans) based on liver tumors in mice.

13.0 CARBON DISULFIDE

13.1 Noncancer Toxicity

Carbon disulfide is a human poison by ingestion and possibly other routes. It is mildly toxic to humans by inhalation. It is an experimental poison by intraperitoneal route. The main toxic effect is on the central nervous system, acting as a narcotic and anesthetic in acute poisoning with death following from respiratory failure. In chronic poisoning the effect on the nervous system is one of central and peripheral damage which may be permanent if the damage has been severe (Sax and Lewis, 1989). Target organs are the CNS, PNS, CVS, eyes, kidneys, liver, and skin (NIOSH, 1990).

The USEPA (December 1994) has reported an RfD of 1.0E-01 mg/kg/day for the oral route of exposure using an uncertainty factor of 100. The USEPA (March 1992) has also reported a RfD of 2.86E-03 mg/kg/day for the inhalation route based on calculation from a reference concentration using an uncertainty factor of 1000.

13.2 Carcinogenicity

Carbon disulfide is an experimental teratogen. Other experimental reproductive effects have been noted. Human reproductive effects on spermatogenesis by inhalation have been noted. Some human mutagenic data exists. (Sax and Lewis, 1989).

14.0 CHLORDANE

Technical chlordane is a mixture of at least 50 related compounds (ATSDR, 1989b). The principal components of the mixture are cis- and trans-chlordane, heptachlor, cis- and trans-nonachlor, and alpha-, beta- and gamma-chlordene. Each component has its own environmental fate and transport kinetics, so it is unlikely that the chlordane identified at the site would have the same chemical composition as technical chlordane. It is unclear which chlordane component(s) were found at the site.

14.1 Pharmacokinetics

Kinetic studies in rats, in which the area under the curve was compared following intravenous and oral dosing, indicate that approximately 80 percent of an oral dose of trans-chlordane is absorbed from the GI tract (Ohno et al., 1986). In animals, absorbed chlordane is distributed most rapidly to the liver and kidneys, probably because of the extensive vascularity of these organs (Ohno et al., 1986), followed by redistribution to adipose tissue (Barnett and Dorough, 1974). In humans, levels of chlordane residues in adipose tissue increase with increasing duration of exposure (ATSDR, 1989b). Metabolism involves principally oxidation, dechlorination, and conjugation, yielding lipophilic products that accumulate in adipose tissue as well as more polar products that are excreted. Chlordane residues are excreted principally through the bile, although considerable species differences occur. Lactation is an important mechanism of excretion of chlordane residues retained in body fat.

14.2 Noncancer Toxicity

An acute oral lethal dose of chlordane in humans is estimated to be 25 to 50 mg/kg (ATSDR, 1989b). Symptoms of acute oral or inhalation intoxication in humans consistently include GI disturbances such as vomiting, cramps, and diarrhea, and neurological effects including headache, irritability, dizziness, incoordination, convulsions, and coma. Data were not located regarding symptoms or effects in humans chronically exposed by the oral route, and no noncancer effects were observed in several studies of occupationally exposed humans. Mild liver lesions were observed in chronic oral studies in rats and mice. Prenatal or early postnatal exposure of mice to chlordane damages the developing immune system and nervous system. Target organs of chlordane include the liver, nervous system, and the fetus and neonate.

The USEPA (December 1994) derived an RfD of 0.06 μg/kg/day for chronic oral exposure to chlordane, based on an NOEL of 0.055 mg/kg/day for liver effects in a 30-month dietary study in rats. An uncertainty factor of 1000 was applied; factors of 10 each for inter- and intraspecies variation, and to reflect deficiencies in the database.

14.3 Carcinogenicity

The USEPA (December 1994) classifies chlordane in cancer weight-of-evidence Group B2, based on inadequate evidence in humans and sufficient evidence in animals. The human data consist of several epidemiologic studies of chlordane manufacturing workers and pesticide applicators. The only indication of a carcinogenic effect was a borderline significantly increased incidence of bladder cancer in one study of pesticide applicators, but chlordane exposure was not quantified and the workers were concomitantly exposed to other carcinogenic pesticides. The animal data consist of several studies in which oral exposure induced a dose-related increase in the incidence of liver tumors. The evidence for carcinogenicity in rats is equivocal. The USEPA (December 1994) derived an oral slope factor of 1.3 per mg/kg/day and an inhalation unit risk of 0.00037 per $\mu g/m^3$ based on liver tumor incidence in two dietary studies in mice.

15.0 CHLOROBENZENE

15.1 Noncancer Toxicity

Oral exposure of animals to chlorobenzene induced liver effects (USEPA, December 1994). Inhalation exposure of animals induced narcosis and other CNS effects, as well as lung, liver, and kidney changes (ACGIH, 1991). Minimal occupational exposure data indicated that chlorobenzene induces respiratory tract irritation and CNS effects (headache) in workers exposed to high levels. The USEPA (December 1994) presented a verified chronic oral RfD of 0.02 mg/kg/day, based on a NOAEL for liver lesions in a 13-week oral study in dogs and an uncertainty factor of 1000. The USEPA (March 1992) presented a provisional subchronic oral RfD of 0.2 mg/kg/day, based on the same NOAEL and an uncertainty factor of 100, however this value has since been revoked. Target organs for the toxicity of chlorobenzene include the liver, CNS, lung, and kidney.

15.2 Carcinogenicity

Chlorobenzene is classified as a USEPA cancer weight-of-evidence Group D compound (not classifiable as to carcinogenicity for humans), based on no available human cancer data and inadequate animal data (USEPA, December 1994). Quantitative risk estimates are not derived for Group D compounds.

16.0 CHLOROFORM

16.1 Noncancer Toxicity

Oral or inhalation exposure of animals to chloroform was associated with liver and kidney damage (ACGIH, 1991; USEPA, December 1994). In humans, acute inhalation exposure to high levels induced narcosis, ventricular fibrillation, and death (ACGIH, 1991). Limited occupational data associated chronic exposure to chloroform with CNS depression, digestive disturbances, and enlarged livers. The USEPA (December 1994) presented a verified chronic oral RfD of 0.01 mg/kg/day based on a LOAEL for fatty cyst formation in the livers of dogs treated orally for 7.5 years and an uncertainty factor of 1000. The same value was presented as a provisional subchronic oral RfD (USEPA, March 1993). Target organs for the toxicity of chloroform include the liver and kidney for oral and inhalation exposure, and the heart and CNS for inhalation exposure.

16.2 Carcinogenicity

Chloroform is classified as a cancer weight-of evidence Group B2 compound (probable human carcinogen), based on increased incidence of several tumor types in rats and liver tumors in mice (USEPA, December 1994). Human carcinogenicity data are inadequate. An oral slope factor of 0.0061 per mg/kg/day was derived from the incidence of kidney tumors in rats treated with chloroform in drinking water for two years. An inhalation risk of 2.3E-05 per $\mu g/m^3$ was based on the incidence of hepatocellular carcinomas in mice treated by gavage for 78 weeks. The inhalation unit risk is equivalent to 0.081 per mg/kg/day, assuming an inhalation rate of 20 m^3/day and a body weight of 70 kg for humans.

17.0 COPPER

17.1 Noncancer Toxicity

Copper is a nutritionally essential element that functions as a cofactor in several enzyme systems (Aaseth and Norseth, 1986). Acute exposure to large oral doses of copper salts was associated with GI disturbances, hemolysis, and liver and kidney lesions. Chronic oral toxicity in humans has not been reported. Chronic oral exposure of animals was associated with an iron-deficiency type of anemia,

hemolysis, and lesions in the liver and kidneys. Occupational exposure may induce metal fume fever, and, in cases of chronic exposure to high levels, hemolysis and anemia (ACGIH, 1991). Neither oral nor inhalation RfD or RfC values were located for copper. The target organs for copper are the erythrocyte, liver, and kidney, and, for inhalation exposure, the lung.

17.2 Carcinogenicity

Copper is classified in cancer weight-of-evidence Group D (not classifiable as to carcinogenicity to humans) (USEPA, December 1994). Quantitative risk estimates are not derived for Group D chemicals.

18.0 DDT

18.1 Pharmacokinetics

Dichlorodiphenyltrichlorothane (DDT) is readily absorbed when dissolved in oils, fats, or lipid solvents, but is poorly absorbed as dry powder or aqueous suspension. Once absorbed, DDT concentrates in adipose tissue. Storage in fat is protective because it decreases the amount of chemicals at the site of toxic action, the brain. At a constant rate of intake, concentrations in adipose tissue reach a steady state and remain relatively constant. When exposure ceases, DDT is slowly eliminated. The rate of elimination is estimated to be 1 percent of stored DDT excreted per day (Gartrell et al., 1985).

After absorption in mammals, DDT degrades by dehydrochlorination to unsaturated DDE and by substitution of hydrogen for one chlorine atom yielding DDD. DDD is further metabolized through a series of intermediates yielding DDA. DDA is relatively water soluble and excreted primarily in the urine. Ingestion studies of DDT administered to volunteers demonstrated that within 24 hours, urinary DDA excretion increased detectably. Excretion of DDT as DDA appeared to be totally dependent on preferential reductive dechlorination of DDT to DDD (rather than DDE) and then to DDA (Clayton and Clayton, 1981).

