U.S. Army
Environmental
Center

FORT DEVENS
FINAL REMEDIAL
INVESTIGATION
FOR GROUP 2 & 7 SITES

FINAL
REMEDIAL INVESTIGATION REPORT
AREA OF CONTAMINATION (AOC) 41

VOLUME II OF II
APPENDICES A THROUGH N

CONTRACT DAAA-91-D-0008
DELIVERY ORDER NUMBER 005

U.S. ARMY ENVIRONMENTAL CENTER
ABERDEEN PROVING GROUND, MARYLAND

February 1996

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AEC Form 45, 1 Feb 93 replaces THAMA Form 45 which is obsolete.

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DELIVERY ORDER NUMBER 005

Prepared for:

U.S. Army Environmental Center
Aberdeen Proving Ground, Maryland

Prepared by:

ABB Environmental Services, Inc.
Portland, ME
Project No. 07053-15

February 1996

EXPLORATION LOGS

SOIL BORING LOG

Study Area: 41M			
Boring No.: SA4-01			
Client: USATHAMA	Project No. 7053-14	Protection: D	
Contractor: DL Maher	Date Started: 9/21/94	Completed: 9/22/94	
Method: Screened HSA	Casing Size: 4¼ ID HSA	PI Meter: 580B OVM	
Ground Elev.:	Soil Drilled: 42.5	Total Depth: 42.5	
Logged by: L Tracy	Checked by:	▽ Below Ground: 38.0	
Screen: (ft.)	Riser: (ft.)	Diam: (ID)	Material:
Page 1 of: 1			

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT.)
						Drilled to 7' for ordinance clearance to 11' on 9/21/94. Ordinance clearance on 9/22/94. Advanced screened HSA to 42.5'					
10						Auger cuttings: -0-23' → f-m sand, trace si, c. sand, gravel. moist. brown. -23'-42.5' → olive-brown f-m sandy silt, becomes wet with increased depth.					
20						BE @ 42.5' Purged 1 casing vol (3½ gal). water was very turbid. Casing purged by baling - too turbid to pump.					
30											
40			GW screen sample			Collect 2 40 ml vials for GW screening - sample SA4 01 38W. Grouted borehole w/ cement-bent. grout.			▼ 38		
50											

PROPORTIONS	(-) AMOUNT (+)	ABBREVIATIONS		
Trace (tr)	0-10%	f = fine	gr = gray	MS = Split Spoon
Little (li)	10-20%	m = medium	bn = brown	BW = Screened Auger
Some (so)	20-35%	c = coarse	blk = black	HP = Hydropunch
and	35-50%			

ABB Environmental Services, Inc.

SOIL BORING LOG

Study Area: 41M			
Boring No.: SA4-02			
Client: USATHAMA	Project No. 705314		Protection: D
Contractor: DL Maher	Date Started: 9/22/94		Completed: 9/ /94
Method: Screened HSA	Casing Size: 4¼" ID HSA		PI Meter: 580B OVM
Ground Elev.:	Soil Drilled: 44.0'		Total Depth: 44.0'
Logged by: L Tracy	Checked by:		▽ Below Ground: 40.4'
Screen: (ft.)	Riser: (ft.)	Diam: (ID)	Material:
Page of:			

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT.)
						- After receiving ordnance clearance to 11', Advanced Screened HSA to 44.0' on 9/22/94.					
10						- On 9/23/94 (AM), ▽ @ 41.2 with sediment in HSA @ 43'.					
						- Due to slow recharge & low column of water, advanced HSA to 49' & waited for recharge (slow again).					
20						- Pulled HSA back to 44', ~~▽ @ 40.4'~~ LT water rose to 40.4'. Sediment in HSA @ 42.5'.					
30						Purged 1 vol. (~1.5 gal) allowed partial recovery to 42. 41.6'. Collected 2-40ml vials of GW for screening sample & SA402 40W.					
40			GW Screen sample			BOE @ 49'.					
50											

PROPORTIONS	(-) AMOUNT (+)	ABBREVIATIONS		
Trace (tr)	0-10%	f = fine	gr = gray	MS = Split Spoon
Little (li)	10-20%	m = medium	bn = brown	BW = Screened Auger
Some (so)	20-35%	c = coarse	blk = black	HP = Hydropunch
and	35-50%			

ABB Environmental Services, Inc.

SOIL BORING LOG

Study Area: SA 41			
Boring No.: SA 4103			
Client: USATHAMA	Project No. 07005		Protection: C dermal, D resp.
Contractor: D. L. Maher	Date Started: 9.26.94		Completed: 9.27.94
Method: HSA	Casing Size: 4" ID		PI Meter: broken
Ground Elev.:	Soil Drilled:		Total Depth: 40'
Logged by: KR	Checked by:		▽ Below Ground:
Screen: — (ft.)	Riser: — (ft.)	Diam: — (ID)	Material: —
Page 1 of: 1			

* 10' of Sch. 40 0.010 slot PVC screen and 30' of Sch. 40 PVC riser installed for sample collection only...removed before grouting.

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT.)
						SAND, Med. w/ — % fine + — % coarse, light brown					
5											
10											
15					~15.5'	SILTY sand grading down to SILT, light brown, damp.					
20											
25											
30											
35					Not holding a charge	▽ same as above, VOA sample collected when H2O level at 35.4'.					
40						BOB					

PROPORTIONS	(-) AMOUNT (+)
Trace (tr)	0-10%
Little (ll)	10-20%
Some (so)	20-35%
and	35-50%

ABBREVIATIONS

f = fine	gr = gray	MS = Split Spoon
m = medium	bn = brown	BW = Screened Auger
c = coarse	blk = black	HP = Hydropunch

ABB Environmental Services, Inc.

SOIL BORING LOG

Client: USATHAMA		Project No. 7053-14	Study Area: D RANGE
			Boring No.: SA4104
			Protection: MOD. D
Contractor: D.L. MAHER	Date Started: 9-22-94		Completed: 9-26-94
Method: HSA's	Casing Size: 4.25"		PI Meter: OVM 580 B
Ground Elev.:	Soil Drilled:		Total Depth: 40'
Logged by: LT	Checked by:		▽ Below Ground: 36'
Screen: 10 (ft.)	Riser: 30 (ft.)	Diam: 2" (ID)	Material: PVC
			Page 1 of: 1

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT.)
						DRILL TO 7FT. FOR METALLIC ANOMALY CLEARANCE. DRILL TO 40', KNOCK OUT END PLUG. SET SCREEN AT 30-40'. PURGED 5 GALLONS (3GAL-RECHARGE, 2GAL-RECHARGE) COLLECTED 2-40ml VIALS, UNPRESERVED: SA40435W SA40435D					
						SAND 0-16' SILT 16'-28' CLAYEY SILT 28'-40'					
						GROUT BOREHOLE					

PROPORTIONS	(-) AMOUNT (+)	ABBREVIATIONS		
Trace (tr)	0-10%	f = fine	gr = gray	MS = Split Spoon
Little (ll)	10-20%	m = medium	bn = brown	BW = Screened Auger
Some (so)	20-35%	c = coarse	blk = black	HP = Hydropunch
and	35-50%			

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92021500 (c)

SOIL BORING LOG

Study Area: DELTA AREA		
Boring No.: SA41-05		
Client: USATHAMA	Project No. 7053-14	Protection: MOD. D
Contractor: MAHER	Date Started: 9-28-94	Completed: 9-28-94
Method: AUGERS	Casing Size: 4.25" HSA	PI Meter: 580 B OVM
Ground Elev.:	Soil Drilled: 40'	Total Depth: 40'
Logged by: TDL	Checked by:	▽ Below Ground: ~34'
Screen: 10 (ft.) Riser: 30 (ft.) Diam: 2 (ID) Material: PVC		Page 1 of: 1

TEMP. WELL ONLY - FOR SCREENING SAMPLE

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT.)
						DRILLED W/ out SAMPLING TO 40'. 4.25" HSA W/ END PLUG. KNOCKED PLUG (STAINLESS STEEL) OUT & SET 10' SCREEN, 0.010", FROM 40'-30', SAND PACK TO 35' W/ MORIE SAND. SAND SET AT 10:00. 10:05 ▽ = 34' T.O. PVC B.O.B. = 40' T.O. PVC WHEN PLATE KNOCKED OUT, JOHN SAID WATER COME IN QUICKLY 10:35 BAILED SEAL.; ▽ = 34'-PRODUCING GOOD WATER - WILL PUMP WELL. 10:40 START PUMP. 10:47 10GAL. TOTAL OUT OF hole - CLEARING NICELY USED BAILER AFTER ≈ 16GALS. PURGED TO collect 2 40-ml. vials SA 40540W SA 40540W (Dup) 0-~14' SAND 14'-~36' SILT/CLAY 36'-40' FINE, WELL SORTED, SAND	SP				
						HEADSPACE OF DEVELOPMENT = 0 WITH 580B OVM PID. 13:00 FINISH GROUTING HOLE - READY TO MOVE					

PROPORTIONS	(-) AMOUNT (+)	ABBREVIATIONS		
Trace (tr)	0-10%	f = fine	gr = gray	MS = Split Spoon
Little (ll)	10-20%	m = medium	bn = brown	BW = Screened Auger
Some (so)	20-35%	c = coarse	blk = black	HP = Hydropunch
and	35-50%			

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SOIL BORING LOG

Client: USATHAMA	Project No. 7053-14	Study Area: DELTA AREA
		Boring No.: SA41-06
		Protection: MOD. D.
Contractor: MAHER	Date Started: 9-28-94	Completed: 9-29-94
Method: H.S.A.	Casing Size: 4.25"	PI Meter: 580 B OVM
Ground Elev.:	Soil Drilled: 39'	Total Depth: 39'
Logged by: T.D.L.	Checked by:	▽ Below Ground: ~30'
Screen: – (ft.) Riser: – (ft.)	Diam: (ID) Material:	Page 1 of: 1

10" x 0.010" SLOT SCREEN w/ RISER INSERTED IN TEMP "well" to obtain water sample

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT.)
						13:40 START DRILLING - NO SAMPLING					
						0'~17' SAND					
						17'± SILT/SAND/CLAY - FIRM TO 31'					
						THEN SAND AGAIN 31'-39'					
						14:45 DOWN TO ~~46'~~ 39' - KNOCK OUT PLATE					
						▽ = 30' BGS. B.O.B. = 39' BGS					
						PURGED W/ WATER PUMP					
						APPROX. 25 GALS. - TOOK SAMPLE					
						PRODUCED GOOD WATER					
						SA40639W					
						SA40639W (DUP.)					
						GROUT hole on 9-29-94					

PROPORTIONS	(-) AMOUNT (+)
Trace (tr)	0-10%
Little (ll)	10-20%
Some (so)	20-35%
and	35-50%

ABBREVIATIONS

f = fine	gr = gray	MS = Split Spoon
m = medium	bn = brown	BW = Screened Auger
c = coarse	blk = black	HP = Hydropunch

ABB Environmental Services, Inc.

SOIL BORING LOG

Study Area: DELTA AREA			
Boring No.: SA41-07			
Client: USATHAMA		Project No. 7053-14	Protection: MOD. D
Contractor: MAHER	Date Started: 9-29-94		Completed: 9-30-94
Method: HSA	Casing Size: 4.25"		PI Meter: 580B OVM
Ground Elev.:	Soil Drilled: ~~35'~~ ~~34'~~ 35'		Total Depth: 35'
Logged by: TDL	Checked by:		▽ Below Ground:
Screen: 10 (ft.)	Riser: (ft.)	Diam: 2 (ID) / Material: PVC	Page 1 of: 1

Temporary Well for Collection of GW screening sample only.

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT.)
						DRILLED W/OUT SAMPLING TO 35' W/ S. steel plug in head AUGER. Cuttings HAD NO PID READINGS.					
						0 - 6' SAND					
						6' - 35' Clay					
						Collected water sample SA4073SW					
						SA4073SW (Dup)					
						V. silty					
						NO PID ON water jar					
						Grouted hole w/ cement/bent grout					

PROPORTIONS	(-) AMOUNT (+)	ABBREVIATIONS		
Trace (tr)	0-10%	f = fine	gr = gray	MS = Split Spoon
Little (ll)	10-20%	m = medium	bn = brown	BW = Screened Auger
Some (so)	20-35%	c = coarse	blk = black	HP = Hydropunch
and	35-50%			

ABB Environmental Services, Inc.

SOIL BORING LOG

Study Area: DELTA AREA			
Boring No.: SA41-08			
Client: USATHAMA	Project No. 7053-14	Protection: MOD. D.	
Contractor: MATHES	Date Started: 9-29-94	Completed: 9-30-94	
Method: HSA	Casing Size: 4.25"	PI Meter: 580B OVM	
Ground Elev.:	Soil Drilled: 28'	Total Depth: 28'	
Logged by: TDL	Checked by:	▽ Below Ground: ~19'	
Screen: (ft.)	Riser: (ft.)	Diam: (ID)	Material:
Page 1 of: 1			

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT.)
						DRILLED w/out sampling TO 28'.					
						0-5' SAND					
						5'-28' SILT, SAND, CLAY					
						STAINLESS STEEL PLUG IN AUGERS KNOCKED OUT W/ DOWN-hole hammer AT 28' - SATURATED CLAY. 12:00					
						▽ = 21 BGS - coming in slowly					
						BAILED W/ BAILER ≈ 3 GAL. TO DRY - LET RECHARGE THEN AT 13:20					
						▽ = 19' BGS TAKE sample					
						SA 4081 9W					
						SA 4081 9W (Comp)					
						NO PID READINGS					
						GROUT HOLE					

PROPORTIONS	(-) AMOUNT (+)	ABBREVIATIONS		
Trace (tr)	0-10%	f = fine	gr = gray	MS = Split Spoon
Little (ll)	10-20%	m = medium	bn = brown	BW = Screened Auger
Some (so)	20-35%	c = coarse	blk = black	HP = Hydropunch
and	35-50%			

ABB Environmental Services, Inc.

SOIL BORING LOG

Study Area: Delta Area			
Boring No.: SA41-09			
Client: USATHAMA	Project No. 7053-14		Protection: Mod. D.
Contractor: MATHER	Date Started: 9-30-94		Completed: 10-3-94
Method: HSA	Casing Size: 4.25"		PI Meter: 580 B OVM
Ground Elev.:	Soil Drilled: 35'		Total Depth: 35'
Logged by: TDL	Checked by:		▽ Below Ground:
Screen: 10 (ft.)	Riser: (ft.)	Diam: 2 (ID)	Material: PVC
			Page 1 of: 1

Temp. Well for Screen Sample only

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT.)
						Drilled w/ out sampling w/ S. Steel plug in lead auger to 35' bg.s. Had to clear at depths of 8' & 12' w/ Forster Magnetometer					
						0-5 SAND					
						5-29 SILT, w/ SAND & clay					
						29-35 SANDY SILT.					
						Bailed w/ bailer after knocked out plate - could not bail dry - Tried whale pump - too silty to pump - Collected 2 40-ml vials by bailer					
						SA40935W					
						SA40935W (Dup)					
						SAND Lense in this boring is between 29'-35' - may get back into clay at 35' - based on pressure during drilling by John Gratia.					

PROPORTIONS	(-) AMOUNT (+)	ABBREVIATIONS		
Trace (tr)	0-10%	f = fine	gr = gray	MS = Split Spoon
Little (ll)	10-20%	m = medium	bn = brown	BW = Screened Auger
Some (so)	20-35%	c = coarse	blk = black	HP = Hydropunch
and	35-50%			

ABB Environmental Services, Inc.

SOIL BORING LOG

Client: USATHAMA	Project No. 7053-14	Study Area: DELTA AREA
		Boring No.: SA41-16
		Protection: MOD D
Contractor: D.L MAHER	Date Started: 10/3/94.	Completed: 10/3/94
Method: HSA's	Casing Size: 4.25" HSA	PI Meter: 580B OVM
Ground Elev.:	Soil Drilled: 19'	Total Depth: 19'
Logged by: DHB	Checked by:	▽ Below Ground: 10.5'
Screen: 10 (ft.) Riser: 10 (ft.)	Diam: 2 (ID) Material: PVC	Page 1 of: 1

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT.)
						DRILLED TO 18FT., CHECK FOR MAGNETIC ANOMALIES.					
5						DRILL TO 19FT. KNOCKOUT END PLUG, SET SCREEN @ 9-19 FT. WITH SAND PACK.	SP				
10						PUMPED ~3GAL. BEFORE PURGING DRY. LET RECHARGE, COLLECT SA41019W					
15						SA41019D (2-40ml VIALS, NON PRESERVED)					
20						PURGEWATER HEADSPACE = 0					
						(0-15') SAND (SP)					
						(15-19') SILT/CLAY, BASED ON DRILLING CHANGE (NO SAMPLES).					
						GROUT BOREHOLE @ 1530					

PROPORTIONS	(-) AMOUNT (+)
Trace (tr)	0-10%
Little (li)	10-20%
Some (so)	20-35%
and	35-50%

ABBREVIATIONS

f = fine	gr = gray	MS = Split Spoon
m = medium	bn = brown	BW = Screened Auger
c = coarse	blk = black	HP = Hydropunch

ABB Environmental Services, Inc.

SOIL BORING LOG

Study Area: DELTA RANGE			
Boring No.: SA41-11			
Client: USATHAMA	Project No. 7053-14	Protection: MOD. D	
Contractor: D.L. MAHER	Date Started: 10/3/94	Completed: 10/5/94	
Method: HSA'S	Casing Size: 4.25"	PI Meter: 580 B OVM	
Ground Elev.:	Soil Drilled:	Total Depth: 37'	
Logged by: DHB	Checked by:	▽ Below Ground: 27'	
Screen: 10 (ft.)	Riser: 30 (ft.)	Diam: 2 (ID)	Material: PVC
Page 1 of: 1			

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT.)
						CHECK FOR MAGNETIC ANOMALIES ~~AT~~ 9 FT. DRILL TO 37FT., KNOCK OUT PLUG, SET SCREEN AT 26-36 FT. WITH SAND PACK. PURGE 10 GALLONS WITH WHALE PUMP. COLLECT 2-40ml VIALS: SA 41136W, SA 41136D (NON PRESERVED) SAND: 0-5 FT.					
						GROUT BOREHOLE ON 10/5/94.					
						SILT: 5-20' SAND: 20-37'					

PROPORTIONS	(-) AMOUNT (+)	ABBREVIATIONS		
Trace (tr)	0-10%	f = fine	gr = gray	MS = Split Spoon
Little (ll)	10-20%	m = medium	bn = brown	BW = Screened Auger
Some (so)	20-35%	c = coarse	blk = black	HP = Hydropunch
and	35-50%			

ABB Environmental Services, Inc.

SOIL BORING LOG

Study Area: D-RANGE			
Boring No.: SA41-12			
Client: USATHAMA	Project No. 7053-14	Protection: MOD, D	
Contractor: MAHER	Date Started: 10-4-94	Completed: 10-5-94	
Method: HSA's	Casing Size: 4.25"	PI Meter: 580B OVM	
Ground Elev.:	Soil Drilled:	Total Depth: 38'	
Logged by: DHB	Checked by:	▽ Below Ground: 30'	
Screen: 10 (ft.)	Riser: 30 (ft.)	Diam: 2"(ID)	Material: PVC
Page 1 of: 1			

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT.)
						CHECK FOR METALLIC ANOMALIES @ 9FT. KNOCKOUT PLUG AT 38FT. SCREEN AT 28-38FT. PURGED 5GALLONS WITH WHALE PUMP. COLLECT 2-40ml VIALS, UNPRESERVED. SA41238W SA41238D GROUTED ON 10-5-94. SAND 0-17' SILT 17-26' SAND 26-38'					

PROPORTIONS	(-) AMOUNT (+)
Trace (tr)	0-10%
Little (ll)	10-20%
Some (so)	20-35%
and	35-50%

ABBREVIATIONS		
f = fine	gr = gray	MS = Split Spoon
m = medium	bn = brown	BW = Screened Auger
c = coarse	blk = black	HP = Hydropunch

ABB Environmental Services, Inc.

SOIL BORING LOG

Client: USATHAMA	Project No. 7053-14	Study Area: D-RANGE
		Boring No.: SA41-13
		Protection: MOD. D
Contractor: D.L. MAHER	Date Started: 10-4-94.	Completed: 10-5-94
Method: HSAs	Casing Size: 4.25"	PI Meter: 580 B OVM
Ground Elev.:	Soil Drilled:	Total Depth: 40'
Logged by: DHB	Checked by:	▽ Below Ground: 35'
Screen: 10 (ft.)	Riser: 30 (ft.)	Diam: 2" (ID)	Material: PVC	Page 1 of: 1

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT.)
						DRILL TO 9FT., CHECK FOR MAGNETIC ANOMALIES. DRILL TO 40FT., KNOCK OUT PLUG, SET SCREEN AT 30-40FT. WITH SAND PACK. PURGE ~6 GALLONS WITH WHALE PUMP; COLLECT 2-40ml VIALS, UNPRESERVED. SA41340D SA41340W GROUTED ON 10/5/94. SAND 0-18' SILT 18-28' SAND 28'-40'					

PROPORTIONS	(-) AMOUNT (+)	ABBREVIATIONS		
Trace (tr)	0-10%	f = fine	gr = gray	MS = Split Spoon
Little (li)	10-20%	m = medium	bn = brown	BW = Screened Auger
Some (so)	20-35%	c = coarse	blk = black	HP = Hydropunch
and	35-50%			

ABB Environmental Services, Inc.

SOIL BORING LOG

Study Area: D-RANGE			
Boring No.: SA-4114			
Client: USATHAMA	Project No. 7053-14	Protection: MOD. D	
Contractor: D.L. MAHER	Date Started: 10-5-94	Completed: 10-6-94	
Method: HSA's	Casing Size: 4.25"	PI Meter: 580	
Ground Elev.:	Soil Drilled:	Total Depth: 45	
Logged by: DHB	Checked by:	▽ Below Ground: 40	
Screen: 10 (ft.)	Riser: 35 (ft.)	Diam: 2"(ID)	Material: PVC
Page 1 of: 1			

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT.)
						DRILLED TO 4', CHECK FOR METALLIC ANOMALIES. DRILL TO 9', CHECK FOR METALLIC ANOMALIES. DRILL TO 45FT. KNOCKOUT PLUG, SET SCREEN AT 34'-44', NATURAL COLLAPSE. PURGED 6 GALLONS UNTIL CLEAR, LIGHT GRAY WITH WHALE PUMP. COLLECT 2-40ml VIALS, UNPRESERVED: SA41444W SA41444D ALL SAND, 0-45FT. GROUT BOREHOLE ON 10/6/94.					

PROPORTIONS	(-) AMOUNT (+)	ABBREVIATIONS		
Trace (tr)	0-10%	f = fine	gr = gray	MS = Split Spoon
Little (ll)	10-20%	m = medium	bn = brown	BW = Screened Auger
Some (so)	20-35%	c = coarse	blk = black	HP = Hydropunch
and	35-50%			

ABB Environmental Services, Inc.

SOIL BORING LOG

Study Area: D-RANGE			
Boring No.: SA-4115			
Client: USATHAMA	Project No.		Protection: MOD D
Contractor: D.L. MAHER	Date Started: 10-6-94		Completed: 10-6-94
Method: HSA's	Casing Size: 4.25"		PI Meter: 2.5
Ground Elev.:	Soil Drilled:		Total Depth: 29
Logged by: PHO	Checked by:		▽ Below Ground: 20.8
Screen: 10 (ft.)	Riser: (ft.)	Diam: 2 (ID)	Material: PVC
Page 1 of: 1			

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT.)
						DRILLED TO 9' CHECKED FOR METALLIC ANOMALIES					
						· DRILLED TO 29 FT.					
						· PLACED 2" PVC & SAND.					
						· SOIL - SILTY CLAY (BROWN)					
						· PID READING = BACKGROUND					
						· DEPTH TO WATER = 20.8 BGS					
						· BALED 5 GAL. OF WATER					
						· TOOK 2 SAMPLES					
						SA4015XW					
						SA4015XD					

PROPORTIONS	(-) AMOUNT (+)
Trace (tr)	0-10%
Little (ll)	10-20%
Some (so)	20-35%
and	35-50%

ABBREVIATIONS		
f = fine	gr = gray	MS = Split Spoon
m = medium	bn = brown	BW = Screened Auger
c = coarse	blk = black	HP = Hydropunch

ABB Environmental Services, Inc.

SOIL BORING LOG

Client: USATHAMA		Project No. 7053-14	Study Area: D RANGE
			Boring No.: SA-4116
			Protection: MOD. D
Contractor: D. L. MAHER	Date Started: 10-6-94		Completed: 10-7-94
Method: HSA's	Casing Size: 4.25"		PI Meter: 580 B OVM
Ground Elev.:	Soil Drilled:		Total Depth: 40'
Logged by: DWB	Checked by:		▽ Below Ground: 33'
Screen: 10 (ft.)	Riser: 30 (ft.)	Diam: 2 (ID) / Material: PVC	Page 1 of: 1

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT.)
						DRILLED TO 8 FT. CHECK FOR MAGNETIC ANOMALIES.					
						DRILL TO 12 FT. CHECK FOR MAGNETIC ANOMALIES.					
						DRILL TO 40 FT. SET SCREEN AT 30-40'.					
						PURGED ~5-6 GALLONS WITH BAILER. COLLECT 2-40ml VIALS, UNPRESERVED.					
						SA41640W					
						SA41640D					
						WATER IS GRAY, SILTY, OPAQUE					
						SAND 0-11 FT.					
						SILT 11-40 FT.					
						GROUT BOREHOLE.					

PROPORTIONS	(-) AMOUNT (+)	ABBREVIATIONS		
Trace (tr)	0-10%	f = fine	gr = gray	MS = Split Spoon
Little (li)	10-20%	m = medium	bn = brown	BW = Screened Auger
Some (so)	20-35%	c = coarse	blk = black	HP = Hydropunch
and	35-50%			

ABB Environmental Services, Inc.

SOIL BORING LOG

Study Area: D RANGE			
Boring No.: SA 4117			
Client: USATHAMA	Project No. 7053-14		Protection: MOD. D
Contractor: D.L. MAHER	Date Started: 10-7-94		Completed: 10-11-94
Method: HSAs	Casing Size: 4.25"		PI Meter: OVM 580B
Ground Elev.:	Soil Drilled:		Total Depth: 45
Logged by: DHB	Checked by:		▽ Below Ground: 41
Screen: 10 (ft.)	Riser: 35 (ft.)	Diam: 2"(ID)	Material: PVC
Page 1 of: 1			

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT.)
						DRILLED TO 9FT., CHECK FOR MAGNETIC ANOMALIES. DRILL TO 45 FT., KNOCK OUT PLUG. SET PVC SCREEN AT 35-45 FT. PURGED 5 TO 6 GALLONS, COLLECTED 2-40ml VIALS, UNPRESERVED. SA 41745W SA 41745D SAND 0-19 FT. SILT 19-45FT(?) SAND (BROWN, VERY FINE) IN WELL FOOT. BOREHOLE GROUTED 10/11/94.					

PROPORTIONS	(-) AMOUNT (+)	ABBREVIATIONS		
Trace (tr)	0-10%	f = fine	gr = gray	MS = Split Spoon
Little (li)	10-20%	m = medium	bn = brown	BW = Screened Auger
Some (so)	20-35%	c = coarse	blk = black	HP = Hydropunch
and	35-50%			

ABB Environmental Services, Inc.

SOIL BORING LOG

Client: USATHAMA		Project No. 7053-14	Study Area: D RANGE
			Boring No.: SA 4118
			Protection: MOD. D
Contractor: D.L. MAHER	Date Started: 10-11-94.		Completed: 10-12-94
Method: HSA's	Casing Size: 4.25"		PI Meter: OVM 580 B
Ground Elev.:	Soil Drilled:		Total Depth: 24'
Logged by: DHB	Checked by:		▽ Below Ground: 15'
Screen: 10 (ft.)	Riser: 17 (ft.)	Diam: 2 (ID) / Material: PVC	Page 1 of: 1

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT.)
						DRILLED TO 9FT. CHECK FOR MAGNETIC ANOMALIES. DRILL TO 24FT., KNOCK OUT PLUG SET SCREEN @ 14-24FT. WITH SAND PACK. PURGED DRY AFTER ~7 GALLONS. COLLECTED 2-40ml VIALS, UNPRESERVED SA 411824W SA41824 D 0-15' SAND 15-20' SILT (GRAY) 20-24' SAND (VERY FINE, BROWN) BOREHOLE GROUTED 10/12/94.					

PROPORTIONS	(-) AMOUNT (+)	ABBREVIATIONS		
Trace (tr)	0-10%	f = fine	gr = gray	MS = Split Spoon
Little (li)	10-20%	m = medium	bn = brown	BW = Screened Auger
Some (so)	20-35%	c = coarse	blk = black	HP = Hydropunch
and	35-50%			

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SOIL BORING LOG

Study Area: D RANGE			
Boring No.: SA 4119			
Client: USATHAMA	Project No. 7053-14	Protection: MOD. D	
Contractor: D. L. MAHER	Date Started: 10-12-94	Completed: 10-12-94	
Method: HSA's	Casing Size: 4.25"	PI Meter: OVM 580 B	
Ground Elev.:	Soil Drilled:	Total Depth: 45'	
Logged by: DHB	Checked by:	▽ Below Ground: 31.5'	
Screen: 10 (ft.)	Riser: 37 (ft.)	Diam: 2" (ID)	Material: PVC
Page 1 of: 1			

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT.)
						DRILLED TO 9FT. CHECK FOR MAGNETIC ANOMALIES, DRILL TO 40FT., NO WATER. DRILL TO 45FT., LET SIT. SLOW WATER CHARGE, SET WELL SCREEN @ 34.5-44.5', WITH SAND PACK. BAILED ~7-8 GALLONS, LET RECHARGE, COLLECT 2-40ml VIALS, UNPRESERVED: SA4945W SA 41945D					
						SAND 0-18'					
						SILT 18-32'					
						SAND (?) 32-33'					
						SILT 33-45' (?)					
						WATER MAY HAVE COME FROM 32-33FT. INTERVAL (DRILLING CHANGE).					
						GROUT BOREHOLE 10-12-94.					

PROPORTIONS	(-) AMOUNT (+)	ABBREVIATIONS		
Trace (tr)	0-10%	f = fine	gr = gray	MS = Split Spoon
Little (ll)	10-20%	m = medium	bn = brown	BW = Screened Auger
Some (so)	20-35%	c = coarse	blk = black	HP = Hydropunch
and	35-50%			

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SOIL BORING LOG

Study Area: D RANGE			
Boring No.: SA4120			
Client: USATHAMA	Project No. 7053-14	Protection: MOD. D	
Contractor: D.L. MAHER	Date Started: 10-13-94	Completed: 10-13-94	
Method: HSAs	Casing Size: 4.25"	PI Meter: OVM 580 B	
Ground Elev.:	Soil Drilled:	Total Depth: 38'	
Logged by: DHB	Checked by:	▽ Below Ground: 30'	
Screen: 10 (ft.)	Riser: 30 (ft.)	Diam: 2" (ID)	Material: PVC
Page 1 of: 1			

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT.)
						MAGNETIC ANOMALIES CLEARED TO 15FT. DRILL TO 38 FT., KNOCK OUT PLUG, SET WELL MATERIAL WITH SAND PACK. COLLECT 2-40ml VIALS, UNPRESERVED. SA42038W SA42038D					
						SAND 0-13.5'					
						SAND/SILT 13.5'-38' LAYERS, VERY MOIST TO WET. WATER IS GRAY, OPAQUE.					
						PURGED 4 GALLONS WITH PUMP					
						GROUT BOREHOLE ON 10/13/94.					

PROPORTIONS	(-) AMOUNT (+)
Trace (tr)	0-10%
Little (ll)	10-20%
Some (so)	20-35%
and	35-50%

ABBREVIATIONS

f = fine	gr = gray	MS = Split Spoon
m = medium	bn = brown	BW = Screened Auger
c = coarse	blk = black	HP = Hydropunch

SOIL BORING LOG

Client: USATHAMA		Project No. 7053-14	Study Area: D RANGE
			Boring No.: SA 4121
			Protection: MOD. D
Contractor: D.L. MAHER	Date Started: 10-13-94		Completed: 10-14-94
Method: HSA's	Casing Size: 4.25"		PI Meter: OVM 580B
Ground Elev.:	Soil Drilled:		Total Depth: 19'
Logged by: DHB	Checked by:		▽ Below Ground: 11.5'
Screen: 10 (ft.)	Riser: 10 (ft.)	Diam: 2" (ID) / Material: PVC	Page 1 of: 1

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT.)
						DRILLED TO 19FT. (ANOMALIES CLEARED TO 15FT.) SET WELL MATERIAL WITH SAND PACK. AT 9 TO 19FT. PURGED 5 GALLONS. COLLECTED 2-40ml VIALS UNPRESERVED: SA4121GW SA4121GD WATER IS BROWN, OPAQUE.					
						SAND WITH GRAVEL AND CLAY 0-7'					
						SAND 7-19'(?)					
						BOREHOLE GROUTED 10-14-94.					

PROPORTIONS	(-) AMOUNT (+)
Trace (tr)	0-10%
Little (li)	10-20%
Some (so)	20-35%
and	35-50%

ABBREVIATIONS

f = fine	gr = gray	MS = Split Spoon
m = medium	bn = brown	BW = Screened Auger
c = coarse	blk = black	HP = Hydropunch

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SOIL BORING LOG

Study Area: D RANGE			
Boring No.: SA 4122/4101-94.06x			
Client: USATHAMA	Project No. 7053-14		Protection: MOD. D
Contractor: D.L. MAHER	Date Started: 10-14-94		Completed: 10-14-94
Method: HSA's	Casing Size: 4.25"		PI Meter: OVM 580 B
Ground Elev.:	Soil Drilled: 14.0 feet		Total Depth: 14.0 feet
Logged by: DHB	Checked by: DBJ.		▽ Below Ground:
Screen: 10 (ft.)	Riser: (ft.)	Diam: ~~2"~~ 4" (ID)	Material: PVC
Page 1 of: 1			

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT.)
						DRILL TO 3FT., CLEAR MAGNETIC ANOMALIES. DRILL TO 13FT., SET 2" PVC WELL MATERIAL. SCREEN SET @ 3-13'. WATER @ 5.8' BGS. PURGED 5 GALLONS, COLLECTED BAILER SAMPLE: 2-40ml VIALS, UNPRESERVED SA 42213W SA 42213D WATER WAS LIGHT BROWN, TRANSLUCENT. SAND 0-13'(?) GC SCREENING OF WATER: ND INSTALL 4" PVC WELL, 10 FT. SCREEN @ 4-14'. PLACE SAND PACK & PELLETS.					

PROPORTIONS	(-) AMOUNT (+)	ABBREVIATIONS		
Trace (tr)	0-10%	f = fine	gr = gray	MS = Split Spoon
Little (li)	10-20%	m = medium	bn = brown	BW = Screened Auger
Some (so)	20-35%	c = coarse	blk = black	HP = Hydropunch
and	35-50%			

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SOIL BORING LOG

Client: USATHAMA		Project No. 7053-14	Study Area: SA41 (D-Range)
			Boring No.: SA4123
			Protection: MOD. D
Contractor: D.L. MAHER	Date Started: 10-17-94		Completed: 10-18-94
Method: HSAs/Scr. Auger	Casing Size: 4.25"		PI Meter: OVM 580B
Ground Elev.:	Soil Drilled: 70 feet		Total Depth: 70 feet
Logged by: R. PENDLETON	Checked by:		Below Ground:
Screen: (ft.) Riser: (ft.)	Diam: (ID)	Material:	Page 1 of: 2

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	Breathing Zone PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT.)
						No split spoon samples collected due to bottom plate in lead screened auger. All soil descriptions are from auger cuttings.			N/A		
0					Ø	Tan, medium sand, dry.					
5					Ø	Same as above.					
10					Ø	Dark gray, sand, w/ little silt, moist.					
15					Ø	Gray to brown clayey silt w/ some medium to coarse sand, moist.					
20					Ø	Same as above.					
25					Ø	Gray to brown silty clay w/ trace sand, wet, mod. plastic.					
30						Same as above.					
35						Same as above. Driller notices drill pressure change at 38' bgs, possibly into sand.					
40											

PROPORTIONS	(-) AMOUNT (+)
Trace (tr)	0-10%
Little (ll)	10-20%
Some (so)	20-35%
and	35-50%

ABBREVIATIONS		
f = fine	gr = gray	MS = Split Spoon
m = medium	bn = brown	BW = Screened Auger
c = coarse	blk = black	HP = Hydropunch

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SOIL BORING LOG

Study Area: SA41 (D-Range)		
Boring No.: SA4123		
Client: USATHAMA	Project No. 7053-14	Protection: MOD. D
Contractor: D.L. MAHER	Date Started: 10-17-94	Completed: 10-18-94
Method: HSAs/Scr. Aug.	Casing Size: 4.25"	PI Meter: OVM 580B
Ground Elev.:	Soil Drilled: 70 feet	Total Depth: 70 feet
Logged by: R. Pendleton	Checked by:	▽ Below Ground:
Screen: (ft.) Riser: (ft.) Diam: (ID) Material:		Page 2 of: 2

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	CLP/SCREENING	RECOVERY	Breathing Zone PID (ppm)	SOIL/ROCK DESCRIPTION	SOIL CLASS	BLOWS/6-IN.	WELL DATA	LITHOLOGY	ELEVATION (FT.)
40					Ø	Same as above. Clay may be stepping advance of sand up the auger flights.					
45	SA4235W SA4235OD	45-50			Ø	Same as above. Sample and duplicate collected from screened auger. 45 gal. purged, headspace = Øppm. Purge rate 15.8 gpm.					
50	SA4235W RB4235W	50-55			Ø	Same as above. Sample and rinse blank collected from screened auger. 50 gal. purged, water clear, headspace = Øppm. Purge rate 20 gpm.					
55	SA4236W	55-60			Ø	Same as above. Sample collected from screened auger. 50 gal. purged, water clear, headspace = Ø ppm. Purge rate 20 gpm.					
60	SA4236W	60-65			Ø	Same as above. Sample collected from screened auger. 50 gal. purged, water is silty, headspace = Ø ppm. Purge rate 20 gpm. Applied 10" of mud to fine sand in bottom of purge drum.					
65	SA4237OW SA4237OD	65-70			Ø	Same as above. Sample and duplicate collected from screened auger. 50 gal. purged, water is silty, headspace = Ø ppm. Purge rate 20 gpm.					
70						BOE = 70 feet bgs. All samples collected 10-17-94. Hole grouted 10-18-94.					

PROPORTIONS	(-) AMOUNT (+)
Trace (tr)	0-10%
Little (ll)	10-20%
Some (so)	20-35%
and	35-50%

ABBREVIATIONS		
f = fine	gr = gray	MS = Split Spoon
m = medium	bn = brown	BW = Screened Auger
c = coarse	blk = black	HP = Hydropunch

SOIL BORING LOG			Study Area: SA-41	
Client: AEC	Project No. 7053-04		Boring No.: 41M-92-01X	
Contractor: Soil Exploration	Date Started: 8-26-92		Completed: 8-27-92	Method: HSA
Ground Elev.: 246.9	Soil Drilled: 36'		Total Depth: 36'	Casing Size: 6.25"
Logged by: P. Bolmer	Checked by: DSP		Groundwater Below Ground: 27' BGS	
Screen: 10 (ft)	Riser: 27.5 (ft)	Diam.: 0.33' (ID)	Material:Sch 40 PVC	Protection: Mod.D

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
1	S-1	0-2	2.0 / 0.4	0.0	ORGANICS with gravel and some medium to fine sand (est. 20%), poorly graded, gravel is angular, loose, damp. (SP)	2-8-8-9	0930 Commence drilling.
2							
3	S-2	2-4	2.0 / 0.8	0.0	SAND, well graded, coarse to fine, subrounded, loose, light brown (7.5YR 6/3), damp. (SW)	6-9-9-9	
4					4-4.9 Similar to S-2. (SW)		
5	S-3	4-6	2.0 / 1.0	0.0	CLAYEY SILT with a trace (5-10%) of fine sand, slightly plastic, soft, light brownish gray (2.5Y 6/2), damp. (ML)	4-7-8-9	Encountered groundwater at 5.0' BGS.
6							
7	S-4	6-8	2.0 / 1.7	0.0	CLAYEY SILT, with a trace (5-10%) of fine sand, plastic, firm, light brownish gray (2.5Y 6/2), damp, varved. (ML)	7-10-11-14	
8							
9	S-5	8-10	--	--	CLAYEY SILT, with a trace (5-10%) of fine sand, plastic, firm, light brownish gray (2.5Y 6/2), damp, varved. (ML)	2-6-8-12	
10							
11	S-6	10-12	2.0 / 2.0	0.0	CLAYEY SILT, with a trace (5-10%) of fine sand, plastic, firm, light brownish gray (2.5Y 6/2), damp, varved. (ML)	5-5-8-9	
12							
13	S-7	12-14	2.0 / 1.5	0.0	SILTY CLAY, with a trace (<5%) of fine sand, occasional fine sand lens, moderately plastic, firm, light olive brown (2.5Y 5/3), moist to saturated. (CL)	6-7-6-10	
14							
15	S-8	14-16	2.0 / 1.8	0.0	SILTY CLAY, with a trace (<5%) of fine sand, occasional fine sand lens, moderately plastic, firm, light olive brown (2.5Y 5/3), moist to saturated. (CL)	4-5-8-9	

SOIL BORING LOG			Study Area: SA-41	
Client: AEC	Project No. 7053-04		Boring No.: 41M-92-01X	
Contractor: Soil Exploration	Date Started: 8-26-92		Completed: 8-27-92	Method: HSA
Ground Elev.: 246.9	Soil Drilled: 36'		Total Depth: 36'	Casing Size: 6.25"
Logged by: P. Bolmer	Checked by: DSP		Groundwater Below Ground: 27' BGS	

Screen: 10 (ft)	Riser: 27.5 (ft)	Diam.: 0.33' (ID)	Material:Sch 40 PVC	Protection: Mod.D	Page 2 of 3

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
16							
17	S-9	16-18	2.0 / 1.9	0.0	SILTY CLAY, with a trace (<5%) of fine sand, occasional fine sand lens, moderately plastic, firm, light olive brown (2.5Y 5/3), moist to saturated. (CL)	4-5-8-9	
18							
19	S-10	18-20	2.0 / 1.7	0.0	SILTY CLAY, with a trace (<5%) of fine sand, occasional fine sand lens, moderately plastic, firm, light olive brown (2.5Y 5/3), moist to saturated. (CL)	5-8-12-12	
20							1500 Done for the day due to heat.
21	S-11	20-22	2.0 / 0.7	0.0	SILTY CLAY, with a trace (<5%) of fine sand, occasional fine sand lens, moderately plastic, firm, light olive brown (2.5Y 5/3), moist to saturated. (CL)	4-7-8-9	0835 8-27-92 Commence drilling.
22							
23	S-12	22-24	2.0 / 1.5	0.0	CLAYEY SILT, with a trace (<10%) fine sand, nonplastic, soft, olive brown (2.5Y 5/3), moist to saturated, mottled. (ML)	2-3-6-11	
24							
25	S-13	24-26	2.0 / 1.0	0.0	CLAYEY SILT, with some (est. 15%) fine sand, nonplastic, soft, olive brown (2.5Y 5/3), moist to saturated, mottled. (ML)	5-11-12-14	
26					26-26.6 CLAYEY SILT similar to S-13. (ML)		
27	S-14	26-28	2.0 / 1.0	0.0	SANDY SILT, nonplastic, soft, gray (2.5Y 5/1), appears saturated. (SM)	5-8-8-8	Encountered groundwater at 27' BGS.
28							
29	S-15	28-30	2.0 / 1.1	0.0	SANDY SILT, nonplastic, soft, gray (2.5Y 5/1), saturated. (SM)	2-6-8-8	
30							

SOIL BORING LOG			Study Area: SA-41	
Client: AEC	Project No. 7053-04		Boring No.: 41M-92-01X	
Contractor: Soil Exploration	Date Started: 8-26-92		Completed: 8-27-92	Method: HSA
Ground Elev.: 246.9	Soil Drilled: 36'		Total Depth: 36'	Casing Size: 6.25"
Logged by: P. Bolmer	Checked by: DSP		Groundwater Below Ground: 27' BGS	

Screen: 10 (ft)	Riser: 27.5 (ft)	Diam.: 0.33' (ID)	Material:Sch 40 PVC	Protection: Mod.D	Page 3 of 3

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
31	S-16	30-32	2.0 / 0.9	0.0	SANDY SILT, nonplastic, soft, gray (2.5Y 5/1), appears saturated. (SM)	3-5-5-5	
32							
33	S-17	32-34	2.0 / 0.6	0.0	SANDY SILT, nonplastic, soft, gray (2.5Y 5/1), appears saturated. (SM)	2-4-4-5	
34							
35	S-18	34-36	2.0 / 1.3	0.0	SANDY SILT, nonplastic, soft, gray (2.5Y 5/1), appears saturated. (SM)	2-4-4-3	1600 moving rig off site.
36					Bottom of boring = 36.0' BGS. No refusal.		
37							
38							
39							
40							
41							
42							
43							
44							
45							

SOIL BORING LOG			Study Area: AOC 41	
Client: AEC	Project No. 7053-10		Boring No.: 41M-93-02B	
Contractor: New Hampshire Boring	Date Started: 9-16-93		Completed: 9-17-93	Method: HSA
Ground Elev.: 249.2	Soil Drilled: 33' bgs		Total Depth: 33' bgs	Casing Size: 6.25"
Logged by: K.Nelson/R.Rusted	Checked by: J. Snowden		Groundwater Below Ground: 26' bgs	
Screen: 10 (ft)	Riser: 33 (ft)	Diam.: 4" (ID)	Material: Sched 40	Protection: Mod.D

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
1	S-1	0-2	24" / 24"	NA	SAND, 95% medium to coarse, <5% fine to medium gravel (subrounded) dry, loose, poorly graded yellowish brown(10YR 6/4) (SP)	3-4-5-7	No PID data due to heavy rain on 9-16
2							
3							
4							
5							
6	S-2	5-7	24" / 24"	NA	CLAYEY SILT, lacustrine clay, mottling due to oxidation horizons, slightly plastic, brittle fracture, stiff, dry gray brown(10YR 5/3) (ML)	4-4-6-9	
7					sand/clay interface approx. 4'		
8							
9							
10							
11	S-3	10-12	24" / 12"	NA	CLAYEY SILT, slightly plastic, firm, dry, brittle fracture olive brown(2.5YR 5/4)	2-4-4-4	
12							
13							
14							
15	S-4	15-17	24" / 24"	NA	CLAYEY SILT, <2% very fine sand, moist, slightly plastic, firm olive brown(2.5YR 5/4) (continued)		

****

SOIL BORING LOG			Study Area: AOC 41	
Client: AEC	Project No. 7053-10		Boring No.: 41M -93-02B	
Contractor: New Hampshire Boring	Date Started: 9-16-93		Completed: 9-17-93	Method: HSA
Ground Elev.: 249.2	Soil Drilled: 33'		Total Depth: 33'	Casing Size: 6.25"
Logged By : K.Nelson/R.Rusted	Checked by: J. Snowden		Groundwater Below Ground: 26'	

Screen: 10 (ft)	Riser: 33 (ft)	Diam. 4" (ID)	Material: sched. 40	Protection: Mod.D	Page 2 of 3

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
					(continued from page 1)		
16	S-4	15-17			VARVED, spacing ave. 10mm per couplet, sand/silt layers are preferentially oxidized (over silt/clay layers) (ML)	2-3-3-4	
17							
18							
19							
20							
21	S-5	20-22	24" / 24"	NA	SAME AS ABOVE, wet, oxidation on sand/silt layers is more reddish tan orange. (ML)	2-3-5-7	
22							
23							
24							
25					6" SAME AS ABOVE (ML)		
26	S-6	25-27	24" / 20"	NA	4" SANDY GRAVEL, 75% fine to medium gravel, subrounded 25% fine to medium sand, (2.5YR 5/4)	7-8-8-15	End of day 9-16-93
27					10" VERY FINE SAND(100%), laminated, saturated, med. dense poorly graded, gray(2.5yn 6/) (SP)		
28							
29							
30							

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SOIL BORING LOG			Study Area: AOC 41	
Client: AEC	Project No. 7053-10		Boring No.: 41M-93-02B	
Contractor: New Hampshire Boring	Date Started: 9-16-93		Completed: 9-17-93	Method: HSA
Ground Elev.: 249.2	Soil Drilled: 33'		Total Depth: 33' bgs	Casing Size: 6.25"
Logged by: K.Nelson/R.Rusted	Checked by: J. Snowden		Groundwater Below Ground: 26'	

Screen: 10 (ft)	Riser: 33 (ft)	Diam.: 4" (ID)	Material: sched. 40	Protection: Mod.D	Page 3 of 3

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. —— REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
31							
32	S-7	31-33	20" ----- 24"	BKG	SILTY SAND AND SANDY SILT, poorly graded, fine, 30-40% silt saturated, loose, some varving and iron staining (SM)	6-8-8-10	Bottom of borehole 33'
33							
34							
35							
36							
37							Water perched on silt layer
38							
39							
40							
41							
42							
43							
44							
45							

SOIL BORING LOG			Study Area: SA-41	
Client: USATHAMA	Project No. 7053-14		Boring No.: 41M-94-02C	
Contractor: D.L. Maher	Date Started: 10-28-94		Completed: 10-31-94	Method: HSA
Ground Elev.: 250.3	Soil Drilled: 50'		Total Depth: 50'	Casing Size: 6.63"
Logged by: D.Beland	Checked by: JCS		Groundwater Below Ground: 25'	

Screen: 10 (ft)	Riser: 42 (ft)	Diam.: 4" (ID)	Material:Sch.40 PVC	Protection: Mod.D	Page 1 of 4

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
1	S-1	0-2	2.0 / 1.1	0.0	SAND, moderately graded, loose, fine-medium, <20% fines, <10% coarse, dry, 10YR 6/4, light yellowish brown (SP)	1-3-4-5	
2							
3							
4	S-2	4-6	2.0 / 1.7	0.0	SILT (TILL), firm, brittle, <10% fine gravel, dry, 5Y 5/3, olive (ML)	3-5-5-7	
5							
6							
7							
8							
9	S-3	9-11	2.0 / 1.7	0.0	SILT (TILL), firm, slightly plastic, damp, 5Y 5/3, olive (ML)	2-3-3-5	
10							Monitoring well installed
11							
12							
13							
14	S-4	14-16	2.0 / 1.9	0.0	SILT (TILL), firm, slightly plastic, <10% fine gravel, damp, 5Y 5/2, olive gray (ML)	2-2-2-2	
15							

SOIL BORING LOG			Study Area: SA-41	
Client: USATHAMA	Project No. 7053-14		Boring No.: 41M-94-02C	
Contractor: D.L. Maher	Date Started: 10-28-94		Completed: 10-31-94	Method: HSA
Ground Elev.: 258.3	Soil Drilled: 50'		Total Depth: 50'	Casing Size: 6.63"
Logged by: D.Beland	Checked by: JCS		Groundwater Below Ground: 25'	

Screen: 10 (ft)	Riser: 42 (ft)	Diam.: 4" (ID)	Material:Sch.40 PVC	Protection: Mod.D	Page 2 of 4

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
16							
17							
18							
19	S-5	19-21	2.0 / 2.0	0.0	SILT (TILL), firm, slightly plastic, moist, 5Y 5/2, olive gray (ML)	2-5-5-6	
20							
21							
22							
23							
24	S-6	24-61	2.0 / 1.4	0.0	SILT (TILL), firm, slightly plastic, moist, 5Y 5/2 olive gray (ML)	3-4-4-6	
25							Monitoring well installed
26							
27							
28							
29	S-7	29-31	2.0 / 1.7	0.0	SAND, poorly graded, very fine, wet, several silt seams, 5Y 5/3, olive (SP)	8-3-5-6	
30							

SOIL BORING LOG			Study Area: SA-41	
Client: USATHAMA	Project No. 7053-14		Boring No.: 41M-94-02C	
Contractor: D.L. Maher	Date Started: 10-28-94		Completed: 10-31-94	Method: HSA
Ground Elev.: 250.3	Soil Drilled: 50'		Total Depth: 50'	Casing Size: 6.63"
Logged by: D.Beland	Checked by: JCS		Groundwater Below Ground: 25'	
Screen: 10 (ft)	Riser: 42 (ft)	Diam.: 4" (ID)	Material:Sch.40 PVC	Protection: Mod.D

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
31							
32							
33							
34	S-8	34-36	2.0 / 1.7	0.0	SAND, poorly graded, very fine, <30% silt, wet, 5Y 5/3, olive (SP)	2-3-3-3	
35							
36							
37							
38							
39	S-9	39-41	2.0 / 2.0	0.0	SAND, poorly graded, very fine, wet, several silt seams, 5Y 5/3, olive (SP)	2-5-6-7	
40							Monitoring well installed
41							
42							
43							
44	S-10	44-46	2.0 / 2.0	0.0	SAND, poorly graded, very fine - fine, wet, 2.5Y 5/4, light olive brown (45-46) and 2.5Y 4/2, dark grayish brown (44-45) (SP)	4-5-6-8	
45							

SOIL BORING LOG			Study Area: SA-41	
Client: USATHAMA	Project No. 7053-14		Boring No.: 41M-94-02C	
Contractor: D.L. Maher	Date Started: 10-28-94		Completed: 10-31-94	Method: HSA
Ground Elev.: 250.3	Soil Drilled: 50'		Total Depth: 50'	Casing Size: 6.63"
Logged by: D.Beland	Checked by: JCS		Groundwater Below Ground: 25'	

Screen: 10 (ft)	Riser: 42 (ft)	Diam.: 4" (ID)	Material:Sch.40 PVC	Protection: Mod.D	Page 4 of 4

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
46							
47							
48							
49	S-11	49-51	2.0 / 1.5	0.0	SAND, poorly graded, fine, wet, 10YR 5/4, yellowish brown (SP)	3-6-8-14	
50					EOB = 50.2 feet bgs.		
51							
52							
53							
54							
55							Monitoring well installed
56							
57							
58							
59							
60							

SOIL BORING LOG			Study Area: AOC 41	
Client: AEC	Project No. 7053-10		Boring No.: 41M-93-03X	
Contractor: New Hampshire Boring	Date Started: 9-15-93		Completed: 9-16-93	Method: HSA
Ground Elev.: 257.5	Soil Drilled: 45'		Total Depth: 45' BGS	Casing Size: 6.25"
Logged by: K.Nelson	Checked by: J. Snowden		Groundwater Below Ground: 40' BGS	
Screen: 10' (ft)	Riser: 44' (ft)	Diam.: 4" (ID)	Material:SCH 40 PVC	Protection: Mod.D

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
1	S-1	0-2	24" / 20"	BKG	SAND, fine to medium, 15% silt inorganic, trace <3% fine gravel fine gravel(rounded), dry, loose, dark brown(7.5YR 4/4) (SM)	4-4-4-4	23PPM H.SPACE
2					NOTE: All headspace readings this locations likely reflect moisture and/or natural background(aromatic sweet ferns surround the borehole). No apparent odor or other indications reflect VOC contamination.		
3							
4							
5							
6	S-2	5-7	24" / 12"	BKG	5" SAME AS 0-2 SPOON(collapse) (SM) 1" SILT, 5% fine to medium sand, <2% fine gravel, mottled gray brown (SM-ML)	4-8-7-8	0 headspace
7					8" SAND, 95% medium to coarse, <3% fine gravel(subrounded) dry, medium dense, pale brown(10YR 10/4) (SP)		
8							
9							
10							
11	S-3	10-12	24" / 16"	BKG	6" SAND, 65% fine to medium sand, 30% silt, a few outsize rounded gravel(up to 15mm diameter), twigs, dark brown to gray brown(10YR 4/2), collapse 10" SAND, 95% medium to coarse sand, 5% gravel(up to 25mm) subrounded clasts to platy), % gravel increases to top of spoon medium dense, dry, very pale brown(10YR 10/4) (SP)	4-8-10-12	0 headspace
12							
13							
14							
15	S-4	15-17	24" / 16"	BKG	4" SAME AS ABOVE (SP) (continued on page two)		

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SOIL BORING LOG			Study Area: AOC 41	
Client: AEC	Project No. 7053-10		Boring No.: 41M-93-03X	
Contractor: New Hampshire Boring	Date Started: 9-15-93		Completed: 9-16-93	Method: HSA
Ground Elev.: 257.5	Soil Drilled: 45'BGS		Total Depth: 45' BGS	Casing Size: 6.25"
Logged By : K.Nelson	Checked by: J. Snowden		Groundwater Below Ground: 40' BGS	
Screen: 10 (ft)	Riser: 44 (ft)	Diam.: 4" (ID)	Material: sched. 40	Protection: Mod.D

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
					(continued from page one)		
16	S-4	15-17	24" / 16"	BKG	12" SILT, some clay, mod. plastic, stiff, moist to wet concoidal fracture, sand/clay interface at 16' grayish brown(2.5Y 4/2)	4-10-7-8	0 headspace
17							
18							
19							
20	S-5	20-22	24" / 12"	BKG	CLAYEY SILT, firm, mod. plastic, cocoidal fracture, wet dark gray brown(2.5Y 4/2)	5-3-3-4	0.4 headspace
21							
22							
23							
24							
25							
26	S-7	25-27	24" / 12"	BKG	SAND, very fine, thin lenses(10mm) of clayey silt as above stiff, concoidal fractures, wet, silty lenses disappear approx. 6" into recovery(spoon tip is 100% very fine sand) light gray(10YR 7/1)	8-5-8-8	0 headspace
27							
28							
29							
30					(continued on next page)		

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SOIL BORING LOG			Study Area: AOC 41	
Client: AEC	Project No. 7053-10		Boring No.: 41M-93-03X	
Contractor: New Hampshire Boring	Date Started: 9-15-93		Completed: 9-16-93	Method: HSA
Ground Elev.: 257.5	Soil Drilled: 45'BGS		Total Depth: 45' BGS	Casing Size: 6.25"
Logged by: K.Nelson	Checked by: J. Snowden		Groundwater Below Ground: 40' BGS	

Screen: 10 (ft)	Riser: 44 (ft)	Diam.: 4" (ID)	Material:SCH 40 PVC	Protection: Mod.D	Page 3 of 3

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. — REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
31	S-7	30-32	24" / 12"	BKG	SAND, very fine, poorly graded, subtle varves(>silt), oxidation banding along varve pattern(3-5mm spacing), wet, concoidal fracture, light gray(10YR 7/1) (SP)	10-10-10-13	0 headspace
32							
33							
34							
35							
36	S-8	35-37	24" / 12"	BKG	SAND, top 4" of spoon 50% silty clay, 50% very fine sand bottom 8" of spoon very fine to fine sand, laminated medium dense, saturated, poorly graded, grayish brown(10YR 4/2) (SP)	7-5-7-10	0 headspace secure hole for night hole is dry
37							
38							
39							
40							
41	S-9	40-42	24" / 16"	BKG	SAND, very fine(100%), laminated horizons of oxidized(red) sand(1 grain thick), heavy minerals and mica's define laminar loose, saturated, poorly graded, grayish brown(10YR 5/2) (SP)	8-3-6-8	0 headspace water level 39'
42							
43							
44	S-10	45-47	24" / 18"	BKG	SAND, 95% very fine, 5% silt/clay lenses(top of spoon) laminated(wider spacing than previous samples), some fine to medium sand in laminae, medium dense, saturated, some orange oxidation along laminae also, gray brown (10YR 5/2) (SM-SP)	15-11-10-12	0 headspace BOB at 45' drove spoon to 47'
45					----------BOB 45'----------		

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SOIL BORING LOG			Study Area: SA-41	
Client: USATHEMA	Project No. 7053-14		Boring No.: 41M-94-03B	
Contractor: Soil Exploration	Date Started: 10-18-94		Completed: 10-19-94	Method: HSA
Ground Elev.: --- 257.3	Soil Drilled: 65'		Total Depth: 67'	Casing Size: 6.63"
Logged by: R. Pendlton	Checked by: JCS		Groundwater Below Ground: 33.4' BGS	
Screen: 10 (ft)	Riser: (ft)	Diam.: 0.33' (ID)	Material:Sch 40 PVC	Protection: Mod.D	Page 1 of 5

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
1	S-1	0-2	2.0 / 1.5	0.0	MEDIUM SAND with little medium gravel, trace silt, very loose, tan (SP)	4-3-3-3	Field screen sample collected: SB40302F
2							
3							
4							
5	S-2	5-7	2.0 / 1.0	1.0	MEDIUM SAND with little medium gravel, trace silt, very loose, tan (SP)	3-5-6-7	Field screen sample collected: SB40307F
6							
7							
8							
9							
10	S-3	10-12	2.0 / 1.8	0.0	MEDIUM SAND with trace silt and gravel, loose, dry, pale yellow (2.5Y 7/4) (SP)	4-8-10-10	Field screen sample collected: SB40312F
11							
12							
13							
14							
15	S-4	15-17	2.0 / 2.0	0.0	CLAY, 20% - 35% silt, very loose, wet, light olive brown (2.5Y 5/3) (CL)	2-2-3-4	

SOIL BORING LOG			Study Area: SA-41	
Client: USATHEMA	Project No. 7053-14		Boring No.: 41M-94-03B	
Contractor: Soil Exploration	Date Started: 10-18-94		Completed: 10-19-94	Method: HSA
Ground Elev.: --- 257.3	Soil Drilled: 65'		Total Depth: 67'	Casing Size: 6.63"
Logged by: R. Pendlton	Checked by: JCS		Groundwater Below Ground: 33.4' BGS	
Screen: 10 (ft)	Riser: (ft)	Diam.: 0.33' (ID)	Material:Sch 40 PVC	Protection: Mod.D	Page 2 of 5

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
16							
17							
18							
19							
20	S-5	20-22	2.0 / 2.0	0.0	CLAY some 0.5" - 1.0" clayey silt lenses, 20% - 35% silt, wet, very loose, grayish brown (2.5Y 5/2) (CL-CH)	2-1-2-3	
21							
22							
23							
24							
25	S-6	25-27	2.0 / 1.2	0.0	CLAY 1" thick fine sand lense (dry) at approx. 26 ft BGS, 20% - 35% silt, wet, very loose, grayish brown (2.5Y 5/2) (CL-CH)	4-3-6-8	
26							
27							
28							
29							
30	S-7	30-32	2.0 / 1.7	0.0	SAND poorly graded, very fine, varved silt and clay lenses (1" - 2" thick) with iron staining at approx. 31' BGS, <5% silt, damp to wet loose, dark brownish gray (2.5Y 4/2) (SP)	5-5-11-9	

SOIL BORING LOG			Study Area: SA-41	
Client: USATHEMA	Project No. 7053-14		Boring No.: 41M-94-03B	
Contractor: Soil Exploration	Date Started: 10-18-94		Completed: 10-19-94	Method: HSA
Ground Elev.: --- 257.3	Soil Drilled: 65'		Total Depth: 67'	Casing Size: 6.63"
Logged by: R. Pendlton	Checked by: JCS		Groundwater Below Ground: 33.4' BGS	
Screen: 10 (ft) Riser: (ft)	Diam.: 0.33' (ID)	Material:Sch 40 PVC	Protection: Mod.D	Page 3 of 5

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
31							
32							
33							
34							
35	S-8	35-37	2.0 / 1.5	0.0	SAND poorly graded, very fine, 35% - 40% silt, very loose, wet (saturated), light olive brown (2.5Y 5/3) (SM)	5-6-6-7	Analytical sample collected for TOC analysis
36							
37							
38							
39							
40	S-9	40-42	2.0 / 2.0	0.0	SAND poorly graded, very fine to fine, 5% - 10% silt, silty clay lenses 1" thick at approx 40.5' and 41.5', very loose, wet (saturated), grayish brown (2.5Y 5/2) (SP)	3-3-3-4	
41							
42							
43							
44							
45	S-10	45-46	2.0 / 1.4	0.0	SAND poorly graded, fine, iron staining some slight varving and trace pyrite, ,5% silt, loose, light olive brown (2.5Y 5/3) (SP)	3-4-7-11	Field screen sample collected: SB40347

SOIL BORING LOG			Study Area: SA-41	
Client: USATHEMA	Project No. 7053-14		Boring No.: 41M-94-03B	
Contractor: Soil Exploration	Date Started: 10-18-94		Completed: 10-19-94	Method: HSA
Ground Elev.: --- 257.3	Soil Drilled: 65'		Total Depth: 67'	Casing Size: 6.63"
Logged by: R. Pendlton	Checked by: JCS		Groundwater Below Ground: 33.4' BGS	
Screen: 10 (ft)	Riser: (ft)	Diam.: 0.33' (ID)	Material:Sch 40 PVC	Protection: Mod.D	Page 4 of 5

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
46							
47							
48							
49							
50	S-11	50-52	2.0 / 1.3	0.0	SAND poorly graded, fine, <5% silt, loose, wet (saturated), light olive brown (2.5Y 5/4) (SP)	1-3-5-6	
51							
52							
53							
54							
55	S-12	55-57	2.0 / 1.3	0.0	SAND poorly graded, fine, <5% silt, 1" thick coarse sand lense at 56.5' BGS, loose, wet (saturated) light olive brown(2.5Y 5/3) (SP)	3-7-7-12	
56							
57							
58							
59							
60	S-13	60-62	2.0 / 1.9	0.0	SAND poorly graded, fine to medium, <5% silt, wet (saturated) medium dense, light olive brown (2.5Y 5/3) (SP)	5-6-10-16	

SOIL BORING LOG			Study Area: SA-41	
Client: USATHEMA	Project No. 7053-14		Boring No.: 41M-94-03B	
Contractor: Soil Exploration	Date Started: 10-18-94		Completed: 10-19-94	Method: HSA
Ground Elev.: 257.3	Soil Drilled: 65'		Total Depth: 67'	Casing Size: 6.63"
Logged by: R. Pendlton	Checked by: JCS		Groundwater Below Ground: 33.4' BGS	
Screen: 10 (ft)	Riser: (ft)	Diam.: 0.33' (ID)	Material:Sch 40 PVC	Protection: Mod.D	Page 5 of 5

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
61							
62							
63							
64							
65	S-12	65-67	2.0 / 1.9	0.0	SAND- Similar to S-13 (SP)	7-10-14-19	
66							
67					Bottom of boring at 67'		
68							
69							
70							
71							
72							
73							
74							
75							

SOIL BORING LOG			Study Area: AOC 41	
Client: AEC	Project No. 7053-10		Boring No.: 41M-93-04X	
Contractor: New Hampshire Boring	Date Started: 9-17-93		Completed: 9-17-93	Method: HSA
Ground Elev.: 227.8	Soil Drilled: 10'		Total Depth: 10'	Casing Size: 4.25"
Logged by: D.Dinsmore/R.Rusted	Checked by: J. Snowden		Groundwater Below Ground: 6'	

Screen: 5 (ft)	Riser: 10 (ft)	Diam.: 2" (ID)	Material: sched. 40	Protection: Mod.D	Page 1 of 1

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
1	S-1	0-2	24" / 14"	BKG	SAND, poorly graded, medium to coarse, 5-10% gravel, <5% silt loose, dry, yellowish brown (SP)	7-6-8-7	
2							
3							
4							
5							
6	S-2	5-7	24" / 15"	BKG	SAND, poorly graded, similar to above (SP)	8-7-10-10	
7							
8							
9							
10					Bottom of Exploration 10'		
11							
12							
13							
14							
15							

SOIL BORING LOG			Study Area: AOC 41	
Client: AEC	Project No. 7053-10		Boring No.: 41M-93-05X	
Contractor: New Hampshire Boring	Date Started: 9-17-93		Completed: 9-17-93	Method: HSA
Ground Elev.: 226.5	Soil Drilled: 10'		Total Depth: 10'	Casing Size: 4.25"
Logged by: D.Dinsmore/R.Rusted	Checked by: J. Snowden		Groundwater Below Ground: 6'	

Screen 5' (ft)	Riser: 4' (ft)	Diam.: 2" (ID)	Material: sched. 40	Protection: Mod.D	Page 1 of 1

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
1	S-1	0-2	24" / 11"	BKG	SAND, poorly graded, medium to coarse, 5-10% gravel, <5% silt subangular grains, loose, dry, yellowish brown (sp)	5-6-7-7	
2							
3							
4							
5							
6	S-7	5-7	24" / 13"	BKG	SAND, poorly graded, similar to above (sp)	10-11-13-10	
7							
8							
9							
10					Bottom of Exploration 10'		
11							
12							
13							
14							
15							

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SOIL BORING LOG			Study Area: SA 43H&I	
Client: AEC	Project No. 7053-10		Boring No.: XHB-93-06X	
Contractor: New Hampshire Boring	Date Started: 9-2-93		Completed: 9-2-93	Method: HSA
Ground Elev.: 322.1	Soil Drilled: 24'		Total Depth: 24'	Casing Size: 4.25"
Logged by: L.Tracey	Checked by: RRR		Groundwater Below Ground: Not encountered	

Screen: --- (ft)	Riser: --- (ft)	Diam.: --- (ID)	Material: ---	Protection: Mod.D	Page 1 of 2

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
					0-0.3 Asphalt		
1	S-1	0-2	1.2 / 2.0	BKG	0.3-1.1 SAND, poorly graded, fine to medium, <5% fines, <5% gravel, damp, loose, yellowish brown, 10yr 6/6 (sp)	7-10-10-7	
2							
3							
4							
5							
6	S-2	5-7	0.6 / 2.0	BKG	SAND, similar to S-1 (sp)	3-2-1-3	
7							
8							
9							
10							
11	S-3	10-12	1.3 / 2.0	BKG	0-1.0 SAND, similar to S-1, plastic liner at 1.0' 1.0-1.3 SAND, poorly graded, medium to coarse, <5% fines, 5-10% gravel, cobbles, damp, dark brown, 10yr 4/3 (sp)	6-14-150-145	fill ----- liner native soil
12							
13							
14							
15							

SOIL BORING LOG			Study Area: SA43H	
Client: AEC	Project No. 7053-10		Boring No.: XHB-93-06X	
Contractor: New Hampshire Boring	Date Started: 9-2-93		Completed: 9-2-93	Method: HSA
Ground Elev.: 322.1	Soil Drilled: 24'		Total Depth: 24'	Casing Size: 4.25"
Logged By : L.Tracey	Checked by: RRR		Groundwater Below Ground: Not encountered	

Screen: --- (ft)	Riser: --- (ft)	Diam.: --- (ID)	Material: ---	Protection: Mod.D	Page 2 of 2

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
16	S-4	15-17	0.7 / 2.0	BKG	SAND, poorly graded, similar to S-3(1.0-1.3) (sp)	13-36-23-38	
17							
18							
19							
20							
21	S-4	20-22	1.1 / 2.0	BKG	SAND, similar to S-4 (sp)	11-13-16-17	
22							
23	S-5	22-24	1.0 / 2.2	BKG	SAND, similar to S-4 (sp)		
					Spoon and auger refusal at 24' BGS		
24							
25							
26							
27							
28							
29							
30							

SOIL BORING LOG			Study Area: SA43H	
Client: AEC	Project No. 7053-10		Boring No.: XHB-93-09X	
Contractor: New Hampshire Boring	Date Started: 9-3-93		Completed: 9-3-93	Method: HSA
Ground Elev.: 321.7	Soil Drilled: 15'		Total Depth: 17'	Casing Size: 4.25"
Logged by: JCS	Checked by: RRR		Groundwater Below Ground: Not encountered	

Screen: --- (ft)	Riser: --- (ft)	Diam.: --- (ID)	Material: ---	Protection: Mod.D	Page 1 of 2

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
1	S-1	0-2	1.6 / 2.0	BKG	SAND, well graded, fine to coarse, <5% fines, 5-12% gravel damp, yellowish brown, 10yr 5/6 (sw)	22-38-36-33	
2							
3							
4							
5							
6							
7	S-2	6-8	1.2 / 2.0	BKG	SAND, well graded, fine to coarse, 30% gravel, 5% silt, moist brown-dark brown, 10yr 4/3 (sw-gw)	37-33-43-42	
8							
9							
10							
11	S-3	10-12	1.2 / 2.0	BKG	GRAVEL, poorly graded, 30% fine to coarse sand, 5% silt, moist, subangular, brown, 10yr 5/3 (gp-sp)	84-63-48-64	
12							
13							
14							
15							

SOIL BORING LOG			Study Area: SA-41	
Client: USATHAMA	Project No. 7053-14		Boring No.: 41M-94-07X	
Contractor: D.L. Maher	Date Started: 10-20-94		Completed: 10-20-94	Method: HSA
Ground Elev.: 226.5	Soil Drilled: 10'		Total Depth: 12'	Casing Size: 6.63"
Logged by: R.Pendleton	Checked by: JCS		Groundwater Below Ground: 3.1'	

Screen: 5 (ft)	Riser: 5 (ft)	Diam.: 4" (ID)	Material:Sch.40 PVC	Protection: Mod.D	Page 1 of 1

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
1	S-1	0-2	2.0 / 1.0	0.0	SAND, poorly graded, fine to medium, 5-10% silt, very loose, dry, (0 to 0.2) dark brown oganic matter, (0.2 to 0.6) 2.5Y 3/2, very dark gray brown, (0.6 to 1.0) 10YR 5/6 yellowish brown (SM)	1-2-2-1	
2							
3							
4							
5	S-2	5-7	2.0 / 1.8	0.0	SAND, well graded, medium to coarse, 5-10% fine gravel, 5-10% medium gravel, loose, saturated, (0 to 1.0) 10YR 5/6 yellowish brown, (1.0 to 1.8) 2.5Y 5/4 light olive brown. (SP)	10-9-9-8	
6							
7							
8							
9							
10	S-3	10-12	2.0 / 1.9	0.0	SAND, poorly graded, very fine, approximately 10% silt, loose, saturated, 2.5Y 5/4, light olive brown, some thin silt lenses lenses approximately 0.25-inches thick. (SM)	5-8-10-11	Monitoring well installed
11							
12					Augers advanced to 10 feet bgs. BOE = 12 feet bgs		
13							
14							
15							

SOIL BORING LOG			Study Area: SA-41	
Client: USATHAMA	Project No. 7053-14		Boring No.: 41M-94-08A	
Contractor: D.L. Maher	Date Started: 10-24-94		Completed: 10-25-94	Method: HSA
Ground Elev.: 242.2	Soil Drilled: 30'		Total Depth: 31'	Casing Size: 6.63"
Logged by: D.Beland	Checked by: JCS		Groundwater Below Ground: 18.5	

Screen: 10 (ft)	Riser: 20 (ft)	Diam.: 4" (ID)	Material:Sch.40 PVC	Protection: Mod.D	Page 1 of 3

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
1	S-1	0-2	2.0 / 1.6	0.0	SAND, poorly graded, fine, 30% medium, loose, damp, 10YR 4/6, dark yellowish brown, (0 to 0.2) topsoil with 30% sand (SP)	1-1-2-1	
2							
3							
4	S-2	4-6	2.0 / 1.5	0.0	SAND, poorly graded, very fine to fine, 40% silt, loose, dry, 10YR 6/4, light yellow brown (SM)	3-6-7-10	
5							
6							
7							
8							
9	S-3	9-11	2.0 / 1.4	0.0	SILT, 30% sand, poorly graded, 5% gravel, damp, 2.5YR 5/4, olive brown, TILL at 10.4 feet bgs, 2.5YR 5/3, light olive brown (ML)	4-3-3-5	
10							Monitoring well installed
11							
12							
13							
14	S-4	14-16	2.0 / 2.0	0.0	TILL, 5% gravel, 2.5YR 5/3, light olive brown, moist, firm to soft. (ML)	2-1-2-3	
15							

SOIL BORING LOG			Study Area: SA-41	
Client: USATHAMA	Project No. 7053-14		Boring No.: 41M-94-08A	
Contractor: D.L. Maher	Date Started: 10-24-94		Completed: 10-25-94	Method: HSA
Ground Elev.: 242.2	Soil Drilled: 30'		Total Depth: 31'	Casing Size: 6.63"
Logged by: D.Beland	Checked by: JCS		Groundwater Below Ground: 18.5	

Screen: 10 (ft)	Riser: 20 (ft)	Diam.: 4" (ID)	Material:Sch.40 PVC	Protection: Mod.D	Page 2 of 3

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
16							
17							
18							
19	S-5	19-21	2.0 / 2.0	0.0	TILL, 5% gravel, 2.5YR 5/3, light olive brown, moist, firm (ML)	2-3-3-4	
20							
21							
22							
23							
24	S-6	24-16	2.0 / 1.9	0.0	SAND, poorly graded, very fine, 30% silt, wet, 2.5YR 4/3, olive brown, 1-inch zone of rust colord sand in 2 seams, 2.5YR 3/6, dark red (SM)	4-3-3-5	
25							Monitoring well installed
26							
27							
28							
29	S-7	29-31	2.0 / 2.0	0.0	SAND, poorly graded, very fine, loose, 30% silt. wet, 10YR 5/1, gray, thin black laminae (ML)	2-1-2-3	
30							

SOIL BORING LOG			Study Area: SA-41	
Client: USATHAMA	Project No. 7053-14		Boring No.: 41M-94-08A	
Contractor: D.L. Maher	Date Started: 10-24-94		Completed: 10-25-94	Method: HSA
Ground Elev.: 242.2	Soil Drilled: 30'		Total Depth: 31'	Casing Size: 6.63"
Logged by: D.Beland	Checked by: JCS		Groundwater Below Ground: 18.5	
Screen: 10 (ft)	Riser: 20 (ft)	Diam.: 4" (ID)	Material:Sch.40 PVC	Protection: Mod.D

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. — REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
31					Augers advanced to 30 feet bgs. BOE = 31 feet bgs. Added approximately 30 gallons of water to the boring during drilling.		
32							
33							
34							
35							
36							
37							
38							
39							
40							Monitoring well installed
41							
42							
43							
44							
45							

SOIL BORING LOG			Study Area: SA-41	
Client: USATHAMA	Project No. 7053-14		Boring No.: 41M-94-08B	
Contractor: D.L. Maher	Date Started: 10-25-94		Completed: 10-26-94	Method: HSA
Ground Elev.: 242.5	Soil Drilled: 44'		Total Depth: 46'	Casing Size: 6.63"
Logged by: D.BELAND	Checked by: JCS		Groundwater Below Ground: 17.6'	

Screen: 10 (ft)	Riser: 40 (ft)	Diam.: 4" (ID)	Material:Sch.40 PVC	Protection: Mod.D	Page 1 of 4

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
1	S-1	0-2	2.0 / 1.6	0.0	SAND, poorly graded, very fine to fine, some medium, dry, 10YR 4/6, dark yellowish brown, 25% topsoil, 10% silt (SP)	1-1-2-1	
2							
3							
4	S-2	4-6	2.0 / 1.5	0.0	SANDY SILT, poorly graded, medium, dry, 2.5YR, light olive brown (SM)	8-6-7-10	
5							
6							
7							
8							
9	S-3	9-11	2.0 / 1.4	0.0	TILL (SILT), 10% sand, 10% gravel, firm, damp, 5Y 5/3, light olive (ML)	4-3-3-5	
10							Monitoring well installed
11							
12							
13							
14	S-4	14-16	2.0 / 2.0	0.0	TILL, <10% sand, firm, damp, 2.5Y 5/2, grayish brown (ML)	3-2-2-2	
15							

SOIL BORING LOG			Study Area: SA-41	
Client: USATHAMA	Project No. 7053-14		Boring No.: 41M-94-08B	
Contractor: D.L. Maher	Date Started: 10-25-94		Completed: 10-26-94	Method: HSA
Ground Elev.: 242.5	Soil Drilled: 44'		Total Depth: 46'	Casing Size: 6.63"
Logged by: D.BELAND	Checked by: JCS		Groundwater Below Ground: 17.6'	
Screen: 10 (ft)	Riser: 40 (ft)	Diam.: 4" (ID)	Material:Sch.40 PVC	Protection: Mod.D

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
16							
17							
18							
19	S-5	19-21	2.0 / 2.0	0.0	TILL (19' to 20'), 2.5Y 5/2, grayish brown SAND (20' to 21'), poorly graded, very fine, loose, wet (ML)	2-3-4-5	
20							
21							
22							
23							
24	S-6	24-26	2.0 / 1.4	0.0	SAND, poorly graded, very fine, 30% silt, wet, orange brown at 25.5', (24' to 25.5') 10YR 4/2, grayish brown, (25.5, to 26') 10YR 5/1 gray (SM)	5-7-7-5	
25							Monitoring well installed
26							
27							
28							
29	S-7	29-31	2.0 / 2.0	0.0	SAND, poorly graded, very fine, <30% silt, wet, 10YR 5/1, gray (SM)	2-2-4-6	
30							

SOIL BORING LOG			Study Area: SA-41	
Client: USATHAMA	Project No. 7053-14		Boring No.: 41M-94-08B	
Contractor: D.L. Maher	Date Started: 10-25-94		Completed: 10-26-94	Method: HSA
Ground Elev.: 242.5	Soil Drilled: 44'		Total Depth: 46'	Casing Size: 6.63"
Logged by: D.BELAND	Checked by: JCS		Groundwater Below Ground: 17.6'	

Screen: 10 (ft)	Riser: 40 (ft)	Diam.: 4" (ID)	Material:Sch.40 PVC	Protection: Mod.D	Page 3 of 4

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
31							
32							
33							
34	S-8	34-46	2.0 / 1.4	0.0	SILTY SAND, poorly graded, very fine, wet, 10YR 5/1, gray (SM)	4-5-5-7	
35							
36							
37							
38							
39	S-9	39-41	2.0 / 2.0	0.0	SILTY SAND, poorly graded, very fine, wet, 10YR 5/1, gray (SM)	6-8-6-8	
40							Monitoring well installed
41							
42							
43							
44	S-10	44-46	2.0 / 2.0	0.0	SILTY SAND (44' to 45'), poorly graded, very fine, wet 10YR 5/1, gray SAND (45' to 46'), poorly graded, very fine, 20% to 30% silt, wet, 10YR 5/4, yellowish brown (SM)	8-10-12-9	
45							

SOIL BORING LOG			Study Area: SA-41	
Client: USATHAMA	Project No. 7053-14		Boring No.: 41M-94-08B	
Contractor: D.L. Maher	Date Started: 10-25-94		Completed: 10-26-94	Method: HSA
Ground Elev.: 242.5	Soil Drilled: 44'		Total Depth: 46'	Casing Size: 6.63"
Logged by: D.BELAND	Checked by: JCS		Groundwater Below Ground: 17.6'	

Screen: 10 (ft)	Riser: 40 (ft)	Diam.: 4" (ID)	Material:Sch.40 PVC	Protection: Mod.D	Page 4 of 4

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. — REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
46					Augers advanced to 44 feet bgs. BOE = 46 feet bgs. Added approximately 70 gallons of water to the boring during drilling		
47							
48							
49							
50							
51							
52							
53							
54							
55							Monitoring well installed
56							
57							
58							
59							
60							

SOIL BORING LOG			Study Area: SA-41	
Client: USATHEMA	Project No. 7053-14		Boring No.: 41M-94-09A	
Contractor: Soil Exploration	Date Started: 11-02-94		Completed: 11-03-94	Method: HSA
Ground Elev.: --- 253.0	Soil Drilled: 40'		Total Depth: 40'	Casing Size: 6.63"ID
Logged by: DHB	Checked by: RRR		Groundwater Below Ground: 31.6'BGS	
Screen: 10 (ft)	Riser: 30 (ft)	Diam.: 0.33' (ID)	Material:Sch 40 PVC	Protection: Mod.D

Page 1 of 3

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
1	S-1	0-2	2.0 / 1.8	0.0	TOPSOIL (0-0.4), SAND moderatlely graded, very fine - medium, <10% gravel, damp, very dark grayish brown (10YR 3/2) (SW) SAND (0.4'-1.4') well graded medium, 10% coarse sand, 10% fine gravel, <5% medium to coarse gravel, dry, light olive brown (2.5Y 5/6) (SW)	9-11-10-12	
2							
3							
4							
5	S-2	5-7	2.0 / 1.0	0.0	SAND well graded, medium, 20% coarse sand, 10% fine gravel, damp olive yellow (2.5Y 6/6) (SW)	3-4-8-8	
6							
7							
8							
9							
10	S-3	10-12	2.0 / 1.5	0.0	SAND poorly graded, fine to medium, <5% coarse sand, loose, damp, pale yellow (2.5Y 7/4) (SP)	4-4-8-10	
11							
12							
13							
14							
15	S-4	15-17	2.0 / 2.0	0.0	SILT (till) 20% clay moderate plastic, loose, moist, light olive brown (2.5Y 5/3) (ML)	3-3-5-8	

SOIL BORING LOG			Study Area: SA-41	
Client: USATHAMA	Project No. 7053-14		Boring No.: 41M-94-09A	
Contractor: D.L. Maher	Date Started: 11-02-94		Completed: 11-03-94	Method: HSA
Ground Elev.: 253.0	Soil Drilled: 40'		Total Depth: 40'	Casing Size: 6.63"
Logged by: D.BELAND	Checked by: RRR		Groundwater Below Ground: 31.6'	

Screen: 10 (ft)	Riser: 30 (ft)	Diam.: 4" (ID)	Material:Sch.40 PVC	Protection: Mod.D	Page 2 of 3

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
16							
17							
18							
19							
20	S-5	20-22	2.0 / 1.6	0.0	SILT (20' to 21.6'), stiff, damp to moist, light olive brown (5Y 5/3) (ML) SAND (21.6' TO 22'), poorly graded, fine, damp, light yellowish brown (10YR 6/3) (SP)	4-5-12-12	
21							
22							
23							
24							
25	S-6	25-27	2.0 / 1.7	0.0	SILT (25' to 25.6'), stiff, damp to moist, light olive brown (5Y 5/3) (ML) SAND (25.6' to 27'), poorly graded, fine, 10% very fine and medium, several silt seams, damp, pale brown (10YR 6/3) (SP)	5-7-11-12	Monitoring well installed
26							
27							
28							
29							
30	S-7	30-32	2.0 / 1.5	0.0	See next page for discription		

SOIL BORING LOG			Study Area: SA-41	
Client: USATHAMA	Project No. 7053-14		Boring No.: 41M-94-09A	
Contractor: D.L. Maher	Date Started: 11-02-94		Completed: 11-03-94	Method: HSA
Ground Elev.: 253.0	Soil Drilled: 40'		Total Depth: 40'	Casing Size: 6.63"
Logged by: D.BELAND	Checked by: RRR		Groundwater Below Ground: 31.6'	
Screen: 10 (ft)	Riser: 30 (ft)	Diam.: 4" (ID)	Material:Sch.40 PVC	Protection: Mod.D

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
					SAND, poorly graded, very fine to fine, dense, damp, several thin silt seams, damp, pale brown (10YR 6/3) (SP)	6-9-12-12	
31							
32							
33							
34							
35	S-8	35-37	2.0 / 1.8	0.0	SAND, well graded, fine to coarse, 10% fine gravel, dense, wet, yellowish brown (10YR 5/4) (SW)	5-7-9-16	
36							
37							
38							
39							
40					EOB = 40 feet bgs. Approximately 20 gallons of water added to the boring during drilling		Monitoring well installed
41							
42							
43							
44							
45							

SOIL BORING LOG			Study Area: SA-41	
Client: USATHEMA	Project No. 7053-14		Boring No.: 41M-94-09B	
Contractor: Soil Exploration	Date Started: 11-03-94		Completed: 11-04-94	Method: HSA
Ground Elev.: --- 252.5	Soil Drilled: 55'		Total Depth: 55'	Casing Size: 6.63"ID
Logged by: DHB	Checked by: RRR		Groundwater Below Ground: 32' BGS	

Screen: 10 (ft)	Riser: 40 (ft)	Diam.: 0.33' (ID)	Material: Sch 40 PVC	Protection: Mod.D	Page 1 of 4

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
1	S-1	0-2	2.0 / 1.7	0.0	SAND well graded, very fine - coarse, 20% gravel, dense, damp, dark yellowish brown (10YR 4/6) (SW)	5-8-11-12	
2							
3							
4							
5	S-2	5-7	2.0 / 1.1	0.0	SAND moderately graded, fine - coarse, dense, damp, very pale brown to yellowish brown (10YR 7/4 - 5/4) (SW)	6-6-9-7	
6							
7							
8							
9							
10	S-3	10-12	2.0 / 1.4	0.0	SAND poorly graded, fine, 20% very fine and medium, loose, damp very pale yellow (10YR 7/4) (SP)	4-4-5-7	
11							
12							
13							
14							
15	S-4	15-17	2.0 / 1.6	0.0	SAND poorly graded, fine - medium 10% gravel, loose, damp, very pale brown (10YR 7/4) (SP) SILT (16.2'-17') very soft, damp, olive (5Y 5/3)	2-2-4-2	

SOIL BORING LOG			Study Area: SA-41	
Client: USATHEMA	Project No. 7053-14		Boring No.: 41M-94-09B	
Contractor: Soil Exploration	Date Started: 11-03-94		Completed: 11-04-94	Method: HSA
Ground Elev.: --- 262.5	Soil Drilled: 55'		Total Depth: 55'	Casing Size: 6.63"ID
Logged by: DHB	Checked by: RRR		Groundwater Below Ground: 32' BGS	
Screen: 10 (ft)	Riser: 40 (ft)	Diam.: 0.33' (ID)	Material:Sch 40 PVC	Protection: Mod.D

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
16							
17							
18							
19							
20	S-5	20-22	2.0 / 1.6	0.0	SILT (20'-21.7') very stiff, damp, several thin moist sand seams light olive brown (2.5Y 5/3) (ML) SAND (21.7'-22') poorly graded, very fine - fine, medium dense, damp, pale yellow (2.5Y 7/3) (SP)	6-7-12-15	
21							
22							
23							
24							
25	S-6	25-27	2.0 / 1.6	0.0	SILT (25'-25.8') very stiff, damp, grayish brown (2.5Y 5/2) (ML) SAND (25.8'-27') poorly graded, very fine - fine, 10% medium, several silt layers, dense, damp, light yellowish brown (2.5Y 6/3) (SP)	7-7-9-15	
26							
27							
28							
29							
30	S-7	30-32	2.0 / 1.8	0.0	SAND poorly graded, fine, 10% very fine, medium dense, damp, moist at 31.9 ft, very pale brown to brown (10YR 7/3 - 5/3) (SP)	6-10-10-12	

SOIL BORING LOG			Study Area: SA-41	
Client: USATHEMA	Project No. 7053-14		Boring No.: 41M-94-09B	
Contractor: Soil Exploration	Date Started: 11-03-94		Completed: 11-04-94	Method: HSA
Ground Elev.: --- 252.5	Soil Drilled: 55'		Total Depth: 55'	Casing Size: 6.63"ID
Logged by: DHB	Checked by: RRR		Groundwater Below Ground: 32' BGS	
Screen: 10 (ft)	Riser: 40 (ft)	Diam.: 0.33' (ID)	Material:Sch 40 PVC	Protection: Mod.D

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
31							
32							
33							
34							
35	S-8	35-37	2.0 / 2.0	0.0	SAND (35'-36' and 36.7'-37') poorly graded, medium - coarse, 10% fine, wet, brown (10YR 5/3) (SP) SAND (36'-37.7') poorly graded, very fine, medium dense, wet, light olive brown (2.5Y 5/4) (SP)	5-6-11-16	
36							
37							
38							
39							
40	S-9	40-42	2.0 / 2.0	0.0	SAND (40'-41') moderately graded, fine - coarse, medium dense, wet, light olive brown (2.5Y 5/3) (SP) SAND (41'-42') poorly graded, very fine, medium dense, wet, olive (5Y 5/4)	5-5-6-7	
41							
42							
43							
44					SAND (45-45.8') poorly graded, fine - medium, 10% very fine, medium dense, wet, light olive brown (2.5Y 5/4)		
45	S-10	45-47	2.0 / 1.8	0.0	SAND (45.8-47') poorly graded, fine, 20% very fine, medium dense wet, light olive brown (2.5Y 5/3)	3-4-7-10	

SOIL BORING LOG			Study Area: SA-41	
Client: USATHEMA	Project No. 7053-14		Boring No.: 41M-94-09B	
Contractor: Soil Exploration	Date Started: 11-03-94		Completed: 11-04-94	Method: HSA
Ground Elev.: --- 252.5	Soil Drilled: 55'		Total Depth: 55'	Casing Size: 6.63"ID
Logged by: DHB	Checked by: RRR		Groundwater Below Ground: 32' BGS	

Screen: 10 (ft)	Riser: 40 (ft)	Diam.: 0.33' (ID)	Material:Sch 40 PVC	Protection: Mod.D	Page 4 of 4

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
46							
47							
48							
49							
50	S-11	50-52	2.0 / 1.6	0.0	SAND poorly graded, fine, 10% very fine, loose - medium dense, wet, light olive brown (2.5Y 5/4) (SP)	4-5-7-10	
51							
52							
53							
54							
55	S-12	55-57	2.0 / 1.4	0.0	SAND poorly graded, fine, 10% very fine, loose, wet, light olive brown (2.5Y 5/4 (SP) EOB at 55 ft. Approx. 20 gallons water added.	2-2-6-12	
56							
57							
58							
59							
60							

SOIL BORING LOG			Study Area: SA-41	
Client: USATHEMA	Project No. 7053-14		Boring No.: 41M-94-10X	
Contractor: Soil Exploration	Date Started: 10-20-94		Completed: 10-21-94	Method: HSA
Ground Elev.: --- 252.8	Soil Drilled: 43'		Total Depth: 43'	Casing Size: 6.63"ID
Logged by: R Pendleton	Checked by: RRR		Groundwater Below Ground: BGS	

Screen: 10 (ft)	Riser: 31.5 (ft)	Diam.: 0.33' (ID)	Material:Sch 40 PVC	Protection: Mod.D	Page 1 of 3

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
1	S-1	0-2	2.0 / 1.4	0.0	SAND poorly graded, fine, 10%- 20% silt, <5% coarse gravel, moist, dark reddish brown (5Y 5/2) from 0 -0.5' (SP) SAND (0.5'-1.4') well graded medium, 10% coarse sand, 10% fine gravel, <5% medium to coarse gravel, dry, light olive brown (2.5Y 5/6) (SW)	2-2-3-3	
2							
3							
4							
5	S-2	5-7	2.0 / 1.0	0.0	SAND well graded, medium, 20% coarse sand, 10% fine gravel, damp olive yellow (2.5Y 6/6) (SW)	3-4-8-8	
6							
7							
8							
9							
10	S-3	10-12	2.0 / 1.5	0.0	SAND poorly graded, fine to medium, <5% coarse sand, loose, damp, pale yellow (2.5Y 7/4) (SP)	4-4-8-10	
11							
12							
13							
14							
15	S-4	15-17	2.0 / 2.0	0.0	SILT (till) 20% clay moderate plastic, loose, moist, light olive brown (2.5Y 5/3) (ML)	3-3-5-8	

SOIL BORING LOG			Study Area: SA-41	
Client: USATHEMA	Project No. 7053-14		Boring No.: 41M-94-10X	
Contractor: Soil Exploration	Date Started: 10-20-94		Completed: 10-21-94	Method: HSA
Ground Elev.: --- 256.8	Soil Drilled: 43'		Total Depth: 43'	Casing Size: 6.63"ID
Logged by: R Pendleton	Checked by: RRR		Groundwater Below Ground: BGS	

Screen: 10 (ft)	Riser: 31.5 (ft)	Diam.: 0.33' (ID)	Material:Sch 40 PVC	Protection: Mod.D	Page 2 of 3

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
16							
17							
18							
19							
20	S-5	20-22	2.0 / 1.9	0.0	CLAY 30% - 40% silt, plastic loose, moist - saturated, olive gray (5Y 5/2) (CL-CH)	2-2-3-5	
21							
22							
23							
24							
25	S-6	25-27	2.0 / 2.0	0.0	CLAY 30% - 40% silt, plastic loose, moist - saturated, occasional thin (1/8" to 1/4") silt lenses, olive gray (5Y 5/2) (CL-CH)	4-4-4-4	
26							
27							
28							
29							
30	S-7	30-32	2.0 / 2.0	0.0	CLAY 30% - 40% silt, plastic, loose, moist - saturated, occasional thin (1/8" to 1/4") silt lenses, olive gray (5Y 5/2)	3-3-4-5	(CL-CH)

SOIL BORING LOG			Study Area: SA-41	
Client: USATHEMA	Project No. 7053-14		Boring No.: 41M-94-10X	
Contractor: Soil Exploration	Date Started: 10-20-94		Completed: 10-21-94	Method: HSA
Ground Elev.: --- 256.8	Soil Drilled: 43'		Total Depth: 43'	Casing Size: 6.63"ID
Logged by: R Pendleton	Checked by: RRR		Groundwater Below Ground: BGS	
Screen: 10 (ft)	Riser: 31.5 (ft)	Diam.: 0.33' (ID)	Material:Sch 40 PVC	Protection: Mod.D

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
31							
32							
33							
34							
35	S-8	35-37	2.0 / 2.0	0.0	SAND poorly graded, very fine, 5% - 10% silt, occasional 1/4" thick silty clay lenses in 0 to 1.0' section, loose, saturated gray (2.5YN 5/) (SP)	2-4-3-5	
36							
37							
38							
39							
40	S-9	40-42	2.0 / 2.0	0.0	SAND poorly graded, very fine, 5% - 10% silt, some thin silt lenses with iron staining varves, loose, saturated, olive gray (5Y 5/2)	3-6-4-7	
41					EOB = 43ft BGS with augers.		
42							
43							
44							
45							

SOIL BORING LOG			Study Area: SA-41	
Client: USATHEMA	Project No. 7053-14		Boring No.: 41M-94-11X	
Contractor: Soil Exploration	Date Started: 10-26-94		Completed: 10-27-94	Method: HSA
Ground Elev.: --- 259.8	Soil Drilled: 47'		Total Depth: 47'	Casing Size: 6.63"ID
Logged by: DHB	Checked by: RRR		Groundwater Below Ground: 38' BGS	

Screen: 10 (ft)	Riser: 38 (ft)	Diam.: 0.33' (ID)	Material:Sch 40 PVC	Protection: Mod.D	Page 1 of 3

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
1	S-1	0-2	2.0 / 2.0	0.0	TOPSOIL (0-1')very fine - medium sand, <10% fine gravel, organic material, dry, dark brown (10YR 3/3) SAND (1-2') moderately graded, fine medium <10% fine gravel,dry yellowish brown (10YR 5/6) (SP)	2-4-4-3	
2							
3							
4							
5	S-2	4-6	2.0 / 0.7	0.0	SAND well graded, very fine - coarse, <20% gravel, dry, light yellowish brown (10YR 5/4) (SW)	2-4-8-8	
6							
7							
8							
9							
10	S-3	10-12	2.0 / 1.4	0.0	SAND poorly graded, coarse, <30% fine medium, 40% gravel and rock fragments, damp, dark yellowish brown (10YR 4/5) (SP)	2-4-7-10	
11							
12							
13							
14					SAND (14-14.5') well graded, very fine - coarse, <10% gravel, wet (perched) olive brown (2.5Y 4/3) (SW)		
15	S-4	15-17	2.0 / 1.9	0.0	SILT (till) (14.5-16'), firm slightly plastic, moist, light olive brown (2.5Y 5/4) (ML)	4-3-4-5	

SOIL BORING LOG			Study Area: SA-41	
Client: USATHEMA	Project No. 7053-14		Boring No.: 41M-94-11X	
Contractor: Soil Exploration	Date Started: 10-26-94		Completed: 10-27-94	Method: HSA
Ground Elev.: --- 259.8	Soil Drilled: 47'		Total Depth: 47'	Casing Size: 6.63"ID
Logged by: DHB	Checked by: RRR		Groundwater Below Ground: 38' BGS	

Screen: 10 (ft)	Riser: 38 (ft)	Diam.: 0.33' (ID)	Material:Sch 40 PVC	Protection: Mod.D	Page 2 of 3

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
16							
17							
18							
19							
20	S-5	19-21	2.0 / 1.8	0.0	SILT (till), firm, moderately plastic, damp, light olive brown (2.5Y 5/3) (ML)	2-3-4-5	
21							
22							
23							
24							
25	S-6	24-26	2.0 / 2.0	0.0	SILT (till), firm, moderately plastic, moist, olive gray (5Y 5/2) (ML)	2-3-2-4	
26							
27							
28							
29							
30	S-7	29-31	2.0 / 2.0	0.0	SILT (till) firm, moderately plastic, moist, olive gray (5Y 5/2) (ML)	3-4-4-5	

SOIL BORING LOG			Study Area: SA-41	
Client: USATHEMA	Project No. 7053-14		Boring No.: 41M-94-11X	
Contractor: Soil Exploration	Date Started: 10-26-94		Completed: 10-27-94	Method: HSA
Ground Elev.: --- 259.8	Soil Drilled: 47'		Total Depth: 47'	Casing Size: 6.63"ID
Logged by: DHB	Checked by: RRR		Groundwater Below Ground: 38' BGS	
Screen: 10 (ft)	Riser: 38 (ft)	Diam.: 0.33' (ID)	Material:Sch 40 PVC	Protection: Mod.D

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
31							
32							
33							
34							
35	S-8	34-36	2.0 / 2.0	0.0	SAND poorly graded, very fine, <30% silt, wet, light olive brown (2.5Y 5/3) (SP)	4-5-6-6	
36							
37							
38							
39							
40	S-9	39-41	2.0 / 2.0	0.0	SAND poorly graded, very fine, <30% silt, wet, light olive brown (2.5Y 5/3) (SP)	3-6-7-10	
41							
42							
43							
44					SAND poorly graded, very fine, <30% silt, some in thin seams, wet, light olive brown (2.5Y 5/3) (SP)		
45	S-10	44-46	2.0 / 2.0	0.0	EOB @ 47 ft well screen at 36 -46 ft. Added approx. 35 gallons of water.	6-8-9-7	

SOIL BORING LOG			Study Area: SA-41	
Client: USATHAMA	Project No. 7053-14		Boring No.: 41M-94-13X	
Contractor: D.L. Maher	Date Started: 10-27-94		Completed: 10-27-94	Method: HSA
Ground Elev.: 241.0	Soil Drilled: 29'		Total Depth: 31'	Casing Size: 6.63"
Logged by: D.BELAND	Checked by: JCS		Groundwater Below Ground: 20'	

Screen: 10 (ft)	Riser: 20 (ft)	Diam.: 4" (ID)	Material:Sch.40 PVC	Protection: Mod.D	Page 1 of 2

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
1	S-1	0-2	2.0 / 0.7	0.0	TOPSOIL (0.1'),sandy, fine, <20% medium dry, organic material, 10YR 3/3, dark brown SAND (0.6'), poorly graded, fine, <20% very fine and medium, dry, 10YR 5/8, wellowish brown (SP)	2-3-3-4	
2							
3							
4	S-2	4-6	2.0 / 1.8	0.0	SILT (till), firm, brittle, dry, 2.5Y 5/3, light olive brown (ML)	4-6-8-9	
5							
6							
7							
8							
9	S-3	9-11	2.0 / 2.0	0.0	SILT (till), firm, slightly plastic, damp, 2.5Y 5/2, grayish brown (ML)	2-2-4-4	
10							
11							
12							
13							
14	S-4	14-16	2.0 / 1.9	0.0	SANDY SILT, firm, slightly plastic, damp, very fine sand, 5Y 5/3, olive (ML)	4-4-6-9	
15							

SOIL BORING LOG			Study Area: SA-41	
Client: USAEC	Project No. 7053-14		Boring No.: 41M-94-12X	
Contractor: D.L. Maher	Date Started: 11-1-94		Completed: 11-2-92	Method: HSA
Ground Elev.:	Soil Drilled: 42'		Total Depth: 42'	Casing Size: 6.63"ID
Logged by: DHB	Checked by: RRR		Groundwater Below Ground: 31' BGS	
Screen: 10 (ft)	Riser: 38 (ft)	Diam.: 0.33' (ID)	Material:Sch 40 PVC	Protection: Mod.D

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
1	S-1	0-2	2.0 / 1.4	0.0	TOPSOIL (0-.5)very fine - medium sand, <10% fine gravel, organic material, dry, dark brown (10YR 3/3) SAND (.5-1) poorly graded, coarse, 10% gravel, dry, loose, yellowish brown (10YR 5/6) (SP)	3-4-3-5	
2							
3							
4							
5	S-2	5-7	2.0 / 1.5	0.0	SAND well graded, very fine - coarse, <10% gravel, dry, light yellowish brown (10YR 5/4 to 6/4) (SW)	3-3-5-7	
6							
7							
8							
9							
10	S-3	10-12	2.0 / 1.4	0.0	SAND poorly graded, coarse, <30% fine to med.,40% gravel and rock fragments, damp, dark yellowish brown (10YR 4/5) (SP)	2-2-8-12	
11							
12							
13							
14							
15	S-4	15-17	2.0 / 1.4	0.0	SILT- stiff, dry to damp, olive brown (2.5Y 5\4) (ML)	5-7-7-8	

SOIL BORING LOG			Study Area: SA-41	
Client: USAEC	Project No. 7053-14		Boring No.: 41M-94-12X	
Contractor: D.L. Maher	Date Started: 11-1-94		Completed: 11-2-94	Method: HSA
Ground Elev.: ---	Soil Drilled: 42'		Total Depth: 42'	Casing Size: 6.63"ID
Logged by: DHB	Checked by: RRR		Groundwater Below Ground: 31' BGS	

Screen: 10 (ft)	Riser: 38 (ft)	Diam.: 0.33' (ID)	Material:Sch 40 PVC	Protection: Mod.D	Page 2 of 3

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
16							
17							
18							
19							
20	S-5	20-22	2.0 / 1.6	0.0	SILT - stiff, damp, slightly plastic, gray (5Y 5\1) (ML)	3-5-7-8	
21							
22							
23							
24							
25	S-6	25-27	2.0 / 2.0	0.0	SILT - firm, thin fine sand laminae (0.02' thick), moist to wet (at 27' bgs), gray to olive gray (5Y 5\1 to 5\2) (ML)	3-2-2-5	
26							
27							
28							
29							
30	S-7	30-32	2.0 / 2.0	0.0	SILT - Similar to S-6 (ML)	4-3-4-6	

SOIL BORING LOG			Study Area: SA-41	
Client: USAEC	Project No. 7053-14		Boring No.: 41M-94-12X	
Contractor: D.L. Maher	Date Started: 11-1-94		Completed: 11-2-94	Method: HSA
Ground Elev.: ---	Soil Drilled: 42'		Total Depth: 42'	Casing Size: 6.63"ID
Logged by: DHB	Checked by: RRR		Groundwater Below Ground: 31' BGS	

Screen: 10 (ft)	Riser: 38 (ft)	Diam.: 0.33' (ID)	Material:Sch 40 PVC	Protection: Mod.D	Page 3 of 3

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
31							
32							
33							
34							
35	S-8	35-37	2.0 / 2.0	0.0	SILT - Similar to S-6 (ML)	3-4-7-8	
36							
37							
38							
39							
40	S-9	40-42	2.0 / 2.0	0.0	SILT - Similar to S-6, gray to dark gray (5Y 5\1 to 4\1) (ML)	4-6-9-9	
41							
42					Bottom of the boring at 42' bgs		
43							
44							
45							

SOIL BORING LOG			Study Area: SA-41	
Client: USATHAMA	Project No. 7053-14		Boring No.: 41M-94-13X	
Contractor: D.L. Maher	Date Started: 10-27-94		Completed: 10-27-94	Method: HSA
Ground Elev.: 241.0	Soil Drilled: 29'		Total Depth: 31'	Casing Size: 6.63"
Logged by: D.BELAND	Checked by: JCS		Groundwater Below Ground: 20'	
Screen: 10 (ft)	Riser: 20 (ft)	Diam.: 4" (ID)	Material:Sch.40 PVC	Protection: Mod.D

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
16							
17							
18							
19	S-5	19-~~20~~ 21 (CPL)	2.0 / 1.9	0.0	SANDY SILT, firm, slightly plastic, damp, very fine sand, 5Y 5/3, olive (ML)	3-4-6-8	
20							
21							
22							
23							
24	S-6	24-26	2.0 / 1.6	0.0	SANDY SILT, firm, slightly-mderate plastic, very fine sand in thin laminae, moist, 2.5Y 5/4, light olive brown (ML)	4-6-8-8	
25							
26							
27							
28							
29	S-7	29-31	2.0 / 1.5	0.0	SAND, poorly graded, very fine, <30% silt in thin seams, wet, 10YR 5/2, grayish brown with several thin layers of 10YR 4/6, dark yellowish brown. (SP) Augers advanced to 29'bgs EOB @ 31'bgs	3-3-5-8	Moniotring Well Installed
30							

SOIL BORING LOG			Study Area: SA-41	
Client: USATHAMA	Project No. 7053-14		Boring No.: 41M-94-14X	
Contractor: D.L. Maher	Date Started: 10-20-94		Completed: 10-20-94	Method: HSA
Ground Elev.: 224.4	Soil Drilled: 10'		Total Depth: 12'	Casing Size: 6.63"
Logged by: R.PENDLETON	Checked by: JCS		Groundwater Below Ground: 2' on 10-20-94	

Screen: 5 (ft)	Riser: 5 (ft)	Diam.: 4" (ID)	Material: Sch.40 PVC	Protection: Mod.D	Page 1 of 1

DEPTH (FT)	SAMPLE NUMBER	SAMPLE DEPTH	PEN. / REC.	PID (ppm)	SOIL-ROCK DESCRIPTION	BLOWS\6-IN.	COMMENTS
1	S-1	0-2	2.0 / 1.6	0.0	SAND, poorly graded, fine to medium, 5-10% silt, very loose, moist, 2.5Y 5/4 light olive brown, roots present throughout sample. 0'-0.6' dark brown organics with 10-20% sand (SP)	1-1-1-3	
2							
3							
4	S-2	4-6	2.0 / 1.4	0.0	SAND, well graded, medium, <5% silt, 5-10% coarse sand, 5-10% fine gravel, <5% medium gravel, <5% coarse gravel, medium dense, saturated, 2.5Y 6/4 light yellow brown. (SW)	7-11-11-11	
5							
6							
7							
8							
9							
10	S-3	10-12	2.0 / 1.5	0.0	10'-11': Same as S-2 (4'-6') 11'-11.5': SAND, poorly graded, very fine, 10-20% silt, medium dense, saturated, 2.5Y 5/4 light olive brown. Thin silt lenses (<0.25" thick) present.	3-2-5-11	Monitoring well installed
11					Augers advanced to 10' bgs. BOE = 12' bgs.		
12							
13							
14							
15							

9202159D (r'

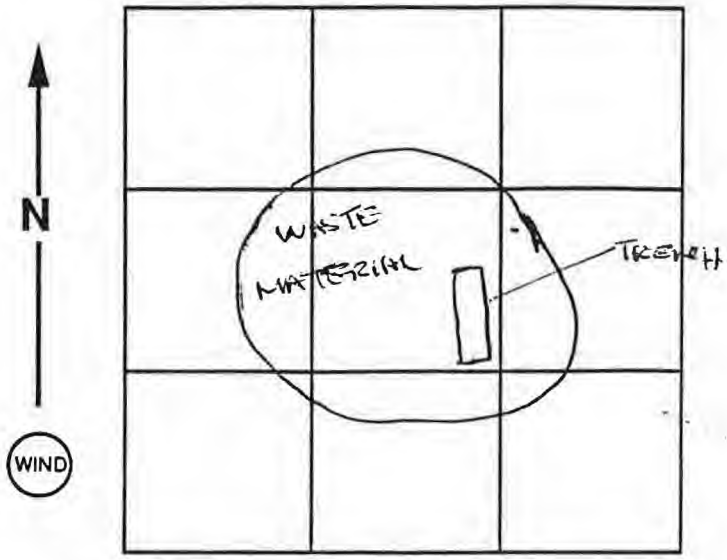
TEST PIT RECORD

Study Area: D-RANGE

Well/Boring 41E-94-01X Date 10-4-94 Time 1245 End 1430

Coordinates _____ Grid Element _____

SKETCH MAP OF TEST PIT SITE



SCALE 1" = 20 FT.