18.2 Noncancer Toxicity

The CNS is an important target organ in humans acutely exposed to DDT. Symptoms include altered sensory perception, headache, nausea, disequilibrium, confusion, tremors, and convulsions (Hayes 1982; ATSDR, 1989c). Tremors and hyperirritability were observed in chronically exposed animals (ATSDR, 1989c). The liver appears to be the other important target organ, at least in animals. Liver effects include enzyme induction, increased liver weight, increased serum levels of liver enzymes, hepatocellular hypertrophy, and necrosis (ATSDR, 1989c). The USEPA (December 1994) derived an RfD of 0.5 μg/kg/day for chronic oral exposure from an NOEL of 0.05 mg/kg/day for liver effects in a 15- to 27-week feeding study in rats. An uncertainty factor of 100 was applied with factors of 10 each for inter- and intraspecies variation.

Dermal exposure has been associated with no illness and usually no irritation. Subcutaneous injection of colloidal suspensions of DDT in saline up to 30 ppm caused no irritation. Studies of DDT-impregnated clothing have found it to cause no irritation (Hayes, 1982). The earliest symptom of acute DDT poisoning is paresthesia of the mouth and lower part of the face. This is followed by paresthesia of same areas and of the tongue and then dizziness, and tremors of extremities, confusion, malaise, headache, fatigue, and delayed vomiting. Vomiting is probably of central origin and not due to local irritation. Convulsions occur only in severe poisoning. Onset may be as soon as 30 minutes after ingestion of a large dose or as late as six hours after smaller but still-toxic doses. Recovery from mild poisoning usually is essentially complete in 24 hours, but recovery from severe poisoning requires several days (Hayes, 1982).

There is no documented evidence that dietary absorption of DDT, alone or in combination with insecticides of the aldrin-toxaphene group, has caused cancer in the general population. No evidence has been

presented that DDT has caused cancer among the millions of individuals (almost entirely men) who have been handling or spraying DDT (as dust, solution, and suspension) in all parts of the world and under all possible climatic conditions.

DDT is a mixture of p,p'-DDT and related compounds. One of the more important of the DDT isomers is o,p'-DDT. These agents have prominent estrogenic effects that have been well-characterized in a number of assay systems (Johnson, et al., 1988). The estrogenicity of DDT has lead to the supposition that it may adversely affect reproductive outcome by causing birth defects, increasing pregnancy complications, or affecting fertility (RTC, 1990).

A verified chronic oral RfD value of 0.0005 mg/kg/day (USEPA, 1993) was based on a NOEL of 0.05 mg/kg/day in a 27-week rat feeding study and on an uncertainty factor of 100.

18.3 Carcinogenicity

The USEPA (December 1994) has classified DDT in cancer weight-of-evidence Group B 2 (probable human carcinogen) based on the observation of tumors (generally of the liver) in seven studies in various mouse strains and in three studies in rats. The USEPA (December 1994) derived an oral slope factor of 0.34 per mg/kg/day from liver tumors in oral (diet) studies in the mouse and the rat. An inhalation unit risk of 9.7E-05 per mg/m^3, equivalent to 0.34 per mg/kg/day (assuming a 70 kg adult inhales 20 m^3 of air/day), was derived from the same oral (diet) studies.

19.0 1,4-DICHLOROBENZENE (para-DICHLOROBENZENE)

19.1 Pharmacokinetics

No data are available to quantitatively evaluate the absorption of 1,4-dichlorobenzene. Absorption via oral administration is assumed to be 100 percent since this chemical is similar in structure to benzene and smaller chlorinated aliphatic hydrocarbons. Approximately 20 percent of the compound is absorbed following inhalational exposure. The dermal absorption of 1,4-dichlorobenzene has not been studied (ATSDR, 1991b).

Once absorbed, whether through inhalation or oral exposure, 1,4-dichlorobenzene is mainly deposited in fatty tissue and the liver and kidneys to a lower extent. The major urinary metabolite of 1,4-dichlorobenzene is 2,5-dichlorophenol. This metabolite is eliminated as conjugates of glucuronic and sulfuric acids.

19.2 Noncancer Toxicity

Studies indicate that the liver is the primary target organ associated with toxic effects for 1,4-dichlorobenzene. Malaise, nausea, anemia, proteinuria, hematuria, as well as liver effects, were observed in humans exposed to this chemical (ATSDR, 1991b).

The USEPA (December 1994) derived an inhalation RfC for 1,4-dichlorobenzene of 6E-05 μg/m^3 from a NOAEL of 301 mg/m^3 for increased liver weights and an uncertainty factor of 100, which is equivalent to an RfD of 0.2 mg/kg/day. The NOAEL was estimated from a subchronic two-generation reproductive study where male and female rats were exposed to varying concentrations of 1,4-dichlorobenzene vapors. Although this study lacked chronic data, chronic lifetime exposure studies support the conclusions drawn in the study.

Oral LD_{50} values for male and female rats were identified as 3,900 and 3,800 mg/kg respectively (ATSDR, 1991b). A NOAEL of 300 mg/kg/day for hepatic effects was derived. No human studies are available regarding toxic effects of 1,4-dichlorobenzene from oral and dermal exposure.

19.3 Carcinogenicity

The USEPA (December 1994) has classified this compound in the cancer weight-of-evidence Group C (possible human carcinogen). This classification is based on several oral exposure studies which indicate that this chemical is carcinogenic in male rats. Cancer effect levels of 150 mg/kg/day and 600 mg/kg/day, respectively, were derived for liver and kidney tumors. No reliable carcinogenicity studies were located for the inhalation of or dermal contact with 1,4-dichlorobenzene.

20.0 1,2-DICHLOROETHANE

20.1 Noncancer Toxicity

Oral or inhalation exposure of humans or laboratory animals to 1,2-dichloroethane induced liver and kidney effects (ACGIH, 1991). Inhalation exposure also induced pulmonary congestion or edema, and, in humans, CNS depression. Neither oral nor inhalation RfD or RfC values were located. The target organs for 1,2-dichloroethane toxicity are the liver, kidney, lung, and CNS.

20.2 Carcinogenicity

USEPA classifies 1,2-dichloroethane as a cancer weight-of-evidence Group B2 compound (probable human carcinogen), based on the induction of several tumor types in rats and mice treated by gavage, and on the induction of benign lung papillomas in mice after dermal application (USEPA, December 1994). The USEPA (December 1994) presented a slope factor for oral exposure of 0.091 per mg/kg/day, and a unit risk for inhalation exposure of 2.6E-05 per $\mu g/m^3$, based on the incidence of vascular system hemangiosarcomas in male rats in the gavage study. The inhalation unit risk is equivalent to 0.091 per mg/kg/day, assuming humans inhale 20 m^3 of air/day and weigh 70 kg.

21.0 1,1-DICHLOROETHENE

21.1 Noncancer Toxicity

Chronic oral exposure of laboratory animals to 1,1-dichloroethene induced liver effects (USEPA, December 1994). In animals, inhalation exposure induced degenerative changes in the liver and kidneys (ATSDR, 1989d). No health effects were observed in a limited study of 138 exposed workers (ACGIH, 1986). The USEPA (December 1994) presented a verified RfD for chronic oral exposure of 0.009 mg/kg/day, based on an NOAEL for liver effects in a chronic drinking water study in rats and an uncertainty factor of 1000. The USEPA (March 1993) presented the same value as a provisional subchronic oral RfD. The liver and kidneys are the target organs for exposure to 1,1-dichloroethene.

21.2 Carcinogenicity

The USEPA classifies 1,1-dichloroethene as a cancer weight-of-evidence Group C compound (possible human carcinogen), based on an inadequate occupational exposure cancer study, limited data in several animal studies, its mutagenicity and ability to alkylate deoxyribonucleic acid (DNA), and its structural similarity to vinyl chloride, a known human carcinogen (USEPA, December 1994). The eighteen available animal studies (11 by inhalation exposure, 5 by oral exposure, and 1 each by dermal application and subcutaneous injection) were limited in sensitivity by various deficiencies in design. Credible evidence that

1,1-dichloroethene was a complete carcinogen was provided only by one 12-month inhalation study in mice, in which the incidence of kidney adenocarcinomas was significantly greater in the high-dose males than in the control males. A slope factor of 0.6 per mg/kg/day for oral exposure was based on the increased incidence of adrenal pheochromocytomas in male rats treated by gavage for two years, even though the increase was not statistically significant (USEPA, December 1994). A unit risk for inhalation exposure of 5.0E-05 per $\mu g/m^3$ was based on the incidence of kidney adenocarcinomas in male mice in the inhalation study mentioned above (USEPA, December 1994). The unit risk is equivalent to 0.175 per mg/kg/day, assuming humans inhale 20 m^3 of air/day and weigh 70 kg.

22.0 CIS-1,2-DICHLOROETHENE (CIS-1,2-DICHLOROETHYLENE)

22.1 Noncancer Toxicity

Repeated oral exposure of rats to cis-1,2-dichloroethene was associated with signs of anemia (decreased hematocrit and hemoglobin) (USEPA, March 1993). Inhalation exposure to isomeric mixtures of 1,2-dichloroethene induced narcosis, and mixed isomers of 1,2-dichloroethene were used as an anesthetic gas (ACGIH, 1991). The USEPA (March 1993) presented a provisional chronic oral RfD of 0.01 mg/kg/day based on an NOAEL for signs of anemia in rats and an uncertainty factor of 3000. A provisional subchronic oral RfD of 0.1 mg/kg/day was derived from the same NOAEL and an uncertainty factor of 300. Target organs appear to be the erythrocyte for oral exposure and the CNS for inhalation exposure.

22.2 Carcinogenicity

The USEPA (December 1994) classifies cis-1,2-dichloroethene as a cancer weight-of-evidence Group D compound (not classifiable as to carcinogenicity to humans), based on an absence of human or animal cancer data. Quantitative estimates of cancer risk are not derived for Group D chemicals.

23.0 TRANS-1,2-DICHLOROETHENE (TRANS-1,2-DICHLOROETHYLENE)

23.1 Noncancer Toxicity

The oral $LD_{50/30}$ for trans-1,2-dichloroethene in rats was 1275 mg/kg; death was preceded by CNS and respiratory depression (ACGIH, 1991). Histopathologic examination revealed lesions in the lungs and heart. Prolonged oral administration induced clinicopathologic evidence of mild liver damage (USEPA, December 1994). An NOAEL for this effect in a 90-day drinking water study in mice and an uncertainty factor of 1000 was the basis for a verified chronic oral RfD of 0.02 mg/kg/day. A provisional subchronic oral RfD of 0.2 mg/kg/day was derived from the same NOAEL and an uncertainty factor of 100 (USEPA, March 1992). The target organs for inhalation exposure to trans-1,2-dichloroethene are the CNS, heart, and lungs; the liver appears to be the principal target of oral exposure.

23.2 Carcinogenicity

Data regarding the carcinogenicity of trans-1,2-dichloroethene were not located.

24.0 DIELDRIN

24.1 Noncancer Toxicity

See Section 1.0 (Aldrin).

24.2 Carcin genicity

See Section 1.0 (Aldrin).

25.0 2,4-DIMETHYLPHENOL

25.1 Noncancer Toxicity

Little is known about the toxicity of 2,4-dimethylphenol. The USEPA (December 1994) presented a chronic oral RfD of 0.02 mg/kg/day based on an NOAEL for nervous system effects and blood alterations in orally treated mice and an uncertainty factor of 3000. The USEPA (March 1992) presented a subchronic oral RfD of 0.2 mg/kg/day based on the same NOAEL and an uncertainty factor of 300. The nervous system and blood may be target organs for the oral toxicity of 2,4-dimethylphenol.

25.2 Carcinogenicity

Data were not located regarding the carcinogenicity of 2,4-dimethylphenol.

26.0 HEPTACHLOR/HEPTACHLOR EPOXIDE

26.1 Noncancer Toxicity

Tests with laboratory animals, primarily rodents, demonstrate acute and chronic toxic effects due to heptachlor exposure. Although heptachlor and heptachlor epoxide are absorbed most readily through the gastrointestinal tract, inhalation and skin contact are also potential routes of exposure. Acute exposure by various routes can cause development of hepatic vein thrombi and can effect the central nervous system and cause death. Chronic exposure induces liver changes, affects hepatic microsomal enzyme activity, and causes increased mortality in offspring. The oral LD_{50} in the rat is 40 mg/kg for heptachlor and 47 mg/kg for heptachlor epoxide (Cclement, 1985).

Although there are reports of acute and chronic toxicity in humans, with symptoms including tremors, convulsions, kidney damage, respiratory collapse, and death, details of such episodes are not well documented. Heptachlor epoxide has been found in a high percentage of human adipose tissue samples, and also in human milk samples and biomagnification of heptachlor/heptachlor epoxide occurs. This compound also has been found in the tissues of stillborn infants, suggesting an ability to cross the placenta and bioaccumulate in the fetus (Clement, 1985).

26.2 Carcinogenicity

Heptachlor and heptachlor epoxide are liver carcinogens when administered orally to mice. Results from mutagenicity bioassays suggest that these compounds also may have genotoxic activity. Reproductive and teratogenic effects in rats include decreased litter size, shortened life span of suckling rats, and development of cataracts in offspring (Clement, 1985)

27.0 LEAD

27.1 Pharmacokinetics

Studies in humans indicate that an average of 10 percent of ingested lead is absorbed, but estimates as high as 40 percent were obtained in some individuals (Tsuchiya, 1986). Nutritional factors have a profound effect on GI absorption efficiency. Children absorb ingested lead more efficiently than adults; absorption

efficiencies up to 53 percent were recorded for children three months to eight years of age. Similar results were obtained for laboratory animals; absorption efficiencies of 5 to 10 percent were obtained for adults and ≥50 percent were obtained for young animals. The deposition rate of inhaled lead averages approximately 30 to 50 percent, depending on particle size, with as much as 60 percent deposition of very small particles (0.03 μm) near highways. All lead deposited in the lungs is eventually absorbed.

Approximately 95 percent of the lead in the blood is located in the erythrocytes (USEPA, 1990). Lead in the plasma exchanges with several body compartments, including the internal organs, bone, and several excretory pathways. In humans, lead concentrations in bone increase with age (Tsuchiya, 1986). About 90 percent of the body burden of lead is located in the skeleton. Neonatal blood concentrations are about 85 percent of maternal concentrations (USEPA, 1990). Excretion of absorbed lead is principally through the urine, although GI secretion, biliary excretion, and loss through hair, nails, and sweat are also significant.

27.2 Noncancer Toxicity

The noncancer toxicity of lead to humans has been well characterized through decades of medical observation and scientific research (USEPA, December 1994). The principal effects of acute oral exposure are colic with diffuse paroxysmal abdominal pain (probably due to vagal irritation), anemia, and, in severe cases, acute encephalopathy, particularly in children (Tsuchiya, 1986). The primary effects of long-term exposure are neurological and hematological. Limited occupational data indicate that long-term exposure to lead may induce kidney damage. The principal target organs of lead toxicity are the erythrocyte and the nervous system. Some of the effects on the blood, particularly changes in levels of certain blood enzymes, and subtle neurobehavioral changes in children, appear to occur at levels so low as to be considered nonthreshold effects.

USEPA (December 1994) presented no inhalation RfC for lead, but referred to the National Ambient Air Quality Standard (NAAQS) for lead, which could be used in lieu of an inhalation RfC. The NAAQSs are based solely on human health considerations and are designed to protect the most sensitive subgroup of the human population. The NAAQS for lead is 1.5 $\mu g/m^3$, averaged quarterly (USEPA, March 1992). The NAAQS is equivalent to 0.00043 mg/kg/day, assuming a body weight of 70 kg and an inhalation rate of 20 m^3/day.

The USEPA (1990; December 1994) determined that it is inappropriate to derive an RfD for oral exposure to lead for several reasons. First, the use of an RfD assumes that a threshold for toxicity exists, below which adverse effects are not expected to occur; however, the most sensitive effects of lead exposure, impaired neurobehavioral development in children and altered blood enzyme levels associated with anemia, may occur at blood lead concentrations so low as to be considered practically nonthreshold in nature. Second, RfD values are specific for the route of exposure for which they are derived. Lead, however, is ubiquitous, so that exposure occurs from virtually all media and by all pathways simultaneously, making it practically impossible to quantify the contribution to blood lead from any one route of exposure. Finally, the dose-response relationships common to many toxicants, and upon which derivation of an RfD is based, do not hold true for lead. This is because the fate of lead within the body depends, in part, on the amount and rate of previous exposures, the age of the recipient, and the rate of exposure. There is, however, a reasonably good correlation between blood lead concentration and effect. Therefore, blood lead concentration is the appropriate parameter on which to base the regulation of lead.

The USEPA UBK lead model is an iterated set of equations that estimate blood lead concentration in children aged 0 to 7 years (USEPA,1990; 1991a). The biokinetic part of the model describes the movement of lead between the plasma and several body compartments and estimates the resultant blood lead concentration. The rate of the movement of lead between the plasma and each compartment is a function of the transition or residence time (i.e., the mean time for lead to leave the plasma and enter a given compartment, or the

mean residence time for lead in that compartment). Compartments modeled include th erythrocytes, liver, kidneys, all the other soft tissue of the body, cortical bone, and trabecular bone. Excretory pathways and their rates are also modeled. These include the mean time for excretion from the plasma to the urine, from the liver to the bile, and from the other soft tissues to the hair, skin, sweat, etc. The model permits the user to adjust the transition and residence times.

USEPA guidance (USEPA, 1989) established an interim soil cleanup level for lead of 500 to 1000 parts per million (ppm) to be applied at Superfund sites. This range is considered by EPA to be protective for direct contact with lead-contaminated soils in residential settings. The guidance adopts recommendations of the Centers for Disease Control and is to be followed when current or predicted land use is residential.

In more recent guidance (USEPA, 1991b), USEPA stated that they are seeking resolution of specific technical concerns before issuing a directive recommending the UBK model as the preferred method for setting lead cleanup levels at CERCLA sites. The model is under review by the Science Advisory Board, and a guidance manual is under development. In 1994, the USEPA recommended a screening level of 400 mg/kg in residential soil (USEPA, 1994a).