NOTES:

DIMENSIONS 13 FT. LONG, 2 FT. WIDE, 10 FT. DEEP.

SCATTERED BEER CANS (CONICAL TOP) AND GLASS BOTTLES ON GROUND SURFACE.

Crew Members:

1. BOB BLANDFORD
2. BRUCE MOE
3. DAVE BELAN
4.
5.
6.

Monitor Equipment:

PI Meter	Y	N
Explosive Gas	Y	N
Avail. Oxygen	Y	N
OVA	Y	N

Other _____

Photogoraphs, Roll —

Exposure —

FIGURE 4-1
TEST PIT RECORD
PROJECT OPERATIONS PLAN
FORT DEVENS, MASSACHUSETTS

ABB Environmental Services, Inc.

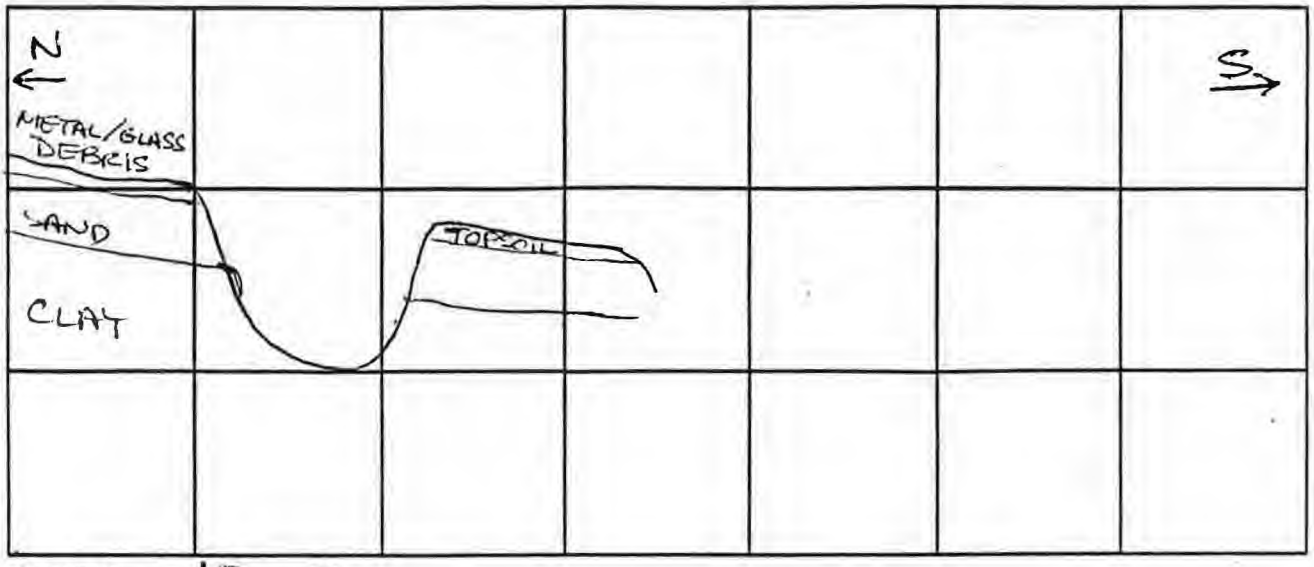
9202159D

TEST PIT RECORD

Profile Along Test Pit:

Study Area: FT DEVENS – D-RANGE

SKETCH MAP OF TEST PIT PROFILE



SCALE 1" = 10 FT.

DEPTH (FT).

NOTES:

0-1' TOPSOIL, ROOTS.
1-4' SAND, FINE, COARSING DOWNWARDS, YELLOW BROWN, DAMP-MOIST (PERCHED WATER AT 4 FT.), TRACE GRAVEL, NO ODOR OR STAINING APPARENT.
4-10' CLAY, STIFF-PLASTIC, LIGHT GRAY AND LIGHT YELLOW BROWN, DRY-MOIST, TRACE GRAVEL, NO ODOR OR STAIN.

NO FILL.

TRENCH BACKFILLED ON 10/5/94

no.	Int. Ser. No.	Depth (Ft.)	HD. SP. VOA PPM
S-1	~~TP401025~~	2	0.6
S-2	TP401045	4	0.3
S-3	TP401105	10	0.2
S-4			
S-5			
S-6			
S-7			
S-8			

REFERENCE: FIELD BOOK, Pg. 56-57

ATTACHMENTS

SIGNATURE: D.H. Bela

FIGURE 4-1 (CONT.)
TEST PIT RECORD
PROJECT OPERATIONS PLAN
FORT DEVENS, MASSACHUSETTS

9202159D (r)

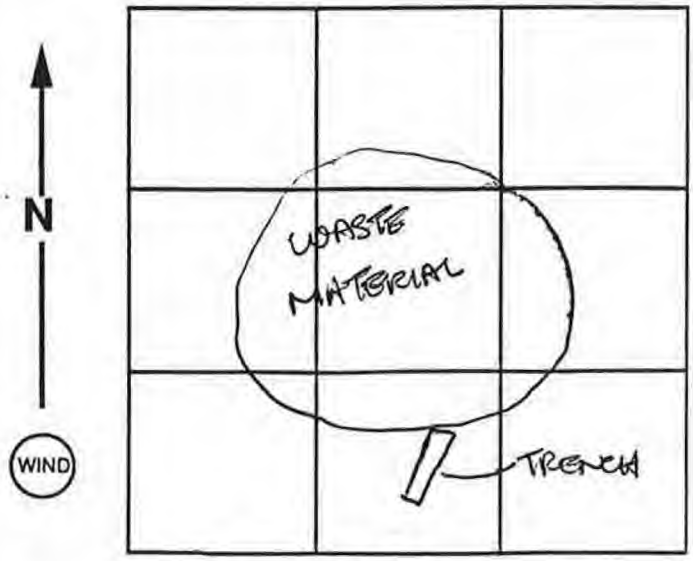
TEST PIT RECORD

Study Area: D-RANGE

Well/Boring 41E-94-02X Date 10-4-94 Time 1530 End 1650

Coordinates _____ Grid Element _____

SKETCH MAP OF TEST PIT SITE



SCALE 1" = 20 FT.

Crew Members:

1. BOB BLANDFORD
2. BRUCE MOE
3. DAVE BELAN
4.
5.
6.

Monitor Equipment:

PI Meter	Y	N
Explosive Gas	Y	N
Avail. Oxygen	Y	N
OVA	Y	N

Other _____

Photogoraphs, Roll —

Exposure —

NOTES:

DIMENSIONS: 18 FT. LONG, 2 FT. WIDE, 9.5 FT. DEEP

SCATTERED METAL DEBRIS ON GROUND (AUTO PARTS, WATER CANS, ETC.)

FIGURE 4-1
TEST PIT RECORD
PROJECT OPERATIONS PLAN
FORT DEVENS, MASSACHUSETTS

ABB Environmental Services, Inc.

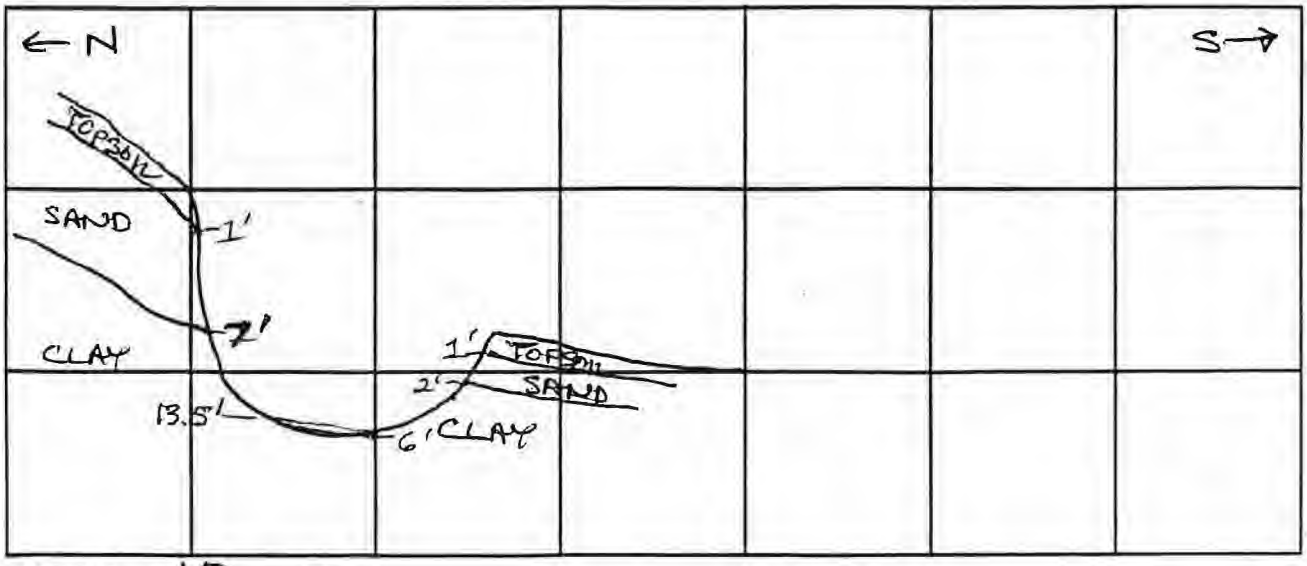
92021159D

TEST PIT RECORD

Profile Along Test Pit:

Study Area: FT. DEVENS D-RANGE

SKETCH MAP OF TEST PIT PROFILE



SCALE 1" = 10 FT.

DEPTH (FT).

NOTES:

0-1' - TOPSOIL, ROOTS

1-(2-7') - SAND, FINE, SOME COARSENING DOWNWARDS, YELLOW BROWN, DAMP, TRACE GRAVEL, NO ODOR OR STAIN.

(2-7')-(6-13.5') CLAY, STIFF-SLIGHTLY PLASTIC, LIGHT GRAY, SOME LIGHT YELLOW BROWN, DRY-~~MOIST~~ DAMP, DAMP, TRACE GRAVEL, NO ODOR OR STAIN. MOIST AT TRENCH BOTTOM.

NO FILL.

TRENCH BACKFILLED ON 10/5/94

no.	Int. Ser. No.	Depth (Ft.)	HD. SP. VOA PPM
S-1	TP40202S	2	0.3
S-2	TP40209S	9.5	0.3
S-3			
S-4			
S-5			
S-6			
S-7			
S-8			

REFERENCE: FIELD BOOK, Pg. 57-58,60

ATTACHMENTS →

SIGNATURE: David N. Belan

FIGURE 4-1 (CONT.)
TEST PIT RECORD
PROJECT OPERATIONS PLAN
FORT DEVENS, MASSACHUSETTS

ABB Environmental Services, Inc.

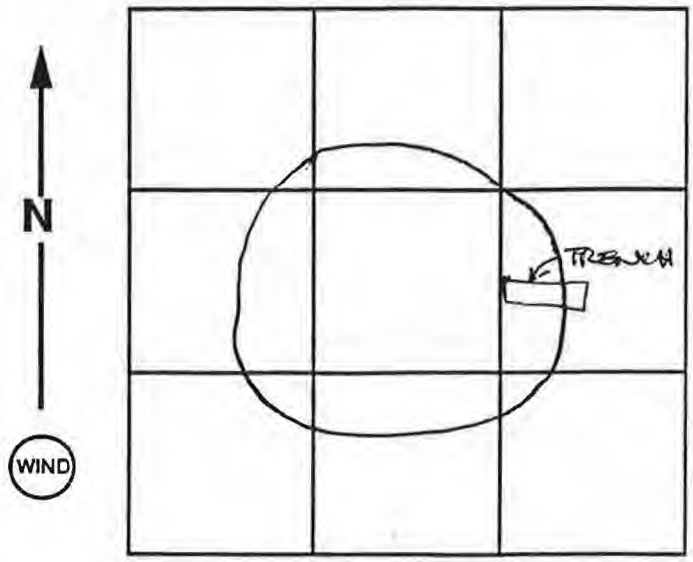
TEST PIT RECORD

Study Area: D-RANGE

Well/Boring 41E-94-03X Date 10-5-94 Time _____ End _____

Coordinates _____ Grid Element _____

SKETCH MAP OF TEST PIT SITE



SCALE 1" = 20 FT.

Crew Members:

1. BOB BLANFORD
2. BRUCE MOE
3. DAVE BELAN
4.
5.
6.

Monitor Equipment:

PI Meter	(Y)	N
Explosive Gas	Y	N
Avail. Oxygen	Y	N
OVA	Y	N

Other _____

Photogoraphs, Roll —

Exposure —

NOTES:

DIMENSIONS: 18 FT. LONG, 2 FT. WIDE
11 FT. DEEP.

SCATTERED BEER CANS (CONICAL TOP)
AND GLASS BOTTLES ON GROUND
SURFACE.

FIGURE 4-1
TEST PIT RECORD
PROJECT OPERATIONS PLAN
FORT DEVENS, MASSACHUSETTS

ABB Environmental Services, Inc.

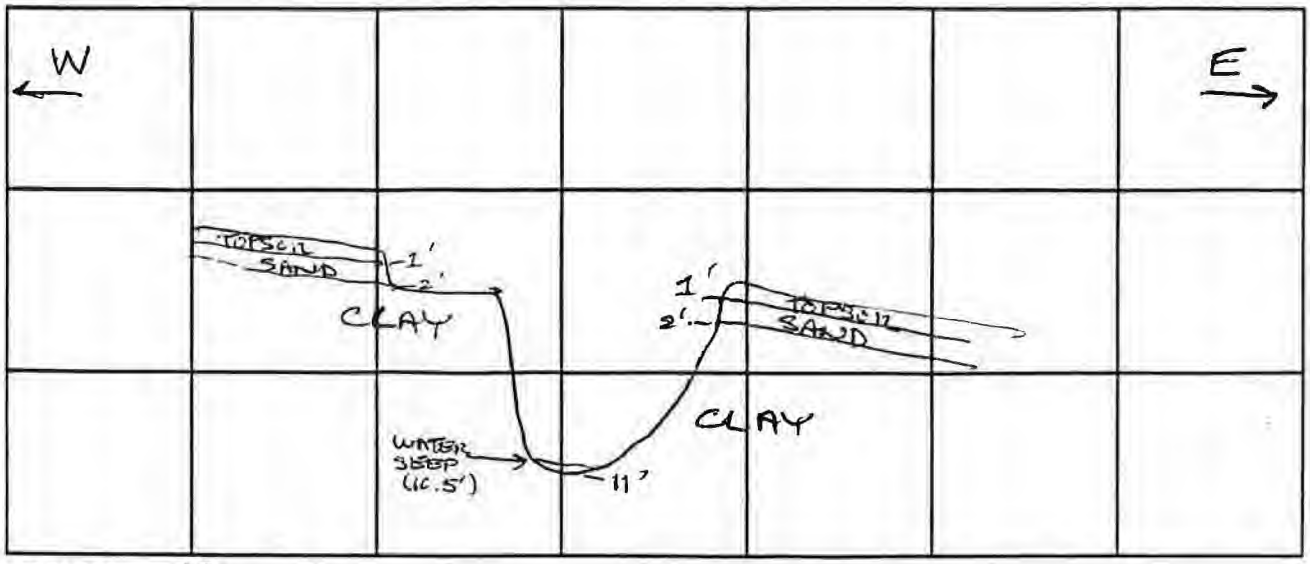
9202159D

TEST PIT RECORD

Profile Along Test Pit:

Study Area: FT. DEVENS D-RANGE

SKETCH MAP OF TEST PIT PROFILE



SCALE 1" = 10 FT.

DEPTH (FT).

NOTES:

0-1' TOPSOIL, ROOTS.

1-2' SAND, FINE-MEDIUM, YELLOW BROWN, DAMP, TRACE GRAVEL, NO ODOR OR STAIN.

2-11' CLAY, STIFF - SLIGHTLY PLASTIC, LIGHT GRAY, LITTLE LIGHT YELLOW BROWN, DRY-DAMP, TRACE GRAVEL, NO ODOR OR STAIN. SLIGHT WATER ACCUMULATION AT 10.5 FEET.

NO FILL.

TRENCH BACKFILLED ON 10/5/94.

no.	Int. Ser. No.	Depth (Ft.)	HD. SP. VOA PPM
S-1	—	—	—
S-2	—	—	—
S-3			
S-4			
S-5			
S-6			
S-7			
S-8			

REFERENCE: FIELD BOOK, Pg. 61-63

ATTACHMENTS —

SIGNATURE: David H. Belan

FIGURE 4-1 (CONT.)
TEST PIT RECORD
PROJECT OPERATIONS PLAN
FORT DEVENS, MASSACHUSETTS
ABB Environmental Services, Inc.

92021590 (n)

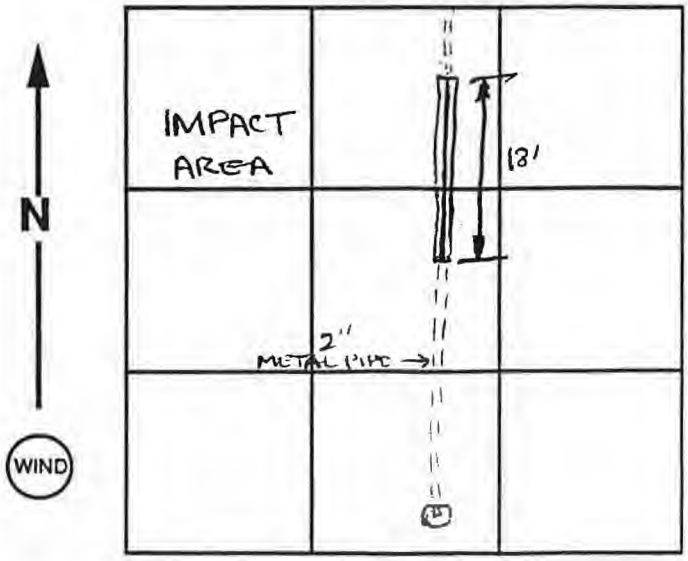
TEST PIT RECORD

Study Area: D-RANGE

Well/Boring 4IE-94-04X Date 10-6-94 Time 1120 End 1245

Coordinates _____ Grid Element _____

SKETCH MAP OF TEST PIT SITE



SCALE 1" = 20 FT.

Crew Members:

1. BOB BLANDFORD
2. BRUCE MOE
3. DAVE BELAN
4.
5.
6.

Monitor Equipment:

PI Meter	(Y)	N
Explosive Gas	Y	N
Avail. Oxygen	Y	N
OVA	Y	N

Other DRAEGER TUBE

Photogoraphs, Roll —

Exposure —

NOTES:

DIMENSIONS: 18 FT. LONG. 2 FT. WIDE. 3 FT. DEEP.

THE UNCOVERED PIPE IS IN LINE WITH A HAND CONSTRUCTED WELL OR CISTERN UPSLOPE FROM THE TRENCH.

THE DOWNSLOPE (DISCHARGE END) WAS LESS THAN 1 FOOT BELOW GROUND SURFACE AND COVERED BY SEVERAL VERY THIN METAL SHEETS (LEAD) AND A LARGE (1 FOOT DIAMETER) ROCK.

FIGURE 4-1
TEST PIT RECORD
PROJECT OPERATIONS PLAN
FORT DEVENS, MASSACHUSETTS

ABB Environmental Services, Inc.

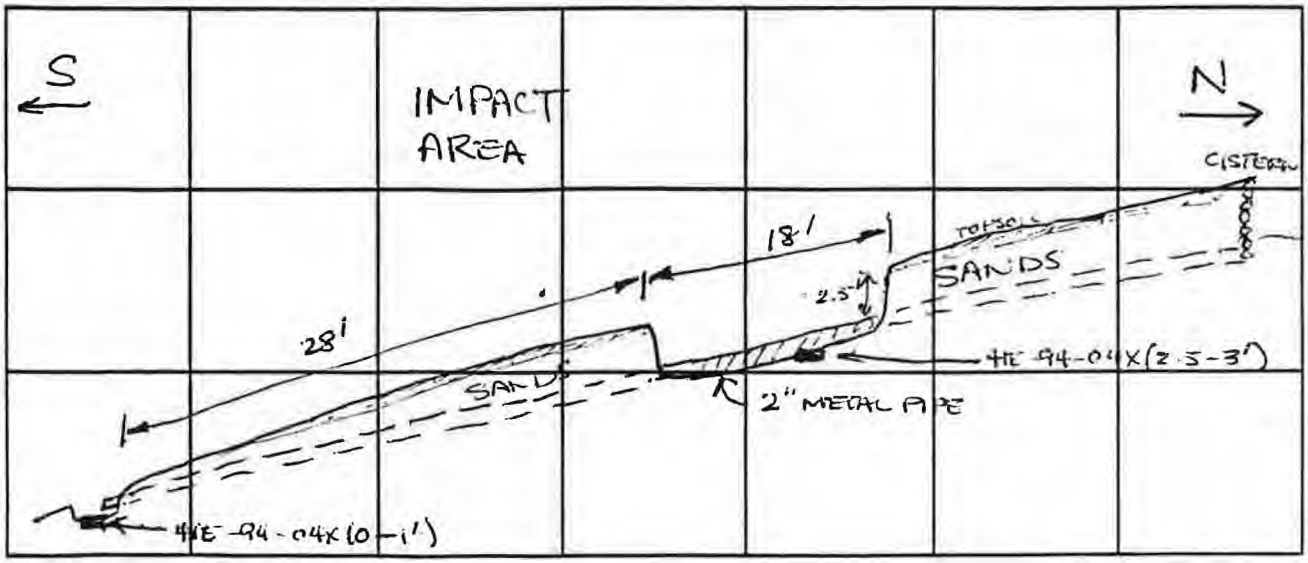
9202159D

TEST PIT RECORD

Profile Along Test Pit: 4E-94-04X

Study Area: FT. DEVENS - D-RANGE

SKETCH MAP OF TEST PIT PROFILE



SCALE 1" = 10 FT.
DEPTH (FT). 10'

NOTES:

(0-1') TOPSOIL AND SAND, DARK BROWN, REDDISH BROWN (RUST-LIKE STAINING), VF-FN, LITTLE GRAVEL, MOIST-WET, NO ODOR.

(2.5-3') SANDS, LIGHT YELLOWISH BROWN, FINE-VERY FINE, TRACE GRAVEL DAMP, NO ODOR OR STAIN.

no.	Int. Ser. No.	Depth (Ft.)	HD. SP. VOA PPM
S-1	4E-94-04X	1	0
S-2	4E-94-04X	3	0
S-3			
S-4			
S-5			
S-6			
S-7			
S-8			

REFERENCE: FIELD BOOK, Pg. 65-66

ATTACHMENTS —

SIGNATURE: David F. Bela

FIGURE 4-1 (CONT.)
TEST PIT RECORD
PROJECT OPERATIONS PLAN
FORT DEVENS, MASSACHUSETTS

ABB Environmental Services, Inc.

9202159D (n'

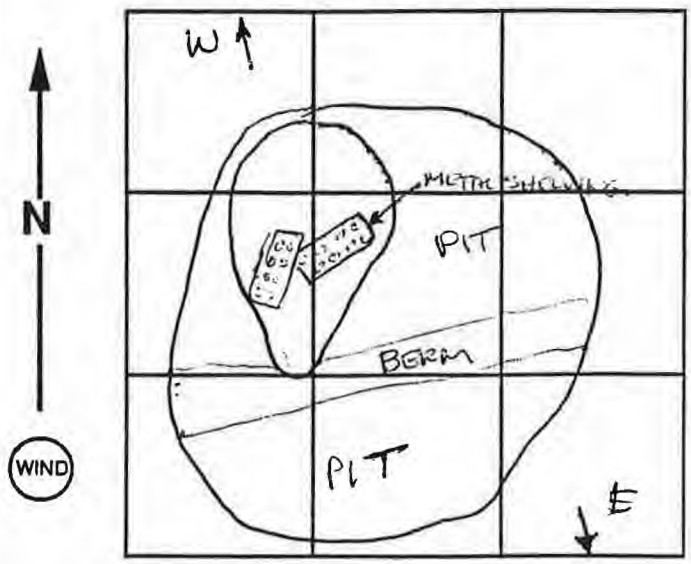
TEST PIT RECORD

Study Area: D-RANGE

Well/Boring 41E-94-05X Date 10-6-94 Time _____ End _____

Coordinates _____ Grid Element _____

SKETCH MAP OF TEST PIT SITE



SCALE 1" = 10 FT.

Crew Members:

1. BOB BLANDFORD
2. BRUCE MOE
3. DAVE BELAN
4.
5.
6.

Monitor Equipment:

PI Meter	Y	N
Explosive Gas	Y	N
Avail. Oxygen	Y	N
OVA	Y	N

Other DRAGER TUBE - VINYL CHLORIDE

Photographs, Roll —

Exposure —

NOTES:

DIMENSIONS: 14 FT. LONG, 7 FT. WIDE 10 FT. DEEP

2 METAL SHELVES (~3' x 5') WERE APPROXIMATELY 1 FOOT UNDER SURFACE OF PIT, WITH TAR PAPER LIKE SHEETS ON PORTIONS OF THEM. CHANGES IN COLOR OF SAND LAYERS FROM 0 TO 3 FEET APPEAR TO BE FILL LAYERS WITH CHARRED RESIDUE OF WOOD IN DARK LAYERS (1-3" THICK)

FIGURE 4-1
TEST PIT RECORD
PROJECT OPERATIONS PLAN
FORT DEVENS, MASSACHUSETTS

ABB Environmental Services, Inc.

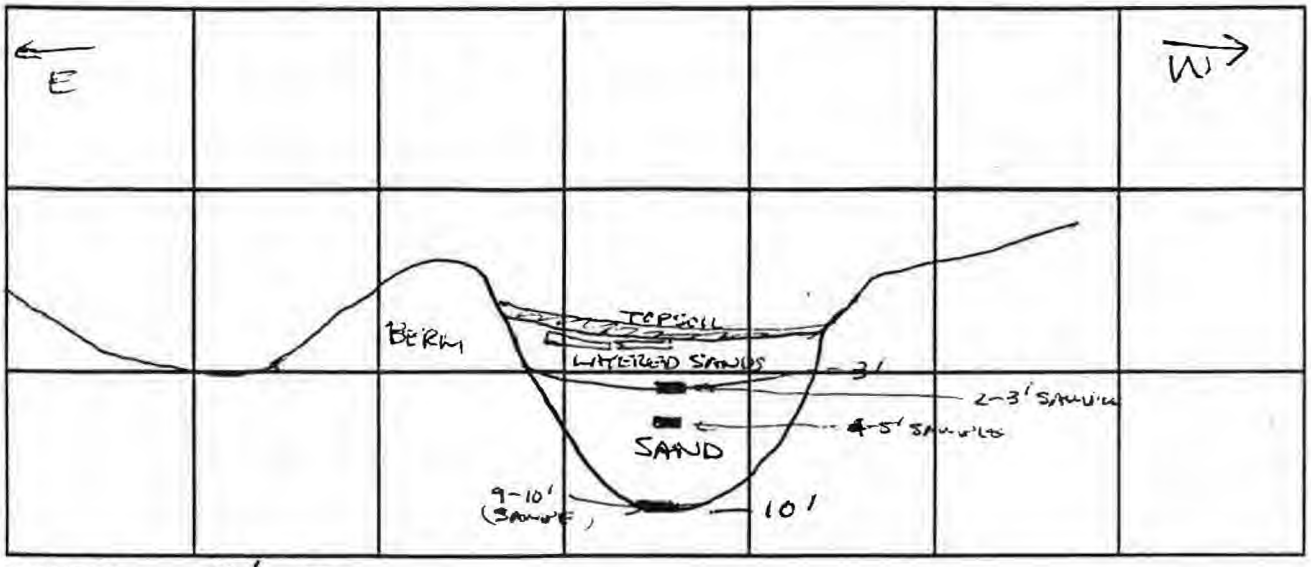
9202159D

TEST PIT RECORD

Profile Along Test Pit: 41E-94-05X

Study Area: FT. DEVENS D-RANGE

SKETCH MAP OF TEST PIT PROFILE



SCALE 1" = 10' FT.

DEPTH (FT). 10

NOTES:

FILL SANDS TO 3 FT

(2.5-3') LAYERED SANDS, LIGHT YELLOW BROWN WITH DARK BROWN AND BLACK (~1-3") SEAMS, FINE-VERY FINE, DRY-DAMP, STAINING (IN BLACK?), OCCASIONAL CHARRED WOOD PIECES IN BLACK, NO APPARENT ODOR.

(4-5') SAND, VERY LIGHT YELLOW BROWN, FINE TO COARSE, DAMP, NO ODOR OR STAIN.

(9-10') SAND, LIGHT YELLOW BROWN, MEDIUM-COARSE, SOME FINE, DAMP, WET @ 9.5 FT, NO ODOR OR STAIN

no.	Int. Ser. No.	Depth (Ft.)	HD. SP. VOA PPM
S-1	41E-94-05X	3	0
S-2	41E-94-05X	5	0
S-3	41E-94-05X	10	0
S-4			
S-5			
S-6			
S-7			
S-8			

REFERENCE: FIELD BOOK, Pg. 66-68

ATTACHMENTS —

SIGNATURE: David H. Bolan

FIGURE 4-1 (CONT.)
TEST PIT RECORD
PROJECT OPERATIONS PLAN
FORT DEVENS, MASSACHUSETTS

92021590 (n)

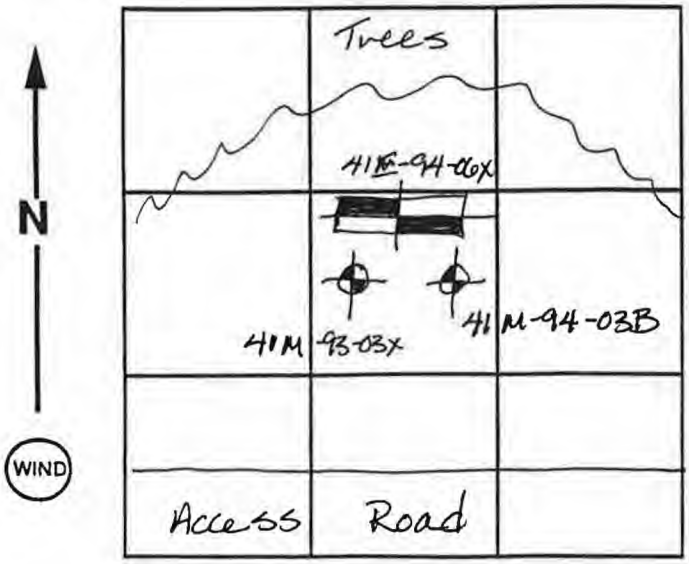
TEST PIT RECORD

Study Area: AOC 41

Well/Boring 41E-94-06X Date 12/22/94 Time 0810 End 1030

Coordinates — Grid Element —

SKETCH MAP OF TEST PIT SITE



SCALE 1" = NA FT.

NOTES:
Dimensions 12' long, 3' wide, 10' deep

Crew Members:

1. John Snowden
2. John Stewart
3. Paul Wilson
4.
5.
6.

Monitor Equipment:

PI Meter	(Y)	N
Explosive Gas	Y	(N)
Avail. Oxygen	Y	(N)
OVA	Y	(N)
Other NA		

Photogoraphs, Roll NA

Exposure NA

FIGURE 4-1
TEST PIT RECORD
PROJECT OPERATIONS PLAN
FORT DEVENS, MASSACHUSETTS

ABB Environmental Services, Inc.

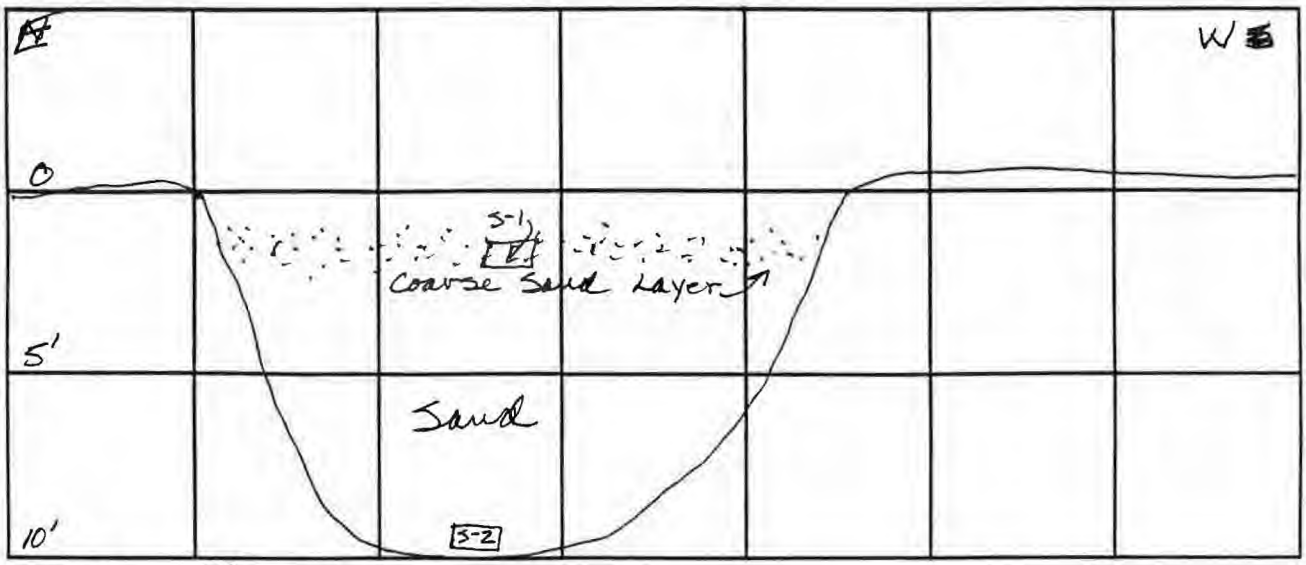
9202159D (n'

TEST PIT RECORD

Profile Along Test Pit: HIE-94-06X

Study Area: AOC 41

SKETCH MAP OF TEST PIT PROFILE



SCALE 1" = 5 FT.

DEPTH (FT).

NOTES:

0'-1.5' Top soil

1.5-3.0 Sand - med. to coarse sand w/ some fine sand, tan to yellow, moist, loose (SM)

3.0-10.0' Sand - fine to med. sand w/ ≈ 5% coarse sand, poorly sorted, light brown to tan, moist, loose (SM)

no.	Int. Ser. No.	Depth (Ft.)	HD. SP. VOA PPM
S-1	EX410603	3.0	1.2
S-2	EX410610	10.0	2.4
S-3			
S-4			
S-5			
S-6			
S-7			
S-8			

REFERENCE: FIELD BOOK, Pg. 18

ATTACHMENTS NA

SIGNATURE: JCS

FIGURE 4-1 (CONT.)
TEST PIT RECORD
PROJECT OPERATIONS PLAN
FORT DEVENS, MASSACHUSETTS

9202159D (n)

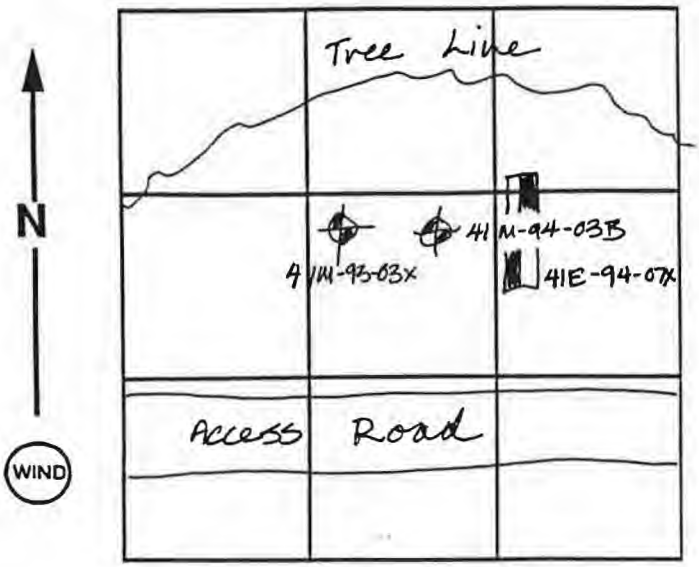
TEST PIT RECORD

Study Area: AOC 41

Well/Boring 41E-94-07X Date 12/22/95 Time 1040 End 1120

Coordinates _____ Grid Element _____

SKETCH MAP OF TEST PIT SITE



SCALE 1" = _____ FT.

NOTES: Demensions 13' long, 4' wide, 10' deep

Crew Members:

1. John Snowden
2. John Stewart
3. Paul Wilson
4.
5.
6.

Monitor Equipment:

PI Meter	(Y)	N
Explosive Gas	Y	(N)
Avail. Oxygen	Y	(N)
OVA	Y	(N)

Other N/A

Photogoraphs, Roll N/A

Exposure N/A

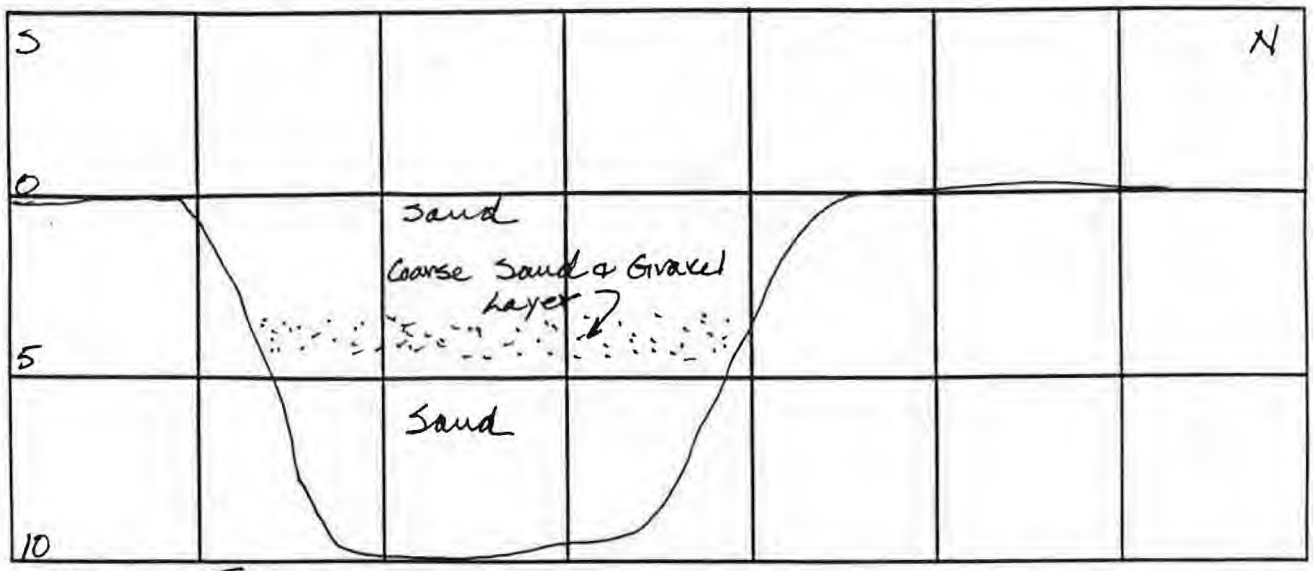
FIGURE 4-1
TEST PIT RECORD
PROJECT OPERATIONS PLAN
FORT DEVENS, MASSACHUSETTS
-ABB Environmental Services, Inc.

TEST PIT RECORD

Profile Along Test Pit: 41E-94-07X

Study Area: AOC 41

SKETCH MAP OF TEST PIT PROFILE



SCALE 1" = 5' FT.

DEPTH (FT).

NOTES:

0.0'-0.8' - Top soil

0.8-3.5 - Sand - fine to med. sand w/ some fine coarse sand, light brown to tan, loose, moist (SM)

3.5'-4.5' Sand med. to coarse sand w/ rounded gravel and ≈5% fine sand, poorly sorted, light brown, moist loose (SM)

4.5'-10.0' - Similar to 0.8'-3.5

no.	Int. Ser. No.	Depth (Ft.)	HD. SP. VOA PPM
S-1	EX410704	4.0	1.3
S-2	EX410710	10.0	2.1
S-3			
S-4			
S-5			
S-6			
S-7			
S-8			

REFERENCE: FIELD BOOK, Pg. 19

ATTACHMENTS NA

SIGNATURE: JCS

FIGURE 4-1 (CONT.)
TEST PIT RECORD
PROJECT OPERATIONS PLAN
FORT DEVENS, MASSACHUSETTS

9202159D (n)

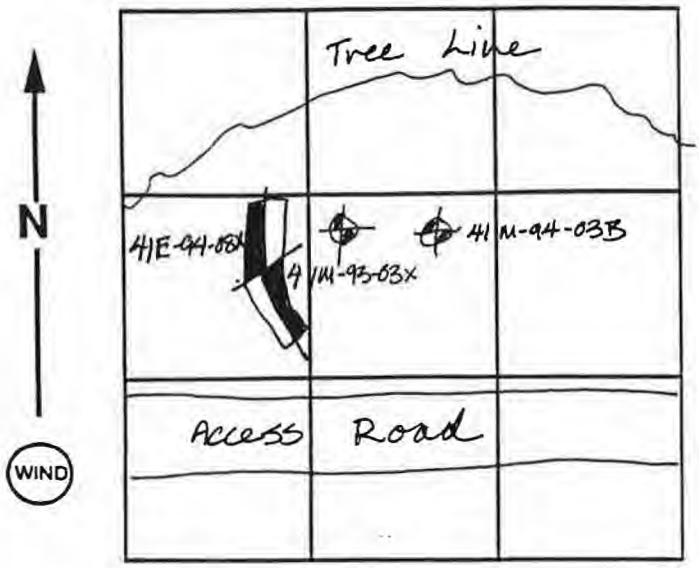
TEST PIT RECORD

Study Area: AOC 41

Well/Boring 41E-94-08X Date 12/22/95 Time 1135 End 1210

Coordinates _____ Grid Element _____

SKETCH MAP OF TEST PIT SITE



SCALE 1" = _____ FT.

Crew Members:

1. John Snowden
2. John Stewart
3. Paul Wilson
4.
5.
6.

Monitor Equipment:

PI Meter	(Y)	N
Explosive Gas	Y	(N)
Avail. Oxygen	Y	(N)
OVA	Y	(N)

Other N/A

Photographs, Roll N/A

Exposure N/A

NOTES:

Demensions 20' long, 4' wide and 12' deep

FIGURE 4-1
TEST PIT RECORD
PROJECT OPERATIONS PLAN
FORT DEVENS, MASSACHUSETTS
ABB Environmental Services, Inc.

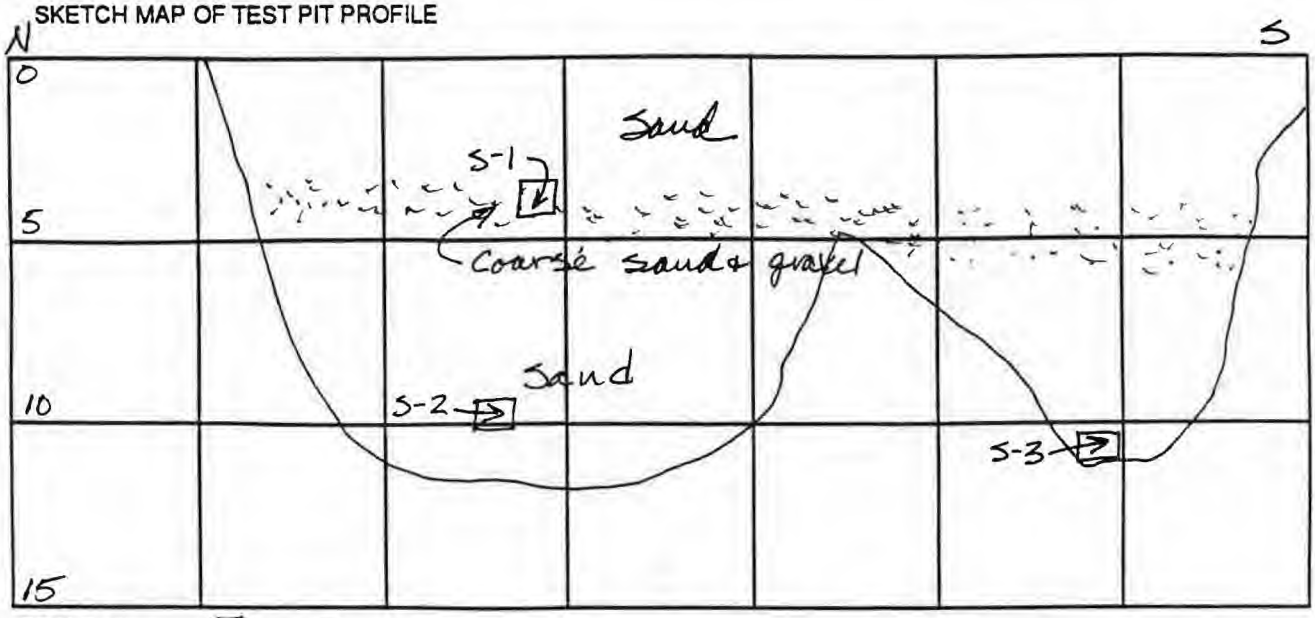
9202159D (n'

TEST PIT RECORD

Profile Along Test Pit: 41E-94-08X

Study Area: AOC 41

SKETCH MAP OF TEST PIT PROFILE



SCALE 1" = 5 FT.

DEPTH (FT). 12.0'

NOTES:

0.0' to 0.8' - Top soil

0.8' to 3.0' - Sand - fine to med. sand w/ some coarse sand, light brown, loose, moist (SM)

3.0 to 4.5 - Sand - med. to coarse sand w/ rounded gravel (≈5%), and fine sand, poorly sorted, moist, loose

4.5 - 12.0' - Similar to 0.8' to 3.0'

no.	Int. Ser. No.	Depth (Ft.)	HD. SP. VOA PPM
S-1	EX410804	4.0	0.8
S-2	EX410810	10.0	1.1
S-3	EX410812	12.0	1.3
S-4			
S-5			
S-6			
S-7			
S-8			

REFERENCE: FIELD BOOK, Pg. 20

ATTACHMENTS NA

SIGNATURE: XS

FIGURE 4-1 (CONT.)
TEST PIT RECORD
PROJECT OPERATIONS PLAN
FORT DEVENS, MASSACHUSETTS

92021S9D (n)

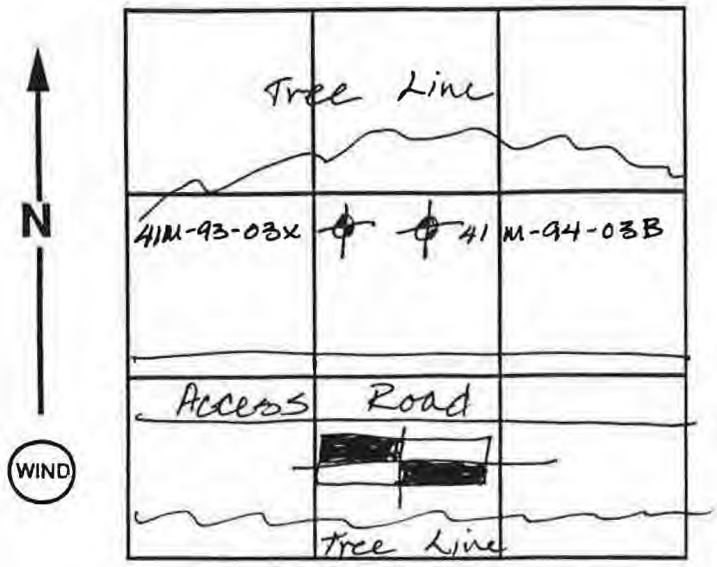
TEST PIT RECORD

Study Area: AOC 41

Well/Boring 41E-94-09X Date 12/22/95 Time 1340 End 1410

Coordinates _____ Grid Element _____

SKETCH MAP OF TEST PIT SITE



SCALE 1" = _____ FT.

Crew Members:

1. John Snawden
2. John Stewart
3. Paul Wilson
4.
5.
6.

Monitor Equipment:

PI Meter	Y	N
Explosive Gas	Y	N
Avail. Oxygen	Y	N
OVA	Y	N
Other NA		

Photogoraphs, Roll NA

Exposure NA

NOTES:

Due to a buried cable and frost the test pit was moved ~~on~~ to the south side of the access road.

Dimensions 20' long x 9.5' deep and 4' wide.

FIGURE 4-1
TEST PIT RECORD
PROJECT OPERATIONS PLAN
FORT DEVENS, MASSACHUSETTS
-ABB Environmental Services, Inc.-

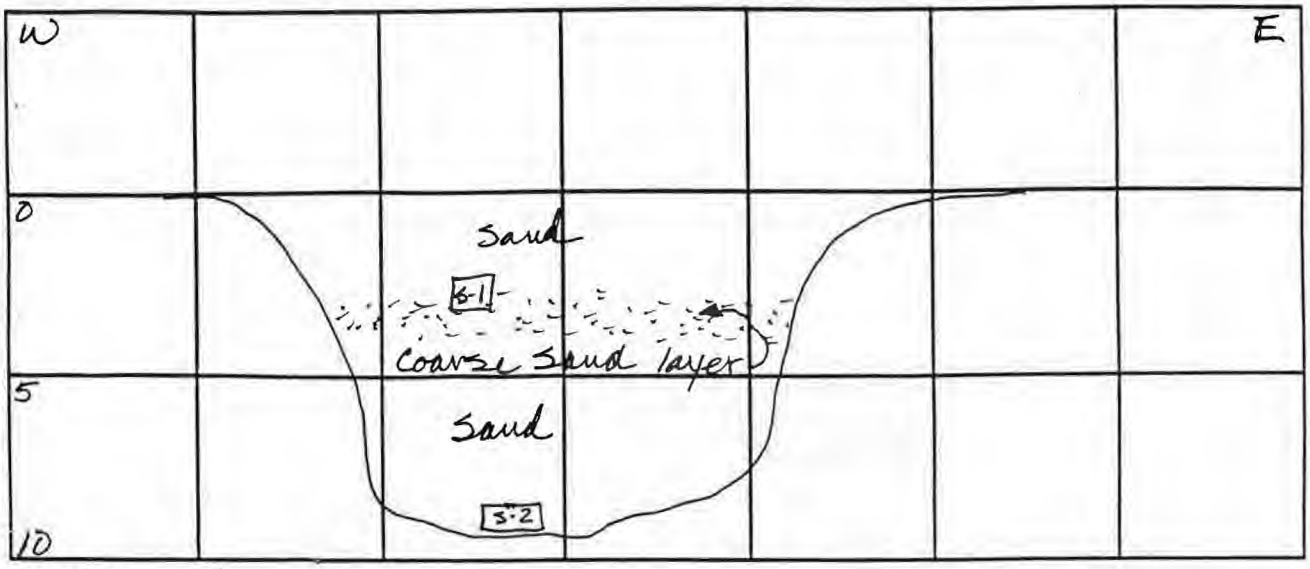
9202159D (n)

TEST PIT RECORD

Profile Along Test Pit: ~~A~~ JCS 41E-94-09X

Study Area: AOC 41

SKETCH MAP OF TEST PIT PROFILE



SCALE 1" = 5 FT.
DEPTH (FT). 9.5

NOTES:
0.0' to 1.0' ~~Sand~~ JCS Topsoil
1.0 to 3.0' - Sand - fine to med. sand w/ some coarse sand, light brown, moist, loose (SM)
3.0' to 4.5' - Sand med. to coarse sand w/ rounded gravel (~5%) and some fine sand, light brown, moist, loose
4.5' to 9.5 - Similar to 1.0' to 3.0'

no.	Int. Ser. No.	Depth (Ft.)	HD. SP. VOA PPM
S-1	EX410904	4.0	0.6
S-2	EX410909	9.0	0.8
S-3			
S-4			
S-5			
S-6			
S-7			
S-8			

REFERENCE: FIELD BOOK, Pg. 21

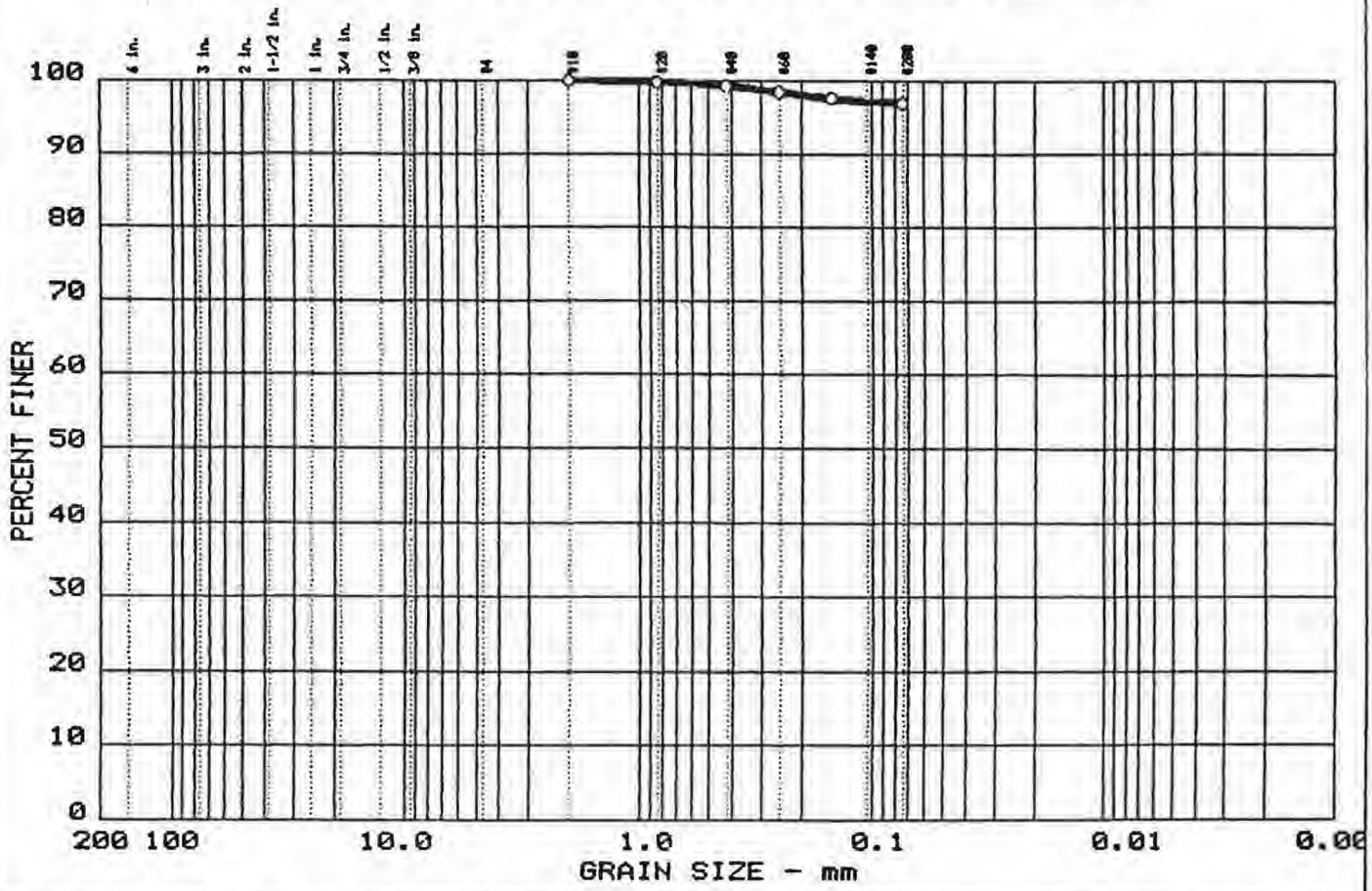
ATTACHMENTS NA

SIGNATURE: JCS

FIGURE 4-1 (CONT.)
TEST PIT RECORD
PROJECT OPERATIONS PLAN
FORT DEVENS, MASSACHUSETTS

GEOTECHNICAL DATA

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% FINES
O	0.0	0.0	3.0	97.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
O	--	--								

MATERIAL DESCRIPTION	USCS	AASHTO
O SILT (based on grain-size)	ML	--

Project No.: 07053.04
Project: USATHAMA - FORT DEVENS SI/RI
O Location: Field Sample I.D. - BX410112

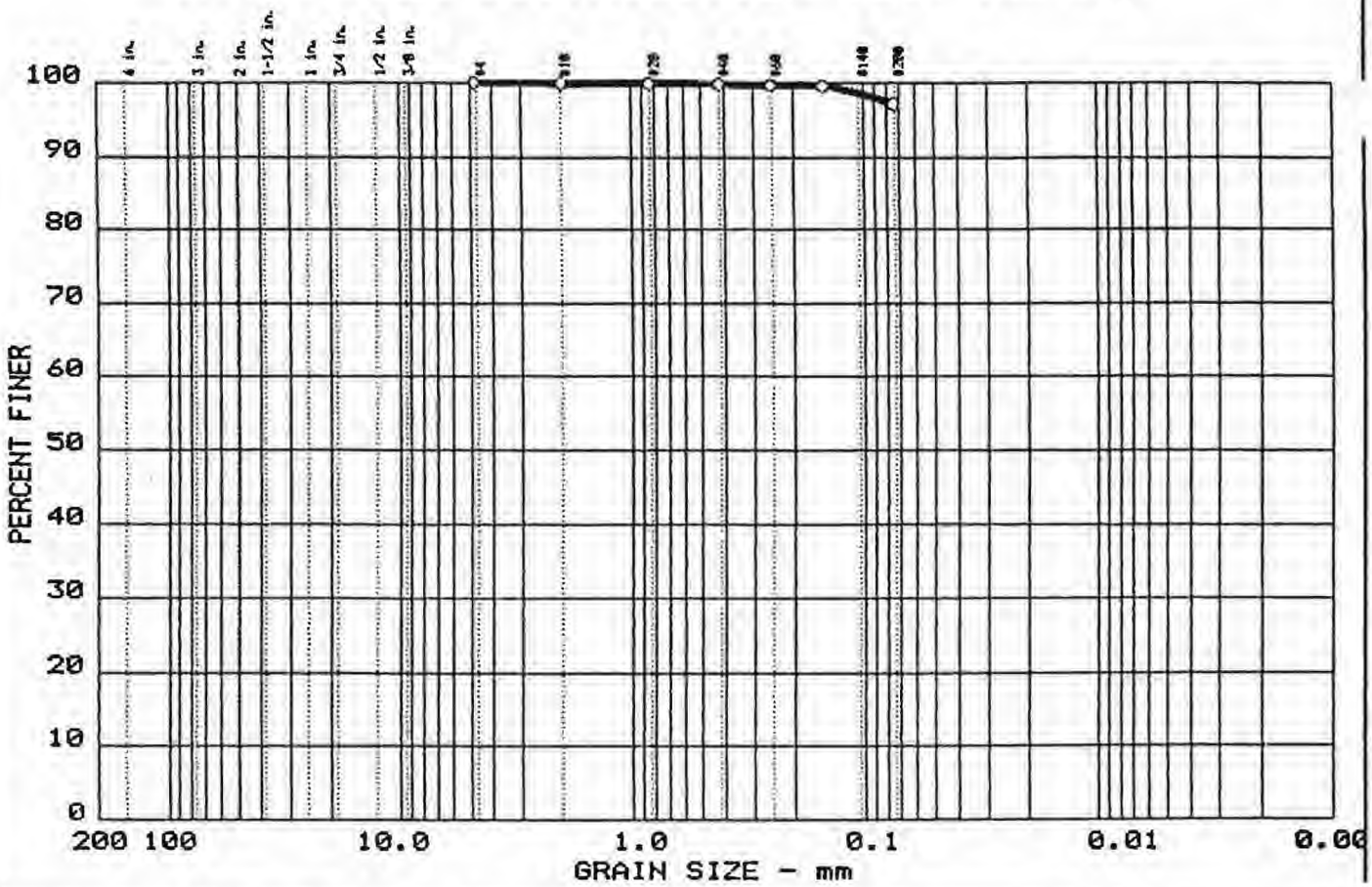
Date: October 23, 1992

Remarks:
Wash Sieve Anlysis
Site I.D. - 41M-92-01X
As rec'd w% = 37.9

GRAIN SIZE DISTRIBUTION TEST REPORT
CIVILTEST LABORATORIES, INC.

CT - 5592

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% FINES
O	0.0	0.0	2.8	97.2

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
O	--	--								

MATERIAL DESCRIPTION	USCS	AASHTO
O SILT (based on grain-size)	ML	--

Project No.: 07053.04
Project: USATHAMA - FORT DEVENS SI/RI
O Location: Field Sample I.D. - BX410132

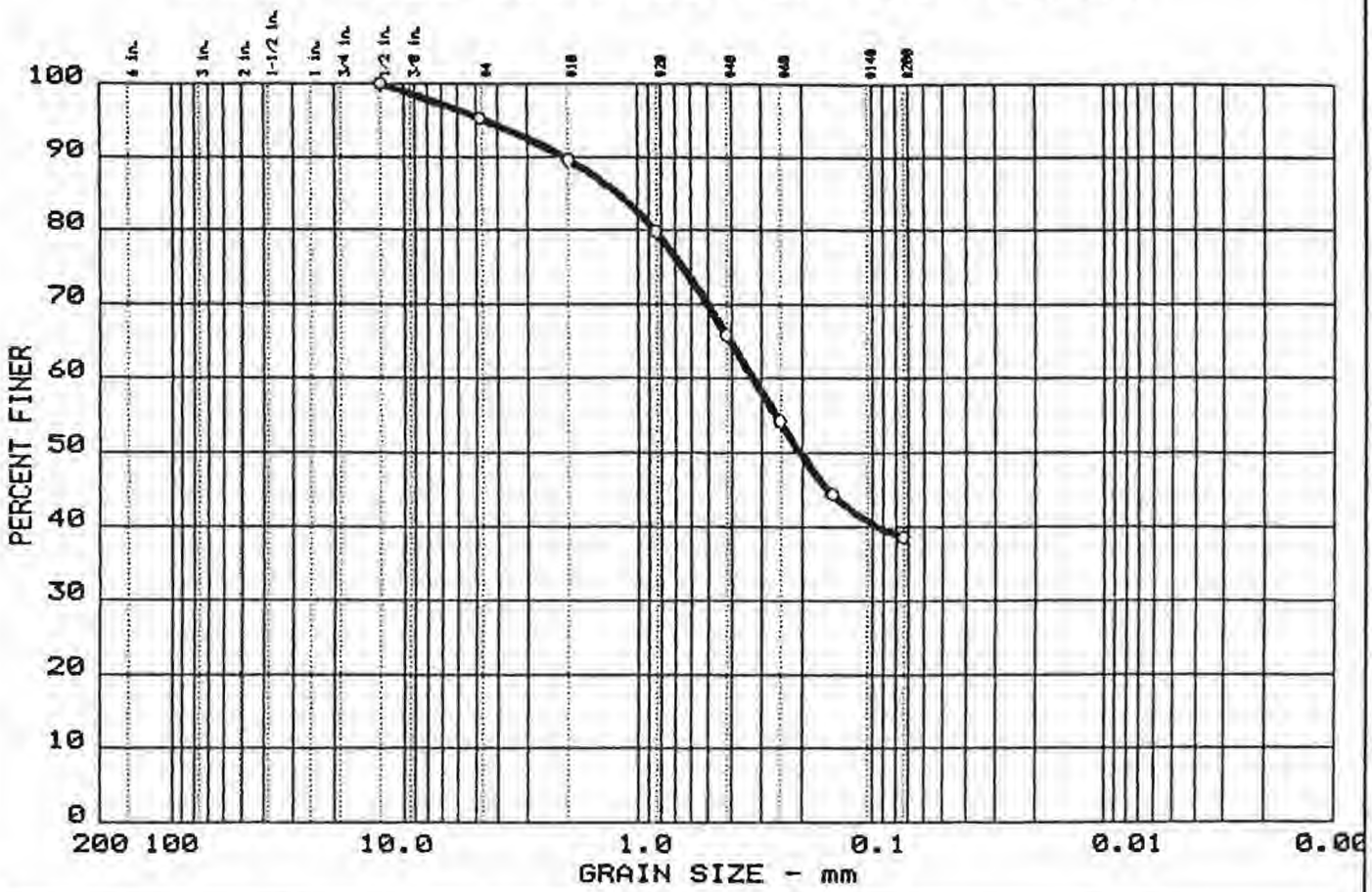
Date: October 23, 1992

Remarks:
Wash Sieve Anlysis
Site I.D. - 41M-92-01X
As rec'd w% = 32.5

GRAIN SIZE DISTRIBUTION TEST REPORT
CIVILTEST LABORATORIES, INC.

CT - 5592

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% FINES
O	0.0	4.7	56.7	38.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
O	--	--	1.22	0.32	0.20					

MATERIAL DESCRIPTION	USCS	AASHTO
O Silty SAND (based on grain-size)	SM	--

Project No.: 07053.04
Project: USATHAMA - FORT DEVENS SI/RI
O Location: Field Sample I.D. - DX410100

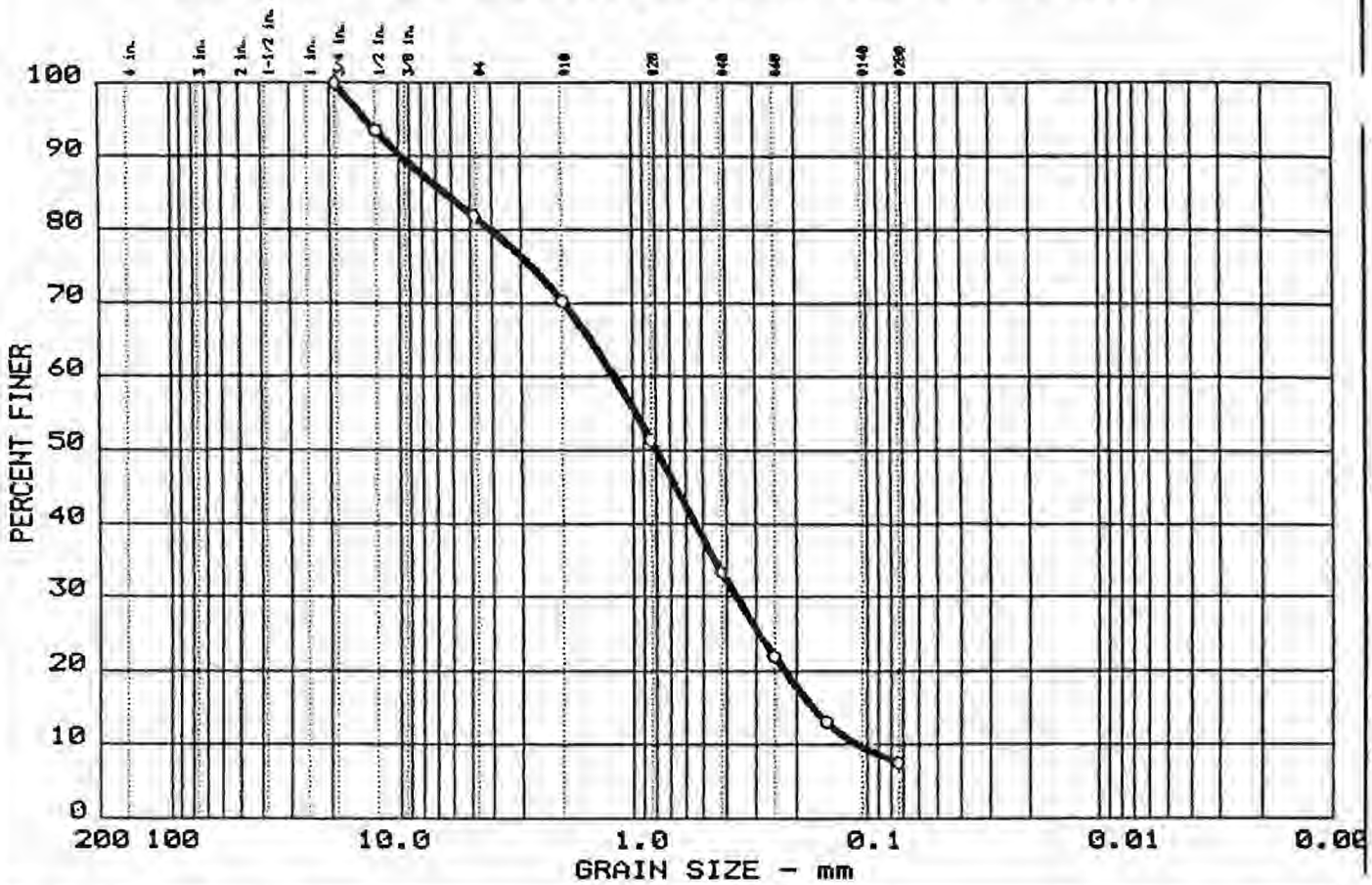
Date: October 23, 1992

Remarks:
Wash Sieve Anlysis
Site I.D. - 41D-92-01X
As rec'd w% = 241.1
some (-) Organics

GRAIN SIZE DISTRIBUTION TEST REPORT
CIVILTEST LABORATORIES, INC.

CT - 5592

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% FINES
O	0.0	18.1	74.3	7.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
O	--	--	6.31	1.20	0.79	0.363	0.1696	0.1083	1.01	11.1

MATERIAL DESCRIPTION	USCS	AASHTO
O Well Graded SAND with Gravel and Silt	SW-SM	--

Project No.: 07053.04
Project: USATHAMA - FORT DEVENS SI/RI
O Location: Field Sample I.D. - DX410200

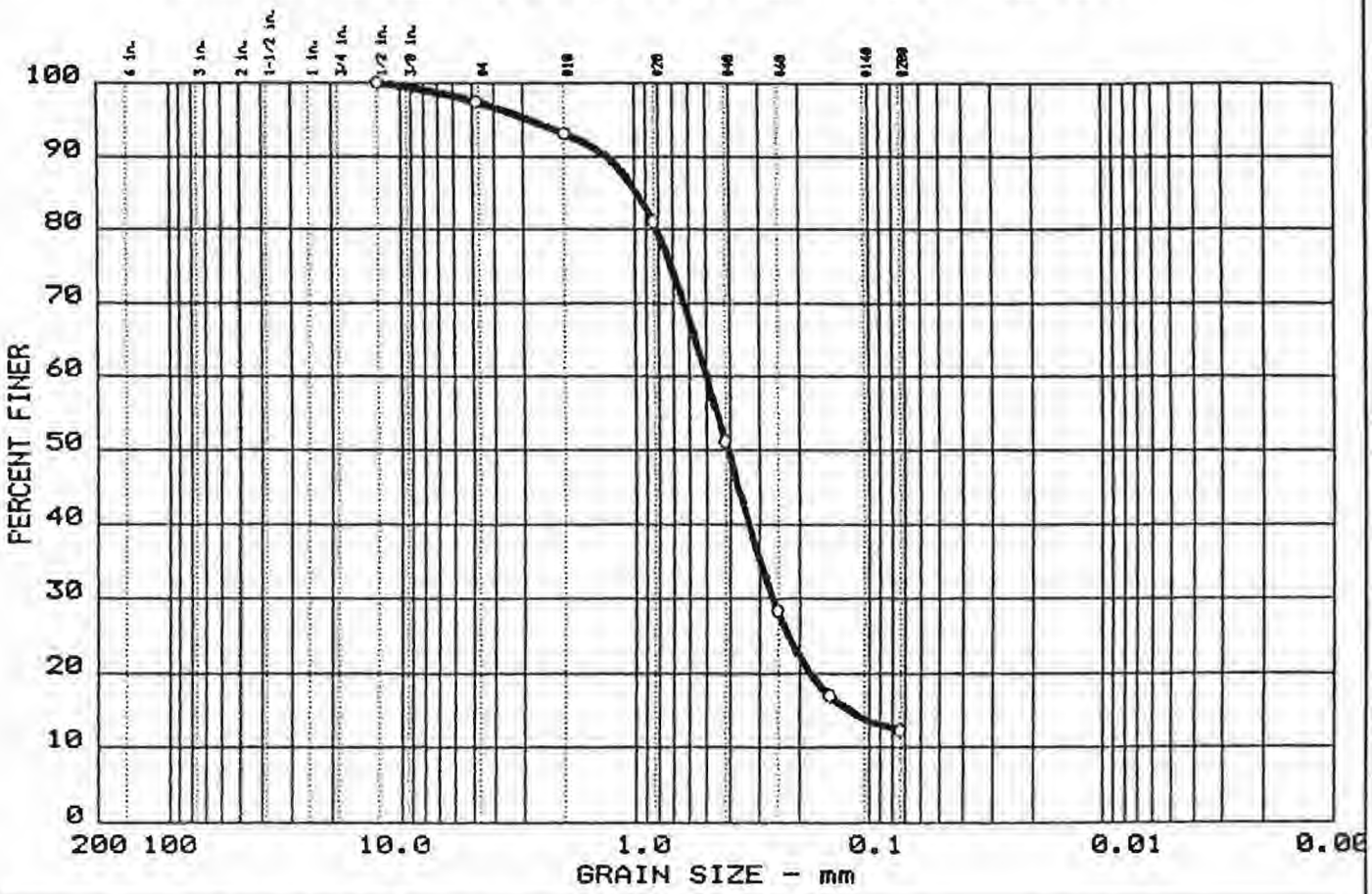
Date: October 23, 1992

Remarks:
Wash Sieve Anlysis
Site I.D. - 41D-92-02X
As rec'd w% = 37.0
trace (+) Organics

GRAIN SIZE DISTRIBUTION TEST REPORT
CIVILTEST LABORATORIES, INC.

CT - 5592

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% FINES
○	0.0	2.5	85.1	12.4

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
○	--	--	0.97	0.50	0.41	0.261	0.1222			

MATERIAL DESCRIPTION	USCS	AASHTO
○ Silty SAND	SM	--

Project No.: 07053.04
Project: USATHAMA - FORT DEVENS SI/RI
○ Location: Field Sample I.D. - DX410300

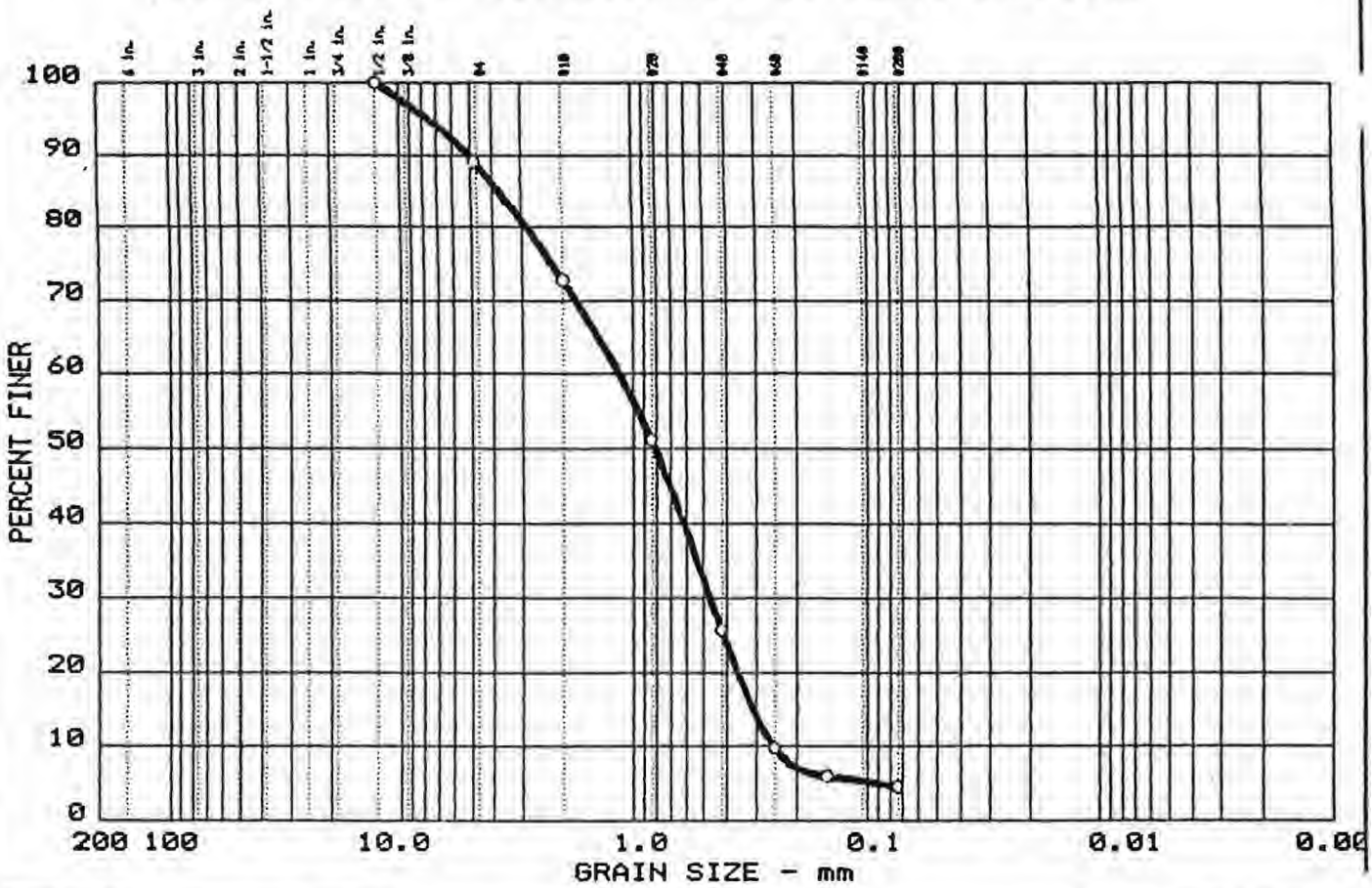
Date: October 23, 1992

Remarks:
Wash Sieve Anlysis
Site I.D. - 41D-92-03X
As rec'd w% = 22.5

GRAIN SIZE DISTRIBUTION TEST REPORT
CIVILTEST LABORATORIES, INC.

CT - 5592

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% FINES
O	0.0	10.8	84.6	4.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
O	--	--	3.67	1.14	0.81	0.469	0.3062	0.2518	0.77	4.5

MATERIAL DESCRIPTION	USCS	AASHTO
O Poorly Graded SAND	SP	--

Project No.: 07053.04
Project: USATHAMA - FORT DEVENS SI/RI
O Location: Field Sample I.D. - DX410400

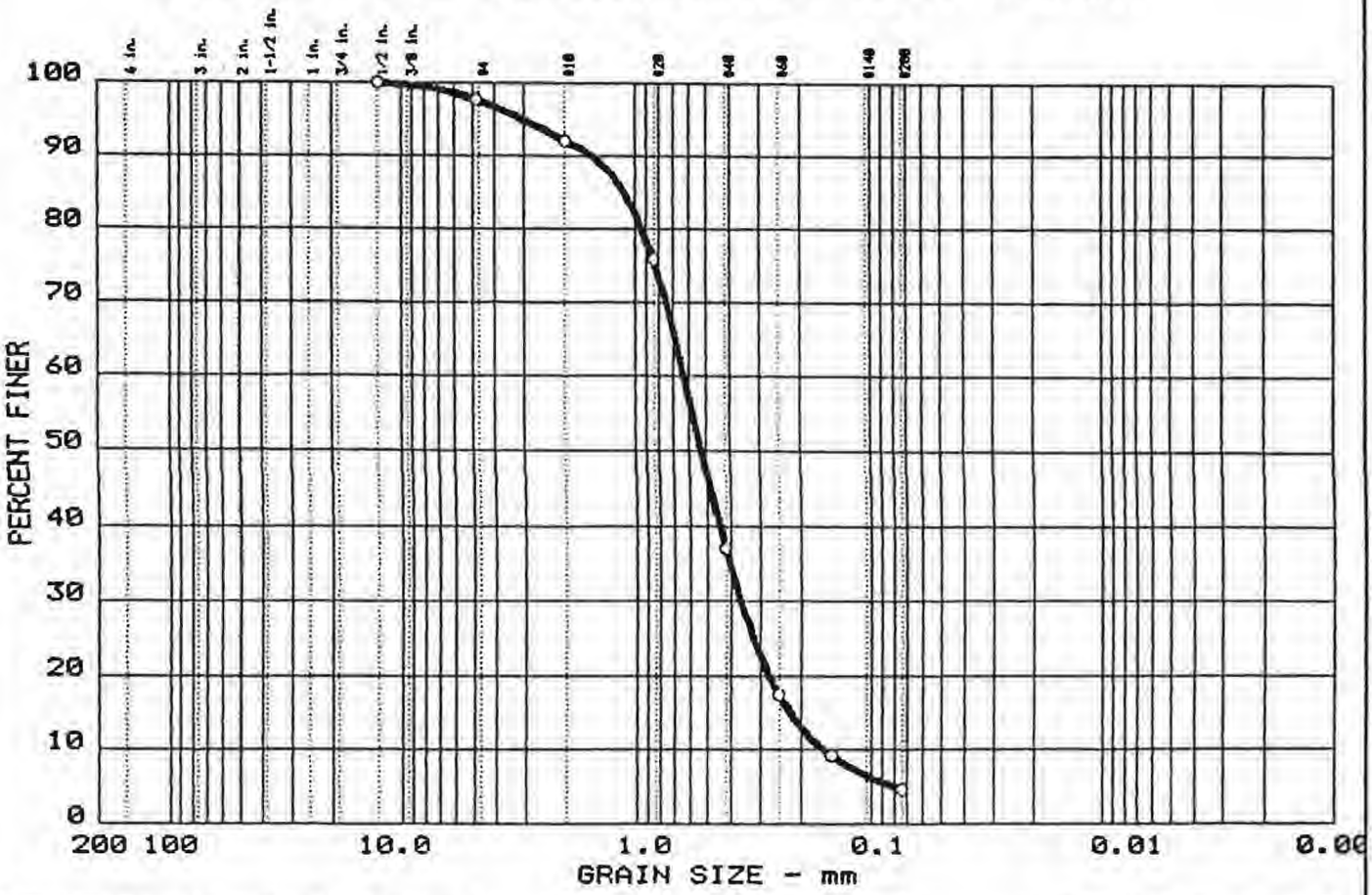
Date: October 23, 1992

Remarks:
Wash Sieve Anlysis
Site I.D. - 41D-92-04X
As rec'd w% = 16.9

GRAIN SIZE DISTRIBUTION TEST REPORT
CIVILTEST LABORATORIES, INC.