27.3 Carcinogenicity

USEPA (December 1994) classifies lead in cancer weight-of-evidence Group B2 (probable human carcinogen), based on inadequate evidence of cancer in humans and sufficient animal evidence. The human data consist of several epidemiologic occupational studies that yielded confusing results. All of the studies lacked quantitative exposure data and failed to control for smoking and concomitant exposure to other possibly carcinogenic metals. Rat and mouse bioassays showed statistically significant increases in renal tumors following dietary and subcutaneous exposure to several soluble lead salts. Various lead compounds were observed to induce chromosomal alterations in vivo and in vitro, sister chromatid exchange in exposed workers, and cell transformation in Syrian hamster embryo cells; to enhance simian adenovirus induction; and to alter molecular processes that regulate gene expression. USEPA (December 1994) declined to estimate risk for oral exposure to lead because many factors (e.g., age, general health, nutritional status, existing body burden and duration of exposure) influence the bioavailability of ingested lead, introducing a great deal of uncertainty into any estimate of risk.

28.0 MANGANESE

28.1 Noncancer Toxicity

Manganese is nutritionally required in humans for normal growth and health (USEPA, December 1994). Humans exposed to approximately 0.8 mg manganese/kg/day in drinking water exhibited lethargy, mental disturbances (1/16 committed suicide), and other neurologic effects. The elderly appeared to be more sensitive than children. Oral treatment of laboratory rodents induced biochemical changes in the brain, but rodents did not exhibit the neurological signs exhibited by humans. Occupational exposure to high concentrations in air induced a generally typical spectrum of neurological effects and an increased incidence of pneumonia (ACGIH, 1986).

Very recently, the chronic oral RfD for manganese was removed from IRIS (USEPA, December 1994). The subchronic oral RfD presented by USEPA (March 1993) was the same value as the chronic oral RfD. It seems prudent to remove the subchronic oral RfD as well, to reflect EPA's lack of confidence in this derivation. The USEPA (December 1994) presented a verified chronic inhalation RfC of 0.0004 mg/m^3 based on a LOAEL for respiratory symptoms and psychomotor disturbances in occupationally exposed humans and an uncertainty factor of 900. The USEPA (March 1993) presented the same value as a subchronic inhalation RfC. The inhalation RfC is equivalent to 0.0001 mg/kg/day, assuming humans inhale 20 m^3 of

air/day and weigh 70 kg. The CNS and respiratory tract are target organs of inhalation exposure to manganese.

28.2 Carcinogenicity

The USEPA (December 1994) classifies manganese in cancer weight-of-evidence Group D (not classifiable as to carcinogenicity to humans). Quantitative cancer risk estimates are not derived from Group D chemicals.

29.0 MERCURY

Mercury occurs in three forms: elemental, organic, and inorganic. Although the toxicity of all forms is mediated by the mercury cation, the extent of absorption and pattern of distribution within the body, which determines the effects observed, depends on the form to which the organism is exposed (Goyer, 1991). Bacterial activity in the environment converts inorganic mercury to methyl mercury (Berlin, 1986). It is likely that either inorganic mercury or methyl mercury may be taken up by plants and enter the food chain, and this discussion will focus on inorganic and methyl mercury. Exposure to elemental mercury, which is more likely to occur in an occupational setting, is not discussed herein.

29.1 Pharmacokinetics

The GI absorption of inorganic mercury salts is about 2 to 10 percent in humans, and slightly higher in experimental animals (Berlin, 1986; Goyer, 1991). Inorganic mercury in the blood is roughly equally divided between the plasma and erythrocytes. Distribution is preferentially to the kidney, with somewhat lower concentrations found in the liver, and even lower levels found in the skin, spleen, testes, and brain (Berlin, 1986). Inorganic mercury is excreted principally through the feces and urine, with minor pathways including the secretions of exocrine glands and exhalation of elemental mercury vapor.

Methyl mercury is nearly completely (90 to 95 percent) absorbed from the GI tract (Berlin, 1986). The concentration of methyl mercury in the erythrocytes is about 10 times that in the plasma. Methyl mercury leaves the blood slowly, showing particular affinity for the brain, particularly in primates. In rats, 1 percent of the body burden of methyl mercury is found in the brain, but in humans, 10 percent of the body burden is found in the brain. Somewhat lower levels are found in the liver and kidney. During pregnancy, methyl mercury accumulates in the fetal brain, often at levels higher than in the maternal brain. Most tissues except the brain transform methyl mercury to inorganic mercury. Excretion of methyl mercury is principally via the bile, with a half-life of 70 days in humans not suffering from toxicity. Following exposure to methyl mercury, some of the mercury in the bile exists as methyl mercury and some as the inorganic form. The inorganic form is largely passed in the feces, but the methyl mercury is subject to enterohepatic recirculation. Another important excretory pathway for methyl mercury is lactation.

29.2 Noncancer Toxicity

Target organs for inorganic or methyl mercury include the kidney, nervous system, fetus, and neonate. Acute oral exposure to high doses of inorganic mercury causes severe damage to the GI mucosa because of the corrosive nature of mercury salts, which may lead to bloody diarrhea, shock, circulatory collapse, and death (Berlin, 1986; Goyer, 1991). Acute sublethal poisoning induces severe kidney damage. Chronic exposure induces an autoimmune glomerular disease and renal tubular injury. The USEPA (March 1992) presented a verified RfD of 0.3 μg/mg-day for chronic oral exposure to inorganic mercury, based on kidney effects in rats.

Acute or chronic exposure to methyl mercury leads to neurologic dysfunction (Berlin, 1986; Goyer, 1991). The region of the nervous system affected is species-dependent. Methyl mercury poisoning in rats induces peripheral nerve damage and kidney effects. In humans, the sensory cortex appears to be the most sensitive. The brain of the fetus and the neonate may be unusually sensitive to methyl mercury; retarded neurologic development was observed in prenatally exposed children whose mothers showed no clinical signs of poisoning. The USEPA (December 1994) derived an RfD of 0.3 μg/kg/day for chronic oral exposure to methyl mercury based on neurological effects in environmentally exposed humans. In this derivation, an intake of 3 μg/kg/day was an LOAEL corresponding to a blood level of 200 ng/mL, which was associated with CNS effects. An uncertainty factor of 10 was used to estimate an NOAEL from an LOAEL. An inhalation RfC of 0.0003 mg/m^3 (uncertainty factor of 30) has been established for inorganic mercury based on neurotoxic effects in humans. This translates into a chronic RfD of 0.000086 mg/kg/day (USEPA, December 1994).

29.3 Carcinogenicity

The USEPA (December 1994) classifies inorganic mercury in cancer weight-of-evidence Group D (not classifiable as to carcinogenicity to humans), based on no data regarding cancer in humans, and inadequate animal and supporting data. In an intraperitoneal injection study with metallic mercury in rats, sarcomas developed only in those tissues in direct contact with the test material (ATSDR, 1992a). A two-year dietary study in rats with mercuric acetate (inorganic mercury) yielded no evidence of carcinogenicity (ATSDR, 1992a). In mice, however, dietary exposure to high doses of mercury chloride for up to 78 weeks induced renal adenomas and adenocarcinomas (ATSDR, 1992a). The USEPA has not yet evaluated the carcinogenicity of organic mercury. No carcinogenic effect, however, was observed in a two-year feeding study with phenylmercuric acetate in rats (ATSDR, 1992a).

30.0 METHOXYCHLOR

30.1 Noncancer Toxicity

Reported acute LD_{50} values for methoxychlor range from 5,000 to 7,000 mg/kg in male and female rats, and 2,900 mg/kg in mice. Exposure to 500-4,200 mg/kg/day methoxychlor in feed for 4-16 weeks produced significant increases in mortality in rats. Increases in mortality were also reported in dogs exposed to 2,000 mg/kg/day for 8-24 weeks. In dogs death was preceded by neurological effects (tremors, convulsions). Although the nervous system is not considered to be the primary target organ for methoxychlor exposure.

The reproduction system effects of methoxychlor have been well studied. These studies indicate that the reproductive system is a sensitive target of methoxychlor toxicity in both males and females.Effects associated with methoxychlor exposure include histopathological changes in reproductive organs and accessory glands, impaired pubertal development and reproductive function, and altered hormone levels. These effects are due to the estrogenic activity of both o-demethylated metabolites of methoxychlor and some o-demethylated contaminants of technical grade methoxychlor (ATSDR, 1992b).

30.2 Carcinogenicity

Data from an unpublished FDA study, reported an increased incidence of liver carcinomas in rats fed 100 mg/kg/day for 2 years. In addition, ovarian tumors occurred in female rats fed 5 and 25 mg/kg/day, respectively, for 2 years, although data concerning ovarian tumor incidence in control animals or in animals at high doses was not provided. The incidence of other tumors was similar in both treated and control animals. In a re-analysis of data from another unpublished FDA study, an increased incidence of testicular tumors in male mice is reported. The tumors observed in treated animals were reported to be larger and less differentiated and more invasive than those observed in control animals. Based on available data, it was

concluded that methoxychlor produces liver tumors in rats, mice, and possibly in dogs. In addition, it was concluded that methoxychlor is carcinogenic to the testes of male mice, bone of female mice, and the ovaries of female rats. However there is considered disagreement between the original study authors and the re-analysis study authors.

Based on review of all the available data, USEPA has classified methoxychlor as a Group D carcinogen, not classifiable to human carcinogenicity. Similarly IARC, has classified methoxychlor as a Group 3 carcinogen (not classifiable to its carcinogenicity to humans) and NCI concluded there was insufficient evidence to classify methoxychlor as a carcinogen.

31.0 METHYLENE CHLORIDE (DICHLOROMETHANE)

31.1 Noncancer Toxicity

Occupational exposure to high concentrations of methylene chloride may induce liver damage (ACGIH, 1986). Liver effects were induced in animals by inhalation or oral exposure (USEPA, December 1994) The USEPA (December 1994) presented a verified chronic oral RfD for methylene chloride of 0.06 mg/kg/day based on a NOAEL for liver toxicity in male and female rats in chronic drinking water studies and an uncertainty factor of 100. The USEPA (December 1994) presented the same value as a provisional subchronic oral RfD. The USEPA (March 1993) also presented a provisional subchronic and chronic inhalation RfC of 3 mg/m^3, derived from a NOAEL for liver toxicity in a two-year intermittent exposure inhalation study in rats and an uncertainty factor of 100. The inhalation RfC is equivalent to 0.9 mg/kg/day, assuming humans inhale 20 m^3 of air/day and weigh 70 kg. The principal target organ for methylene chloride is the liver.

31.2 . Carcinogenicity

Methylene chloride is classified in USEPA cancer weight-of-evidence Group B2 (probable human carcinogen), based on inadequate human data and sufficient evidence of carcinogenicity in animals (USEPA, December 1994). Animal inhalation studies showed increased incidence of hepatocellular neoplasms and alveolar/bronchiolar neoplasms in male and female mice, mammary tumors in rats of either sex, salivary gland sarcomas in male rats, and leukemia in female rats. Oral studies were inconclusive. An oral slope factor of 0.0075 per mg/kg/day was based on the incidence of liver tumors in two inhalation studies in mice. An inhalation unit risk of 4.7E-07 per μg/m^3 was based on the incidence of liver and lung tumors in one inhalation study. The inhalation unit risk is equivalent to 0.0016 per mg/kg/day, based on inhaled dose, assuming humans inhale 20 m^3 of air/day and weigh 70 kg.

32.0 2-METHYLPHENOL (o-CRESOL)

32.1 Noncancer Toxicity

The oral toxicity of 2-methylphenol is low; the $LD_{50/30}$ in rats was 1350 mg/kg (ACGIH, 1991). Ingestion by animals or humans of mixed isomers of methylphenol was associated with corrosion of the GI tissues, kidney tubular, pancreatic and liver damage, and nodular pneumonia. Occupational exposure of humans or inhalation exposure of animals to mixed isomers of methylphenol was associated with neurological effects, impaired kidney function, and irritation of the respiratory tract. The USEPA (December 1994) presented a verified chronic oral RfD of 0.05 mg/kg/day based on an NOAEL for decreased body weight and neurotoxicity in a gavage study in rats and an uncertainty factor of 1000. The USEPA (March 1993) presented a subchronic oral RfD of 0.5 mg/kg/day based on the same NOAEL and an uncertainty factor of 100. Principal target organs are the nervous system, respiratory mucosa, liver, and kidney.

32.2 Carcinogenicity

Methylphenol isomers were tumor promoters in the two-stage mouse skin tumor initiation-promotion test (ACGIH, 1991). The USEPA (December 1994) classified 2-methylphenol as a cancer weight-of-evidence Group C compound (possible human carcinogen), but derived no quantitative risk estimates for either oral or inhalation exposure.

33.0 4-METHYLPHENOL

33.1 Noncancer Toxicity

The oral toxicity of 4-methylphenol is low; the $LD_{50/30}$ in rats is 1800 mg/kg (ACGIH 1991). Ingestion by animals or humans of mixed isomers of methylphenol was associated with corrosion of the GI tissues, kidney tubular, pancreatic and liver damage, and nodular pneumonia. Occupational exposure of humans or inhalation exposure of animals to mixed isomers of methylphenol was associated with neurological effects, impaired kidney function and irritation of the respiratory tract. The EPA (1992b) presented a provisional chronic oral RfD of 0.05 mg/kg/day based on an NOAEL for decreased body weight and neurotoxicity in a gavage study in rats and an uncertainty factor of 1000. The EPA (1992b) also presented a provisional subchronic oral RfD of 0.5 mg/kg/day based on the same NOAEL and an uncertainty factor of 100. Principal target organs are the nervous system, respiratory mucosa, liver and kidney.

33.2 Carcinogenicity

Methylphenol isomers are tumor promoters in the two-stage mouse skin tumor initiation-promotion test (ACGIH, 1991). The USEPA (november 1994) classifies 2-methylphenol as a cancer weight-of-evidence Group C compound (possible human carcinogen), but derives no quantitative risk estimates for either oral or inhalation exposure.

34.0 NICKEL

34.1 Noncancer Toxicity

In a subchronic gavage study with nickel chloride in water, clinical signs of toxicity in rats included lethargy, ataxia, irregular breathing, reduced body temperature, salivation, and discolored extremities (USEPA, March 1994). Inhalation exposure was associated with asthma and pulmonary fibrosis in welders using nickel alloys (ACGIH, 1986). Lung effects were observed in laboratory animals exposed by inhalation. The USEPA (December 1994) presented a verified RfD of 0.02 for chronic oral exposure to nickel, based on an NOAEL for decreased organ and body weights in a two-year dietary study with nickel sulfate in rats and an uncertainty factor of 300. The USEPA (March 1993) presented the same value as a provisional subchronic oral RfD. The CNS appears to be the target organ for the oral toxicity of nickel. The lung is clearly the target organ for inhalation exposure.

34.2 Carcinogenicity

Occupational exposure to nickel was associated with increased risk of nasal, laryngeal, and lung cancer (ATSDR, 1991a). Inhalation exposure of rats to nickel subsulfide increased the incidence of lung tumors. The USEPA (December 1994) presents a cancer weight-of-evidence Group A classification (human carcinogen) for nickel, and presents an inhalation unit risk of 0.00024 per $\mu g/m^3$ for nickel refinery dust. The unit risk is equivalent to 0.84 per mg/kg/day, assuming humans inhale 20 m^3 of air/day and weigh 70 kg. The quantitative estimate was derived from human occupational studies.

35.0 OCTACHLORODIBENZO-P-DIOXIN (OCDD)

35.1 N ncancer T xicity

Of the dioxins, the toxicity of 2,3,7,8-TCDD has been studied most extensively. The only effect in humans clearly attributable to 2,3,7,8-TCDD was chloracne (ATSDR, 1989e). The data, however, also associated exposure to 2,3,7,8-TCDD with hepatotoxicity and neurotoxicity in humans. In animals, toxicity of 2,3,7,8-TCDD is most commonly manifested as a wasting syndrome with thymic atrophy, terminating in death, with a large number of organ systems showing nonspecific effects. Chronic treatment of animals with 2,3,7,8-TCDD or a mixture of two isomers of hexachlorodibenzo-p-dioxin resulted in liver damage. Immunologic effects may be among the more sensitive endpoints of exposure to the PCDDs in animals. In animals 2,3,7,8-TCDD is a developmental and reproductive toxicant. No verified or provisional noncancer toxicity values were located for any of the chemicals of interest in these classes (USEPA, December 1994; March 1992).

35.2 Carcinogenicity

Data regarding the carcinogenicity of 2,3,7,8-TCDD to humans, obtained from epidemiologic studies of workers exposed to pesticides or to other chlorinated chemicals known to be contaminated with 2,3,7,8-TCDD, are conflicting (ATSDR, 1989e). The interpretation of these studies is not clear because exposure to 2,3,7,8-TCDD was not quantified, multiple routes of exposure (dermal, inhalation, oral) were involved, and the workers were exposed to other potentially carcinogenic compounds. In animals, however, 2,3,7,8-TCDD is clearly carcinogenic, inducing thyroid, lung, and liver tumors in orally treated rats and mice (EPA 1985). Similarly, oral treatment with a mixture of two hexachlorodibenzo-p-dioxin isomers induced liver tumors in rats and mice. On the basis of the animal data, 2,3,7,8-TCDD and the hexachlorodibenzo-p-dioxins were assigned to EPA cancer weight-of-evidence Group B2 (probable human carcinogen). Although the other PCDDs and PCDFs were not formally classified as to carcinogenicity to humans, for regulatory purposes they are treated as probable human carcinogens.

The USEPA (March 1993) presents provisional oral and inhalation slope factors for 2,3,7,8-TCDD of 150,000 per mg/kg/day, based on the incidence of liver and lung tumors in an oral study in rats (Kociba et al. 1978).

Much less is known about the toxicity of other CDD and CDF congeners. Based on available toxicity data, USEPA has developed a method for expressing toxicities of these compounds in terms of equivalent amounts of 2,3,7,8-TCDD. "Toxicity equivalency factors", or TEFs, are used to convert the concentration of a given CDD/CDF into an equivalent concentration of 2,3,7,8-TCDD. The TEF approach has been applied in the risk assessment of dioxins.

36.0 POLYCYCLIC AROMATIC HYDROCARBONS (PAHs)

PAHs are a large class of ubiquitous natural and anthropogenic chemicals, all with similar chemical structures (ATSDR, 1990a).

36.1 Pharmacokinetics

Although quantitative absorption data for the PAHs were not located, benzo(a)pyrene was readily absorbed across the GI and respiratory epithelia (USEPA, 1980). The high lipophilicity of other compounds in this class suggests that other PAHs also would be readily absorbed across GI and respiratory epithelia.