CT - 5592

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% FINES
O	0.0	2.3	93.0	4.7

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
O	--	--	1.11	0.62	0.53	0.362	0.2231	0.1579	1.34	3.9

MATERIAL DESCRIPTION	USCS	AASHTO
O Poorly Graded SAND	SP	--

Project No.: 07053.04
Project: USATHAMA - FORT DEVENS SI/RI
O Location: Field Sample I.D. - DX410500

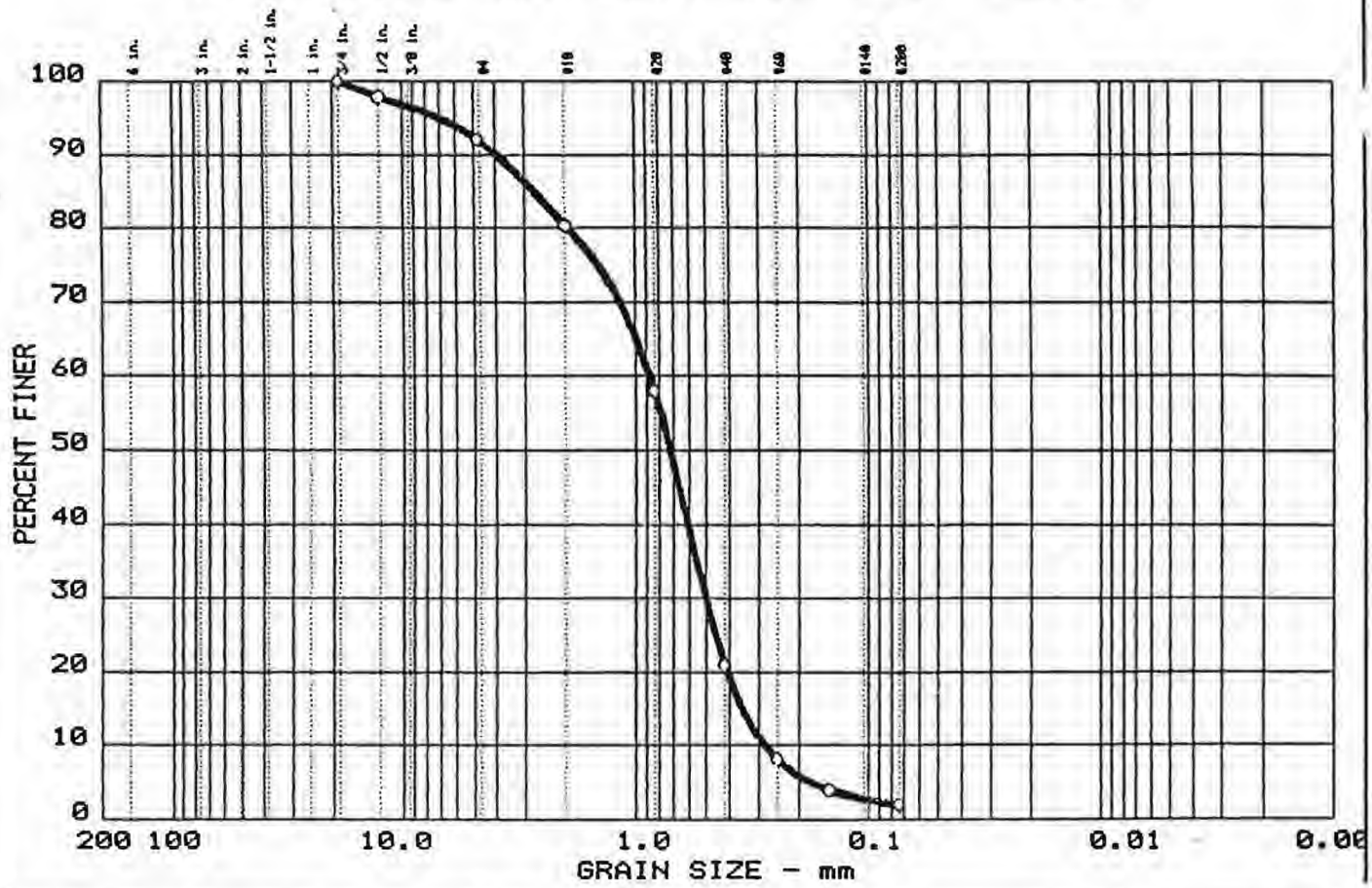
Date: October 23, 1992

Remarks:
Wash Sieve Analysis
Site I.D. - 41D-92-05X
As rec'd w% = 24.0

GRAIN SIZE DISTRIBUTION TEST REPORT
CIVILTEST LABORATORIES, INC.

CT - 5592

GRAIN SIZE DISTRIBUTION TEST REPORT



	% +3"	% GRAVEL	% SAND	% FINES
O	0.0	7.9	90.1	2.0

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
O	--	--	2.69	0.88	0.72	0.505	0.3532	0.2805	1.04	3.1

MATERIAL DESCRIPTION	USCS	AASHTO
O Poorly Graded SAND	SP	--

Project No.: 07053.04
Project: USATHAMA - FORT DEVENS SI/RI
O Location: Field Sample I.D. - DX410600

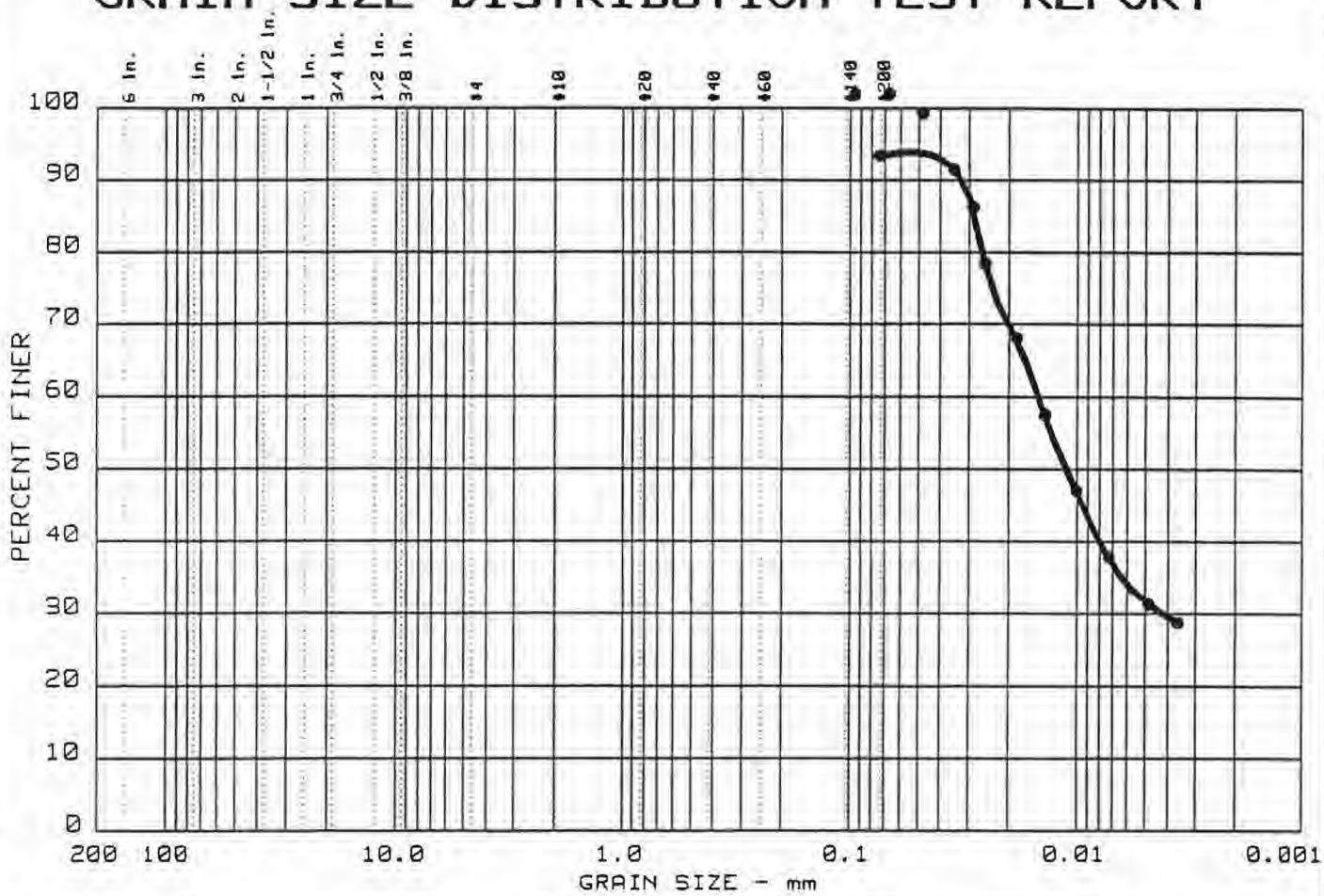
Date: October 23, 1992

Remarks:
Wash Sieve Analysis
Site I.D. - 41D-92-06X
As rec'd w% = 23.8

GRAIN SIZE DISTRIBUTION TEST REPORT
CIVILTEST LABORATORIES, INC.

CT - 5592

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	19	0.0	0.0	6.7	61.7	31.6

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●					0.01	0.004				

MATERIAL DESCRIPTION	USCS	AASHTO
● YELLOW SILT	ML	A-4(0.0)

Project No.:
Project: FT. DEVENS
● Location: 41M-93-02X

Date: 12-28-93

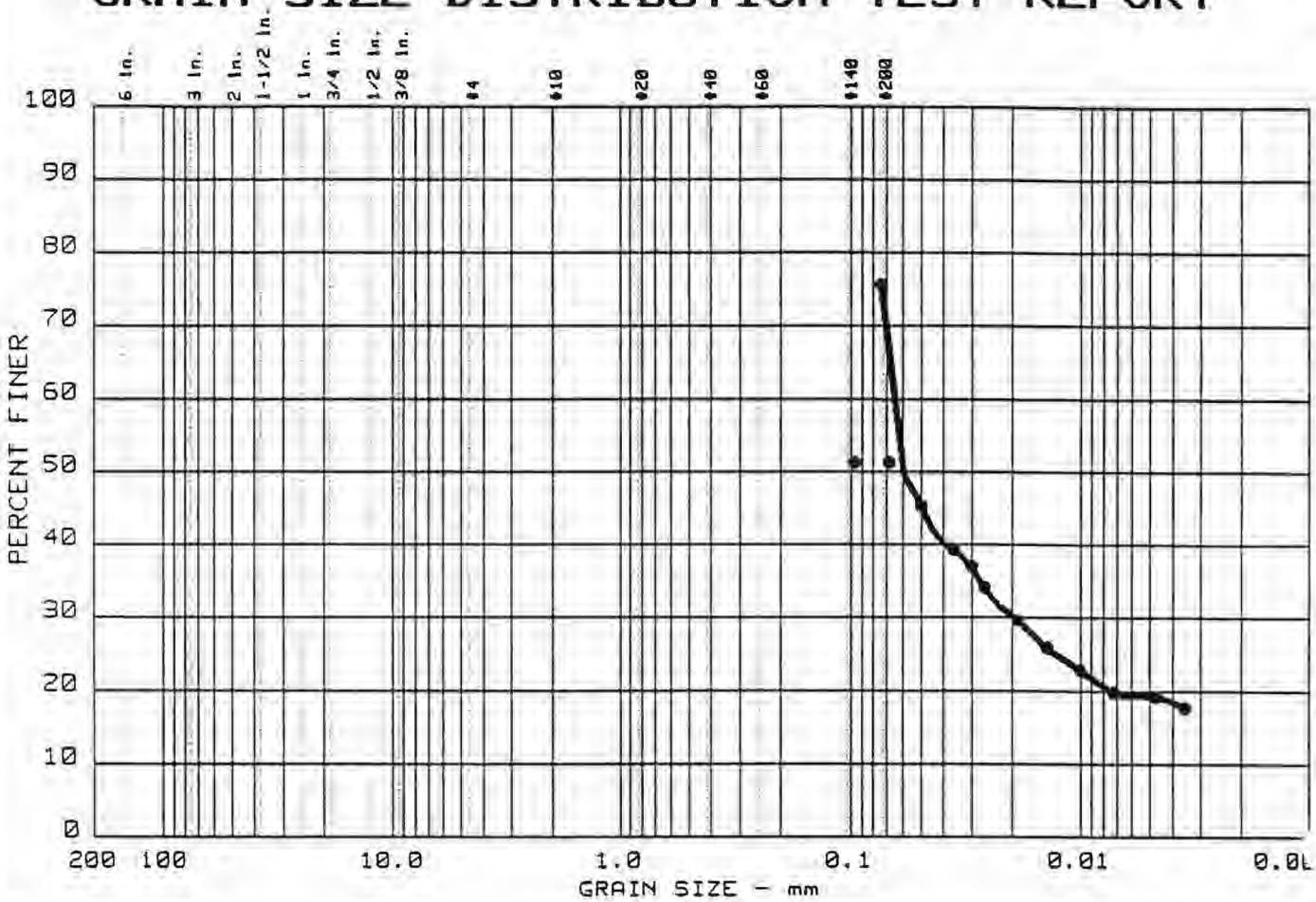
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

ABB Environmental Services, Inc.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	24.5	56.2	19.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●					0.07	0.020				

MATERIAL DESCRIPTION	USCS	AASHTO
● SILT WITH SAND	ML	A-4(0.0)

Project No.:
Project: FT. DEVENS
● Location: 41M-93-03X

Date: 12-29-93

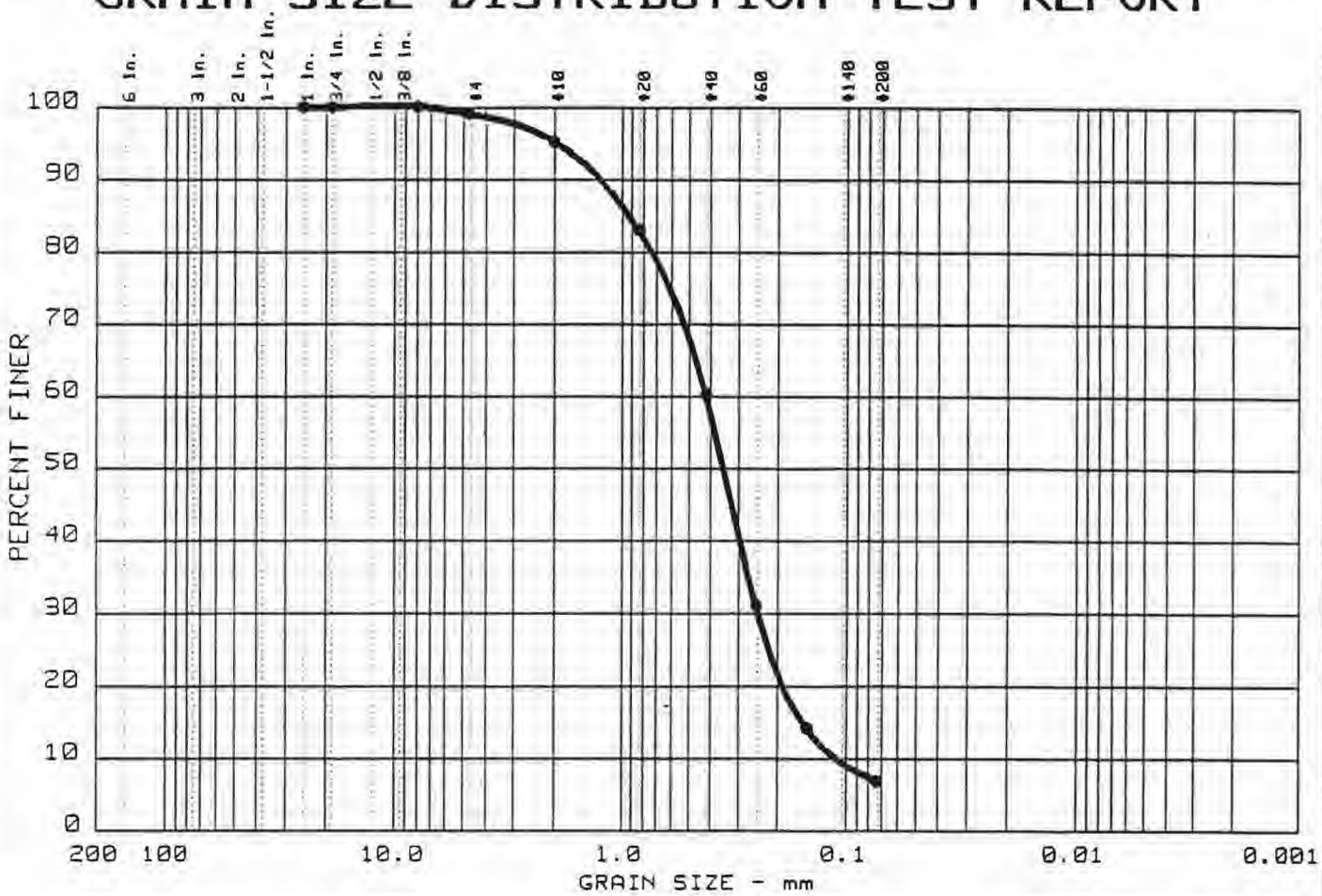
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

ABB Environmental Services, Inc.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	5	0.0	4.8	88.3	6.9	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			0.92	0.42	0.35	0.244	0.1540	0.1103	1.30	3.8

MATERIAL DESCRIPTION	USCS	AASHTO
● NARROWLY GRADED SAND WITH SILT	SP-SM	A-3

Project No.:
Project: FT. DEVENS
● Location: 41D-93-09X

Date: 12-28-93

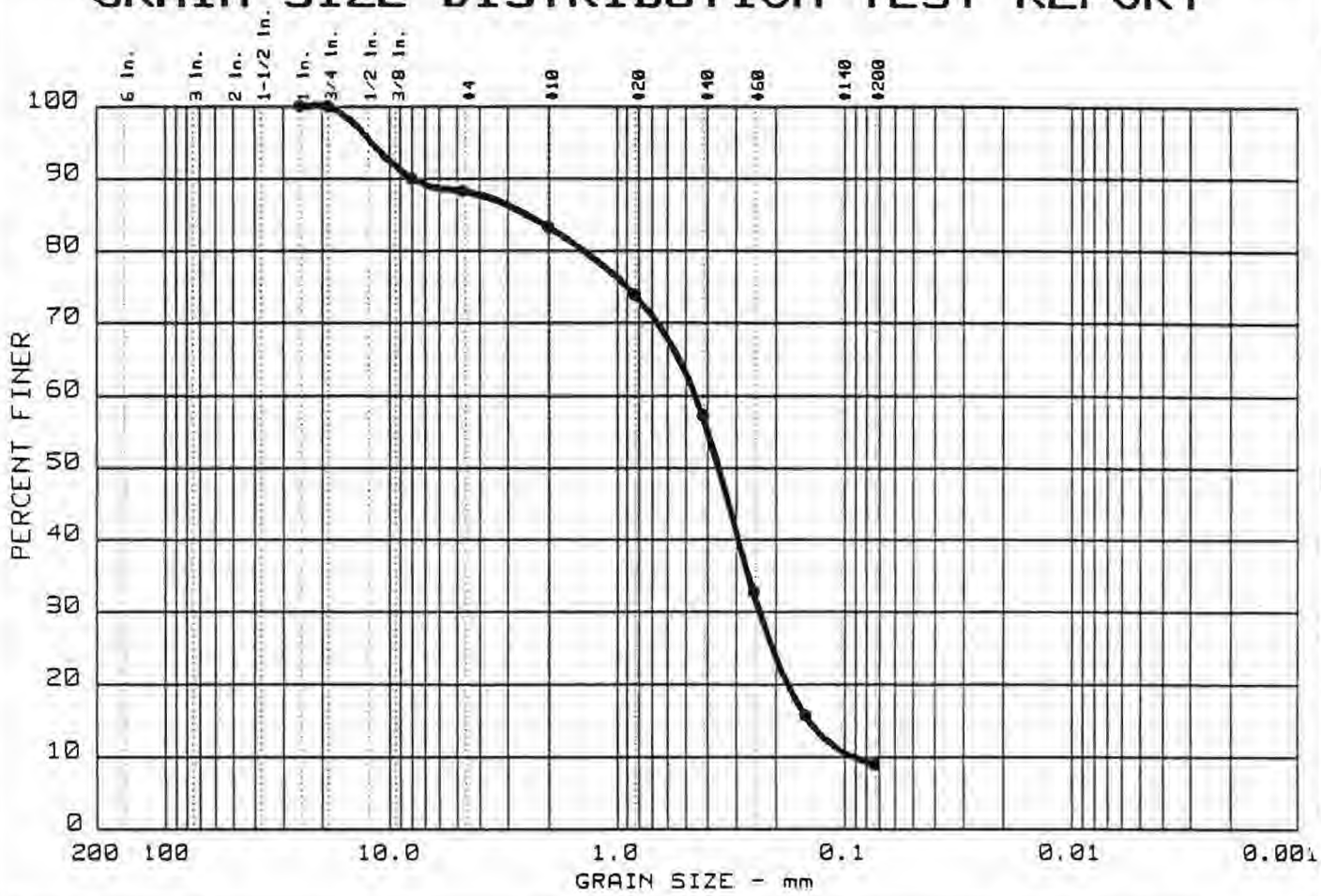
Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

ABB Environmental Services, Inc.

Figure No. _____

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	18	0.0	16.8	74.2	9.0	

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●			2.51	0.45	0.36	0.234	0.1429	0.0902	1.35	5.0

MATERIAL DESCRIPTION	USCS	AASHTO
● NARROWLY GRADED SAND WITH SILT AND GRAVEL	SP-SM	A-3

Project No.:
Project: FT. DEVENS
● Location: 41D-93-10X

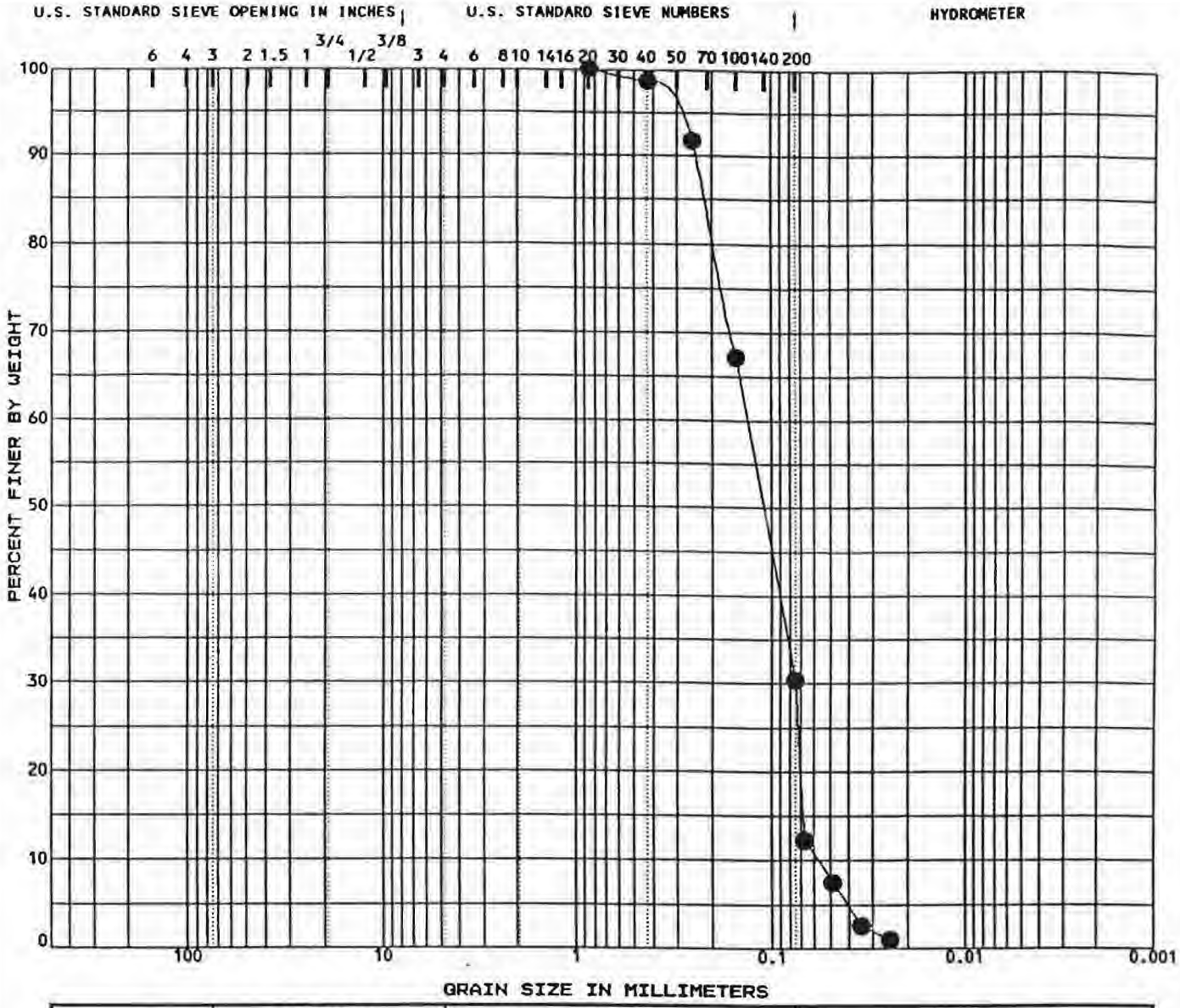
Date: 12-28-93

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

ABB Environmental Services, Inc.

Figure No. _____

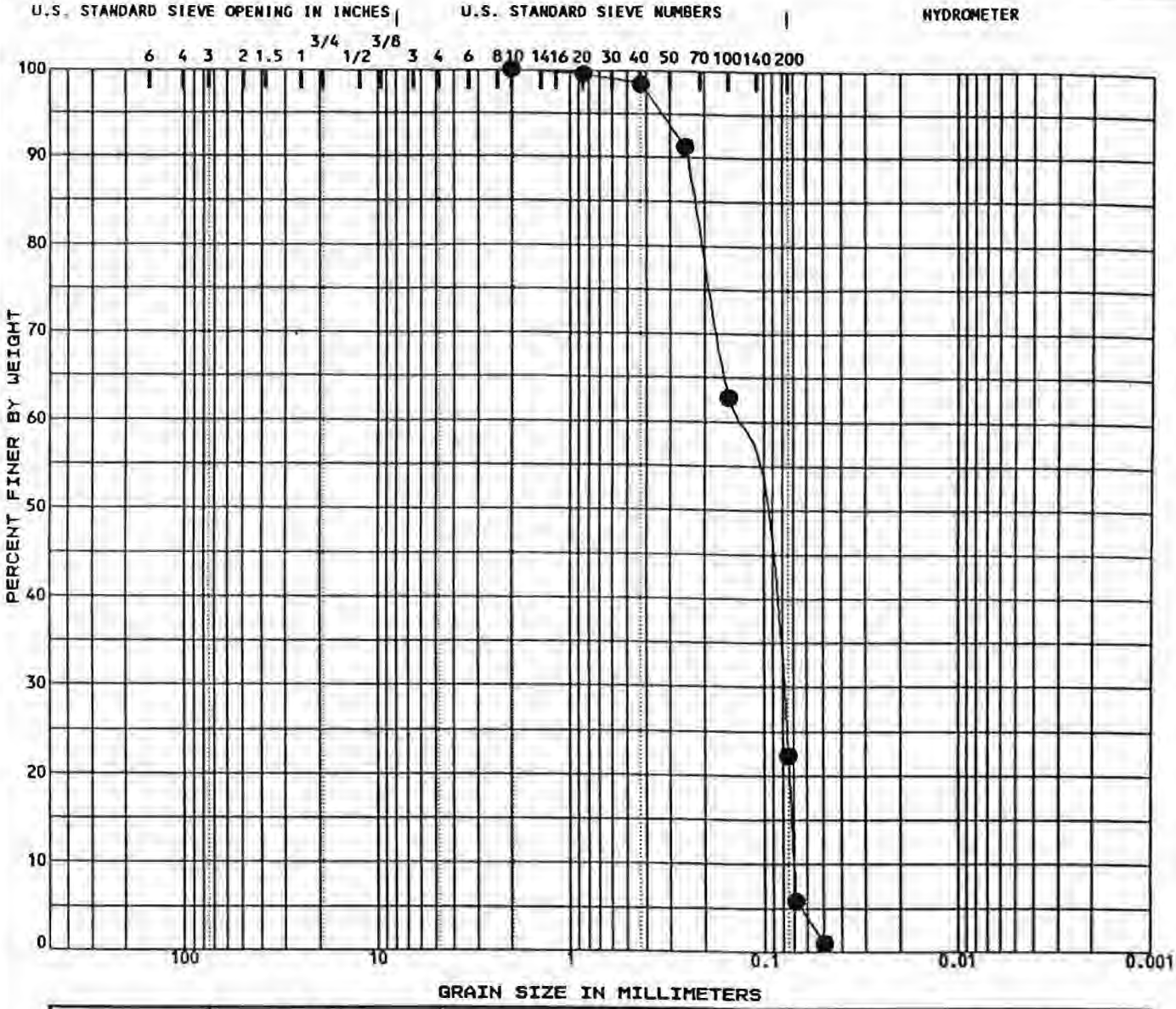


COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	WC%	LL	PL	PI	Cc	Cu
● 4IM-2C	44.0	Fine SAND; some silt; trace medium sand						
41M-94-02C (T.P.)								

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● 4IM-2C	44.0	0.85	0.13	0.075	0.0575	0.0	69.6	30.4	

Project	Fort Devens	Location
Area		Notes
Date	March 1995	**GRADATION CURVES**



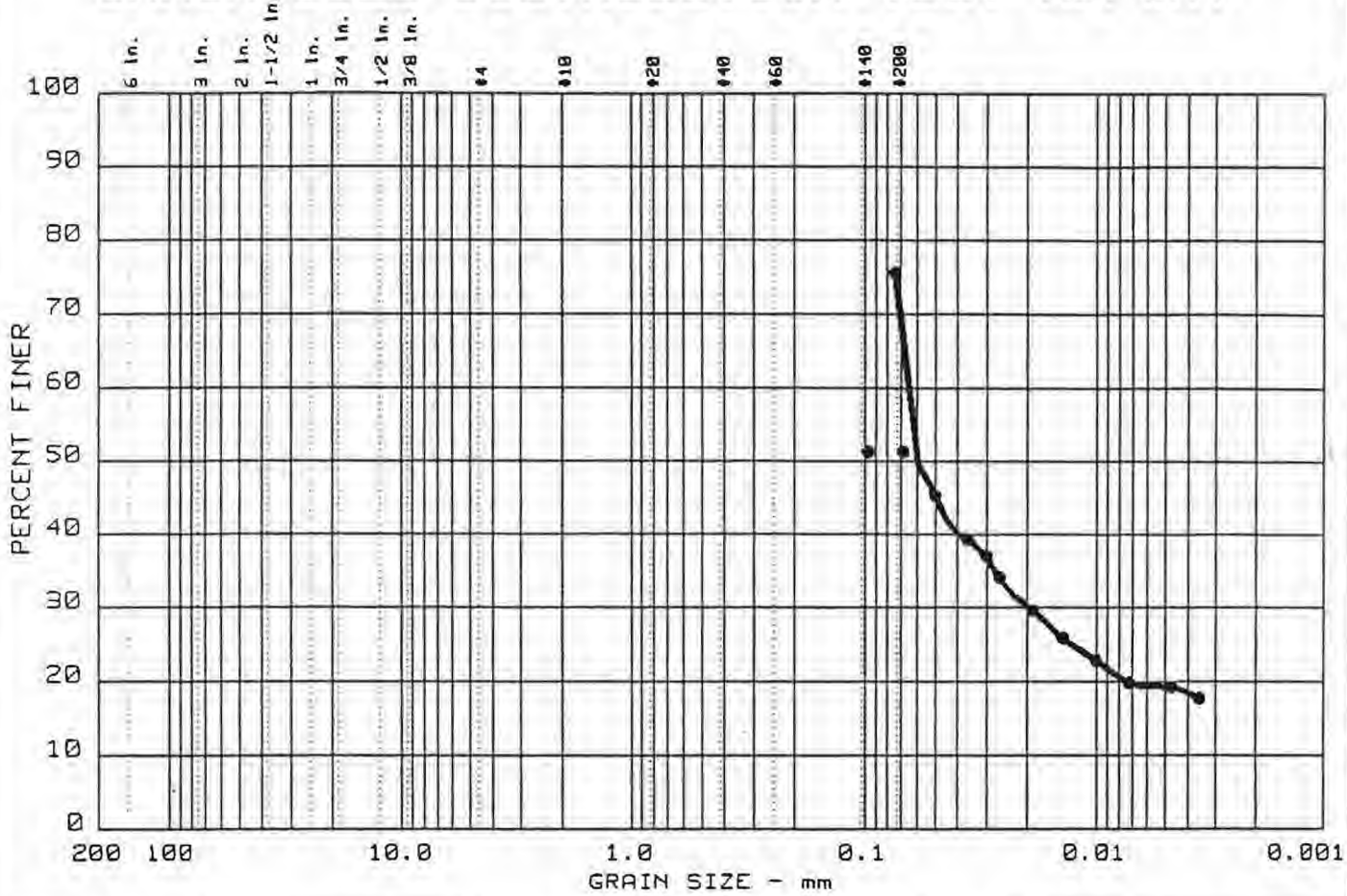
COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	WC%	LL	PL	PI	Cc	Cu
4IM-2C	49.0	Fine SAND; some silt ; trace medium sand						
41M-94-02C	R.T.							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
4IM-2C	49.0	2.00	0.14	0.086	0.0703	0.0	77.7	22.3	

Project	Fort Devens	Location
Area		Notes
Date	March 1995	**GRADATION CURVES**

GRAIN SIZE DISTRIBUTION TEST REPORT



	Test	% +3"	% GRAVEL	% SAND	% SILT	% CLAY
●	1	0.0	0.0	24.5	56.2	19.3

	LL	PI	D_{85}	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
●					0.07	0.020				

MATERIAL DESCRIPTION	USCS	AASHTO
● SILT WITH SAND	ML	A-4(0.0)

Project No.:
Project: FT. DEVENS
● Location: 41M-93-03X

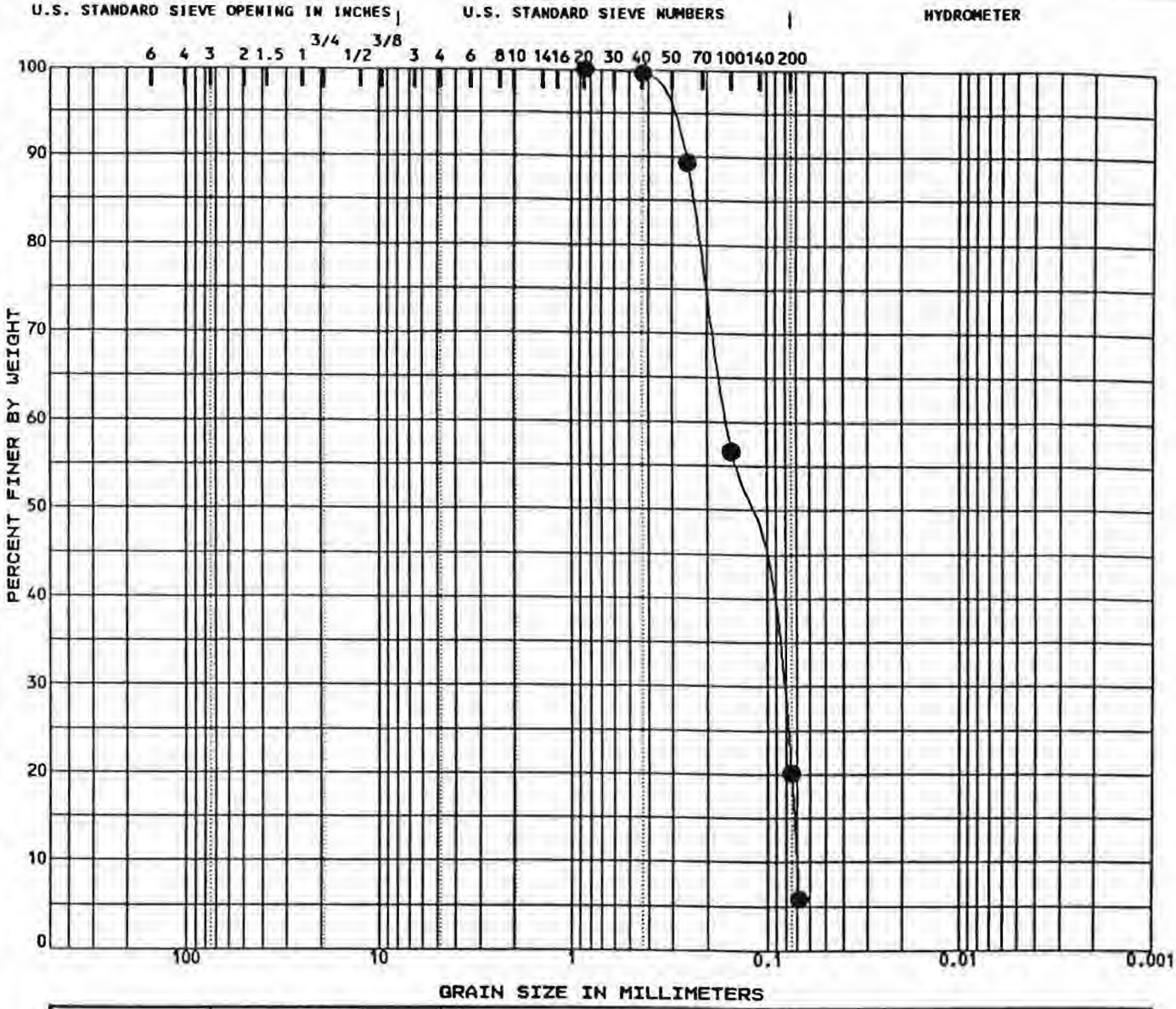
Date: 12-28-93

Remarks:

GRAIN SIZE DISTRIBUTION TEST REPORT

ABB Environmental Services, Inc.

Figure No. _____

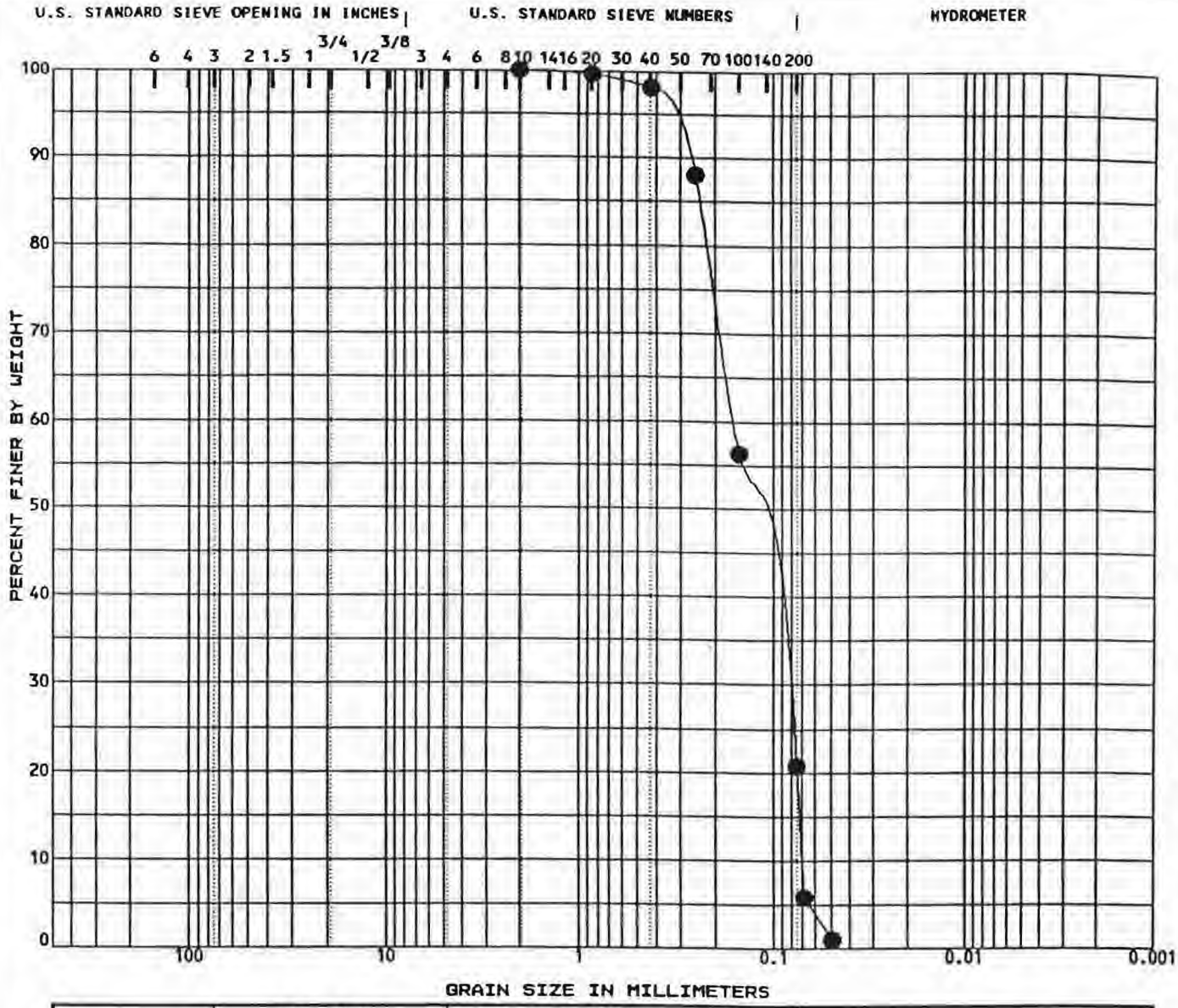


COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	WC%	LL	PL	PI	Cc	Cu
● 4IM-3B	60.0	Fine SAND; some silt; trace medium sand						
41M-94-03B	R.D.							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● 4IM-3B	60.0	0.85	0.16	0.091	0.0705	0.0	79.9	20.1	

Project	Fort Devens	Location
Area		Notes
Date	March 1995	**GRADATION CURVES**

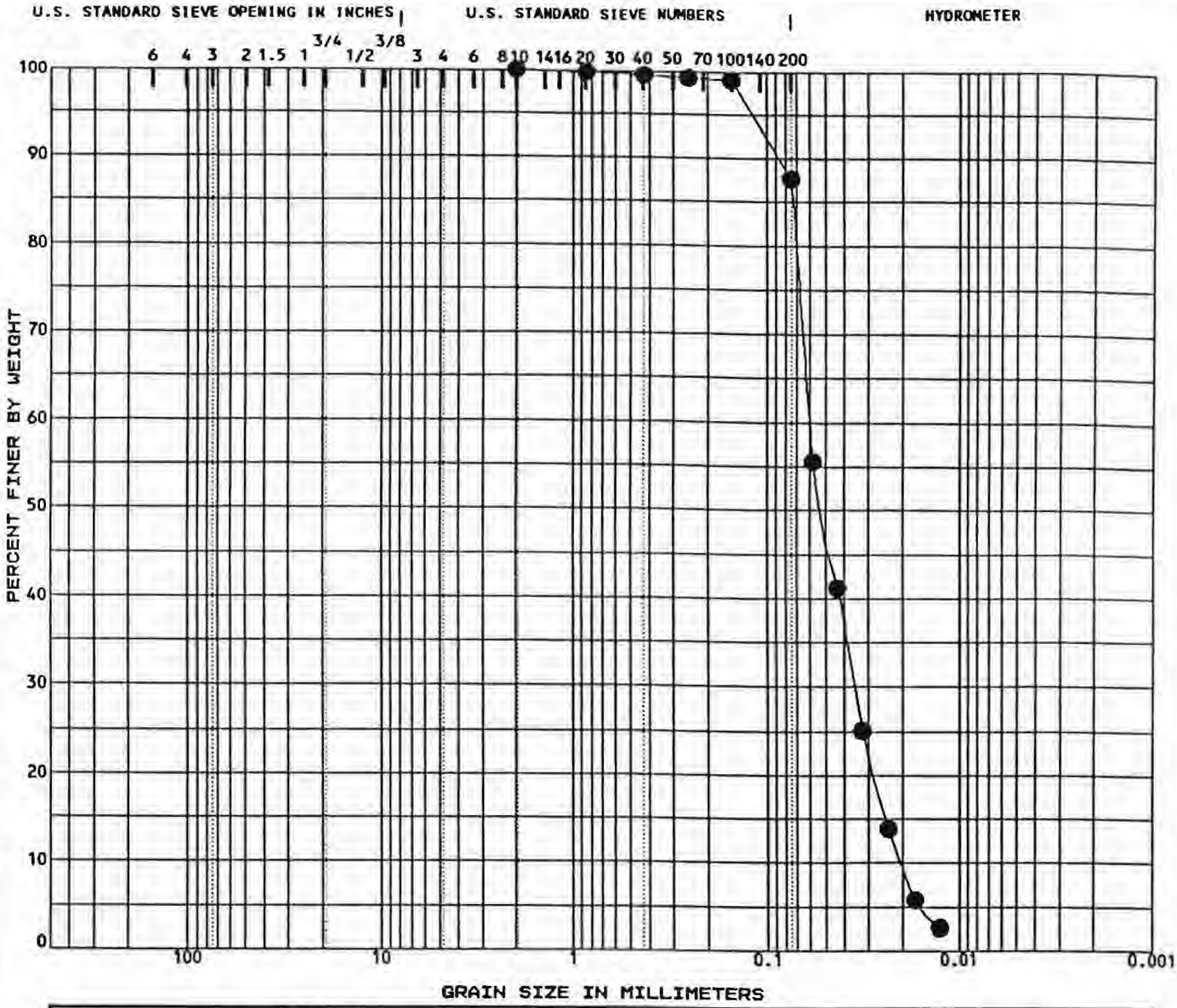


COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	WC%	LL	PL	PI	Cc	Cu
4IM-3B	65.0	**Fine SAND; some silt; trace medium sand**						
4IM-94-03B (R.P.)								

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
4IM-3B	65.0	2.00	0.16	0.090	0.0704	0.0	79.2	20.8	

Project	Fort Devens	Location
Area		Notes
Date	March 1995	**GRADATION CURVES**

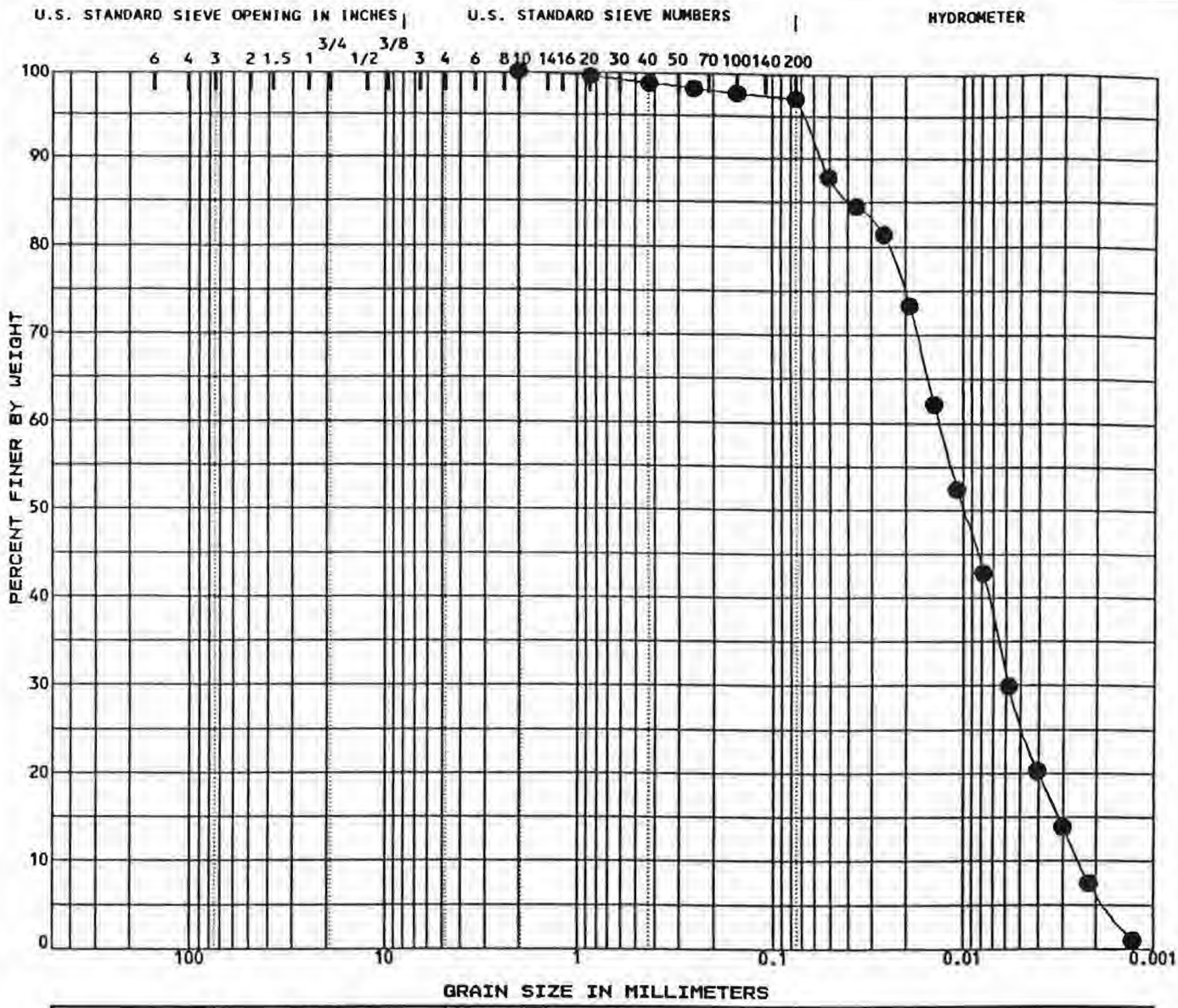


COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	WC%	LL	PL	PI	Cc	Cu
● 4IM-07X	10.0	SILT; little fine sand; trace medium sand						
41M-94-07X (R.P.)								

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● 4IM-07X	10.0	2.00	0.06	0.035	0.0203	0.0	12.4	87.6	

Project	Fort Devens	Location
Area		Notes
Date	March 1995	**GRADATION CURVES**

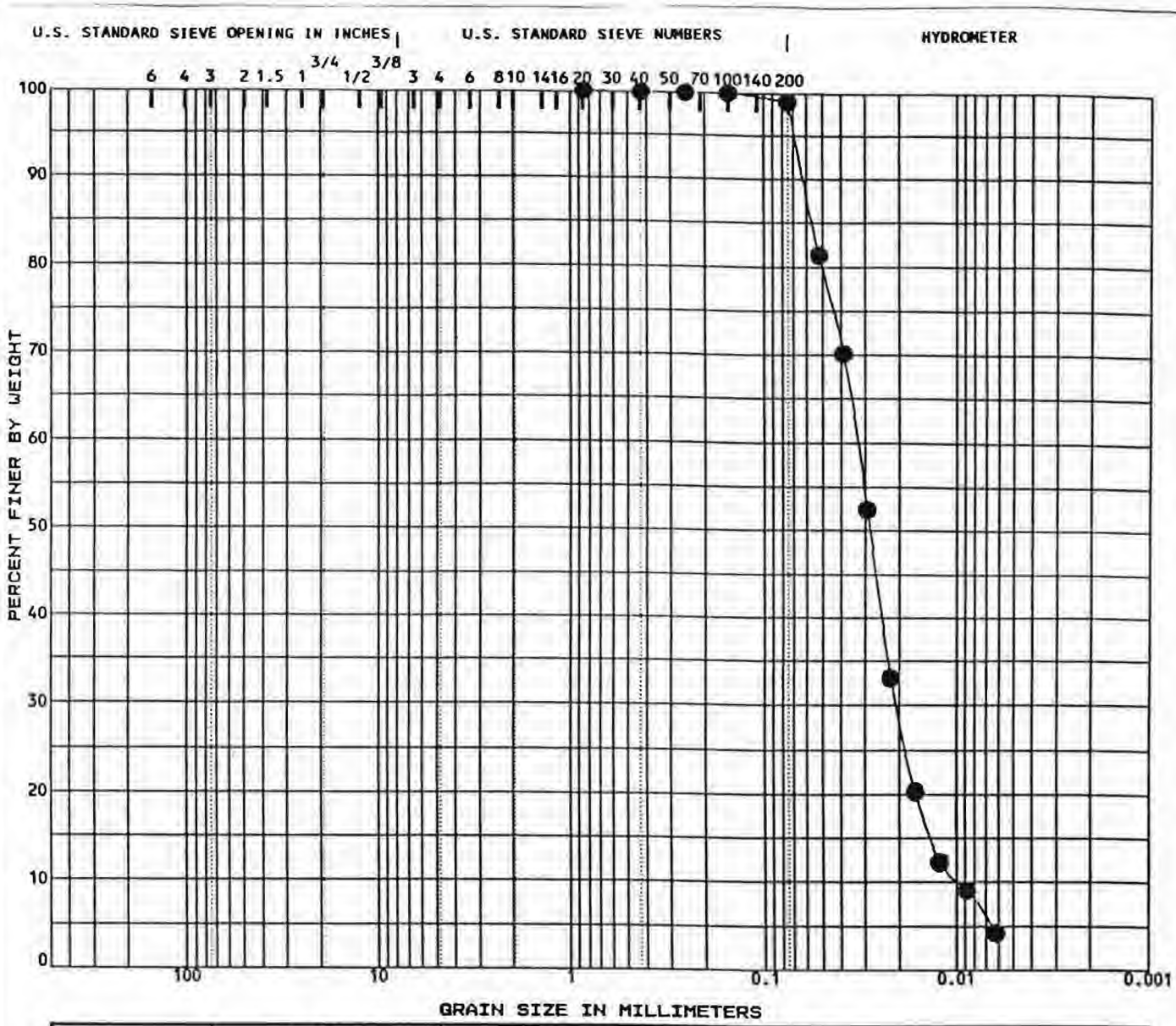


COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	WC%	LL	PL	PI	Cc	Cu
● 4IM-08A	19.0	SILT; little clay; trace fine - medium sand						
4IM-94-08A (R.P.)								

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● 4IM-08A	19.0	2.00	0.01	0.006	0.0025	0.0	3.0	71.2	25.7

Project	Fort Devens	Location
Area		Notes
Date	March 1995	**GRADATION CURVES**

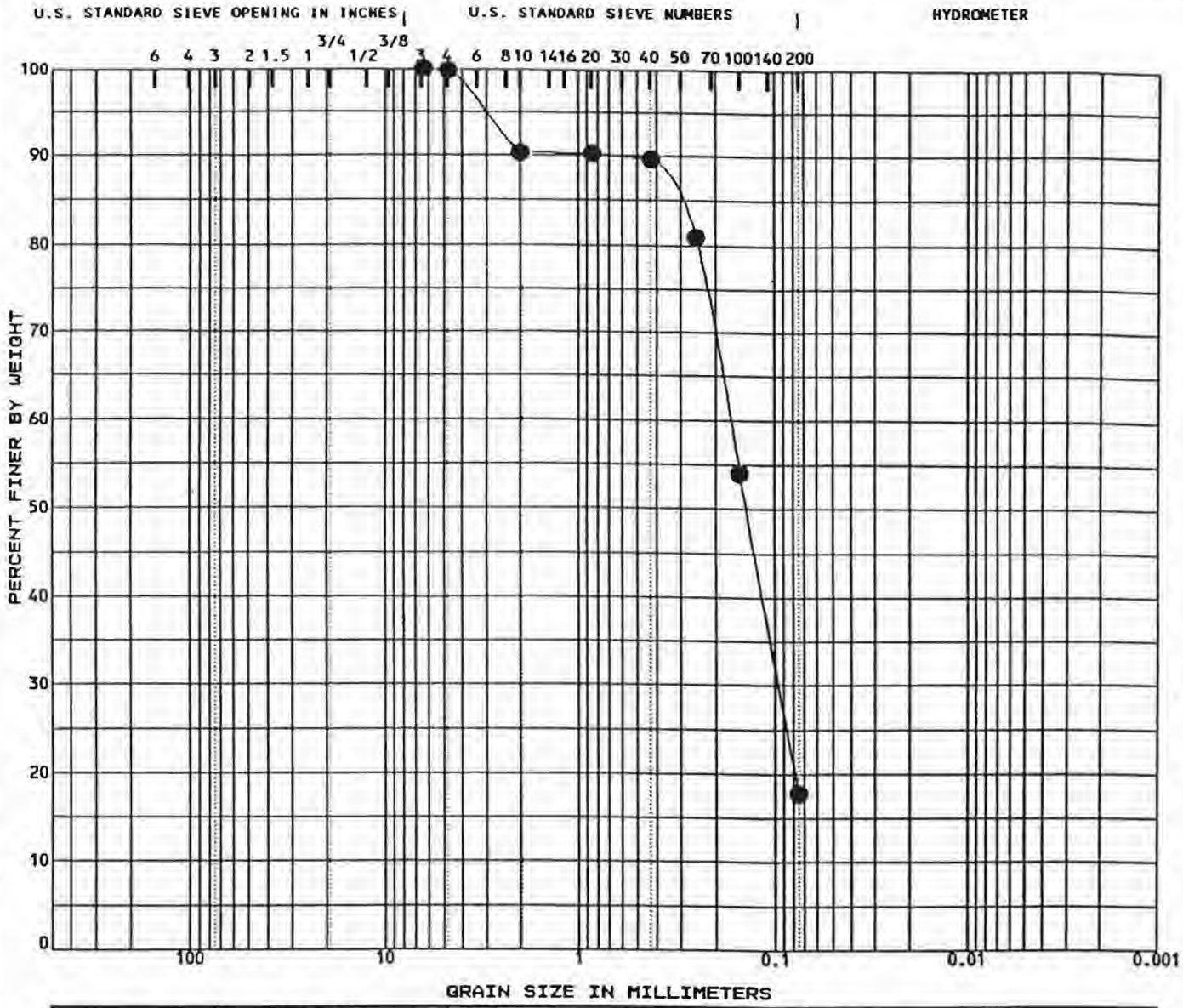


COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	WC%	LL	PL	PI	Cc	Cu
● 4IM-08B	39.0	**SILT; trace fine - medium sand**						
41M-94-08B	7.1							

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● 4IM-08B	39.0	0.85	0.03	0.021	0.0097	0.0	1.1	98.9	

Project	Fort Devens	Location
Area		Notes
Date	March 1995	**GRADATION CURVES**

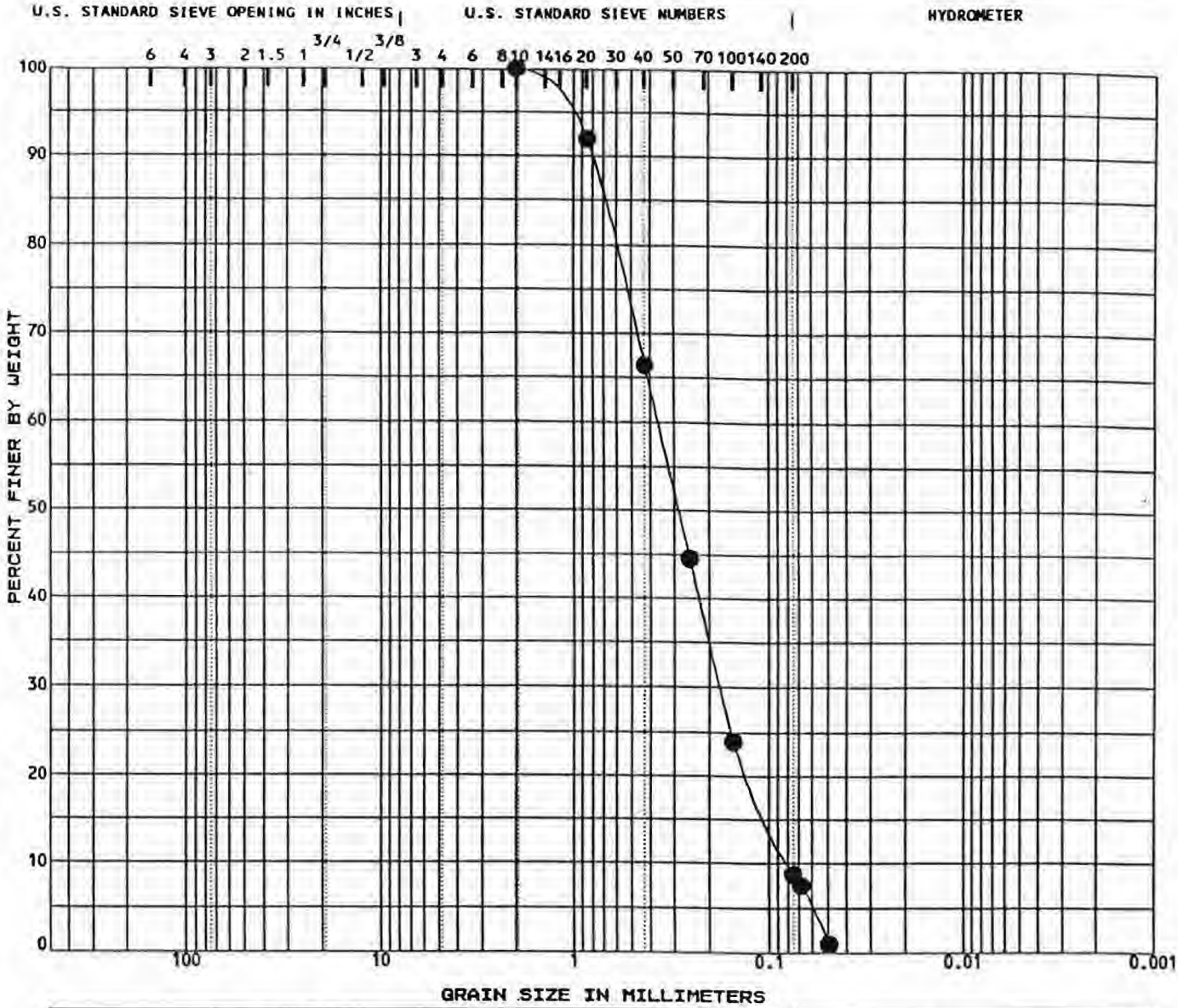


COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	WC%	LL	PL	PI	Cc	Cu
● 4IM-09A	35.0	Fine SAND; little silt;						
41M-94-09A		trace coarse - medium sand , fine gravel						

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● 4IM-09A	35.0	6.30	0.17	0.095		0.2	82.0	17.8	

Project	Fort Devens	Location
Area		Notes
Date	March 1995	**GRADATION CURVES**

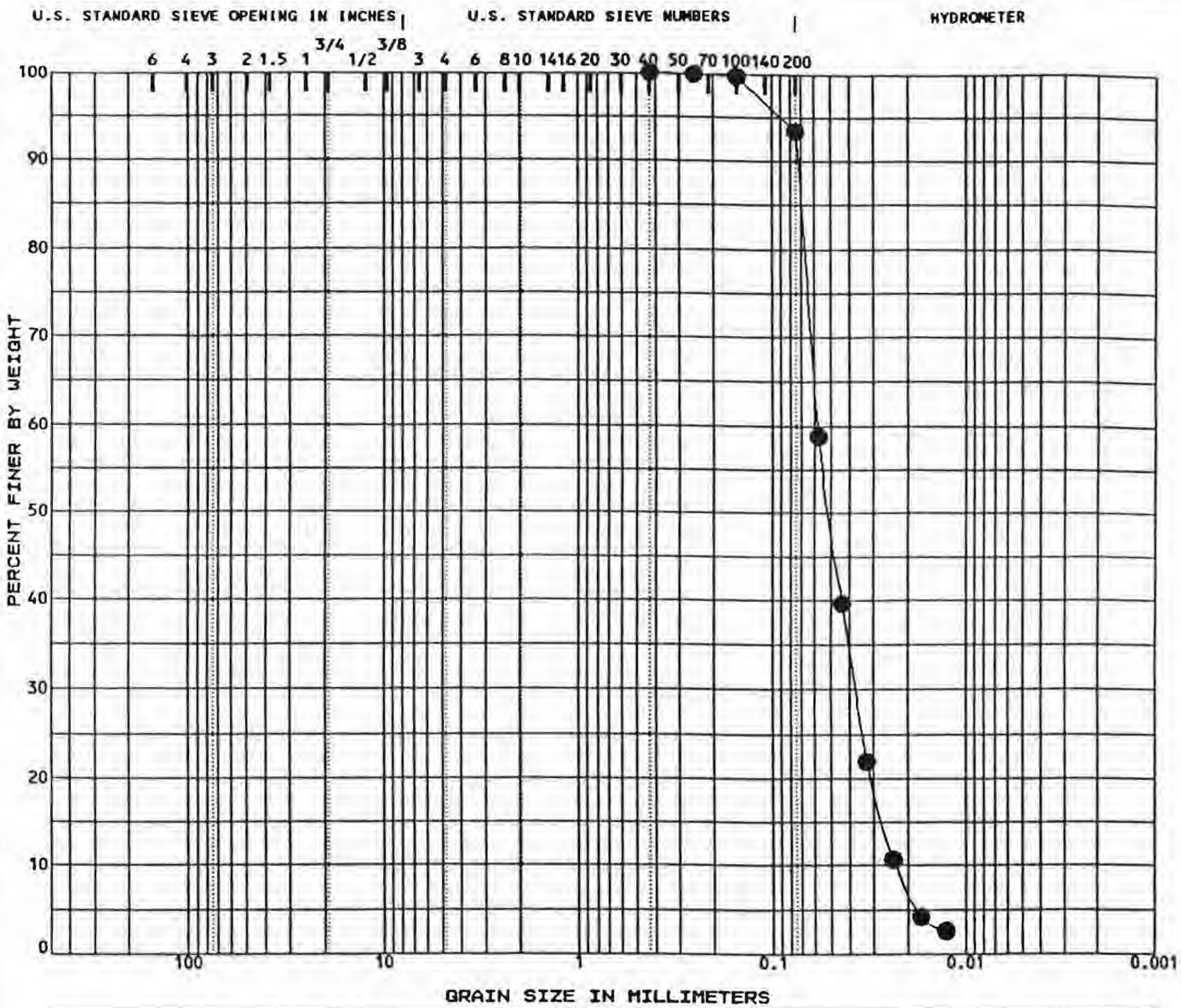


COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	WC%	LL	PL	PI	Cc	Cu
● 4IM-09B	50.0	Fine - Medium SAND; trace silt						
41M-94-09B (A.T.)								

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● 4IM-09B	50.0	2.00	0.36	0.175	0.0792	0.0	91.2	8.8	

Project	Fort Devens	Location
Area		Notes
Date	March 1995	**GRADATION CURVES**

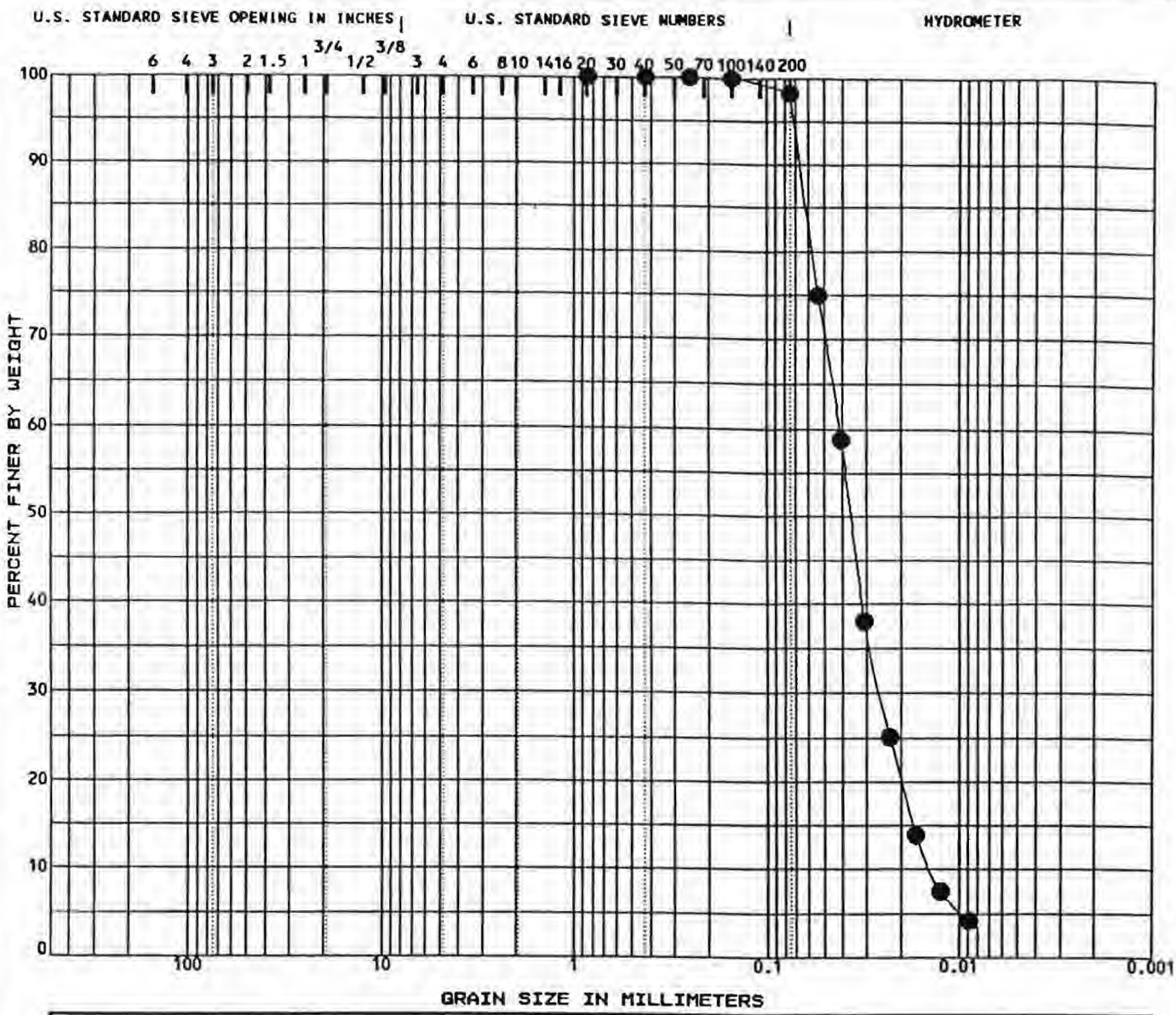


COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	WC%	LL	PL	PI	Cc	Cu
● 4IM-10X	35.0	SILT; trace fine sand						
4IM-94-10X (R.P)								

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● 4IM-10X	35.0	0.43	0.06	0.037	0.0231	0.0	6.6	93.4	

Project	Fort Devens	Location
Area		Notes
Date	March 1995	**GRADATION CURVES**

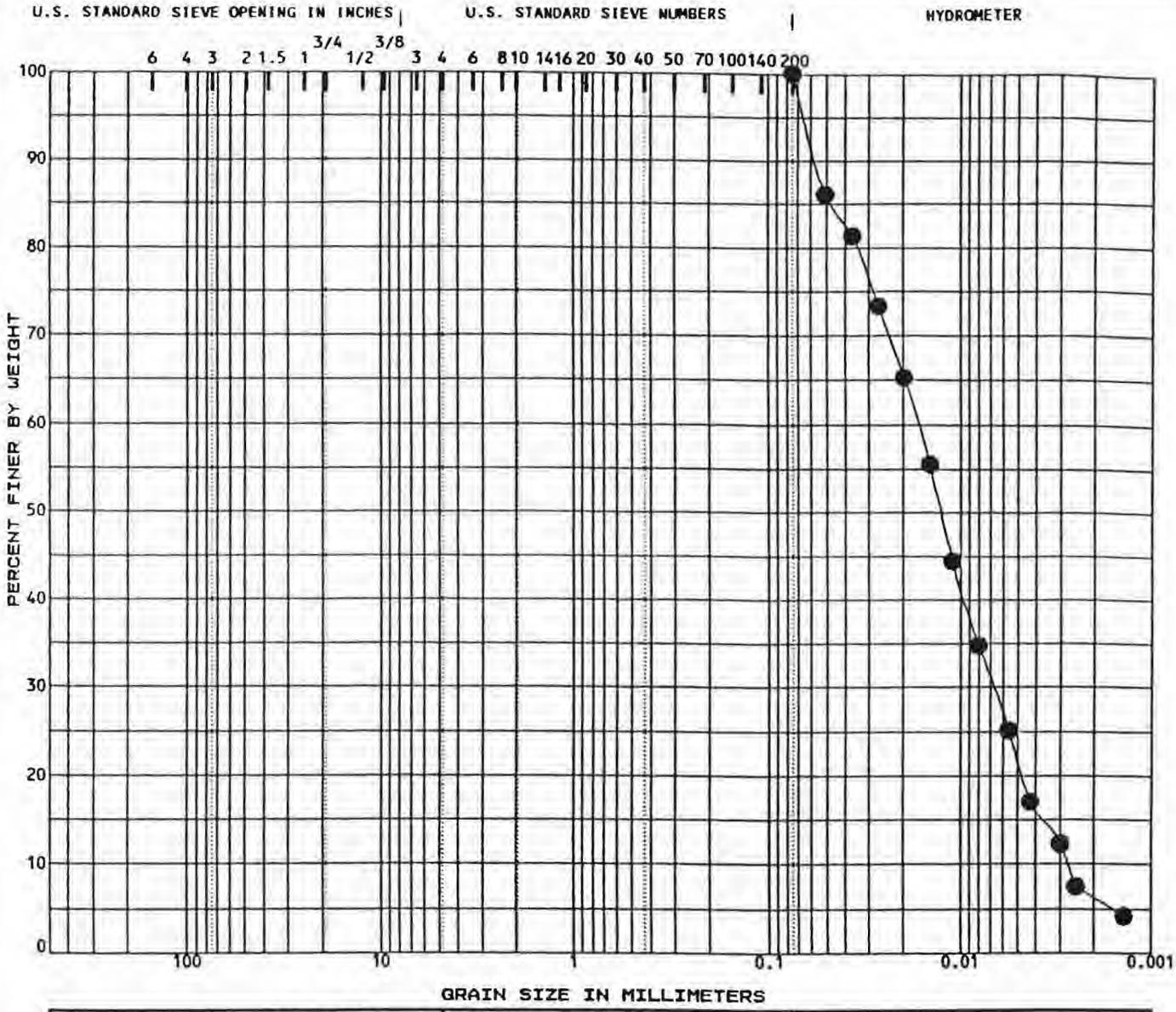


COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	WC%	LL	PL	PI	Cc	Cu
● 4IM-11X 44.0	SILT; trace fine - medium sand						
41M-94-11X (R.P.)							

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● 4IM-11X 44.0	0.25	0.04	0.026	0.0140	0.0	1.8	98.2	

Project Fort Devens	Location	
Area	Notes	
Date March 1995	**GRADATION CURVES**	

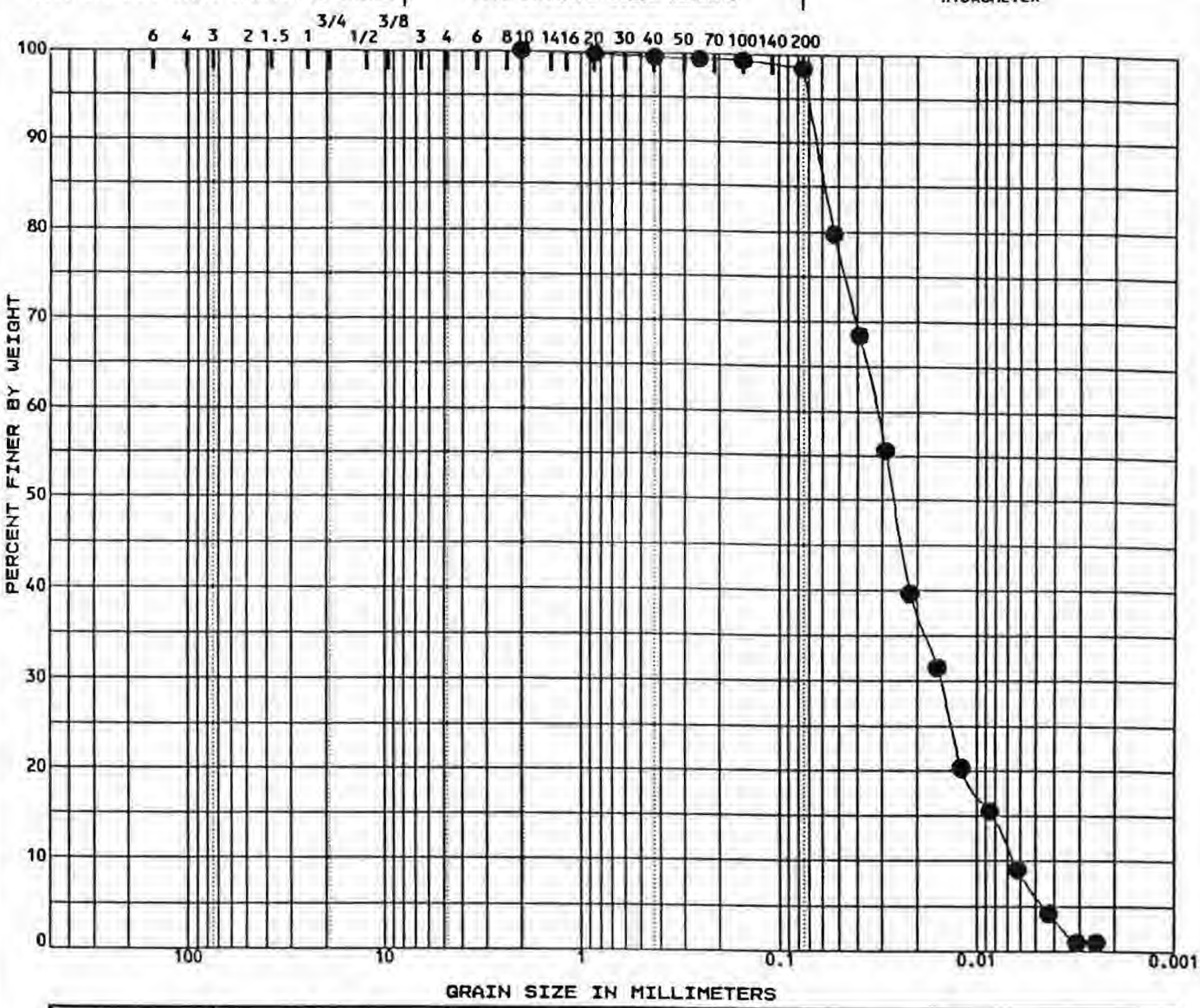


COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	WC%	LL	PL	PI	Cc	Cu
● 4IM-12X	35.0	SILT; little clay						
41M-94-12X (R.P.)								

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● 4IM-12X	35.0	0.08	0.02	0.007	0.0027	0.0	0.0	78.3	21.6

Project Fort Devens	Location
Area	Notes
Date March 1995	**GRADATION CURVES**

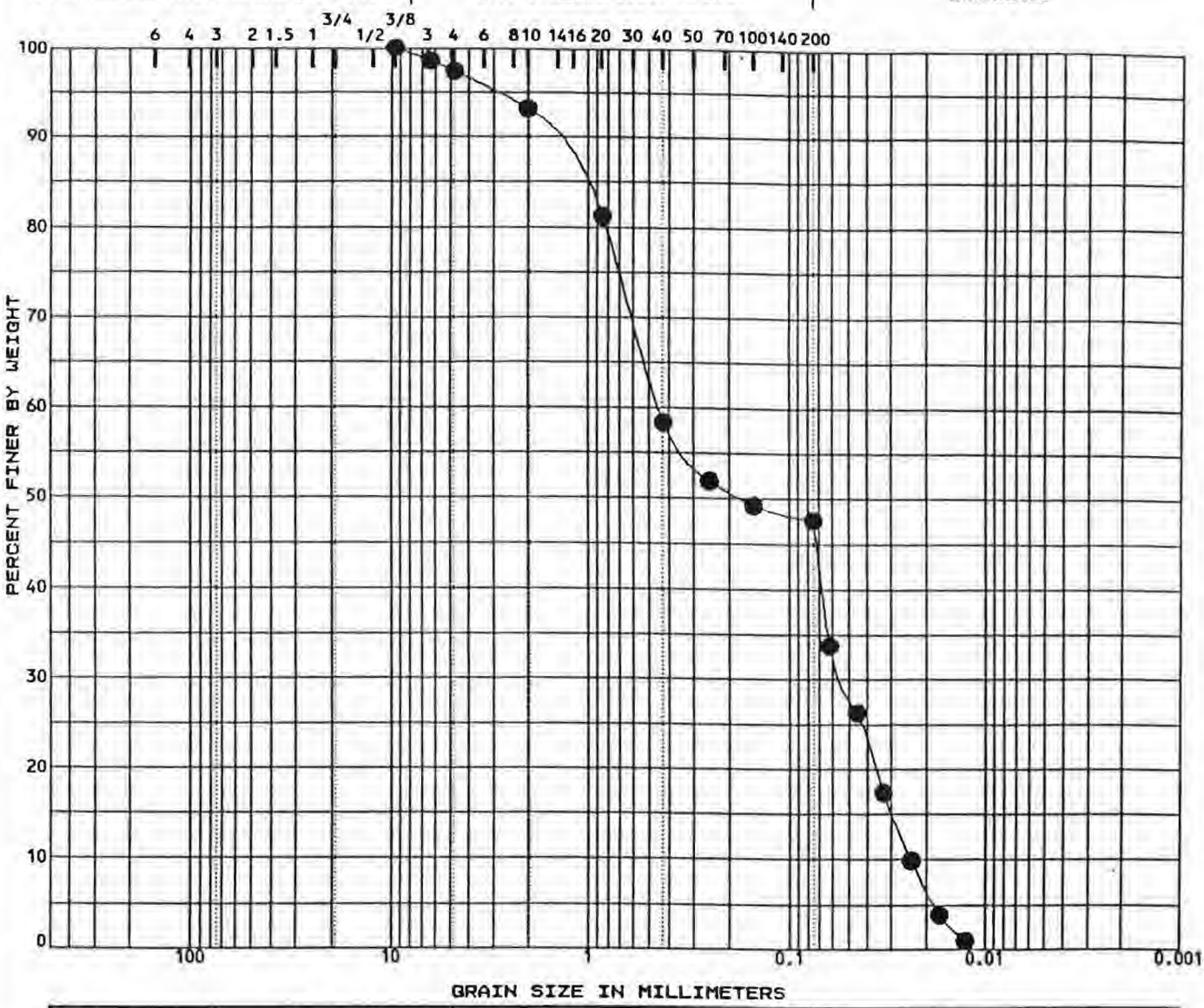


COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	WC%	LL	PL	PI	Cc	Cu
● 4IM-13X	19.0	SILT; trace clay, fine - medium sand						
4IM-94-13X (R.P.)								

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● 4IM-13X	19.0	2.00	0.03	0.015	0.0065	0.0	1.7	92.0	6.2

Project	Fort Devens	Location
Area		Notes
Date	March 1995	**GRADATION CURVES**



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	WC%	LL	PL	PI	Cc	Cu
● 4IM-14X	10.0	Sandy SILT; trace fine gravel						
4IM-94-14X (N.P.)								

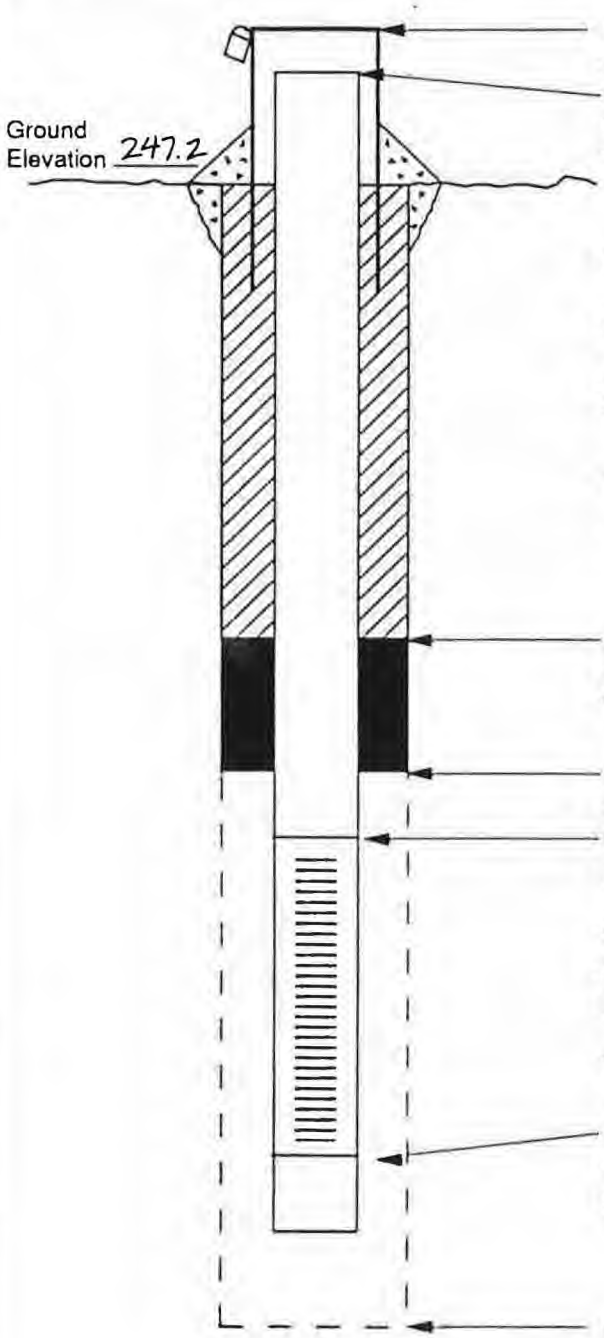
Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● 4IM-14X	10.0	9.51	0.45	0.053	0.0240	2.7	49.7	47.6	

Project Fort Devens	Location
Area	Notes
Date March 1995	**GRADATION CURVES**

MONITORING WELL CONSTRUCTION DIAGRAMS

MONITORING WELL CONSTRUCTION DIAGRAM

Project Fort Devens
Study Area 41
Driller Soil Exploration / J. Campbell
Project No. 7053-04
Boring No. 41M-92-01X
Drilling Method HSA 6.25"
Date Installed 8-27-92
Development Method
Field Geologist P. Bolmer



Elevation of Top of Surface Casing: 249.3
Stick-up of Casing Above Ground Surface: 2.5'
Elevation of Top of Riser Pipe: 249.85 SCS
Type of Surface Seal: Grout
Type of Surface Casing: Stainless Steel

ID of Surface Casing: 6"

Diameter of Borehole: ± 9"

Riser Pipe ID: 4" ID
Type of Riser Pipe: Sch 40 PVC

Type of Backfill: Bentonite / cement grout

Elevation of Top of Seal: 233.3
Depth of Top of Seal: 13.9
Type of Seal: bentonite pellets

Elevation of Top of Sand: 228.2
Depth of Top of Sand: 19.0
Elevation of Top of Screen: 222.1
Depth of Top of Screen: 25.1

Type of Screen: Sch 40 PVC
Slot Size x Length: 0.01 x 10'
ID of Screen: 4.0" ID

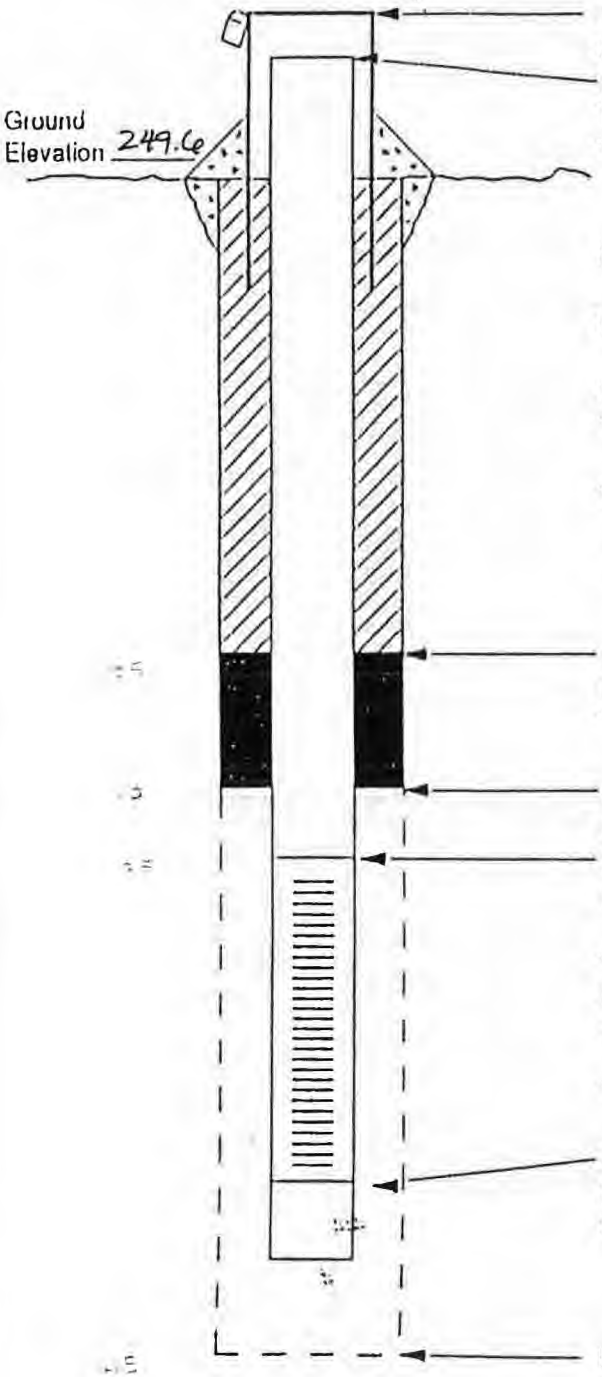
Type of Sandpack: Silica Quartz

Elevation of Bottom of Screen: 212.1
Depth of Bottom of Screen: 35.1
Depth of Sediment Sump with Plug:

Elevation of Bottom of Borehole: 211.2
Depth of Bottom of Borehole: 36.0'

MONITORING WELL CONSTRUCTION DIAGRAM

Project: Fort Devens
Study Area: SA 41
Driller: NHB J Garside (B-47)
Project No.: 07053.10
Boring No.: 41M-93-02A
Drilling Method: HSA 6.25" ID
Date Installed: 9.16.93
Development Method: Pump + Surge
Field Geologist: K. Nelson



Elevation of Top of Surface Casing: 252.4
Stick-up of Casing Above Ground Surface: 2.6
Elevation of Top of Riser Pipe: 252.2
Type of Surface Seal: Cement/Bentonite
Type of Surface Casing: 5' Steel Round

ID of Surface Casing: 6"

Diameter of Borehole: 10"

Riser Pipe ID: 2 ~~4~~ xs"
Type of Riser Pipe: sched 40 PVC

Type of Backfill: Grout
Portland Cement
Bentonite Powder

Elevation of Top of Seal: ~~248~~ JCS 248.6
Depth of Top of Seal: 1.0 bgs
Type of Seal: Bentonite Chips

Elevation of Top of Sand: 247.6
Depth of Top of Sand: 2.0' bgs
Elevation of Top of Screen: 246.6
Depth of Top of Screen: 3.0' bgs

Type of Screen: sched 40 PVC
Slot Size x Length: .010 x 10'
ID of Screen: 4 inch

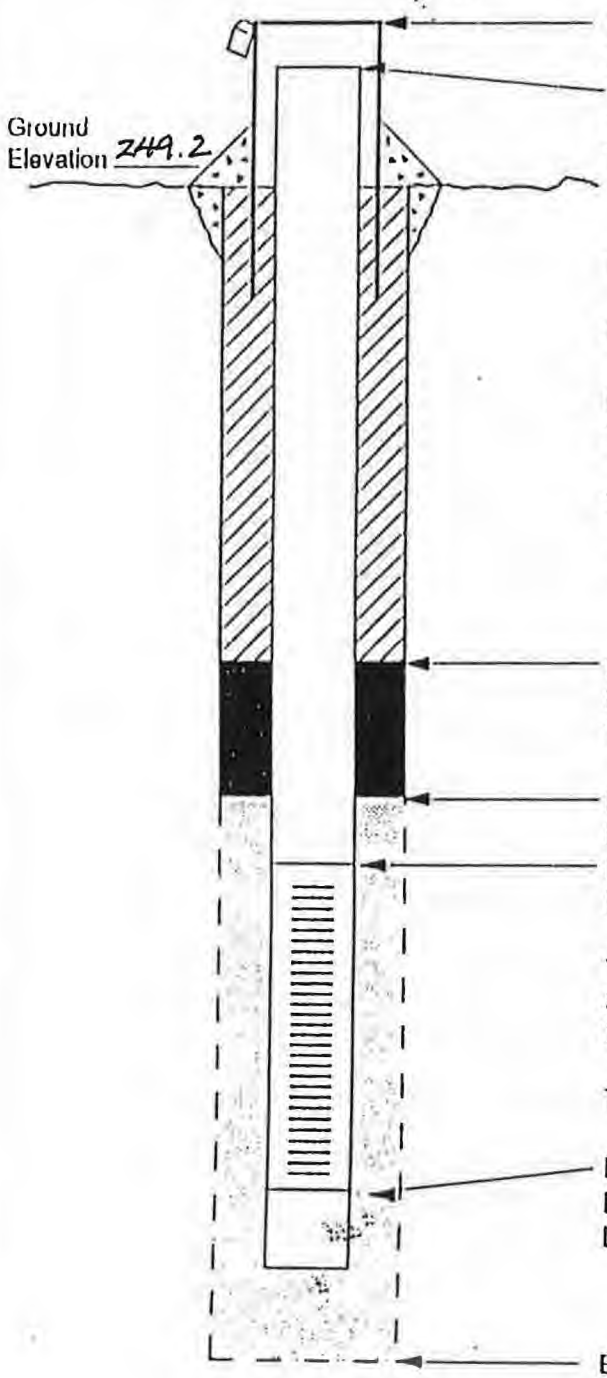
Type of Sandpack: Filter Sand

Elevation of Bottom of Screen: 241.6
Depth of Bottom of Screen: 8.0' bgs
Depth of Sediment Sump with Plug: NA

Elevation of Bottom of Borehole: 241.6
Depth of Bottom of Borehole: 8' bgs

MONITORING WELL CONSTRUCTION DIAGRAM

Project: Fort Devens
Study Area: 41
Driller: J. GARSIDE
Project No.: 7053.04
Boring No.: 41M.93.02B
Drilling Method: HSA 6 1/4"
Date Installed: 9.17.93
Development Method: Pump + Surge
Field Geologist: DINSMORE, RUSTAD



Elevation of Top of Surface Casing: 252.6
Stick-up of Casing Above Ground Surface: 3'
Elevation of Top of Riser Pipe: 252.3
Type of Surface Seal: MORTAR COLLAR
Type of Surface Casing: STEEL

ID of Surface Casing: 6"

Diameter of Borehole: 10"

Riser Pipe ID: 4"
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: 20:1
PORTLAND TYPE II : BENTONITE GROUT

Elevation of Top of Seal: 238.2
Depth of Top of Seal: 11' BGS
Type of Seal: BENTONITE CHIPS

Elevation of Top of Sand: 232.2
Depth of Top of Sand: 17' BGS
Elevation of Top of Screen: 227.2
Depth of Top of Screen: 22' BGS

Type of Screen: SCH 40 PVC
Slot Size x Length: 0.01" SLOT x 10'
ID of Screen: 4"

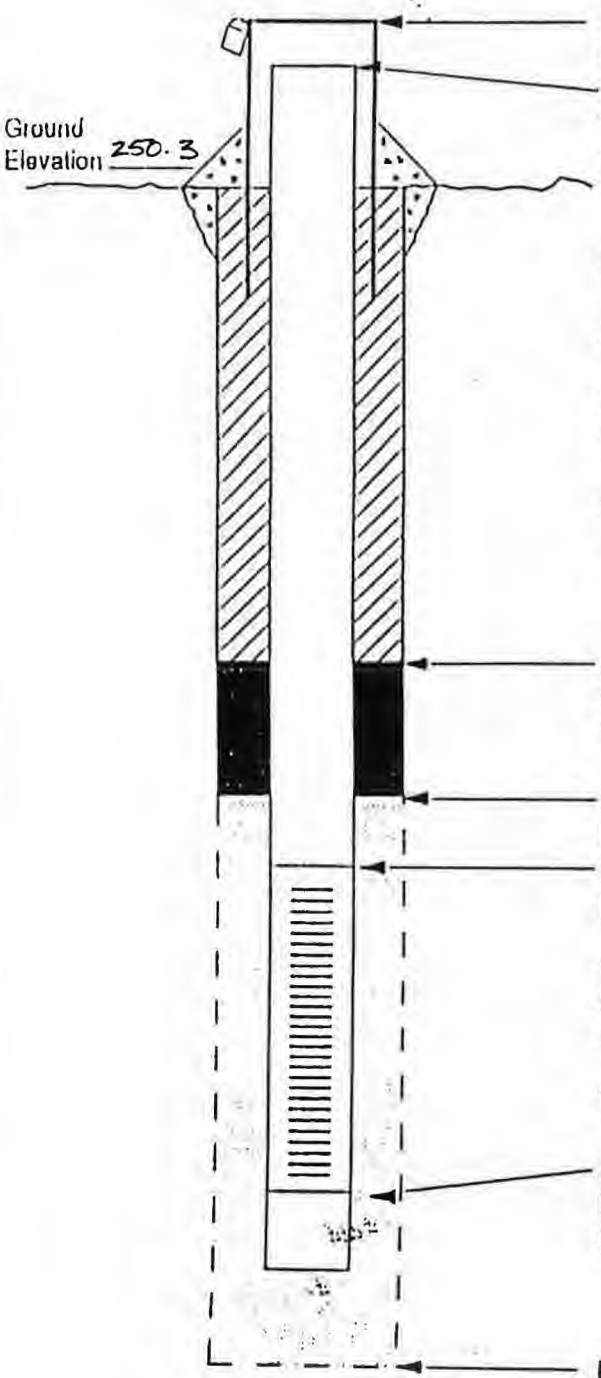
Type of Sandpack: FILTER SAND

Elevation of Bottom of Screen: 217.2
Depth of Bottom of Screen: 32' BGS
Depth of Sediment Sump with Plug: 32' BGS

Elevation of Bottom of Borehole: 216.2
Depth of Bottom of Borehole: 33' BGS

MONITORING WELL CONSTRUCTION DIAGRAM

Project: Fort Devens
Study Area: SA41
Driller: D.L. MAHER
Project No.: 7053-14
Boring No.: 41M-94-02C
Drilling Method: HSAs
Date Installed: 10-31-94
Development Method: PUMP + SURGE
Field Geologist: D.H. BELAN



Elevation of Top of Surface Casing: 253.1
Stick-up of Casing Above Ground Surface: 2.8
Elevation of Top of Riser Pipe: 252.9
Type of Surface Seal: MORTAR COLLAR
Type of Surface Casing: STEEL

ID of Surface Casing: 6"

Diameter of Borehole: 12"

Riser Pipe ID: 4"
Type of Riser Pipe: PVC

Type of Backfill: B-C GROUT

Elevation of Top of Seal: 221.3
Depth of Top of Seal: 29'
Type of Seal: HEAVY BENTONITE SLURRY

Elevation of Top of Sand: 216.5
Depth of Top of Sand: 33.8
Elevation of Top of Screen: 210.3
Depth of Top of Screen: 40'

Type of Screen: PVC
Slot Size x Length: 0.01" X 10'
ID of Screen: 4"

Type of Sandpack: 00 MORIE SAND

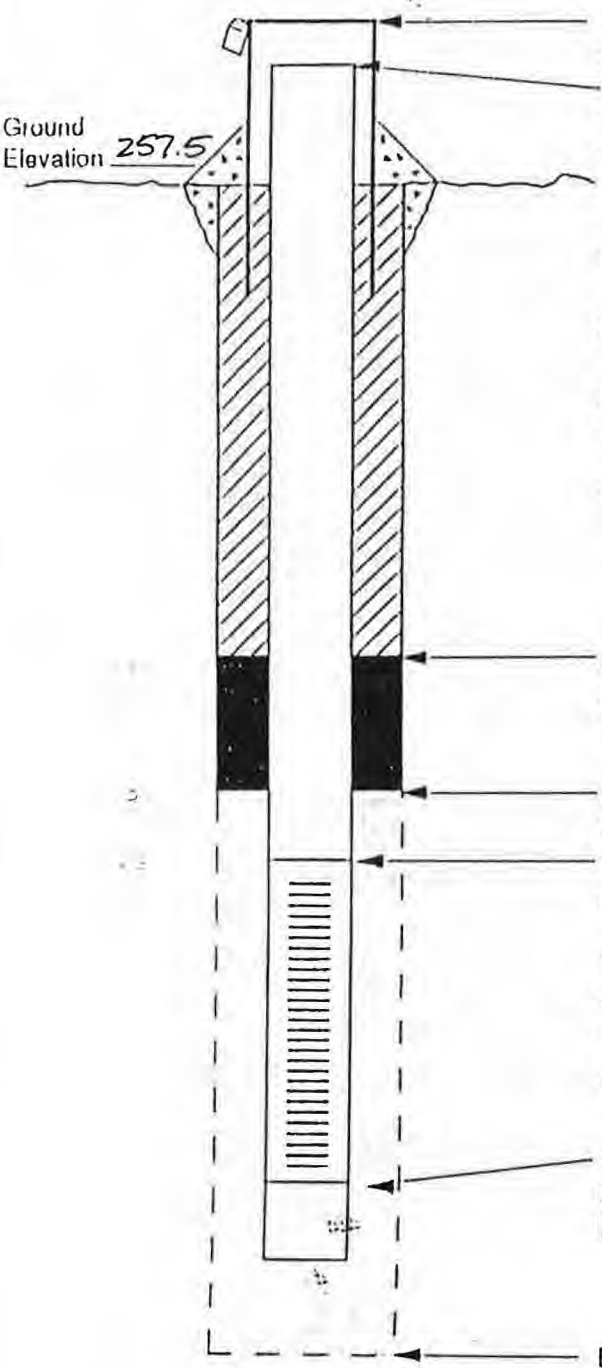
Elevation of Bottom of Screen: 200.3
Depth of Bottom of Screen: 50'
Depth of Sediment Sump with Plug: NA

Elevation of Bottom of Borehole: 200.3
Depth of Bottom of Borehole: 50'

▽ = 25' BGS
10.31.94

MONITORING WELL CONSTRUCTION DIAGRAM

Project: Fort Devens
Study Area: SA 41
Driller: NHB J Gaiside (B-47)
Project No.: 07053.10
Boring No.: 41M-93-03x
Drilling Method: HSA 6.25" ID
Date Installed: 9.16.93
Development Method:
Field Geologist: K. Nelson



Elevation of Top of Surface Casing: 259.9
Stick-up of Casing Above Ground Surface: 2.3
Elevation of Top of Riser Pipe: 259.6
Type of Surface Seal: Cement/Bentonite
Type of Surface Casing: 5' Steel Round

ID of Surface Casing: 6"

Diameter of Borehole: 10"

Riser Pipe ID: 4"
Type of Riser Pipe: sched 40 PVC

Type of Backfill: Grout
Portland Cement
Bentonite Powder

Elevation of Top of Seal: 232.5
Depth of Top of Seal: 25' bgs
Type of Seal: Bentonite Chips

Elevation of Top of Sand: 227.5
Depth of Top of Sand: 30' bgs
Elevation of Top of Screen: 223.5
Depth of Top of Screen: 34' bgs

Type of Screen: sched 40 PVC
Slot Size x Length: .010 x 10'
ID of Screen: 4 inch

Type of Sandpack: Filter Sand

Elevation of Bottom of Screen: 213.5
Depth of Bottom of Screen: 44' bgs
Depth of Sediment Sump with Plug: 44

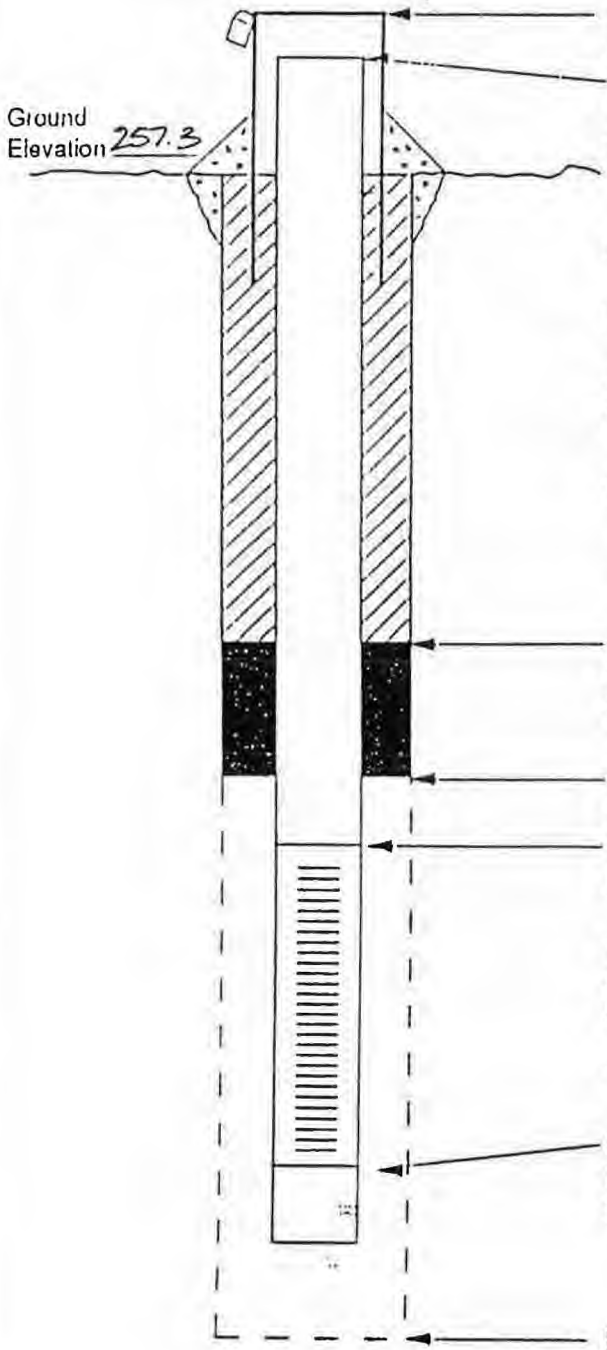
Elevation of Bottom of Borehole: 213.5
Depth of Bottom of Borehole: 45' bgs

MONITORING WELL CONSTRUCTION DIAGRAM

Project Fort Devens
Project No. 7053-14
Field Geologist R. PENDLETON

Study Area SA41
Boring No. 41M-94-03B
Date Installed 10-19-94

Driller J. Graglia of D.L. Maher
Drilling Method 6 5/8" ID HSAs
Development Method



Elevation of Top of Surface Casing: 260.53
Stick-up of Casing Above Ground Surface: 2.7'
Elevation of Top of Riser Pipe: 260.1
Type of Surface Seal: C-B Grout
Type of Surface Casing: 6" ID Steel

ID of Surface Casing: 6"

Diameter of Borehole: 10 1/4"

Riser Pipe ID: 4"
Type of Riser Pipe: Sched. 40 PVC (Johnson)

Type of Backfill: Cement-Bentonite Grout

Elevation of Top of Seal: 212.8
Depth of Top of Seal: 44.5'
Type of Seal: Bentonite Slurry (Volclay)

Elevation of Top of Sand: 207.8
Depth of Top of Sand: 49.5'
Elevation of Top of Screen: 203.1
Depth of Top of Screen: 54.2'

Type of Screen: Sched. 40 PVC (Johnson)
Slot Size x Length: 0.010" x 10'
ID of Screen: 4"

Type of Sandpack: #0 Morie Sand

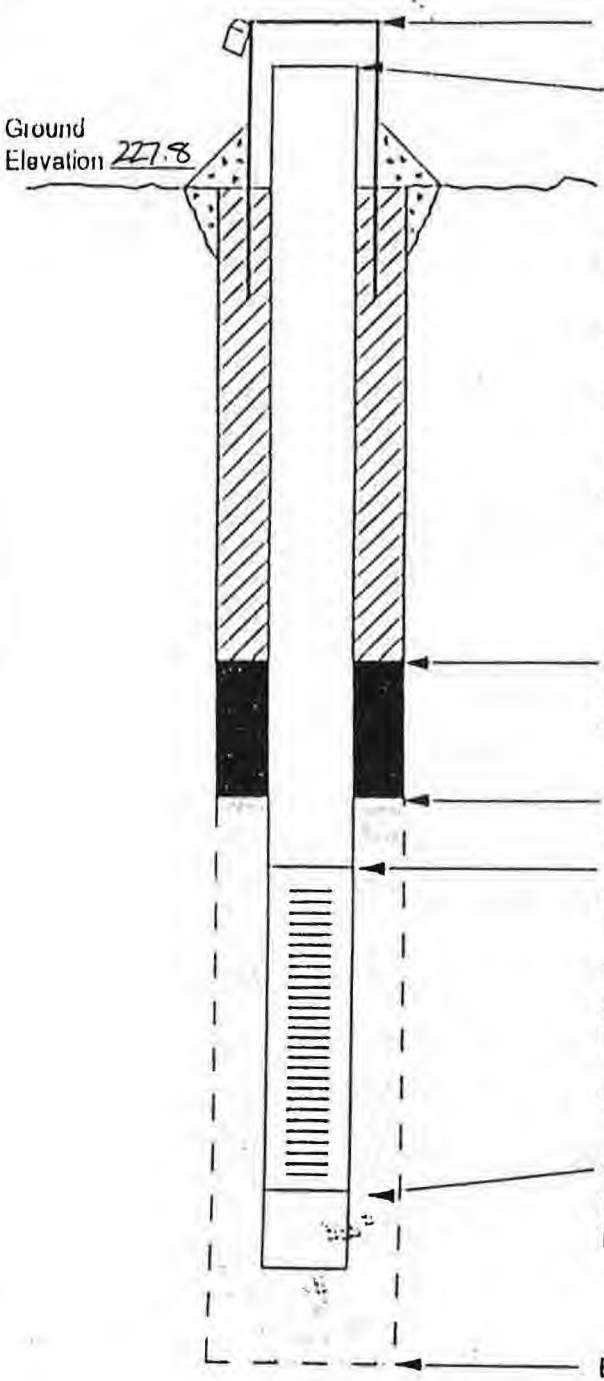
Elevation of Bottom of Screen: 193.1
Depth of Bottom of Screen: 64.2'
Depth of Sediment Sump with Plug: N/A

Elevation of Bottom of Borehole: 192.3
Depth of Bottom of Borehole: 65.0'

70 gallons of USAEC-approved source water added during drilling.

MONITORING WELL CONSTRUCTION DIAGRAM

Project: Fort Devens
Study Area: 41M
Driller: J. GARSIDE
Project No.: 07053-10
Boring No.: 41M-93-04X
Drilling Method: 4¼ HSA
Date Installed: 9-17-93
Development Method:
Field Geologist: DINSMORE



Elevation of Top of Surface Casing: 230.9
Stick-up of Casing Above Ground Surface: 2'
Elevation of Top of Riser Pipe: 230.6
Type of Surface Seal: MORTAR COLLAR
Type of Surface Casing: STEEL

ID of Surface Casing: 4"

Diameter of Borehole: 7"

Riser Pipe ID: 2"
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: PORTLAND TYPE II : BENTONITE 20 : 1

Elevation of Top of Seal: ~~1' BGS~~ (RR)
Depth of Top of Seal: 1' BGS
Type of Seal: BENTONITE CHIPS

Elevation of Top of Sand:
Depth of Top of Sand: 2' BGS
Elevation of Top of Screen:
Depth of Top of Screen: ~~2~~ BGS 4' (RR)

Type of Screen: SCH 40 PVC
Slot Size x Length: 0.01" SLOT X 5'
ID of Screen: 2"

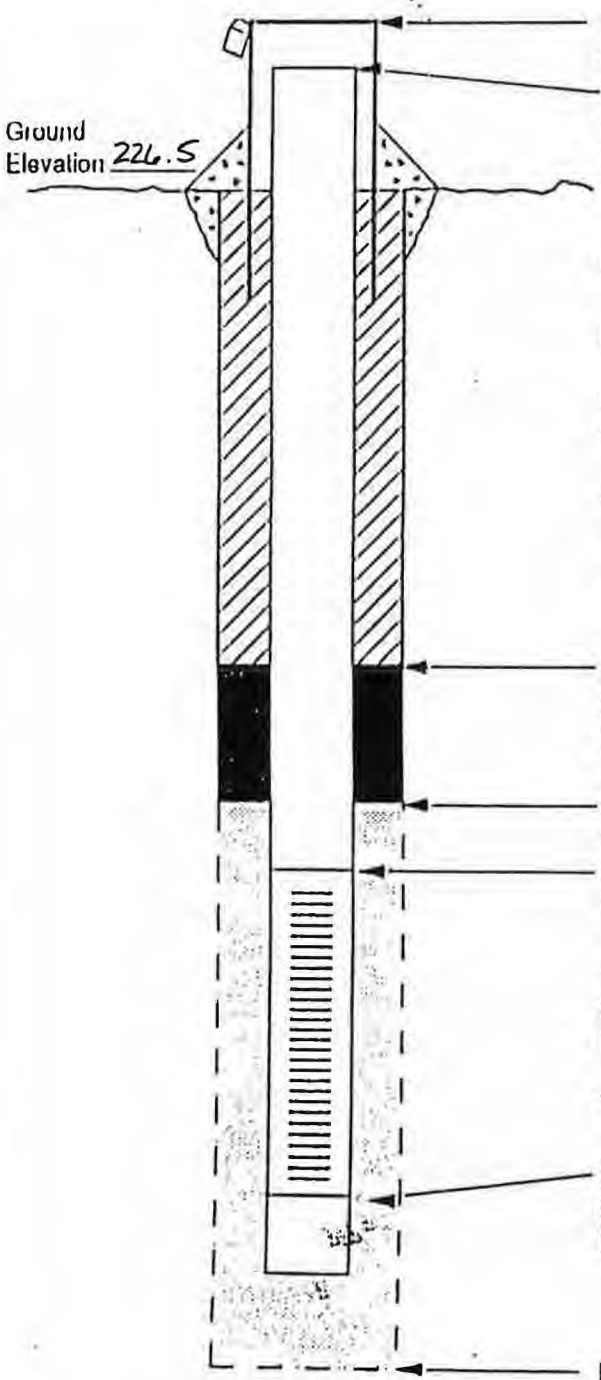
Type of Sandpack: FILTER SAND

Elevation of Bottom of Screen: (RR)
Depth of Bottom of Screen: 8' ~~10'~~ BGS (RR)
Depth of Sediment Sump with Plug: 8' ~~10'~~ BGS

Elevation of Bottom of Borehole:
Depth of Bottom of Borehole: 10' BGS

MONITORING WELL CONSTRUCTION DIAGRAM

Project: Fort Devens
Study Area: 41M
Driller: J. GARSIDE
Project No.: 07053-04
Boring No.: 41M-93-05X
Drilling Method: 4¼ HSA
Date Installed: 9-17-93
Development Method:
Field Geologist: DINSMORE



Elevation of Top of Surface Casing: 230.18
Stick-up of Casing Above Ground Surface: 2.5'
Elevation of Top of Riser Pipe: 230.1
Type of Surface Seal: MORTAR COLLAR
Type of Surface Casing: STEEL

ID of Surface Casing: 3"

Diameter of Borehole: 7"

Riser Pipe ID: 2"
Type of Riser Pipe: SCH 40 PVC

Type of Backfill: 20:1
PORTLAND TYPE II : BENTONITE

Elevation of Top of Seal: 225.5
Depth of Top of Seal: 1' BGS
Type of Seal: BENTONITE CHIPS

Elevation of Top of Sand: 224.5
Depth of Top of Sand: 2' BGS
Elevation of Top of Screen:
Depth of Top of Screen: ~~5'~~ BGS
4' RR

Type of Screen: SCH 40 PVC
Slot Size x Length: 0.01" SLOT x 5'
ID of Screen: 2"

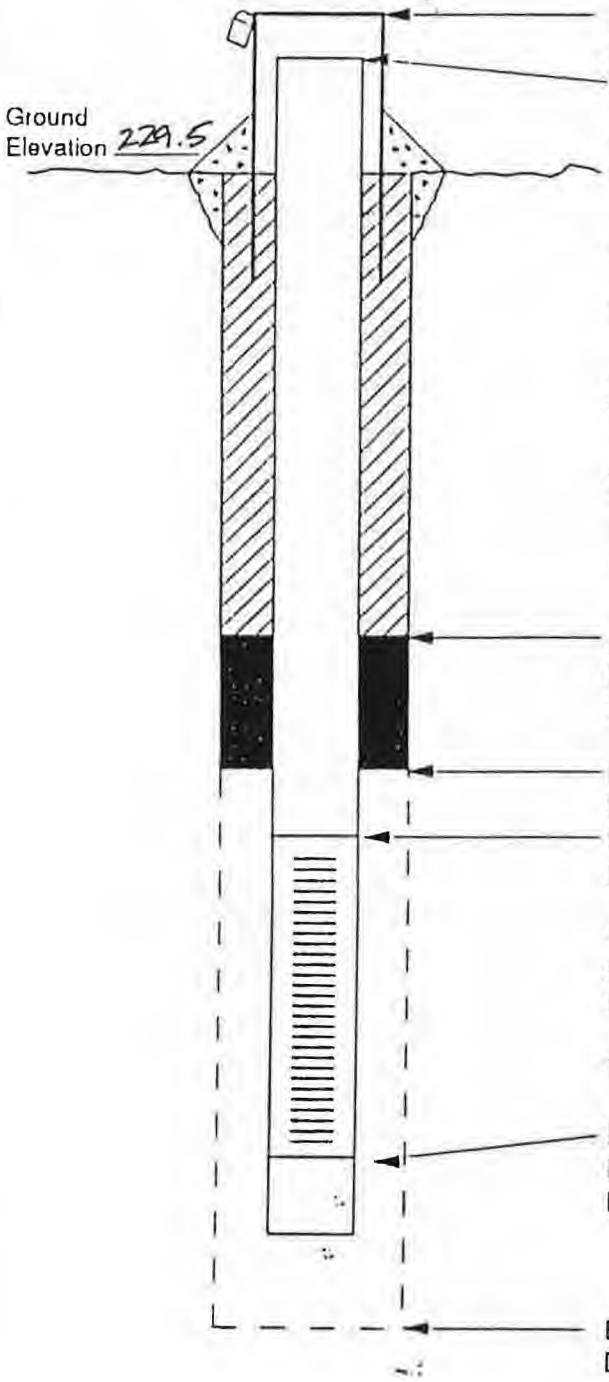
Type of Sandpack: FILTER SAND

Elevation of Bottom of Screen: RR 222.5
Depth of Bottom of Screen: ~~4'~~ ~~10'~~ BGS
Depth of Sediment Sump with Plug: ~~10'~~ BGS
~~4'~~ 20

Elevation of Bottom of Borehole: RR ~~216~~ 216.5
Depth of Bottom of Borehole: 10' BGS

MONITORING WELL CONSTRUCTION DIAGRAM

Project: Fort Devens
Project No.: 7053-14
Study Area: SA 41
Boring No.: ~~XGM~~ 41MW-94-06X
Date Installed: 10/14/94
Driller: John Graglia (D.L. Maher)
Drilling Method: 6 5/8" HSA
Development Method:
Field Geologist: D. H. Belon



Elevation of Top of Surface Casing: 232.0
Stick-up of Casing Above Ground Surface: 2.4
Elevation of Top of Riser Pipe: 231.9
Type of Surface Seal: C-B Grout
Type of Surface Casing: Steel Prot. Cover

ID of Surface Casing: 6.0"

Diameter of Borehole: 10.25"

Riser Pipe ID: 4-inch
Type of Riser Pipe: Sch. 40 PVC

Type of Backfill: C-B Grout

Elevation of Top of Seal: 227.5
Depth of Top of Seal: 2.0 feet
Type of Seal: Bentonite Pellets

Elevation of Top of Sand: 226.5
Depth of Top of Sand: 3.0 feet
Elevation of Top of Screen:
Depth of Top of Screen: 4.0 feet

Type of Screen: PVC slotted
Slot Size x Length: 10-slot x 10 feet
ID of Screen: 4-inch

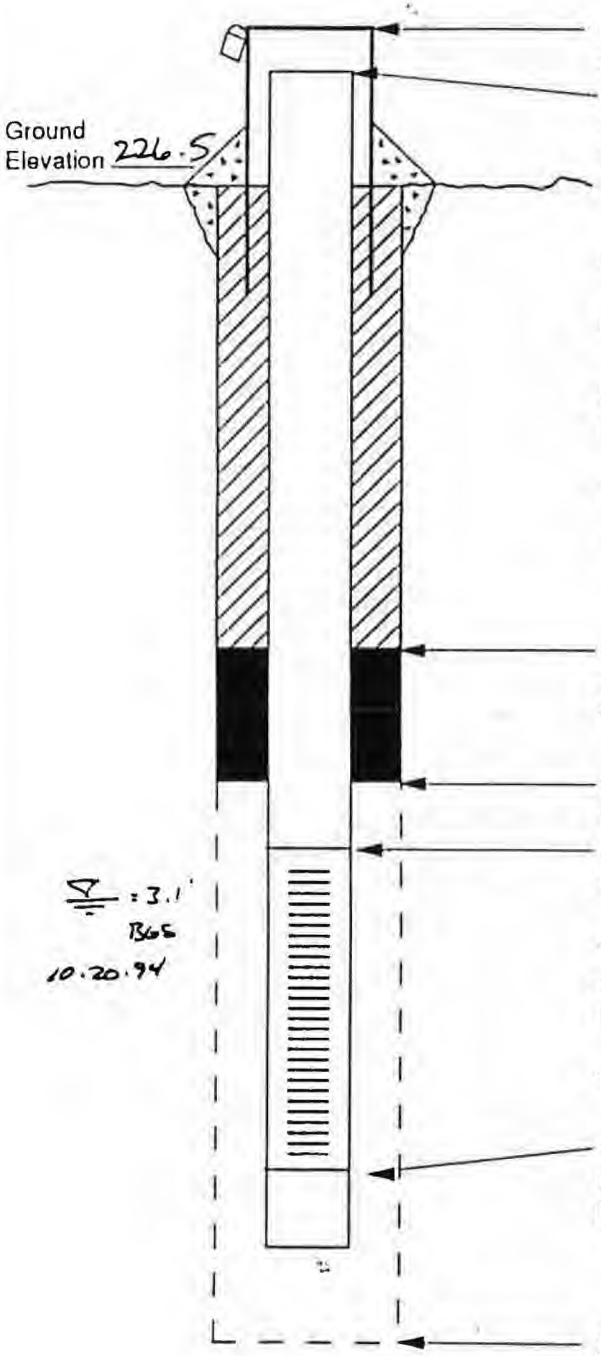
Type of Sandpack: ØØ MORIE SILICA SAND

Elevation of Bottom of Screen: 215.5
Depth of Bottom of Screen: 14.0 feet
Depth of Sediment Sump with Plug: —

Elevation of Bottom of Borehole: 215.5
Depth of Bottom of Borehole: 14.0 feet

MONITORING WELL CONSTRUCTION DIAGRAM

Project: Fort Devens
Study Area: SA41
Driller: D.L. MAHER
Project No.: 7053-14
Boring No.: 41M-94-07X
Drilling Method: 6 5/8" ID HSAs
Date Installed: 10-20-94
Development Method: Pump + Surge
Field Geologist: R PENDLETON



Elevation of Top of Surface Casing: 229.1
Stick-up of Casing Above Ground Surface: 2.6
Elevation of Top of Riser Pipe: 228.9
Type of Surface Seal: MORTAR COLLAR
Type of Surface Casing: STEEL

ID of Surface Casing: 6"

Diameter of Borehole: 10 1/4"

Riser Pipe ID: 4"
Type of Riser Pipe: Sch. 40 PVC (Johnson)

Type of Backfill: 20:1 GROUT
PORTLAND TYPE II : BENTONITE

Elevation of Top of Seal: 224.5
Depth of Top of Seal: 2.0 ft
Type of Seal: Bentonite pellets

Elevation of Top of Sand: 224.0
Depth of Top of Sand: 2.5 ft
Elevation of Top of Screen:
Depth of Top of Screen: 3.4 ft

Type of Screen: Sch. 40 PVC (Johnson)
Slot Size x Length: 0.010" x 5 ft
ID of Screen: 4"

Type of Sandpack: ØØ Morie Sand

Elevation of Bottom of Screen: 218.6
Depth of Bottom of Screen: 7.9 ft
Depth of Sediment Sump with Plug: N/A

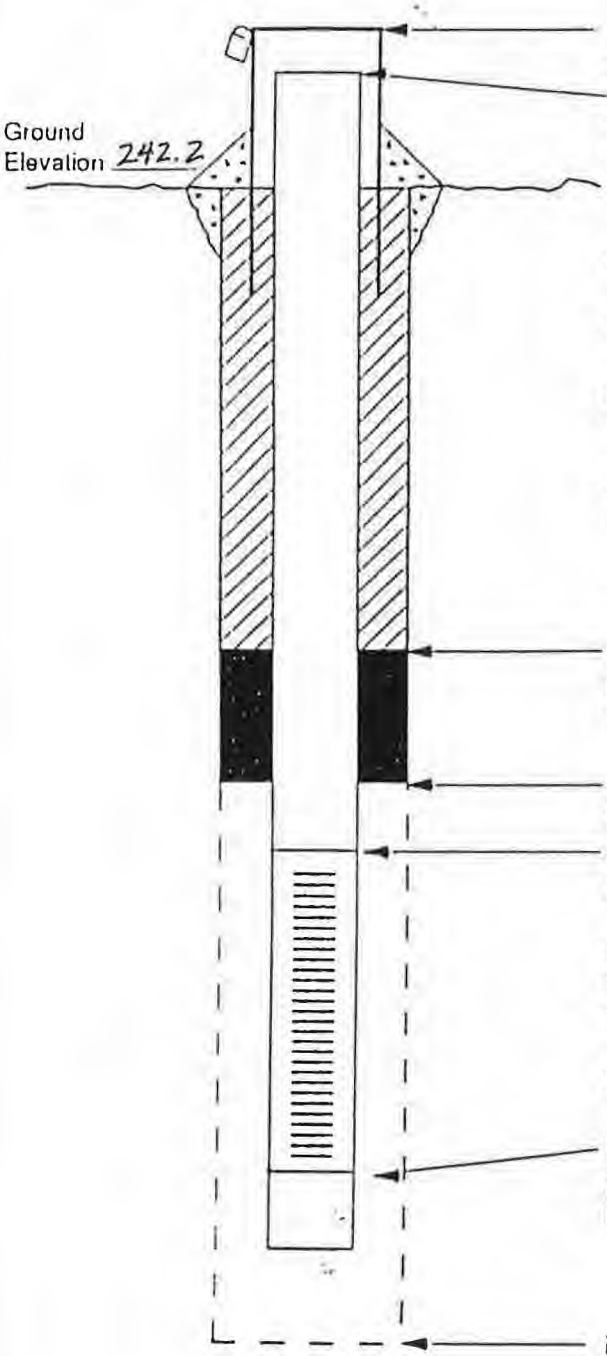
Elevation of Bottom of Borehole: 216.5
Depth of Bottom of Borehole: 10 ft

MONITORING WELL CONSTRUCTION DIAGRAM

Project Fort Devens
Project No. 7053-14
Field Geologist D H. BELAN

Study Area SA 41
Boring No. 41M-94-08A
Date Installed 10-25-94

Driller D.L. MAHER
Drilling Method HSAs
Development Method Pump + Surge



Elevation of Top of Surface Casing: 245.0
Stick-up of Casing Above Ground Surface: 2.8
Elevation of Top of Riser Pipe: 244.7
Type of Surface Seal: Cement/Bentonite
Type of Surface Casing:

ID of Surface Casing: 6.0"
Diameter of Borehole: ~~12"~~ JLS 10.25"

Riser Pipe ID: 4"
Type of Riser Pipe: PVC
Type of Backfill: BENTONITE-CEMENT SLURRY

Elevation of Top of Seal: 235.7
Depth of Top of Seal: 6.8'
Type of Seal: BENTONITE PELLET (1/4")

Elevation of Top of Sand: 230.9
Depth of Top of Sand: 11.3
Elevation of Top of Screen:
Depth of Top of Screen: 16.5'

Type of Screen: PVC
Slot Size x Length: 0.01 x 10'
ID of Screen: 4"

Type of Sandpack: 00 MORIE SAND

Elevation of Bottom of Screen: 215.7
Depth of Bottom of Screen: 26.5'
Depth of Sediment Sump with Plug:

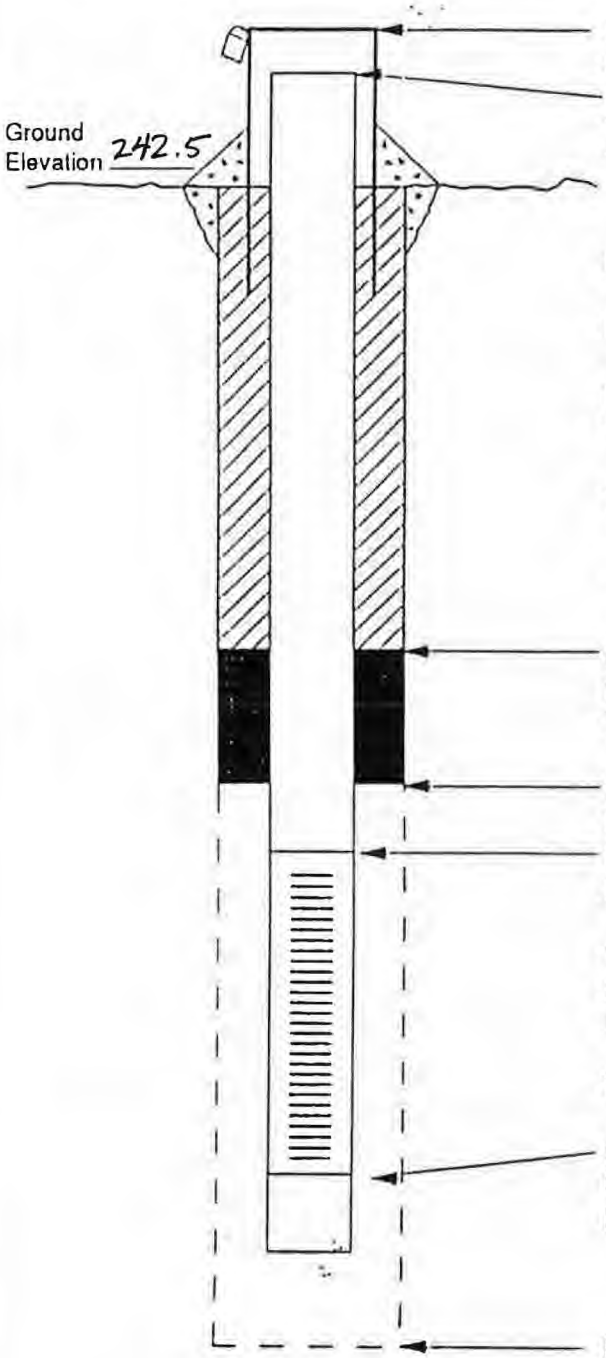
Elevation of Bottom of Borehole: 212.2
Depth of Bottom of Borehole: 30'

▼ 18.5'

30 GALLONS ADDED

MONITORING WELL CONSTRUCTION DIAGRAM

Project: Fort Devens
Study Area: SA 41
Driller: D.L. MAYER
Project No.: 7053-14
Boring No.: 41M-94-08B
Drilling Method: HSAs
Date Installed: 10-26-94
Development Method: PUMP + SURGE
Field Geologist: D.H. BELAN



Elevation of Top of Surface Casing: 245.1
Stick-up of Casing Above Ground Surface: 2.6
Elevation of Top of Riser Pipe: 244.9
Type of Surface Seal: MORTAR COLLAR
Type of Surface Casing: STEEL

ID of Surface Casing: 6"

Diameter of Borehole: 12"

Riser Pipe ID: 4"
Type of Riser Pipe: PVC

Type of Backfill: BENTONITE-CEMENT GROUT

Elevation of Top of Seal: 218.5
Depth of Top of Seal: 24'
Type of Seal: VOLCLAY SLURRY

Elevation of Top of Sand: 213.5
Depth of Top of Sand: 29'
Elevation of Top of Screen:
Depth of Top of Screen: 34'

Type of Screen: PVC
Slot Size x Length: 0.01 x 10'
ID of Screen: 4"

Type of Sandpack: 00 MORIE SAND

Elevation of Bottom of Screen: 198.5
Depth of Bottom of Screen: 44'
Depth of Sediment Sump with Plug: NA

Elevation of Bottom of Borehole: 198.5
Depth of Bottom of Borehole: 44'

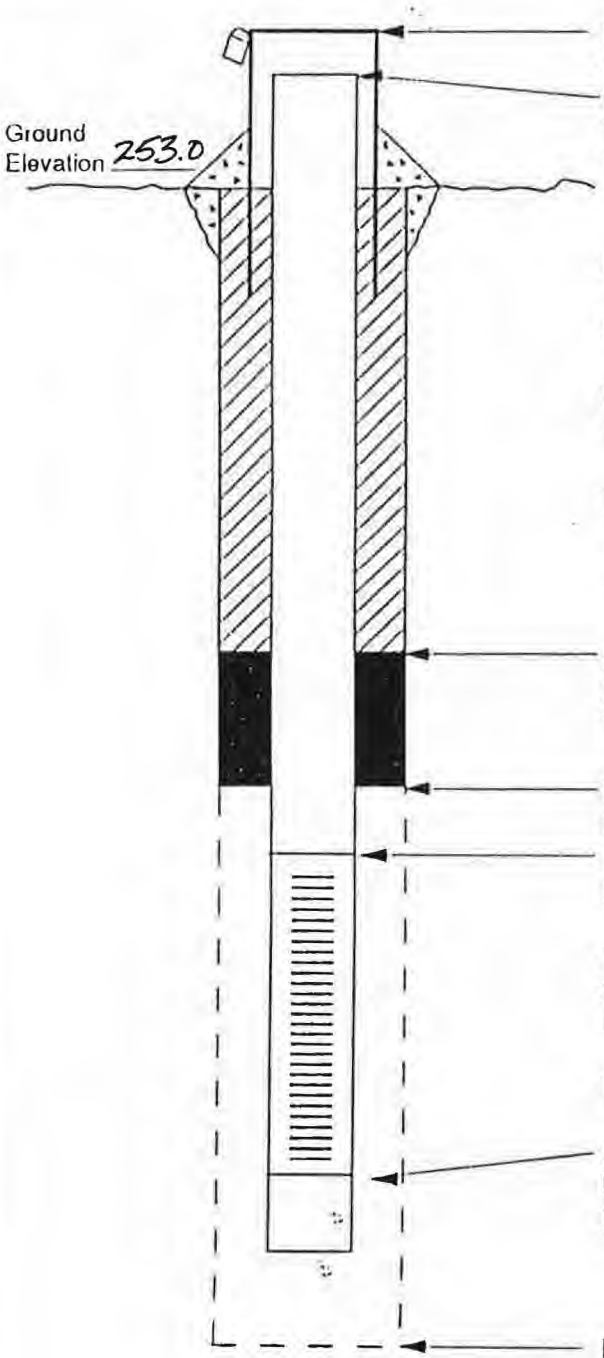
▼ 17.6'

~~30~~ 70 GALLONS ADDED

ABB Environmental Services, Inc.

MONITORING WELL CONSTRUCTION DIAGRAM

Project: Fort Devens
Study Area: SA 41
Driller: D.L. MAHER
Project No.: 7053-14
Boring No.: 41M-94-09A
Drilling Method: HSAs
Date Installed: 11-3-94
Development Method: PUMP + SURGE
Field Geologist: D.H. BELAN



Elevation of Top of Surface Casing: 255.6
Stick-up of Casing Above Ground Surface: 2.6
Elevation of Top of Riser Pipe: 255.5
Type of Surface Seal: MORTAR COLLAR
Type of Surface Casing: STEEL

ID of Surface Casing: 6"

Diameter of Borehole: 12"

Riser Pipe ID: 4"
Type of Riser Pipe: PVC

Type of Backfill: B-C GROUT

Elevation of Top of Seal: 234.0
Depth of Top of Seal: 19'
Type of Seal: BENTONITE PELLETS (1/4")

Elevation of Top of Sand: 24.', 229.0
Depth of Top of Sand: 24.1'
Elevation of Top of Screen:
Depth of Top of Screen: 29'

Type of Screen: PVC
Slot Size x Length: 0.01' X 10'
ID of Screen: 4"

Type of Sandpack: 00 MORIE SAND

Elevation of Bottom of Screen: 213.0
Depth of Bottom of Screen: 39'
Depth of Sediment Sump with Plug: NA

Elevation of Bottom of Borehole: 213.0
Depth of Bottom of Borehole: 40'

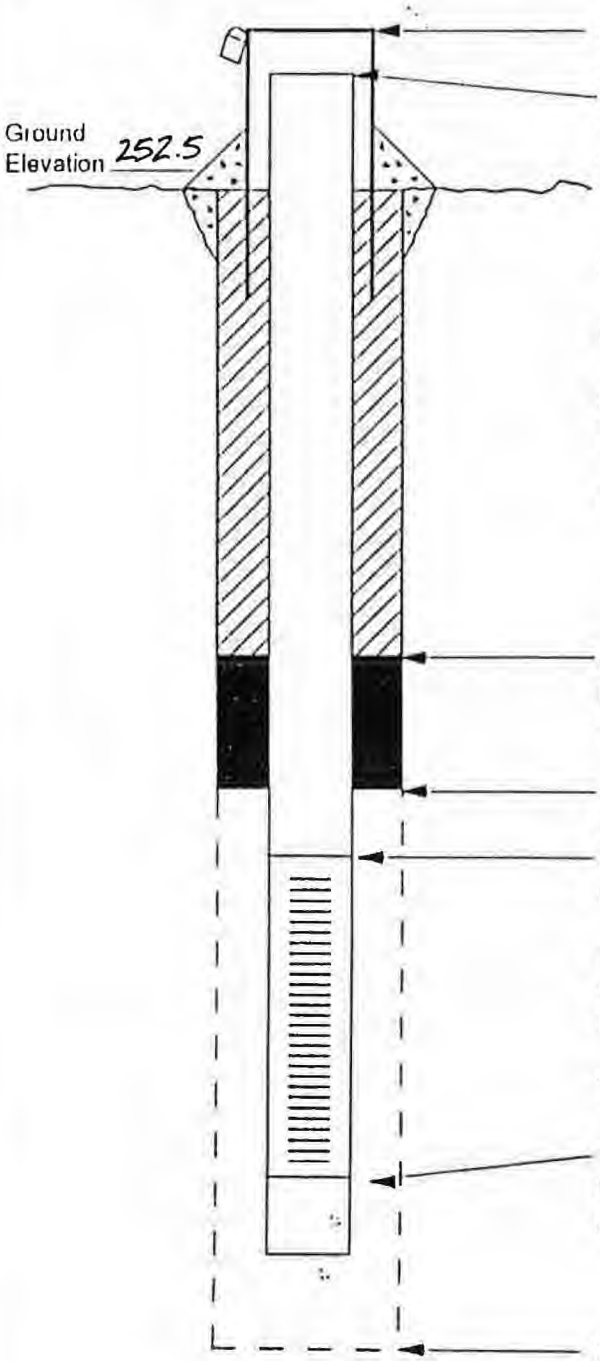
▼ @ 31.6'

20 GALLONS WATER ADDED

ABB Environmental Services, Inc.

MONITORING WELL CONSTRUCTION DIAGRAM

Project: Fort Devens
Study Area: SA 41
Driller: D.L. MAHER
Project No.: 7053-14
Boring No.: 41M-94-09B
Drilling Method: HSAs
Date Installed: 11-4-94
Development Method: PUMP + SURGE
Field Geologist: D.H. BELANI



Elevation of Top of Surface Casing: 255.4
Stick-up of Casing Above Ground Surface: 2.9
Elevation of Top of Riser Pipe: 255.2
Type of Surface Seal: Cement/Bentonite
Type of Surface Casing: STEEL

ID of Surface Casing: 6"
Diameter of Borehole: 12"
Riser Pipe ID: 4"
Type of Riser Pipe: PVC
Type of Backfill: B-C GROUT
20:1 RATIO

Elevation of Top of Seal: 218.5
Depth of Top of Seal: 34'
Type of Seal: BENTONITE SLURRY

Elevation of Top of Sand: 213.5
Depth of Top of Sand: 39'
Elevation of Top of Screen:
Depth of Top of Screen: 45'

Type of Screen: PVC
Slot Size x Length: 0.01" X 10'
ID of Screen: 4"

Type of Sandpack: 00 MORIE SAND

Elevation of Bottom of Screen: ~~Z~~ 197.5
Depth of Bottom of Screen: 55'
Depth of Sediment Sump with Plug: NA

Elevation of Bottom of Borehole: 197.5
Depth of Bottom of Borehole: 55'

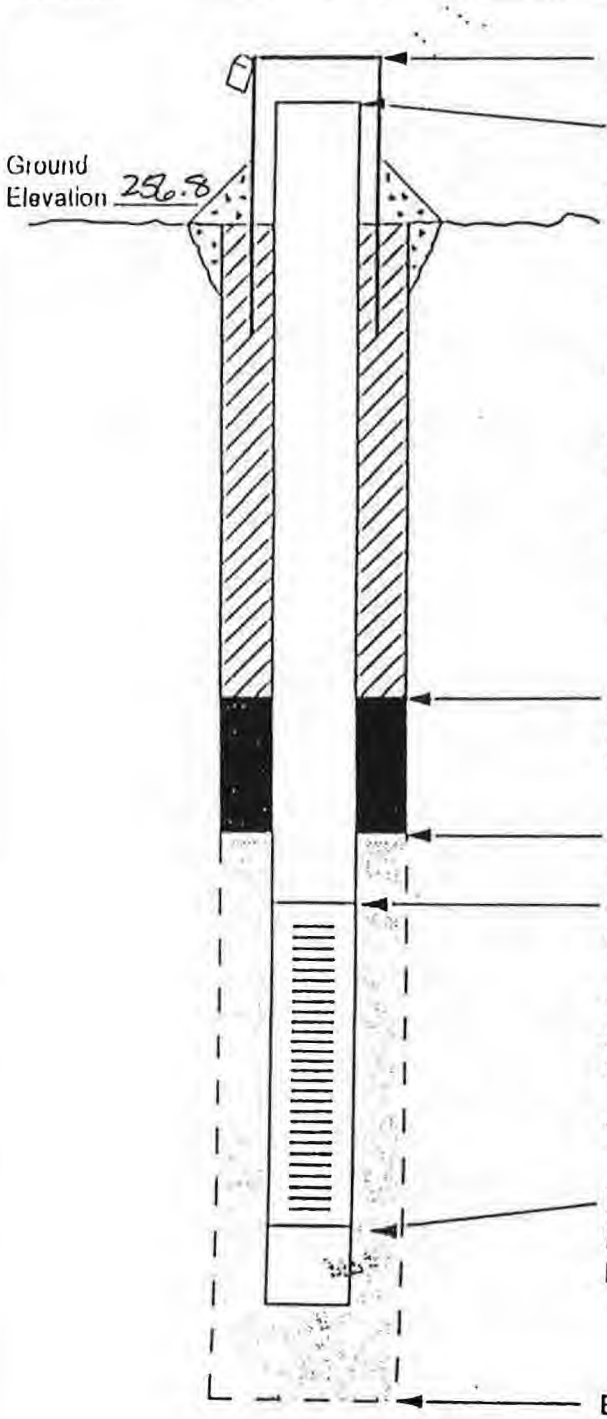
▼ @ 32 FT.

APPROX. 20 GALLONS OF WATER ADDED

ABB Environmental Services, Inc.

MONITORING WELL CONSTRUCTION DIAGRAM

Project: Fort Devens
Project No.: 7053-14
Study Area: SA41
Boring No.: 41M-94-10X
Date Installed: 10-21-94
Driller: D.L. MAHER / J. Graglia
Drilling Method: 6 5/8" ID HSAs
Development Method: Pump + Surge
Field Geologist: R. PENDLETON



Elevation of Top of Surface Casing: 259.3
Stick-up of Casing Above Ground Surface: 2.5
Elevation of Top of Riser Pipe: 259.2
Type of Surface Seal: MORTAR COLLAR
Type of Surface Casing: STEEL

ID of Surface Casing: 6"

Diameter of Borehole: 10 1/4"

Riser Pipe ID: 4"
Type of Riser Pipe: Sch. 40 PVC (Johnson)

Type of Backfill: C-B Grout
20:1

Elevation of Top of Seal: 240.8
Depth of Top of Seal: 16 ft.
Type of Seal: Bentonite Pellets

Elevation of Top of Sand: 234.3
Depth of Top of Sand: 22.5 ft
Elevation of Top of Screen: 227.8
Depth of Top of Screen: 29 ft

Type of Screen: Sch. 40 PVC (Johnson)
Slot Size x Length: 0.010" x 10 ft.
ID of Screen: 4"

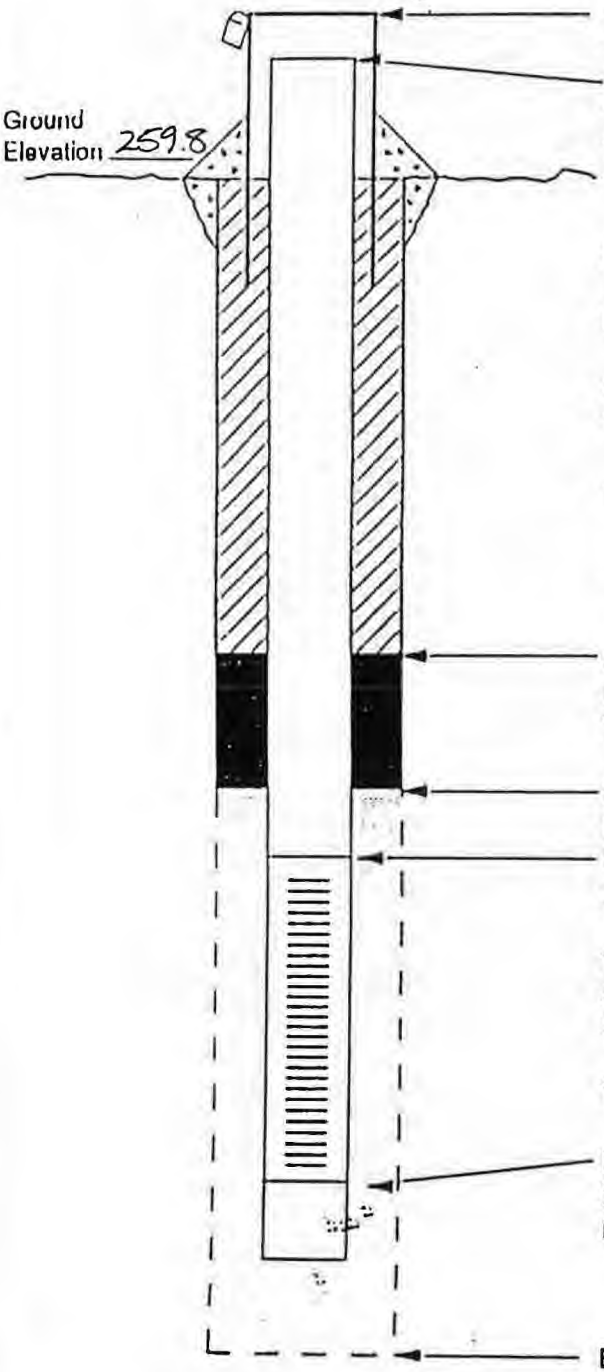
Type of Sandpack: #0 Morie Sand

Elevation of Bottom of Screen: 217.8
Depth of Bottom of Screen: 39 ft
Depth of Sediment Sump with Plug: NA

Elevation of Bottom of Borehole: 213.8
Depth of Bottom of Borehole: 43 ft

MONITORING WELL CONSTRUCTION DIAGRAM

Project: Fort Devens
Study Area: SA 41
Driller: D. L. [illegible]
Project No.: [illegible]-14
Boring No.: 41M-[illegible]-11X
Drilling Method: HSA
Date Installed: 10-27-94
Development Method: Pump + Surge
Field Geologist: D. H. Ellin



Elevation of Top of Surface Casing: 262.5
Stick-up of Casing Above Ground Surface: 2.7
Elevation of Top of Riser Pipe: 262.3
Type of Surface Seal: MORTAR COLLAR
Type of Surface Casing: STEEL

ID of Surface Casing: 6"

Diameter of Borehole: 12"

Riser Pipe ID: 4"
Type of Riser Pipe: PVC SCHEDULE 40

Type of Backfill: BENTONITE-CEMENT GROUT

Elevation of Top of Seal: 234.8
Depth of Top of Seal: 25'
Type of Seal: BENTONITE PELLET

Elevation of Top of Sand: ~~30.5'~~ (RE) 229.3
Depth of Top of Sand: 30.5
Elevation of Top of Screen: 223.8
Depth of Top of Screen: 36'

Type of Screen: PVC SCHEDULE 40
Slot Size x Length: 0.01 X 10'
ID of Screen: 4.0"

Type of Sandpack: 00 MORIE SAND

Elevation of Bottom of Screen: 213.8
Depth of Bottom of Screen: 46'
Depth of Sediment Sump with Plug: NA

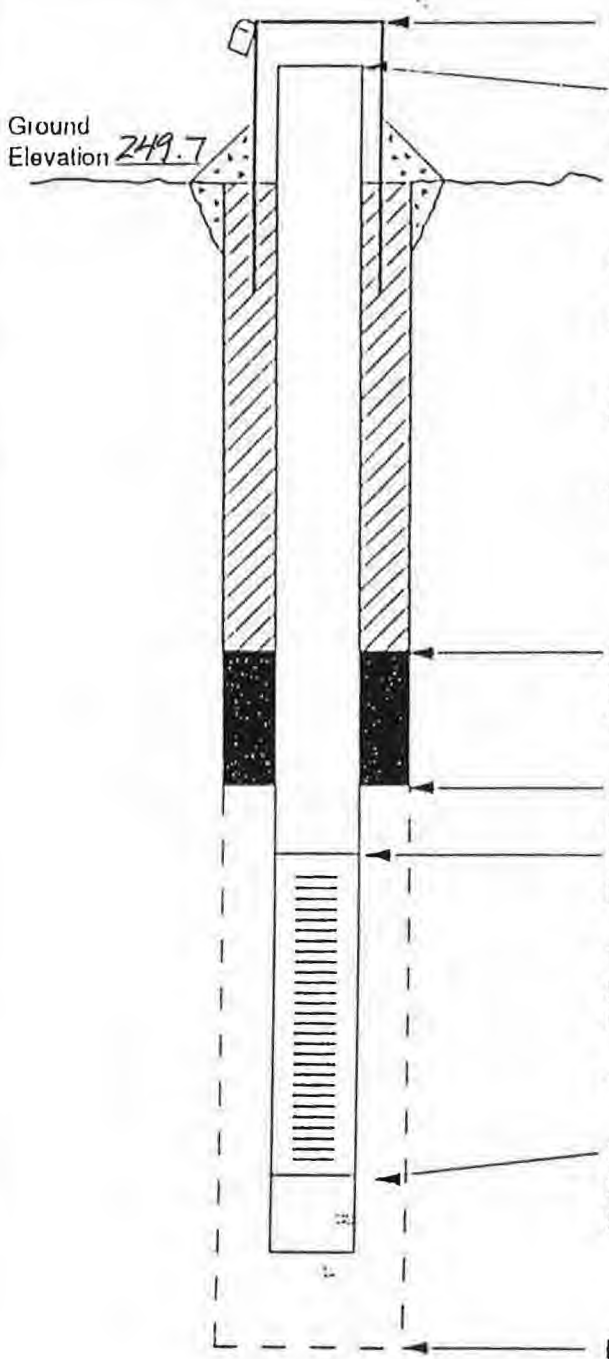
Elevation of Bottom of Borehole: 212.8
Depth of Bottom of Borehole: 47'

▼ 38 FT.

35 GALLONS ADDED

MONITORING WELL CONSTRUCTION DIAGRAM

Project: Fort Devens
Study Area: SA-41
Driller: D.L. MAHER
Project No.: 7053-14
Boring No.: 41M-94-12X
Drilling Method: HSAs
Date Installed: 11-2-94
Development Method: PUMP + SURGE
Field Geologist: D.H. BERAN



Elevation of Top of Surface Casing: 252.3
Stick-up of Casing Above Ground Surface: 2.6
Elevation of Top of Riser Pipe: 252.1
Type of Surface Seal: MORTAR COLLAR
Type of Surface Casing: STEEL

ID of Surface Casing: 6"

Diameter of Borehole: 12"

Riser Pipe ID: 4"
Type of Riser Pipe: PVC

Type of Backfill: B-C GROUT

Elevation of Top of Seal: ~~17.4~~ 232.3
Depth of Top of Seal: 17.4'
Type of Seal: BENTONITE PELLETS (1/4")

Elevation of Top of Sand: 227.1
Depth of Top of Sand: 22.6'
Elevation of Top of Screen: 222.2
Depth of Top of Screen: 27.5'

Type of Screen: PVC
Slot Size x Length: 0.01" x 10'
ID of Screen: 4"

Type of Sandpack: CO MORIE SAND

Elevation of Bottom of Screen: 212.2
Depth of Bottom of Screen: 37.5'
Depth of Sediment Sump with Plug: NA

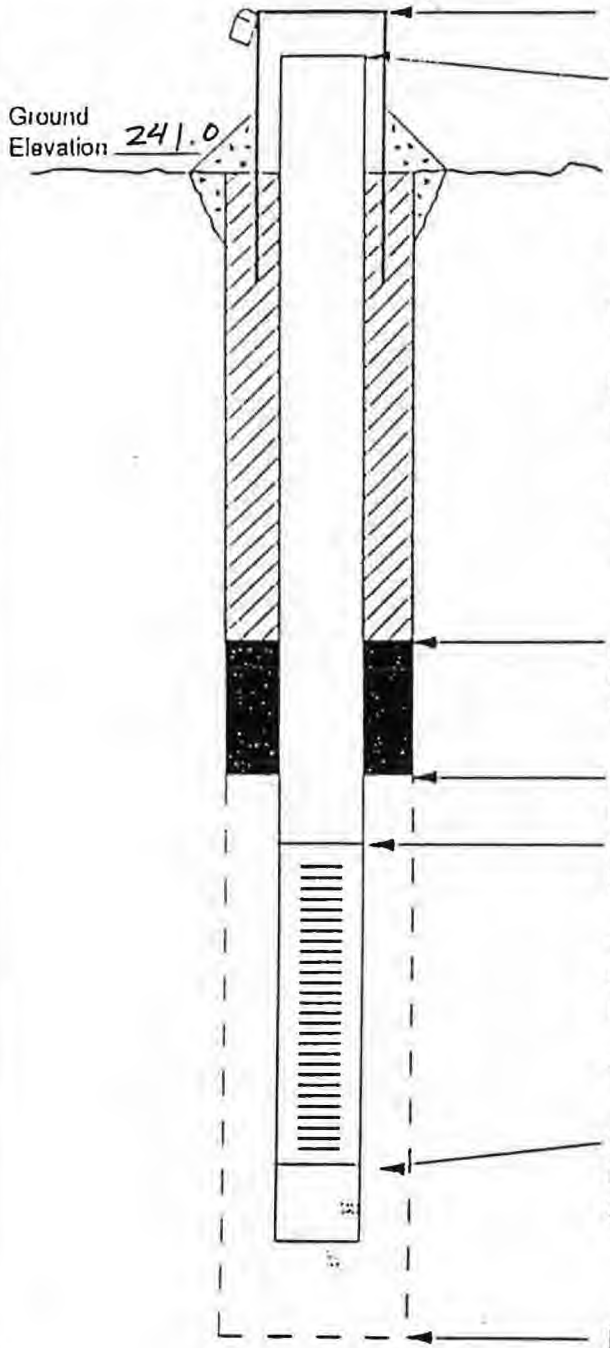
Elevation of Bottom of Borehole: 209.7
Depth of Bottom of Borehole: 40

▼ @ 31'

APPROX. 15 GALLONS OF WATER ADDED

MONITORING WELL CONSTRUCTION DIAGRAM

Project: Fort Devens
Study Area: SA 41
Driller: D.L. MAHER
Project No.: 7053-14
Boring No.: 41M-94-13X
Drilling Method: HSAs
Date Installed: 10-28-94
Development Method: Pump & Surge
Field Geologist: D.H. BELAN



Elevation of Top of Surface Casing: 243.7
Stick-up of Casing Above Ground Surface: 2.7
Elevation of Top of Riser Pipe: 243.4
Type of Surface Seal: MORTAR COLLAR
Type of Surface Casing: STEEL

ID of Surface Casing: 6"

Diameter of Borehole: 12"

Riser Pipe ID: 4"
Type of Riser Pipe: PVC

Type of Backfill: BENTONITE-CEMENT GROUT

Elevation of Top of Seal: 234.0
Depth of Top of Seal: 7'
Type of Seal: BENTONITE PELLET (1/4")

Elevation of Top of Sand: ~~11.8'~~ 229.2
Depth of Top of Sand: 11.8'
Elevation of Top of Screen: 223.5
Depth of Top of Screen: 17.5'

Type of Screen: PVC
Slot Size x Length: 0.01 x 10'
ID of Screen: 4"

Type of Sandpack: 00 MORIE SAND

Elevation of Bottom of Screen: 213.5
Depth of Bottom of Screen: 27.5'
Depth of Sediment Sump with Plug: NA

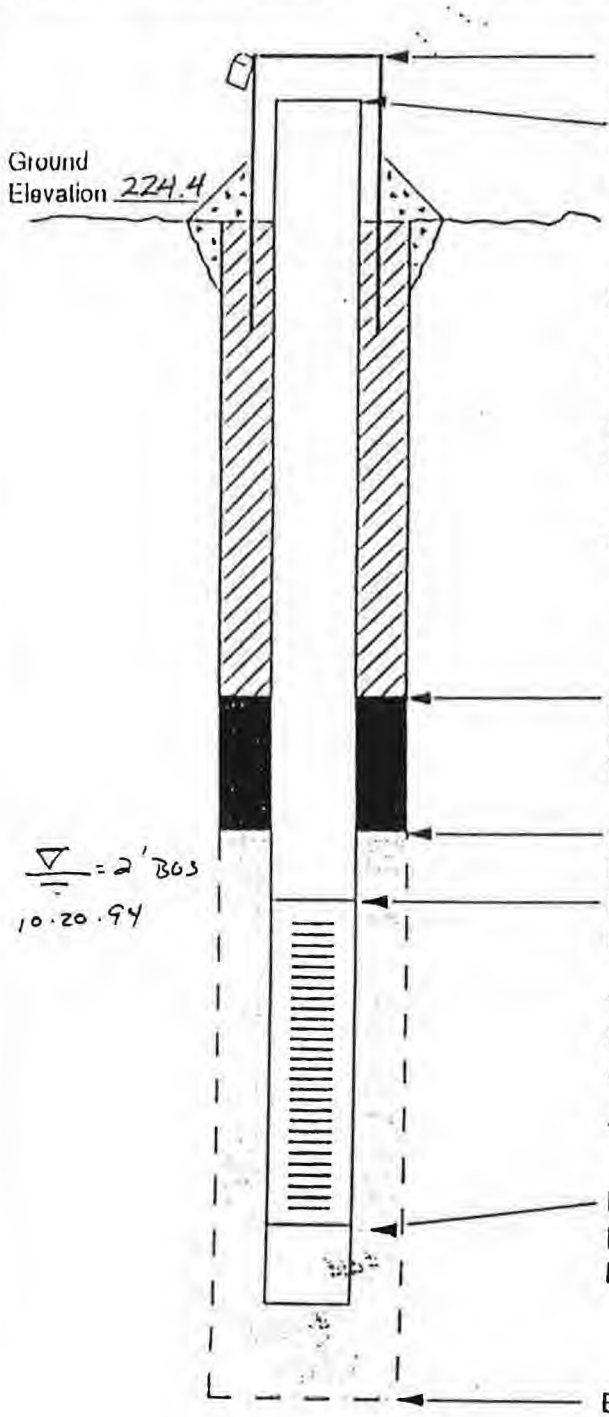
Elevation of Bottom of Borehole: 212.0
Depth of Bottom of Borehole: 29'

▼ 20'

20 GALLONS ADDED

MONITORING WELL CONSTRUCTION DIAGRAM

Project Fort Devens
Study Area SA41
Driller D.L. MAHER
Project No. 7053-14
Boring No. 41M-94-14X
Drilling Method 6 7/8" ID HSAs
Date Installed 10-20-94
Development Method Pump + Surge
Field Geologist R. PENDLETON



Elevation of Top of Surface Casing: 227.1
Stick-up of Casing Above Ground Surface: 2.7
Elevation of Top of Riser Pipe: 226.9
Type of Surface Seal: MORTAR COLLAR
Type of Surface Casing: STEEL

ID of Surface Casing: 6"

Diameter of Borehole: 10 1/4"

Riser Pipe ID: 4"
Type of Riser Pipe: Sch. 40 PVC

Type of Backfill: CEMENT : BENTONITE GROUT 20 : 1

Elevation of Top of Seal: 223.2
Depth of Top of Seal: 1.2 ft
Type of Seal: Bentonite pellets

Elevation of Top of Sand: 222.7
Depth of Top of Sand: 1.7 ft.
Elevation of Top of Screen: 221.6
Depth of Top of Screen: 2.8

Type of Screen: Sch. 40 PVC (Johnson)
Slot Size x Length: 0.010" x 4.5 ft.
ID of Screen: 4"

Type of Sandpack: #0 Morie Sand

Elevation of Bottom of Screen: 216.6
Depth of Bottom of Screen: 7.8 Ft
Depth of Sediment Sump with Plug: NA

Elevation of Bottom of Borehole: 214.4
Depth of Bottom of Borehole: 10 ft.

HYDROGEOLOGIC DATA

D-1 IN-SITU HYDRAULIC CONDUCTIVITY TESTING

APPENDIX D-1 HYDRAULIC CONDUCTIVITY TEST RESULTS

ABB-ES has performed a series of falling and rising head slug tests on monitoring wells installed during the AOC 41, AOC 43G, and AOC 43J RIs. Falling head test data were collected and analyzed for wells with static water levels above the top of the well screen. This appendix discusses the analytical procedure and presents estimated values of hydraulic conductivity. The test methodology is presented in Subsections 4.8.2 of Volume I of the Fort Devens POP (ABB-ES, 1993c). Field data from all tests were analyzed to estimate hydraulic conductivity using a derivation of the method of Hvorslev (1951)[1] and the method of Bouwer and Rice (1976)[2].

The form of the Hvorslev equation that was used relates the hydraulic conductivity, K, of an unconfined aquifer to the well geometry and the rate of head recovery by:

$$-K = \left[\frac{Log(H_1)-Log(H_2)}{t_1 - t_2}\right] \frac{r^2 \; Log(L \; / \; R)}{2L}$$

Parameters in this equation included: r (radius of the well casing), R (radius of the borehole), L (length of the aquifer tested), as well as time (t) and water level (H) data expressed as drawdown. Log values are log base ten. Test data were also analyzed using AQTESOLV™[3], an aquifer test analysis program by Geraghty Miller,

[1]Hvorslev, M.J., 1951. "Time Lag and Soil Permeability in Groundwater Observations;" U.S. Army Corps of Engineers, Waterways Experiment Station, Bulletin 36; Vicksburg, Mississippi.

[2]Bouwer, H. and R.C. Rice, 1976. A Slug Test Method for Determining Hydraulic Conductivity of Unconfined Aquifers with Completely or Partially Penetrating Wells, Water Resources Research, Vol. 12, No. 3, pp 423-428.

[3]AQTESOLV, 1991 "ATESOLV, Aquifer Test Solver Version 1.00;" Geraghty and Miller Modeling Group; Reston, VA.

Inc. AQTESOLV™ utilizes the Bouwer and Rice method for estimating hydraulic conductivities in unconfined aquifers.

Estimates of hydraulic conductivity for the 15 wells/piezometers tested range between $1.3x10^{-2}$ cm/sec and $5.1x10^{-6}$ cm/sec for the Bouwer and Rice method while the Hvorslev method yields values of $5.2x10^{-2}$ cm/sec to $1.2x10^{-6}$ cm/sec. Typically the Bouwer and Rice method provided hydraulic conductivity values which were greater than the values obtained with the Hvorslev equation.

The results of hydraulic conductivity testing are summarized in Table D-1. The data for each test are also provided. The information contained in this Appendix is organized as follows:

1) Table G-1, Summary of In-Situ Hydraulic Conductivity Test Results;

2) Saturated-Aquifer Thickness Sensitivity Analysis - AQTESOLV™ Plots;

3) Calculation of hydraulic conductivities using the Hvorslev Equation;

4) Raw data, including times and head values selected for Hvorslev analyses;

5) Plots of data, including circled time/head values used for Hvorslev analyses;

6) A table of input parameters used for AQTESOL™ analyses;

7) AQTESOLV™ plots with computed hydraulic conductivity values; and

8) Aquifer testing completion checklists for each test performed.

Hydraulic conductivity values are expressed in centimeters per second (cm/sec) while the raw data and recovery plots are referenced to feet and minutes. Static water levels in each well were referenced to zero with head stress being expressed as a positive change.

SENSITIVITY ANALYSIS FOR SATURATED AQUIFER THICKNESS

As a result of the geologic media and stratigraphy encountered at sites AOC 41, 43G & 43J, a sensitivity analysis was performed to determine the effect of the saturated aquifer thickness term (H) used in the Bouwer and Rice (1976) slug test analysis procedure. Using data from rising head tests performed on two wells (XGM-94-04X and XGM-94-06X), the saturated aquifer thickness was varied to determine the effect on calculated hydraulic conductivity (all other parameters were fixed). The following table presents the results.

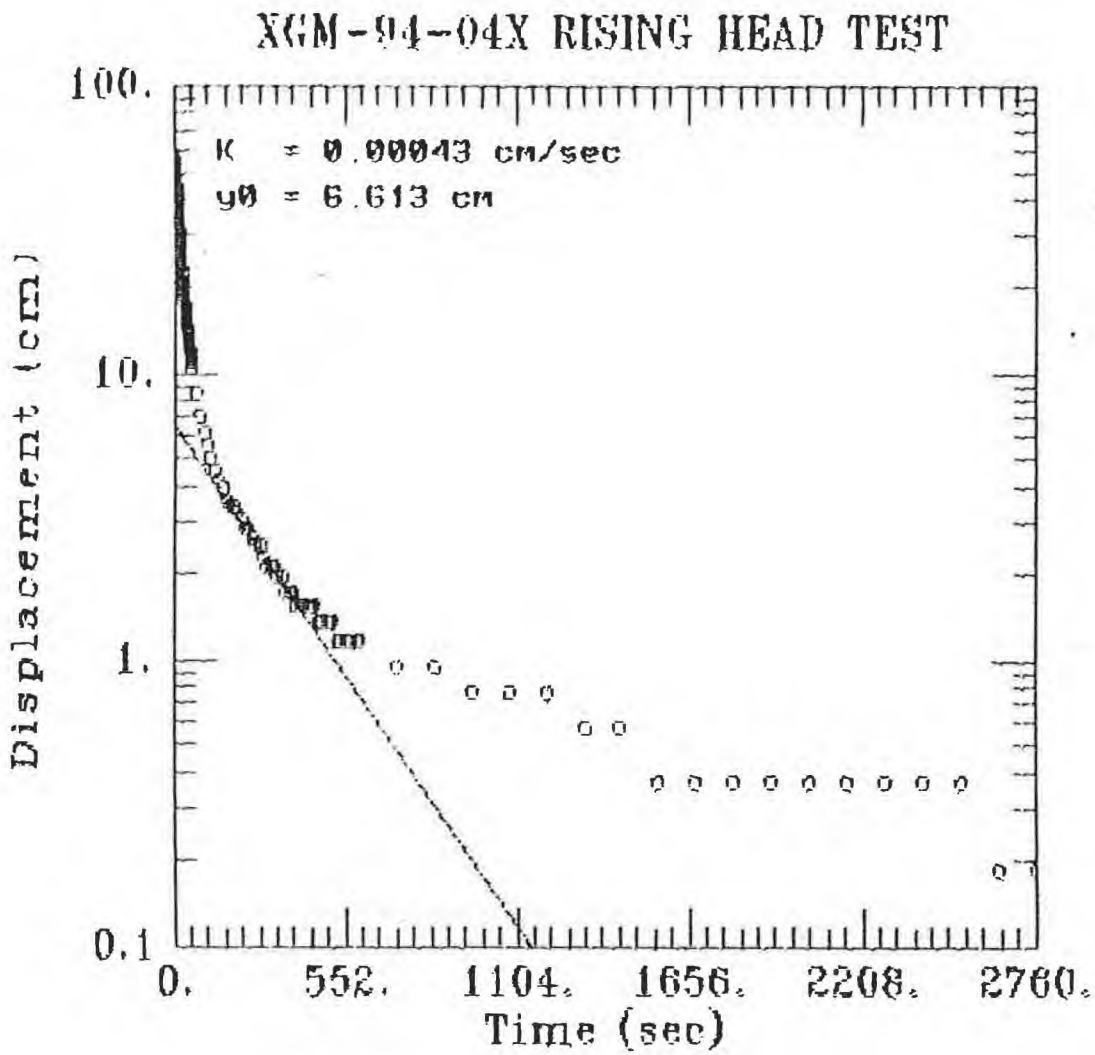
H (ft)	Hydraulic Cond. XGM-94-04X (cm/sec)	Hydraulic Cond. XGM-94-06X (cm/sec)
Equal to height of static water column in the well	4.3×10^{-4}	2.9×10^{-3}
50	3.6×10^{-4}	2.5×10^{-3}
100	3.5×10^{-4}	2.4×10^{-3}

TABLE D-1
SUMMARY OF IN-SITU HYDRAULIC CONDUCTIVITY TEST RESULTS
AOC 41 - UNAUTHORIZED DUMPING AREA (SITE A)

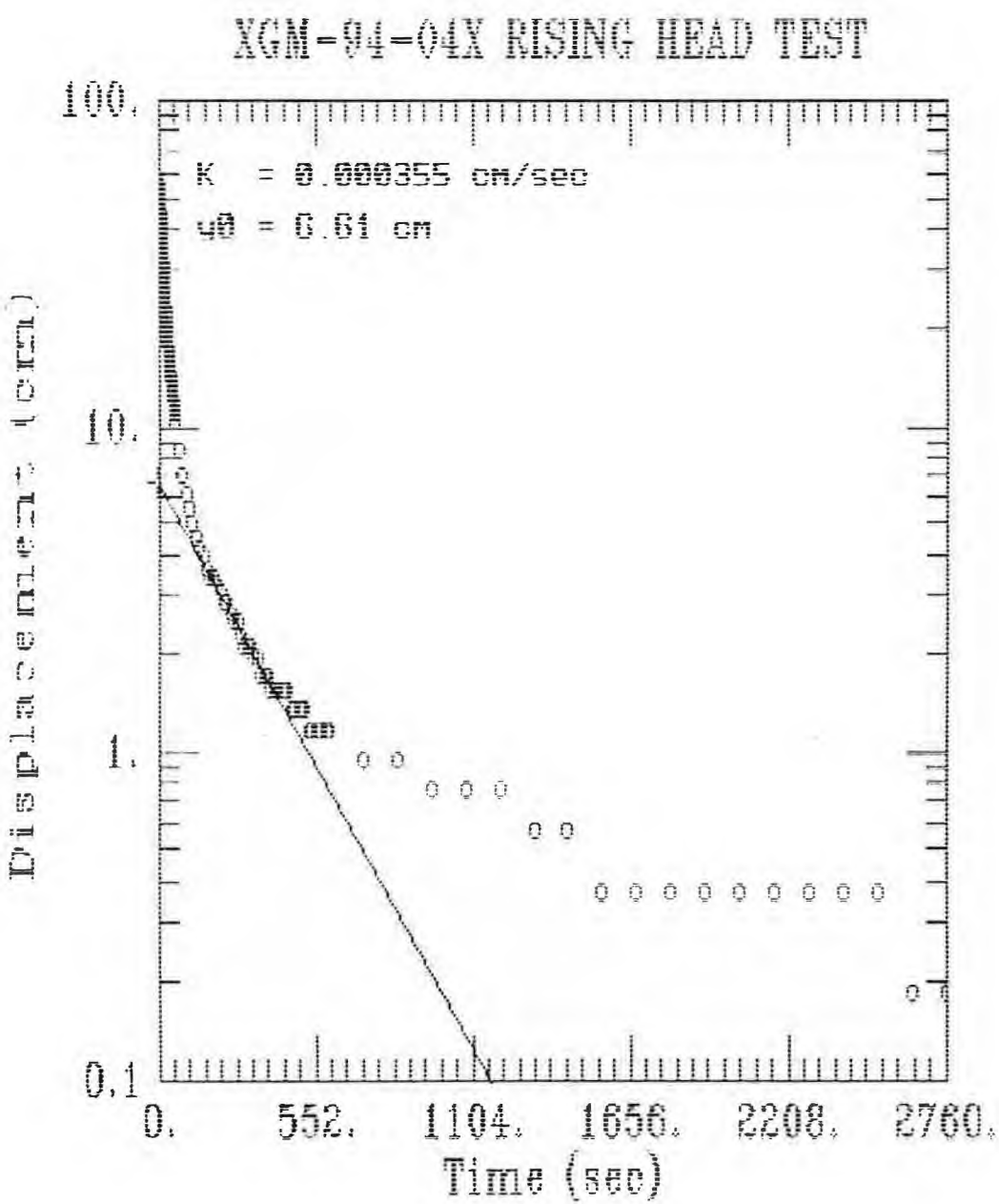
REMEDIAL INVESTIGATION REPORT
FORT DEVENS, MA

WELL	SCREENED GEOLOGIC UNIT	TYPE OF TEST/ TEST NUMBER	HYDRAULIC CONDUCTIVITY	
			HVORSLEV (cm/sec)	BOUWER AND RICE (cm/sec)
SITE INVESTIGATION				
41M-92-01X	SANDY SILT	RISING HEAD #1		
		RISING HEAD #2		
SUPPLEMENTAL SITE INVESTIGATION				
41M-93-04X	SAND	RISING HEAD #1	5.20E-02	1.20E-02
		RISING HEAD #2	2.50E-02	1.30E-02
41M-93-05X	SAND	RISING HEAD #1	1.40E-02	1.20E-02
		RISING HEAD #2	1.30E-02	1.10E-02
REMEDIAL INVESIGATION				
41M-94-02C	LOWER SAND	FALLING HEAD	1.70E-04	1.00E-03
		RISING HEAD	1.00E-04	6.90E-04
41M-94-03B	LOWER SAND	FALLING HEAD	1.20E-04	8.20E-04
		RISING HEAD	7.40E-05	6.10E-04
41M-94-06X	SAND	RISING HEAD	1.20E-03	4.00E-03
41M-94-07X	SAND	FALLING HEAD	9.40E-04	1.90E-03
		RISING HEAD	1.20E-03	3.70E-03
41M-94-08A	CLAYEY/SANDY SILT	RISING HEAD	5.40E-06	1.90E-05
41M-94-08B	SANDY SILT	FALLING HEAD	3.20E-06	2.00E-05
41M-94-09A	SANDY SILT/LOWER SAND	RISING HEAD	2.10E-03	6.60E-03
41M-94-09B	LOWER SAND	FALLING HEAD	4.40E-04	2.90E-03
		RISING HEAD	5.20E-04	3.50E-03
41M-94-11X	SANDY SILT	FALLING HEAD	1.20E-06	5.10E-06
41M-94-12X	CLAYEY SILT	FALLING HEAD	8.30E-06	3.50E-05
41M-94-13X	CLAYEY SILT	RISING HEAD	8.10E-06	2.90E-05
41M-94-14X	SAND	FALLING HEAD	2.40E-03	1.20E-02
		RISING HEAD	3.1E-03	1.5E-02

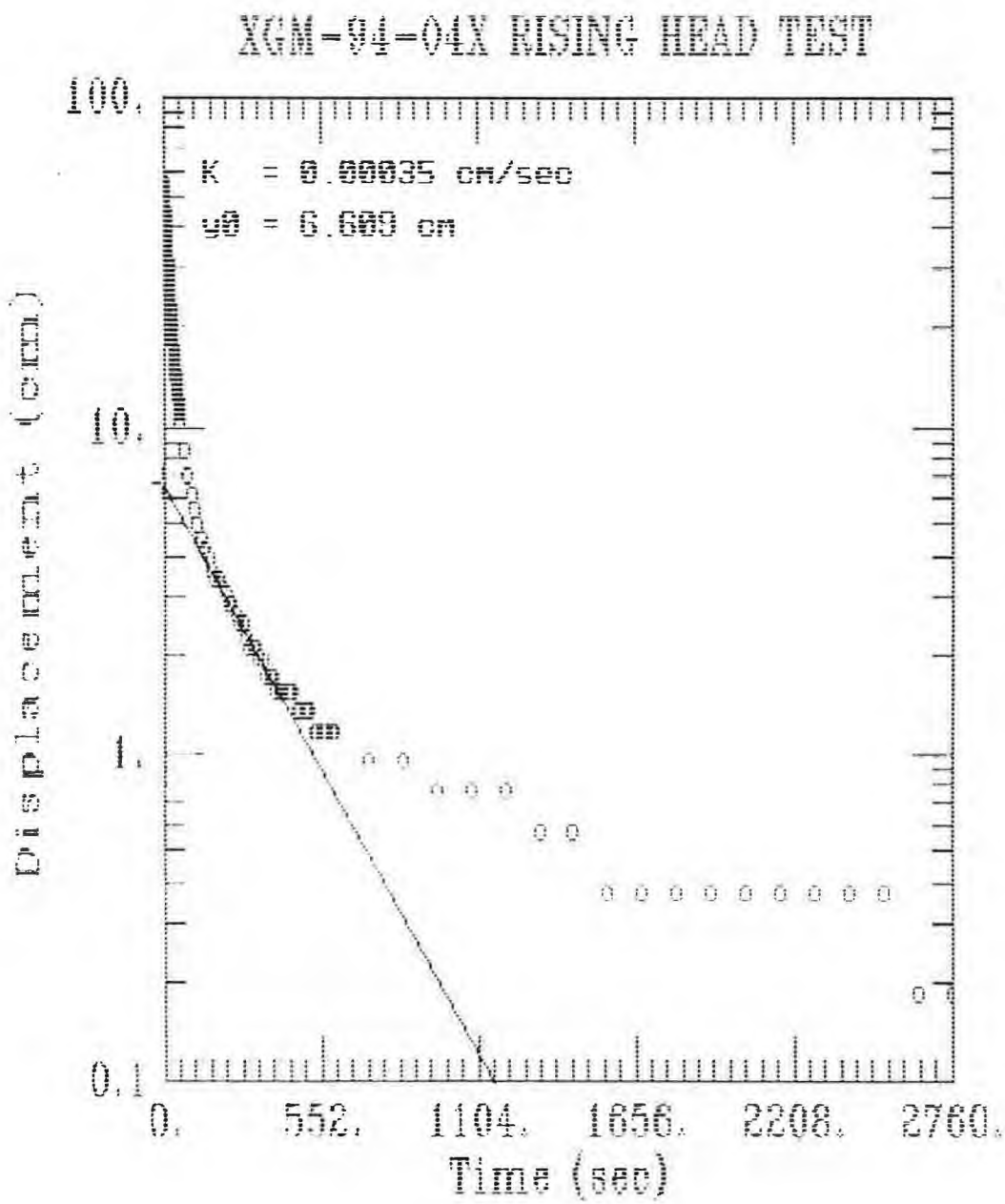
Notes:



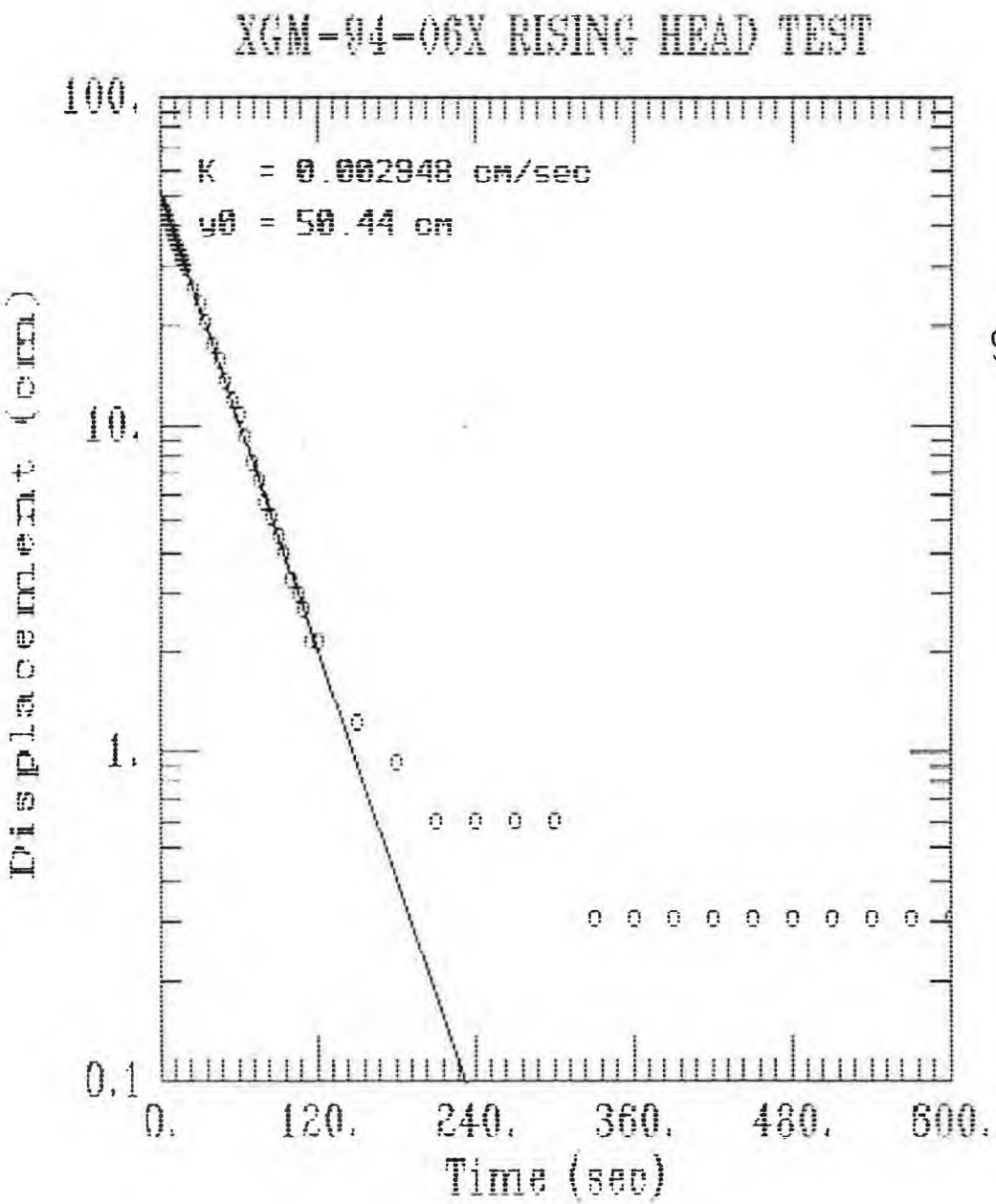
Saturated Aquifer Thickness
= 9.1' (or 277.3 cm)



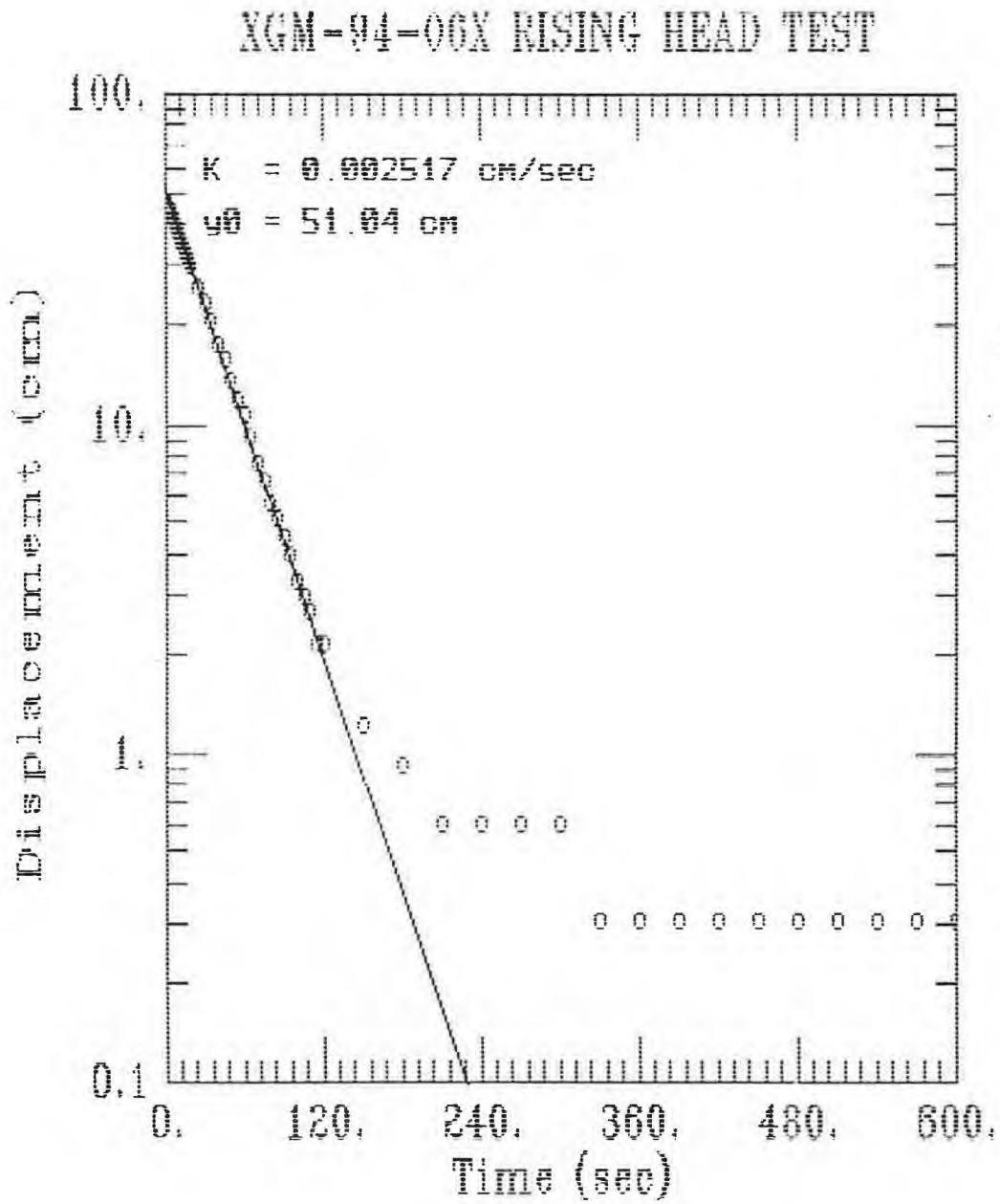
Saturated Aquifer Thickness
= 50' (or 1524 cm)



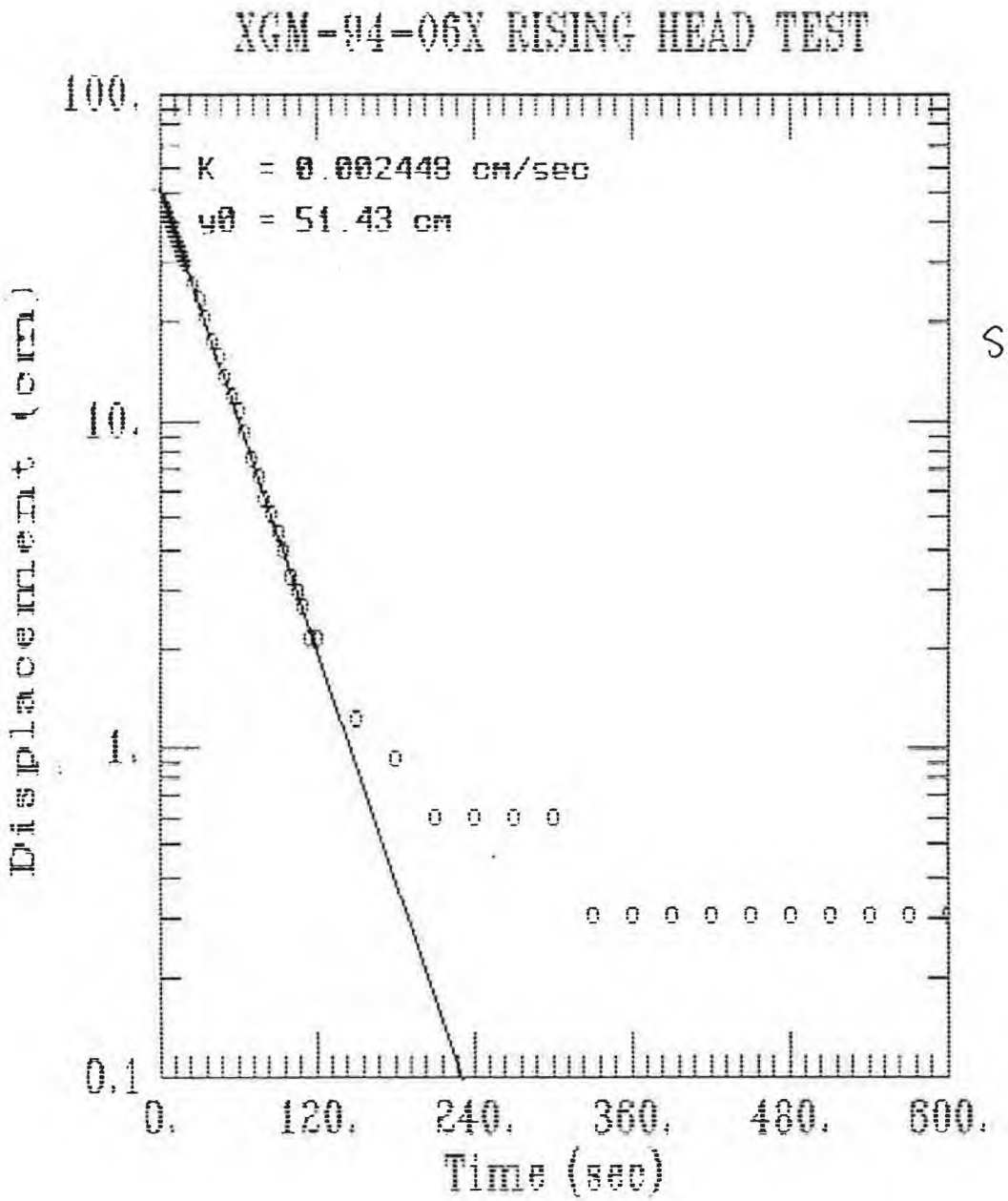
Saturated Aquifer Thickness
= 100' (or 3048 cm)



Saturated Aquifer Thickness
= 8.66' (or 263.9 cm)



Saturated Aquifer Thickness
= 50' (or 1524 cm)



Saturated Aquifer Thickness
= 100' (or 3048 cm)

AOC 41

CALCULATION OF HYDRAULIC CONDUCTIVITIES USING THE HVORSLEV EQUATION

K = -[(LOG Ht1 - LOG Ht2)/(t1 - t2)]{[(r)^2 LOG (L/R)]/2L}

WHERE:

t1 = TIME 1 (MINUTES)
t2 = TIME 2 (MINUTES)
Ht1 = HEAD STRESS AT TIME 1 (FEET)
Ht2 = HEAD STRESS AT TIME 2 (FEET)
r = RADIUS OF WELL CASING (FEET)
R = RADUS OF BOREHOLE (FEET)
L = EFFECTIVE SATURATED LENGTH OF SCREEN (FEET)

WELL	TEST TYPE	t1	t2	Ht1	Ht2	r	R	L	K (FT/MIN)	K (CM/SEC)
41M-92-01X	RISING HEAD	11	27	1.076	0.858	0.167	0.417	4.7	1.9E-05	9.7E-06
41M-92-01X	RISING HEAD	10	20	1.164	1.006	0.167	0.417	4.7	2.0E-05	1.0E-05
41M-93-04X	RISING HEAD	0.04	0.0566	0.616	0.218	0.167	0.417	3.4	1.0E-01	5.2E-02
41M-93-04X	RISING HEAD	0.07	0.09	0.063	0.034	0.167	0.417	3.4	5.0E-02	2.5E-02
41M-93-05X	RISING HEAD	0.04	0.1133	0.344	0.126	0.167	0.417	2.1	2.8E-02	1.4E-02
41M-93-05X	RISING HEAD	0.05	0.1	0.417	0.218	0.167	0.417	2.1	2.6E-02	1.3E-02
41M-94-02C	FALLING HEAD	1	2	1.13	0.67	0.167	0.417	15.2	3.3E-04	1.7E-04
41M-94-02C	RISING HEAD	2	4	0.98	0.51	0.167	0.417	15.2	2.0E-04	1.0E-04
41M-94-03B	FALLING HEAD	1	3	1.03	0.47	0.167	0.417	15.5	2.4E-04	1.2E-04
41M-94-03B	RISING HEAD	3	6	0.69	0.34	0.167	0.417	15.5	1.4E-04	7.4E-05
41M-94-06X	RISING HEAD	0.7	1	0.108	0.051	0.167	0.417	8.83	2.3E-03	1.2E-03
41M-94-07X	FALLING HEAD	0.9167	1.25	0.18	0.11	0.167	0.417	5.35	1.9E-03	9.4E-04
41M-94-07X	RISING HEAD	1	1.4166	0.11	0.05	0.167	0.417	5.35	2.4E-03	1.2E-03
41M-94-08A	RISING HEAD	30	60	0.467	0.328	0.167	0.417	8.88	1.1E-05	5.4E-06
41M-94-08B	FALLING HEAD	100	200	0.62	0.23	0.167	0.417	15	6.2E-06	3.2E-06
41M-94-09A	RISING HEAD	0.5	1	0.14	0.02	0.167	0.417	6.92	4.2E-03	2.1E-03
41M-94-09B	FALLING HEAD	1	2	0.3	0.07	0.167	0.417	16	8.7E-04	4.4E-04
41M-94-09B	RISING HEAD	0.5	1	0.75	0.32	0.167	0.417	16	1.0E-03	5.2E-04

AOC 41

CALCULATION OF HYDRAULIC CONDUCTIVITIES USING THE HVORSLEV EQUATION

K = -[(LOG Ht1 - LOG Ht2)/(t1 - t2)]{[(r)^2 LOG (L/R)]/2L}

WHERE:

t1 = TIME 1 (MINUTES)

t2 = TIME 2 (MINUTES)

Ht1 = HEAD STRESS AT TIME 1 (FEET)

Ht2 = HEAD STRESS AT TIME 2 (FEET)

r = RADIUS OF WELL CASING (FEET)

R = RADUS OF BOREHOLE (FEET)

L = EFFECTIVE SATURATED LENGTH OF SCREEN (FEET)

WELL	TEST TYPE	t1	t2	Ht1	Ht2	r	R	L	K (FT/MIN)	K (CM/SEC)
41M-94-11X	FALLING HEAD	80	200	1.036	0.72	0.167	0.417	10.9	2.4E-06	1.2E-06
41M-94-12X	FALLING HEAD	20	60	1.14	0.49	0.167	0.417	11.3	1.6E-05	8.3E-06
41M-94-12X	RISING HEAD	70	100	0.9	0.75	0.167	0.417	11.2	4.7E-06	2.4E-06
41M-94-13X	RISING HEAD	30	80	0.297	0.12	0.167	0.417	9.19	1.6E-05	8.1E-06
41M-94-14X	FALLING HEAD	0.4167	0.6667	0.18	0.06	0.167	0.417	7.05	4.6E-03	2.4E-03
41M-94-14X	RISING HEAD	0.2	0.3	0.5	0.28	0.167	0.417	7.05	6.1E-03	3.1E-03