Benzo(a)pyrene was distributed widely in the tissues of treated rats and mice, but primarily to tissues high in fat, such as adipose tissue and mammary gland (USEPA, 1980). Patterns of tissue distribution of other PAHs would be expected to be similar because of the high lipophilicity of the members of this class.

Studies of the metabolism of benzo(a)pyrene provide information relevant to other PAHs because of the structural similarities of all members of the class. Metabolism involves microsomal mixed function oxidase hydroxylation of one or more of the phenyl rings with the formation of phenols and dihydrodiols, probably via formation of arene oxide intermediates (USEPA, 1980). The dihydrodiols may be further oxidized to diol epoxides, which, for certain members of the class, are known to be the ultimate carcinogens (USEPA, 1980). Conjugation with glutathione or glucuronic acid, and reduction to tetrahydrotetrols are important detoxification pathways. Metabolism of naphthalene resulted in the formation of 1,2-naphthoquinone, which induced cataract formation and retinal damage in rats and rabbits.

Excretion of benzo(a)pyrene residues was reported to be rapid, although quantitative data were not located (USEPA, 1980). Excretion occurred mainly via the feces, probably largely due to biliary secretion. The USEPA (1980) concluded that accumulation in the body tissues of PAHs from chronic low level exposure would be unlikely.

36.2 Noncancer Toxicity

Oral noncancer toxicity data are available for anthracene, fluoranthene, fluorene, naphthalene and pyrene. Newborn infants, children, and adults exposed to naphthalene by ingestion, inhalation, or possibly by skin contact developed hemolytic anemia with associated jaundice and occasionally renal disease (USEPA, 1980). In a 13-week gavage study in rats, treatment with 50 mg naphthalene/kg, 5 days/week for 13 weeks (35.7 mg/kg/day) induced no effects; higher doses presumably reduced the growth rate. Application of an uncertainty factor of 1000 yielded a provisional RfD for chronic oral exposure of 0.04 mg/kg/day (USEPA, March 1992). The very mild effect (decreased growth rate) apparently observed at higher doses suggests that the RfD is very conservatively protective.

The toxic potency of anthracene appears to be very low. In a chronic study in rats, doses of 5 to 15 mg/rat (16 to 48 mg/kg/day) via the diet had no effect on longevity or gross or histopathologic appearance of unspecified tissues (USEPA, March 1992). Gavage treatment of mice with 1000 mg/kg/day for at least 90 days had no effects on a comprehensive range of toxicologic parameters (USEPA, December 1994). The NOEL of 1000 mg/kg/day in mice and an uncertainty factor of 3000 (10 each for inter- and intraspecies variation, and 30 for the use of a subchronic study and an incomplete database) yielded a verified RfD for chronic oral exposure of 0.3 mg/kg/day (USEPA, December 1994). The USEPA (March 1993) presented a provisional subchronic oral RfD of 3 mg/kg/day based on the same NOEL and an uncertainty factor of 300. The data were inadequate to define target organs for the toxicity of anthracene.

Fluoranthene appears to be toxic to the liver, kidney, and blood. In a comprehensive 13-week gavage study in mice, 125 mg/kg/day was an NOAEL and 250 mg/kg/day was a LOAEL (USEPA, December 1994). The verified chronic oral RfD for fluoranthene is 0.04 mg/kg/day, based on the NOAEL in a comprehensive 13-week gavage study of 125 mg/kg/day in mice and an uncertainty factor of 3000 (USEPA, December 1994). The uncertainty factor of 3000 includes factors of 10 each for inter- and intraspecies variation, and a factor of 30 to expand from subchronic to chronic exposure and to reflect an incomplete database. A provisional subchronic oral RfD of 0.4 mg/kg/day was derived from the same NOAEL and an uncertainty factor of 300. The liver, kidney, and blood appear to be the target organs for the toxicity of fluoranthene.

The critical effects of oral exposure to fluorene appear to be hemolytic anemia and CNS effects. In mice treated by gavage for 13 weeks, 125 mg/kg/day was a NOAEL and 250 mg/kg/day was a LOAEL (USEPA, December 1994). A verified chronic oral RfD for fluorene of 0.04 mg/kg/day was based on the NOAEL of

125 mg/kg/day for hemolytic anemia in mice (USEPA, March 1993). An uncertainty factor of 3000 was used with factors of 10 each for inter- and intraspecies variation and to expand from subchronic to chronic exposure, and a factor of 3 to reflect gaps in the database. The USEPA (March 1993) presented a provisional subchronic oral RfD of 0.4 mg/kg/day based on the same NOAEL and an uncertainty factor of 300. The target organs of fluorene toxicity are the erythrocyte and the CNS.

Mild kidney lesions appear to be the critical effects of pyrene. In mice treated by gavage for 13 weeks, 75 mg/kg/day was an NOAEL and 125 mg/kg/day was an LOAEL (USEPA, December 1994). Even in mice treated with 250 mg/kg/day the lesions were considered minimal to mild. The USEPA (December 1994) verified a chronic oral RfD for pyrene of 0.03 mg/kg/day based on the NOAEL in mice and an uncertainty factor of 3000 (10 each for inter- and intraspecies variation and to expand from subchronic to chronic exposure, and a factor of 3 to reflect gaps in the database). The USEPA (March 1993) presented a provisional subchronic oral RfD of 0.3 mg/kg/day based on the same NOAEL and an uncertainty factor of 300. The kidney is the target organ for the toxicity of pyrene.

36.3 Carcinogenicity

The PAHs are ubiquitous, being released to the environment from anthropogenic as well as from natural sources (ATSDR, 1987). Benzo(a)pyrene is the most extensively studied member of the class, inducing tumors in multiple tissues of virtually all laboratory species tested by all routes of exposure. Although epidemiology studies suggested that complex mixtures that contain PAHs (coal tar, soots, coke oven emissions, cigarette smoke) are carcinogenic to humans (USEPA, December 1994), the carcinogenicity cannot be attributed to PAHs alone because of the presence of other potentially carcinogenic substances in these mixtures (ATSDR, 1987). In addition, recent investigations showed that the PAH fraction of roofing tar, cigarette smoke, and coke oven emissions accounted for only 0.1 to 8 percent of the total mutagenic activity of the unfractionated complex mixture in Salmonella (Lewtas, 1988). Aromatic amines, nitrogen heterocyclic compounds, highly oxygenated quinones, diones, and nitrooxygenated compounds, none of which would be expected to arise from in vivo metabolism of PAHs, probably accounted for the majority of the mutagenicity of coke oven emissions and cigarette smoke. Furthermore, coal tar, which contains a mixture of many PAHs, has a long history of use in the clinical treatment of a variety of skin disorders in humans (ATSDR, 1987).

Because of the lack of human cancer data, assignment of individual PAHs to USEPA cancer weight-of-evidence groups was based largely on the results of animal studies with large doses of purified compound (USEPA, December 1994). Frequently, unnatural routes of exposure, including implants of the test chemical in beeswax and trioctanoin in the lungs of female Osborne-Mendel rats, intratracheal instillation, and subcutaneous or intraperitoneal injection, were used. Acenaphthylene, anthracene, fluoranthene, fluorene, naphthalene, 2-methylnaphthalene, phenanthrene, and pyrene were classified in Group D (not classifiable as to carcinogenicity to humans), and benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, and dibenz(a,h)anthracene were classified in Group B2 (probable human carcinogens).

The USEPA (December 1994) verified a slope factor for oral exposure to benzo(a)pyrene of 7.3 per mg/kg/day, based on several dietary studies in mice and rats. Neither verified nor provisional quantitative risk estimates were available for the other PAHs in Group B2. The USEPA (1980) promulgated an ambient water quality criterion for "total carcinogenic PAHs," based on an oral slope factor derived from a study with benzo(a)pyrene, as being sufficiently protective for the class. Largely because of this precedent, the quantitative risk estimates for benzo(a)pyrene were adopted for the other carcinogenic PAHs when quantitative estimates were needed.

Recent reevaluations of the carcinogenity and mutagenicity of the Group B2 PAHs suggest that there are large differences between individual PAHs in cancer potency (Krewski et al., 1989). Based on the available cancer and mutagenicity data, and assuming that there is a constant relative potency between different carcinogens across different bioassay systems and that the PAHs under consideration have similar dose-response curves, relative potency values were derived for several PAHs (Krewski et al., 1989). A more recent Relative Potency Factor (RPF) scheme for the Group B2 PAHs was based only on the induction of lung epidermoid carcinomas in female Osborne-Mendel rats in the lung-implantation experiments (Clement International, 1990; USEPA, July 1993).

The USEPA indicates (July 1993) that there is no inhalation unit risk acceptable to the Cancer Risk Ass ssment Verification Endeavor (CRAVE) and there is no basis for judgment that benzo(a)pyrene and other PAHs are equipotent by oral and inhalation routes.