WELL 41M-92-01X
WELL DIAMETER= 0.333 FT, SATURATED SCREEN LENGTH= 4.7 FT, BORING DIAMETER= 0.833 FT

TEST 1 MINUTES	FEET
0	0.022
0.0033	0.1
0.0066	0.41
0.01	0.662
0.0133	1.72
0.0166	0.59
0.02	2.064
0.0233	1.808
0.0266	1.824
0.03	1.824
0.0333	1.805
0.0366	1.78
0.04	1.767
0.0433	1.755
0.0466	1.745
0.05	1.729
0.0533	1.72
0.0566	1.704
0.06	1.698
0.0633	1.691
0.0666	1.682
0.07	1.666
0.0733	1.669
0.0766	1.644
0.08	1.644
0.0833	1.631
0.0866	1.625
0.09	1.616
0.0933	1.606
0.0966	1.6
0.1	1.594
0.1033	1.587
0.1066	1.581
0.11	1.575
0.1133	1.568
0.1166	1.562
0.12	1.556
0.1233	1.549
0.1266	1.546
0.13	1.54
0.1333	1.537
0.1366	1.53
0.14	1.527
0.1433	1.521
0.1466	1.518
0.15	1.515
0.1533	1.508
0.1566	1.505
0.16	1.502
0.1633	1.499
0.1666	1.496
0.17	1.489
0.1733	1.486
0.1766	1.483
0.18	1.48
0.1833	1.477
0.1866	1.477
0.19	1.474
0.1933	1.47
0.1966	1.467
0.2	1.464
0.2033	1.464
0.2066	1.461
0.21	1.458
0.2133	1.458
0.2166	1.455
0.22	1.451
0.2233	1.451
0.2266	1.448
0.23	1.445
0.2333	1.445
0.2366	1.442
0.24	1.442
0.2433	1.439
0.2466	1.439
0.25	1.439
0.2533	1.436
0.2566	1.436
0.26	1.433
0.2633	1.433
0.2666	1.429
0.27	1.429
0.2733	1.429
0.2766	1.426
0.28	1.426
0.2833	1.426
0.2866	1.423
0.29	1.423
0.2933	1.423
0.2966	1.42
0.3	1.42
0.3033	1.42
0.3066	1.417
0.31	1.417
0.3133	1.417
0.3166	1.414
0.32	1.414
0.3233	1.414
0.3266	1.414
0.33	1.414
0.3333	1.41
0.35	1.407
0.3666	1.404
0.3833	1.401
0.4	1.398
0.4166	1.398
0.4333	1.395
0.45	1.391
0.4666	1.391
0.4833	1.388
0.5	1.385
0.5166	1.385
0.5333	1.382
0.55	1.379

TEST 2 MINUTES	FEET
0	0.151
0.0033	1.41
0.0066	0.435
0.01	1.259
0.0133	1.486
0.0166	1.994
0.02	1.808
0.0233	1.789
0.0266	1.811
0.03	1.815
0.0333	1.805
0.0366	1.796
0.04	1.78
0.0433	1.77
0.0466	1.764
0.05	1.748
0.0533	1.736
0.0566	1.723
0.06	1.713
0.0633	1.707
0.0666	1.698
0.07	1.688
0.0733	1.682
0.0766	1.672
0.08	1.666
0.0833	1.657
0.0866	1.65
0.09	1.644
0.0933	1.638
0.0966	1.628
0.1	1.625
0.1033	1.616
0.1066	1.609
0.11	1.603
0.1133	1.6
0.1166	1.594
0.12	1.587
0.1233	1.581
0.1266	1.578
0.13	1.575
0.1333	1.568
0.1366	1.565
0.14	1.559
0.1433	1.556
0.1466	1.553
0.15	1.549
0.1533	1.543
0.1566	1.54
0.16	1.537
0.1633	1.534
0.1666	1.53
0.17	1.527
0.1733	1.524
0.1766	1.521
0.18	1.518
0.1833	1.518
0.1866	1.515
0.19	1.511
0.1933	1.508
0.1966	1.508
0.2	1.505
0.2033	1.502
0.2066	1.502
0.21	1.499
0.2133	1.496
0.2166	1.496
0.22	1.493
0.2233	1.493
0.2266	1.489
0.23	1.489
0.2333	1.486
0.2366	1.486
0.24	1.483
0.2433	1.483
0.2466	1.483
0.25	1.48
0.2533	1.48
0.2566	1.477
0.26	1.477
0.2633	1.477
0.2666	1.474
0.27	1.474
0.2733	1.474
0.2766	1.47
0.28	1.47
0.2833	1.47
0.2866	1.47
0.29	1.467
0.2933	1.467
0.2966	1.467
0.3	1.464
0.3033	1.464
0.3066	1.464
0.31	1.464
0.3133	1.461
0.3166	1.461
0.32	1.461
0.3233	1.461
0.3266	1.461
0.33	1.458
0.3333	1.458
0.35	1.455
0.3666	1.451
0.3833	1.448
0.4	1.448
0.4166	1.445
0.4333	1.442
0.45	1.442
0.4666	1.439
0.4833	1.439
0.5	1.436
0.5166	1.436
0.5333	1.433
0.55	1.433

	0.5666	1.379
	0.5833	1.379
	0.6	1.376
	0.6166	1.376
	0.6333	1.373
	0.65	1.373
	0.6666	1.369
	0.6833	1.369
	0.7	1.369
	0.7166	1.366
	0.7333	1.366
	0.75	1.363
	0.7666	1.363
	0.7833	1.363
	0.8	1.36
	0.8166	1.36
	0.8333	1.36
	0.85	1.357
	0.8666	1.357
	0.8833	1.357
	0.9	1.354
	0.9166	1.354
	0.9333	1.354
	0.95	1.354
	0.9666	1.35
	0.9833	1.35
	1	1.35
	1.2	1.338
	1.4	1.328
	1.6	1.319
	1.8	1.313
	2	1.303
	2.2	1.297
	2.4	1.291
	2.6	1.284
	2.8	1.275
	3	1.268
	3.2	1.262
	3.4	1.256
	3.6	1.253
	3.8	1.246
	4	1.24
	4.2	1.234
	4.4	1.227
	4.6	1.221
	4.8	1.215
	5	1.212
	5.2	1.205
	5.4	1.199
	5.6	1.196
	5.8	1.189
	6	1.183
	6.2	1.18
	6.4	1.174
	6.6	1.171
	6.8	1.167
	7	1.161
	7.2	1.155
	7.4	1.152
	7.6	1.145
	7.8	1.142
	8	1.139
	8.2	1.133
	8.4	1.13
	8.6	1.123
	8.8	1.12
	9	1.114
	9.2	1.111
	9.4	1.107
	9.6	1.104
	9.8	1.098
t_1	10	1.095
	11	1.076
	12	1.057
	13	1.041
	14	1.025
	15	1.006
	16	0.994
	17	0.978
	18	0.962
	19	0.95
	20	0.934
	21	0.924
	22	0.912
	23	0.899
	24	0.89
	25	0.877
	26	0.868
t_2	27	0.858

	0.5666	1.429
	0.5833	1.429
	0.6	1.426
	0.6166	1.426
	0.6333	1.426
	0.65	1.423
	0.6666	1.423
	0.6833	1.423
	0.7	1.42
	0.7166	1.42
	0.7333	1.42
	0.75	1.417
	0.7666	1.417
	0.7833	1.417
	0.8	1.414
	0.8166	1.414
	0.8333	1.414
	0.85	1.414
	0.8666	1.41
	0.8833	1.41
	0.9	1.41
	0.9166	1.407
	0.9333	1.407
	0.95	1.407
	0.9666	1.407
	0.9833	1.407
	1	1.404
	1.2	1.395
	1.4	1.385
	1.6	1.379
	1.8	1.369
	2	1.363
	2.2	1.357
	2.4	1.35
	2.6	1.344
	2.8	1.338
	3	1.332
	3.2	1.325
	3.4	1.319
	3.6	1.313
	3.8	1.309
	4	1.303
	4.2	1.297
	4.4	1.291
	4.6	1.287
	4.8	1.281
	5	1.275
	5.2	1.272
	5.4	1.265
	5.6	1.259
	5.8	1.256
	6	1.249
	6.2	1.246
	6.4	1.24
	6.6	1.237
	6.8	1.231
	7	1.227
	7.2	1.221
	7.4	1.218
	7.6	1.212
	7.8	1.208
	8	1.202
	8.2	1.199
	8.4	1.196
	8.6	1.193
	8.8	1.186
	9	1.183
	9.2	1.18
	9.4	1.174
	9.6	1.171
t_1	9.8	1.167
	10	1.164
	11	1.142
	12	1.126
	13	1.107
	14	1.095
	15	1.076
	16	1.063
	17	1.047
	18	1.032
	19	1.019
t_2	20	1.006
	21	0.994
	22	0.981

9304X1RH

41M-93-04X

RISING HEAD TEST #1

	0.0233	0.983
	0.0266	0.085
	0.03	0.389
	0.0333	0.578
	0.0366	0.664
t_1	0.04	0.616
	0.0433	0.499
	0.0466	0.408
	0.05	0.328
	0.0533	0.268
t_2	0.0566	0.218
	0.06	0.177
	0.0633	0.145
	0.0666	0.123
	0.07	0.104
	0.0733	0.088
	0.0766	0.075
	0.08	0.066
	0.0833	0.06
	0.0866	0.056
	0.09	0.05
	0.0933	0.047
	0.0966	0.044
	0.1	0.041
	0.1033	0.037
	0.1066	0.037
	0.11	0.034
	0.1133	0.034
	0.1166	0.031
	0.12	0.031
	0.1233	0.031
	0.1266	0.028
	0.13	0.028
	0.1333	0.028
	0.1366	0.025
	0.14	0.025
	0.1433	0.025
	0.1466	0.025
	0.15	0.025
	0.1533	0.022
	0.1566	0.025
	0.16	0.022
	0.1633	0.022
	0.1666	0.018
	0.17	0.018
	0.1733	0.018
	0.1766	0.018

41M-93-04X

RISING HEAD TEST #2

	0.0333	0.6
	0.0366	0.496
	0.04	0.401
	0.0433	0.319
	0.0466	0.256
	0.05	0.205
	0.0533	0.164
	0.0566	0.132
	0.06	0.107
	0.0633	0.088
	0.0666	0.075
t_1	0.07	0.063
	0.0733	0.056
	0.0766	0.05
	0.08	0.044
	0.0833	0.041
	0.0866	0.037
t_2	0.09	0.034
	0.0933	0.031
	0.0966	0.028
	0.1	0.028
	0.1033	0.025
	0.1066	0.025
	0.11	0.022
	0.1133	0.022
	0.1166	0.022
	0.12	0.022
	0.1233	0.018
	0.1266	0.018
	0.13	0.015
	0.1333	0.018
	0.1366	0.015
	0.14	0.015
	0.1433	0.015
	0.1466	0.015
	0.15	0.015
	0.1533	0.012
	0.1566	0.012
	0.16	0.012
	0.1633	0.012
	0.1666	0.012
	0.17	0.012
	0.1733	0.012
	0.1766	0.012
	0.18	0.009
	0.1833	0.009
	0.1866	0.012

9304X1RH

41M-93-04X

RISING HEAD TEST #1

0.18	0.018
0.1833	0.018
0.1866	0.018
0.19	0.018
0.1933	0.018
0.1966	0.015
0.2	0.015
0.2033	0.015
0.2066	0.015
0.21	0.015
0.2133	0.015
0.2166	0.015
0.22	0.015
0.2233	0.015
0.2266	0.015
0.23	0.015
0.2333	0.012
0.2366	0.015
0.24	0.012
0.2433	0.012
0.2466	0.012
0.25	0.012
0.2533	0.012
0.2566	0.012
0.26	0.012
0.2633	0.012
0.2666	0.012
0.27	0.012
0.2733	0.012
0.2766	0.012
0.28	0.012
0.2833	0.012
0.2866	0.009
0.29	0.012
0.2933	0.012
0.2966	0.009
0.3	0.012
0.3033	0.009
0.3066	0.009
0.31	0.009
0.3133	0.009
0.3166	0.009
0.32	0.009
0.3233	0.009
0.3266	0.009
0.33	0.009
0.3333	0.009

41M-93-04X

RISING HEAD TEST #2

0.19	0.009
0.1933	0.009
0.1966	0.009
0.2	0.009
0.2033	0.009
0.2066	0.009
0.21	0.009
0.2133	0.006
0.2166	0.006
0.22	0.009
0.2233	0.006
0.2266	0.006
0.23	0.006
0.2333	0.006
0.2366	0.006
0.24	0.006
0.2433	0.006
0.2466	0.006
0.25	0.006
0.2533	0.006
0.2566	0.006
0.26	0.006
0.2633	0.006
0.2666	0.006
0.27	0.006
0.2733	0.006
0.2766	0.006
0.28	0.006
0.2833	0.006
0.2866	0.006
0.29	0.006
0.2933	0.006
0.2966	0.006
0.3	0.006
0.3033	0.003
0.3066	0.003
0.31	0.006
0.3133	0.003
0.3166	0.003
0.32	0.003
0.3233	0.003
0.3266	0.003
0.33	0.003
0.3333	0.003
0.35	0.003
0.3666	0.003
0.3833	0.003

9304X1RH

41M-93-04X

RISING HEAD TEST #1

0.35	0.009
0.3666	0.009
0.3833	0.009
0.4	0.006
0.4166	0.006
0.4333	0.006
0.45	0.006
0.4666	0.006
0.4833	0.006
0.5	0.006
0.5166	0.006
0.5333	0.006
0.55	0.006
0.5666	0.006
0.5833	0.006
0.6	0.006
0.6166	0.006
0.6333	0.006
0.65	0.006
0.6666	0.006
0.6833	0.006
0.7	0.003
0.7166	0.003
0.7333	0.003
0.75	0.003
0.7666	0.003
0.7833	0.003
0.8	0.003
0.8166	0.003
0.8333	0.003
0.85	0.003
0.8666	0.003
0.8833	0.003
0.9	0.003
0.9166	0.003
0.9333	0.003
0.95	0.003
0.9666	0.003
0.9833	0.003
1	0.003
1.2	0.003
1.4	0.003
1.6	0.003

41M-93-04X

RISING HEAD TEST #2

0.4	0.003
0.4166	0.003
0.4333	0.003
0.45	0.003
0.4666	0.003

9305X1RH

41M-93-05X

RISING HEAD TEST #1

	0.0333	0.379
	0.0366	0.344
t_1	0.04	0.344
	0.0433	0.319
	0.0466	0.306
	0.05	0.294
	0.0533	0.29
	0.0566	0.265
	0.06	0.256
	0.0633	0.24
	0.0666	0.234
	0.07	0.221
	0.0733	0.208
	0.0766	0.199
	0.08	0.192
	0.0833	0.173
	0.0866	0.167
	0.09	0.183
	0.0933	0.164
	0.0966	0.154
	0.1	0.154
	0.1033	0.145
	0.1066	0.139
	0.11	0.129
t_2	0.1133	0.126
	0.1166	0.142
	0.12	0.113
	0.1233	0.113
	0.1266	0.107
	0.13	0.104
	0.1333	0.098
	0.1366	0.094
	0.14	0.088
	0.1433	0.085
	0.1466	0.082
	0.15	0.079
	0.1533	0.075
	0.1566	0.072
	0.16	0.072
	0.1633	0.069
	0.1666	0.063
	0.17	0.06
	0.1733	0.06
	0.1766	0.056
	0.18	0.056
	0.1833	0.05
	0.1866	0.05

41M-93-05X

RISING HEAD TEST #2

	0.0333	0.537
	0.0366	0.471
	0.04	0.461
	0.0433	0.458
	0.0466	0.42
t_1	0.05	0.417
	0.0533	0.392
	0.0566	0.37
	0.06	0.354
	0.0633	0.341
	0.0666	0.328
	0.07	0.313
	0.0733	0.3
	0.0766	0.287
	0.08	0.278
	0.0833	0.281
	0.0866	0.249
	0.09	0.246
	0.0933	0.234
	0.0966	0.224
t_2	0.1	0.218
	0.1033	0.208
	0.1066	0.199
	0.11	0.189
	0.1133	0.183
	0.1166	0.18
	0.12	0.17
	0.1233	0.164
	0.1266	0.17
	0.13	0.154
	0.1333	0.145
	0.1366	0.142
	0.14	0.135
	0.1433	0.132
	0.1466	0.123
	0.15	0.123
	0.1533	0.117
	0.1566	0.107
	0.16	0.107
	0.1633	0.107
	0.1666	0.104
	0.17	0.101
	0.1733	0.091
	0.1766	0.091
	0.18	0.085
	0.1833	0.085
	0.1866	0.079

9305X1RH

41M-93-05X

RISING HEAD TEST #1

0.19	0.047
0.1933	0.044
0.1966	0.047
0.2	0.044
0.2033	0.037
0.2066	0.037
0.21	0.037
0.2133	0.034
0.2166	0.031
0.22	0.031
0.2233	0.031
0.2266	0.031
0.23	0.028
0.2333	0.028
0.2366	0.025
0.24	0.022
0.2433	0.022
0.2466	0.025
0.25	0.022
0.2533	0.022
0.2566	0.022
0.26	0.018
0.2633	0.018
0.2666	0.018
0.27	0.015
0.2733	0.018
0.2766	0.018
0.28	0.015
0.2833	0.015
0.2866	0.015
0.29	0.012
0.2933	0.012
0.2966	0.012
0.3	0.012
0.3033	0.012
0.3066	0.012
0.31	0.012
0.3133	0.012
0.3166	0.012
0.32	0.012
0.3233	0.012
0.3266	0.012
0.33	0.009
0.3333	0.009
0 35	0.009
0.3666	0.006
0.3833	0.006

41M-93-05X

RISING HEAD TEST #2

0.19	0.091
0.1933	0.075
0.1966	0.072
0.2	0.069
0.2033	0.066
0.2066	0.066
0.21	0.063
0.2133	0.063
0.2166	0.05
0.22	0.056
0.2233	0.053
0.2266	0.053
0.23	0.053
0.2333	0.05
0.2366	0.05
0.24	0.047
0.2433	0.047
0.2466	0.044
0.25	0.044
0.2533	0.041
0.2566	0.041
0.26	0.041
0.2633	0.037
0.2666	0.037
0.27	0.037
0.2733	0.037
0.2766	0.034
0.28	0.034
0.2833	0.034
0.2866	0.031
0.29	0.031
0.2933	0.031
0.2966	0.031
0.3	0.031
0.3033	0.028
0.3066	0.028
0.31	0.028
0.3133	0.028
0.3166	0.028
0.32	0.028
0.3233	0.025
0.3266	0.025
0.33	0.025
0.3333	0.025
0.35	0.022
0.3666	0.022
0.3833	0.022

9305X1RH

41M-93-05X

RISING HEAD TEST #1

0.4	0.006
0.4166	0.006
0.4333	0.006
0.45	0.006
0.4666	0.003
0.4833	0.003
0.5	0.003
0.5166	0.003
0.5333	0.006
0.55	0.006
0.5666	0.003
0.5833	0.006
0.6	0.006
0.6166	0.006
0.6333	0.003
0.65	0.003
0.6666	0.006
0.6833	0.003
0.7	0.003
0.7166	0.006
0.7333	0.003
0.75	0.003
0.7666	0.003
0.7833	0.003
0.8	0.003
0.8166	0.006
0.8333	0.003
0.85	0.003
0.8666	0.003
0.8833	0.003
0.9	0.003
0.9166	0.003
0.9333	0.003
0.95	0.006
0.9666	0.003
0.9833	0.003
1	0.006

41M-93-05X

RISING HEAD TEST #2

0.4	0.018
0.4166	0.018
0.4333	0.018
0.45	0.018
0.4666	0.018
0.4833	0.018
0.5	0.018
0.5166	0.018
0.5333	0.018
0.55	0.018
0.5666	0.015
0.5833	0.015
0.6	0.018
0.6166	0.015
0.6333	0.018
0.65	0.018
0.6666	0.018
0.6833	0.015
0.7	0.018
0.7166	0.018
0.7333	0.018
0.75	0.018
0.7666	0.018
0.7833	0.018
0.8	0.018
0.8166	0.018
0.8333	0.018
0.85	0.018
0.8666	0.018
0.8833	0.018
0.9	0.018
0.9166	0.018
0.9333	0.018
0.95	0.018
0.9666	0.018
0.9833	0.018
1	0.018

AOC 41 AQTESOLV DATA

41M-94-02C

FALLING HEAD TEST

	TIME (MIN)	DISPL (FT)
	0.0833	2.48
	0.1	2.38
	0.1166	2.3
	0.1333	2.2
	0.15	2.25
	0.1666	2.22
	0.1833	2.41
	0.2	1.53
	0.2166	1.85
	0.2333	1.71
	0.25	1.7
	0.2666	1.69
	0.2833	1.67
	0.3	1.66
	0.3166	1.64
	0.3333	1.62
	0.4167	1.56
	0.5	1.48
	0.5833	1.42
	0.6667	1.36
	0.75	1.3
	0.8333	1.24
	0.9167	1.19
t_1	1	1.13
	1.0833	1.08
	1.1667	1.04
	1.25	0.99
	1.3333	0.95
	1.4166	0.91
	1.5	0.87
	1.5833	0.83
	1.6667	0.79
	1.75	0.76
	1.8333	0.73
	1.9167	0.7
t_2	2	0.67
	2.5	0.51
	3	0.38
	3.5	0.29
	4	0.22
	4.5	0.17
	5	0.13
	5.5	0.09
	6	0.06

41M-94-02C

RISING HEAD TEST

	TIME (MIN)	DISPL (FT)
	0.0666	1.87
	0.0833	1.86
	0.1	1.85
	0.1166	1.85
	0.1333	1.83
	0.15	1.82
	0.1666	1.8
	0.1833	1.78
	0.2	1.78
	0.2166	1.77
	0.2333	1.76
	0.25	1.75
	0.2666	1.73
	0.2833	1.72
	0.3	1.71
	0.3166	1.7
	0.3333	1.69
	0.4167	1.65
	0.5	1.6
	0.5833	1.56
	0.6667	1.51
	0.75	1.48
	0.8333	1.43
	0.9167	1.39
	1	1.35
	1.0833	1.32
	1.1667	1.28
	1.25	1.25
	1.3333	1.21
	1.4166	1.18
	1.5	1.15
	1.5833	1.12
	1.6667	1.09
	1.75	1.06
	1.8333	1.02
	1.9167	1
t_1	2	0.98
	2.5	0.82
	3	0.7
	3.5	0.6
t_2	4	0.51
	4.5	0.44
	5	0.37
	5.5	0.31

41M-94-03B

FALLING HEAD TEST

	TIME (MIN)	DISPL (FT)
	0.0833	1.78
	0.1	1.75
	0.1166	1.5
	0.1333	1.58
	0.15	1.73
	0.1666	1.45
	0.1833	1.47
	0.2	1.38
	0.2166	1.42
	0.2333	1.44
	0.25	1.42
	0.2666	1.41
	0.2833	1.4
	0.3	1.4
	0.3166	1.38
	0.3333	1.37
	0.4167	1.32
	0.5	1.27
	0.5833	1.23
	0.6667	1.18
	0.75	1.14
	0.8333	1.1
	0.9167	1.06
t_1	1	1.03
	1.0833	0.99
	1.1667	0.96
	1.25	0.92
	1.3333	0.89
	1.4166	0.87
	1.5	0.84
	1.5833	0.81
	1.6667	0.78
	1.75	0.76
	1.8333	0.73
	1.9167	0.71
	2	0.69
	2.5	0.56
t_2	3	0.47
	3.5	0.38
	4	0.32
	4.5	0.27
	5	0.22
	5.5	0.18
	6	0.16

AOC 41 AQTESOLV DATA

41M-94-02C

FALLING HEAD TEST

TIME (MIN)	DISPL (FT)
6.5	0.04
7	0.03
7.5	0.03
8	0.01
8.5	0.01
9	0

41M-94-02C

RISING HEAD TEST

TIME (MIN)	DISPL (FT)
6	0.27
6.5	0.23
7	0.19
7.5	0.16
8	0.13
8.5	0.11
9	0.1
9.5	0.08
10	0.07
12	0.03
14	0.01
16	0

41M-94-03B

FALLING HEAD TEST

TIME (MIN)	DISPL (FT)
6.5	0.13
7	0.11
7.5	0.09
8	0.07
8.5	0.06
9	0.05
9.5	0.04
10	0.03
12	0
14	0

AOC 41 AQTESOLV DATA

41M-94-03B

RISING HEAD TEST

	TIME (MIN)	DISPL (FT)
	0.0833	1.86
	0.1	1.72
	0.1166	1.71
	0.1333	1.7
	0.15	1.69
	0.1666	1.67
	0.1833	1.66
	0.2	1.65
	0.2166	1.64
	0.2333	1.63
	0.25	1.62
	0.2666	1.61
	0.2833	1.6
	0.3	1.59
	0.3166	1.58
	0.3333	1.57
	0.4167	1.54
	0.5	1.49
	0.5833	1.45
	0.6667	1.41
	0.75	1.37
	0.8333	1.34
	0.9167	1.3
	1	1.26
	1.0833	1.23
	1.1667	1.19
	1.25	1.17
	1.3333	1.14
	1.4166	1.11
	1.5	1.08
	1.5833	1.05
	1.6667	1.02
	1.75	1
	1.8333	0.98
	1.9167	0.95
	2	0.93
	2.5	0.8
t_1	3	0.69
	3.5	0.61
	4	0.53
	4.5	0.48
	5	0.42
	5.5	0.38
t_2	6	0.34

41M-94-06X

RISING HEAD TEST

TIME (MIN)	DISPL (FT)
0.05	1.666
0.0583	1.622
0.0666	1.679
0.075	1.584
0.0833	1.521
0.0916	1.445
0.1	1.382
0.1083	1.307
0.1166	1.25
0.125	1.193
0.1333	1.136
0.1416	1.086
0.15	1.029
0.1583	0.985
0.1666	0.934
0.175	0.884
0.1833	0.846
0.1916	0.802
0.2	0.764
0.2083	0.726
0.2166	0.688
0.225	0.657
0.2333	0.619
0.2416	0.587
0.25	0.556
0.2583	0.53
0.2666	0.505
0.275	0.486
0.2833	0.461
0.2916	0.436
0.3	0.417
0.3083	0.398
0.3166	0.379
0.325	0.366
0.3333	0.347
0.35	0.322
0.3666	0.297
0.3833	0.278
0.4	0.259
0.4166	0.246
0.4333	0.227
0.45	0.215
0.4666	0.202
0.4833	0.196

41M-94-07X

FALLING HEAD TEST

	TIME (MIN)	DISPL (FT)
	0.0666	1.44
	0.0833	1.43
	0.1	1.28
	0.1166	1.29
	0.1333	1.19
	0.15	1.12
	0.1666	1.06
	0.1833	1.01
	0.2	0.96
	0.2166	0.91
	0.2333	0.87
	0.25	0.83
	0.2666	0.79
	0.2833	0.75
	0.3	0.72
	0.3166	0.69
	0.3333	0.66
	0.4167	0.53
	0.5	0.42
	0.5833	0.35
	0.6667	0.29
	0.75	0.24
	0.8333	0.2
t_1	0.9167	0.18
	1	0.16
	1.0833	0.14
	1.1667	0.12
t_2	1.25	0.11
	1.3333	0.11
	1.4166	0.1
	1.5	0.09
	1.5833	0.09
	1.6667	0.08
	1.75	0.08
	1.8333	0.08
	1.9167	0.07
	2	0.07
	2.5	0.07
	3	0.07
	3.5	0.07
	4	0.06
	4.5	0.06
	5	0.06
	5.5	0.06

AOC 41 AQTESOLV DATA

41M-94-03B

RISING HEAD TEST

TIME (MIN)	DISPL (FT)
6.5	0.31
7	0.29
7.5	0.27
8	0.25
8.5	0.23
9	0.22
9.5	0.21
10	0.2
12	0.17
14	0.16
16	0.15
18	0.15
20	0.15
22	0.15
24	0.15

41M-94-06X

RISING HEAD TEST

	TIME (MIN)	DISPL (FT)
	0.5	0.183
	0.5166	0.177
	0.5333	0.171
	0.55	0.158
	0.5666	0.152
	0.5833	0.145
	0.6	0.139
	0.6166	0.133
	0.6333	0.126
	0.65	0.12
	0.6666	0.12
	0.6833	0.108
t_1	0.7	0.108
	0.7166	0.101
	0.7333	0.095
	0.75	0.095
	0.7666	0.089
	0.7833	0.089
	0.8	0.082
	0.8166	0.082
	0.8333	0.076
	0.85	0.076
	0.8666	0.07
	0.8833	0.063
	0.9	0.063
	0.9166	0.063
	0.9333	0.057
	0.95	0.057
	0.9666	0.057
	0.9833	0.051
t_2	1	0.051
	1.2	0.032
	1.4	0.026
	1.6	0.019
	1.8	0.013
	2	0.013
	2.2	0.007
	2.4	0.007
	2.6	0.007
	2.8	0.007
	3	0.007
	3.2	0.007
	3.4	0.007
	3.6	0.007

41M-94-07X

FALLING HEAD TEST

TIME (MIN)	DISPL (FT)
6	0.06
6.5	0.06
7	0.06
7.5	0.06
8	0.06
8.5	0.06
9	0.06
9.5	0.06
10	0.06

AOC 41 AQTESOLV DATA

41M-94-03B

RISING HEAD TEST

TIME (MIN)	DISPL (FT)

41M-94-06X

RISING HEAD TEST

TIME (MIN)	DISPL (FT)
3.8	0.007
4	0.007
4.2	0.007
4.4	0
4.6	0
4.8	0
5	0
5.2	0
5.4	0
5.6	0
5.8	0
6	0
6.2	0
6.4	0
6.6	0
6.8	0
7	0
7.2	0
7.4	0

41M-94-07X

FALLING HEAD TEST

TIME (MIN)	DISPL (FT)

AOC 41 AQTESOLV DATA

41M-94-07X

RISING HEAD TEST

	TIME (MIN)	DISPL (FT)
	0.0833	1.44
	0.1	1.36
	0.1166	1.28
	0.1333	1.21
	0.15	1.14
	0.1666	1.08
	0.1833	1.03
	0.2	0.97
	0.2166	0.92
	0.2333	0.88
	0.25	0.83
	0.2666	0.79
	0.2833	0.75
	0.3	0.71
	0.3166	0.68
	0.3333	0.65
	0.4167	0.51
	0.5	0.39
	0.5833	0.32
	0.6667	0.25
	0.75	0.2
	0.8333	0.17
	0.9167	0.14
t_1	1	0.11
	1.0833	0.1
	1.1667	0.08
	1.25	0.07
	1.3333	0.06
t_2	1.4166	0.05
	1.5	0.05
	1.5833	0.04
	1.6667	0.04
	1.75	0.04
	1.8333	0.03
	1.9167	0.03
	2	0.03
	2.5	0.02
	3	0.02
	3.5	0.02
	4	0.02
	4.5	0.02
	5	0.02
	5.5	0.02
	6	0.02

41M-94-08A

RISING HEAD TEST

TIME (MIN)	DISPL (FT)
0.0583	2.309
0.0666	2.164
0.075	1.843
0.0833	1.843
0.0916	1.83
0.1	1.817
0.1083	1.811
0.1166	1.798
0.125	1.798
0.1333	1.786
0.1416	1.779
0.15	1.767
0.1583	1.767
0.1666	1.767
0.175	1.754
0.1833	1.742
0.1916	1.735
0.2	1.735
0.2083	1.723
0.2166	1.716
0.225	1.716
0.2333	1.704
0.2416	1.704
0.25	1.691
0.2583	1.685
0.2666	1.678
0.275	1.666
0.2833	1.672
0.2916	1.666
0.3	1.66
0.3083	1.66
0.3166	1.653
0.325	1.641
0.3333	1.634
0.35	1.622
0.3666	1.609
0.3833	1.596
0.4	1.584
0.4166	1.571
0.4333	1.559
0.45	1.546
0.4666	1.533
0.4833	1.521
0.5	1.514

41M-94-08B

FALLING HEAD TEST

TIME (MIN)	DISPL (FT)
0.15	1.96
0.1666	0.56
0.1833	1.67
0.2	1.5
0.2166	1.54
0.2333	1.57
0.25	1.57
0.2666	1.56
0.2833	1.55
0.3	1.55
0.3166	1.55
0.3333	1.55
0.4167	1.55
0.5	1.54
0.5833	1.54
0.6667	1.54
0.75	1.53
0.8333	1.53
0.9167	1.53
1	1.53
1.0833	1.53
1.1667	1.52
1.25	1.52
1.3333	1.52
1.4166	1.52
1.5	1.52
1.5833	1.52
1.6667	1.52
1.75	1.51
1.8333	1.51
1.9167	1.51
2	1.51
2.5	1.5
3	1.49
3.5	1.49
4	1.48
4.5	1.47
5	1.47
5.5	1.46
6	1.45
6.5	1.45
7	1.44
7.5	1.43
8	1.43

AOC 41 AQTESOLV DATA

41M-94-07X

RISING HEAD TEST

TIME (MIN)	DISPL (FT)
6.5	0.02
7	0.02
7.5	0.02
8	0.02
8.5	0.02
9	0.02
9.5	0.02
10	0.02

41M-94-08A

RISING HEAD TEST

TIME (MIN)	DISPL (FT)
0.5166	1.502
0.5333	1.489
0.55	1.477
0.5666	1.464
0.5833	1.451
0.6	1.439
0.6166	1.432
0.6333	1.42
0.65	1.407
0.6666	1.401
0.6833	1.382
0.7	1.376
0.7166	1.363
0.7333	1.35
0.75	1.344
0.7666	1.331
0.7833	1.325
0.8	1.313
0.8166	1.306
0.8333	1.294
0.85	1.287
0.8666	1.275
0.8833	1.262
0.9	1.256
0.9166	1.249
0.9333	1.237
0.95	1.23
0.9666	1.218
0.9833	1.212
1	1.205
1.2	1.098
1.4	1.022
1.6	0.972
1.8	0.928
2	0.902
2.2	0.877
2.4	0.858
2.6	0.846
2.8	0.833
3	0.82
3.2	0.808
3.4	0.795
3.6	0.789
3.8	0.782

41M-94-08B

FALLING HEAD TEST

TIME (MIN)	DISPL (FT)
8.5	1.42
9	1.41
9.5	1.41
10	1.4
12	1.37
14	1.35
16	1.33
18	1.3
20	1.28
22	1.26
24	1.23
26	1.21
28	1.2
30	1.17
32	1.15
34	1.13
36	1.11
38	1.09
40	1.07
42	1.04
44	1.03
46	1.02
48	1
50	0.98
52	0.96
54	0.94
56	0.93
58	0.91
60	0.89
62	0.87
64	0.86
66	0.85
68	0.84
70	0.82
72	0.8
74	0.79
76	0.78
78	0.76
80	0.75
82	0.73
84	0.72
86	0.7
88	0.69
90	0.68

AOC 41 AQTESOLV DATA

41M-94-07X

RISING HEAD TEST

TIME (MIN)	DISPL (FT)

41M-94-08A

RISING HEAD TEST

TIME (MIN)	DISPL (FT)
4	0.776
4.2	0.77
4.4	0.757
4.6	0.751
4.8	0.745
5	0.738
5.2	0.745
5.4	0.738
5.6	0.732
5.8	0.726
6	0.726
6.2	0.719
6.4	0.713
6.6	0.707
6.8	0.7
7	0.7
7.2	0.694
7.4	0.688
7.6	0.688
7.8	0.681
8	0.681
8.2	0.675
8.4	0.675
8.6	0.669
8.8	0.663
9	0.656
9.2	0.65
9.4	0.65
9.6	0.65
9.8	0.65
10	0.644
12	0.625
14	0.599
16	0.574
18	0.562
20	0.543
22	0.524
24	0.511
26	0.498
28	0.48
t_1 30	0.467
32	0.461
34	0.442
36	0.429

41M-94-08B

FALLING HEAD TEST

TIME (MIN)	DISPL (FT)
92	0.67
94	0.66
96	0.64
98	0.63
t_1 100	0.62
102	0.61
104	0.6
106	0.59
108	0.57
110	0.56
112	0.55
114	0.54
116	0.53
118	0.52
120	0.5
122	0.5
124	0.5
126	0.49
128	0.47
130	0.47
132	0.46
134	0.45
136	0.44
138	0.43
140	0.42
142	0.41
144	0.4
146	0.39
148	0.38
150	0.38
152	0.37
154	0.36
156	0.35
158	0.34
160	0.34
162	0.33
164	0.32
166	0.32
168	0.32
170	0.31
172	0.31
174	0.3
176	0.29
178	0.29

AOC 41 AQTESOLV DATA

41M-94-07X

RISING HEAD TEST

TIME (MIN)	DISPL (FT)

41M-94-08A

RISING HEAD TEST

	TIME (MIN)	DISPL (FT)
	38	0.423
	40	0.41
	42	0.404
	44	0.391
	46	0.385
	48	0.372
	50	0.366
	52	0.36
	54	0.353
	56	0.341
	58	0.334
t_2	60	0.328
	62	0.322
	64	0.315
	66	0.309
	68	0.303
	70	0.297
	72	0.297
	74	0.29
	76	0.284
	78	0.278
	80	0.278
	82	0.271
	84	0.265
	86	0.259
	88	0.259
	90	0.252
	92	0.252
	94	0.246
	96	0.24
	98	0.24
	100	0.24
	120	0.208
	140	0.189
	160	0.17
	180	0.164
	200	0.151
	220	0.151
	240	0.145
	260	0.139
	280	0.132
	300	0.132
	320	0.132
	340	0.126

41M-94-08B

FALLING HEAD TEST

	TIME (MIN)	DISPL (FT)
	180	0.28
	182	0.27
	184	0.27
	186	0.26
	188	0.26
	190	0.25
	192	0.24
	194	0.24
	196	0.24
	198	0.23
t_2	200	0.23
	202	0.22
	204	0.21
	206	0.21
	208	0.2
	210	0.2
	212	0.19
	214	0.19

41M-94-07X

RISING HEAD TEST

TIME (MIN)	DISPL (FT)

41M-94-08A

RISING HEAD TEST

TIME (MIN)	DISPL (FT)
360	0.126
380	0.126
400	0.12
420	0.12
440	0.126
460	0.12
480	0.12
500	0.12
520	0.12
540	0.12
560	0.114
580	0.114
600	0.114
620	0.114
640	0.107
660	0.107
680	0.107
700	0.107
720	0.107
740	0.107
760	0.107
780	0.107
800	0.107
820	0.107
840	0.107
860	0.107
880	0.107
900	0.107

41M-94-08B

FALLING HEAD TEST

TIME (MIN)	DISPL (FT)

AOC 41 AQTESOLV DATA

41M-94-09A

RISING HEAD TEST

	TIME (MIN)	DISPL (FT)
	0.0666	1.92
	0.0833	1.64
	0.1	1.44
	0.1166	1.3
	0.1333	1.16
	0.15	1.04
	0.1666	0.93
	0.1833	0.84
	0.2	0.74
	0.2166	0.68
	0.2333	0.6
	0.25	0.53
	0.2666	0.49
	0.2833	0.43
	0.3	0.39
	0.3166	0.35
	0.3333	0.33
	0.4167	0.2
t_1	0.5	0.14
	0.5833	0.09
	0.6667	0.06
	0.75	0.05
	0.8333	0.03
	0.9167	0.03
t_2	1	0.02
	1.0833	0.01
	1.1667	0.01
	1.25	0.01
	1.3333	0.01
	1.4166	0
	1.5	0
	1.5833	0.01
	1.6667	0
	1.75	0
	1.8333	0
	1.9167	0
	2	0
	2.5	0
	3	0
	3.5	0
	4	0
	4.5	0
	5	0
	5.5	0

41M-94-09B

FALLING HEAD TEST

	TIME (MIN)	DISPL (FT)
	0.05	1.61
	0.0666	1.54
	0.0833	1.42
	0.1	1.51
	0.1166	1.55
	0.1333	1.49
	0.15	1.26
	0.1666	1.11
	0.1833	1.37
	0.2	1.68
	0.2166	1.25
	0.2333	1.19
	0.25	0.97
	0.2666	0.75
	0.2833	0.95
	0.3	0.97
	0.3166	0.94
	0.3333	0.91
	0.4167	0.79
	0.5	0.69
	0.5833	0.6
	0.6667	0.53
	0.75	0.45
	0.8333	0.39
	0.9167	0.35
t_1	1	0.3
	1.0833	0.27
	1.1667	0.23
	1.25	0.2
	1.3333	0.18
	1.4166	0.16
	1.5	0.14
	1.5833	0.12
	1.6667	0.11
	1.75	0.1
	1.8333	0.09
	1.9167	0.08
t_2	2	0.07
	2.5	0.03
	3	0.02
	3.5	0.01
	4	0.01
	4.5	0.01
	5	0.01

41M-94-09B

RISING HEAD TEST

	TIME (MIN)	DISPL (FT)
	0.1166	1.54
	0.1333	1.48
	0.15	1.43
	0.1666	1.39
	0.1833	1.34
	0.2	1.3
	0.2166	1.25
	0.2333	1.22
	0.25	1.18
	0.2666	1.14
	0.2833	1.11
	0.3	1.07
	0.3166	1.05
	0.3333	1.01
	0.4167	0.87
t_1	0.5	0.75
	0.5833	0.65
	0.6667	0.56
	0.75	0.49
	0.8333	0.42
	0.9167	0.36
t_2	1	0.32
	1.0833	0.28
	1.1667	0.24
	1.25	0.21
	1.3333	0.18
	1.4166	0.16
	1.5	0.14
	1.5833	0.12
	1.6667	0.11
	1.75	0.09
	1.8333	0.08
	1.9167	0.07
	2	0.06
	2.5	0.02
	3	0.01
	3.5	0
	4	0
	4.5	0
	5	0
	5.5	0
	6	0
	6.5	0
	7	0

AOC 41 AQTESOLV DATA

41M-94-09A

RISING HEAD TEST

TIME (MIN)	DISPL (FT)
6	0
6.5	0
7	0
7.5	0
8	0
8.5	0
9	0
9.5	0
10	0

41M-94-09B

FALLING HEAD TEST

TIME (MIN)	DISPL (FT)
5.5	0.01
6	0
6.5	0
7	0.01
7.5	0
8	0
8.5	0
9	0
9.5	0
10	0

41M-94-09B

RISING HEAD TEST

TIME (MIN)	DISPL (FT)
7.5	0
8	0
8.5	0
9	0
9.5	0
10	0

AOC 41 AQTESOLV DATA

41M-94-11X

FALLING HEAD TEST

TIME (MIN)	DISPL (FT)
0.2083	2.286
0.2166	0.802
0.225	1.396
0.2333	1.591
0.2416	1.629
0.25	1.547
0.2583	1.49
0.2666	1.49
0.275	1.522
0.2833	1.528
0.2916	1.522
0.3	1.509
0.3083	1.509
0.3166	1.509
0.325	1.509
0.3333	1.503
0.35	1.503
0.3666	1.497
0.3833	1.497
0.4	1.49
0.4166	1.49
0.4333	1.484
0.45	1.484
0.4666	1.478
0.4833	1.478
0.5	1.471
0.5166	1.471
0.5333	1.465
0.55	1.465
0.5666	1.459
0.5833	1.459
0.6	1.459
0.6166	1.453
0.6333	1.453
0.65	1.446
0.6666	1.446
0.6833	1.446
0.7	1.446
0.7166	1.44
0.7333	1.44
0.75	1.44
0.7666	1.434
0.7833	1.434
0.8	1.434

41M-94-12X

FALLING HEAD TEST

TIME (MIN)	DISPL (FT)
0.2333	3.19
0.25	2.56
0.2666	2.39
0.2833	1.56
0.3	1.48
0.3166	1.62
0.3333	1.55
0.4167	1.6
0.5	1.58
0.5833	1.58
0.6667	1.58
0.75	1.58
0.8333	1.57
0.9167	1.57
1	1.56
1.0833	1.56
1.1667	1.56
1.25	1.56
1.3333	1.55
1.4166	1.56
1.5	1.55
1.5833	1.55
1.6667	1.55
1.75	1.55
1.8333	1.55
1.9167	1.54
2	1.54
2.5	1.53
3	1.52
3.5	1.51
4	1.5
4.5	1.49
5	1.47
5.5	1.46
6	1.46
6.5	1.44
7	1.43
7.5	1.42
8	1.41
8.5	1.4
9	1.4
9.5	1.39
10	1.37
12	1.32

41M-94-12X

RISING HEAD TEST

TIME (MIN)	DISPL (FT)
0.0666	2.18
0.0833	1.84
0.1	1.74
0.1166	1.71
0.1333	1.68
0.15	1.66
0.1666	1.64
0.1833	1.63
0.2	1.6
0.2166	1.6
0.2333	1.58
0.25	1.59
0.2666	1.57
0.2833	1.57
0.3	1.57
0.3166	1.57
0.3333	1.57
0.4167	1.56
0.5	1.54
0.5833	1.54
0.6667	1.53
0.75	1.53
0.8333	1.52
0.9167	1.52
1	1.51
1.0833	1.51
1.1667	1.51
1.25	1.51
1.3333	1.51
1.4166	1.5
1.5	1.5
1.5833	1.5
1.6667	1.5
1.75	1.49
1.8333	1.49
1.9167	1.49
2	1.49
2.5	1.48
3	1.46
3.5	1.46
4	1.45
4.5	1.44
5	1.43
5.5	1.43

AOC 41 AQTESOLV DATA

41M-94-11X

FALLING HEAD TEST

TIME (MIN)	DISPL (FT)
0.8166	1.427
0.8333	1.427
0.85	1.427
0.8666	1.421
0.8833	1.421
0.9	1.415
0.9166	1.421
0.9333	1.415
0.95	1.408
0.9666	1.408
0.9833	1.415
1	1.408
1.2	1.389
1.4	1.377
1.6	1.37
1.8	1.364
2	1.351
2.2	1.37
2.4	1.364
2.6	1.351
2.8	1.351
3	1.345
3.2	1.351
3.4	1.345
3.6	1.345
3.8	1.351
4	1.345
4.2	1.339
4.4	1.345
4.6	1.345
4.8	1.339
5	1.339
5.2	1.339
5.4	1.333
5.6	1.339
5.8	1.333
6	1.333
6.2	1.333
6.4	1.333
6.6	1.326
6.8	1.333
7	1.333
7.2	1.326
7.4	1.326

41M-94-12X

FALLING HEAD TEST

	TIME (MIN)	DISPL (FT)
	14	1.27
	16	1.23
	18	1.18
t_1	20	1.14
	22	1.09
	24	1.05
	26	1.02
	28	0.98
	30	0.94
	32	0.9
	34	0.87
	36	0.84
	38	0.81
	40	0.77
	42	0.73
	44	0.7
	46	0.68
	48	0.65
	50	0.62
	52	0.59
	54	0.57
	56	0.53
	58	0.52
t_2	60	0.49
	62	0.47
	64	0.45
	66	0.42
	68	0.39
	70	0.37
	72	0.35
	74	0.34
	76	0.31
	78	0.3
	80	0.27
	82	0.26
	84	0.23
	86	0.22
	88	0.2
	90	0.18
	92	0.18
	94	0.15
	96	0.14
	98	0.13
	100	0.11

41M-94-12X

RISING HEAD TEST

	TIME (MIN)	DISPL (FT)
	6	1.42
	6.5	1.42
	7	1.41
	7.5	1.4
	8	1.4
	8.5	1.4
	9	1.4
	9.5	1.39
	10	1.38
	12	1.36
	14	1.34
	16	1.32
	18	1.31
	20	1.28
	22	1.25
	24	1.24
	26	1.22
	28	1.21
	30	1.19
	32	1.17
	34	1.15
	36	1.14
	38	1.12
	40	1.1
	42	1.09
	44	1.07
	46	1.06
	48	1.05
	50	1.04
	52	1.02
	54	1.01
	56	0.99
	58	0.98
	60	0.97
	62	0.95
	64	0.95
	66	0.93
	68	0.92
t_1	70	0.9
	72	0.89
	74	0.88
	76	0.87
	78	0.86
	80	0.86

AOC 41 AQTESOLV DATA

41M-94-11X

FALLING HEAD TEST

TIME (MIN)	DISPL (FT)
7.6	1.326
7.8	1.32
8	1.326
8.2	1.32
8.4	1.314
8.6	1.32
8.8	1.32
9	1.32
9.2	1.32
9.4	1.314
9.6	1.314
9.8	1.314
10	1.32
12	1.295
14	1.288
16	1.276
18	1.269
20	1.263
22	1.25
24	1.238
26	1.231
28	1.225
30	1.219
32	1.206
34	1.2
36	1.194
38	1.187
40	1.175
42	1.168
44	1.162
46	1.156
48	1.149
50	1.137
52	1.13
54	1.124
56	1.118
58	1.112
60	1.099
62	1.093
64	1.086
66	1.08
68	1.08
70	1.067
72	1.067

41M-94-12X

FALLING HEAD TEST

TIME (MIN)	DISPL (FT)
102	0.1
104	0.09
106	0.08
108	0.07
110	0.05
112	0.04
114	0.03
116	0.02
118	0.01
120	0
122	0

41M-94-12X

RISING HEAD TEST

TIME (MIN)	DISPL (FT)
82	0.84
84	0.82
86	0.81
88	0.8
90	0.79
92	0.78
94	0.77
96	0.76
98	0.75
t_2 100	0.75
102	0.73
104	0.72
106	0.71
108	0.7
110	0.7
112	0.69
114	0.69
116	0.68
118	0.67
120	0.66
122	0.66
124	0.65
126	0.64
128	0.63
130	0.63
132	0.62
134	0.61
136	0.6
138	0.59
140	0.59
142	0.58
144	0.58
146	0.57
148	0.56
150	0.56
152	0.56
154	0.55
156	0.54
158	0.54
160	0.53
162	0.52
164	0.52
166	0.52
168	0.52

AOC 41 AQTESOLV DATA

41M-94-11X

FALLING HEAD TEST

TIME (MIN)	DISPL (FT)
74	1.055
76	1.048
78	1.042
t_1 80	1.036
82	1.029
84	1.023
86	1.017
88	0.941
90	0.947
92	0.947
94	0.941
96	0.935
98	0.941
100	0.935
102	0.935
104	0.928
106	0.928
108	0.928
110	0.916
112	0.916
114	0.909
116	0.909
118	0.909
120	0.903
122	0.897
124	0.897
126	0.897
128	0.89
130	0.884
132	0.884
134	0.878
136	0.872
138	0.865
140	0.859
142	0.853
144	0.853
146	0.84
148	0.84
150	0.834
152	0.827
154	0.827
156	0.821
158	0.815
160	0.808

41M-94-12X

FALLING HEAD TEST

TIME (MIN)	DISPL (FT)

41M-94-12X

RISING HEAD TEST

TIME (MIN)	DISPL (FT)
170	0.51
172	0.51
174	0.5
176	0.51
178	0.5
180	0.5
182	0.48
184	0.49
186	0.48
188	0.48
190	0.47
192	0.47
194	0.47
196	0.46
198	0.46
200	0.45
202	0.45
204	0.45
206	0.45
208	0.44
210	0.44
212	0.44
214	0.44
216	0.43
218	0.43
220	0.43
222	0.42

AOC 41 AQTESOLV DATA

41M-94-11X

FALLING HEAD TEST

TIME (MIN)	DISPL (FT)
162	0.802
164	0.796
166	0.796
168	0.789
170	0.789
172	0.777
174	0.777
176	0.771
178	0.771
180	0.764
182	0.758
184	0.752
186	0.752
188	0.745
190	0.739
192	0.739
194	0.733
196	0.726
198	0.72
t_2 200	0.72
202	0.714
204	0.714
206	0.707
208	0.701
210	0.695
212	0.701
214	0.695
216	0.688
218	0.682
220	0.682
222	0.676
224	0.676
226	0.669
228	0.669
230	0.663
232	0.657
234	0.657

41M-94-12X

FALLING HEAD TEST

TIME (MIN)	DISPL (FT)

41M-94-12X

RISING HEAD TEST

TIME (MIN)	DISPL (FT)

AOC 41 AQTESOLV DATA

41M-94-13X

RISING HEAD TEST

TIME (MIN)	DISPL (FT)
0.0583	1.603
0.0666	1.597
0.075	1.597
0.0833	1.565
0.0916	1.572
0.1	1.559
0.1083	1.546
0.1166	1.546
0.125	1.534
0.1333	1.521
0.1416	1.521
0.15	1.515
0.1583	1.502
0.1666	1.496
0.175	1.49
0.1833	1.477
0.1916	1.471
0.2	1.464
0.2083	1.458
0.2166	1.452
0.225	1.445
0.2333	1.439
0.2416	1.433
0.25	1.426
0.2583	1.42
0.2666	1.414
0.275	1.408
0.2833	1.401
0.2916	1.395
0.3	1.389
0.3083	1.382
0.3166	1.376
0.325	1.37
0.3333	1.357
0.35	1.351
0.3666	1.338
0.3833	1.325
0.4	1.313
0.4166	1.3
0.4333	1.288
0.45	1.275
0.4666	1.262
0.4833	1.256
0.5	1.243

41M-94-14X

FALLING HEAD TEST

	TIME (MIN)	DISPL (FT)
	0.1333	0.96
	0.15	0.88
	0.1666	0.85
	0.1833	0.72
	0.2	0.52
	0.2166	0.6
	0.2333	0.53
	0.25	0.49
	0.2666	0.44
	0.2833	0.39
	0.3	0.35
	0.3166	0.33
	0.3333	0.29
t_1	0.4167	0.18
	0.5	0.12
	0.5833	0.08
t_2	0.6667	0.06
	0.75	0.04
	0.8333	0.03
	0.9167	0.03
	1	0.02
	1.0833	0.02
	1.1667	0.02
	1.25	0.02
	1.3333	0.01
	1.4166	0.01
	1.5	0.01
	1.5833	0.01
	1.6667	0.01
	1.75	0.01
	1.8333	0.01
	1.9167	0.01
	2	0.01
	2.5	0.01
	3	0.01
	3.5	0.01
	4	0.01
	4.5	0
	5	0
	5.5	0
	6	0
	6.5	0
	7	0
	7.5	0

41M-94-14X

RISING HEAD TEST

	TIME (MIN)	DISPL (FT)
	0.05	1.3
	0.0666	1.15
	0.0833	1.04
	0.1	0.93
	0.1166	0.84
	0.1333	0.75
	0.15	0.68
	0.1666	0.61
	0.1833	0.55
t_1	0.2	0.5
	0.2166	0.45
	0.2333	0.41
	0.25	0.37
	0.2666	0.34
	0.2833	0.31
t_2	0.3	0.28
	0.3166	0.25
	0.3333	0.23
	0.4167	0.15
	0.5	0.09
	0.5833	0.06
	0.6667	0.04
	0.75	0.03
	0.8333	0.02
	0.9167	0.01
	1	0.01
	1.0833	0.01
	1.1667	0
	1.25	0
	1.3333	0
	1.4166	0
	1.5	0
	1.5833	0
	1.6667	0
	1.75	0
	1.8333	0
	1.9167	0
	2	0
	2.5	0
	3	0
	3.5	0
	4	0
	4.5	0
	5	0

AOC 41 AQTESOLV DATA

41M-94-13X

RISING HEAD TEST

TIME (MIN)	DISPL (FT)
0.5166	1.231
0.5333	1.225
0.55	1.212
0.5666	1.206
0.5833	1.193
0.6	1.18
0.6166	1.174
0.6333	1.161
0.65	1.155
0.6666	1.142
0.6833	1.136
0.7	1.124
0.7166	1.117
0.7333	1.105
0.75	1.098
0.7666	1.092
0.7833	1.079
0.8	1.073
0.8166	1.067
0.8333	1.06
0.85	1.054
0.8666	1.048
0.8833	1.042
0.9	1.029
0.9166	1.023
0.9333	1.016
0.95	1.01
0.9666	1.004
0.9833	0.997
1	0.991
1.2	0.922
1.4	0.871
1.6	0.84
1.8	0.808
2	0.789
2.2	0.77
2.4	0.751
2.6	0.739
2.8	0.726
3	0.707
3.2	0.701
3.4	0.688
3.6	0.682
3.8	0.669

41M-94-14X

FALLING HEAD TEST

TIME (MIN)	DISPL (FT)
8	0
8.5	0
9	0
9.5	0
10	0

41M-94-14X

RISING HEAD TEST

TIME (MIN)	DISPL (FT)
5.5	0
6	0
6.5	0
7	0
7.5	0
8	0
8.5	0
9	0
9.5	0
10	0

AOC 41 AQTESOLV DATA

41M-94-13X

RISING HEAD TEST

TIME (MIN)	DISPL (FT)
4	0.657
4.2	0.657
4.4	0.644
4.6	0.638
4.8	0.631
5	0.625
5.2	0.619
5.4	0.612
5.6	0.6
5.8	0.6
6	0.593
6.2	0.587
6.4	0.581
6.6	0.581
6.8	0.574
7	0.568
7.2	0.568
7.4	0.562
7.6	0.562
7.8	0.556
8	0.549
8.2	0.543
8.4	0.543
8.6	0.537
8.8	0.53
9	0.524
9.2	0.524
9.4	0.518
9.6	0.518
9.8	0.518
10	0.511
12	0.486
14	0.461
16	0.429
18	0.404
20	0.379
22	0.36
24	0.341
26	0.335
28	0.316
t_1 30	0.297
32	0.29
34	0.278
36	0.272

41M-94-14X

FALLING HEAD TEST

TIME (MIN)	DISPL (FT)

41M-94-14X

RISING HEAD TEST

TIME (MIN)	DISPL (FT)

AOC 41 AQTESOLV DATA

41M-94-13X

RISING HEAD TEST

TIME (MIN)	DISPL (FT)
38	0.259
40	0.246
42	0.234
44	0.227
46	0.215
48	0.208
50	0.196
52	0.189
54	0.196
56	0.177
58	0.171
60	0.164
62	0.158
64	0.158
66	0.152
68	0.145
70	0.145
72	0.133
74	0.126
76	0.126
78	0.12
t_2 80	0.12
82	0.114
84	0.107
86	0.107
88	0.107
90	0.101
92	0.101
94	0.101
96	0.095
98	0.095
100	0.088
102	0.088
104	0.088
106	0.088
108	0.082
110	0.082
112	0.133

41M-94-14X

FALLING HEAD TEST

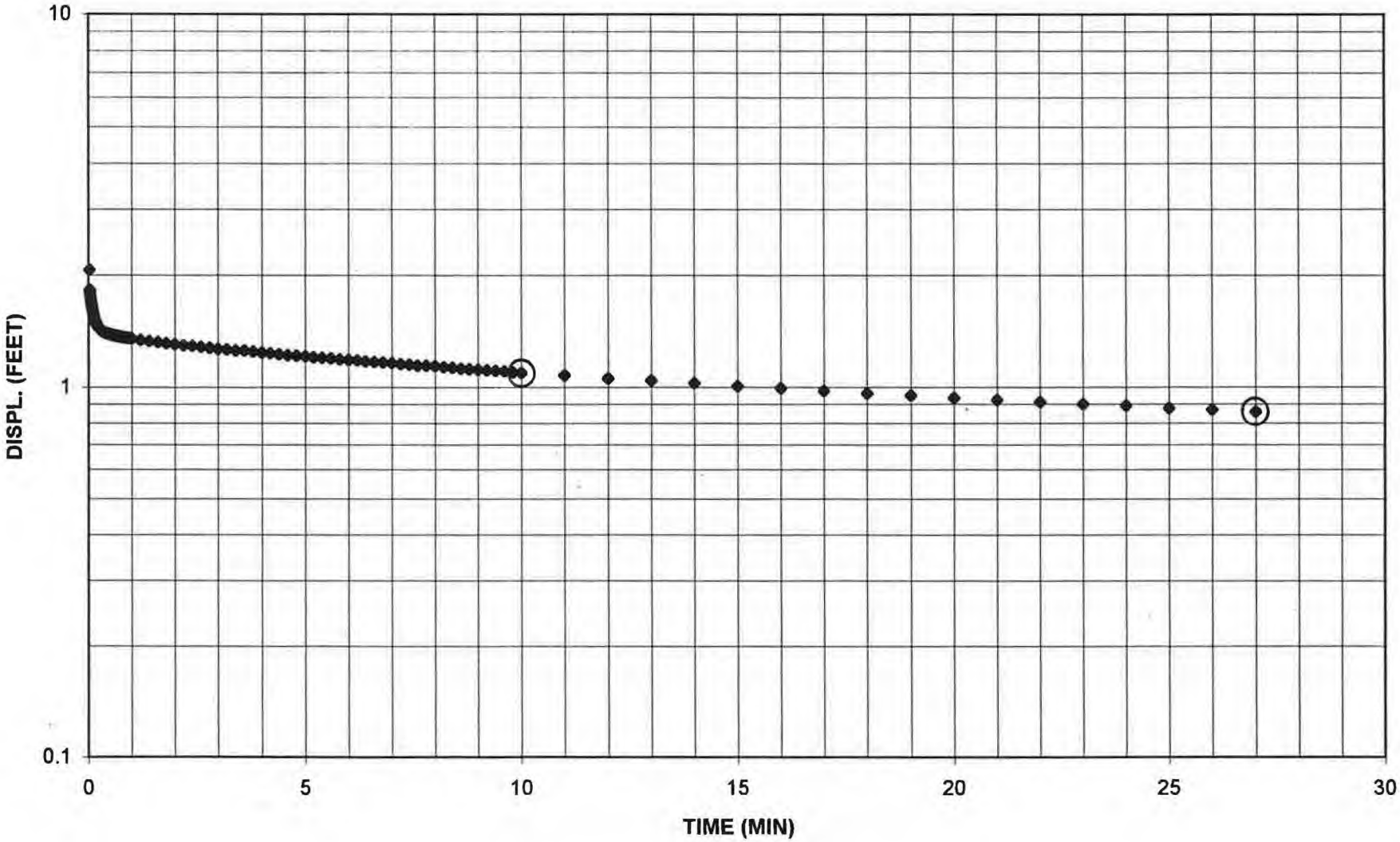
TIME (MIN)	DISPL (FT)

41M-94-14X

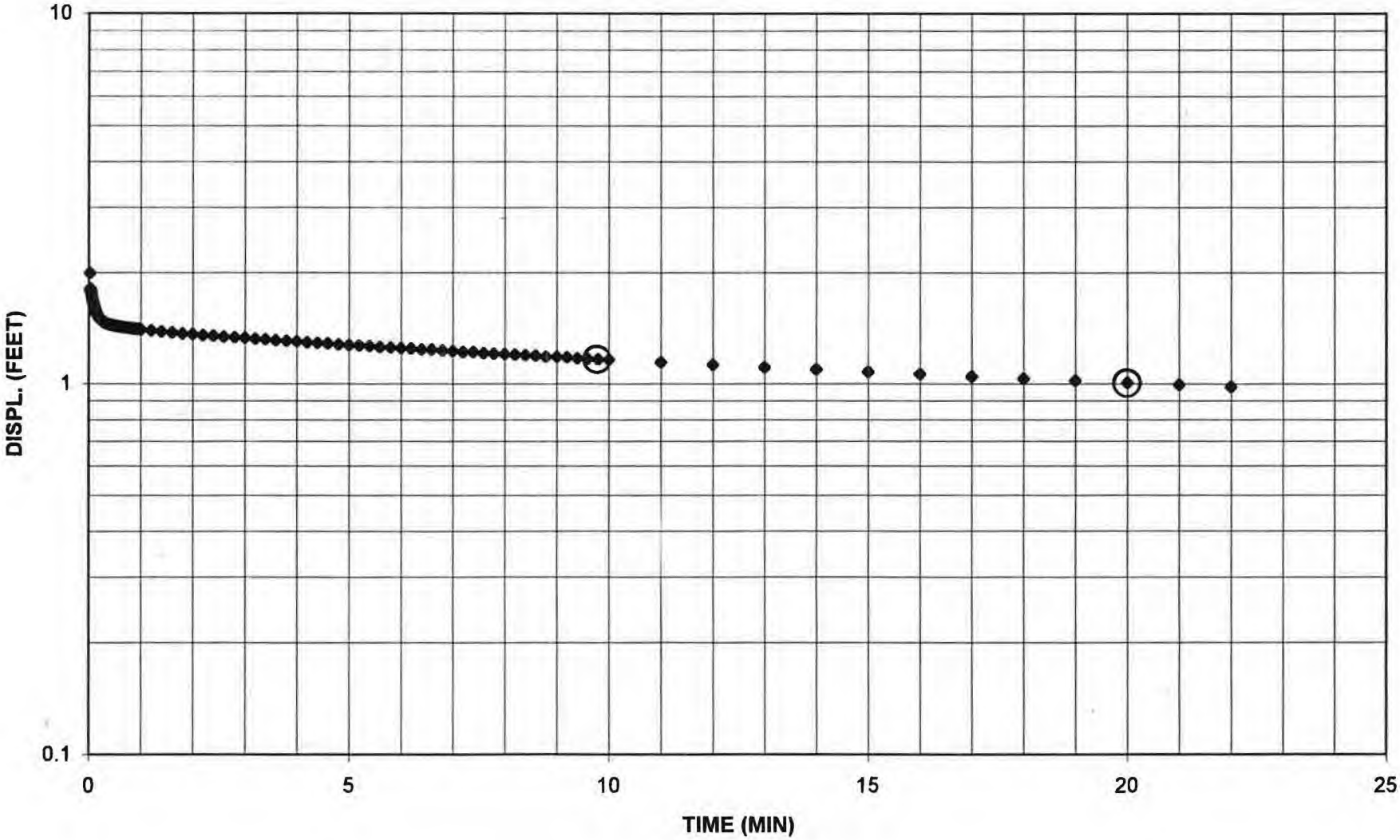
RISING HEAD TEST

TIME (MIN)	DISPL (FT)