37.0 SELENIUM

37.1 Noncancer Toxicity

Selenium is a nutritionally essential trace element that is an integral part of the enzyme glutathione peroxidase and other proteins (Högberg and Alexander, 1986). The National Research Council (1989) recommended dietary allowances (RDAs) for humans range from 10 to 75 μg/day. Chronic ingestion of 5 mg/day (0.071 mg/kg/day, assuming humans weigh 70 kg) induced selenosis in humans, characterized by abnormal hair and nail formation (Högberg and Alexander, 1986). Effects in domestic grazing animals exposed to high levels of selenium included emaciation, lameness, and loss of hair and hooves. Occupational exposure to selenium fumes or various selenium compounds was associated with intense ocular and respiratory tract irritation, chemical pneumonia, skin rashes, garlic odor to the breath, metallic taste in the mouth, and various socio-psychological effects (ACGIH, 1986). The USEPA (December 1994) presented a verified RfD of 0.005 mg/kg/day for chronic oral exposure to selenourea, based on effects in humans exposed to selenium in high selenium areas. An uncertainty factor of 3 was used. The USEPA (March 1993) presented the same value as a provisional subchronic oral RfD. The principal target organs for oral exposure to selenium are the skin, including the nails and hair, and in animals, the hooves and joints. Targets for inhalation or dermal exposure include the skin and mucous membranes of the eyes and respiratory tract, and possibly the CNS.

37.2 Carcinogenicity

An impressive body of data indicates that selenium exerts an anticarcinogenic effect (Högberg and Alexander, 1986). In laboratory animals, selenium supplementation decreased the incidence of chemical-induced cancers. In humans, the incidence of lymphomas and cancers of the breast, digestive tract, and lung were lower in geographic areas with high soil selenium levels. Occupational data suggest that selenium may protect against lung cancer. Several animal tests with various deficiencies in design and conduct equivocally associated exposure to selenium with cancer induction. In a well controlled oral experiment, selenium sulfide was associated with an increase in the incidence of liver tumors in rats, and with liver and lung tumors in mice. On the basis of this study, USEPA (December 1994) classified selenium sulfide a cancer weight-of-evidence Group B2 compound (probable human carcinogen), but declined to derive quantitative risk estimates. Selenium and other selenium compounds were classified in cancer weight-of-evidence Group D (not classifiable as to carcinogenicity to humans) (USEPA, December 1994). Quantitative risk estimates are not derived for Group D substances.

38.0 SILVER

38.1 Pharmac kinetics

The GI absorption of ingested silver in animals was estimated at ≤ 10 percent; however, absorption of 18 percent was estimated from one human subject given silver acetate (Fowler and Nordberg, 1986). Highest tissue levels are located in the liver; lower levels are located in the lungs, brain, spleen, bone marrow, muscle, and skin (Fowler and Nordberg, 1986; Goyer, 1991). Excretion is virtually entirely through the bile. The excretion kinetics appear to be species- and organ-dependent. In humans, the apparent half-life for silver in the liver is approximately 50 days. Silver in skin also appeared to have a long half- life (not quantified).

38.2 Noncancer Toxicity

Silver compounds have been used in dentistry, medicinally in the treatment of burns, as a local disinfectant, and as a drinking water disinfectant (Fowler and Nordberg, 1986). The classical syndrome of toxicity, called argyria, is a blue-gray to nearly black discoloration of areas of the skin or the viscera resulting from deposition of microscopic granules of silver compounds in the affected tissues. Argyria results from occupational (inhalation), parenteral, or oral exposure. The USEPA (December 1994) derived an RfD of 3 μg/kg/day for chronic oral exposure, based on a LOAEL for argyria estimated at 5.2 μg/kg/day in a person who ingested silver acetate as an anti-smoking aid for 2.5 years (USEPA, December 1994). Data from other cases of argyria involving medicinal (oral and intravenous) treatment were considered in this evaluation. An uncertainty factor of two was applied because the critical effect is considered to be only minimally severe.

38.3 Carcinogenicity

The USEPA (December 1994) classifies silver in cancer weight-of-evidence Group D (not classifiable as to carcinogenicity to humans). The human data consist of no evidence in the literature of cancer despite frequent medical use of silver compounds. The animal data are limited to studies of implanted silver foil or injected metallic silver that provided unconvincing indications of a carcinogenic response relevant to humans.

39.0 1,1,2,2-TETRACHLOROETHANE (1,1,2,2-TCA)

39.1 Noncancer Toxicity

Chronic oral exposure of laboratory animals to 1,1,2,2-tetrachloroethane was associated with liver and kidney effects (ATSDR, 1989f). Acute occupational exposure to high levels was associated with CNS effects; prolonged exposure to more moderate levels was associated with GI disturbances and liver damage (ACGIH, 1986). Inhalation exposure studies in animals confirm that 1,1,2,2-tetrachloroethane is highly hepatotoxic. Neither oral nor inhalation RfD or RfC values were located. The target organs for 1,1,2,2-tetrachloroethane are the liver, kidney, and the CNS.

39.2 Carcinogenicity

Oral treatment with 1,1,2,2-tetrachloroethane induced a highly significant dose-related increase in hepatocellular carcinomas in rats (ATSDR, 1989f). Occupational data regarding carcinogenicity in humans are inadequate. The USEPA (December 1994) classifies 1,1,2,2-tetrachloroethane as a cancer weight-of-evidence Group C compound (possible human carcinogen), based on liver tumors in mice, and derived an oral slope factor of 0.2 per mg/kg/day. The same data serve as the basis for an inhalation unit risk of

5.8E-05 per $\mu g/m^3$, which is equivalent to 0.2 per mg/kg/day, assuming humans inhale 20 m^3 of air/day and weigh 70 kg.

40.0 TETRACHLOROETHENE (TETRACHLOROETHYLENE; PCE)

40.1 Noncancer Toxicity

Occupational (inhalation and dermal) exposure to tetrachloroethene was associated with neurologic effects, beginning with uncoordination and progressing to dizziness, headache, vertigo, and unconsciousness (ACGIH, 1986). The USEPA (December 1994) presented a verified chronic oral RfD for tetrachloroethene of 0.01 mg/kg/day based on a NOAEL for liver toxicity in mice in a subchronic gavage study, and on a NOAEL for depressed body weight gain in rats in a subchronic drinking water study. An uncertainty factor of 1000 was used. The USEPA (March 1993) presented a provisional subchronic oral RfD of 0.1 mg/kg/day based on the same NOAEL and an uncertainty factor of 100. The CNS is the principal target organ for oral exposure to tetrachloroethene.

40.2 Carcinogenicity

Inhalation exposure to tetrachloroethene induced mononuclear cell leukemia in rats, and inhalation or oral exposure induced hepatocellular carcinomas in mice (ATSDR, 1988a). Occupational exposure data do not suggest a carcinogenic role for tetrachloroethene in humans (ACGIH, 1986). Interpretation of the data regarding the carcinogenicity of tetrachloroethene is controversial, and the USEPA (1993) has not adopted a final position on the cancer weight-of-evidence classification or quantitative risk estimates for tetrachloroethene. For this reason, the cancer evaluation of tetrachloroethene was removed from IRIS (USEPA, December 1994). Currently, USEPA believes the weight-of-evidence to be on the C-B2 continuum (possible-probable human carcinogen), and offers slope factors of 0.052 per mg/kg/day for oral exposure and 0.002 per mg/kg/day for inhalation exposure (USEPA, 1993).

41.0 THALLIUM

41.1 Noncancer Toxicity

Thallium is highly toxic; acute ingestion by humans or laboratory animals induced gastroenteritis, neurological dysfunction, and renal and liver damage (Kazantzis, 1986). Chronic ingestion of more moderate doses characteristically caused alopecia. Thallium was used medicinally to induce alopecia in cases of ringworm of the scalp, sometimes with disastrous results. In industrial (inhalation, oral, dermal) exposure, neurologic signs preceded alopecia, suggesting that the nervous system is more sensitive than the hair follicle. The USEPA (December 1994) presented verified chronic oral RfD values for several thallium compounds (thallium acetate, thallium acetate, thallium carbonate, thallium chloride, thallium nitrate, thallium sulfate, and thallic oxide) based on increased incidence of alopecia and increased serum levels of liver enzymes indicative of hepatocellular damage in rats treated with thallium sulfate for 90 days. An oral RfD for thallium alone, however, was not located, although values have been developed for thallic oxide of 0.07 $\mu g/kg/day$ (chronic) and 0.7 $\mu g/kg/day$ (subchronic).

41.2 Carcinogenicity

Several thallium compounds (thallic oxide, thallium acetate, thallium carbonate, thallium chloride, thallium nitrate, thallium sulfate) were classified as cancer weight-of-evidence Group D substances (not classifiable as to carcinogenicity to humans) (USEPA, December 1994). No weight-of-evidence classification was located for thallium alone.

42.0 TOLUENE

42.1 Noncancer Toxicity

In a subchronic gavage study, high doses of toluene induced slight changes in liver and kidney weights in rats (USEPA, December 1994). Inhalation exposure of laboratory animals or humans was associated primarily with CNS depression (ATSDR, 1989g). Recent developmental toxicity studies in animals suggest that the fetus or offspring may be unusually sensitive to effects on the developing nervous system. The USEPA (March 1994) presented a verified chronic oral RfD for toluene of 0.2 mg/kg/day based on a NOAEL for changes in liver and kidney weights in rats in a 13-week gavage study and a uncertainty factor of 1000. A provisional subchronic oral RfD of 2 mg/kg/day was based on the same NOAEL and an uncertainty factor of 100 (USEPA, March 1993). The USEPA (December 1994) presented a verified chronic inhalation RfC of 0.4 mg/m^3 based on a LOAEL for neurological effects in occupationally exposed humans and an uncertainty factor of 300. The USEPA (March 1992) presented a provisional subchronic inhalation RfC of 2 mg/m^3, based on a NOAEL for CNS effects and mucosal irritation in humans and an uncertainty factor of 100. The chronic inhalation RfC is equivalent to 0.1 mg/kg/day, assuming humans inhale 20 m^3 of air/day and weigh 70 kg. Similarly estimated, the subchronic inhalation RfC is equivalent to 0.6 mg/kg/day.

42.2 Carcinogenicity

Toluene is classified as a cancer weight-of-evidence Group D compound (not classifiable as to carcinogenicity to humans), based on no human data and inadequate animal data (USEPA, December 1994). Quantitative risk estimates are not derived for Group D substances.

43.0 1,2,4-TRICHLOROBENZENE (TCB)

43.1 Noncancer Toxicity

Several animal studies on the subchronic toxicity of trichlorobenzenes have been reported. Inhalation studies with 1, 2,4-TCB of 1.5 to 6 months duration in rats, rabbits, dogs, and monkeys have not shown major irreversible effects, although some effects on liver and kidney were found (transient histological changes and increased relative liver weight; (Clement 1985). Increased urinary porphyrin levels were also noted. Also it was reported that mice exposed to TCB (isomers unspecified) for 3 weeks to 3 months showed indications of bone marrow damage. In a chronic study in which mice were administered 1, 2,4-TCB by dermal application, there was a treatment-related increase in the incidence of amyloidosis, which affected a number of organs and was considered a primary cause of death (Clement, 1985). TCB is an inducer of the microsomal mixed function oxidases and therefore will increase metabolism, leading to the inactivation or activation of chemicals affected by this system.

43.2 Carcinogenicity

There are no reports indicating carcinogenic, teratogenic, or mutagenic activity of the trichlorobenzenes in humans or animals. No specific reproductive effects have been found for the TCBs, but embryotoxicity has been noted at a dose level that produces maternal toxicity in rats (Kitchin and Ebron 1983).

44.0 TRICHLOROETHENE (TRICHLOROETHYLENE; TCE)

44.1 Noncancer Toxicity

Little is known about the toxicity of prolonged oral exposure to trichloroethene. Acute inhalation exposure to high levels induced anesthesia, tachypnea, and ventricular arrhythmias (ACGIH, 1986). Occupational

exposure was associated with headache, dizziness, lassitude, and other CNS effects. Prolonged inhalation exposure of animals affected the liver and kidneys. Neither oral nor inhalation RfD or RfC values were located for trichloroethene. The principal target organs for trichloroethene are the CNS and heart, and, to a lesser extent, the liver and kidney.

44.2 Carcinogenicity

Carcinogenicity studies in laboratory animals showed increased incidence of hepatocellular carcinomas (gavage exposure) and malignant lymphomas (inhalation exposure) in mice and increased incidence of renal adenocarcinomas in male rats (gavage) (USEPA, 1988a). Cancer studies in humans were inadequate. Interpretation of the data regarding the carcinogenicity of trichloroethene is controversial, and the USEPA has not adopted a final position on a cancer weight-of-evidence classification or quantitative risk estimates for trichloroethene. For this reason, trichloroethene was removed from IRIS (USEPA, December 1994). Currently, USEPA believes the weight-of evidence to be on the C-B2 continuum (possible-probably human carcinogen), and offers slope factors of 0.011 per mg/kg/day for oral exposure and 0.006 per mg/kg/day for inhalation exposure (USEPA, 1993).

45.0 VANADIUM

45.1 Noncancer Toxicity

The oral toxicity of vanadium compounds to humans is very low (Lagerkvist et al. 1986), probably because little vanadium is absorbed from the GI tract. Effects in humans exposed by inhalation include upper and lower respiratory tract irritation. A provisional subchronic and chronic oral RfD of 0.007 mg/kg/day was derived from an NOEL in rats in a lifetime drinking water study with vanadyl sulfate and an uncertainty factor of 100 (USEPA, March 1992). A target organ could not be identified for oral exposure. The respiratory tract is the target organ for inhalation exposure.

45.2 Carcinogenicity

No information was located regarding the carcinogenicity of vanadium.

46.0 VINYL CHLORIDE

46.1 Noncancer Toxicity

Data were not located regarding oral exposure of humans to vinyl chloride (ATSDR, 1989h). In rats, lifetime dietary ingestion of vinyl chloride slightly but significantly increased mortality and induced mild histopathologic effects in the liver. Several early occupational studies associated vinyl chloride exposure with a syndrome known as vinyl chloride disease, which includes acroosteolysis (dissolution of the ends of the distal phalanges of the hands), circulatory disturbances in the extremities, Raynaud syndrome (sudden, recurrent bilateral cyanosis of the digits), scleroderma, hematologic effects, effects on the lungs, and impaired liver function and liver damage. Mild neurologic effects were also associated with occupational exposure. Long-term inhalation studies in rats and mice identified elevated relative liver weight as a sensitive indicator of liver effects. Neither inhalation RfC values nor oral RfD values for vinyl chloride were located. The principal target organs for vinyl chloride appear to be the CNS and the liver.

46.2 Carcinogenicity

The USEPA (March 1993) lists vinyl chloride as a USEPA cancer weight-of-evidence Group A compound (human carcinogen) and presents a verified oral slope factor of 1.9 per mg/kg/day, based on the increased

incidence of liver and lung tumors in a lifetime dietary study in rats. An inhalation unit risk of 8.4E-05 per $\mu g/m^3$, equivalent to 0.3 per mg/kg/day, assuming humans inhale 20 m^3 of air/day and weigh 70 kg, is based on liver tumors in rats intermittently exposed by inhalation for 12 months.

47.0 XYLENES

47.1 Noncancer Toxicity

Prolonged oral exposure of animals to xylenes was associated with CNS signs and increased mortality, without histopathological alterations in the internal organs (USEPA, December 1994). Occupational exposure to xylenes induced CNS effects and GI disturbances (ACGIH, 1986). Other effects attributed to occupational exposure to xylene (blood dyscrasias, and heart, liver, and kidney damage) may have arisen from concurrent exposure to other chemicals. The USEPA (December 1994) presented a chronic oral RfD for total xylenes of 2 mg/kg/day based on an NOAEL for hyperactivity and decreased body weight and increased mortality in male rats in chronic gavage studies. An uncertainty factor of 100 was used. The USEPA (March 1992) presented a subchronic oral RfD of 4 mg/kg/day based on an NOEL for body weight effects in a 13-week gavage study in rats and an uncertainty factor of 100. Inhalation RfC values for xylenes are considered not verifiable by the RfD/RfC Work Group (USEPA, March 1992). The CNS is the principal target organ for xylenes.

47.2 Carcinogenicity

Xylene is classified as a cancer weight-of-evidence Group D compound (not classifiable as to carcinogenicity to humans) (USEPA, December 1994). There are no reported human cancer data, and gavage animal studies in rat and mice of both sexes did not result in significant increases in tumor incidence. Quantitative risk estimates are not derived for Group D substances.

48.0 ZINC

48.1 Pharmacokinetics

Zinc is a nutritionally required trace element. Estimates of the efficiency of GI absorption of zinc in animals range from <10 to 90 percent (Elinder, 1986). Estimates in normal humans range from approximately 20 to 77 percent (Elinder, 1986; Goyer, 1991). The net absorption of zinc appears to be homeostatically controlled, but it is unclear whether GI absorption, intestinal secretion, or both are regulated. Distribution of absorbed zinc is primarily to the liver (Goyer, 1991), with subsequent redistribution to bone, muscle, and kidney (Elinder, 1986). Highest tissue concentrations are found in the prostate. Excretion appears to be principally through the feces, in part from biliary secretion, but the relative importance of fecal and urinary excretion is species-dependent. The half-life of zinc absorbed from the GI tracts of humans in normal zinc homeostasis is approximately 162 to 500 days.

48.2 Noncancer Toxicity

Humans exposed to high concentrations of aerosols of zinc compounds may experience severe pulmonary damage and death (Elinder, 1986). The usual occupational exposure is to freshly formed fumes of zinc, which can induce a reversible syndrome known as metal fume fever. Orally, zinc exhibits a low order of acute toxicity. Animals dosed with 100 times dietary requirement showed no evidence of toxicity (Goyer, 1991). In humans, acute poisoning from foods or beverages prepared in galvanized containers is characterized by GI upset (Elinder, 1986). Chronic oral toxicity in animals is associated with poor growth, GI inflammation, arthritis, lameness, and a microcytic, hypochromic anemia (Elinder, 1986), possibly

secondary to copp r deficiency (Underwood, 1977). The USEPA (December 1994) presented a verified RfD of 0.3 mg/kg/day for chronic oral exposure to zinc, based on anemia in humans.

48.3 Carcinogenicity

The USEPA (December 1994) classifies zinc in cancer weight-of-evidence Group D (not classifiable as to carcinogenicity to humans) based on inadequate evidence for carcinogenicity in humans and animals. The human data consist largely of occupational exposure studies not designed to detect a carcinogenic response, and of reports that prostatic zinc concentrations were lower in cancerous than in noncancerous tissue. The animal data consist of several dietary, drinking water, and zinc injection studies, none of which provided convincing data for a carcinogenic response.

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