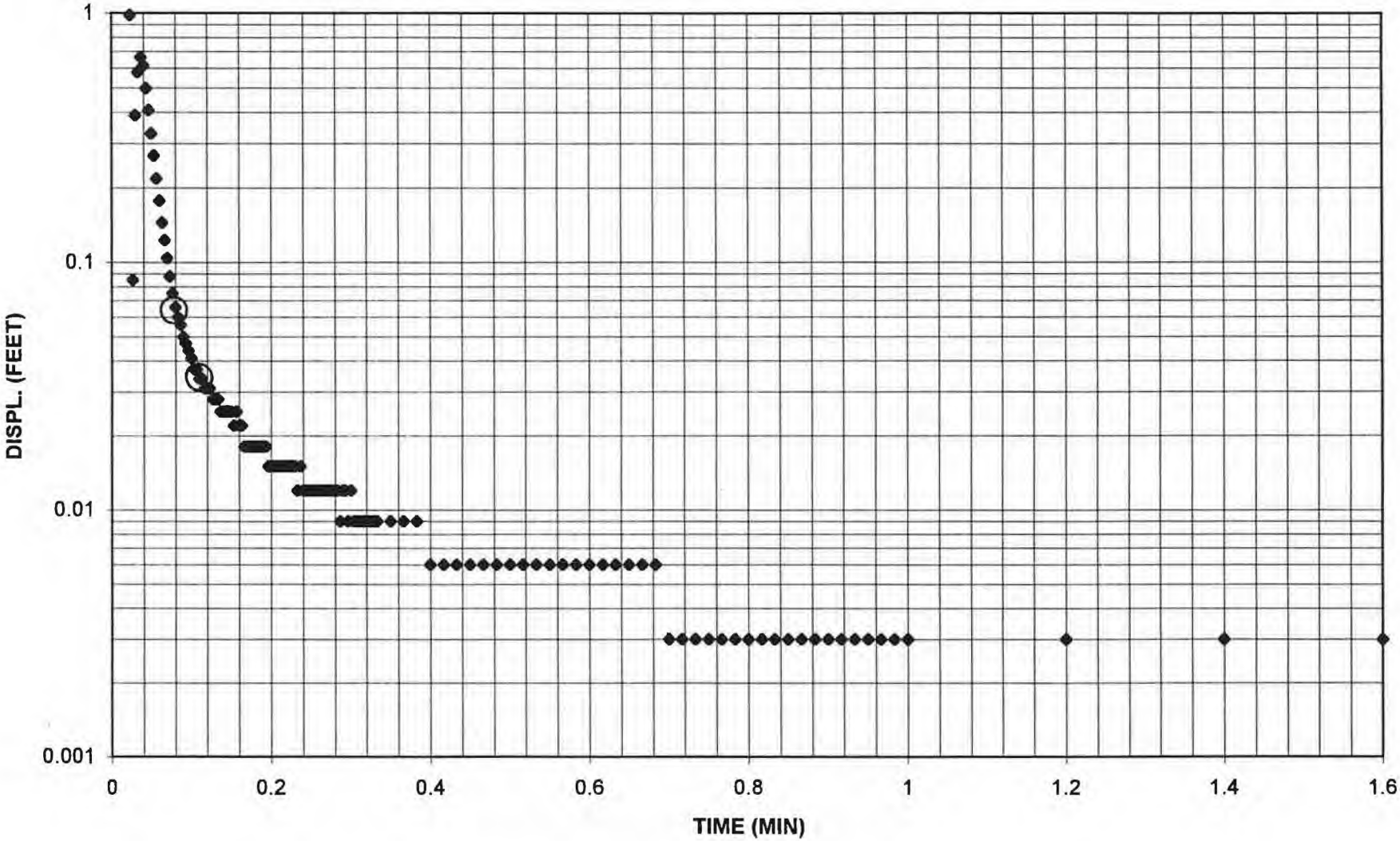
41M-92-01X RISING HEAD TEST #1



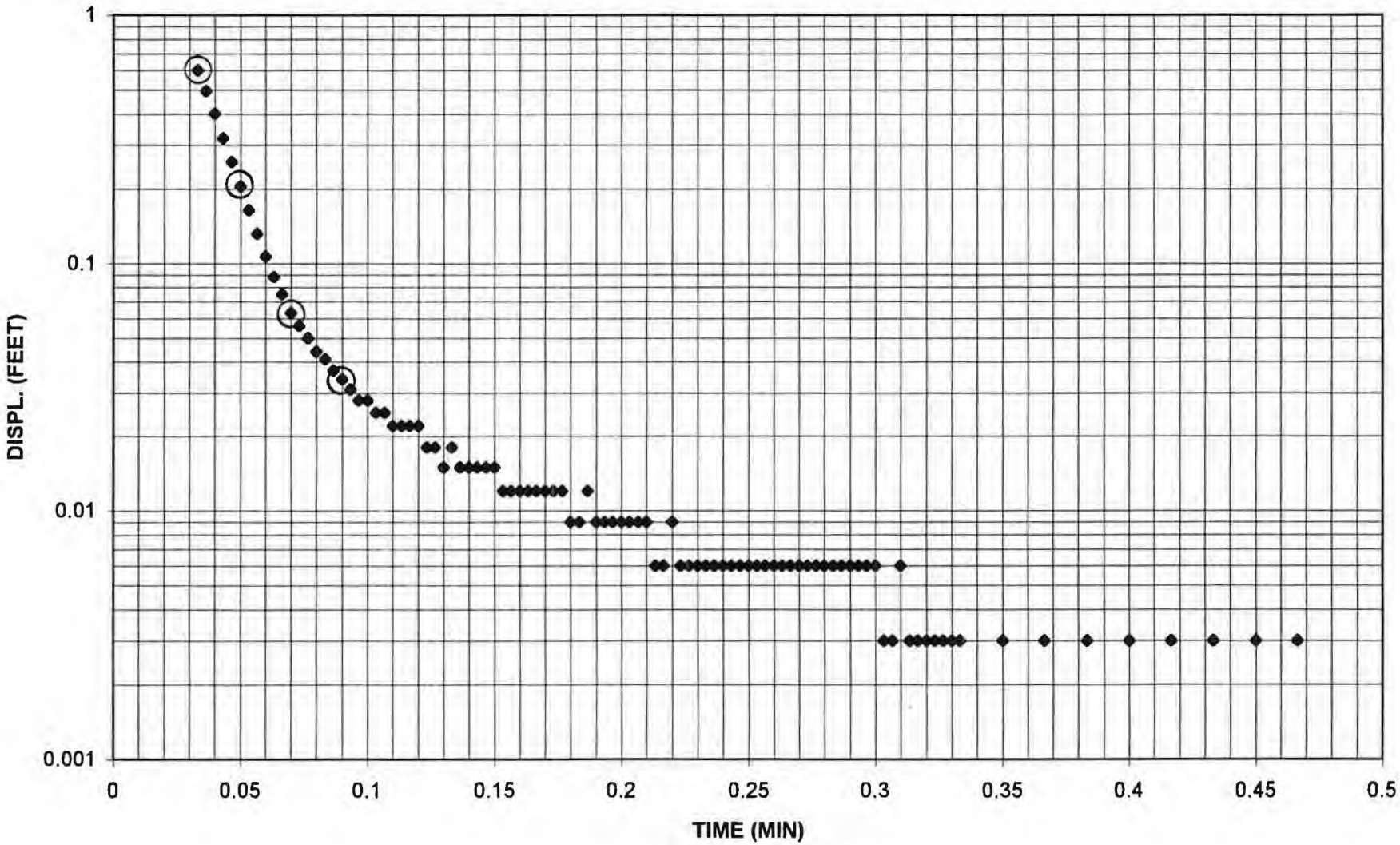
41M-92-01X RISING HEAD TEST #2



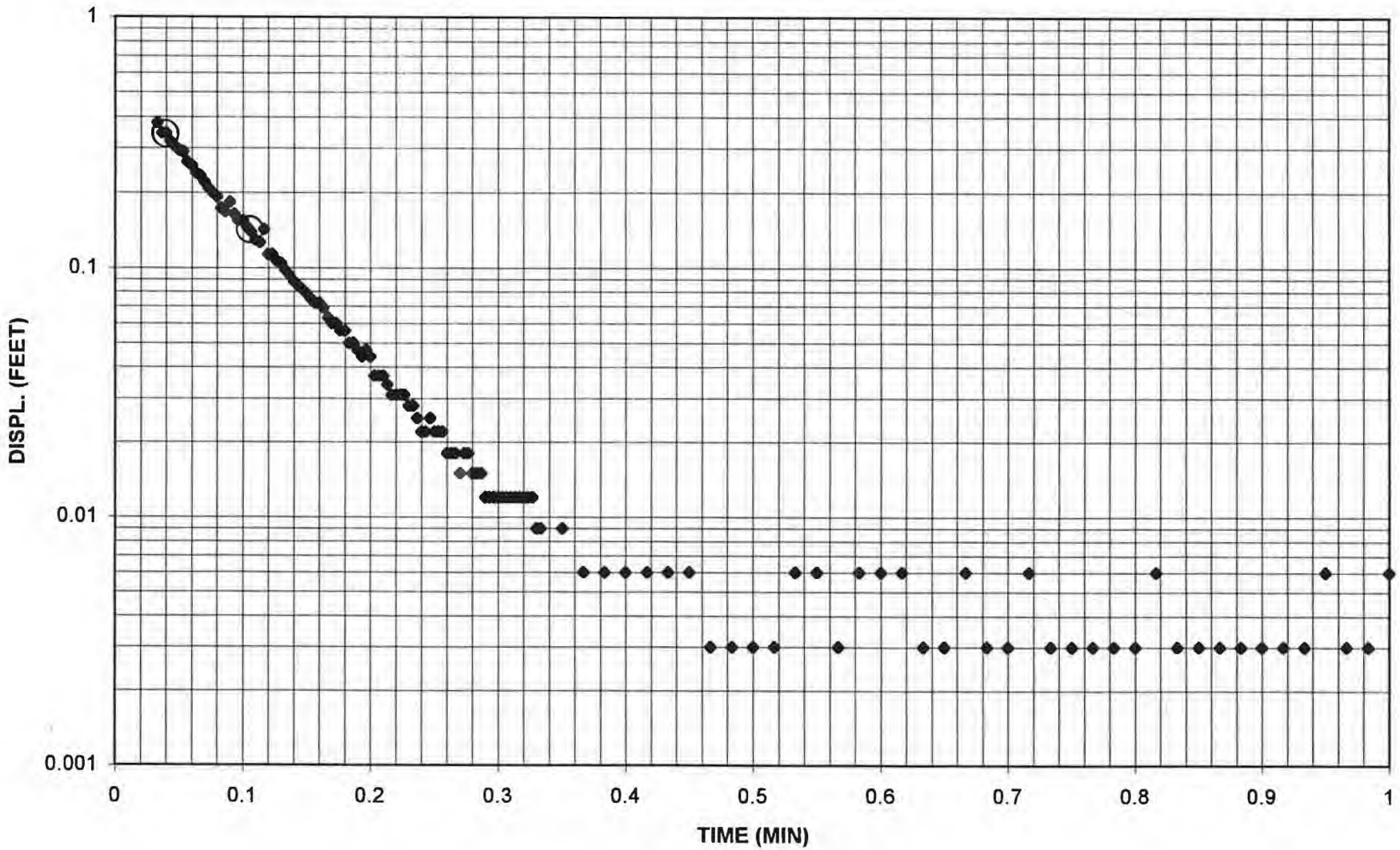
41M-93-04X RISING HEAD TEST #1



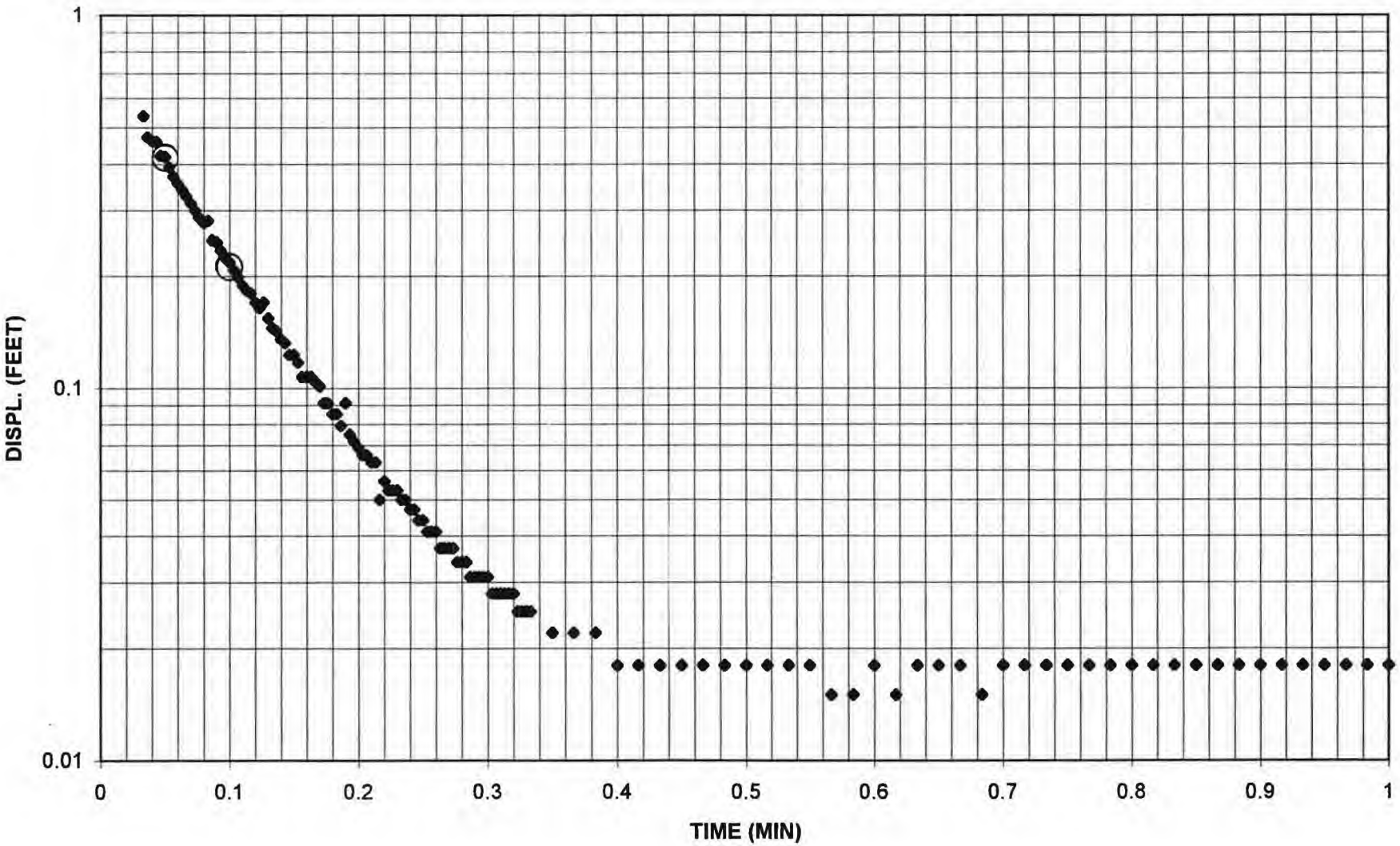
41M-93-04X RISING HEAD TEST #2



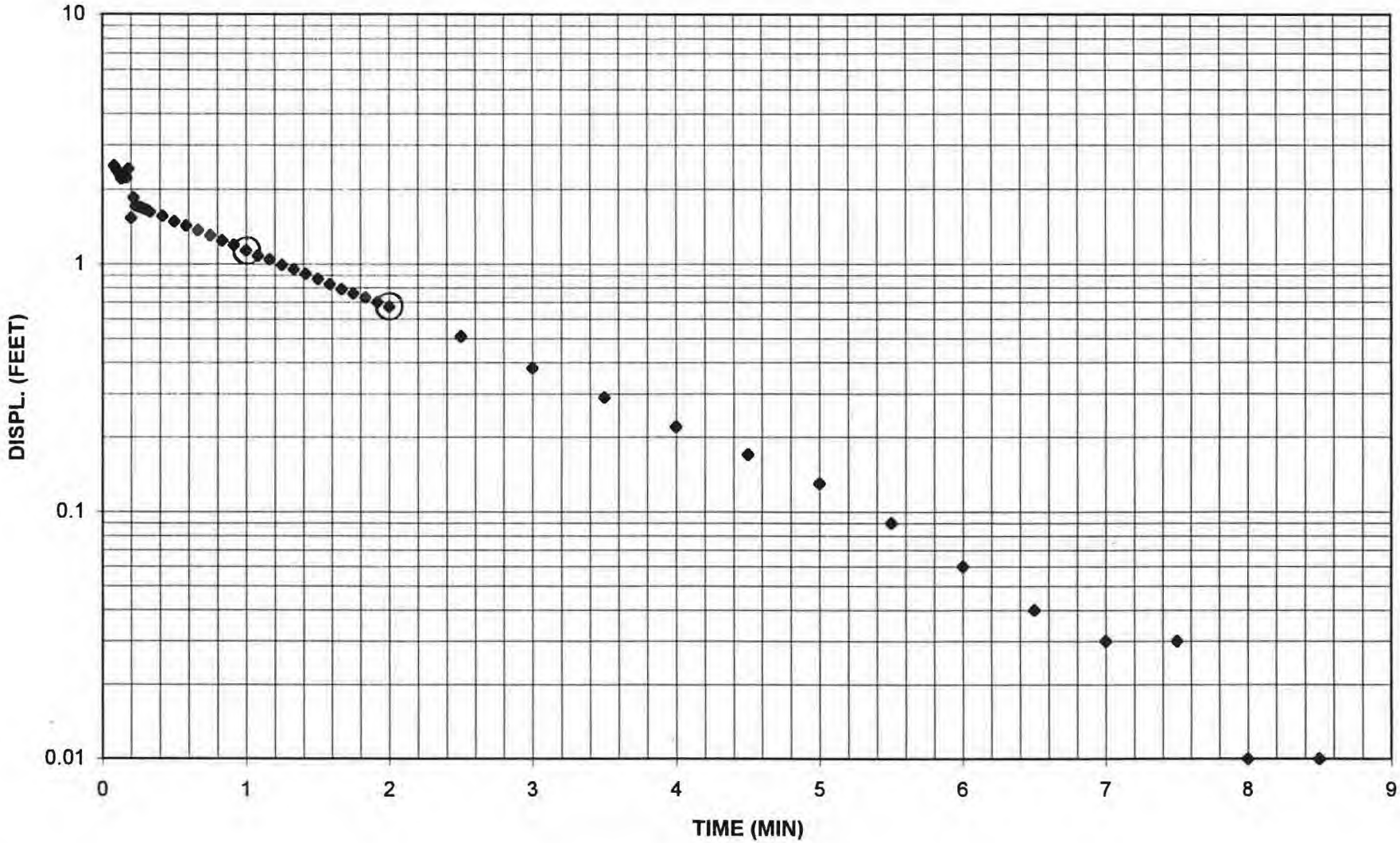
41M-93-05X RISING HEAD TEST #1



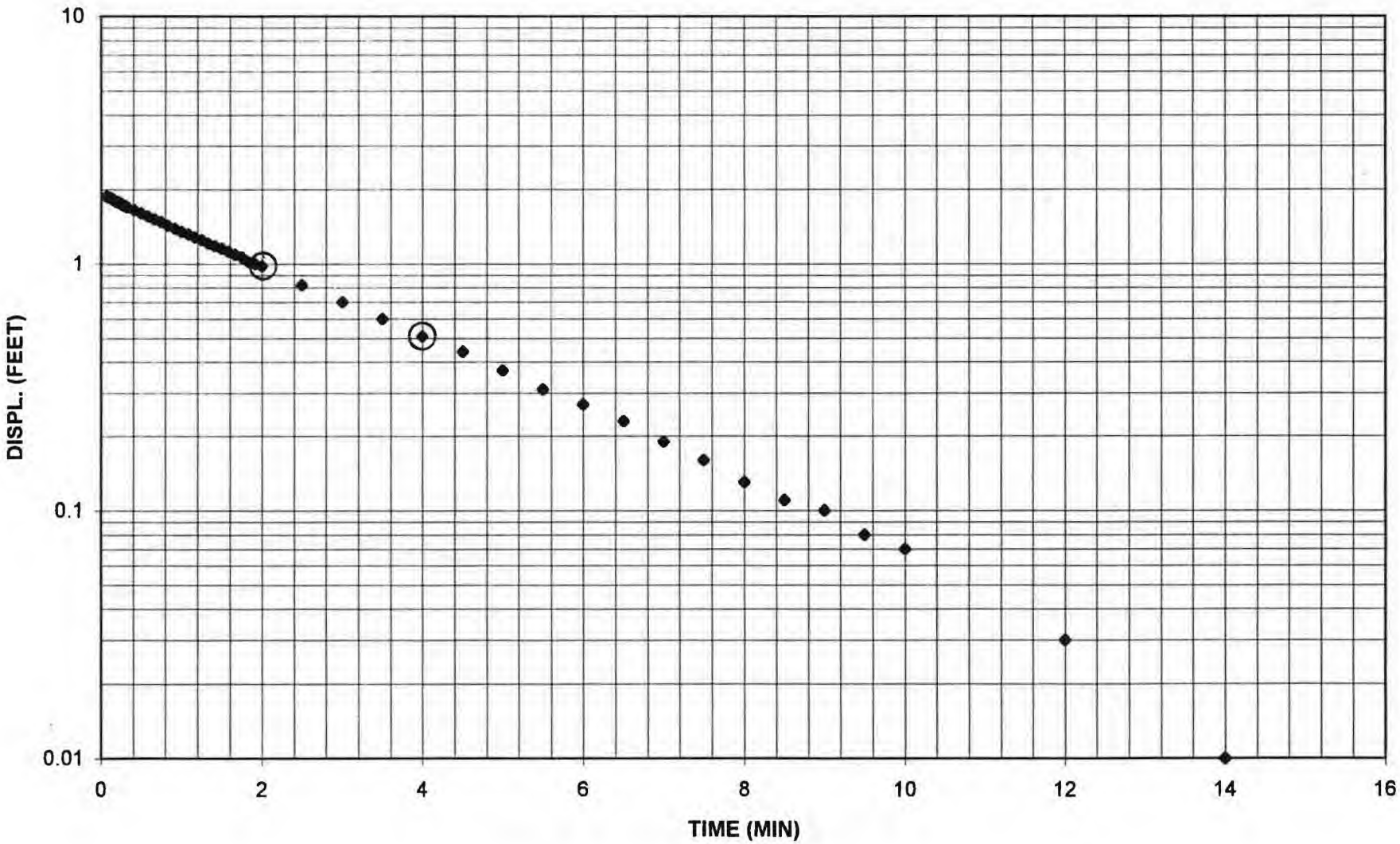
41M-93-05X RISING HEAD TEST #2



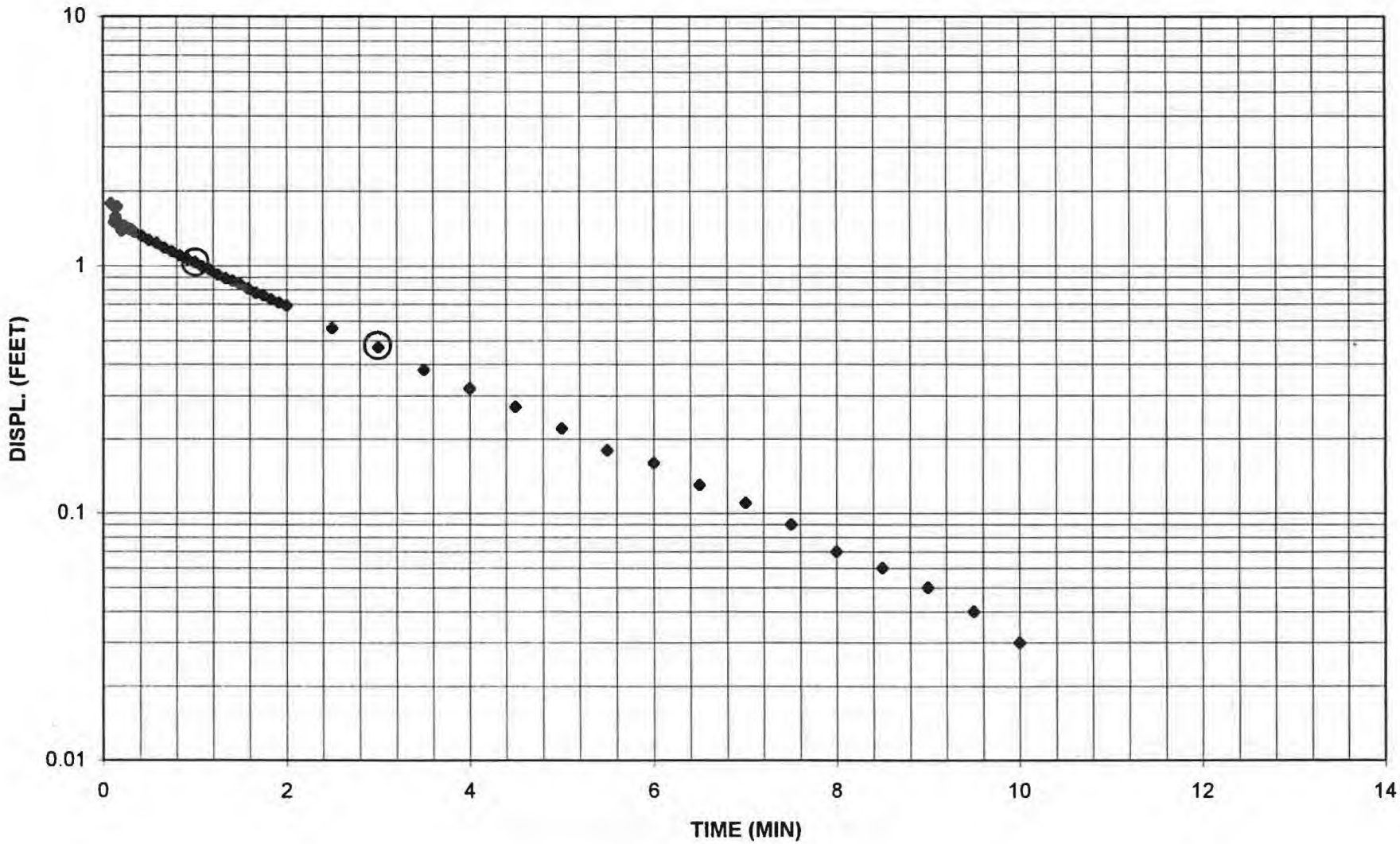
41M-94-02C FALLING HEAD TEST



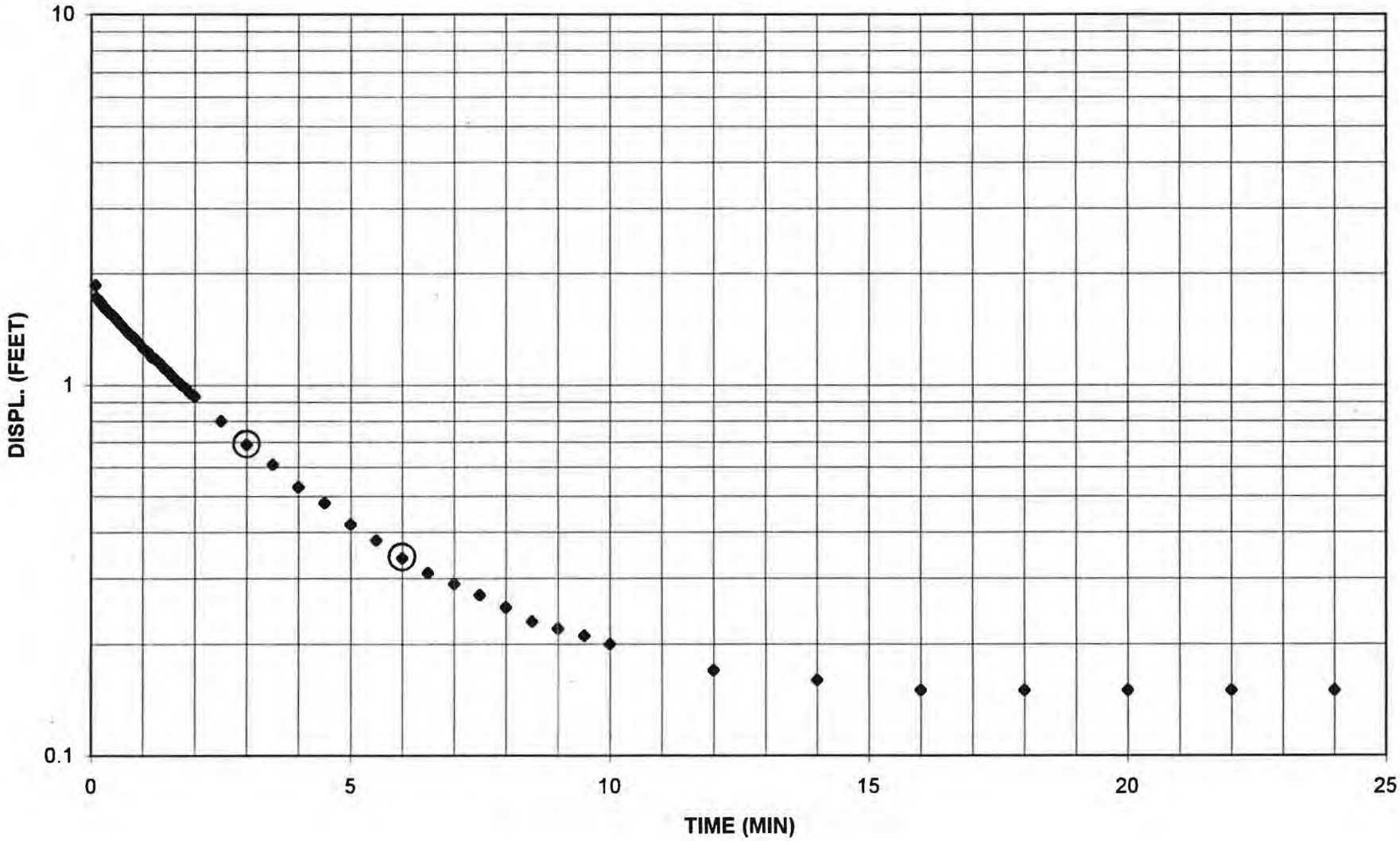
41M-94-02C RISING HEAD TEST



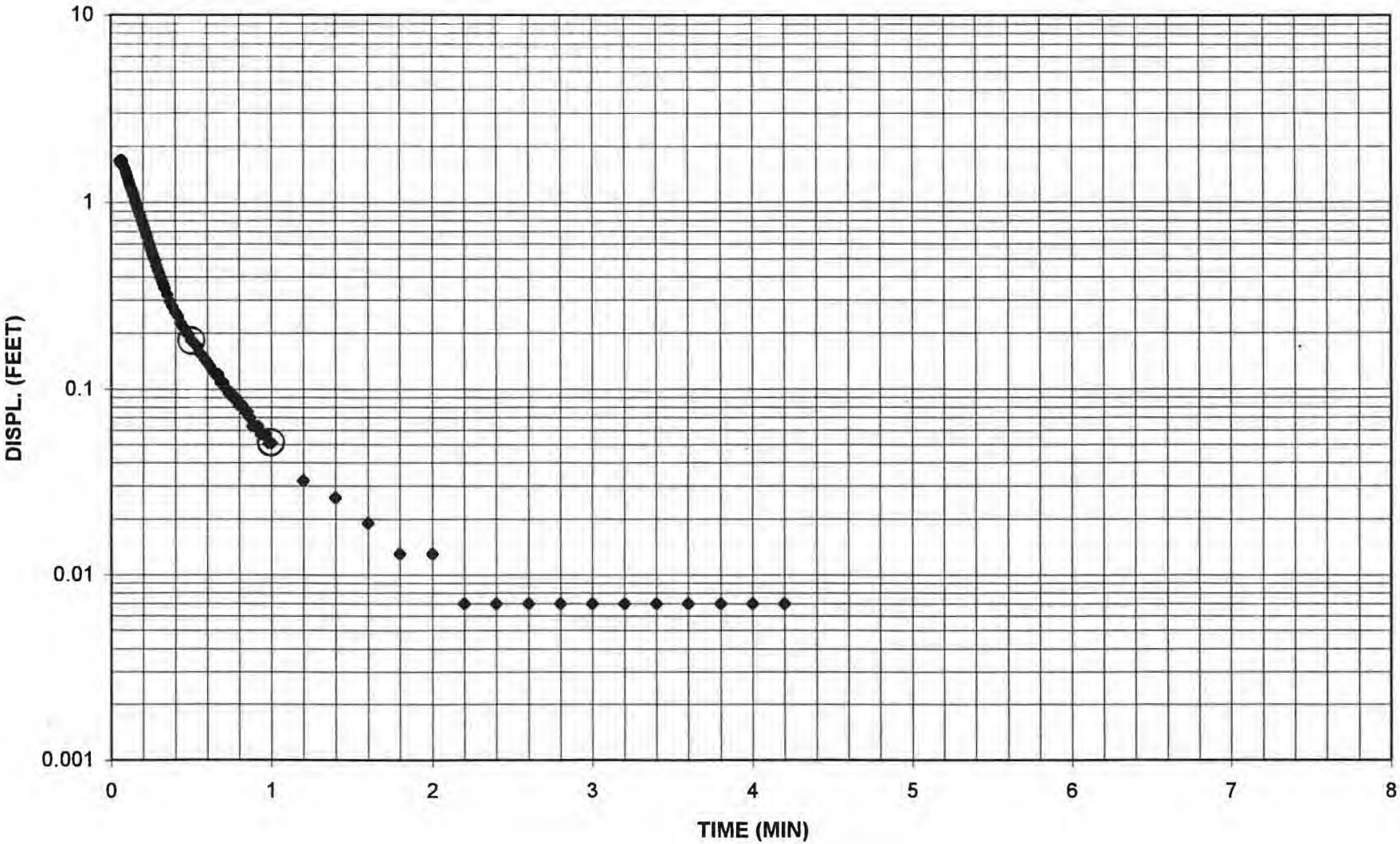
41M-94-03B FALLING HEAD TEST



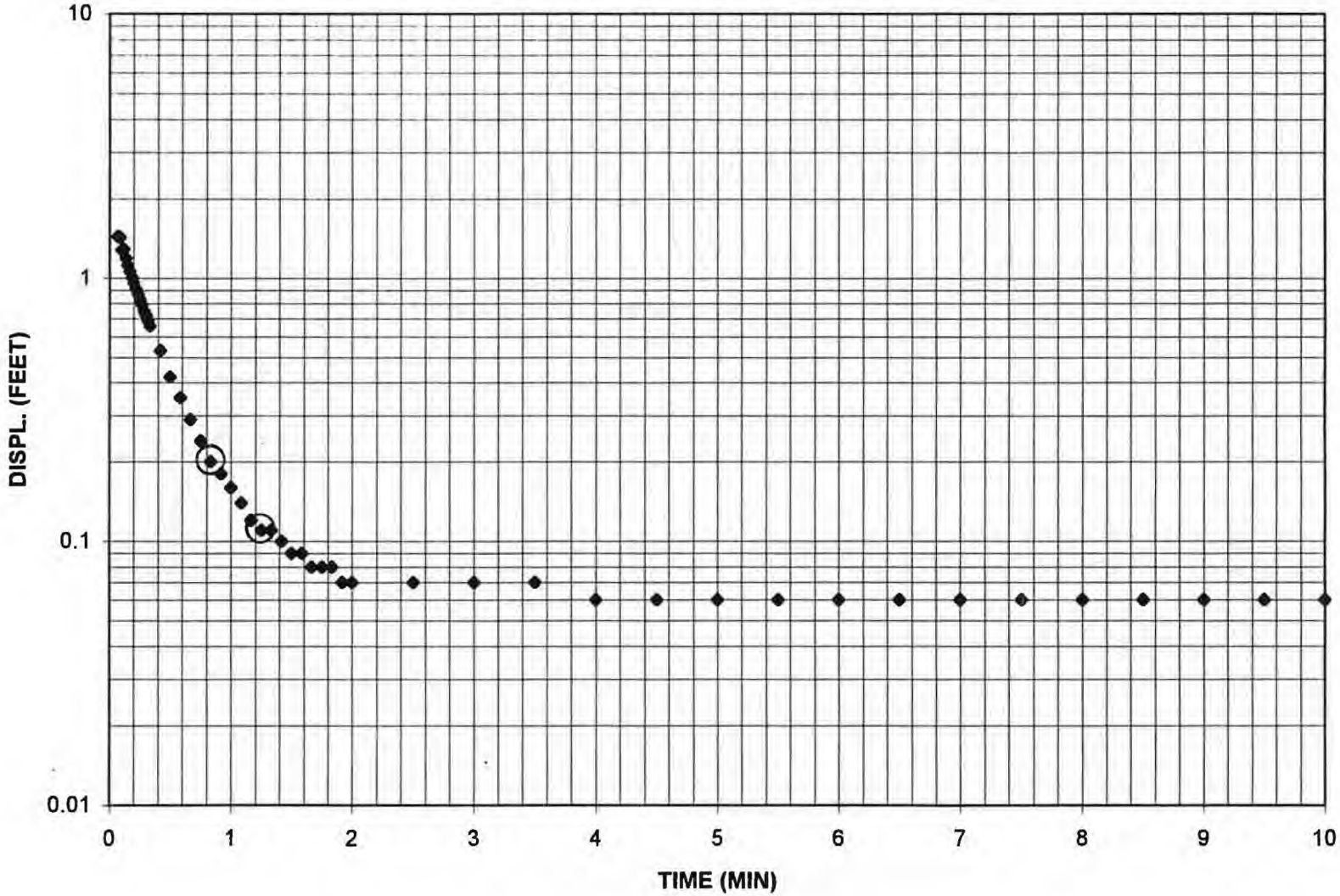
41M-94-03B RISING HEAD TEST



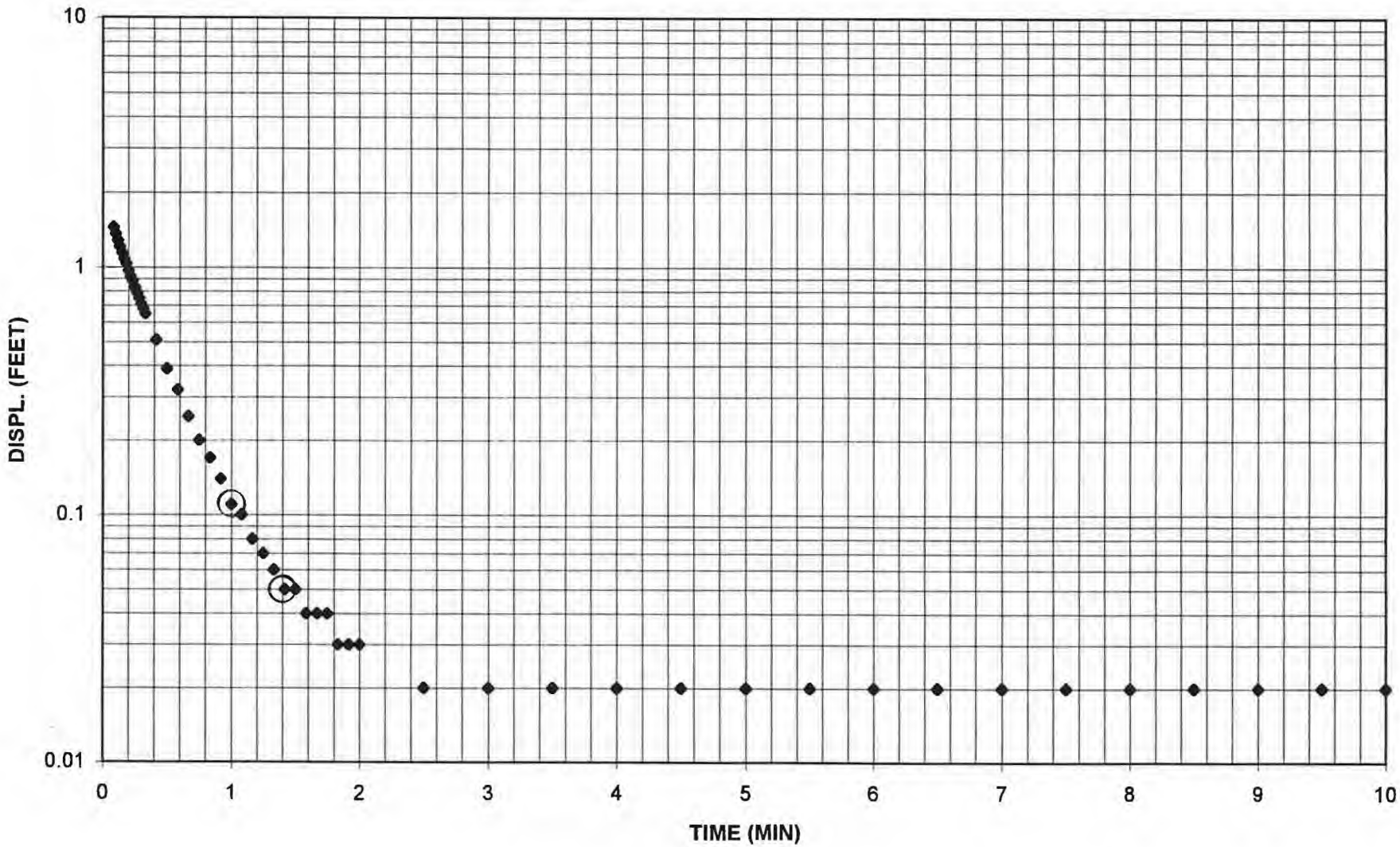
41M-94-06X RISING HEAD TEST



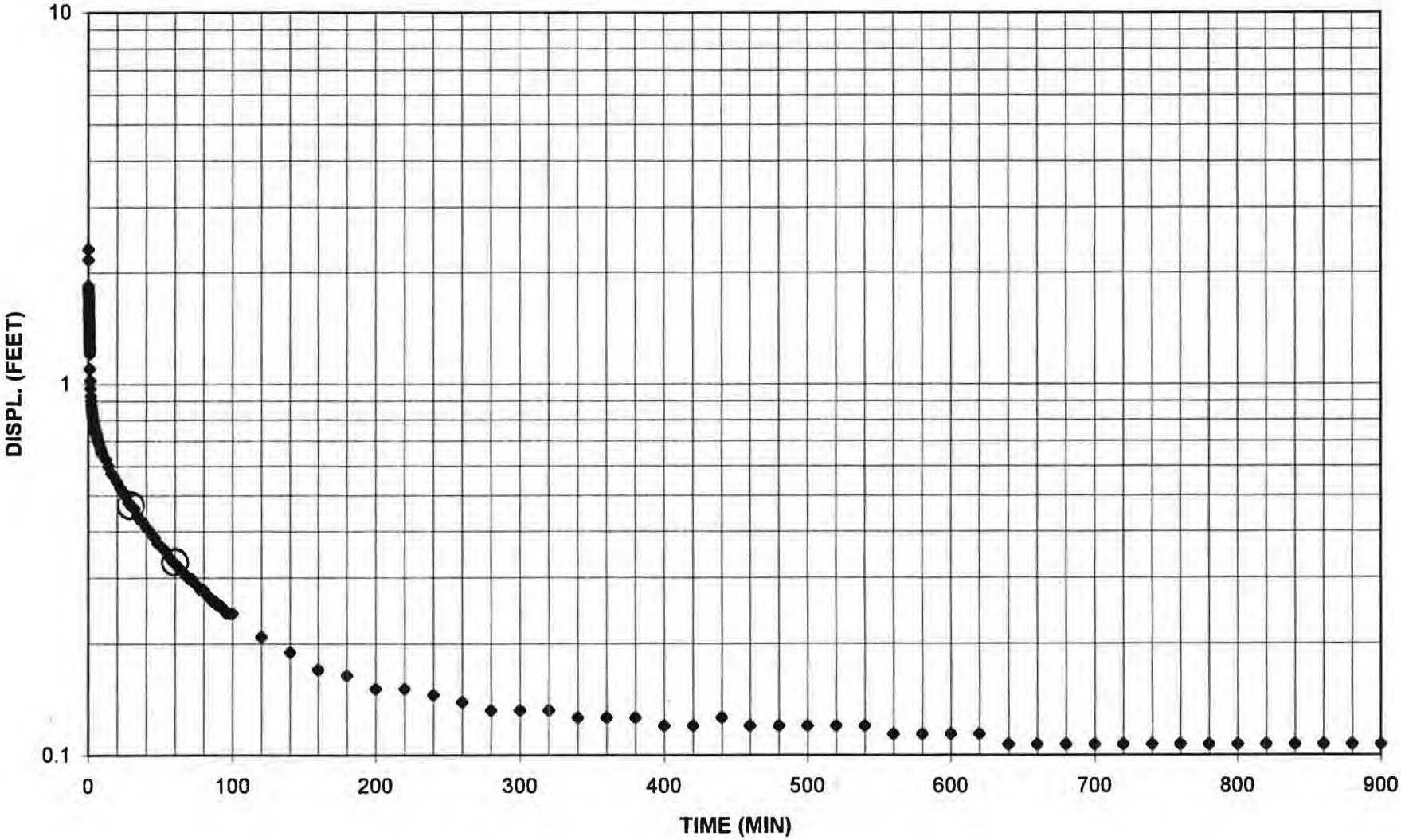
41M-94-07X FALLING HEAD TEST



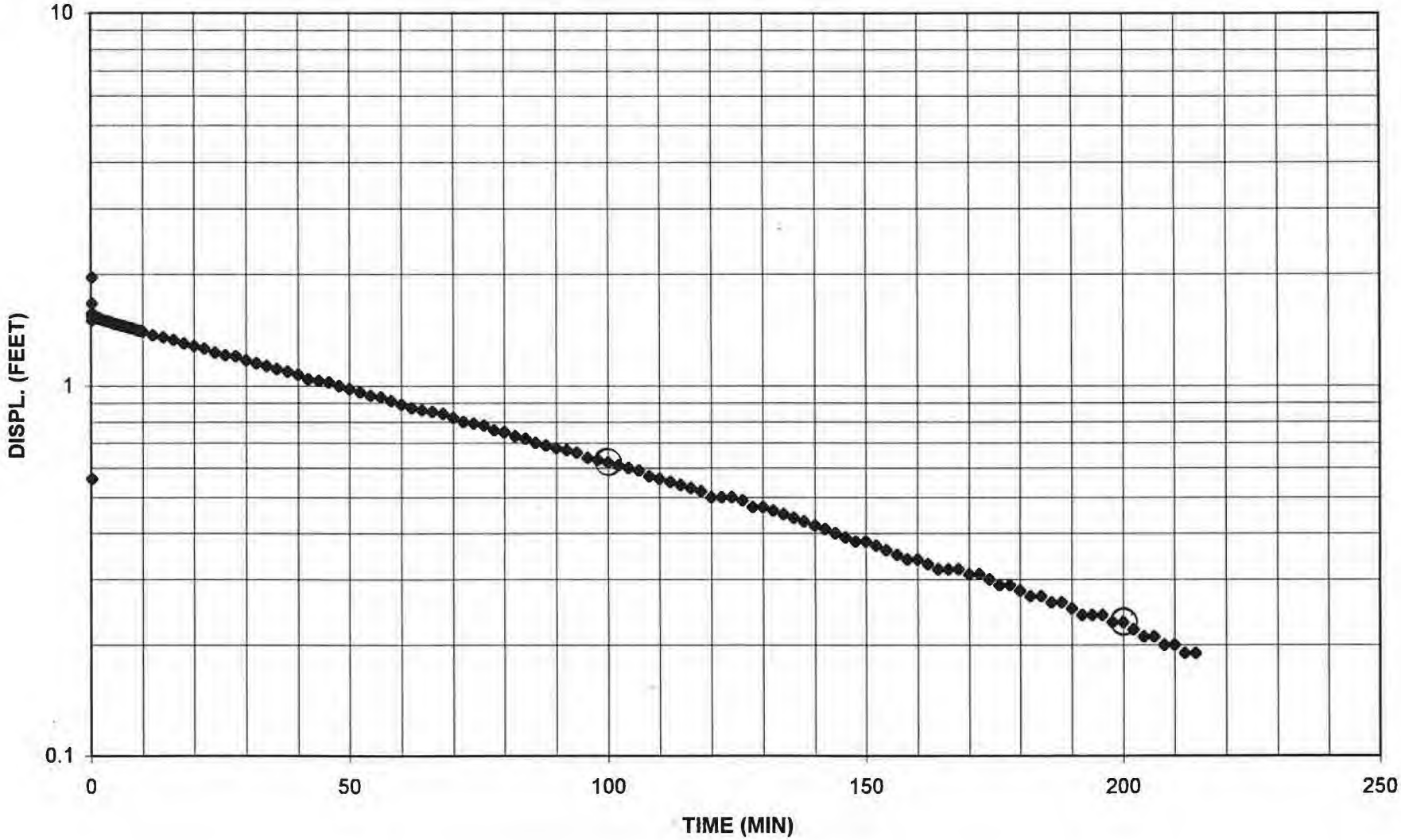
41M-94-07X RISING HEAD TEST



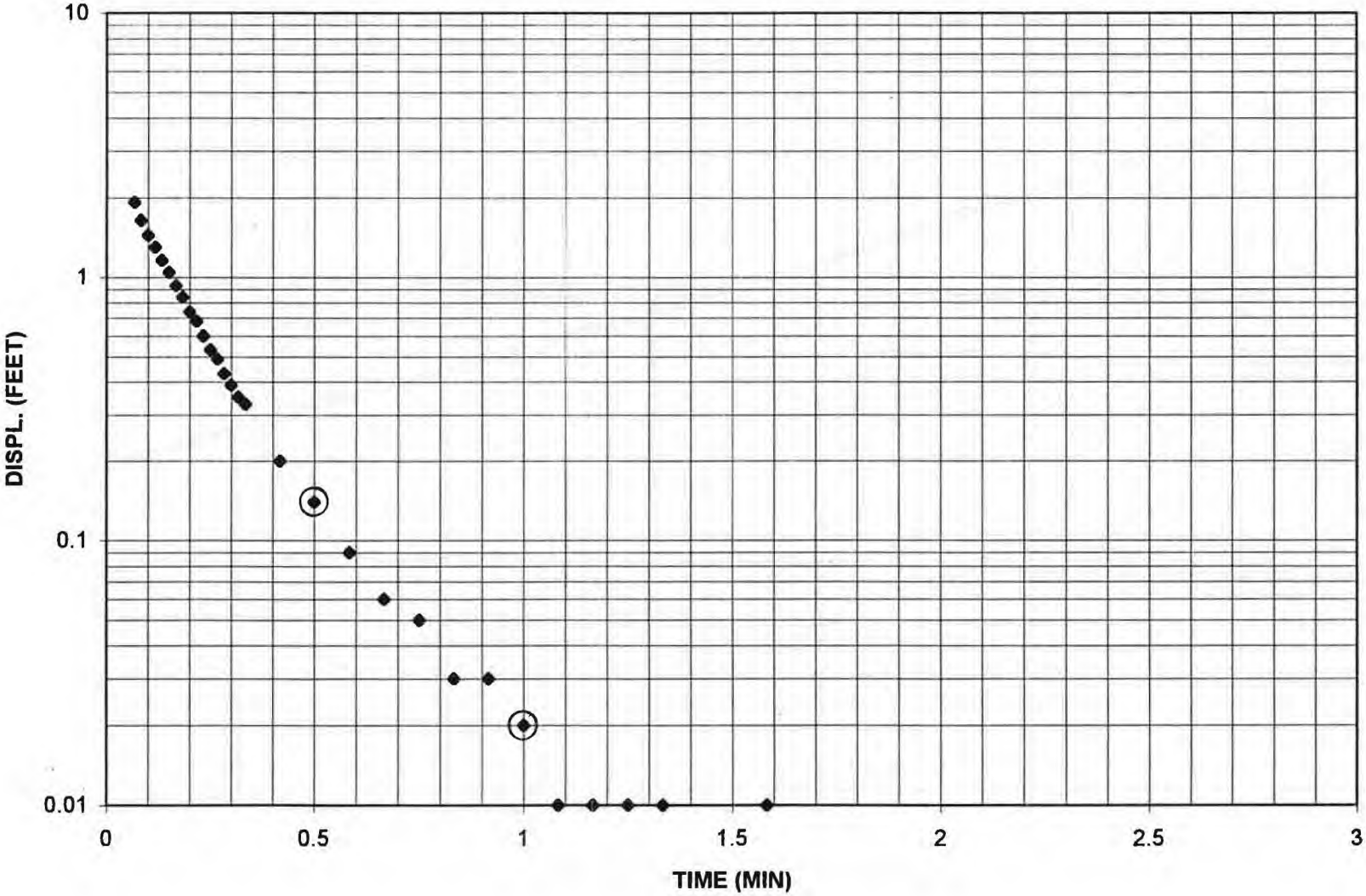
41M-94-08A RISING HEAD TEST



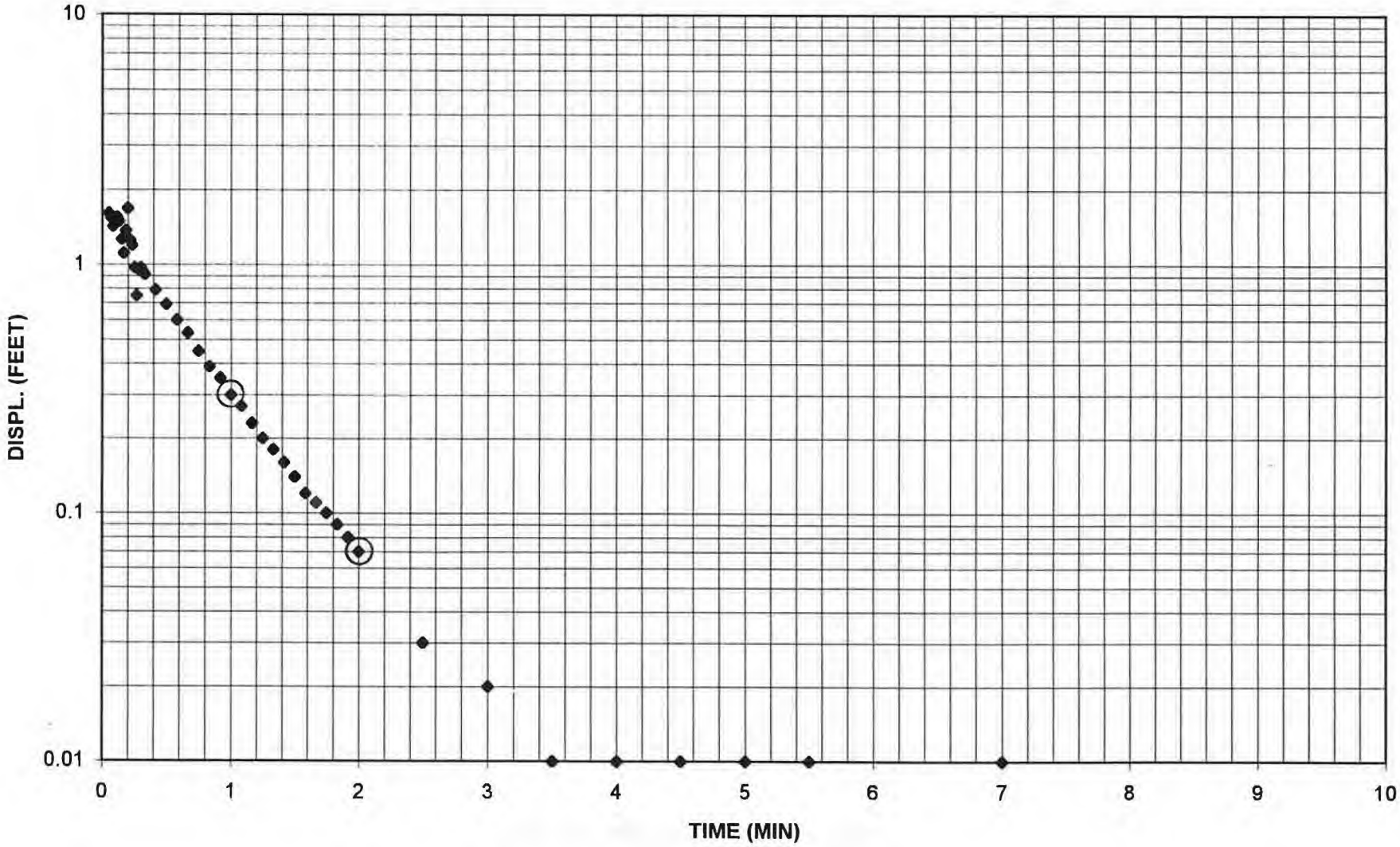
41M-94-08B FALLING HEAD TEST



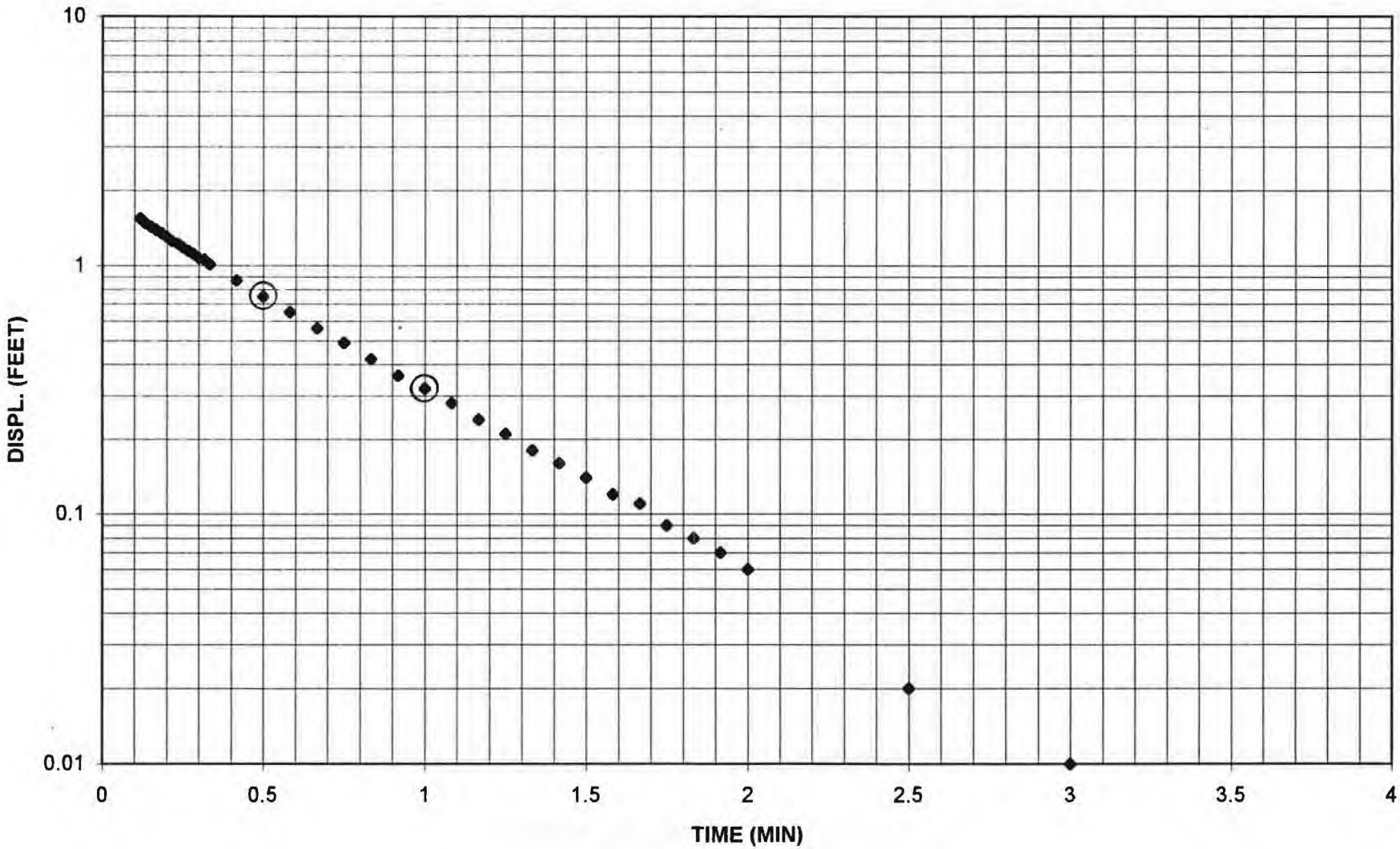
41M-94-09A RISING HEAD TEST



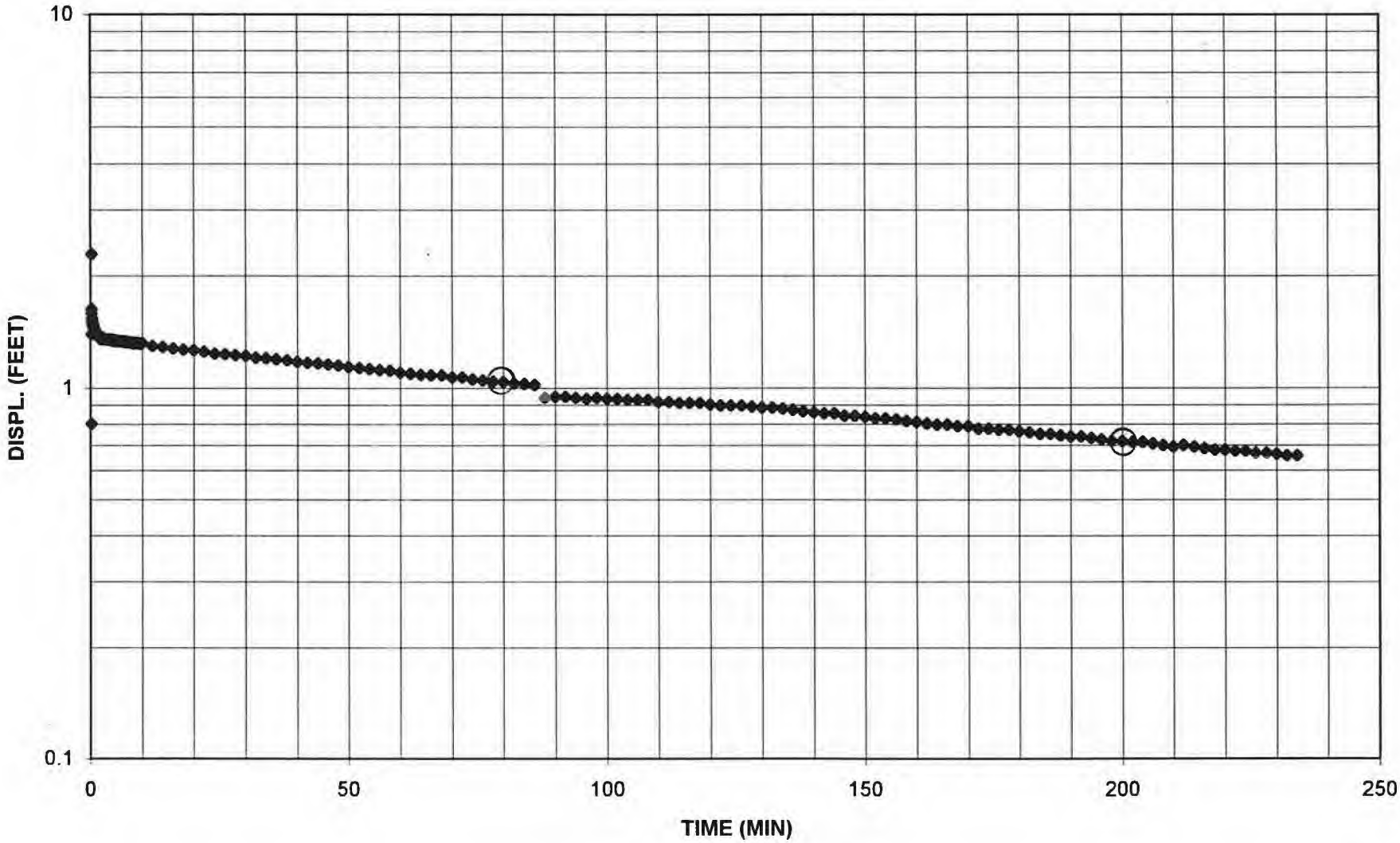
41M-94-09B FALLING HEAD TEST



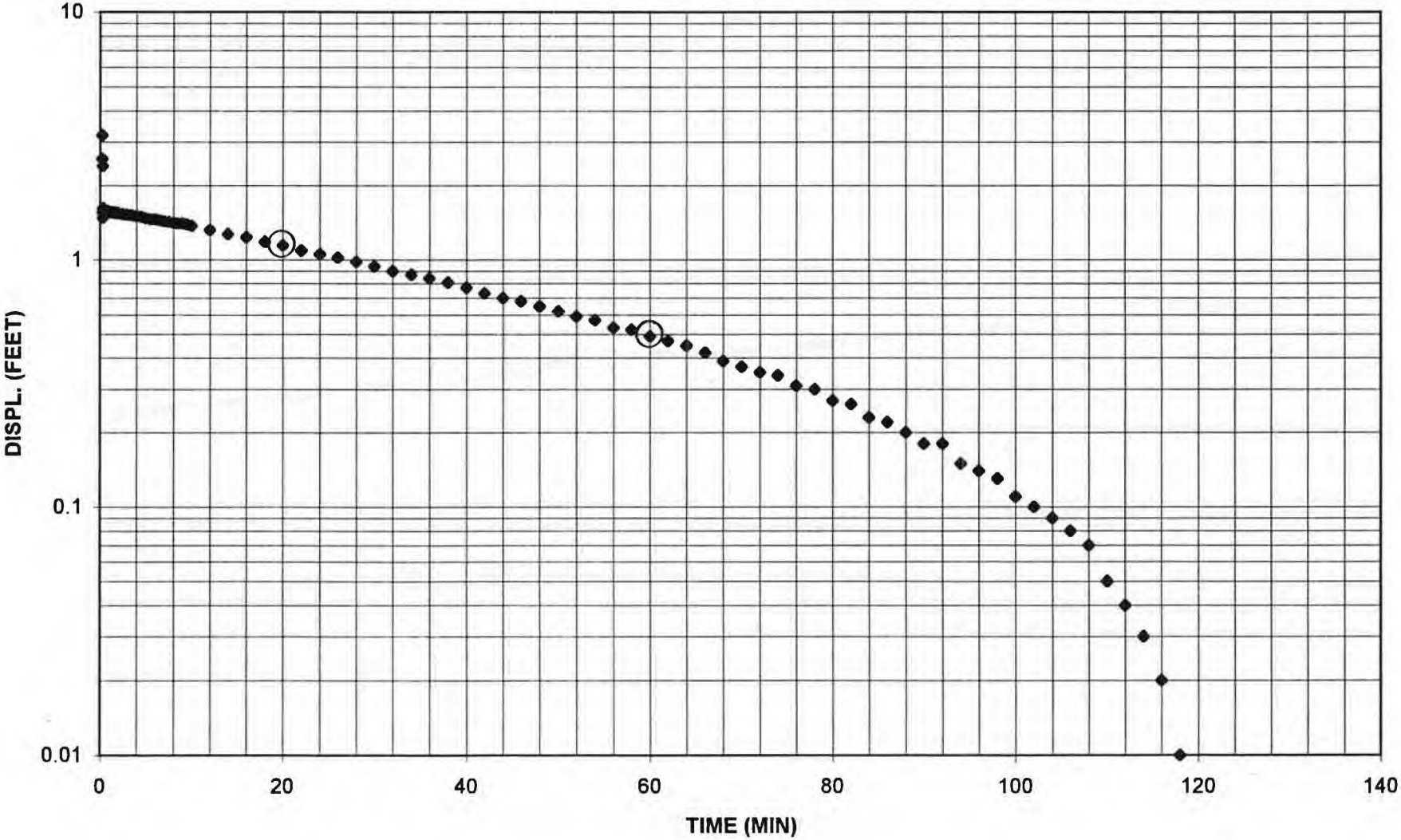
41M-94-09B RISING HEAD TEST



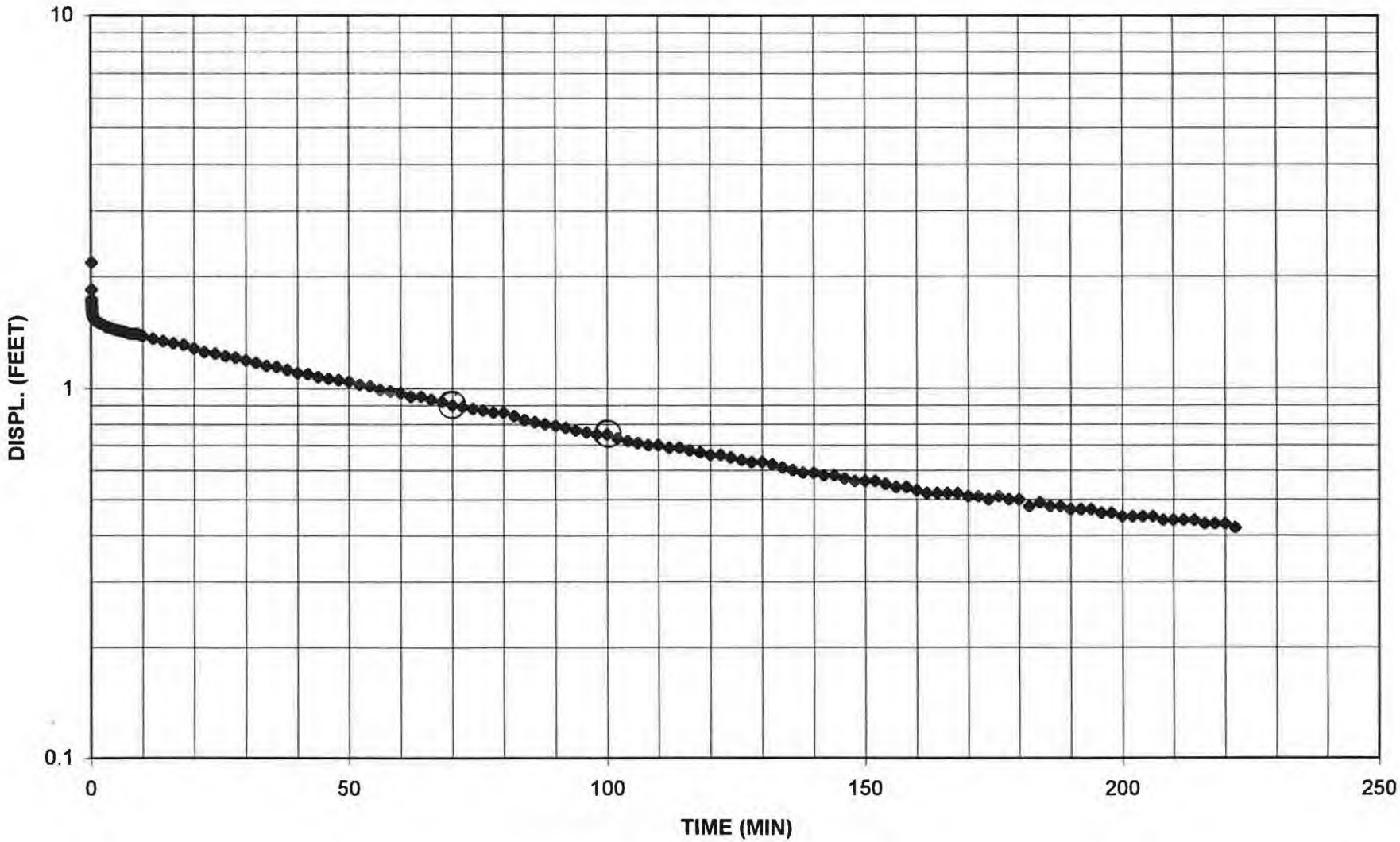
41M-94-11X FALLING HEAD TEST



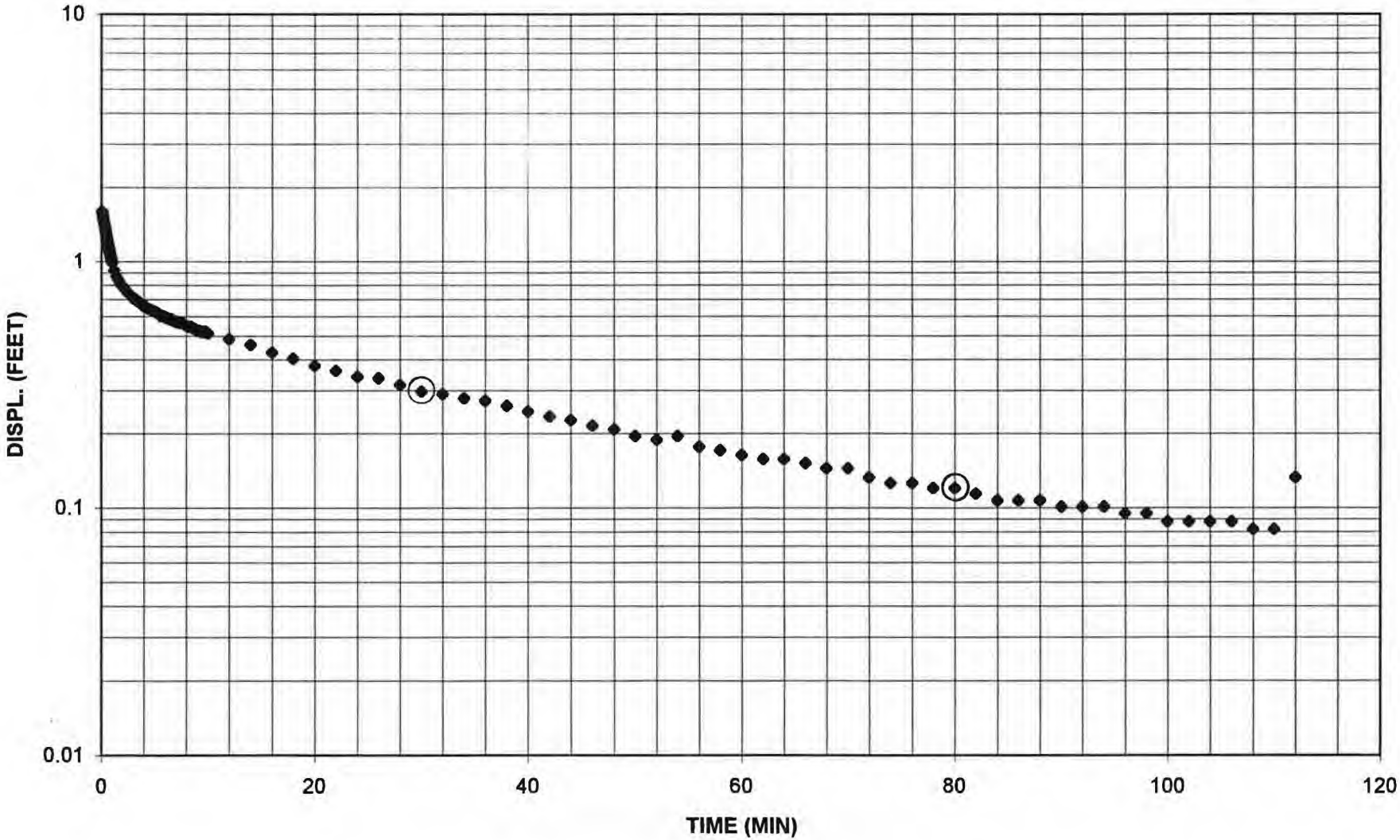
41M-94-12X FALLING HEAD TEST



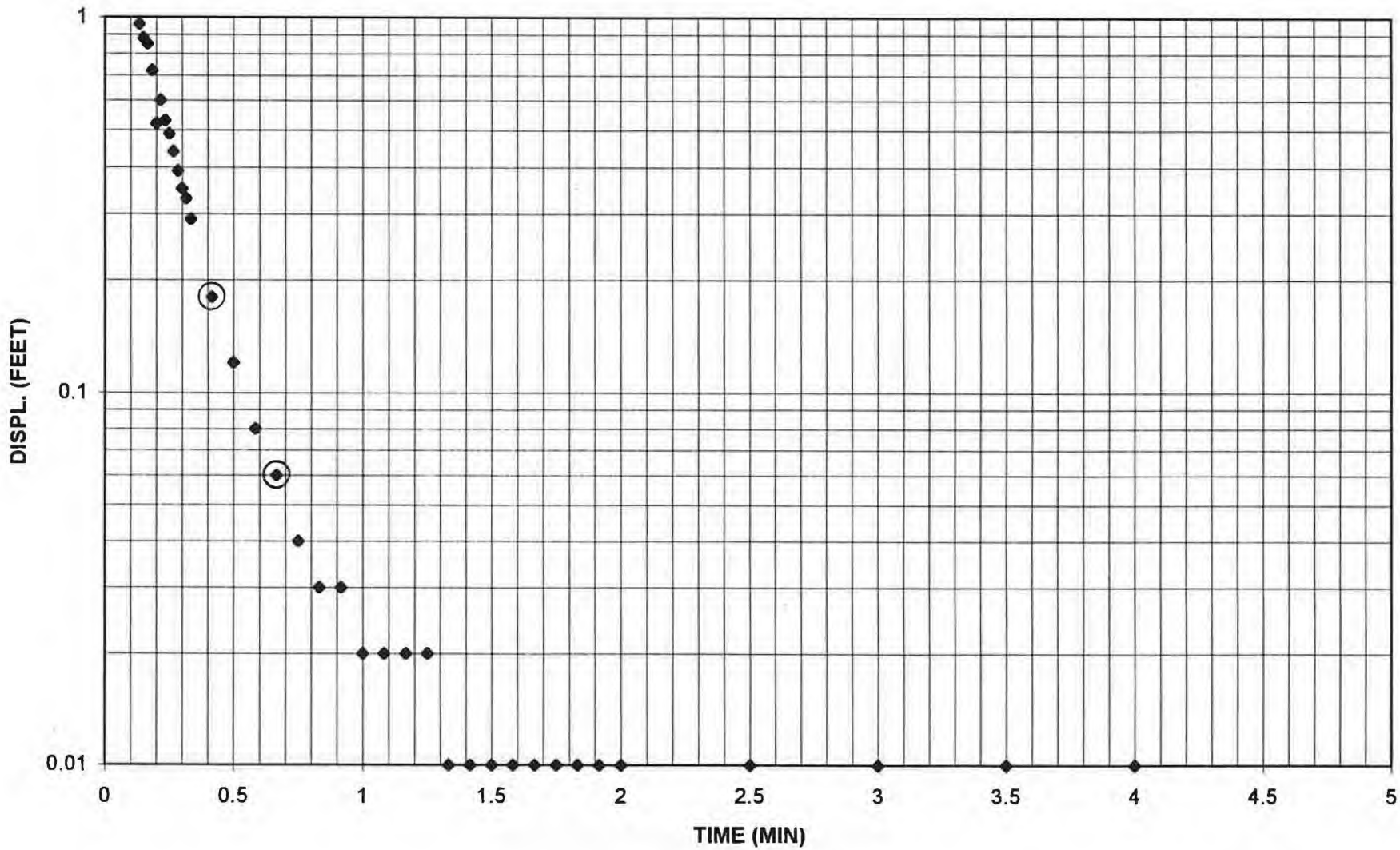
41M-94-12X RISING HEAD TEST



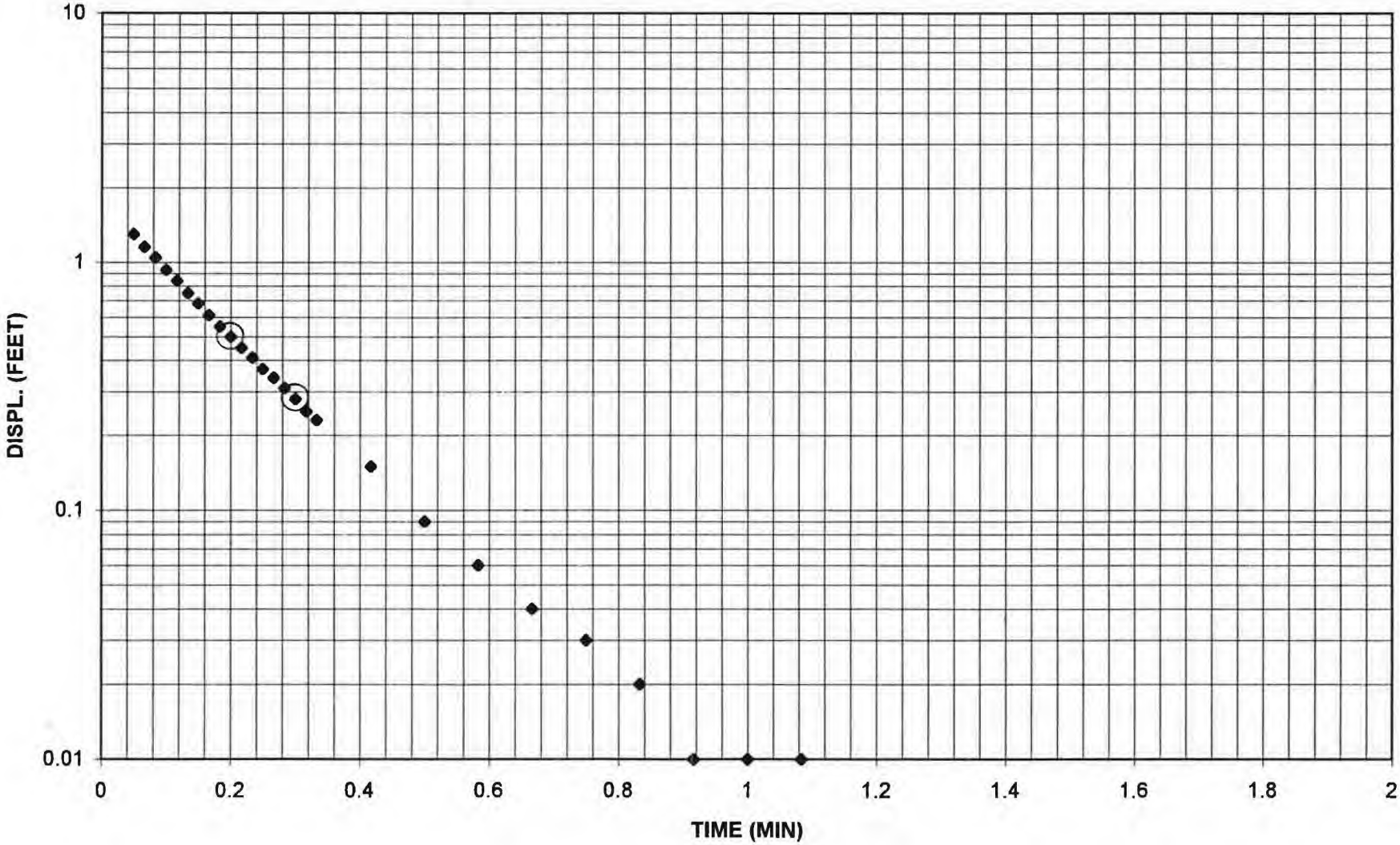
41M-94-13X RISING HEAD TEST



41M-94-14X FALLING HEAD TEST



41M-94-14X RISING HEAD TEST



AOC 41
AQUIFER SLUG TESTING
INPUT PARAMETERS FOR AQTESOLV

FALLING HEAD TESTS

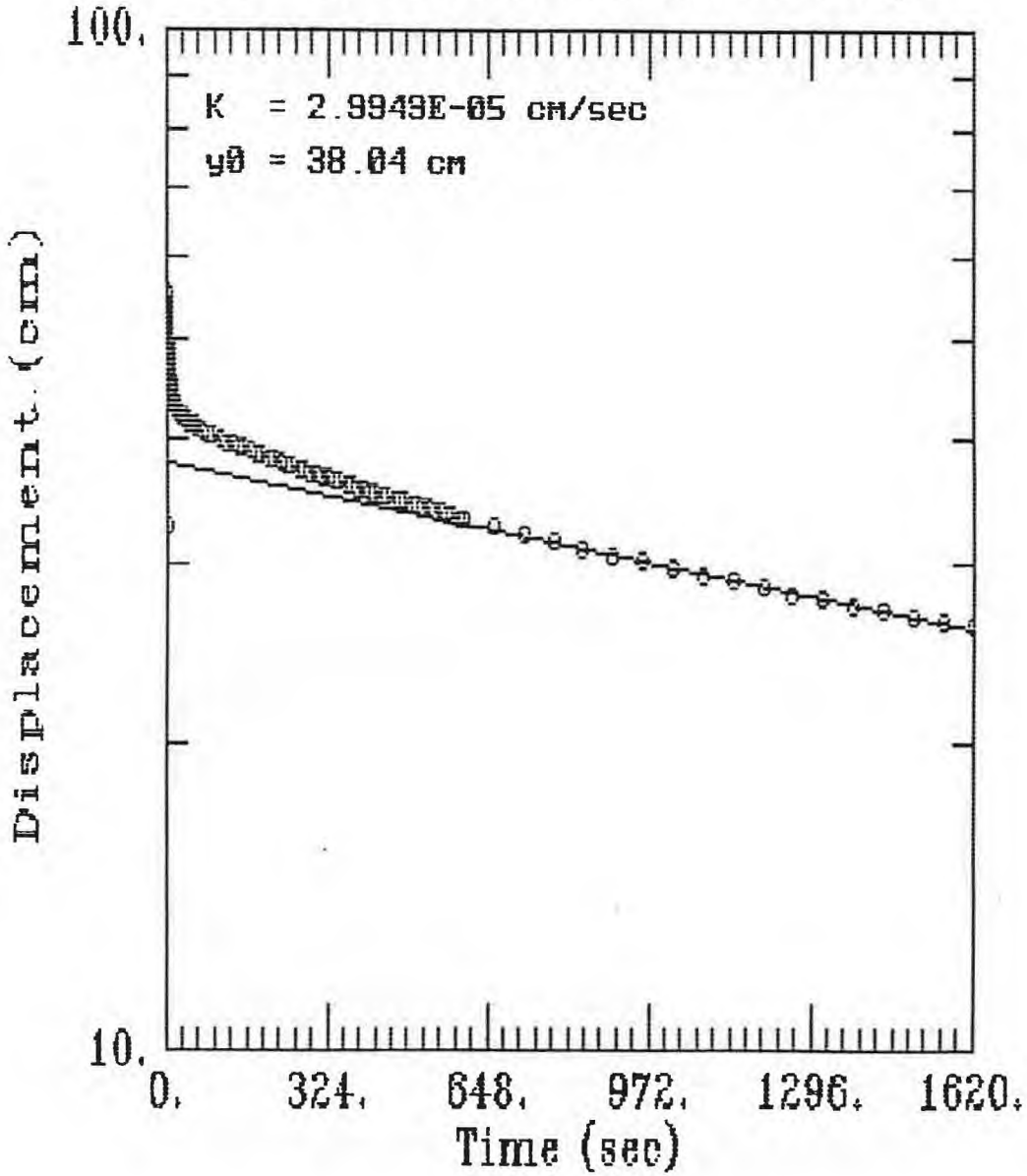
SITE ID	INITIAL DISPLACEMENT (FEET)	RADIUS OF WELL CASING (FEET)	RADIUS OF BOREHOLE (FEET)	SATURATED AQ. THICKNESS (FEET)	SCREEN LENGTH (FEET)	STATIC HT. OF WATER (FEET)	DEPTH TO WATER (FT, TOC)	DEPTH TO BOT OF WELL (FT, TOC)
41M-94-02C	2.48	0.167	0.417	22.06	10	22.06	30.54	52.6
41M-94-03B	1.78	0.167	0.417	28.79	10	28.79	38.21	67
41M-94-07X	1.44	0.167	0.417	5.35	4.5	5.35	4.95	10.3
41M-94-08B	1.96	0.167	0.417	25.22	10	25.22	21.28	46.5
41M-94-09B	1.61	0.167	0.417	23.27	10	23.27	34.43	57.7
41M-94-11X	2.29	0.167	0.417	10.85	10	10.85	37.75	48.6
41M-94-12X	3.19	0.167	0.417	11.25	10	11.25	28.65	39.9
41M-94-14X	0.96	0.167	0.417	7.05	5	7.05	3.25	10.3

RISING HEAD TESTS

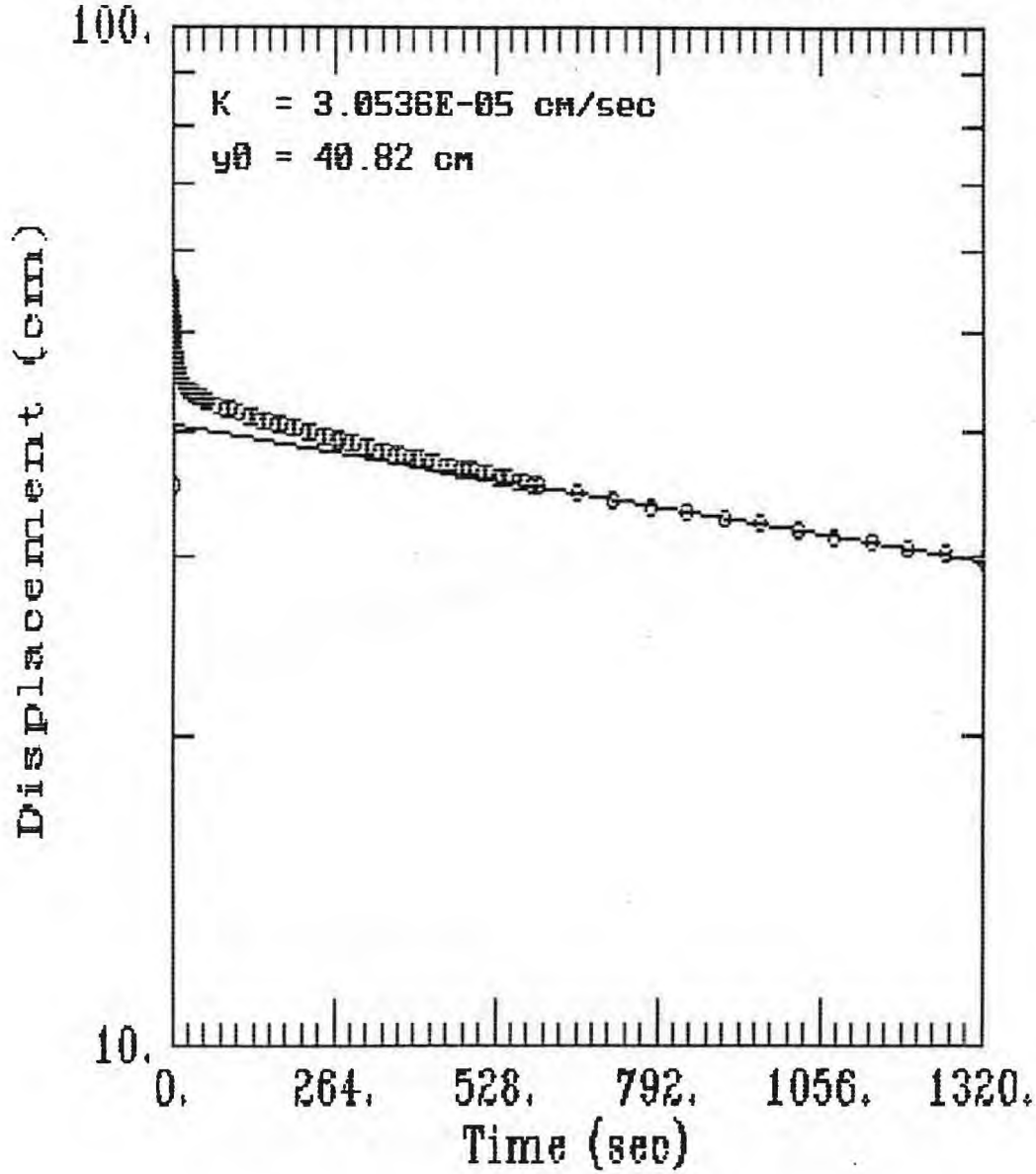
SITE ID	INITIAL DISPLACEMENT (FEET)	RADIUS OF WELL CASING (FEET)	RADIUS OF BOREHOLE (FEET)	SATURATED AQ. THICKNESS (FEET)	SCREEN LENGTH (FEET)	STATIC HT. OF WATER (FEET)	DEPTH TO WATER (FT, TOC)	DEPTH TO BOT OF WELL (FT, TOC)
41M-92-01X	2.06	0.167	0.417	4.72	10	4.72	27.88	32.6
41M-92-01X	1.99	0.167	0.417	4.72	10	4.72	27.88	32.6
41M-93-04X	0.98	0.167	0.417	3.4	10	3.4	7.51	10.91
41M-93-04X	0.6	0.167	0.417	3.4	10	3.4	7.51	10.91
41M-93-05X	0.38	0.167	0.417	2.09	10	2.09	8.06	10.15
41M-93-05X	0.54	0.167	0.417	2.09	10	2.09	8.06	10.15
41M-94-02C	1.87	0.167	0.417	22.03	10	22.03	30.57	52.6
41M-94-03B	1.86	0.167	0.417	28.81	10	28.81	38.19	67
41M-94-06X	1.67	0.167	0.417	8.83	10	8.83	7.57	16.4
41M-94-07X	1.44	0.167	0.417	5.35	4.5	5.35	4.95	10.3
41M-94-08A	2.31	0.167	0.417	8.88	10	8.88	20.22	29.1
41M-94-09A	1.92	0.167	0.417	6.92	10	6.92	34.58	41.5
41M-94-09B	1.54	0.167	0.417	23.27	10	23.27	34.43	57.7
41M-94-12X	2.18	0.167	0.417	11.24	10	11.24	28.66	39.9
41M-94-13X	1.6	0.167	0.417	9.19	10	9.19	20.71	29.9
41M-94-14X	1.3	0.167	0.417	7.05	5	7.05	3.25	10.3

NA = Rising Head test not performed due to very slow water level recovery; see results for Falling Head tests.

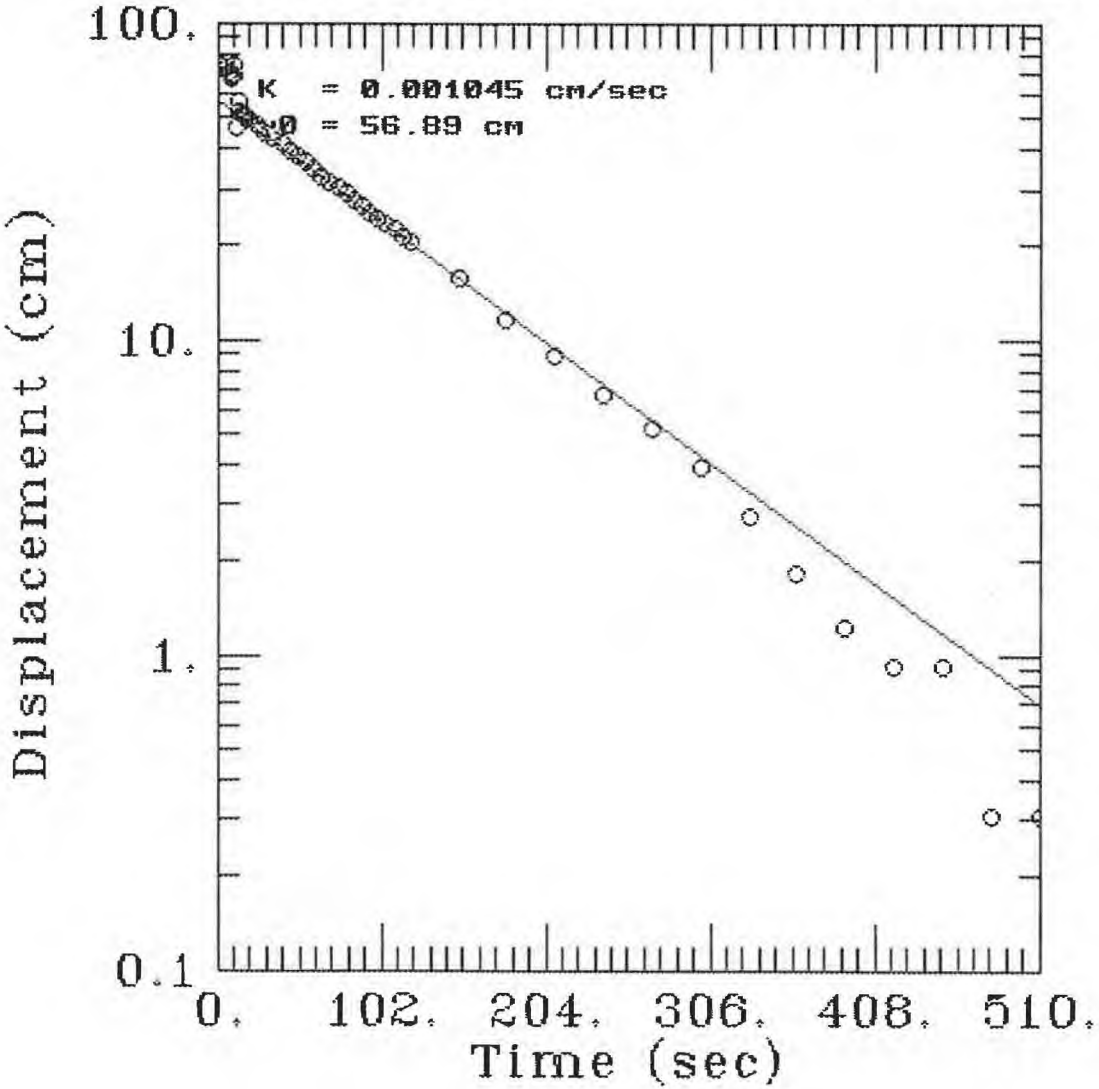
41M-92-01X PERMEABILITY TEST #1

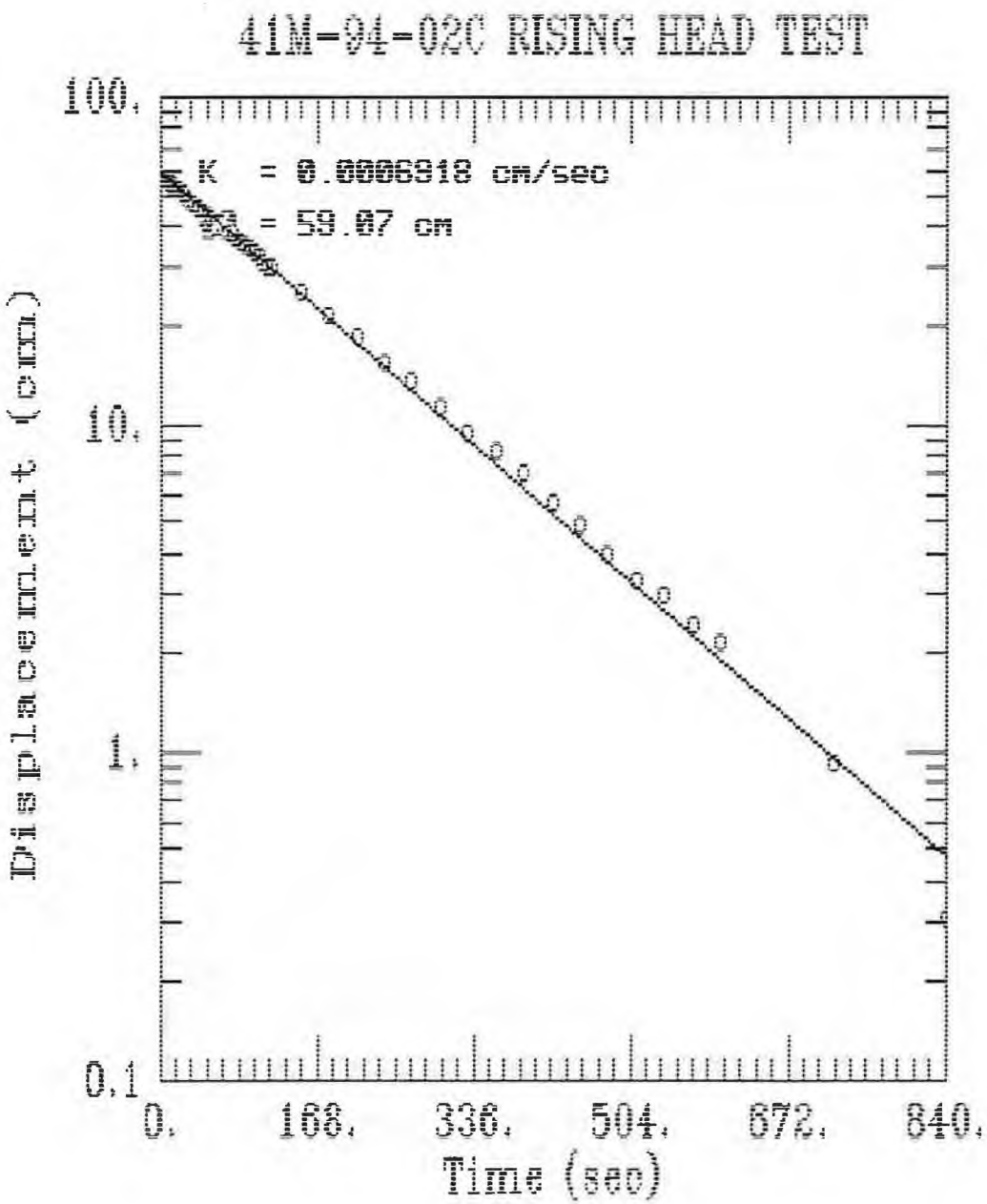


41M-92-01X PERMEABILITY TEST #2

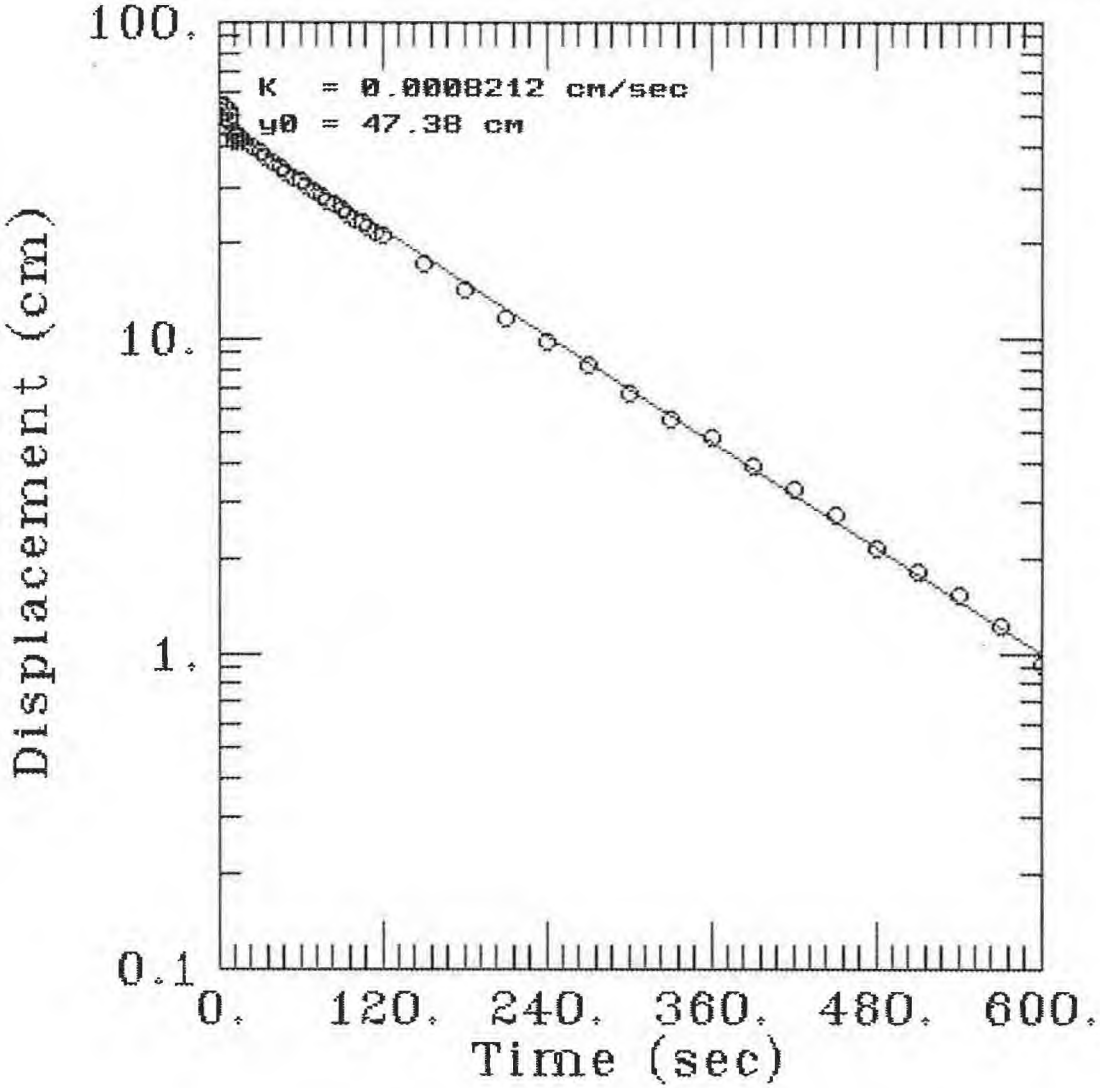


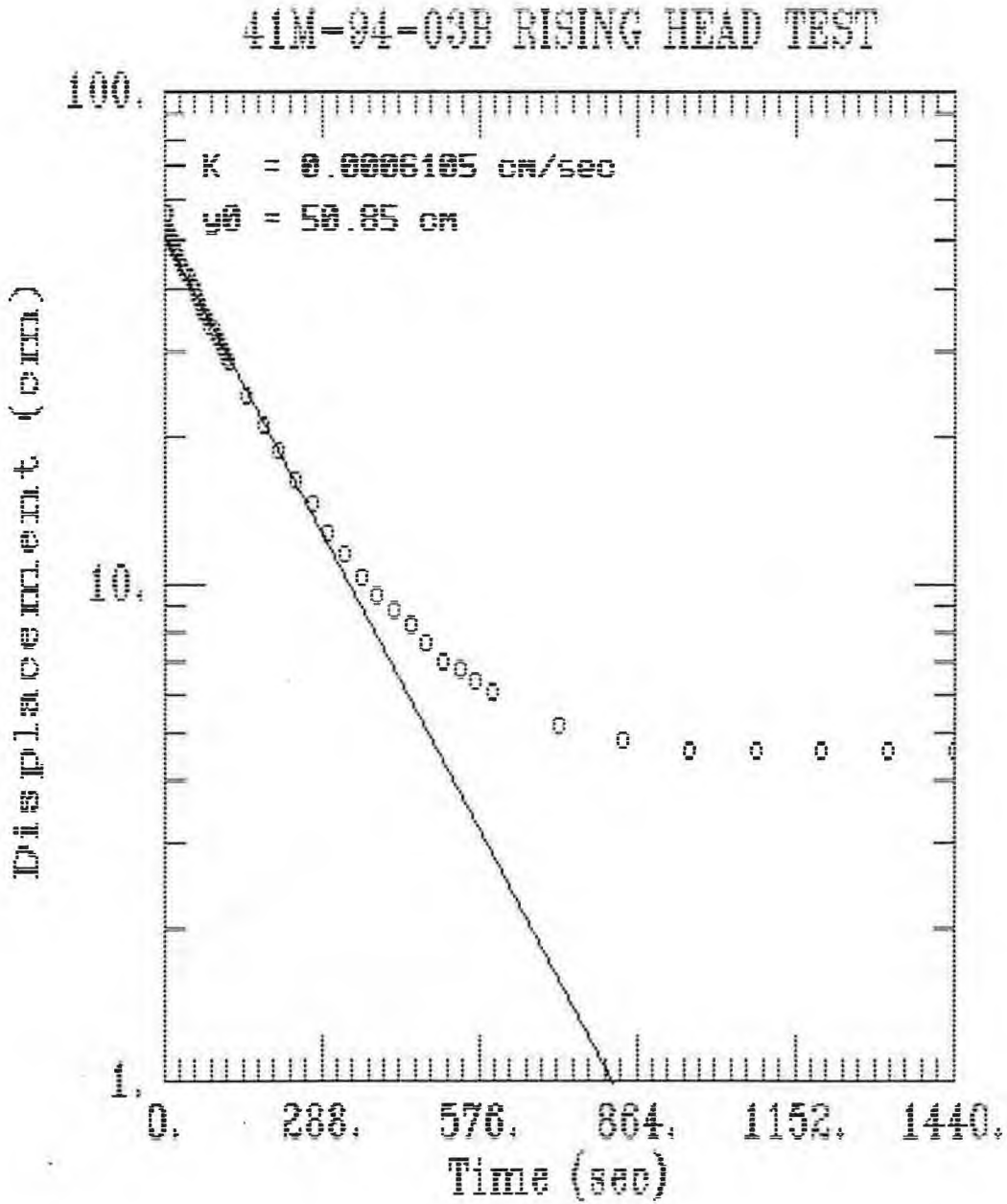
41M-94-02C FALLING HEAD TEST



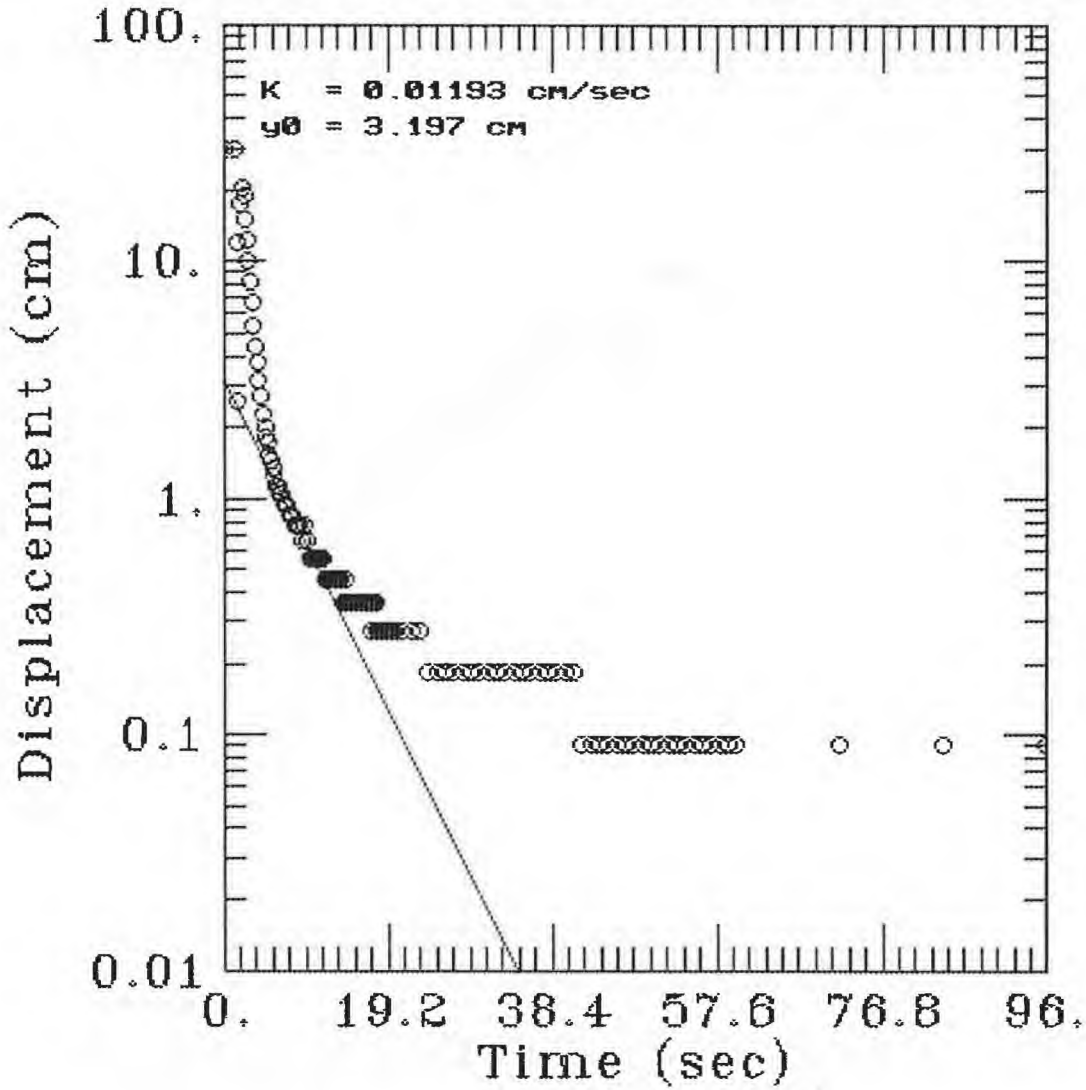

41M-94-02C RISING HEAD TEST
K = 0.0006918 cm/sec
= 59.07 cm
100.
10.
1.
0.1
0.
168.
336.
504.
672.
840.
Time (sec)
Displacement (cm)

41M-94-03B FALLING HEAD TEST

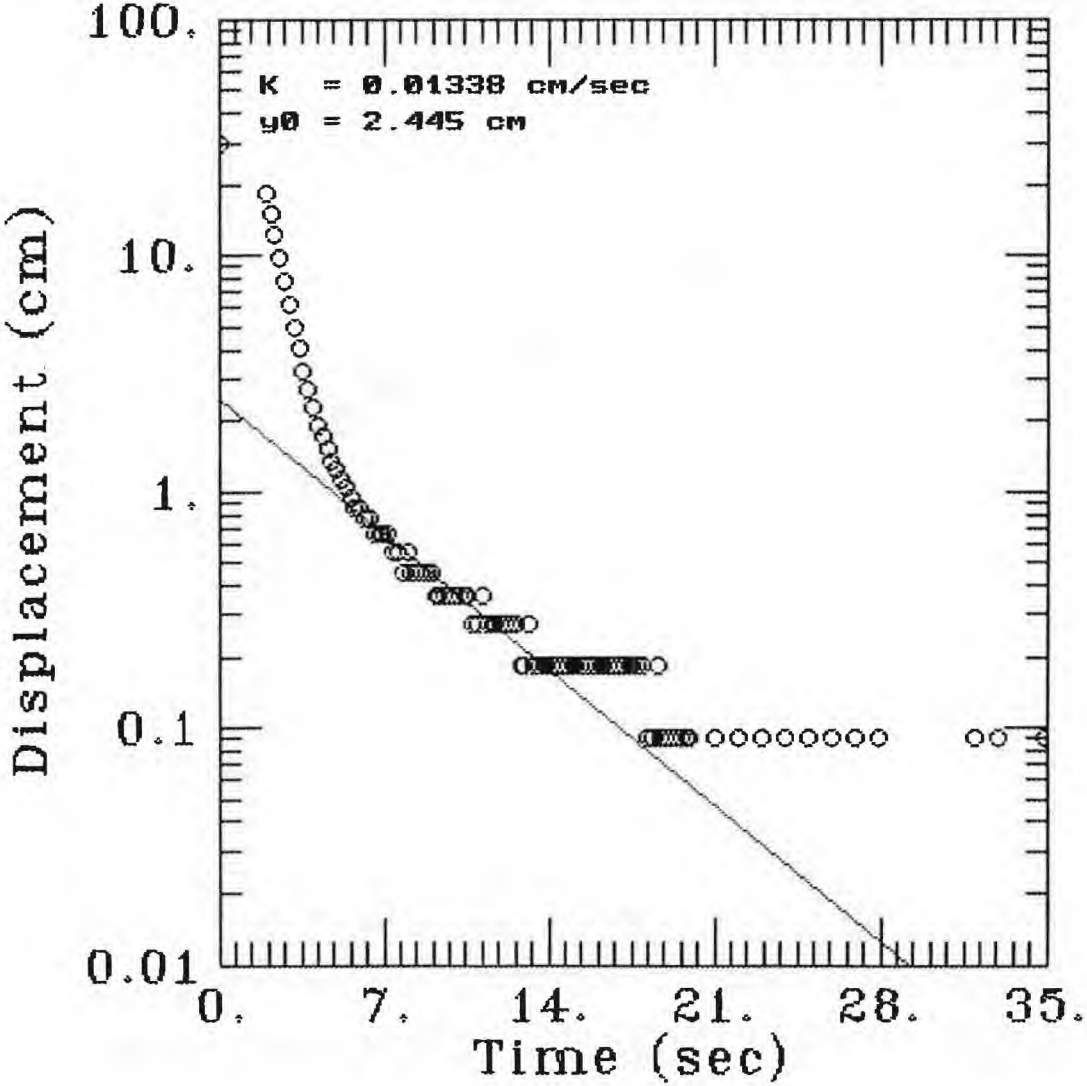



41M-94-03B RISING HEAD TEST
K = 0.0006105 cm/sec
y0 = 50.85 cm
100.
10.
1.
0.
288.
576.
864.
1152.
1440.
Time (sec)
Displacement (cm)

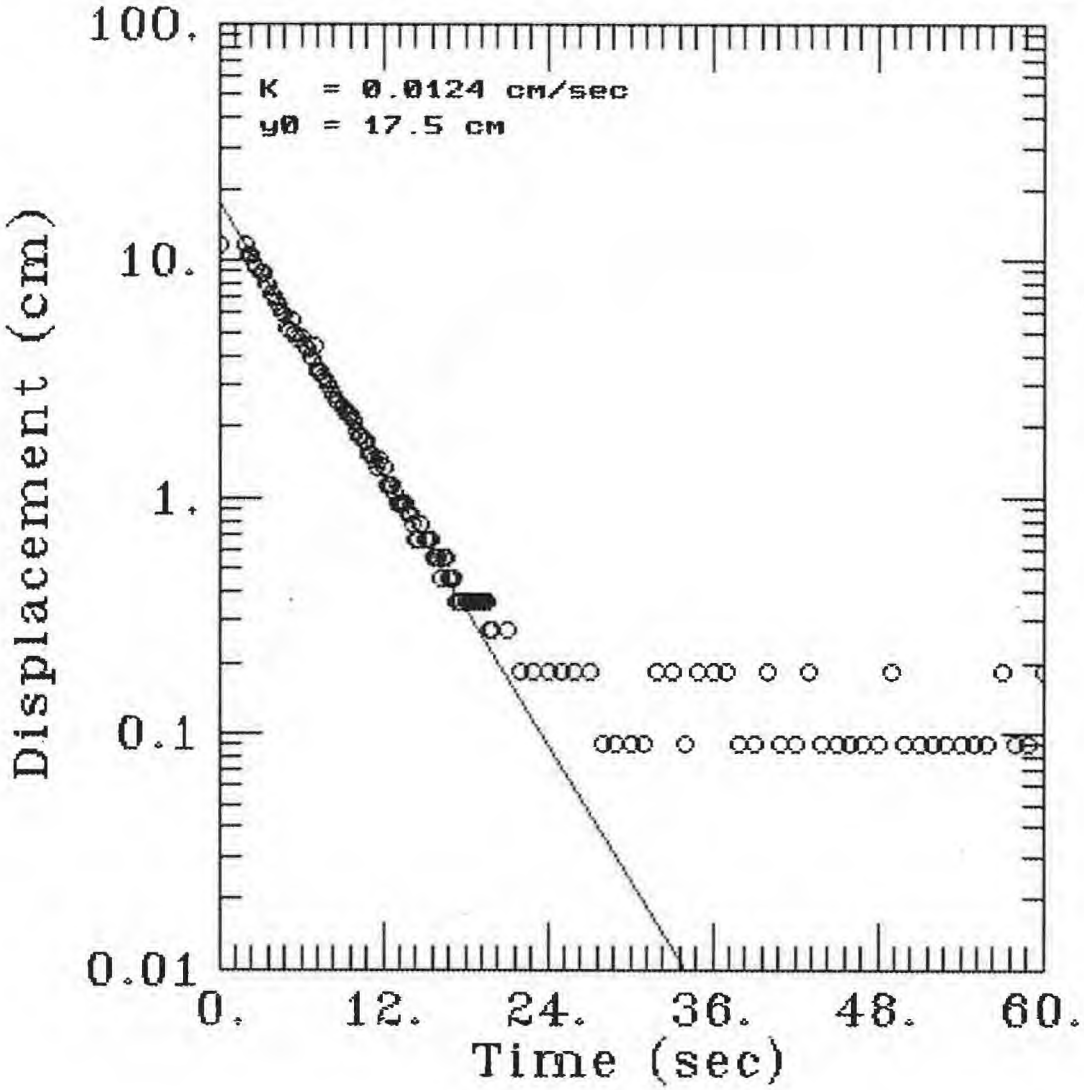
41M-93-04X RISING HEAD TEST #1



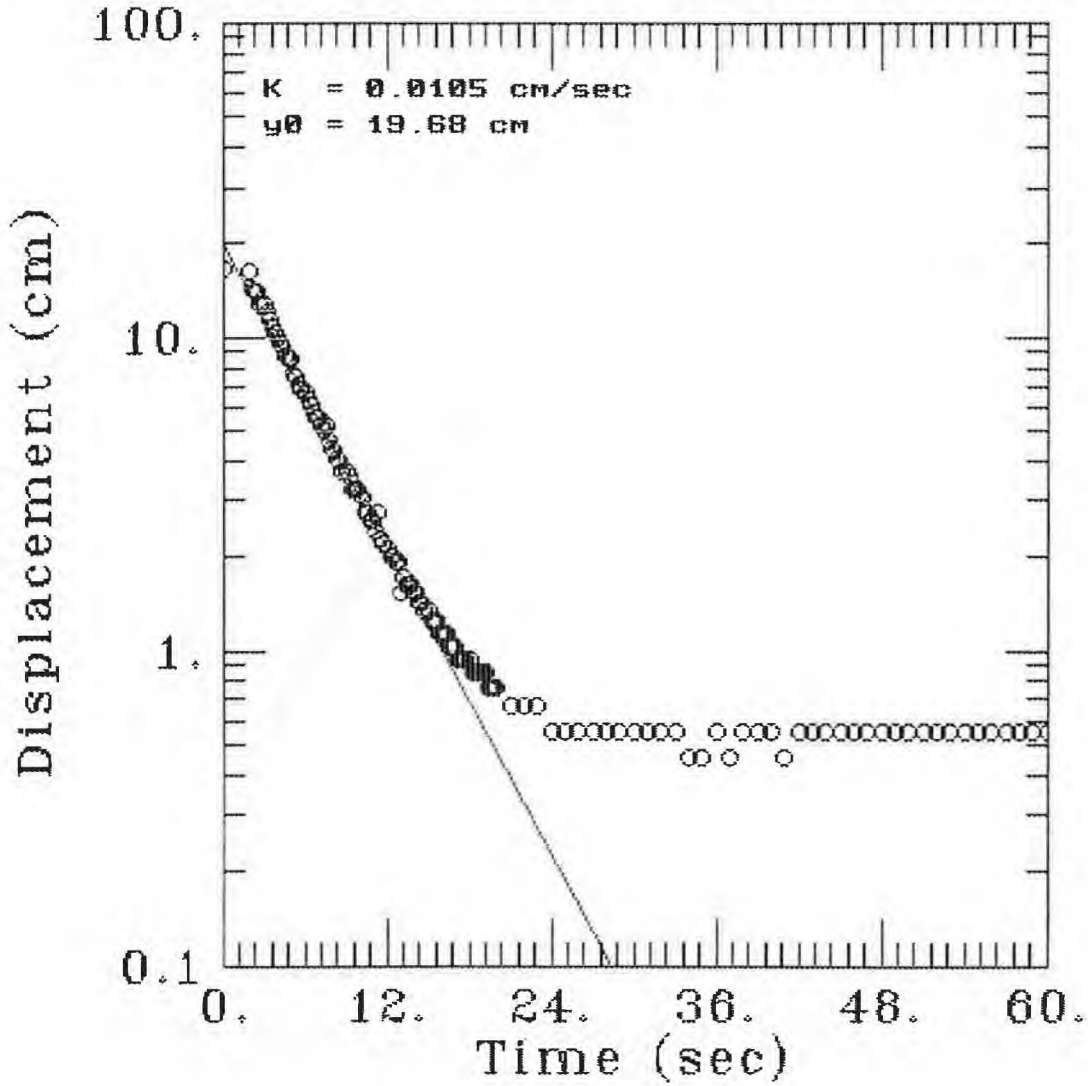
41M-93-04X RISING HEAD TEST #2



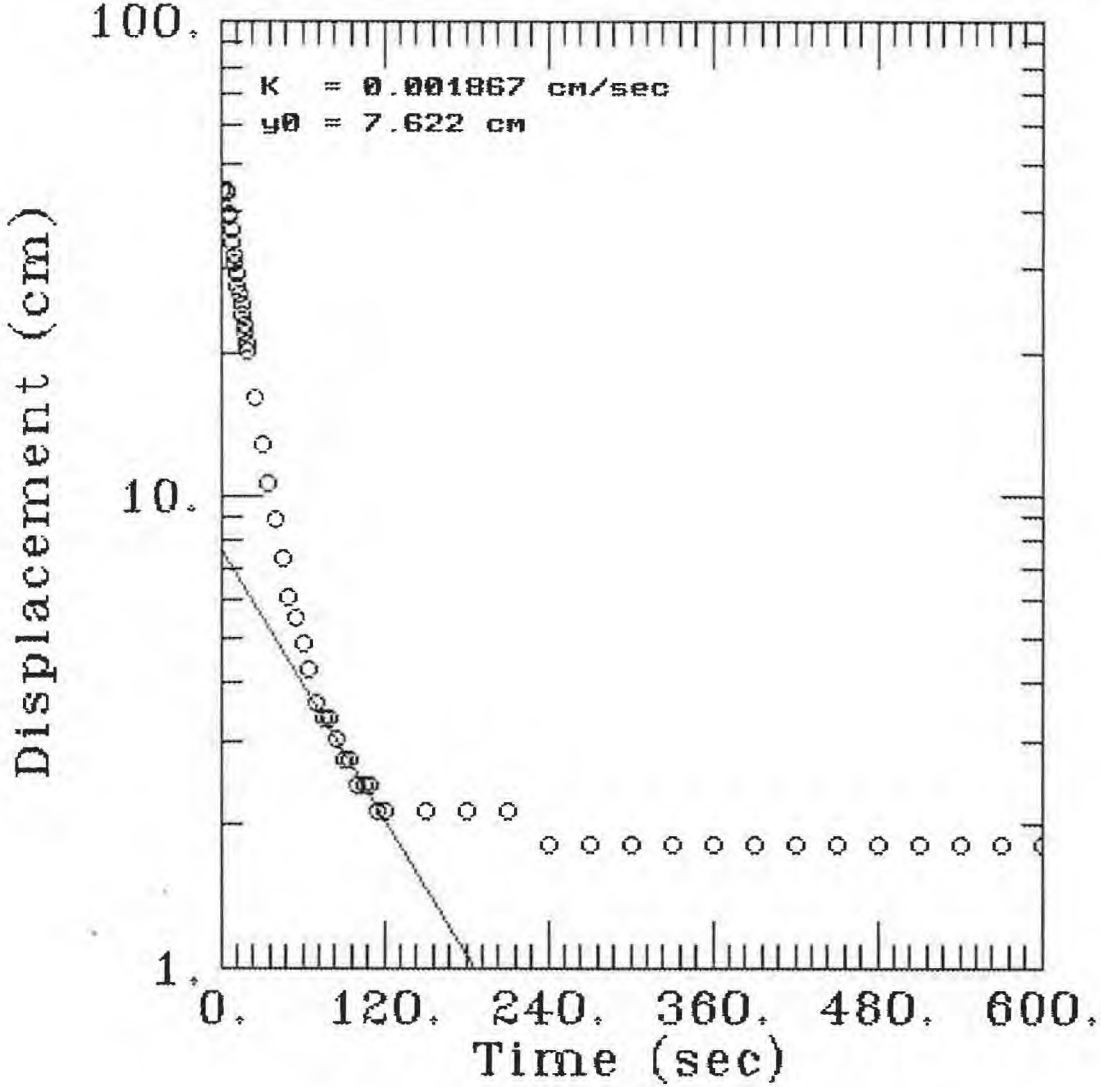
41M-93-05X RISING HEAD TEST #1

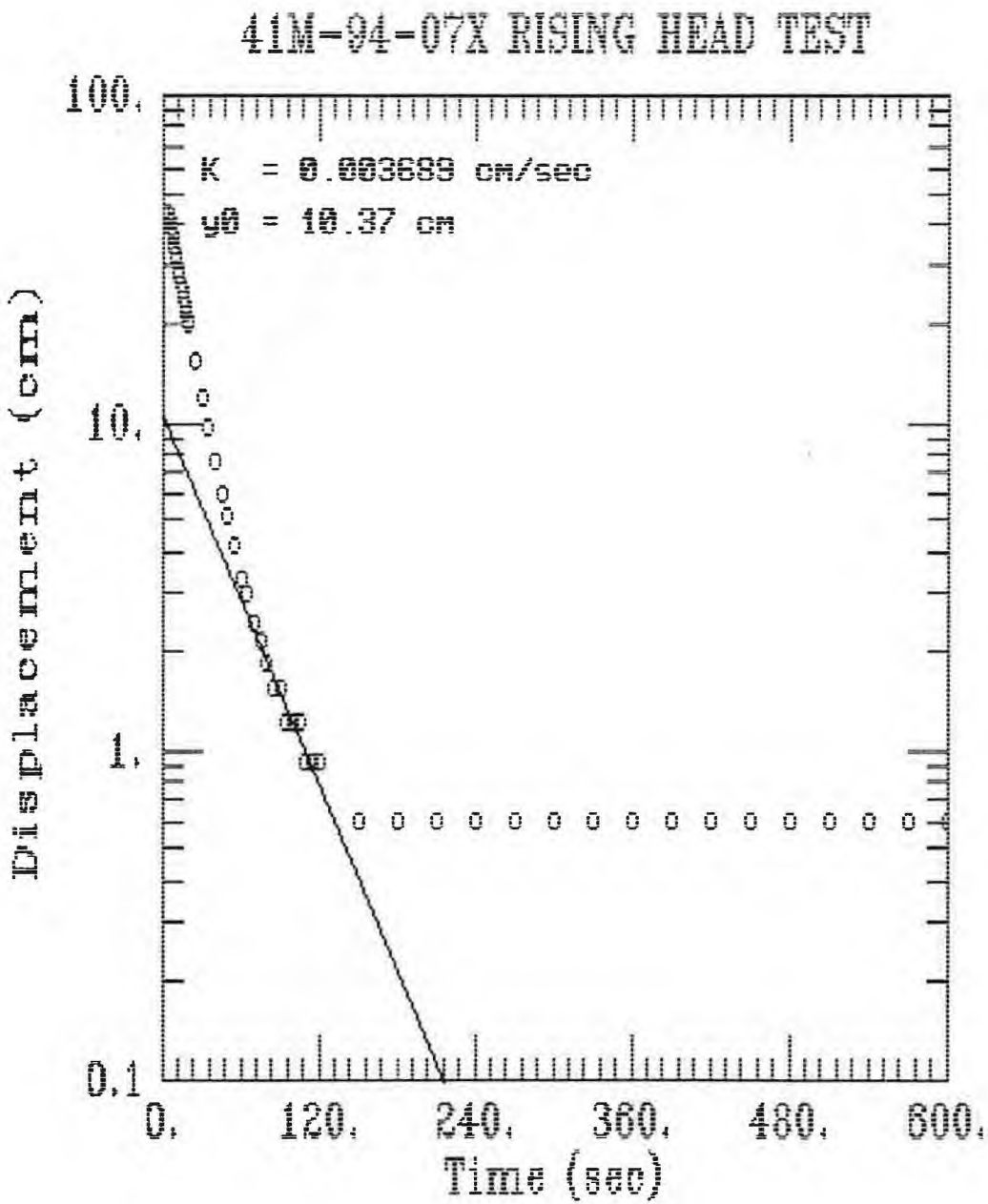


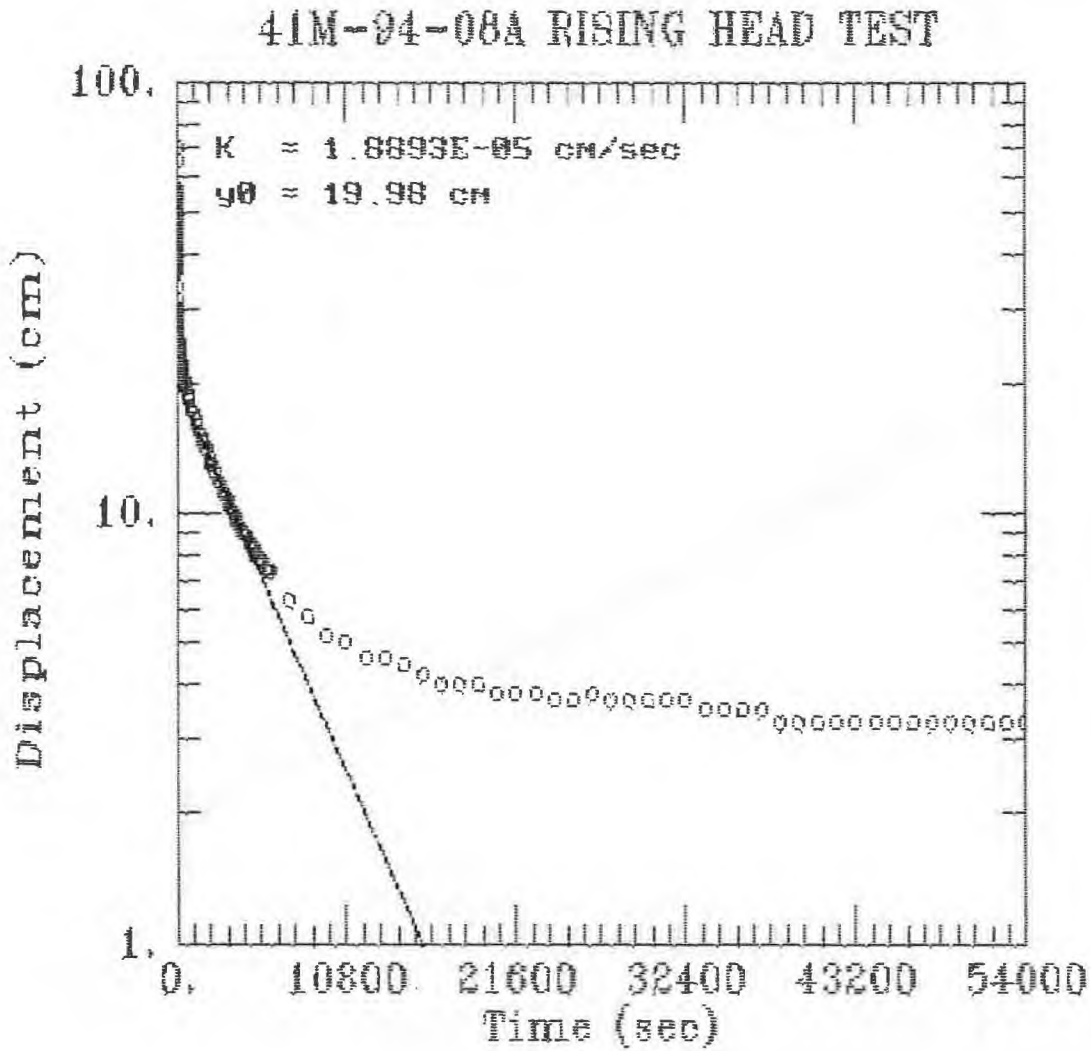
41M-93-05X RISING HEAD TEST #2



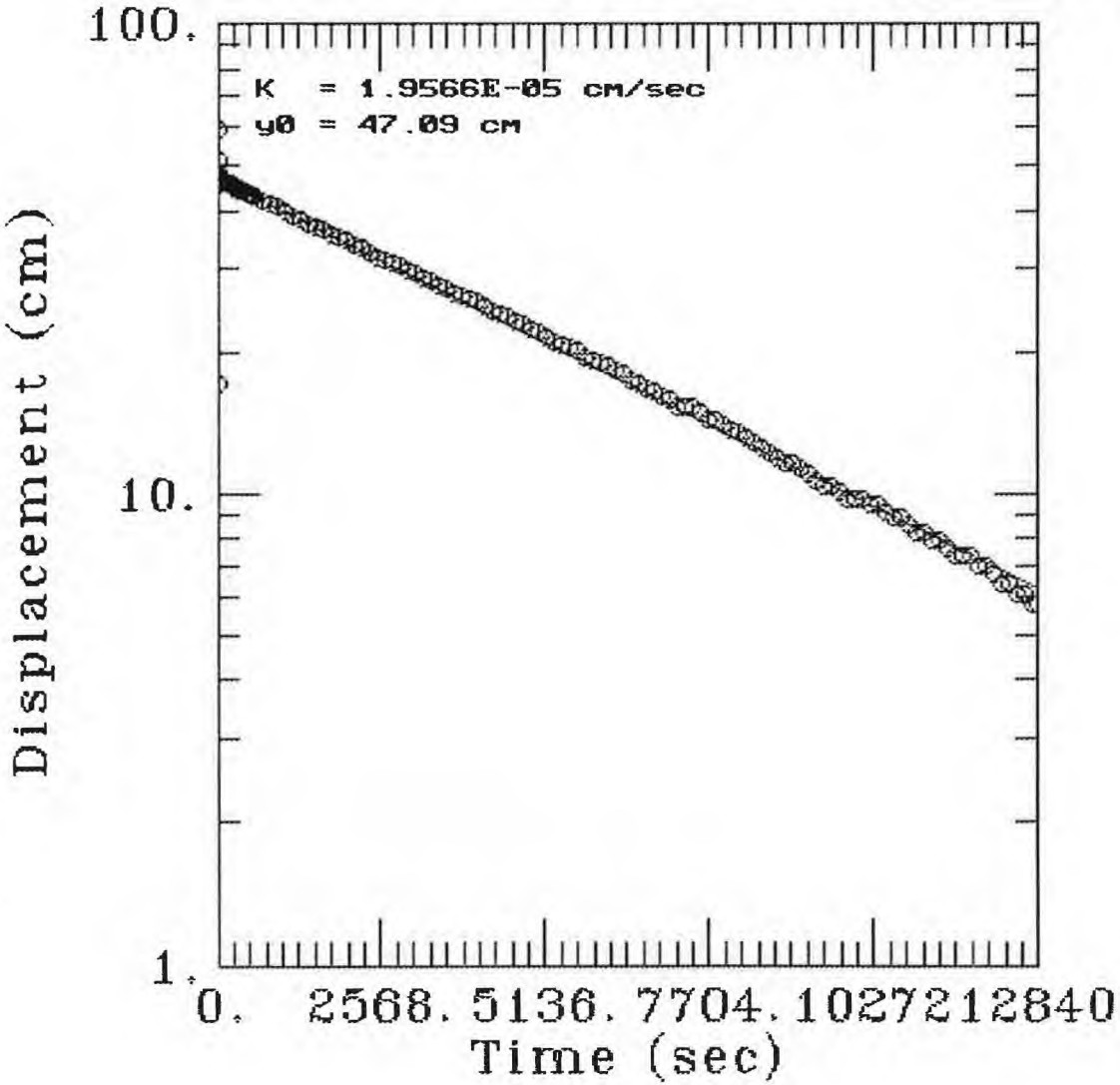
41M-94-07X FALLING HEAD TEST

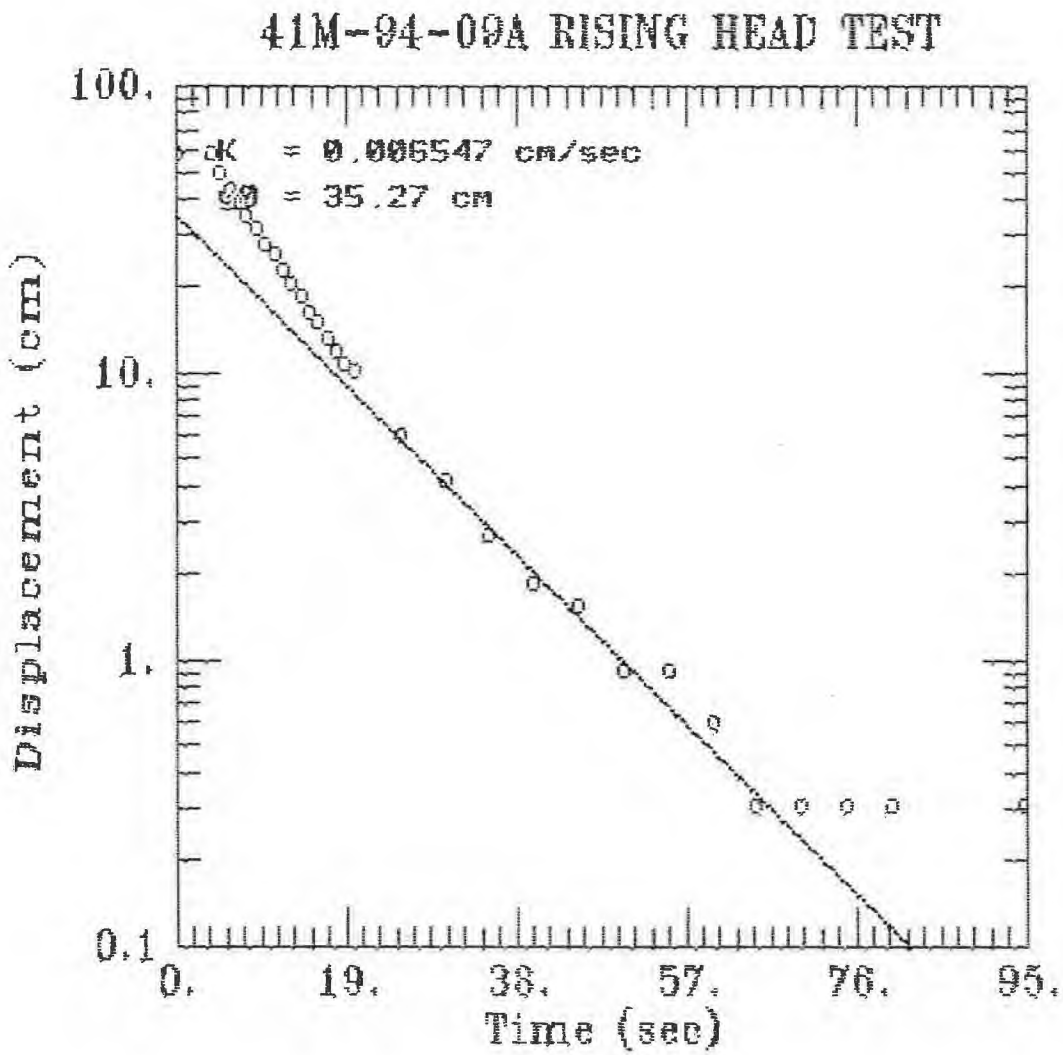



41M-94-07X RISING HEAD TEST
K = 0.003689 cm/sec
y0 = 10.37 cm
100.
10.
1.
0.1
Displacement (cm)
0.
120.
240.
360.
480.
600.
Time (sec)

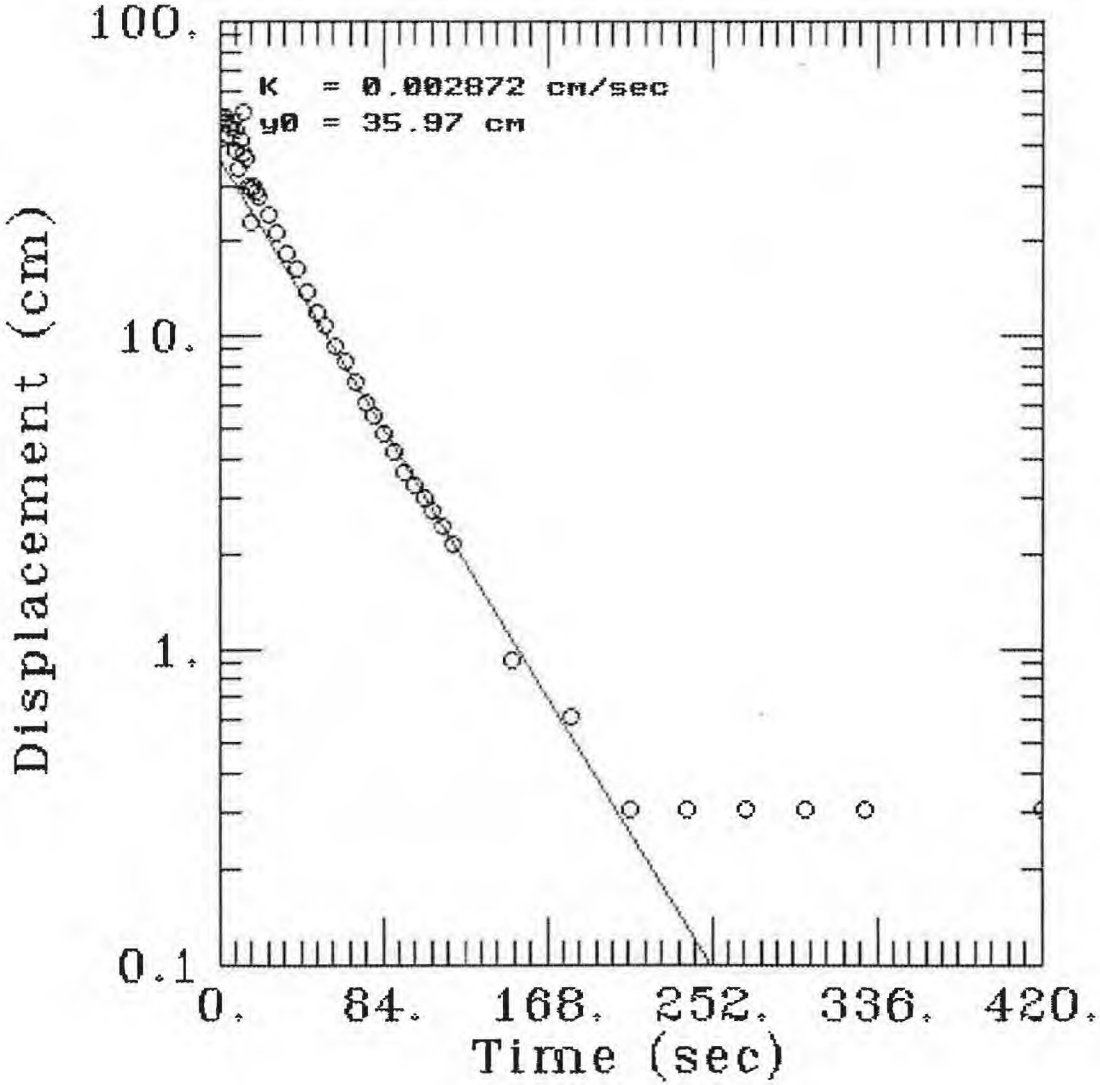

41M-94-08A RISING HEAD TEST
K = 1.8893E-05 cm/sec
y0 = 19.98 cm
100.
10.
1.
Displacement (cm)
0.
10800
21600
32400
43200
54000
Time (sec)

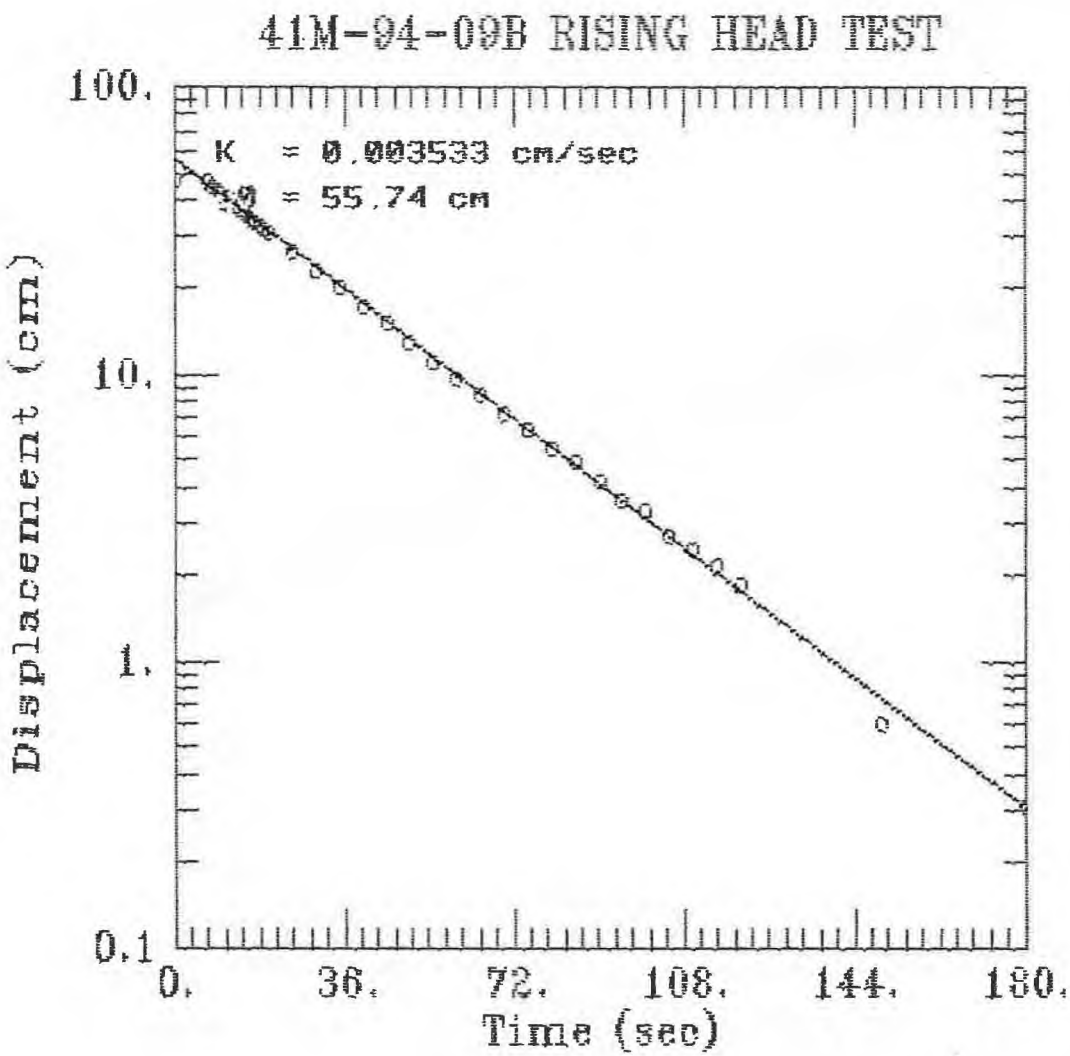
41M-94-08B FALLING HEAD TEST



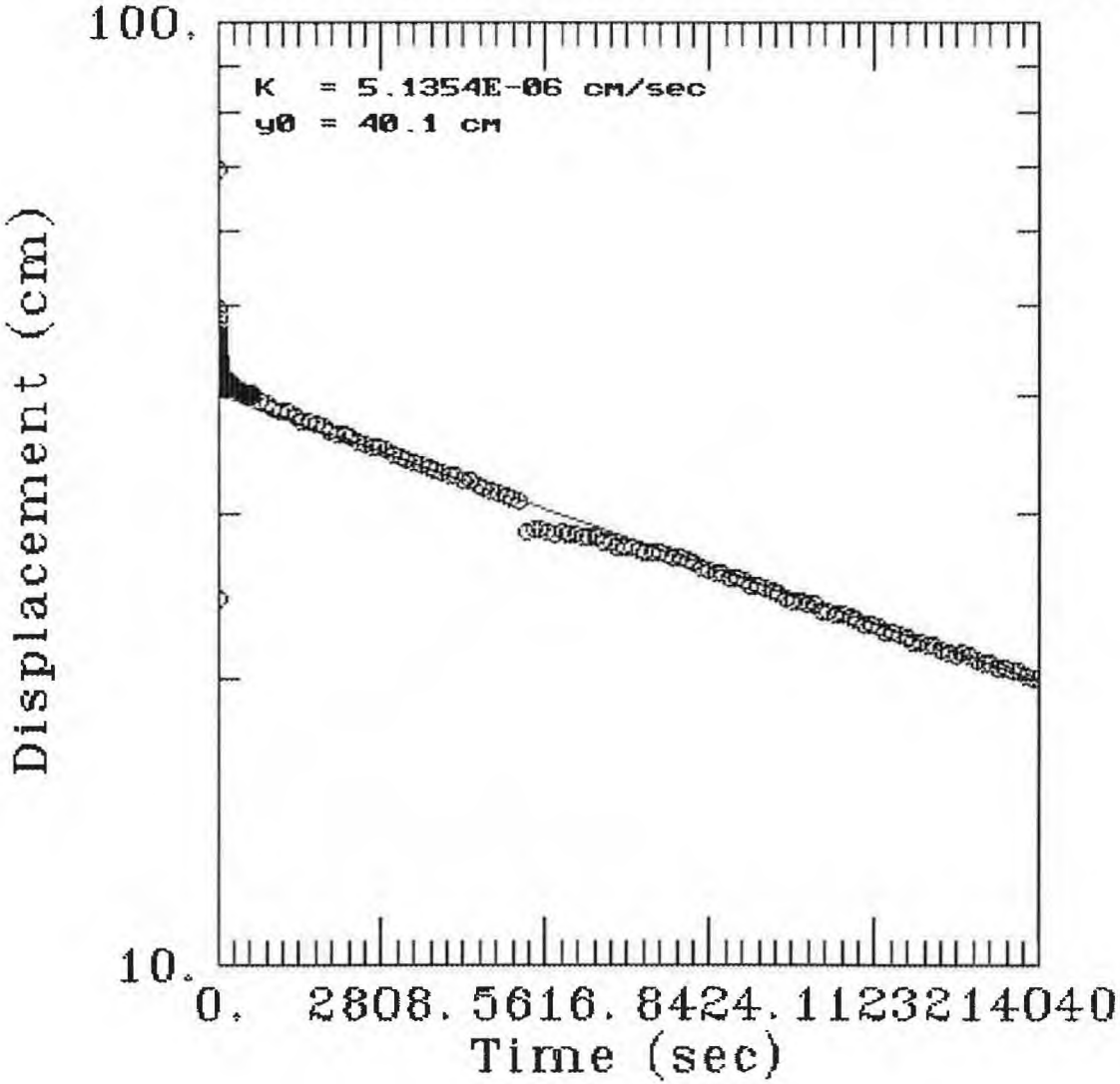

41M-94-09A RISING HEAD TEST
dK = 0.006547 cm/sec
dO = 35.27 cm
100.
10.
1.
0.1
Displacement (cm)
0.
19.
38.
57.
76.
95.
Time (sec)

41M-94-09B FALLING HEAD TEST

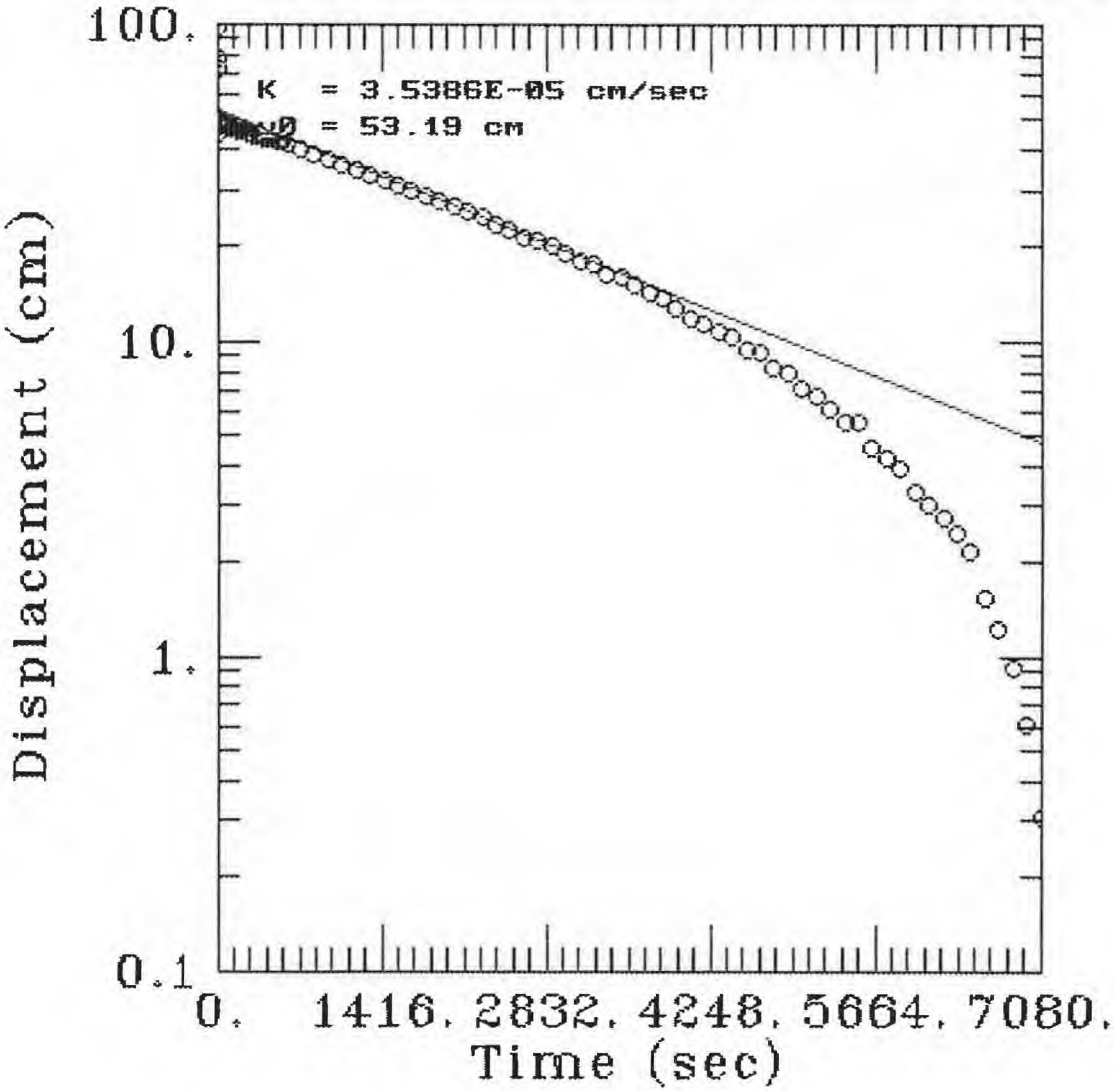


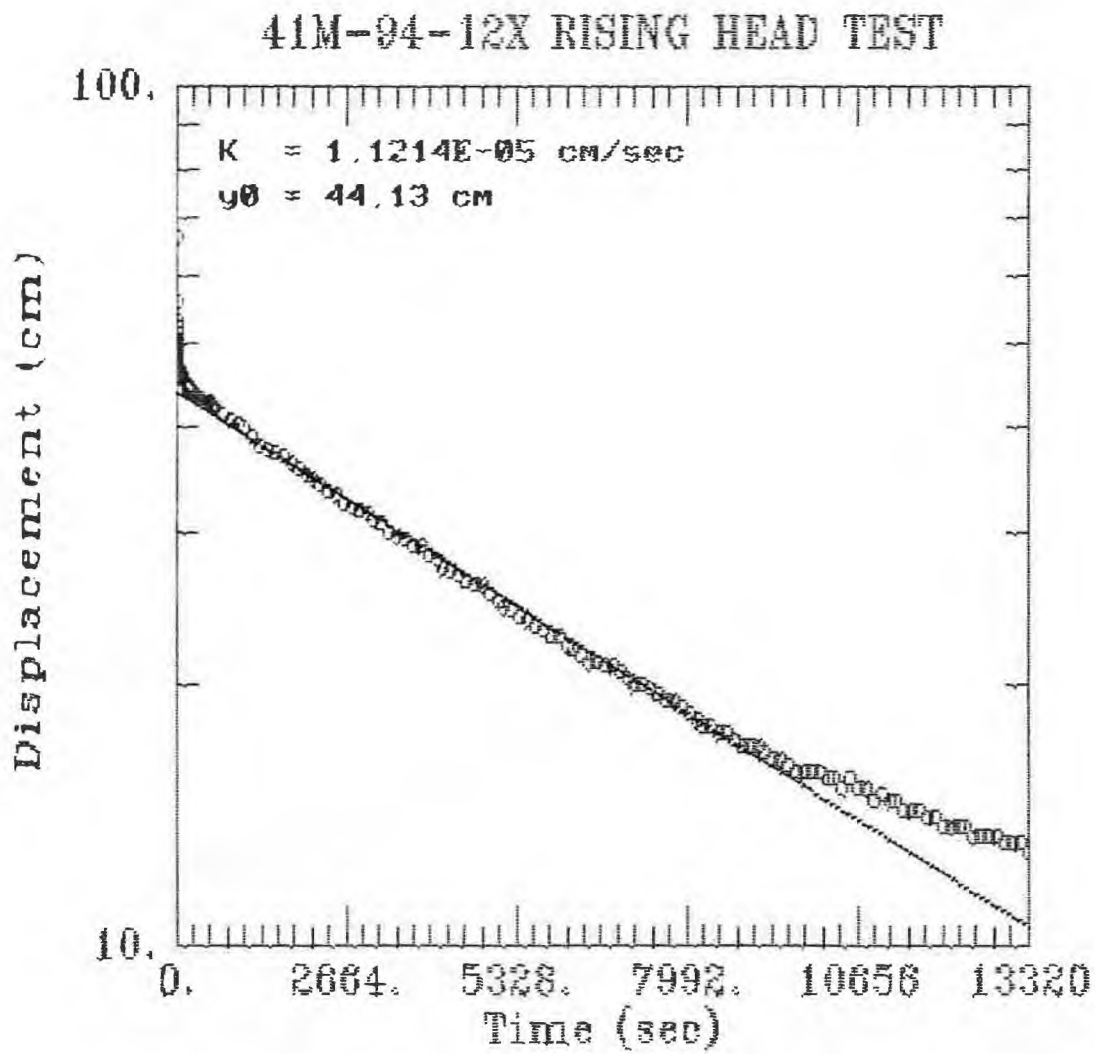

41M-94-09B RISING HEAD TEST
K = 0.003533 cm/sec
Ø = 55.74 cm
100.
10.
1.
0.1
Displacement (cm)
0.
36.
72.
108.
144.
180.
Time (sec)

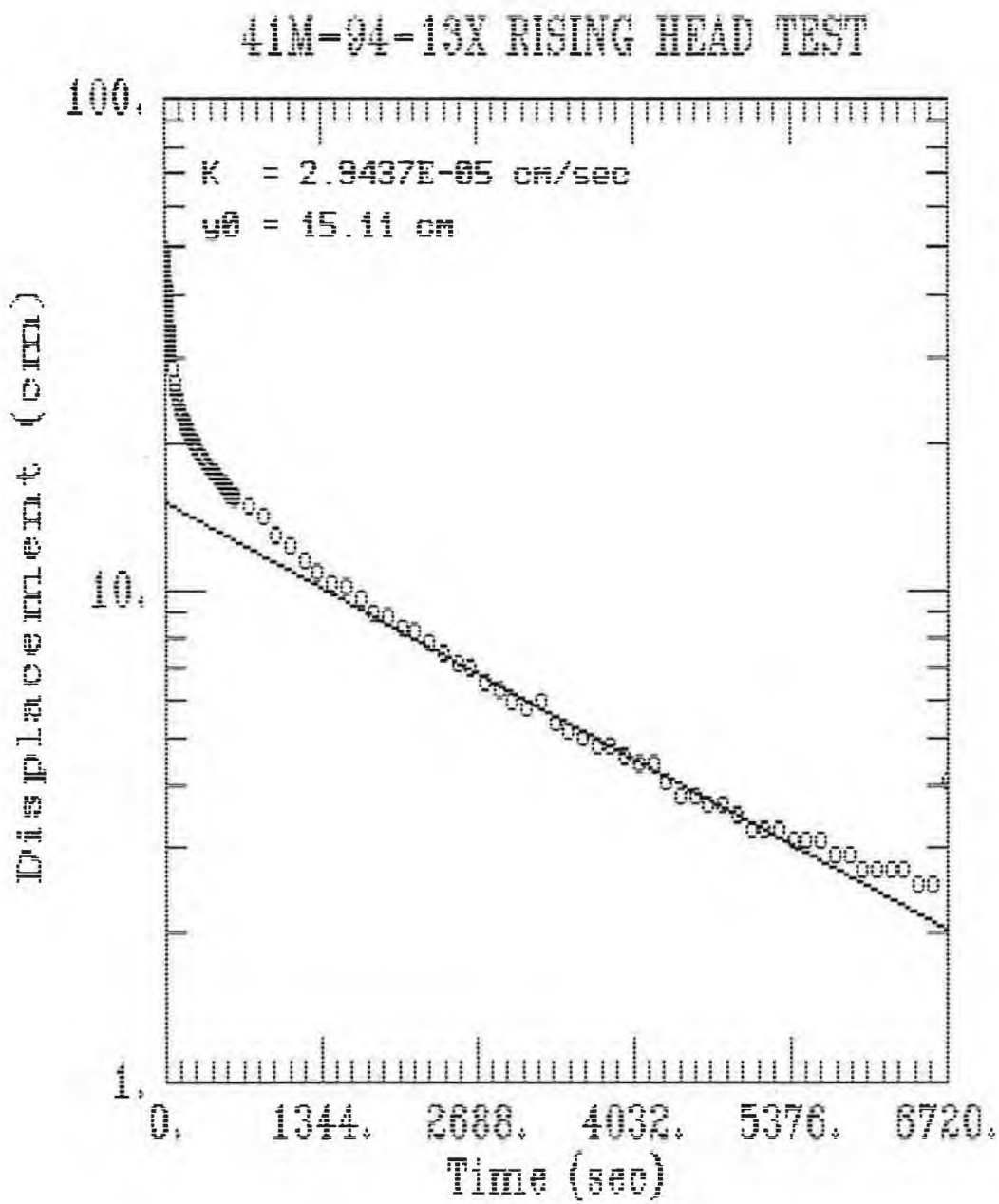
41M-94-11X FALLING HEAD TEST

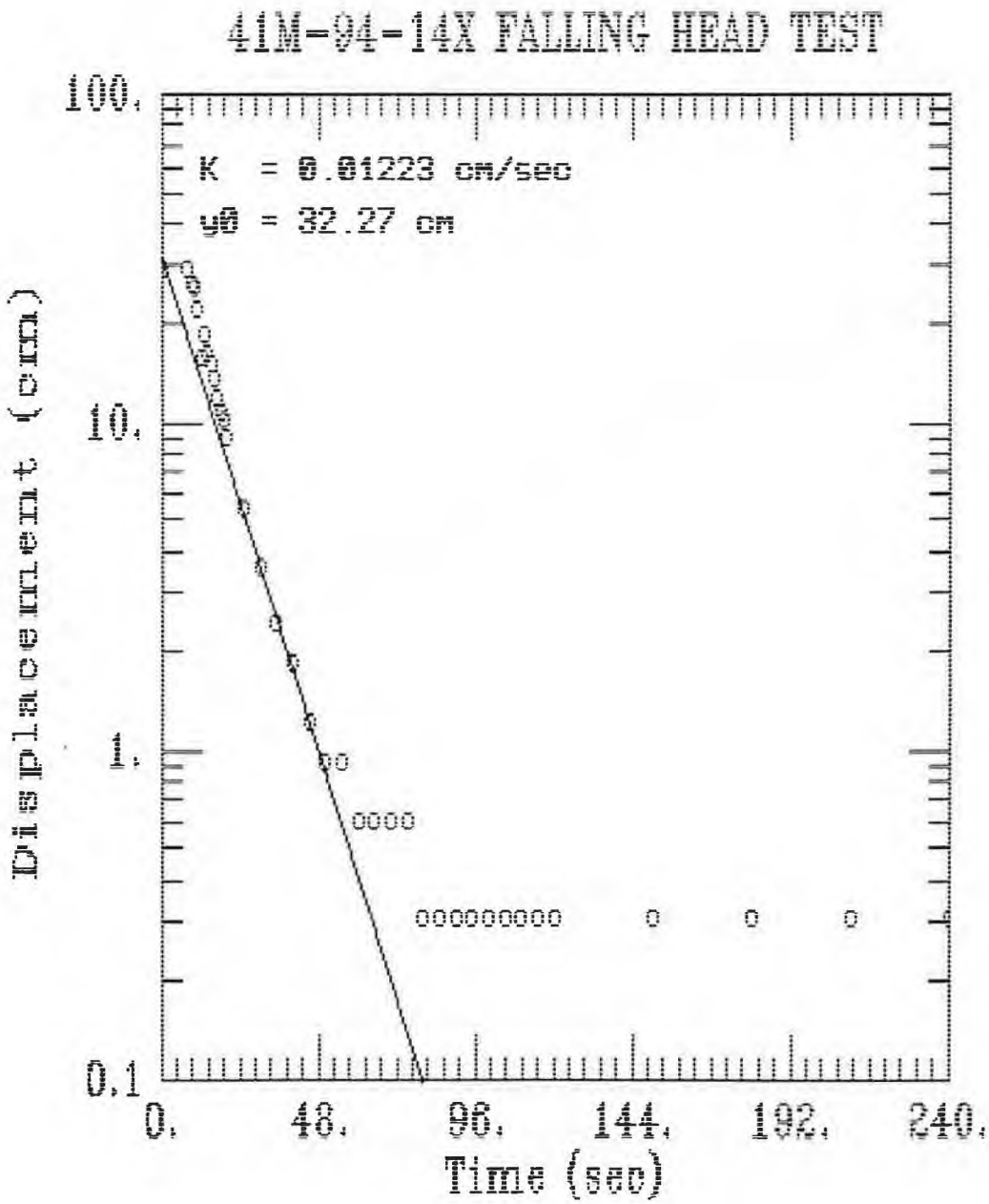


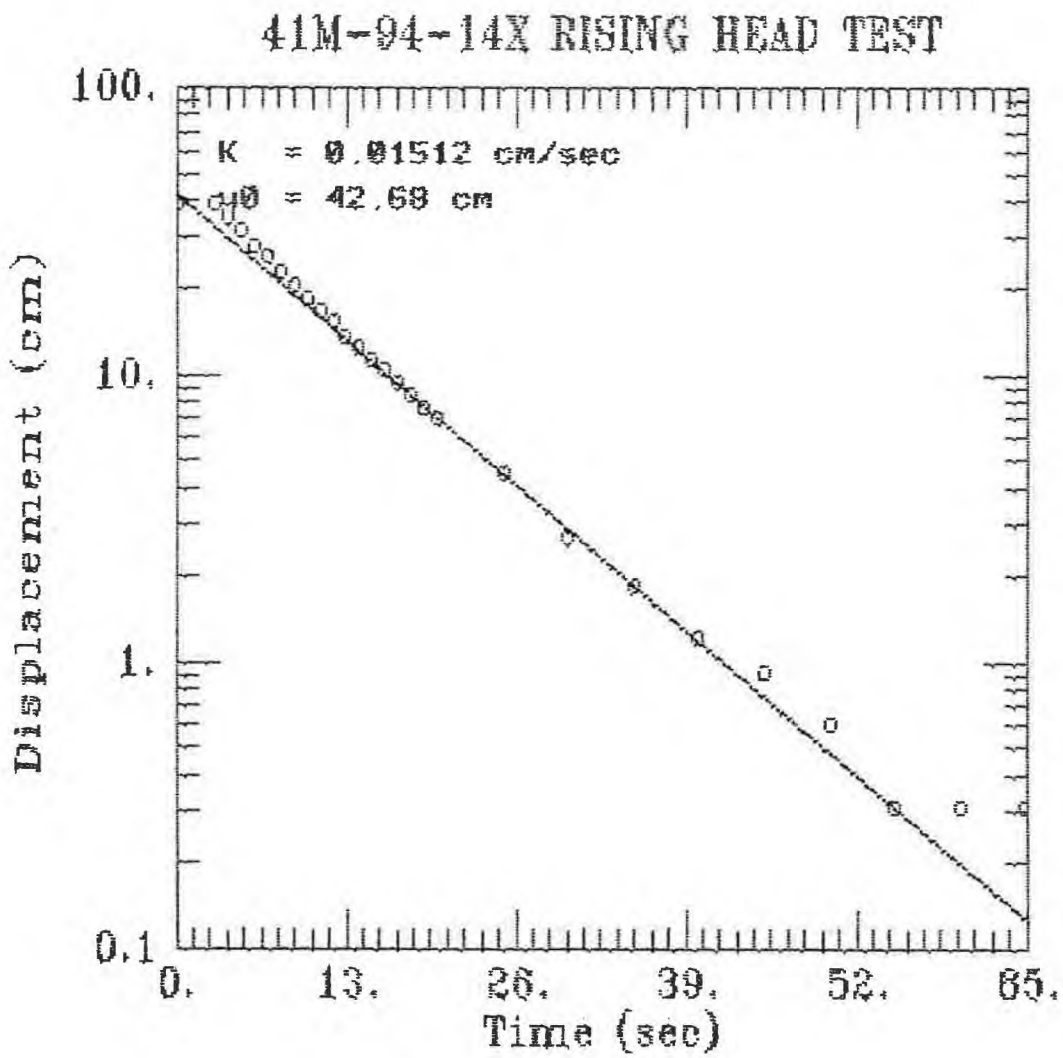
41M-94-12X FALLING HEAD TEST




41M-94-12X RISING HEAD TEST
K = 1.1214E-05 cm/sec
y0 = 44.13 cm
100.
10.
Displacement (cm)
0.
2664.
5328.
7992.
10656
13320
Time (sec)


41M-94-13X RISING HEAD TEST
K = 2.9437E-05 cm/sec
y0 = 15.11 cm
100.
10.
1.
Displacement (cm)
0.
1344.
2688.
4032.
5376.
6720.
Time (sec)


41M-94-14X FALLING HEAD TEST
K = 0.01223 cm/sec
y0 = 32.27 cm
100.
10.
1.
0.1
Displacement (cm)
0.
48.
96.
144.
192.
240.
Time (sec)


41M-94-14X RISING HEAD TEST
K = 0.01512 cm/sec
H0 = 42.68 cm
100.
10.
1.
0.1
Displacement (cm)
0.
13.
26.
39.
52.
65.
Time (sec)

AQUIFER TESTING COMPLETION CHECKLIST

AQUIFER TEST NO. _____

SETUP	DATE	BY WHOM
MONITORING WELL ID	4" 41M.92.01X	R. RUSTAD
DATE OF TEST	10.19.92	
TYPE OF TEST	RISING HEAD	
HERMIT TYPE/SERIAL#	SE 1000C / 1KC01732	
TEST #	SEL2 / 1 of 2	
DATA COLLECTION RATE	LOG 1	
TRANSDUCER		
SERIAL #	2045DE	
PSIG	10	
SCALE FACTOR	9.983	
OFFSET	-0.035	
INPUT CHANNEL	# 1	
TEST DATA		
INPUT MODE (TOC/SUR)	TOC	
STATIC WATER LEVEL (FT./TOC)	27.88 (PVC)	
WELL DEPTH (FT./TOC)	32.60 (PVC)	
XD DEPTH (FT.TOC)	31.60 (PVC)	
INITIAL XD REFERENCE	0.00	
SLUG DEPTH (FT./TOC)	30.00 (PVC)	
TIME OF SLUG PLACEMENT	1315	
TIME OF WL EQUILIBRATION	1350	
NEW XD REFERENCE	0.00	
START TIME OF TEST	1351	
END TIME OF TEST	~~1318~~ 1419 (RN)	
NOTES: 3' x 3"	BAR STOCK	PVC

FIGURE 4-14
AQUIFER TEST COMPLETION CHECKLIST
PROJECT OPERATIONS PLAN
FORT DEVENS, MASSACHUSETTS
ABB Environmental Services, Inc.

AQUIFER TESTING COMPLETION CHECKLIST

AQUIFER TEST NO. _____

SETUP	DATE	BY WHOM
MONITORING WELL ID	4" 41M.92.01X	R. RUSTAD
DATE OF TEST	10.19.92	
TYPE OF TEST	RISING HEAD	
HERMIT TYPE/SERIAL#	SE 1000C / 1KC01732	
TEST #	SEL 3 / 2 of 2	
DATA COLLECTION RATE	LOG 1	
TRANSDUCER		
SERIAL #	2045DE	
PSIG	10	
SCALE FACTOR	9.983	
OFFSET	-0.035	
INPUT CHANNEL	# 1	
TEST DATA		
INPUT MODE (TOC/SUR)	TOC	
STATIC WATER LEVEL (FT./TOC)	27.88	
WELL DEPTH (FT./TOC)	32.60	
XD DEPTH (FT.TOC)	31.60	
INITIAL XD REFERENCE	0.00	
SLUG DEPTH (FT./TOC)	30.00	
TIME OF SLUG PLACEMENT	13.20	
TIME OF WL EQUILIBRATION	13.40	
NEW XD REFERENCE	0.19 RESET TO 0	
START TIME OF TEST	1445	
END TIME OF TEST	~~1310~~ 1410 RN	
NOTES: 3' x 3"	BAR STOCK	PVC

FIGURE 4-14
AQUIFER TEST COMPLETION CHECKLIST
PROJECT OPERATIONS PLAN
FORT DEVENS, MASSACHUSETTS
ABB Environmental Services, Inc.

AQUIFER TESTING COMPLETION CHECKLIST

AQUIFER TEST NO. 09

SETUP	DATE	BY WHOM
MONITORING WELL ID	2/1M.93-04X	R. RUSTAD
DATE OF TEST	10.21.93	
TYPE OF TEST	RISING HEAD	
HERMIT TYPE/SERIAL#	SE 1000C / 1KC01732	
TEST #	SEL 9 / 1OF 2	
DATA COLLECTION RATE	LOG 00	
TRANSDUCER		
SERIAL #	2046 DE	
PSIG	10	
SCALE FACTOR	10.001	
OFFSET	-0.34	
INPUT CHANNEL	#1	
TEST DATA		
INPUT MODE (TOC/SUR)	TOC	
STATIC WATER LEVEL (FT./TOC)	7.51 (PVC)	
WELL DEPTH (FT./TOC)	10.91 (PVC)	
XD DEPTH (FT.TOC)	10.85 (PVC)	
INITIAL XD REFERENCE	3.36	
SLUG DEPTH (FT./TOC)	10.00 (PVC)	
TIME OF SLUG PLACEMENT	0940	
TIME OF WL EQUILIBRATION	0940	
NEW XD REFERENCE	3.36 \0.00	
START TIME OF TEST	0943	
END TIME OF TEST	~~0944~~ 0944 (RR)	
NOTES: SLUG 3' x 3"		

FIGURE 4-14
AQUIFER TEST COMPLETION CHECKLIST
PROJECT OPERATIONS PLAN
FORT DEVENS, MASSACHUSETTS
ABB Environmental Services, Inc.

AQUIFER TESTING COMPLETION CHECKLIST

AQUIFER TEST NO. 10

SETUP	DATE	BY WHOM
MONITORING WELL ID	41M-93-04R	R. RUSTAD
DATE OF TEST	10.21.93	
TYPE OF TEST	RISING HEAD	
HERMIT TYPE/SERIAL#	SE 1000C / 1KC01732	
TEST #	SEL 9 / 2 OF 2	
DATA COLLECTION RATE	LOG 0	
TRANSDUCER		
SERIAL #	2046 DE	
PSIG	10	
SCALE FACTOR	10.001	
OFFSET	-0.34	
INPUT CHANNEL	# 1	
TEST DATA		
INPUT MODE (TOC/SUR)	TOC	
STATIC WATER LEVEL (FT./TOC)	7.51 (PVC)	
WELL DEPTH (FT./TOC)	10.91 (PVC)	
XD DEPTH (FT.TOC)	10.85 (PVC)	
INITIAL XD REFERENCE	3.37	
SLUG DEPTH (FT./TOC)	10.00 (PVC)	
TIME OF SLUG PLACEMENT	0945	
TIME OF WL EQUILIBRATION	0945	
NEW XD REFERENCE	3.36	
START TIME OF TEST	0946	
END TIME OF TEST	0947	
NOTES: 3' x 3" SLUG		

FIGURE 4-14
AQUIFER TEST COMPLETION CHECKLIST
PROJECT OPERATIONS PLAN
FORT DEVENS, MASSACHUSETTS
ABB Environmental Services, Inc.

AQUIFER TESTING COMPLETION CHECKLIST

AQUIFER TEST NO. 11

SETUP	DATE	BY WHOM
MONITORING WELL ID	4/M 93-05X	R. RUSTAD
DATE OF TEST	10-21-93	
TYPE OF TEST	RISING HEAD	
HERMIT TYPE/SERIAL#	SE 1000C / 1KC017 32	
TEST #	SEL 11 / 10F2	
DATA COLLECTION RATE	LOG 0	
TRANSDUCER		
SERIAL #	2046 DE	
PSIG	10	
SCALE FACTOR	10.001	
OFFSET	-0.34	
INPUT CHANNEL	# 1	
TEST DATA		
INPUT MODE (TOC/SUR)	TOC	
STATIC WATER LEVEL (FT./TOC)	8.00 (PVC)	
WELL DEPTH (FT./TOC)	10.15 (PVC)	
XD DEPTH (FT.TOC)	10.00 (PVC)	
INITIAL XD REFERENCE	1.95	
SLUG DEPTH (FT./TOC)	9.50 (PVC	
TIME OF SLUG PLACEMENT	0955	
TIME OF WL EQUILIBRATION	0955	
NEW XD REFERENCE	1.96 / 0.00	
START TIME OF TEST	0956	
END TIME OF TEST	0957	
NOTES: 3' x 3" SLUG		

FIGURE 4-14
AQUIFER TEST COMPLETION CHECKLIST
PROJECT OPERATIONS PLAN
FORT DEVENS, MASSACHUSETTS
ABB Environmental Services, Inc.

AQUIFER TESTING COMPLETION CHECKLIST

AQUIFER TEST NO. 12

SETUP	DATE	BY WHOM
MONITORING WELL ID	41m.93.05x	R. Rustad
DATE OF TEST	10.21.93	
TYPE OF TEST	Rising Head	
HERMIT TYPE/SERIAL#	SE 1000C/KC01732	
TEST #	SEL 12/20F2	
DATA COLLECTION RATE	Log 0	
TRANSDUCER		
SERIAL #	2046 DE	
PSIG	10	
SCALE FACTOR	10.001	
OFFSET	-0.34	
INPUT CHANNEL	# 1	
TEST DATA		
INPUT MODE (TOC/SUR)	TOC	
STATIC WATER LEVEL (FT./TOC)	8.06 (PVC)	
WELL DEPTH (FT./TOC)	10.15 (PVC)	
XD DEPTH (FT.TOC)	10.00 (PVC)	
INITIAL XD REFERENCE	1.96	
SLUG DEPTH (FT./TOC)	RA ~~0.96~~ 9.50 (PVC)	
TIME OF SLUG PLACEMENT	0958	
TIME OF WL EQUILIBRATION	0958	
NEW XD REFERENCE	1.97 / 0.00	
START TIME OF TEST	0959	
END TIME OF TEST	1000	
NOTES: 3' x 3" SLUG		

FIGURE 4-14
AQUIFER TEST COMPLETION CHECKLIST
PROJECT OPERATIONS PLAN
FORT DEVENS, MASSACHUSETTS
ABB Environmental Services, Inc.

AQUIFER TESTING COMPLETION CHECKLIST

AQUIFER TEST NO. 4

SETUP	DATE 3-8-95	BY WHOM R. PENDLETON B. SCHOONARD
MONITORING WELL ID	41M-94-02C	
DATE OF TEST	3-8-95	
TYPE OF TEST	FALLING HEAD	
HERMIT TYPE/SERIAL#	1000B / 1K-B-480	
TEST #	TEST 4	
DATA COLLECTION RATE	LOG 2 MIN	
TRANSDUCER		
SERIAL #	6638	
PSIG	30	
SCALE FACTOR	29.9331	
OFFSET	-0.0219	
INPUT CHANNEL	1	
TEST DATA		
INPUT MODE (TOC/SUR)	TOC	
STATIC WATER LEVEL (FT./TOC)	30.54	
WELL DEPTH (FT./TOC)	52.6	
XD DEPTH (FT.TOC)	52.6	
INITIAL XD REFERENCE	30.52	
SLUG DEPTH (FT./TOC)	~40	
TIME OF SLUG PLACEMENT	1509 HRS	
TIME OF WL EQUILIBRATION	1536 HRS	∇ 30.57 TOC(XD)
NEW XD REFERENCE	B.S. ~~30.5~~ NA	
START TIME OF TEST	1509 HRS	
END TIME OF TEST	1536 HRS	∇ 30.57 TOC(XD)
NOTES:		

FORT DEVENS, MASSACHUSETTS
ABB Environmental Services, Inc.

AQUIFER TESTING COMPLETION CHECKLIST

AQUIFER TEST NO. 5

SETUP	DATE 3-8-95	BY WHOM R. PENDLETON B. SCHOONARD
MONITORING WELL ID	41M-94-02C	
DATE OF TEST	3-8-95	
TYPE OF TEST	RISING HEAD	
HERMIT TYPE/SERIAL#	1000B/1KB-480	
TEST #	TEST 5	
DATA COLLECTION RATE	LOG 2 MIN	
TRANSDUCER		
SERIAL #	6638	
PSIG	30	
SCALE FACTOR	29.9331	
OFFSET	-0.0219	
INPUT CHANNEL	1	
TEST DATA		
INPUT MODE (TOC/SUR)	TOC	
STATIC WATER LEVEL (FT./TOC)	30.54	
WELL DEPTH (FT./TOC)	52.6	
XD DEPTH (FT.TOC)	52.6	
INITIAL XD REFERENCE	30.52	
SLUG DEPTH (FT./TOC)	~40	
TIME OF SLUG PLACEMENT	1509 HRS	
TIME OF WL EQUILIBRATION	1536 HRS	≅ 30.57 TOC (XD)
NEW XD REFERENCE	NA	
START TIME OF TEST	1537 HRS	
END TIME OF TEST	1602 HRS	≅ 30.57 TOC (XD)
NOTES:		

AQUIFER TESTING COMPLETION CHECKLIST

AQUIFER TEST NO. 7

SETUP	DATE 3-7-95	BY WHOM R. PENDLETON B. SCHOONARD
MONITORING WELL ID	41M-94-03B	
DATE OF TEST	FALLING-HEAD	
TYPE OF TEST	3-7-95	
HERMIT TYPE/SERIAL#	1000B/1K-480	
TEST #	TEST 7	
DATA COLLECTION RATE	LOG 2 MIN	
TRANSDUCER		
SERIAL #	6638	
PSIG	30	
SCALE FACTOR	29.9331	
OFFSET	-0.0219	
INPUT CHANNEL	1	
TEST DATA		
INPUT MODE (TOC/SUR)	TOC	
STATIC WATER LEVEL (FT./TOC)	38.21	
WELL DEPTH (FT./TOC)	67	
XD DEPTH (FT.TOC)	66	
INITIAL XD REFERENCE	38.18	
SLUG DEPTH (FT./TOC)	~ 48	
TIME OF SLUG PLACEMENT	1648 HRS	
TIME OF WL EQUILIBRATION	1714 HRS	∇ 38.19 TOC (XD)
NEW XD REFERENCE	NA	
START TIME OF TEST	1648 HRS	
END TIME OF TEST	1714 HRS	∇ 38.19 TOC (XD)
NOTES:		

FORT DEVENS, MASSACHUSETTS
ABB Environmental Services, Inc.

AQUIFER TESTING COMPLETION CHECKLIST

AQUIFER TEST NO. 8

SETUP	DATE 3-7-95	BY WHOM R. PENDLETON B. SCHOONARD
MONITORING WELL ID	41M-94-03B	
DATE OF TEST	3-7-95	
TYPE OF TEST	RISING HEAD	
HERMIT TYPE/SERIAL#	1000B/1K-480	
TEST #	TEST 8	
DATA COLLECTION RATE	LOG 2 MIN	
TRANSDUCER		
SERIAL #	6638	
PSIG	30	
SCALE FACTOR	29.9331	
OFFSET	-0.0219	
INPUT CHANNEL	1	
TEST DATA		
INPUT MODE (TOC/SUR)	TOC	
STATIC WATER LEVEL (FT./TOC)	38.21	
WELL DEPTH (FT./TOC)	67	
XD DEPTH (FT.TOC)	66	
INITIAL XD REFERENCE	38.18	
SLUG DEPTH (FT./TOC)	~ 48	
TIME OF SLUG PLACEMENT	1648 HRS	
TIME OF WL EQUILIBRATION	1714 HRS	≅38.19 TOC (XD)
NEW XD REFERENCE	NA	
START TIME OF TEST	1715 HRS	
END TIME OF TEST	1739 HRS	≅38.19 TOC (XD)
NOTES:		

FORT DEVENS, MASSACHUSETTS
ABB Environmental Services, Inc.

AQUIFER TESTING COMPLETION CHECKLIST

AQUIFER TEST NO. 1

SETUP	DATE 3-7-95	BY WHOM R. PENDLETON B. SCHOONARD
MONITORING WELL ID	41M-94-06V	
DATE OF TEST	3-7-95	
TYPE OF TEST	RISING HEAD	
HERMIT TYPE/SERIAL#	2000/2K-189	
TEST #	TEST 1	
DATA COLLECTION RATE	LOG 2 MIN	
TRANSDUCER		
SERIAL #	5039	
PSIG	30	
SCALE FACTOR	19.937	
OFFSET	-0.06	
~~INPUT CHANNEL~~ LIN.	0.08	
TEST DATA		
INPUT MODE (TOC/SUR)	TOC	
STATIC WATER LEVEL (FT./TOC)	7.59	
WELL DEPTH (FT./TOC)	16.4	
XD DEPTH (FT.TOC)	16.4	
INITIAL XD REFERENCE	7.59	
SLUG DEPTH (FT./TOC)	15	
TIME OF SLUG PLACEMENT	0948 HRS	
TIME OF WL EQUILIBRATION	0956 HRS	∇ 7.57 TOC (XD)
NEW XD REFERENCE	NA	
START TIME OF TEST	0958 HRS	
END TIME OF TEST	1006 HRS	∇ 7.56 TOC (XD)
NOTES:		

FORT DEVENS, MASSACHUSETTS
ABB Environmental Services, Inc.

AQUIFER TESTING COMPLETION CHECKLIST

AQUIFER TEST NO. 0

SETUP	DATE 3-7-95	BY WHOM R. PENDLETON B. SCHOONARD
MONITORING WELL ID	41M-94-07X	
DATE OF TEST	3-7-95	
TYPE OF TEST	FALLING HEAD	
HERMIT TYPE/SERIAL#	1000B/1K-480	
TEST #	TEST 0	
DATA COLLECTION RATE	LOG 2 MIN	
TRANSDUCER		
SERIAL #	6638	
PSIG	30	
SCALE FACTOR	29.9331	
OFFSET	-0.0219	
INPUT CHANNEL	1	
TEST DATA		
INPUT MODE (TOC/SUR)	TOC	
STATIC WATER LEVEL (FT./TOC)	4.95	
WELL DEPTH (FT./TOC)	10.3	
XD DEPTH (FT.TOC)	10.3	
INITIAL XD REFERENCE	4.95	
SLUG DEPTH (FT./TOC)	~10	
TIME OF SLUG PLACEMENT	1045 HRS	
TIME OF WL EQUILIBRATION	1055 HRS	∇ 4.89 TOC (XD)
NEW XD REFERENCE	NA	
START TIME OF TEST	1045 HRS	
END TIME OF TEST	1055 HRS	∇ 4.89 TOC (XD)
NOTES:		

FORT DEVENS, MASSACHUSETTS
ABB Environmental Services, Inc.

AQUIFER TESTING COMPLETION CHECKLIST

AQUIFER TEST NO. 1

SETUP	DATE 3-7-95	BY WHOM R. PENDLETON
MONITORING WELL ID	41M-94-07X	B. SCHOONARD
DATE OF TEST	3-7-95	
TYPE OF TEST	RISING HEAD	
HERMIT TYPE/SERIAL#	1000B/1K-480	
TEST #	TEST 1	
DATA COLLECTION RATE	LOG 2 MIN	
TRANSDUCER		
SERIAL #	6638	
PSIG	30	
SCALE FACTOR	29.9331	
OFFSET	-0.0219	
INPUT CHANNEL	1	
TEST DATA		
INPUT MODE (TOC/SUR)	TOC	
STATIC WATER LEVEL (FT./TOC)	4.95	
WELL DEPTH (FT./TOC)	10.3	
XD DEPTH (FT.TOC)	10.3	
INITIAL XD REFERENCE	4.95	
SLUG DEPTH (FT./TOC)	~10	
TIME OF SLUG PLACEMENT	1045 HRS	
TIME OF WL EQUILIBRATION	1055 HRS	≅ 4.95 TOC (MAN)
NEW XD REFERENCE	4.95	
START TIME OF TEST	1059 HRS	
END TIME OF TEST	1112 HRS	≅ 4.96 TOC (XD)
NOTES:		

FORT DEVENS, MASSACHUSETTS
ABB Environmental Services, Inc.

AQUIFER TESTING COMPLETION CHECKLIST

AQUIFER TEST NO. 4

SETUP	DATE 3-7-95	BY WHOM R. PENDLETON B. SCHOONARD
MONITORING WELL ID	41M-94-08A	
DATE OF TEST	3-7-95	
TYPE OF TEST	RISING HEAD	
HERMIT TYPE/SERIAL#	2000/2K-189	
TEST #	TEST 4	
DATA COLLECTION RATE	LOG 60 MIN	
TRANSDUCER		
SERIAL #	5039	
PSIG	20	
SCALE FACTOR	19.937	
OFFSET	-0.06	
~~INPUT CHANNEL~~ LIN.	0.08	
TEST DATA		
INPUT MODE (TOC/SUR)	TOC	
STATIC WATER LEVEL (FT./TOC)	20.36	
WELL DEPTH (FT./TOC)	29.1	
XD DEPTH (FT.TOC)	29	
INITIAL XD REFERENCE	20.33	
SLUG DEPTH (FT./TOC)	~ 27	
TIME OF SLUG PLACEMENT	1515 HRS	
TIME OF WL EQUILIBRATION	1654 HRS	▽ 20.22 TOC (XD)
NEW XD REFERENCE	NA	
START TIME OF TEST	1658 HRS	
END TIME OF TEST 3-8-95	(0800 HRS)	▽ 20.32 TOC (XD)
NOTES:		

FORT DEVENS, MASSACHUSETTS
ABB Environmental Services, Inc.

AQUIFER TESTING COMPLETION CHECKLIST

AQUIFER TEST NO. 4

SETUP	DATE 3-7-95	BY WHOM R. PENDLETON B. SCHOONARD
MONITORING WELL ID	41M-94-03B	
DATE OF TEST	3-7-95	
TYPE OF TEST	FALLING HEAD	
HERMIT TYPE/SERIAL#	1000B/1K-480	
TEST #	TEST 4	
DATA COLLECTION RATE	LOG 2 MIN	
TRANSDUCER		
SERIAL #	6638	
PSIG	30	
SCALE FACTOR	29.9331	
OFFSET	-0.0219	
INPUT CHANNEL	1	
TEST DATA		
INPUT MODE (TOC/SUR)	TOC	
STATIC WATER LEVEL (FT./TOC)	21.28	
WELL DEPTH (FT./TOC)	46.5	
XD DEPTH (FT.TOC)	46.5	
INITIAL XD REFERENCE	21.28	
SLUG DEPTH (FT./TOC)	~ 29	
TIME OF SLUG PLACEMENT	1211 HRS	
TIME OF WL EQUILIBRATION	1545 HRS	21.06 TOC (XD)
NEW XD REFERENCE	NA	
START TIME OF TEST	1211 HRS	
END TIME OF TEST	1545 HRS	21.06 TOC (XD)
NOTES:		

AQUIFER TESTING COMPLETION CHECKLIST

AQUIFER TEST NO. 1

SETUP	DATE 3-8-95	BY WHOM R. PENDLETON B. SCHOONARD
MONITORING WELL ID	41M-94-09A	
DATE OF TEST	3-8-95	
TYPE OF TEST	RISING HEAD	
HERMIT TYPE/SERIAL#	1000B/1KB-480	
TEST #	TEST 1	
DATA COLLECTION RATE	LOG 2 MIN	
TRANSDUCER		
SERIAL #	6638	
PSIG	30	
SCALE FACTOR	29.9331	
OFFSET	-0.0219	
INPUT CHANNEL	1	
TEST DATA		
INPUT MODE (TOC/SUR)	TOC	
STATIC WATER LEVEL (FT./TOC)	34.58	
WELL DEPTH (FT./TOC)	41.5	
XD DEPTH (FT.TOC)	41.5	
INITIAL XD REFERENCE	34.58	
SLUG DEPTH (FT./TOC)	41.5	
TIME OF SLUG PLACEMENT	0750 HRS	
TIME OF WL EQUILIBRATION	0825 HRS	∇ 34.58 TOC (XD)
NEW XD REFERENCE	NA	
START TIME OF TEST	0826 HRS	
END TIME OF TEST	0840 HRS	∇ 34.58 TOC (XD)
NOTES:		

FORT DEVENS, MASSACHUSETTS
ABB Environmental Services, Inc.

AQUIFER TESTING COMPLETION CHECKLIST

AQUIFER TEST NO. 5

SETUP	DATE 3-7-95	BY WHOM R. PENDLETON B. SCHOONARD
MONITORING WELL ID	41M-94-09B	
DATE OF TEST	3-7-95	
TYPE OF TEST	FALLING HEAD	
HERMIT TYPE/SERIAL#	1000B/1K-480	
TEST #	TEST 5	
DATA COLLECTION RATE	LOG 2 MIN	
TRANSDUCER		
SERIAL #	6638	
PSIG	30	
SCALE FACTOR	29.9331	
OFFSET	-0.0219	
INPUT CHANNEL	1	
TEST DATA		
INPUT MODE (TOC/SUR)	TOC	
STATIC WATER LEVEL (FT./TOC)	34.43	
WELL DEPTH (FT./TOC)	B.S. ~~34~~ 57.7	
XD DEPTH (FT.TOC)	57.7	
INITIAL XD REFERENCE	34.43	
SLUG DEPTH (FT./TOC)	~57	
TIME OF SLUG PLACEMENT	1605 HRS	
TIME OF WL EQUILIBRATION	1618 HRS	34.43 TOC (XD)
NEW XD REFERENCE	NA	
START TIME OF TEST	1605 HRS	
END TIME OF TEST	1618 HRS	34.43 TOC (XD)
NOTES:		

AQUIFER TESTING COMPLETION CHECKLIST

AQUIFER TEST NO. 6

SETUP	DATE 3-7-95	BY WHOM R. PENDLETON B. SCHOONARD
MONITORING WELL ID	41M-94-09B	
DATE OF TEST	3-7-95	
TYPE OF TEST	RISING HEAD	
HERMIT TYPE/SERIAL#	1000B/1K-480	
TEST #	TEST 6	
DATA COLLECTION RATE	LOG 2 MIN	
TRANSDUCER		
SERIAL #	6638	
PSIG	30	
SCALE FACTOR	29.9331	
OFFSET	-0.0219	
INPUT CHANNEL	1	
TEST DATA		
INPUT MODE (TOC/SUR)	TOC	
STATIC WATER LEVEL (FT./TOC)	34.43	
WELL DEPTH (FT./TOC)	57.7	
XD DEPTH (FT.TOC)	57.7	
INITIAL XD REFERENCE	34.43	
SLUG DEPTH (FT./TOC)	~57	
TIME OF SLUG PLACEMENT	1605 HRS	
TIME OF WL EQUILIBRATION	1618 HRS	34.43 TOC (XD)
NEW XD REFERENCE	NA	
START TIME OF TEST	1619 HRS	
END TIME OF TEST	1630 HRS	34.43 TOC (XD)
NOTES:		

FORT DEVENS, MASSACHUSETTS
ABB Environmental Services, Inc.

AQUIFER TESTING COMPLETION CHECKLIST

AQUIFER TEST NO. 7

SETUP	DATE 3-8-95	BY WHOM R. PENDLETON B. SCHOONARD
MONITORING WELL ID	41M-94-11X	
DATE OF TEST	3-8-95	
TYPE OF TEST	FALLING HEAD	
HERMIT TYPE/SERIAL#	2000/2K-189	
TEST #	TEST 7	
DATA COLLECTION RATE	LOG 2 MIN.	
TRANSDUCER		
SERIAL #	5039	
PSIG	20	
SCALE FACTOR	19.937	
OFFSET	-0.06	
INPUT CHANNEL LIN.	0.08	
TEST DATA		
INPUT MODE (TOC/SUR)	TOC	
STATIC WATER LEVEL (FT./TOC)	37.75	
WELL DEPTH (FT./TOC)	48.6	
XD DEPTH (FT.TOC)	48.6	
INITIAL XD REFERENCE	37.70	
SLUG DEPTH (FT./TOC)	48.6	
TIME OF SLUG PLACEMENT	1217 HRS	
TIME OF WL EQUILIBRATION	1611 HRS	∇ 37.05 (TOC XD)
NEW XD REFERENCE	NA	
START TIME OF TEST	1217 HRS	
END TIME OF TEST	1611 HRS	∇ 37.05 TOC (XD)
NOTES:		

AQUIFER TESTING COMPLETION CHECKLIST

AQUIFER TEST NO. 2

SETUP	DATE 3-8-95	BY WHOM R. PENDLETON / B. SCHOONARD
MONITORING WELL ID	41M-94-12X	
DATE OF TEST	3-8-95	
TYPE OF TEST	FALLING HEAD	
HERMIT TYPE/SERIAL#	1000B/1KB-480	
TEST #	TEST 2	
DATA COLLECTION RATE	LOG 2 MIN	
TRANSDUCER		
SERIAL #	6638	
PSIG	30	
SCALE FACTOR	29.9331	
OFFSET	-0.0219	
INPUT CHANNEL	1	
TEST DATA		
INPUT MODE (TOC/SUR)	TOC	
STATIC WATER LEVEL (FT./TOC)	28.65	
WELL DEPTH (FT./TOC)	39.9	
XD DEPTH (FT.TOC)	39.9	
INITIAL XD REFERENCE	28.61	
SLUG DEPTH (FT./TOC)	~38	
TIME OF SLUG PLACEMENT	0853 HRS	
TIME OF WL EQUILIBRATION	1105 HRS	∇ 28.66 TOC (XD)
NEW XD REFERENCE	NA	
START TIME OF TEST	0853 HRS	
END TIME OF TEST	1105 HRS	∇ 28.66 TOC (XD)
NOTES:		

FORT DEVENS, MASSACHUSETTS
ABB Environmental Services, Inc.

AQUIFER TESTING COMPLETION CHECKLIST

AQUIFER TEST NO. 3

SETUP	DATE 3-8-95	BY WHOM R. PENDLETON B. SCHOONARD
MONITORING WELL ID	41M-94-12X	
DATE OF TEST	3-8-95	
TYPE OF TEST	RISING HEAD	
HERMIT TYPE/SERIAL#	1000B/1KB-480	
TEST #	TEST 3	
DATA COLLECTION RATE	LOG 2 MIN	
TRANSDUCER		
SERIAL #	6638	
PSIG	30	
SCALE FACTOR	29.9331	
OFFSET	-0.0219	
INPUT CHANNEL	1	
TEST DATA		
INPUT MODE (TOC/SUR)	TOC	
STATIC WATER LEVEL (FT./TOC)	28.65	
WELL DEPTH (FT./TOC)	39.9	
XD DEPTH (FT.TOC)	39.9	
INITIAL XD REFERENCE	28.61	
SLUG DEPTH (FT./TOC)	~ 38	
TIME OF SLUG PLACEMENT	0853 HRS	
TIME OF WL EQUILIBRATION	1105 HRS	∇ 28.66 TOC (XD)
NEW XD REFERENCE	28.61	
START TIME OF TEST	1106 HRS	
END TIME OF TEST	1450 HRS	∇ 29.03 TOC (XD)
NOTES: ∇ 29.04 (Man) at end of test		

FORT DEVENS, MASSACHUSETTS
ABB Environmental Services, Inc.

AQUIFER TESTING COMPLETION CHECKLIST

AQUIFER TEST NO. 6

SETUP	DATE 3-8-95	BY WHOM R. PENDLETON B. SCHOONARD
MONITORING WELL ID	4/M-94-13X	
DATE OF TEST	3-8-95	
TYPE OF TEST	RISING HEAD	
HERMIT TYPE/SERIAL#	2000/2K-189	
TEST #	TEST 6	
DATA COLLECTION RATE	LOG 2 MIN	
TRANSDUCER		
SERIAL #	5039	
PSIG	20	
SCALE FACTOR	19.937	
OFFSET	-0.06	
~~INPUT CHANNEL~~ LIN.	0.08	
TEST DATA		
INPUT MODE (TOC/SUR)	TOC	
STATIC WATER LEVEL (FT./TOC)	20.74	
WELL DEPTH (FT./TOC)	29.9	
XD DEPTH (FT.TOC)	29.9	
INITIAL XD REFERENCE	20.7	
SLUG DEPTH (FT./TOC)	29.9	
TIME OF SLUG PLACEMENT	0818 HRS	
TIME OF WL EQUILIBRATION	1008 HRS	▽ 20.71 TOC (XD)
NEW XD REFERENCE	NA	
START TIME OF TEST	1010 HRS	
END TIME OF TEST	1202 HRS	▽ 20.79 TOC (XD)
NOTES:		

FORT DEVENS, MASSACHUSETTS
ABB Environmental Services, Inc.

AQUIFER TESTING COMPLETION CHECKLIST

AQUIFER TEST NO. 2

SETUP	DATE 3-7-95	BY WHOM R. PENDLETON B. SCHOONARD
MONITORING WELL ID	41M-94-14X	
DATE OF TEST	3-7-95	
TYPE OF TEST	FALLING HEAD	
HERMIT TYPE/SERIAL#	1000B / 1K-480	
TEST #	TEST 2	
DATA COLLECTION RATE	LOG 2 MIN	
TRANSDUCER		
SERIAL #	6638	
PSIG	30	
SCALE FACTOR	29.9331	
OFFSET	-0.0219	
INPUT CHANNEL	1	
TEST DATA		
INPUT MODE (TOC/SUR)	TOC	
STATIC WATER LEVEL (FT./TOC)	3.25	
WELL DEPTH (FT./TOC)	10.3	
XD DEPTH (FT.TOC)	10.3	
INITIAL XD REFERENCE	3.25	
SLUG DEPTH (FT./TOC)	~ 9	
TIME OF SLUG PLACEMENT	1123 HRS	
TIME OF WL EQUILIBRATION	1142 HRS	≅3.25 TOC (XD)
NEW XD REFERENCE	NA	
START TIME OF TEST	1123 HRS	
END TIME OF TEST	1142 HRS	≅3.25 TOC (XD)
NOTES:		

FORT DEVENS, MASSACHUSETTS
ABB Environmental Services, Inc.

AQUIFER TESTING COMPLETION CHECKLIST

AQUIFER TEST NO. 3

SETUP	DATE 3-7-95	BY WHOM R. PENDLETON B. SCHOONARD
MONITORING WELL ID	41M-94-14X	
DATE OF TEST	3-7-95	
TYPE OF TEST	RISING HEAD	
HERMIT TYPE/SERIAL#	1000 B/1K -480	
TEST #	TEST 3	
DATA COLLECTION RATE	LOG 2 MIN	
TRANSDUCER		
SERIAL #	6638	
PSIG	30	
SCALE FACTOR	29.9331	
OFFSET	-0.0219	
INPUT CHANNEL	1	
TEST DATA		
INPUT MODE (TOC/SUR)	TOC	
STATIC WATER LEVEL (FT./TOC)	3.25	
WELL DEPTH (FT./TOC)	10.3	
XD DEPTH (FT.TOC)	10.3	
INITIAL XD REFERENCE	3.25	
SLUG DEPTH (FT./TOC)	~ 9	
TIME OF SLUG PLACEMENT	1123 HRS	3.25 TOC (XD)
TIME OF WL EQUILIBRATION	1157 HRS	
NEW XD REFERENCE	NA	
START TIME OF TEST	1144 HRS	
END TIME OF TEST	1157 HRS	3.25 TOC (XD)
NOTES:		

FORT DEVENS, MASSACHUSETTS
ABB Environmental Services, Inc.

D-2 HYDRAULIC GRADIENT AND GROUNDWATER FLOW VELOCITY CALCULATIONS

Fort Devens Groups 2 & 7
AOC 41 Horizontal Gradient Calculations

* Water Level Data Used was Collected January 31, 1995.

Monitoring Well	Distance Between Wells	GW Elev.	Gradient (ft/ft)
41M-94-10X	168 feet	227.38	0.020
41M-94-07X		224.03	
41M-92-01X	208 feet	224.60	0.005
41M-94-13X		223.48	
41M-94-13X	180 feet	223.48	0.004
41M-94-12X		222.74	
41M-93-02B	184 feet	224.82	0.011
41M-93-03X		222.73	
41M-93-03X	266 feet	222.73	0.006
41M-94-09A		221.18	
41M-94-08A	130 feet	224.45	0.006
41M-94-14X		223.71	
41M-94-08B	740 feet	223.76	0.004
41M-94-09B		221.03	

* Water Level Data Used Below was Collected May 9, 1995.

Monitoring Well	Distance Between Wells	GW Elev.	Gradient (ft/ft)
41M-94-10X	168 feet	226.61	0.019
41M-94-07X		223.42	
41M-92-01X	208 feet	223.91	0.010
41M-94-13X		221.87	

Fort Devens Groups 2 & 7
AOC 41 Horizontal Gradient Calculations
(continued)

41M-94-13X	180 feet	221.87	-0.003[1]
41M-94-12X		222.48	
41M-93-02B	184 feet	224.14	0.012
41M-93-03X		222.01	
41M-93-03X	266 feet	222.01	0.006
41M-94-09A		220.52	
41M-94-08A	130 feet	223.86	0.006
41M-94-14X		223.13	
41M-94-08B	740 feet	223.22	0.004
41M-94-09B		220.44	

Notes:

[1] Charge in groundwater flow direction between these two wells since the January 31, 1995 WL measurements.

Water Table (Clayey Silt/Sandy Silt):

Range of Hydraulic Conductivities (K):

1.0×10^{-5} cm/sec -- 0.028 ft/day
to
1.2×10^{-6} cm/sec -- 0.0034 ft/day

Fort Devens Groups 2 & 7
AOC 41 Horizontal Gradient Calculations
(continued)

Range of Horizontal Hydraulic Gradients (i):

0.004 ft/ft
to
0.020 ft/ft

Velocity of Groundwater = $\frac{Ki}{n}$ (assume n = 0.3)

Estimate of Slowest Groundwater Velocity:

$$v = \frac{(0.0034 \text{ ft/day})\ (0.004 \text{ ft/ft})}{(0.3)}$$
$$= 4.54 \times 10^{-5} \text{ ft/day}$$

Estimate of Fastest Groundwater Velocity:

$$v = \frac{(0.028 \text{ ft/day})\ (0.020 \text{ ft/ft})}{(0.3)}$$
$$= 1.87 \times 10^{-3} \text{ ft/day}$$

Lower Sand Beneath Clay/Silt:

Range of Hydraulic Conductivities:

7.4×10^{-5} cm/sec -- 0.21 ft/day
to
6.6×10^{-3} cm/sec -- 18.7 ft/day

Fort Devens Groups 2 & 7
AOC 41 Horizontal Gradient Calculations
(continued)

Horizontal Hydraulic Gradient between 41M-94-08B and 41M-94-09B:

0.004 ft/ft

Velocity of Groundwater = $\frac{Ki}{n}$ (assume n = 0.3)

Estimate of Slowest Groundwater Velocity:

$$v = \frac{(0.21 \text{ ft/day})\ (0.004 \text{ ft/ft})}{(0.3)}$$
$$= 2.80 \times 10^{-3} \text{ ft/day}$$

Estimate of Fastest Groundwater Velocity:

$$v = \frac{(18.7 \text{ ft/day})\ (0.004 \text{ ft/ft})}{(0.3)}$$
$$= 0.25 \text{ ft/day}$$

D-3 LONG-TERM WATER LEVEL DATA

IN-SITU, INC.	
WELL SENTINEL	
Serial # L3K00475	

Downloaded: 11/28/94 16:53	
Unit ID:	26m9206x
Test name:	41m9201x
Linearity:	0.070
Scale Factor:	15.030
Offset:	0.007
Specific Gravity:	1.000
Data Type:	Level
Units:	English
Mode:	Top of Casing
Ref. Level:	0.000
Ref. Taken: 04/14/94 11:48	
Test Begun: 04/14/94 15:00	
Real Time	Reading

04/14/94 15:00	-0.078
04/15/94 03:00	-0.037
04/15/94 15:00	-0.089
04/16/94 03:00	-0.069
04/16/94 15:00	-0.239
04/17/94 03:00	-0.111
04/17/94 15:00	-0.093
04/18/94 03:00	-0.022
04/18/94 15:00	0.030
04/19/94 03:00	0.048
04/19/94 15:00	-0.113
04/20/94 03:00	-0.048
04/20/94 15:00	0.024
04/21/94 03:00	0.108
04/21/94 15:00	0.089
04/22/94 03:00	0.108
04/22/94 15:00	0.061
04/23/94 03:00	0.163
04/23/94 15:00	0.067
04/24/94 03:00	0.030
04/24/94 15:00	-0.072
04/25/94 03:00	0.128
04/25/94 15:00	0.295
04/26/94 03:00	0.328
04/26/94 15:00	0.289
04/27/94 03:00	0.249
04/27/94 15:00	0.113
04/28/94 03:00	0.258
04/28/94 15:00	0.445
04/29/94 03:00	0.497
04/29/94 15:00	0.380

04/30/94 03:00	0.256
04/30/94 15:00	0.278
05/01/94 03:00	0.252
05/01/94 15:00	0.158
05/02/94 03:00	0.323
05/02/94 15:00	0.390
05/03/94 03:00	0.501
05/03/94 15:00	0.495
05/04/94 03:00	0.503
05/04/94 15:00	0.462
05/05/94 03:00	0.362
05/05/94 15:00	0.226
05/06/94 03:00	0.282
05/06/94 15:00	0.278
05/07/94 03:00	0.406
05/07/94 15:00	0.386
05/08/94 03:00	0.334
05/08/94 15:00	0.174
05/09/94 03:00	0.182
05/09/94 15:00	0.221
05/10/94 03:00	0.297
05/10/94 15:00	0.323
05/11/94 03:00	0.397
05/11/94 15:00	0.356
05/12/94 03:00	0.265
05/12/94 15:00	0.178
05/13/94 03:00	0.282
05/13/94 15:00	0.356
05/14/94 03:00	0.471
05/14/94 15:00	0.460
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05/15/94 15:00	0.466
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05/17/94 15:00	0.315
05/18/94 03:00	0.302
05/18/94 15:00	0.312
05/19/94 03:00	0.341
05/19/94 15:00	0.349
05/20/94 03:00	0.349
05/20/94 15:00	0.330
05/21/94 03:00	0.345
05/21/94 15:00	0.302
05/22/94 03:00	0.325
05/22/94 15:00	0.323
05/23/94 03:00	0.293
05/23/94 15:00	0.299
05/24/94 03:00	0.393
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05/25/94 03:00	0.462

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05/26/94 03:00	0.473
05/26/94 15:00	0.466
05/27/94 03:00	0.412
05/27/94 15:00	0.577
05/28/94 03:00	0.698
05/28/94 15:00	0.662
05/29/94 03:00	0.701
05/29/94 15:00	0.688
05/30/94 03:00	0.718
05/30/94 15:00	0.659
05/31/94 03:00	0.679
05/31/94 15:00	0.605
06/01/94 03:00	0.570
06/01/94 15:00	0.551
06/02/94 03:00	0.696
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06/03/94 03:00	0.835
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06/04/94 03:00	0.885
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06/05/94 03:00	0.974
06/05/94 15:00	0.941
06/06/94 03:00	0.957
06/06/94 15:00	0.898
06/07/94 03:00	0.816
06/07/94 15:00	0.876
06/08/94 03:00	0.978
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06/09/94 03:00	1.160
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06/10/94 15:00	1.247
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06/11/94 15:00	1.319
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06/12/94 15:00	1.293
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06/17/94 03:00	1.455
06/17/94 15:00	1.442
06/18/94 03:00	1.477
06/18/94 15:00	1.481
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06/19/94 15:00	1.590

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07/27/94 15:00	2.774
07/28/94 03:00	2.802
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08/19/94 15:00	3.094
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08/23/94 15:00	2.802
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08/31/94 15:00	2.550
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09/02/94 15:00	2.693
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09/09/94 15:00	2.862
09/10/94 03:00	2.927
09/10/94 15:00	2.934
09/11/94 03:00	2.980
09/11/94 15:00	2.971
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09/18/94 15:00	2.984
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09/19/94 15:00	3.125
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09/20/94 15:00	3.192
09/21/94 03:00	3.201
09/21/94 15:00	3.203
09/22/94 03:00	3.253
09/22/94 15:00	3.240
09/23/94 03:00	3.149
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09/29/94 03:00	2.058
09/29/94 15:00	2.056

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10/08/94 03:00	2.056
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10/15/94 15:00	2.065
10/16/94 03:00	2.065
10/16/94 15:00	2.019
10/17/94 03:00	2.069
10/17/94 15:00	2.056
10/18/94 03:00	2.054
10/18/94 15:00	2.021
10/19/94 03:00	2.043
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10/20/94 15:00	2.043
10/21/94 03:00	2.043
10/21/94 15:00	2.021
10/22/94 03:00	2.060
10/22/94 15:00	2.082
10/23/94 03:00	2.106
10/23/94 15:00	2.080
10/24/94 03:00	2.084
10/24/94 15:00	2.104
10/25/94 03:00	2.093

10/25/94 15:00	2.071
10/26/94 03:00	2.125
10/26/94 15:00	2.091
10/27/94 03:00	2.091
10/27/94 15:00	2.110
10/28/94 03:00	2.141
10/28/94 15:00	2.117
10/29/94 03:00	2.102
10/29/94 15:00	2.062
10/30/94 03:00	2.075
10/30/94 15:00	2.065
10/31/94 03:00	2.108
10/31/94 15:00	2.028
11/01/94 03:00	1.980
11/01/94 15:00	1.878
11/02/94 03:00	1.839
11/02/94 15:00	2.058
11/03/94 03:00	2.251
11/03/94 15:00	2.249
11/04/94 03:00	2.203
11/04/94 15:00	2.130
11/05/94 03:00	2.104
11/05/94 15:00	2.073
11/06/94 03:00	2.119
11/06/94 15:00	2.015
11/07/94 03:00	2.004
11/07/94 15:00	2.203
11/08/94 03:00	2.223
11/08/94 15:00	2.030
11/09/94 03:00	2.023
11/09/94 15:00	2.069
11/10/94 03:00	2.145
11/10/94 15:00	2.141
11/11/94 03:00	2.199
11/11/94 15:00	2.221
11/12/94 03:00	2.249
11/12/94 15:00	2.154
11/13/94 03:00	2.084
11/13/94 15:00	2.130
11/14/94 03:00	2.210
11/14/94 15:00	2.147
11/15/94 03:00	2.086
11/15/94 15:00	2.097
11/16/94 03:00	2.229
11/16/94 15:00	2.245
11/17/94 03:00	2.273
11/17/94 15:00	2.242
11/18/94 03:00	2.214
11/18/94 15:00	2.115
11/19/94 03:00	1.974
11/19/94 15:00	2.106

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11/20/94 15:00		2.273
11/21/94 03:00		2.281
11/21/94 15:00		2.128
11/22/94 03:00		1.839
11/22/94 15:00		1.974
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11/23/94 15:00		1.963
11/24/94 03:00		2.115
11/24/94 15:00		2.099
11/25/94 03:00		2.039
11/25/94 15:00		1.993
11/26/94 03:00		2.052
11/26/94 15:00		2.093
11/27/94 03:00		2.242
11/27/94 15:00		2.188
11/28/94 03:00		1.984
11/28/94 15:00		1.596

IN-SITU, INC.	
WELL SENTINEL	
Serial # L3K00476	

Downloaded: 11/28/94 17:00	
Unit ID: 25m9205x	
Test name: 41M9303X	
Linearity: 0.043	
Scale Factor: 10.068	
Offset: -0.021	
Specific Gravity: 1.000	
Data Type: Level	
Units: English	
Mode: Top of Casing	
Ref. Level: 0.000	
Ref. Taken: 05/25/94 16:58	
Test Begun: 05/25/94 17:00	
Real Time	Reading

05/25/94 17:00	0.003
05/26/94 05:00	0.084
05/26/94 17:00	0.026
05/27/94 05:00	0.083
05/27/94 17:00	0.219
05/28/94 05:00	0.270
05/28/94 17:00	0.207
05/29/94 05:00	0.261
05/29/94 17:00	0.227
05/30/94 05:00	0.268
05/30/94 17:00	0.192
05/31/94 05:00	0.217
05/31/94 17:00	0.138
06/01/94 05:00	0.131
06/01/94 17:00	0.119
06/02/94 05:00	0.230
06/02/94 17:00	0.243
06/03/94 05:00	0.309
06/03/94 17:00	0.281
06/04/94 05:00	0.326
06/04/94 17:00	0.338
06/05/94 05:00	0.385
06/05/94 17:00	0.342
06/06/94 05:00	0.348
06/06/94 17:00	0.287
06/07/94 05:00	0.246
06/07/94 17:00	0.316
06/08/94 05:00	0.369
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06/09/94 17:00	0.427

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06/16/94 05:00	0.701
06/16/94 17:00	0.654
06/17/94 05:00	0.667
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06/19/94 05:00	0.689
06/19/94 17:00	0.774
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06/20/94 17:00	0.794
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06/25/94 17:00	0.900
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06/26/94 17:00	0.989
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06/27/94 17:00	0.988
06/28/94 05:00	0.991
06/28/94 17:00	1.002
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06/29/94 17:00	1.002
06/30/94 05:00	0.993
06/30/94 17:00	1.004
07/01/94 05:00	1.050
07/01/94 17:00	1.053
07/02/94 05:00	1.063
07/02/94 17:00	1.024
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07/08/94 05:00	1.178
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07/10/94 05:00	1.123
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07/11/94 05:00	1.193
07/11/94 17:00	1.208
07/12/94 05:00	1.226
07/12/94 17:00	1.196
07/13/94 05:00	1.225
07/13/94 17:00	1.229
07/14/94 05:00	1.304
07/14/94 17:00	1.315
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07/15/94 17:00	1.276
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07/17/94 17:00	1.371
07/18/94 05:00	1.375
07/18/94 17:00	1.341
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07/24/94 17:00	1.441
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07/25/94 17:00	1.427
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07/26/94 17:00	1.433
07/27/94 05:00	1.470
07/27/94 17:00	1.519
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07/28/94 17:00	1.519
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07/29/94 17:00	1.566
07/30/94 05:00	1.572
07/30/94 17:00	1.515

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08/02/94 05:00	1.471
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08/10/94 17:00	1.685
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08/12/94 17:00	1.743
08/13/94 05:00	1.717
08/13/94 17:00	1.675
08/14/94 05:00	1.660
08/14/94 17:00	1.671
08/15/94 05:00	1.780
08/15/94 17:00	1.826
08/16/94 05:00	1.872
08/16/94 17:00	1.863
08/17/94 05:00	1.870
08/17/94 17:00	1.851
08/18/94 05:00	1.784
08/18/94 17:00	1.738
08/19/94 05:00	1.771
08/19/94 17:00	1.774
08/20/94 05:00	1.751
08/20/94 17:00	1.701
08/21/94 05:00	1.673
08/21/94 17:00	1.609
08/22/94 05:00	1.653
08/22/94 17:00	1.697
08/23/94 05:00	1.711
08/23/94 17:00	1.704
08/24/94 05:00	1.707
08/24/94 17:00	1.643
08/25/94 05:00	1.596

08/25/94 17:00	1.521
08/26/94 05:00	1.540
08/26/94 17:00	1.521
08/27/94 05:00	1.522
08/27/94 17:00	1.531
08/28/94 05:00	1.541
08/28/94 17:00	1.474
08/29/94 05:00	1.513
08/29/94 17:00	1.563
08/30/94 05:00	1.627
08/30/94 17:00	1.655
08/31/94 05:00	1.663
08/31/94 17:00	1.612
09/01/94 05:00	1.607
09/01/94 17:00	1.668
09/02/94 05:00	1.758
09/02/94 17:00	1.746
09/03/94 05:00	1.789
09/03/94 17:00	1.765
09/04/94 05:00	1.775
09/04/94 17:00	1.740
09/05/94 05:00	1.687
09/05/94 17:00	1.652
09/06/94 05:00	1.657
09/06/94 17:00	1.719
09/07/94 05:00	1.772
09/07/94 17:00	1.781
09/08/94 05:00	1.832
09/08/94 17:00	1.831
09/09/94 05:00	1.855
09/09/94 17:00	1.822
09/10/94 05:00	1.874
09/10/94 17:00	1.877
09/11/94 05:00	1.901
09/11/94 17:00	1.892
09/12/94 05:00	1.912
09/12/94 17:00	1.885
09/13/94 05:00	1.874
09/13/94 17:00	1.902
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09/14/94 17:00	1.943
09/15/94 05:00	2.005
09/15/94 17:00	1.989
09/16/94 05:00	2.007
09/16/94 17:00	1.960
09/17/94 05:00	1.920
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09/18/94 05:00	1.936
09/18/94 17:00	1.998
09/19/94 05:00	2.021
09/19/94 17:00	2.007

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09/21/94 05:00	2.019
09/21/94 17:00	2.011
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09/23/94 17:00	1.861
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09/26/94 17:00	1.602
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10/10/94 17:00	1.522
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10/15/94 05:00	1.538

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10/16/94 17:00	1.443
10/17/94 05:00	1.496
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10/18/94 05:00	1.481
10/18/94 17:00	1.301
10/19/94 05:00	1.471
10/19/94 17:00	1.688
10/20/94 05:00	1.692
10/20/94 17:00	1.675
10/21/94 05:00	1.679
10/21/94 17:00	1.671
10/22/94 05:00	1.687
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10/23/94 05:00	1.692
10/23/94 17:00	1.681
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10/24/94 17:00	1.682
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10/25/94 17:00	1.673
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10/27/94 05:00	1.688
10/27/94 17:00	1.722
10/28/94 05:00	1.713
10/28/94 17:00	1.685
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10/29/94 17:00	1.666
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10/30/94 17:00	1.672
10/31/94 05:00	1.700
10/31/94 17:00	1.653
11/01/94 05:00	1.618
11/01/94 17:00	1.576
11/02/94 05:00	1.583
11/02/94 17:00	1.710
11/03/94 05:00	1.789
11/03/94 17:00	1.775
11/04/94 05:00	1.754
11/04/94 17:00	1.716
11/05/94 05:00	1.710
11/05/94 17:00	1.724
11/06/94 05:00	1.736
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11/08/94 05:00	1.794
11/08/94 17:00	1.710
11/09/94 05:00	1.704
11/09/94 17:00	1.754

11/10/94 05:00	1.789
11/10/94 17:00	1.818
11/11/94 05:00	1.832
11/11/94 17:00	1.842
11/12/94 05:00	1.860
11/12/94 17:00	1.806
11/13/94 05:00	1.790
11/13/94 17:00	1.837
11/14/94 05:00	1.870
11/14/94 17:00	1.823
11/15/94 05:00	1.805
11/15/94 17:00	1.844
11/16/94 05:00	1.902
11/16/94 17:00	1.909
11/17/94 05:00	1.917
11/17/94 17:00	1.911
11/18/94 05:00	1.886
11/18/94 17:00	1.839
11/19/94 05:00	1.796
11/19/94 17:00	1.872
11/20/94 05:00	1.931
11/20/94 17:00	1.946
11/21/94 05:00	1.936
11/21/94 17:00	1.841
11/22/94 05:00	1.755
11/22/94 17:00	1.834
11/23/94 05:00	1.842
11/23/94 17:00	1.806
11/24/94 05:00	1.874
11/24/94 17:00	1.869
11/25/94 05:00	1.812
11/25/94 17:00	1.832
11/26/94 05:00	1.864
11/26/94 17:00	1.917
11/27/94 05:00	1.976
11/27/94 17:00	1.925
11/28/94 05:00	1.803
11/28/94 17:00	10.849

IN-SITU, INC.	
WELL SENTINEL	
Serial # L3K00478	

Downloaded: 11/28/94 16:52	
Unit ID:	slatepnd
Test name:	41NCRAN
Linearity:	0.064
Scale Factor:	15.047
Offset:	-0.012
Specific Gravity:	1.000
Data Type:	Level
Units:	English
Mode:	Top of Casing
Ref. Level:	0.000
Ref. Taken: 05/26/94 12:03	
Test Begun: 05/26/94 12:10	
Real Time	Reading

05/26/94 12:10	0.046
05/27/94 00:10	0.439
05/27/94 12:10	0.656
05/28/94 00:10	0.660
05/28/94 12:10	0.712
05/29/94 00:10	0.736
05/29/94 12:10	0.795
05/30/94 00:10	0.816
05/30/94 12:10	0.888
05/31/94 00:10	0.903
05/31/94 12:10	0.964
06/01/94 00:10	0.968
06/01/94 12:10	0.970
06/02/94 00:10	0.986
06/02/94 12:10	1.031
06/03/94 00:10	1.022
06/03/94 12:10	1.072
06/04/94 00:10	1.070
06/04/94 12:10	1.127
06/05/94 00:10	1.105
06/05/94 12:10	1.150
06/06/94 00:10	1.148
06/06/94 12:10	1.179
06/07/94 00:10	1.142
06/07/94 12:10	1.144
06/08/94 00:10	1.146
06/08/94 12:10	1.190
06/09/94 00:10	1.177
06/09/94 12:10	1.213
06/10/94 00:10	1.205
06/10/94 12:10	1.248

06/11/94 00:10	1.235
06/11/94 12:10	1.281
06/12/94 00:10	1.261
06/12/94 12:10	1.161
06/13/94 00:10	1.155
06/13/94 12:10	1.200
06/14/94 00:10	1.207
06/14/94 12:10	1.198
06/15/94 00:10	1.222
06/15/94 12:10	1.239
06/16/94 00:10	1.237
06/16/94 12:10	1.261
06/17/94 00:10	1.255
06/17/94 12:10	1.276
06/18/94 00:10	1.270
06/18/94 12:10	1.283
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06/22/94 00:10	1.244
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06/23/94 00:10	1.333
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06/25/94 00:10	1.324
06/25/94 12:10	1.170
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06/27/94 00:10	1.287
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06/30/94 00:10	0.823
06/30/94 12:10	0.860
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07/01/94 12:10	0.964
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07/05/94 00:10	1.224
07/05/94 12:10	1.287
07/06/94 00:10	1.263

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07/07/94 12:10	1.350
07/08/94 00:10	0.749
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07/09/94 00:10	0.931
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07/12/94 12:10	1.187
07/13/94 00:10	1.187
07/13/94 12:10	1.246
07/14/94 00:10	1.244
07/14/94 12:10	1.313
07/15/94 00:10	1.289
07/15/94 12:10	1.285
07/16/94 00:10	1.255
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07/31/94 12:10	0.942

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08/08/94 12:10	1.252
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08/25/94 00:10	0.669
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11/16/94 00:10	0.766
11/16/94 12:10	0.762
11/17/94 00:10	0.768
11/17/94 12:10	0.760
11/18/94 00:10	0.768
11/18/94 12:10	0.753
11/19/94 00:10	0.488
11/19/94 12:10	0.647
11/20/94 00:10	0.660
11/20/94 12:10	0.666
11/21/94 00:10	0.666
11/21/94 12:10	0.649
11/22/94 00:10	0.360
11/22/94 12:10	0.493
11/23/94 00:10	0.493
11/23/94 12:10	0.469
11/24/94 00:10	0.484
11/24/94 12:10	0.467
11/25/94 00:10	0.475
11/25/94 12:10	0.460
11/26/94 00:10	0.491
11/26/94 12:10	0.482
11/27/94 00:10	0.512
11/27/94 12:10	0.499
11/28/94 00:10	0.501
11/28/94 12:10	0.217

GEOPHYSICAL INVESTIGATION DATA AND ANALYSIS

APPENDIX E
STUDY AREA 41 GEOPHYSICAL SURVEY

1.0 INTRODUCTION

The original objectives of the SA 41 geophysical survey were to delineate the limits of the landfill and provide information on the nature and distribution of the landfill materials. An initial survey effort was performed during the SA 41 supplemental site investigation (SSI) field program in September 1993. Based on information gathered during that field program, a remedial investigation (RI) was performed and included an expansion of the original geophysical survey at SA 41. The objective of this supplemental survey was to search for potential source(s) of the contaminants discovered in groundwater during the SSI. The supplemental geophysical survey was conducted in September 1994.

2.0 SURVEY METHODS

Two geophysical surveying techniques, magnetometry and terrain conductivity, were selected as the most appropriate methods to meet the objectives of the SA 41 SSI and RI. A rectangular X-Y grid system was established within the survey area in 1993 along which SSI geophysical survey data was collected. During the supplemental survey, this initial survey grid system was expanded to search for contaminant sources beyond the limits of the SSI survey. The combined surveyed area is presented in Figure 1.

Because the survey area is adjacent to an active firing range, unexploded ordnance (UXO) clearance was deemed necessary prior to geophysical surveying. Before geophysical surveying started, vegetation was removed along survey lines during UXO clearing activities to allow easier access to the grid nodes. During all phases of geophysical surveying, ABB field personnel were escorted by an ABB-ES subcontractor certified to provide UXO services.

Field maps were generated during geophysical survey data collection for the purpose of locating survey stations, cultural landmarks, and natural and man-made surface features within the survey area. Compiled sketch maps from the 1993 and 1994 surveys are shown in Figure 2 through 5.

2.1 MAGNETOMETER SURVEY METHOD

The magnetometer survey method is used to measure variations in the earth's natural magnetic field strength resulting from the localized effects of natural and man-made materials. Man-made materials that can affect the earth's magnetic field include objects constructed of ferrous metal (steel and iron). Nonferrous metal objects, such as those constructed of aluminum, copper, and tin, do not effect magnetic fields and are thus not detectable with a magnetometer.

The magnetic gradiometer, a type of magnetometer, is a portable instrument consisting of a pair of total field sensors mounted on a survey pole. The sensors are designed to measure the earth's magnetic field strength (usually in gammas) simultaneously at each sensor while the survey pole is held vertically. The vertical magnetic gradient (measured typically in units of gammas/meter) can then be determined by calculating the difference between the total field values measured by each sensor and dividing that value by the distance separating the two sensors. Because the total field is measured during a sampling event, both the gradient and total field values can be used together during the interpretation of survey results.

Anomalous, localized variations in the normal total field or vertical magnetic gradient values are often attributable to both surface and subsurface ferrous metal objects. The magnetic field strength and vertical magnetic gradient values are proportional to the mass of the ferrous metallic source and inversely proportional to the cube of the distance between sensor and object. Based on this, the size and proximity (depth of burial for subsurface objects) of the target will influence the response of the magnetometer.

The effectiveness in interpreting data collected with this survey method is dependent on understanding two important factors that affect the data. The first, and perhaps most important in locating subsurface targets is the interference caused by the presence of natural and cultural features at the surface (automobiles, fences, overhead utility lines, bedrock outcrops, and time-variable changes in the earth's magnetic field). For this reason, it is particularly important to note all surface physical features within the survey area that may influence the data. The second factor to consider is the natural variation of the earth's magnetic field strength. Significant changes can take place over a matter of hours. Monitoring these natural variations at a selected base station during the survey allows the interpreter to factor these variations out of the data set if necessary. One beneficial feature of magnetic gradient data is that these natural variations do not affect the data because they are factored out in the calculation. Magnetic gradient data tend to be less sensitive to magnetic field noise.

Total field and magnetic gradient data can be measured at discrete locations (usually within an X-Y survey grid). The X and Y horizontal coordinates and the magnetometer values are then used to generate total field and vertical gradient contour maps of the survey area. By factoring out the effects of surface interference and natural variations in field strength, anomalies in the total field and vertical magnetic gradient produced by buried ferrous metal objects can be seen in the contour maps. The anomalies can then be used to make assumptions on the location, size, distribution, and occasionally the depth of ferrous metal targets.

2.2 TERRAIN CONDUCTIVITY SURVEY METHOD

The terrain conductivity survey method (also known as an electro-magnetic induction or EM survey) measures electrical conductivity in subsurface materials. Variations in conductivity can be the result of several natural factors including soil type, porosity, moisture content, and pore water salinity. Buried waste and metal utility lines can also produce measurable variations in subsurface conductivity. The terrain conductivity survey provides a good interpretation supplement to the magnetometer survey in that metallic objects (ferrous and nonferrous) and conductive materials are detectable. The combination of both surveys provides a particularly effective remote sensing tool for buried waste materials.

The typical terrain conductivity survey unit is comprised of portable sending and receiving electromagnetic field coils. The 3-dimensional source field produced by the unit induces electrical eddy currents in subsurface materials that in turn produce a secondary electromagnetic field. This secondary magnetic field is received by the terrain conductivity unit where the field strength is measured and recorded in a portable data logging device. The magnitude of the secondary field is roughly proportional to the conductivity of subsurface materials beneath the sampling point. When collected in a survey mode, as conductivity values are recorded from one location to another, these values provide an indication of the relative changes in subsurface material composition.

Near surface variations in conductivity values are most easily detected with this survey method. As with the magnetometer survey, the quality of terrain conductivity data can be adversely affected by the presence of surface features such as fences, automobiles, and electromagnetic noise produced by overhead power lines, radio transmitters, and atmospheric conditions.

The two components (quadrature phase and in-phase values) of the secondary electromagnetic field produced while conducting a terrain conductivity survey can be

measured during the data collection. The quadrature phase (real solution) component represents the terrain conductivity value averaged over the range of the primary field, and the in-phase (imaginary solution) component is essentially equivalent to a metal detector response.

Terrain conductivity data can be collected at discrete stations (i.e., grid nodes) in much the same manner as the magnetometer data is collected. Data is processed into conductivity contour maps, and anomalies interpreted. The anomalies can then be used to make assumptions on the location, size, distribution, and occasionally the depth of electrically conductive media.

3.0 SA 41 MAGNETOMETER SURVEY

The magnetometer survey was conducted using a GEM™ gradiometer. The unit consists of a portable microprocessor-based proton precession magnetometer with a pair of proton precession total field magnetic sensors mounted on a vertical survey pole. With the pole held vertically, the magnetometer simultaneous reads each sensor and provides the total field values and automatically calculates the gradient value at that location. The unit is equipped with an electronics console that allows the operator to view and store collected field data in an internal memory.

3.1 DATA COLLECTION

Magnetometer survey data was collected at discrete stations from within a 10-by-20 foot rectangular grid established over a 500-by-700 foot survey area at SA 41 (Figure 1). Total field and vertical gradient data measurements were stored in the magnetometer during the survey day. As mentioned before, a critical aspect of surveying with this geophysical technique is to identify and map potential sources of magnetic interference in a field-drawn sketch map (Figures 2 through 5).

A two-person field crew (instrument operator and crew chief) collected magnetometer data on two separate days, September 9, 1993 during the SSI field program and September 20, 1994 during the RI. Separate survey base stations were established to provide reference points from which to monitor diurnal variations in the magnetic field strength a regular intervals (roughly each hour) during surveying. These values were used later to provide an evaluation of diurnal variations and the need for corrections to the total field data.

At the conclusions of both survey days, data was transferred from the magnetometer's internal memory to a personal computer for processing and interpretation.

3.2 DATA PROCESSING AND INTERPRETATION

The natural magnetic field strength variations measured during the 1993 and 1994 survey days at the respective base stations were determined not to be significant enough when compared to the to the observed total field anomaly magnitudes to make necessitate corrections to the data sets. Comparison of total field magnitudes at stations common to both surveys (line L4960), a datum shift of approximately 107 gammas did appear. In order to appropriately splice the two data sets, the shift was removed by subtracting 107 gammas from each total field measurement in the 1993 data set and the data sets were merged (Table 1).

Data were processed using a geophysical software program with contouring capabilities (GEOSOFT™). The resulting total field and vertical magnetic gradient contour maps are presented in Figures 6 and 7, respectively. Magnetic anomalies identified in the contour maps are reviewed and those attributable to surface interference such as bedrock outcrops, metal fences, and ferrous metal debris are noted. The field maps were used during the interpretation process to discriminate between magnetic anomalies caused by natural and cultural surficial features and buried objects.

The majority of total field measurements varied only slightly above and below the mean value of 54,532 gammas over the surveyed area. Extreme values ranging from 52,892 to 58,336 gammas were record. Predominant anomalies attributable to cultural interference were observed in the area of the refuse pile, monitoring well protective casings, power pole guy wires, barbed wire fence, steel entrance gate, steel bleachers, former brick kiln structure (reinforcing rods), portable toilet, and numerous piles of metallic debris. Three anomalies not attributable to surface interference were observed west of the wire fence within the impact area of the firing range. The largest was a broad anomaly extending north and south between surface lines L4960 and L5040 and east and west between survey stations S4850 and S4950. The peak anomaly value within this broad anomaly was observed at survey stations (L5020, S4930). The other two anomalies, observed at (L5160, S2890) and (L4920, S4920), exhibited less significant magnitudes.

The majority of vertical magnetic gradient values observed in the survey area ranged from -15 to 5 gammas/meter with extreme values ranging from -5666 to 3084 gammas/meter. The mean value for the survey area was -10 gammas/meter. Vertical gradient data did not

reveal any other additional significant anomalous areas. Each of the total field anomalies were observable in the vertical gradient data.

4.0 TERRAIN CONDUCTIVITY SURVEY

The terrain conductivity survey was conducted using a Geonics™ EM-31 terrain conductivity meter and Polycorder data logger. The EM-31 unit consists of a transmitter/receiver array which can simultaneously measure both components of the electromagnetic magnetic field induced by the instrument when it is coupled the Polycorder (digital data logger).

4.1 DATA COLLECTION

Terrain conductivity data was collected at discrete stations (coincident with the magnetometer survey stations) from within the rectangular grid established over the area to be surveyed at SA 41 in 1993 and 1994. As with the magnetometer survey, both components of the field measurements were stored with each X and Y grid coordinate.

At the start of each survey day, the survey crew performed set-up procedures as specified in the operations manual. Procedures included battery check, a mechanical "zero" calibration check, and instrument functional checks for phasing and sensitivity. Terrain conductivity measurements collected at stations common to both surveys were very consistent.

At the conclusions of each survey day, data was transferred from the internal memory of the data logger to a personal computer for processing and interpretation.

4.2 PROCESSING AND INTERPRETATION

Data collected during the terrain conductivity survey were downloaded from the field data logger to a personal computer (Table 2) and processed using the contouring program mentioned earlier. The resulting quadrature and in-phase component contour maps are presented in Figures 8 and 9, respectively.

Quadrature phase measurements generally varied from 0 to 10 mmhos/meter over the surveyed area. The mean value for the survey area was 4.9 mmhos/meter with extreme values ranging from -53.4 to 17.2. Predominant anomalies attributable to cultural interference were again observed in the area of the refuse pile, barbed wire fence, steel

entrance gate, former brick kiln structure (reinforcing rods), and to a lesser extent the monitoring well protective casings, steel bleachers, portable toilet, and numerous piles of metallic debris. Three anomalies not attributable to surface interference observed in the magnetometer survey data within the impact area of the firing range did not exhibit strong quadrature phase anomalies. A very broad anomalous conductivity high was observed through the middle of the surveyed area, extending continuously in a nearly east-west trend across the length of the survey area in widths varying from 100 to 250 feet.

The in-phase measurements varied roughly ± 1 around a mean value of 0 across the survey area. Extreme values ranging from -31.8 to 33.9 revealed significant anomalies over the debris pile, around the demolished brick kiln, and near the metal bleachers and associated metal sign board nearby. No correlation between the quadrature phase and in-phase data sets was observable. Minor anomalies were observed near the steel gate, along wire fences, and over the three subsurface magnetic anomalies in the impact area.

5.0 FINDINGS AND CONCLUSIONS

Surface exposure of the debris pile is consistent with anomalies in all surveys results suggesting no subsurface extent beyond the surface exposure. A significant amount of ferrous metal (in the form of steel cans) exists in the landfill debris. With the cultural features considered, only three anomalies were determined to be the result of buried objects. Because the anomalies were clearly observable on the magnetometer survey, the sources likely consist at least in part of ferrous metal.

The broad conductivity anomaly observed in the quadrature phase terrain conductivity data is likely the result of a natural subsurface clay layer reported in several nearby soil borings. The presence of an abandoned clay brick kiln with evidence of limited mining (major depression observed near the debris pile) supports the clay layer theory.

No major anomalies suggestive of a 55-gallon drum disposal area were observed. With the exception of the three impact zone anomalies, no other notable anomalies were observed.

FIGURE 1

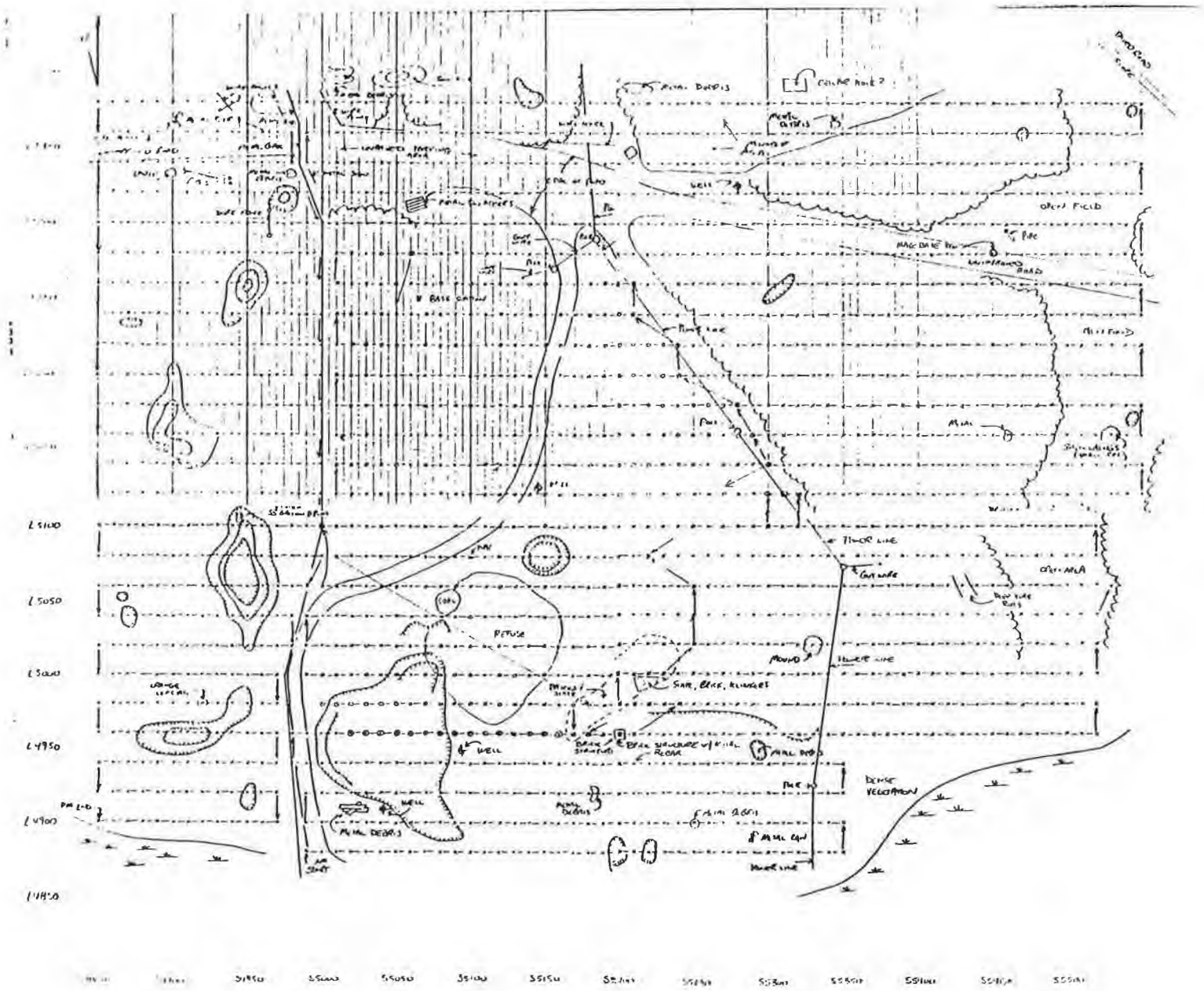
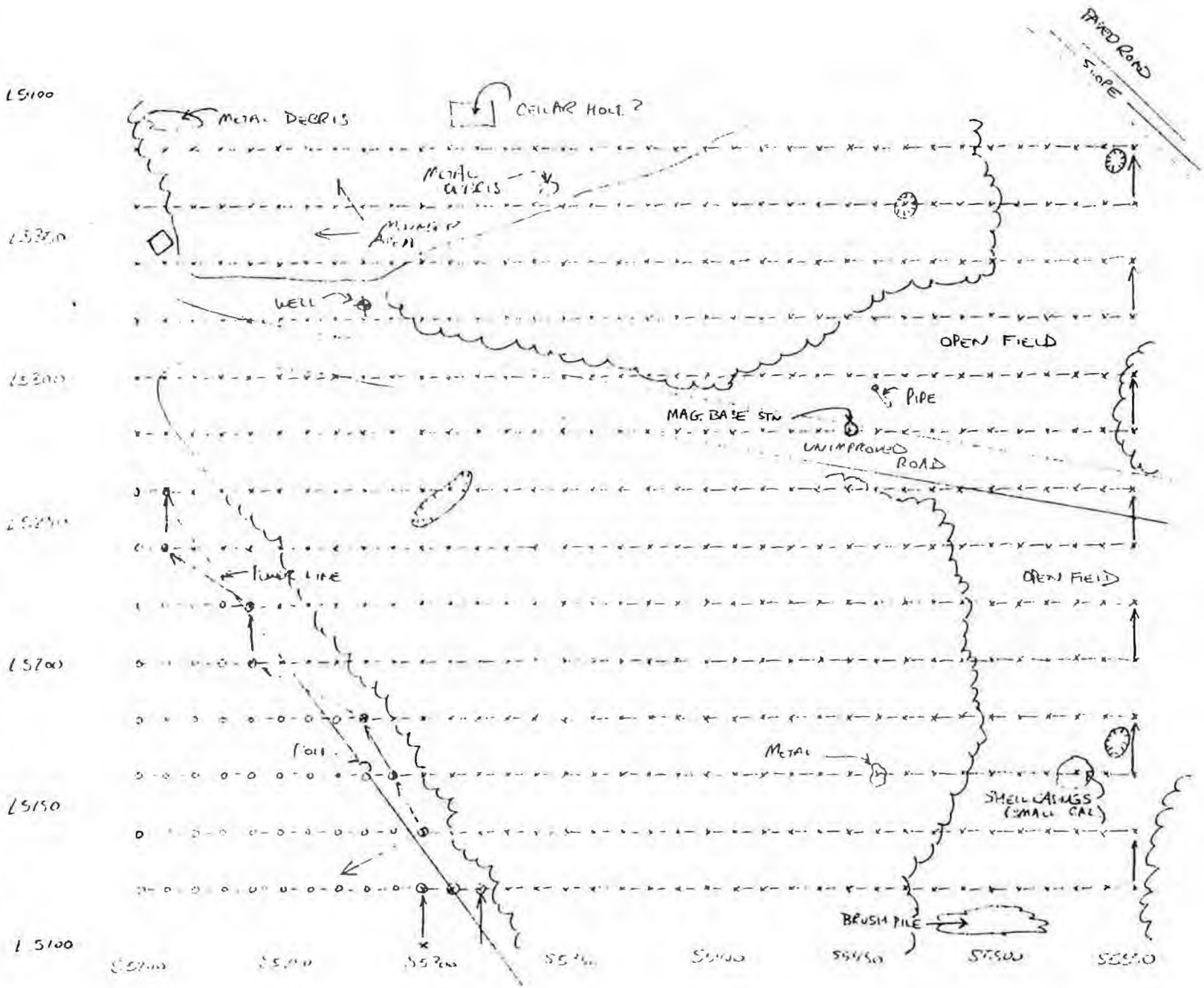


FIGURE 2



PROJECT
STUDY AREA 41
GEOPHYSICAL SURVEYS
MAP 1 OF 4

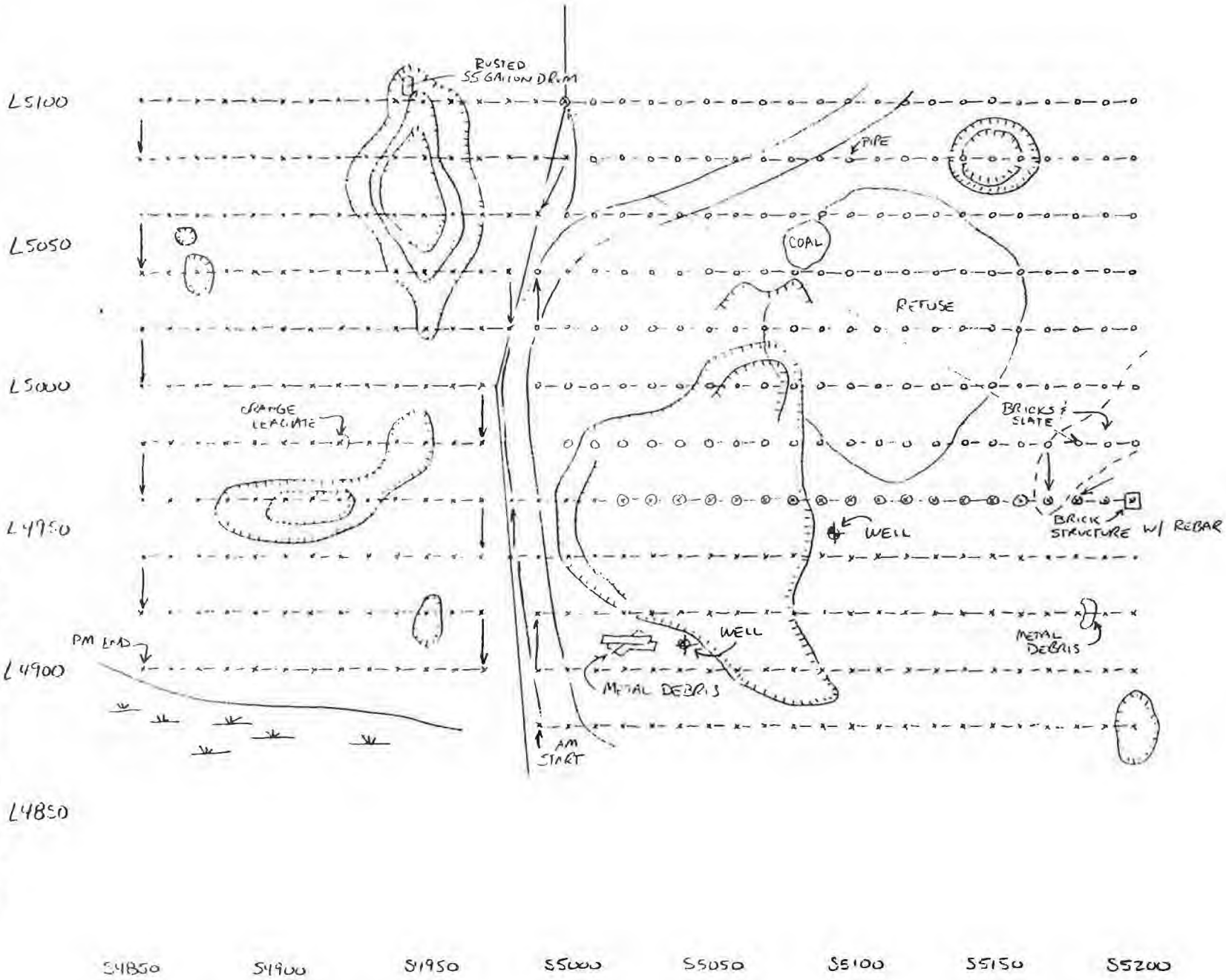
COMP. BY BJR
CHK. BY

JOB NO. 7053-14
DATE 7/20/94

FORM 00.01 REV 4/81

ABB Environmental Services, Inc.

FIGURE 3



PROJECT

COMP. BY

CHK. BY

JOB NO.

DATE

FORM 00 01 REV 4/91

ABB Environmental Services, Inc.

FIGURE 4

PROJECT: STUDY AREA 41 GEOPHYSICAL SURVEYS MAP 3 OF 4

COMP. BY: BTK

CHK. BY:

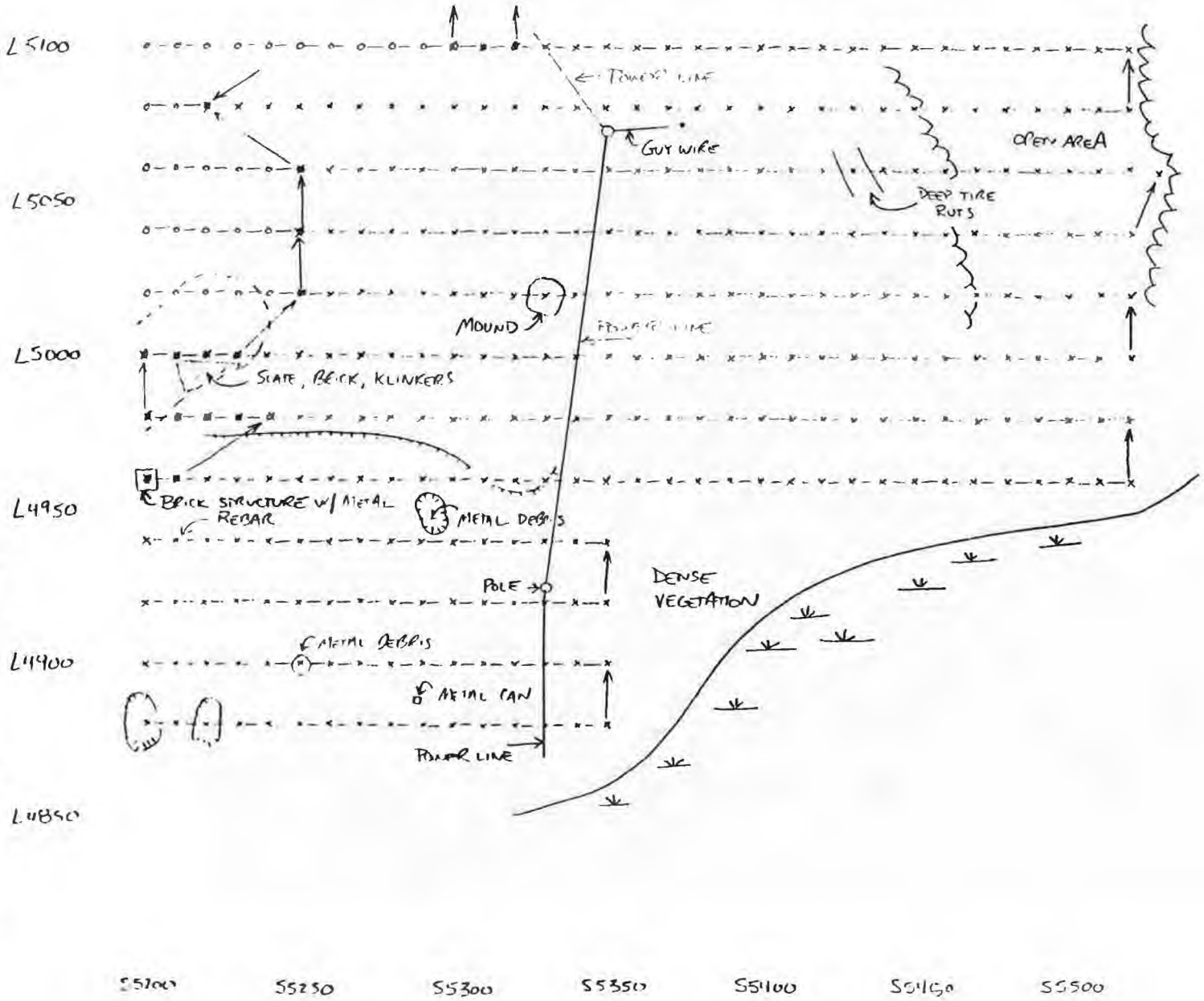
JOB NO.: 7053-14

DATE: 9/20/94

FORM 00 01 REV 4/81

ABB Environmental Services, Inc.

FIGURE 5



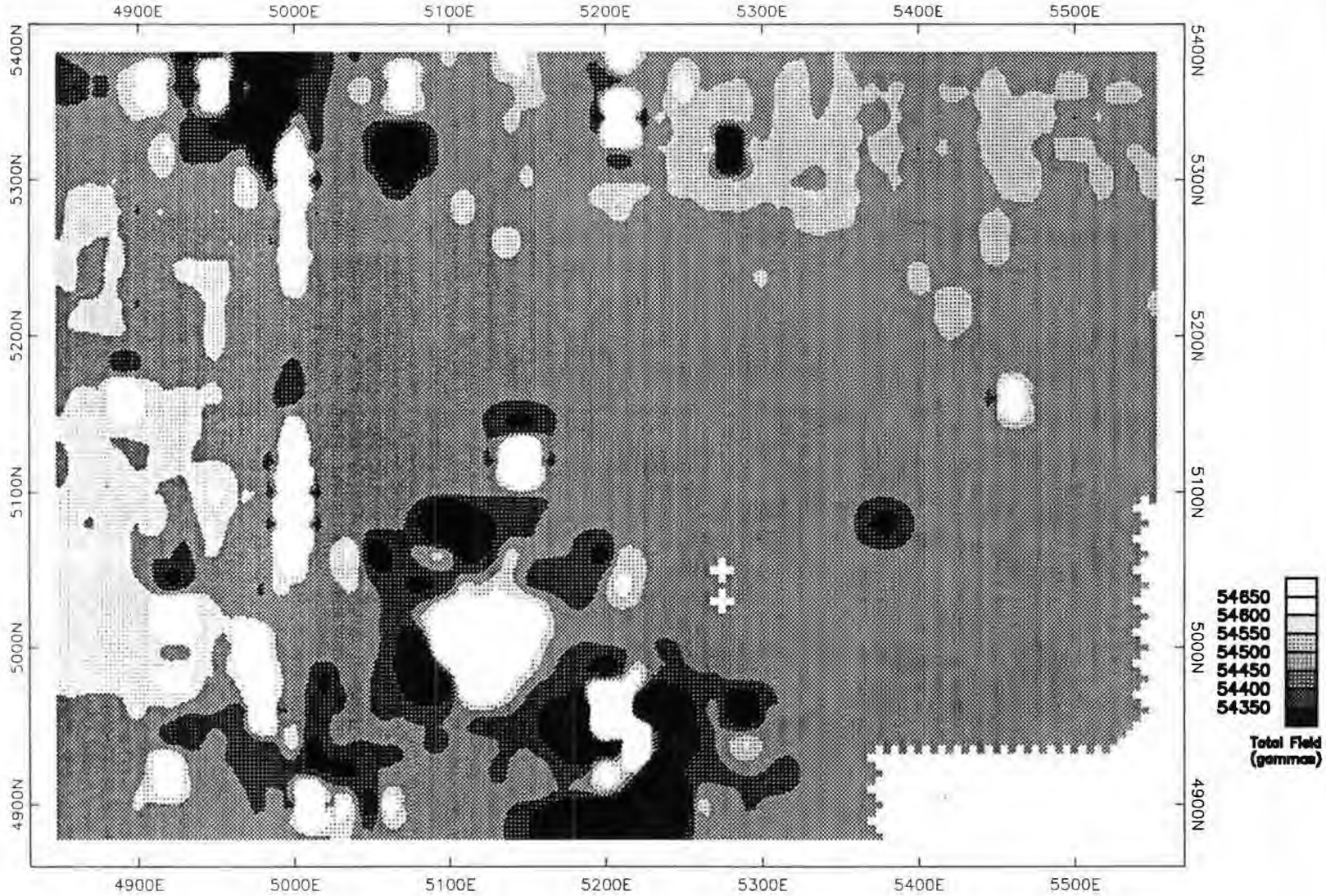
PROJECT
STUDY AREA 41
GEOPHYSICAL SURVEY
MAP 4 OF 4

COMP. BY
CHK. BY

JOB NO.
7052-1
DATE
9/20/94

FORM 00 01 REV 4/81

ABB Environmental Services, Inc.



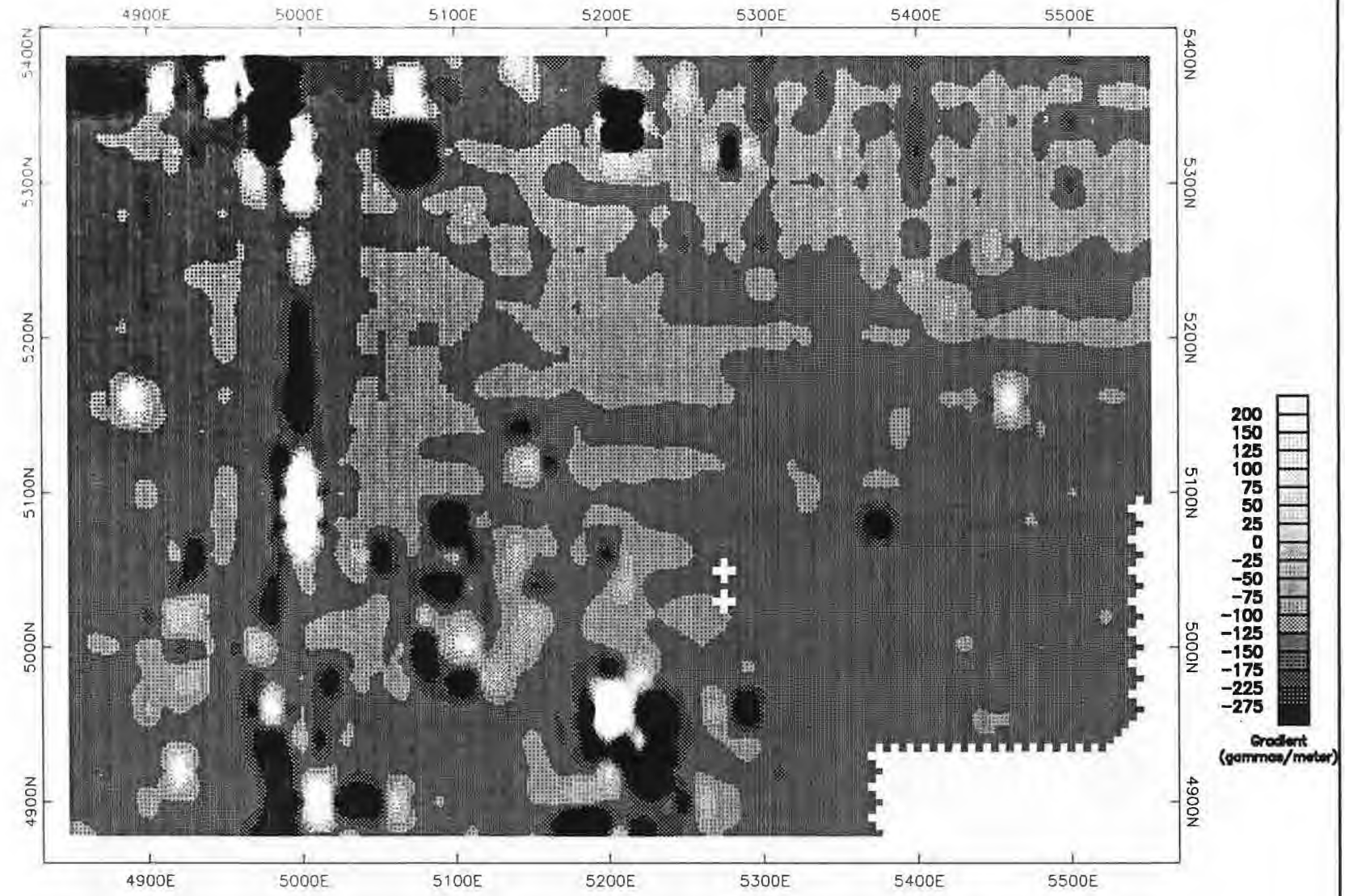
Unauthorized Dumping Area (Site A) – SA 41

Fort Devens, Massachusetts

Magnetometer Survey

50 0 50 100
(feet)

FIGURE 6



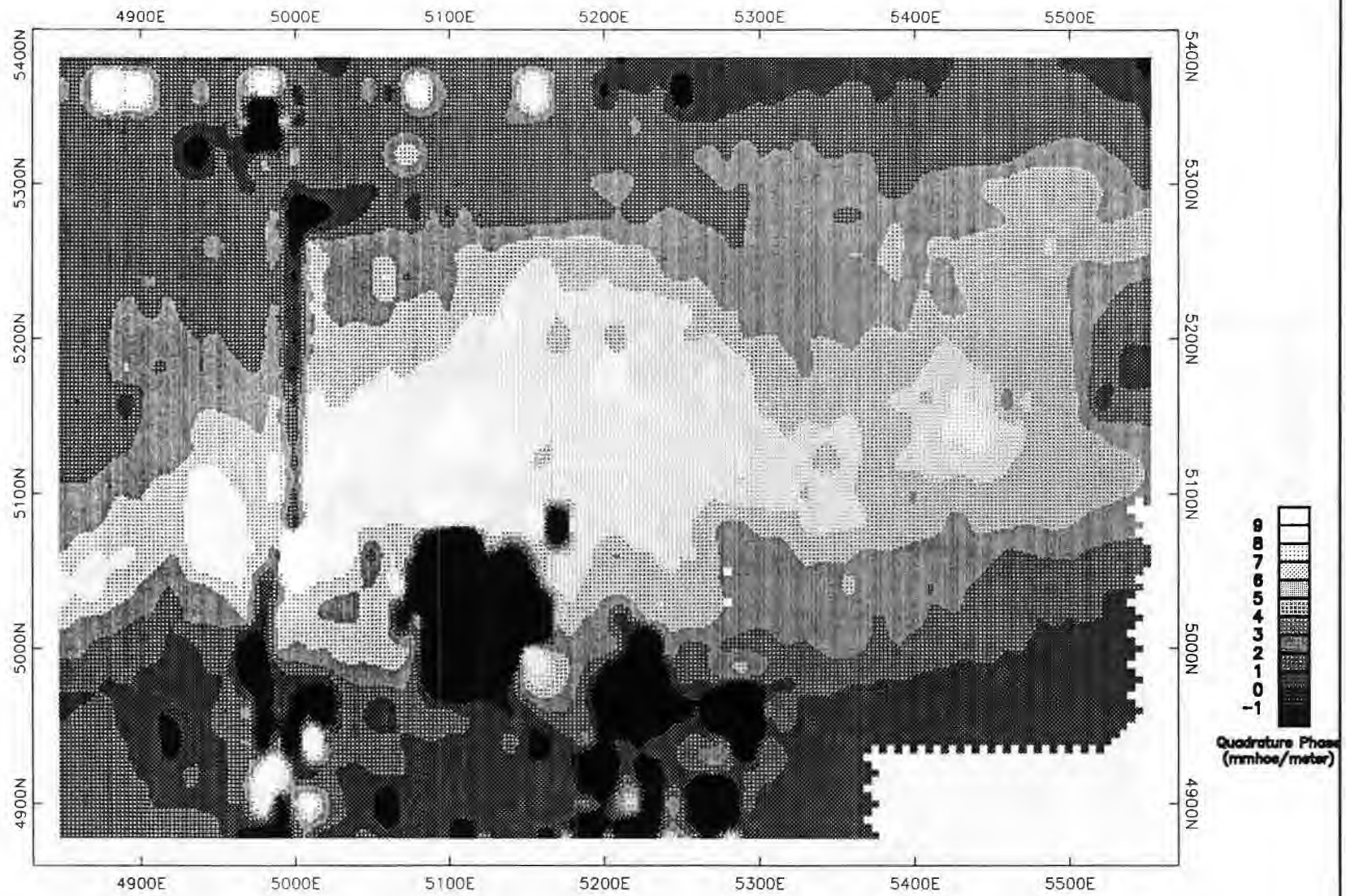
Unauthorized Dumping Area (Site A) - SA 41

Fort Devens, Massachusetts

Magnetometer Survey

50 0 50 100
(feet)

FIGURE 7

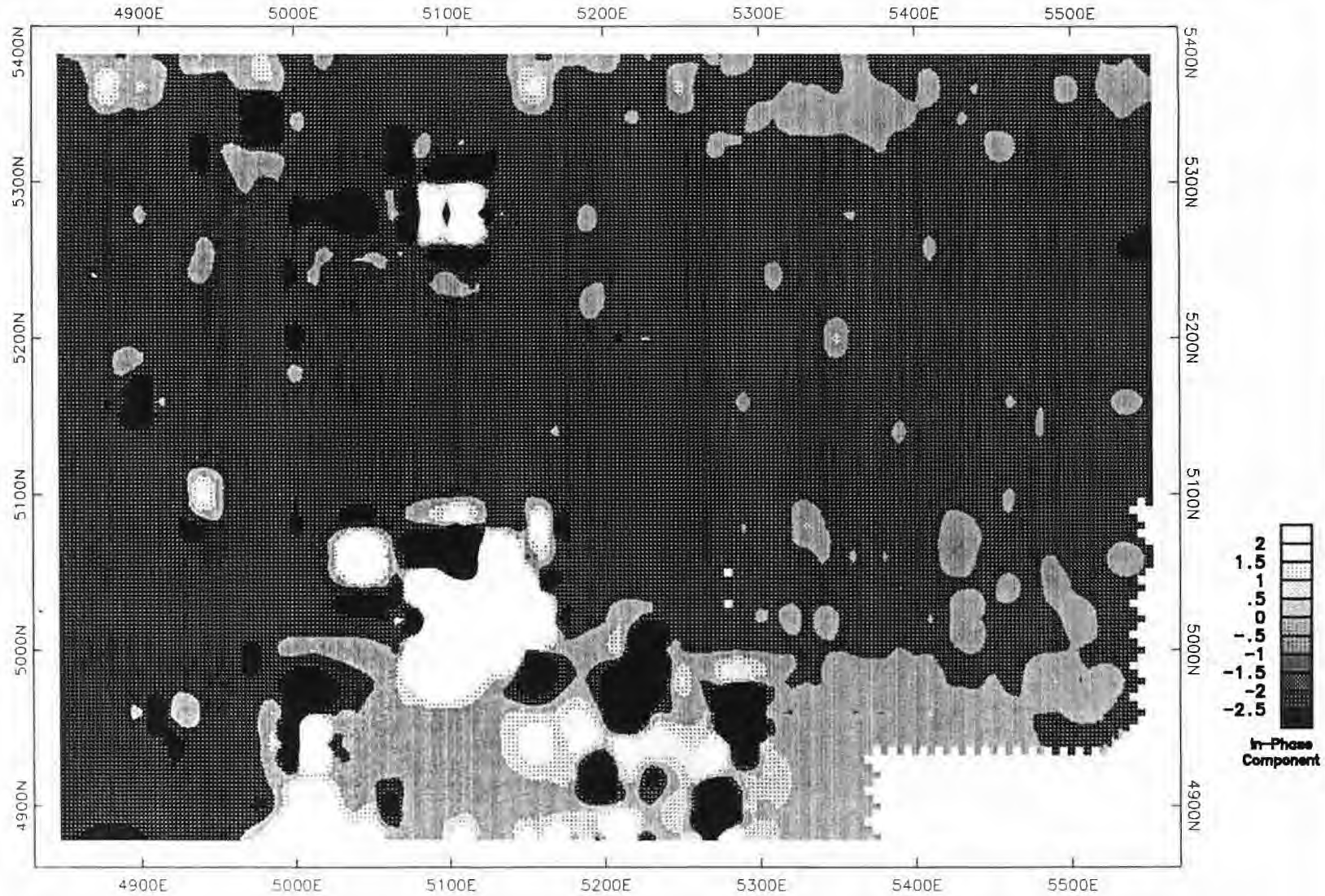


Unauthorized Dumping Area (Site A) - SA 41

Fort Devens, Massachusetts

Terrain Conductivity Survey

FIGURE 8



Unauthorized Dumping Area (Site A) - SA 41

Fort Devens, Massachusetts

Terrain Conductivity Survey

50 0 50 100
(feet)

FIGURE 9

TABLE 1
STUDY AREA 41 – MAGNETOMETER DATA

Station	Line	Total	Gradient	Station	Line	Total	Gradient	Station	Line	Total	Gradient
4880	4990	54540.03	−107.42	5060	5300	54517.68	−2.07	5220	5410	54542.11	4.16
4880	5000	54499.92	−23.82	5060	5310	54517.2	−4.89	5220	5420	54601.02	48.67
4880	5010	54523.97	−14.75	5060	5320	54520	−2.55	5220	5430	54564.71	10.48
4880	5020	54534.4	−10.75	5060	5330	54520.47	−2.07	5220	5440	54537.08	−3.23
4880	5030	54585.96	20.64	5060	5340	54517.84	−5.58	5220	5450	54535.87	−1.83
4880	5040	54512.41	−12.07	5060	5350	54515.13	−9.08	5220	5460	54535.69	−1.41
4880	5050	54512.72	−1.5	5060	5360	54517.2	−7.3	5220	5470	54537.33	0.57
4880	5060	54524.69	−4.21	5060	5370	54518.05	−5.73	5220	5480	54537.37	−0.69
4880	5070	54523.98	−5.37	5060	5380	54514.56	−7.85	5220	5490	54536.58	−0.51
4880	5080	54521.15	−4.6	5060	5390	54517.07	−5.01	5220	5500	54536.9	−1.69
4880	5090	54517.27	−6.03	5060	5400	54518.04	−6.3	5220	5510	54538.73	−0.98
4880	5100	54516.12	−6.8	5060	5410	54520.46	−4.3	5220	5520	54537.93	−1.66
4880	5110	54528.96	5.23	5060	5420	54517.84	−8.3	5220	5530	54536.35	−1.73
4880	5120	54508.8	−8.26	5060	5430	54523.23	−0.51	5220	5540	54534.04	−2.76
4880	5130	54506.22	−4.14	5060	5440	54518.75	−5.87	5220	5550	54558.01	23.26
4880	5140	54492.82	−6.1	5060	5450	54520.31	−3.96	5240	4850	54550.26	−3.39
4880	5150	54472.81	1.66	5060	5460	54520.6	−4.75	5240	4860	54552.69	−1.98
4880	5160	54329.77	−27.28	5060	5470	54522	−3.5	5240	4870	54540.03	−13.6
4880	5170	53892.14	−200.62	5060	5480	54522.99	−4.16	5240	4880	54551.56	−2.12
4880	5180	52892.03	−726.69	5060	5490	54522.83	−4.41	5240	4890	54550.83	−1.87
4880	5190	53286.27	−604.67	5060	5500	54521.45	−5.96	5240	4900	54539.52	−13.03
4880	5200	54178.34	−12.71	5060	5510	54521.94	−5.23	5240	4910	54547.9	−3.33
4880	5210	54421.72	35.62	5060	5520	54521.48	−9.14	5240	4920	54548.11	−2.57
4880	5220	54263.47	−204.96	5080	4850	54554.48	−5.39	5240	4930	54553.41	4.55
4880	5230	54395.76	−53.35	5080	4860	54552.42	−4.58	5240	4940	54553.67	4.37
4880	5240	54379.41	−42.37	5080	4870	54548.47	−8.67	5240	4950	54575.02	27.98
4880	5250	54465.54	−9.53	5080	4880	54555.52	−3.51	5240	4960	54546.79	−0.1
4880	5260	54519.95	−2.03	5080	4890	54558.12	−0.57	5240	4970	54538.81	−1.78
4880	5270	54531.53	2.55	5080	4900	54548.08	−14.64	5240	4980	54528.97	−4.91
4880	5280	54512.69	−6.83	5080	4910	54574.67	−4.19	5240	4990	54508.5	−39.42
4880	5290	54514.14	−5.35	5080	4920	54544.46	−12.14	5240	5000	54757.88	42.03
4880	5300	54517.88	−4.1	5080	4930	54519.28	−13.1	5240	5010	54522.1	−15.2
4880	5310	54512.83	−8.01	5080	4940	54550.05	−1.73	5240	5020	54517.8	−3
4880	5320	54510.62	−9	5080	4950	54574.33	15.58	5240	5030	54521.7	−0.4
4880	5330	54522.08	−0.62	5080	4960	54539.9	−6.62	5240	5040	54523.3	0.2
4880	5340	54517.8	−5.17	5080	4970	54541.78	−5.57	5240	5050	54524.3	0.2
4880	5350	54516.67	−5.32	5080	4980	54528.53	−18.76	5240	5060	54524.8	0.7
4900	4850	54532.74	−4.62	5080	4990	54537.37	−38.89	5240	5070	54525.4	0.4
4900	4860	54533.92	−3.33	5080	5000	55501.74	1011.69	5240	5080	54525.6	1.1
4900	4870	54533.71	−2.82	5080	5010	54528.9	−20.4	5240	5090	54526.1	1.3
4900	4880	54533.5	−3.92	5080	5020	54521.7	0	5240	5100	54526.2	1.1
4900	4890	54535.23	−4.03	5080	5030	54521.3	1.6	5240	5110	54524.6	0.2
4900	4900	54555.94	13.78	5080	5040	54520.8	4.1	5240	5120	54524.4	0.1
4900	4910	54540.04	−5.37	5080	5050	54517.6	5.5	5240	5130	54524.4	−0.3
4900	4920	54537.72	−8.08	5080	5060	54512.6	5.2	5240	5140	54524.6	−0.4
4900	4930	54535.33	−4.17	5080	5070	54504.2	4.8	5240	5150	54516.1	−0.4
4900	4940	54525.89	−8.12	5080	5080	54458.7	−6.2	5240	5160	54521.5	0
4900	4950	54529.2	−1.6	5080	5090	54303	−182.4	5240	5170	54521.8	1.8
4900	4960	54518.86	−12.03	5080	5100	54146.8	−267.2	5240	5180	54519.7	0.2
4900	4970	54503.62	−16.32	5080	5110	54340.2	−19.4	5240	5190	54518.3	0.9
4900	4980	54490.29	−77.23	5080	5120	54417.1	2	5240	5200	54517.4	0
4900	4990	54548.7	−55.67	5080	5130	54446.9	−3.2	5240	5210	54542.33	0.73
4900	5000	54493.79	−43.76	5080	5140	54461.9	−2.2	5240	5210	54517.1	−0.1
4900	5010	55206.63	505.76	5080	5150	54472.1	−7.7	5240	5220	54540.32	−0.62
4900	5020	54526.8	−61.96	5080	5160	54512.9	1.9	5240	5230	54540.95	0.75
4900	5030	54647.49	−100.19	5080	5170	54518.9	−13.9	5240	5240	54541.41	−0.82
4900	5040	54527.46	−69.92	5080	5180	54507.8	−1.4	5240	5250	54541.77	−2.14
4900	5050	54373.81	−100.19	5080	5190	54511.9	0.6	5240	5260	54541.34	−1.8
4900	5060	54663.88	136.21	5080	5200	54516.1	1.4	5240	5270	54541.23	−2.05
4900	5070	54549.72	−5.3	5080	5210	54519	1.2	5240	5280	54543.79	−0.35
4900	5080	54537.21	−4.16	5080	5220	54519.3	0	5240	5290	54544.07	−0.8
4900	5090	54535.41	1.6	5080	5230	54518.7	−1.1	5240	5300	54555.6	13.48
4900	5100	54513.59	−8.28	5080	5240	54519.5	−1.6	5240	5310	54542.59	−1.98
4900	5110	54512.8	−4.76	5080	5270	54510.8	−8.5	5240	5320	54543.24	−1.62
4900	5120	54517.02	−3.35	5080	5280	54517.63	−2.48	5240	5330	54542.29	−1.91
4900	5130	54513.65	−3.51	5080	5290	54516.62	−4.66	5240	5340	54542.76	−0.16
4900	5140	54501.17	−5.73	5080	5300	54517.03	−5.51	5240	5350	54541.67	−2.46
4900	5150	54490.56	−0.07	5080	5310	54521.97	−2.41	5240	5360	54542.51	−0.48
4900	5160	54466.64	4.01	5080	5320	54520.62	−1.85	5240	5370	54543.94	1.41
4900	5170	54410.12	11	5080	5330	54518.52	−3.12	5240	5380	54542.07	1.82
4900	5180	54382.29	23.89	5080	5340	54517.89	−2.78	5240	5390	54536.76	−2.28
4900	5190	54351.63	1.37	5080	5350	54512.17	−9.25	5240	5400	54575.61	42.91
4900	5200	54352.88	−19.08	5080	5360	54498.39	−20.92	5240	5410	54539.06	6.03
4900	5210	54345.24	−12.78	5080	5370	54441.27	−84.78	5240	5420	54516.41	−8.41
4900	5220	54351.5	−34.57	5080	5380	54399.72	−78	5240	5430	54533.88	−3.6
4900	5230	54358.65	−42.28	5080	5390	54476.7	−13.21	5240	5440	54540.37	−0.01
4900	5240	54390.36	−17.71	5080	5400	54505.68	−8.23	5240	5450	54539.14	−2.41
4900	5250	54342.11	−95.69	5080	5410	54513.79	−5.57	5240	5460	54538.86	−2.66
4900	5260	54571.8	80.37	5080	5420	54517.22	−6.51	5240	5470	54537.79	−2.5
4900	5270	54532.25	13.35	5080	5430	54523.9	−1.42	5240	5480	54539.12	−1.87
4900	5280	54531.67	18.26	5080	5440	54520.12	−4.19	5240	5490	54540.44	−2.73
4900	5290	54492.92	−15.55	5080	5450	54521.75	−2.14	5240	5500	54542.35	−0.75
4900	5300	54505.36	−11.48	5080	5460	54520.77	−5.19	5240	5510	54544.41	−0.48
4900	5310	54513.83	−13.69	5080	5470	54529	0.35	5240	5520	54543.22	−1.48
4900	5320	54514.24	−14.19	5080	5480	54528.38	−0.17	5240	5530	54540.41	−1.07
4900	5330	54509.85	−8.48	5080	5490	54522.53	−6.14	5240	5540	54539.85	−1.42
4900	5340	54516.2	−2.46	5080	5500	54523.14	−5.14	5240	5550	54540.05	−0.37
4900	5350	54515.41	−4.33	5080	5510	54523.53	−4.55	5260	4850	54550.17	−7.21
4920	4850	54535.71	−6.89	5080	5520	54525.95	−6.67	5260	4860	54551.37	−6.66
4920	4860	54541.3	−1.66	5100	4850	54551.72	−11.06	5260	4870	54550.22	−7.01
4920	4870	54536.31	−4.53	5100	4860	54556.05	−4.1	5260	4880	54548.75	−8.58
4920	4880	54535.83	−5.75	5100	4870	54553.49	−7.82	5260	4890	54552.07	−6.35
4920	4890	54537.73	−4.51	5100	4880	54553.73	−6.19	5260	4900	54535.68	−22.46
4920	4900	54537.23	−11.92	5100	4890	54555.98	−4.16	5260	4910	54547.49	−7.98
4920	4910	54596.97	−0.25	5100	4900	54574.45	16.12	5260	4920	54546.12	−8.71
4920	4920	54853.76	204.73	5100	4910	54550.65	−10.86	5260	4930	54544.33	−9.28
4920	4930	54567.74	−4.19	5100	4920	54546.96	−8.21	5260	4940	54543.7	−4.91
4920	4940	54511.95	−13.98	5100	4930	54543.64	−13.01	5260	4950	54516.46	−37.14

TABLE 1
STUDY AREA 41 – MAGNETOMETER DATA

Station	Line	Total	Gradient	Station	Line	Total	Gradient	Station	Line	Total	Gradient
4920	4950	54502.53	−20	5100	4940	54567.25	−20.14	5260	4960	54552.28	6.44
4920	4960	54506.32	−11.23	5100	4950	54633.67	28.55	5260	4970	54535.16	−12.21
4920	4970	54481.99	−32.51	5100	4960	54555.62	−7.44	5260	4980	54530.5	−8.66
4920	4980	54493.8	−87.83	5100	4970	54552.66	−2.07	5260	4990	54502.59	−37.32
4920	4990	54485.64	−86	5100	4980	54535.77	−14.44	5260	5000	54817.58	97.82
4920	5000	54496.54	−9.76	5100	4990	54528.15	−38.8	5260	5010	54528.7	−25.1
4920	5010	54479.31	12.23	5100	5000	55849.85	1399.53	5260	5020	54514.7	−6.2
4920	5020	54450.25	13.32	5100	5000	54739.2	249.8	5260	5030	54518	−1.4
4920	5030	54436.35	−21.16	5100	5010	54523.4	−19.5	5260	5040	54520.5	0.1
4920	5040	54446.04	−25.03	5100	5020	54526.8	−4.8	5260	5050	54522.1	−0.1
4920	5050	54492.09	−5.42	5100	5030	54529.6	−2.1	5260	5060	54523.7	−0.2
4920	5060	54505.81	−6.73	5100	5040	54531.9	2	5260	5070	54523.5	−0.1
4920	5070	54507.03	−5.89	5100	5050	54530.8	1.2	5260	5080	54524.1	0.1
4920	5080	54511.46	−2.05	5100	5060	54529.7	1.8	5260	5090	54524.4	−0.2
4920	5090	54515.06	−1.33	5100	5070	54528.3	1.8	5260	5100	54524.6	−0.1
4920	5100	54510.45	−5.98	5100	5080	54525.4	1.9	5260	5110	54522.9	−0.8
4920	5110	54512.01	−3.51	5100	5090	54521	1.9	5260	5120	54521.6	−4.7
4920	5120	54511.88	−2.19	5100	5100	54517.4	3.7	5260	5130	54559.7	10
4920	5130	54489.45	−22.5	5100	5110	54514.9	1.9	5260	5140	54576.2	24.2
4920	5140	54505.15	−11.89	5100	5120	54512.2	−2.4	5260	5150	54535.1	−3.2
4920	5150	54527.63	4.16	5100	5130	54513.3	−4.9	5260	5160	54530.1	−0.6
4920	5160	54543.51	14.5	5100	5140	54517.5	−20.1	5260	5170	54529.6	0.6
4920	5170	54473.53	−19.46	5100	5150	54521.2	−20.6	5260	5180	54530	0.2
4920	5180	54481.43	−4.39	5100	5160	54509.9	−12.6	5260	5190	54530.3	0.8
4920	5190	54515.7	−17.14	5100	5160	54509.8	−12.1	5260	5200	54530.2	1.2
4920	5200	54747.2	121.14	5100	5170	54513.3	−4.6	5260	5210	54541.72	−2.37
4920	5210	54601.26	−60.96	5100	5180	54519.5	−2.5	5260	5210	54527	0.6
4920	5220	54501.91	−234.23	5100	5180	54519.5	−2.5	5260	5220	54542.14	−5.28
4920	5230	54102.94	−294.39	5100	5190	54523.8	−0.2	5260	5230	54543.37	−2.57
4920	5240	54323.79	−66.12	5100	5200	54523.3	−3.6	5260	5240	54544.94	0.51
4920	5250	54448.37	−4.42	5100	5210	54522.5	−1.8	5260	5250	54512.19	−36.21
4920	5260	54479.82	−2.46	5100	5220	54527.3	−1.1	5260	5260	54545.6	−0.12
4920	5270	54479.89	−12.67	5100	5230	54527.1	−3.9	5260	5270	54545.47	0.16
4920	5280	54489.99	−9.44	5100	5240	54527.7	−2	5260	5280	54544.41	0.53
4920	5290	54503.73	−6.94	5100	5250	54528.6	−2.9	5260	5290	54544.2	1
4920	5300	54496.89	−14.82	5100	5260	54529.6	−3.2	5260	5300	54504.82	−42.85
4920	5310	54474.31	−30.8	5100	5270	54529.7	−3.5	5260	5310	54546.14	2.17
4920	5320	54492.18	−12.12	5100	5280	54528.3	−2.9	5260	5320	54546.56	1.58
4920	5330	54508.38	−7.35	5100	5290	54527.7	−2.7	5260	5330	54545.65	−0.23
4920	5340	54518.16	−2.62	5100	5300	54523.32	0.83	5260	5340	54547.05	2.05
4920	5350	54513.52	−6.03	5100	5300	54527.6	−2.8	5260	5350	54533.64	−11.07
4940	4850	54533.39	−1.76	5100	5310	54522.72	−1.69	5260	5360	54545.09	2.23
4940	4860	54534.47	−4.12	5100	5310	54528.6	−2.2	5260	5370	54544.01	1.07
4940	4870	54532.62	−7.01	5100	5320	54521.2	−3.37	5260	5380	54543.78	1.1
4940	4880	54529.44	−9.83	5100	5320	54527.6	−2.2	5260	5390	54543.77	3.28
4940	4890	54528.12	−10.37	5100	5330	54535.78	10.33	5260	5400	54511.51	−30.69
4940	4900	54521.93	−14.71	5100	5340	54521.42	−5.69	5260	5410	54545.63	3.19
4940	4910	54523.42	−7.39	5100	5350	54524.68	−0.96	5260	5420	54548.47	7.35
4940	4920	54487.6	−6.75	5100	5360	54520.02	−2.96	5260	5430	54538.14	−2.1
4940	4930	54472.47	−13.01	5100	5370	54515.25	−4.37	5260	5440	54549.82	6.71
4940	4940	54497.82	−10.37	5100	5380	54513.89	−3.89	5260	5450	54599.33	63.94
4940	4950	54513.91	0.55	5100	5390	54515.62	−2.07	5260	5460	54540.71	−1.37
4940	4960	54492.3	−15.58	5100	5400	54520.88	−0.23	5260	5470	54542.18	2.37
4940	4970	54460.24	−57.91	5100	5410	54520.11	−3.32	5260	5480	54542.88	3
4940	4980	54485.41	−163.18	5100	5420	54522.19	−2.64	5260	5490	54542.89	1.94
4940	4990	54506.65	−40.75	5100	5430	54525.07	−0.64	5260	5500	54543.78	1.41
4940	5000	54598.61	48.82	5100	5440	54521.5	−8.16	5260	5510	54540.67	−1.62
4940	5010	54414.85	−83.76	5100	5450	54526.04	−1.39	5260	5520	54539.22	−1.5
4940	5020	54483.28	−9.87	5100	5460	54527.11	−1.08	5260	5530	54541.26	1.21
4940	5030	54509.61	2.87	5100	5470	54529.75	−0.05	5260	5540	54540.47	0.82
4940	5040	54497.97	−9.46	5100	5480	54524.97	−2.73	5260	5550	54539.16	−0.33
4940	5050	54500.58	−8.1	5100	5490	54523.15	−6.16	5280	4850	54547.78	−9.28
4940	5060	54500.39	−8.12	5100	5500	54531.21	1.1	5280	4860	54552.55	−2.42
4940	5070	54501.23	−4.98	5100	5510	54524.34	−3.41	5280	4870	54553.46	−0.89
4940	5080	54503.1	−3.05	5100	5520	54512.82	−14.51	5280	4880	54552.95	−0.53
4940	5090	54493.84	−3.91	5120	4850	54539.55	−17.62	5280	4890	54550.01	−1.1
4940	5100	54500.3	−3.39	5120	4860	54554.94	−4.58	5280	4900	54493.08	−82.39
4940	5110	54508.05	−8.08	5120	4870	54556.95	−1.55	5280	4910	54548.09	−2.14
4940	5120	54508.91	−6.46	5120	4880	54559.17	−2.1	5280	4920	54546.91	−3.67
4940	5130	54503.46	−9.73	5120	4890	54559.37	−2.1	5280	4930	54544.33	−4.89
4940	5140	54486.46	−11.89	5120	4900	54540.13	−21.26	5280	4940	54542.03	−5.58
4940	5150	54494.97	14.67	5120	4910	54555.64	−3.33	5280	4950	54551.58	4.33
4940	5160	54448.58	−12.89	5120	4920	54554.61	−3.01	5280	4960	54542.01	−11.46
4940	5170	54421.93	−27.21	5120	4930	54552.1	−4.6	5280	4970	54546.13	−14.17
4940	5180	54400.78	−20.25	5120	4940	54548.7	−5.92	5280	4980	54536.68	−7.46
4940	5190	54311.38	−128.64	5120	4950	54551.43	−0.82	5280	4990	54515.51	−31.28
4940	5200	54470.51	8.66	5120	4960	54544.93	−3.94	5280	5000	54661.18	15.12
4940	5210	54408.29	−251.39	5120	4970	54534.75	−9	5280	5010	54513.8	−13.5
4940	5220	55595.1	187.67	5120	4980	54501.61	−53.21	5280	5020	54518.1	−2.6
4940	5230	54527.65	−352.89	5120	4990	54523.89	−96.39	5280	5030	54518.3	−0.8
4940	5240	54407.64	−78.94	5120	5000	54866.66	148.07	5280	5040	54518.1	−0.3
4940	5250	54419.76	−31.58	5120	5010	54540.3	−33	5280	5050	54514.8	−1.3
4940	5260	54444.91	−22.14	5120	5020	54524.3	−3.5	5280	5060	54513.9	−2.1
4940	5270	54496.97	−0.75	5120	5030	54526.1	0.5	5280	5060	54530.37	0.12
4940	5280	54552.85	0.98	5120	5040	54531.6	2.7	5280	5070	54527.57	−3.46
4940	5290	54611.04	10.05	5120	5050	54531.4	2	5280	5080	54528.82	−3.21
4940	5300	54550.52	−4.3	5120	5060	54531.2	2.4	5280	5090	54533.18	0.82
4940	5310	54516.81	−9.67	5120	5070	54530.8	1.8	5280	5100	54539.95	0.25
4940	5320	54507.86	−11.03	5120	5080	54528.1	0.8	5280	5110	54580.57	45.39
4940	5330	54513.52	−7.55	5120	5080	54528.2	0.7	5280	5120	54535.79	−0.5
4940	5340	54506.1	−15.42	5120	5090	54525.4	0	5280	5130	54527.78	−4.53
4940	5350	54510.96	−10.3	5120	5100	54523.2	−0.3	5280	5140	54526.14	−10.33
4960	4850	54528.9	−12.28	5120	5110	54520.2	−1.6	5280	5150	54536.94	−0.44
4960	4860	54535.1	−2.83	5120	5120	54513.7	−5.1	5280	5160	54539.22	4.05
4960	4870	54531.87	−4.32	5120	5130	54498.1	−10.6	5280	5170	54541.96	2.58
4960	4880	54533.84	−2.23	5120	5150	55136.8	119.8	5280	5180	54547.17	2.32
4960	4890	54536.95	−1.71	5120	5160	54523.1	−77.1	5280	5190	54548.34	1.82
4960	4900	54571.53	34.94	5120	5170	54507.5	−6.3	5280	5200	54549.79	6.6

TABLE 1
STUDY AREA 41 – MAGNETOMETER DATA

Station	Line	Total	Gradient	Station	Line	Total	Gradient	Station	Line	Total	Gradient
4960	4910	54528.46	−7.19	5120	5180	54519.3	5.3	5280	5210	54559.52	7.96
4960	4920	54541.41	10.6	5120	5190	54523.2	7.5	5280	5220	54544.61	−1.51
4960	4930	54508.33	−9.66	5120	5200	54524.8	4.8	5280	5230	54543.62	1.53
4960	4940	54504.89	−10.14	5120	5210	54528.4	4.3	5280	5240	54547.2	0.94
4960	4950	54501.1	−11.5	5120	5220	54529.9	4.4	5280	5250	54525.74	−19.5
4960	4960	54490.73	−17.5	5120	5230	54530.2	2.5	5280	5260	54547.17	3.28
4960	4970	54507.16	−70.94	5120	5230	54530.2	2.4	5280	5270	54548	1.98
4960	4980	54962.36	222.16	5120	5240	54530.5	2.8	5280	5280	54548.71	2.76
4960	4990	54483.61	−45.8	5120	5250	54530.5	3.2	5280	5290	54548.73	2.19
4960	5000	54553.63	8.03	5120	5260	54530.5	0.4	5280	5300	54541.48	−6.14
4960	5010	54478.09	−46.37	5120	5270	54530.7	1	5280	5310	54549.29	3.46
4960	5020	54489.38	−1.98	5120	5280	54529	−1	5280	5320	54549.45	2.57
4960	5020	54494.2	−29	5120	5290	54528.2	−1.2	5280	5330	54561.02	9.96
4960	5030	54501.8	−0.53	5120	5300	54520.21	−3.08	5280	5340	54558.71	7.87
4960	5030	54497.3	−3.6	5120	5300	54528.8	1	5280	5350	54575.2	29.48
4960	5040	54504.22	0.78	5120	5310	54521.57	−2.42	5280	5360	54548.61	1.17
4960	5040	54505.4	−2.5	5120	5310	54529.1	−0.7	5280	5370	54549.95	4.08
4960	5050	54494.65	−5	5120	5320	54526.05	1.5	5280	5380	54547.61	3.03
4960	5050	54504.7	−4.2	5120	5320	54529.4	1.2	5280	5390	54546.11	2.55
4960	5060	54492.23	−6.57	5120	5330	54518.99	−6.25	5280	5400	54546.32	2.58
4960	5060	54498.7	−5.5	5120	5340	54522.53	−3.44	5280	5410	54547.14	4.83
4960	5070	54493.91	−0.96	5120	5350	54523.47	−4.46	5280	5420	54546.06	3.62
4960	5070	54491.4	−1.3	5120	5360	54519.78	−6.16	5280	5430	54544.47	3.03
4960	5080	54471.54	−20.44	5120	5370	54525.93	−3	5280	5440	54543.42	1.44
4960	5080	54477.1	−6	5120	5380	54529.31	−1.92	5280	5450	54551.39	6.46
4960	5090	54488.95	−3.66	5120	5390	54522.83	−5.23	5280	5460	54545.36	2.82
4960	5090	54472.1	−15	5120	5400	54520.61	−7.41	5280	5470	54546.88	3.51
4960	5100	54495.24	−6.32	5120	5410	54523.72	−5.71	5280	5480	54546.58	2.55
4960	5100	54497.8	−21.3	5120	5420	54524.9	−5.89	5280	5490	54546.32	2.82
4960	5110	54510.63	−17.25	5120	5430	54519.79	−11.46	5280	5500	54549.16	6.1
4960	5110	54550.9	−0.4	5120	5440	54528.71	−1.58	5280	5510	54548.69	4.96
4960	5120	54540.8	−19.9	5120	5450	54529.13	−2.41	5280	5520	54547.19	2.53
4960	5120	54509.96	−16.16	5120	5460	54528.49	−3.39	5280	5530	54546.65	3.32
4960	5130	54519.09	−0.91	5120	5470	54527.25	−3.1	5280	5540	54546.78	3.5
4960	5130	54528.7	−20.6	5120	5480	54525.69	−3.25	5280	5550	54545.88	1.6
4960	5140	54508.3	−24.8	5120	5490	54523.49	−4.53	5300	4850	54547.59	−8.71
4960	5140	54505.63	0.21	5120	5500	54525.42	−2.48	5300	4860	54548.58	−7.58
4960	5150	54487.31	−9.69	5120	5510	54521.06	−10.32	5300	4870	54549.49	−7
4960	5150	54487.3	−15	5120	5520	54524.08	−8.75	5300	4880	54548.63	−7.17
4960	5160	54414.69	−24.51	5120	5530	54534.84	0.78	5300	4890	54545.84	−9.75
4960	5160	54475.6	−11.6	5120	5540	54534.23	−2.67	5300	4900	54501.15	−56.03
4960	5170	54412.53	−22.28	5120	5550	54534.21	−2.21	5300	4910	54545.44	−5.76
4960	5170	54446.5	−27.9	5140	4850	54553.39	−8.23	5300	4920	54542.55	−8.57
4960	5180	54411.9	−43.3	5140	4860	54558.38	−4.53	5300	4930	54542.03	−6.19
4960	5180	54412.3	−44.4	5140	4870	54563.44	−2.14	5300	4940	54537.38	−4.39
4960	5180	54424.51	4.67	5140	4880	54557.2	−7.89	5300	4950	54514.04	−28.73
4960	5190	54214.03	−285.07	5140	4890	54561.65	−6.83	5300	4960	54517.49	−18.19
4960	5190	54352	−163.9	5140	4900	54569.86	2.87	5300	4970	54620.15	102
4960	5200	58336.47	3084.41	5140	4910	54557.19	−3.78	5300	4980	54508.87	−20.5
4960	5200	54750.5	9.4	5140	4920	54555.7	−3.78	5300	4990	54498.76	−36.85
4960	5210	55358.1	597.2	5140	4930	54554.99	−2.63	5300	5000	55558.47	961.73
4960	5210	55349.1	1028.2	5140	4940	54554.56	−0.25	5300	5000	55284.43	608.01
4960	5210	55565.19	462.08	5140	4950	54524.5	−32.01	5300	5010	54507.03	−20.51
4960	5220	54232.55	−365.25	5140	4960	54547.61	−3.53	5300	5020	54520.28	−5.78
4960	5230	54265.74	−153.39	5140	4970	54543.58	−6.91	5300	5030	54511.21	−11.21
4960	5240	54293.65	−87.14	5140	4980	54534.75	−9.85	5300	5040	54513.81	−6.91
4960	5250	54411.99	−23.82	5140	4990	54512.9	−30.98	5300	5050	54529.05	32.44
4960	5260	54458.87	−4.39	5140	5000	54645.49	−61.78	5300	5060	54439.11	−52.51
4960	5270	54527.52	64.44	5140	5010	54529.2	−35.5	5300	5070	54399.27	−118.98
4960	5280	54399.01	−47.78	5140	5020	54517.4	−5	5300	5080	54498.47	−60.12
4960	5290	54275.85	−142.08	5140	5030	54523.3	−0.5	5300	5090	54517	−17.87
4960	5300	54487.53	−20.83	5140	5040	54526.3	0.8	5300	5100	54533.01	−5.35
4960	5310	54501.11	−9.25	5140	5050	54526.9	0.7	5300	5110	54539.86	−2.55
4960	5320	54510.12	−1.67	5140	5060	54526.9	0.2	5300	5120	54539.92	−1.96
4960	5330	54510.56	−3.62	5140	5060	54526.8	0.2	5300	5130	54540.12	−2.8
4960	5340	54514.04	−1.16	5140	5070	54526.3	1.2	5300	5140	54540.28	−1.89
4960	5350	54513.72	−3.58	5140	5080	54524.9	0.9	5300	5150	54556.2	14.03
4960	5360	54503.89	−11.71	5140	5090	54522.7	0.9	5300	5160	54541.94	−2.66
4960	5370	54510.72	−3.08	5140	5100	54520.4	0.6	5300	5170	54543.65	−2.75
4960	5380	54512.49	−3.62	5140	5110	54516.9	0.3	5300	5180	54544.75	−3.58
4960	5390	54514.18	−2.71	5140	5120	54505.5	1.9	5300	5190	54545.46	−2.16
4960	5400	54516.05	−1.33	5140	5120	54509.2	−1.9	5300	5200	54547.05	−1.08
4960	5410	54516.04	−1.5	5140	5130	54482.7	−18.4	5300	5210	54547.04	0.21
4960	5420	54516.66	−0.98	5140	5140	54453	−72	5300	5220	54547.34	1.01
4960	5430	54517.75	−0.96	5140	5150	54460	−51.6	5300	5230	54548.76	2.69
4960	5440	54519.85	0.21	5140	5160	54484.6	−12.4	5300	5240	54547.57	−0.92
4960	5450	54517.23	−0.42	5140	5170	54504.2	−7.5	5300	5250	54576.77	29.26
4960	5460	54517.22	−0.01	5140	5180	54516.3	1.9	5300	5260	54552.05	1.46
4960	5470	54515.23	−3	5140	5190	54511.9	−9	5300	5270	54553.86	2.87
4960	5480	54515.51	−2.89	5140	5200	54518.4	−3.2	5300	5280	54555.58	4.48
4960	5490	54515.87	−1.8	5140	5210	54521.2	−3.5	5300	5290	54555.2	2.67
4960	5500	54514	−5.5	5140	5220	54522.2	−3.3	5300	5300	54553.5	1.32
4960	5510	54514.39	−5.62	5140	5230	54522.4	−4.1	5300	5310	54551.23	0.39
4960	5520	54516.8	−1.25	5140	5240	54522.4	−2.6	5300	5320	54549.58	−0.16
4980	4850	54570.66	−3.37	5140	5250	54522.2	−3.2	5300	5330	54547.3	−0.12
4980	4860	54570.5	−3.76	5140	5260	54522.9	−1.9	5300	5340	54544.52	−0.78
4980	4870	54561.96	−10.35	5140	5270	54524.3	−2	5300	5350	54566.84	21.89
4980	4880	54565.91	−3.83	5140	5280	54538.1	−15.5	5300	5360	54548.03	−0.98
4980	4890	54559.8	−5.98	5140	5290	54522	−3.1	5300	5370	54548.25	0.83
4980	4900	54575.66	4.16	5140	5290	54520.4	−11.26	5300	5380	54548.45	1.16
4980	4910	54600.26	15.91	5140	5300	54522	−2.6	5300	5390	54550.52	3.46
4980	4920	54621.65	30.62	5140	5300	54522.28	−7.87	5300	5400	54512.41	−36.91
4980	4930	54636.18	46.21	5140	5310	54522.76	−6.6	5300	5410	54546.37	2.75
4980	4940	54556.16	−4.76	5140	5320	54523.47	−6.23	5300	5420	54543.65	−0.42
4980	4950	54548.69	−10.41	5140	5330	54517.88	−10.64	5300	5430	54544.15	1
4980	4960	54541.87	−22.19	5140	5340	54510.85	−17.05	5300	5440	54544.42	0.58
4980	4970	54623.33	−55.58	5140	5350	54520.86	−8.64	5300	5450	54551.75	4.96
4980	5000	54531.9	2.4	5140	5360	54520.01	−12.69	5300	5460	54561.58	10.19

TABLE 1
STUDY AREA 41 – MAGNETOMETER DATA

Station	Line	Total	Gradient	Station	Line	Total	Gradient	Station	Line	Total	Gradient
4980	5010	54497.6	−39.7	5140	5370	54525.7	−10.75	5300	5470	54560.47	6.19
4980	5020	54416.5	−90	5140	5380	54526.78	−7.14	5300	5480	54548.51	0.76
4980	5030	54506.2	0	5140	5390	54550.55	16.37	5300	5490	54545.27	3
4980	5040	54510.2	1.1	5140	5400	54520.78	−14.19	5300	5500	54503.57	−44.87
4980	5050	54499.4	−0.8	5140	5410	54528.92	−5.17	5300	5510	54553.25	4.46
4980	5060	54478.2	3.7	5140	5420	54521.2	−14.03	5300	5520	54553.03	4.55
4980	5070	54425.5	0.6	5140	5430	54521.78	−10.23	5300	5530	54547.14	1.37
4980	5080	54300.1	−64.6	5140	5440	54521.75	−11.32	5300	5540	54549.04	2.82
4980	5090	54290.5	−42.7	5140	5450	54526.27	−10.51	5300	5550	54555.89	9.07
4980	5100	54415	−83.7	5140	5460	54535.19	−8.8	5320	4850	54541.8	−9.87
4980	5110	54757.5	−105.4	5140	5470	54534.8	−10.83	5320	4860	54540.2	−11.83
4980	5120	55105.9	66.6	5140	5480	54544.14	4.37	5320	4870	54548.55	−2.44
4980	5130	54833.9	81.6	5140	5490	54529.03	−8.08	5320	4880	54547.88	−1.62
4980	5140	54634.8	−5.1	5140	5500	54524.71	−7.01	5320	4890	54543.58	−0.5
4980	5150	54548.3	−21.9	5140	5510	54522.13	−10.5	5320	4900	54543.74	22.32
4980	5160	54504.3	−14.7	5140	5520	54517.49	−17.6	5320	4910	54554.51	−3.6
4980	5170	54487.6	−12.4	5140	5530	54526.16	−8.89	5320	4920	54621.27	32.85
4980	5180	54462.9	−32.2	5140	5540	54524.55	−12.66	5320	4930	54447.36	−67.35
4980	5190	54497.1	5.5	5140	5550	54525.25	−10.66	5320	4940	54474.12	−17.78
4980	5200	54497.9	−23.4	5160	4850	54545.34	−10.69	5320	4950	54480.44	−23.08
4980	5210	54537.6	14.9	5160	4860	54553.42	−3.01	5320	4960	54487.79	−16.23
4980	5220	54679.2	215.5	5160	4870	54563.94	7.21	5320	4970	54489.31	−2.71
4980	5220	54671	224.8	5160	4880	54571.75	8.83	5320	4980	54207.26	−382.3
4980	5230	54511.6	−4.7	5160	4890	54809.47	201.64	5320	4990	54562.25	−57.16
4980	5230	54458.4	−36.32	5160	4900	54657.39	43.51	5320	5000	54742.61	151.6
4980	5240	54476.43	−10.08	5160	4910	54561.68	−1.85	5320	5010	54500.02	−21.1
4980	5240	54485.2	−5.3	5160	4920	54552.63	−5.69	5320	5020	54511.33	−4.71
4980	5250	54481.55	−12	5160	4930	54553.99	−1.32	5320	5030	54518.82	−0.92
4980	5260	54495.14	−5.14	5160	4940	54550.65	−3	5320	5040	54514.6	0.37
4980	5270	54492.44	−12.19	5160	4950	54552.77	2.25	5320	5050	54464.67	−22.28
4980	5280	54502.5	−6.23	5160	4960	54545.79	−2.92	5320	5060	54244.78	−339.26
4980	5290	54506	−4.87	5160	4970	54537.69	−5.76	5320	5070	54213.59	−878.98
4980	5300	54505.72	−6.98	5160	4980	54525.08	−17.12	5320	5080	54307.77	−429.98
4980	5310	54508.1	−8.5	5160	4990	54488.67	−71.32	5320	5090	54480.91	−29.66
4980	5320	54509.79	−7.55	5160	5000	54479.94	−150.78	5320	5100	54529.15	−0.94
4980	5330	54514.98	−3.26	5160	5010	54516.1	−26.8	5320	5110	54538.31	1.41
4980	5340	54513.8	−6.98	5160	5020	54514.4	−5	5320	5120	54542.12	2.48
4980	5350	54516.14	−5.69	5160	5030	54520.1	−0.6	5320	5130	54543.5	3.42
4980	5360	54516.25	−5.8	5160	5040	54524	0.8	5320	5140	54543.13	1.48
4980	5370	54515.05	−6.58	5160	5050	54523.9	0	5320	5150	54544.52	3.39
4980	5380	54514.93	−7.03	5160	5050	54523.9	0	5320	5160	54543.97	2.62
4980	5390	54513.88	−9.05	5160	5060	54523.7	0.5	5320	5170	54545.06	4.26
4980	5400	54516.29	−4.75	5160	5070	54523.3	0.4	5320	5180	54544.38	3.6
4980	5410	54513.91	−8	5160	5080	54522.2	0.5	5320	5190	54542.56	2.19
4980	5420	54517.11	−5.33	5160	5090	54521.1	0.5	5320	5200	54539.48	0.5
4980	5430	54516.69	−8.17	5160	5100	54520.3	0	5320	5210	54538.68	−1.07
4980	5440	54517.96	−6.19	5160	5110	54517.9	0	5320	5220	54542.33	1.25
4980	5450	54518.11	−5.71	5160	5120	54515.5	0	5320	5230	54546.46	2.23
4980	5460	54518.58	−4.73	5160	5130	54510.1	−1	5320	5240	54551.09	4.25
4980	5470	54516.09	−8.05	5160	5140	54505.1	−2	5320	5250	54556.15	4.66
4980	5480	54518.79	−6.51	5160	5150	54506.9	−2.4	5320	5260	54569.97	15.91
4980	5490	54517.82	−4.42	5160	5160	54510.6	−0.3	5320	5270	54578.98	95.44
4980	5500	54516.57	−5.33	5160	5170	54515.5	−0.9	5320	5280	53915.37	−226.58
4980	5510	54517.17	−4.55	5160	5180	54518.2	−0.6	5320	5290	54554.27	130.05
4980	5520	54519.35	−4.28	5160	5190	54519.7	0.8	5320	5300	54549.66	−14.16
5000	4850	54566.35	−4.82	5160	5200	54520.6	2.6	5320	5310	54562.03	5.17
5000	4860	54570.98	0.26	5160	5210	54521.3	1.1	5320	5320	54557.96	3.94
5000	4870	54573.2	2.19	5160	5220	54524.2	1.4	5320	5330	54557.38	5.85
5000	4880	54571.61	0.73	5160	5230	54525.7	0.8	5320	5340	54555.21	4.3
5000	4890	54565.63	−2.5	5160	5240	54526.7	0.4	5320	5350	54581.94	32.14
5000	4900	54588.32	13.25	5160	5250	54527	0.9	5320	5360	54549.51	0.42
5000	4910	54577.95	−1.96	5160	5260	54528.3	0.7	5320	5370	54550.99	2.37
5000	4920	54516.9	−33.42	5160	5270	54526.2	1.2	5320	5380	54555.7	5.32
5000	4930	54531.47	−20.73	5160	5280	54527.4	1	5320	5390	54553.89	4.35
5000	4940	54573.48	5.28	5160	5290	54525.42	−6.05	5320	5400	54493.93	−59.08
5000	4950	54543.22	−14.76	5160	5290	54526.8	0	5320	5410	54549.34	4.98
5000	4960	54537.75	−32.03	5160	5300	54524.27	−4.82	5320	5420	54549.23	2.69
5000	4970	54836.09	101.41	5160	5310	54527.73	−2.01	5320	5430	54548.13	0.53
5000	4990	54516	−22.8	5160	5320	54525.65	−4	5320	5440	54549.34	2.89
5000	5000	54530.5	−1.7	5160	5330	54526.34	−4.05	5320	5450	54563.4	16.26
5000	5010	54539.6	2.7	5160	5340	54525.54	−6	5320	5460	54553.4	5.08
5000	5020	54541.5	3.8	5160	5350	54526.54	−4.92	5320	5470	54550.86	3.62
5000	5030	54537.3	3.4	5160	5360	54528.33	−3.44	5320	5480	54546.22	−2.01
5000	5040	54528.8	1.6	5160	5370	54529.69	−3.83	5320	5490	54552.15	2.76
5000	5050	54515.6	1.2	5160	5380	54529.55	−3.58	5320	5500	54572.15	27.69
5000	5060	54483.2	−2.7	5160	5390	54527.94	−2.48	5320	5510	54552.54	6.14
5000	5070	54419.3	−11.9	5160	5400	54527.14	0.1	5320	5520	54545.14	−1.42
5000	5080	54258.4	−216.9	5160	5410	54528.95	−1.89	5320	5530	54549.08	2.26
5000	5090	54595.9	20.2	5160	5420	54533.46	3.07	5320	5540	54551.44	4.05
5000	5100	54846.8	97.1	5160	5430	54529.31	1.16	5320	5550	54547.54	1.3
5000	5110	54955.8	145.3	5160	5440	54524.06	3.46	5340	4850	54534.65	−25.08
5000	5120	54812.1	−9.3	5160	5450	54489.74	−35.78	5340	4860	54539.61	−19.05
5000	5130	54804.7	27.1	5160	5460	54898.8	291.67	5340	4870	54533.83	−20.98
5000	5140	54774.8	57.7	5160	5470	54561.57	−7.16	5340	4880	54533.82	−18.44
5000	5150	54691.7	36.4	5160	5480	54532.68	−2.76	5340	4890	54537.92	−16.55
5000	5160	54561.5	−26.8	5160	5490	54529.07	−3.35	5340	4900	54557.19	12.89
5000	5170	54517.9	−14.6	5160	5500	54528.54	−0.58	5340	4910	54537.9	−0.48
5000	5180	54497.6	−6.4	5160	5510	54529.53	−1.89	5340	4920	54520.08	−22.41
5000	5190	54490.6	−7.5	5160	5520	54532.76	0.89	5340	4930	54502.14	−14.94
5000	5200	54496.1	−0.9	5160	5530	54531.54	1.5	5340	4940	54494	−14.46
5000	5210	54502.1	21	5160	5540	54528.45	−0.83	5340	4950	54471.88	−18.83
5000	5220	54502	9.9	5160	5550	54526.91	−1.78	5340	4960	54379.59	−70.64
5000	5230	54495.4	−0.5	5180	4850	54545.62	−11.3	5340	4970	54174.2	−320.07
5000	5230	54509.4	5	5180	4860	54543.73	−8.19	5340	4980	54262.39	−3581.21
5000	5240	54489.29	−7.69	5180	4870	54527.03	−17.42	5340	4990	54218.42	−413.26
5000	5250	54502.76	−4.85	5180	4880	54517.52	−7.08	5340	5000	54524.17	59.73
5000	5260	54508.87	0.3	5180	4890	54456.81	−23.67	5340	5010	54470.33	−25.19
5000	5270	54511.36	−3.12	5180	4900	54489.1	−33.57	5340	5020	54503.45	−10.89

TABLE 1
STUDY AREA 41 – MAGNETOMETER DATA

Station	Line	Total	Gradient	Station	Line	Total	Gradient	Station	Line	Total	Gradient
5000	5280	54513.24	−3.16	5180	4910	54536.72	−6.98	5340	5030	54517.23	−6.21
5000	5290	54514.19	−3.75	5180	4920	54544.3	−7.6	5340	5040	54521.73	−6.66
5000	5300	54514.06	−6.17	5180	4930	54545.49	−6.98	5340	5050	54520.69	−5.33
5000	5310	54517.45	−1.33	5180	4940	54545.13	−7.14	5340	5060	54516.71	−6.46
5000	5320	54517.19	−3.33	5180	4950	54549.27	−0.83	5340	5070	54515.48	−7.71
5000	5330	54519.53	−2.55	5180	4960	54542.46	−5.75	5340	5080	54520.46	−7.76
5000	5340	54520.69	−3.85	5180	4970	54535.39	−9.58	5340	5090	54526.98	−8.32
5000	5350	54523.46	−1.91	5180	4980	54525.51	−15	5340	5100	54533.37	−8.07
5000	5360	54522.11	−3.03	5180	4990	54515.54	−27.08	5340	5110	54536.83	−8.82
5000	5370	54521.42	−3.07	5180	5000	54477.19	−123.98	5340	5120	54541.57	−13.69
5000	5380	54521.63	−2.64	5180	5010	54520.2	−27.8	5340	5130	54537.29	−12.6
5000	5390	54520.43	−3.87	5180	5020	54514	−6.7	5340	5140	54560.42	−26.12
5000	5400	54519.63	−4.01	5180	5030	54516.4	−1.9	5340	5150	54541.03	−18.6
5000	5410	54520.83	−2.55	5180	5040	54519.8	−0.1	5340	5160	54541.25	−6.48
5000	5420	54520.69	−0.92	5180	5050	54521.2	−0.2	5340	5170	54541.47	−4.42
5000	5430	54522.18	1.37	5180	5060	54521.5	0.7	5340	5180	54537.28	−6
5000	5440	54521.43	−1.05	5180	5070	54522.1	0.4	5340	5190	54528.17	−15.87
5000	5450	54519.79	−5.14	5180	5080	54522.3	0.7	5340	5200	54457.22	−71.12
5000	5460	54522.11	−2.62	5180	5090	54521.4	0.2	5340	5210	56353.38	−2502.5
5000	5470	54521.97	−2.39	5180	5100	54520.6	−0.7	5340	5220	54496.09	−71.55
5000	5480	54523.98	0.21	5180	5110	54519.8	−0.5	5340	5230	54545.23	−5.05
5000	5490	54523.19	−1.01	5180	5120	54521.2	−0.3	5340	5240	54546.66	−4.91
5000	5500	54522.45	−1.91	5180	5130	54521.9	0.8	5340	5250	54567.94	14.64
5000	5510	54524.26	−0.96	5180	5140	54520	0.8	5340	5260	54559.56	−1.14
5000	5520	54522.5	−2.26	5180	5150	54518.8	−0.1	5340	5270	54570.4	3.62
5020	4850	54565.67	−5.62	5180	5160	54519.2	0.3	5340	5280	54576.37	6.62
5020	4860	54573.38	−0.41	5180	5170	54520.6	0.2	5340	5290	54570.62	3.37
5020	4870	54567.98	−5.23	5180	5180	54522.7	0.6	5340	5300	54512.75	−57.08
5020	4880	54567.9	−3.91	5180	5190	54524.1	1.1	5340	5310	54565.31	4.85
5020	4890	54572.13	−2.78	5180	5200	54524.6	1.2	5340	5320	54559.33	−1.1
5020	4900	54548.8	−37.89	5180	5210	54525.2	1.1	5340	5330	54552.18	−5.83
5020	4910	54618.24	1.44	5180	5220	54525.8	1	5340	5340	54550.56	−5.35
5020	4920	54824.42	111.55	5180	5230	54525.8	0.5	5340	5350	54569.55	15.78
5020	4930	54782.91	68.46	5180	5240	54526.2	0.8	5340	5360	54549.65	−3.16
5020	4940	54594.8	−8.69	5180	5250	54527.1	0.5	5340	5370	54548.39	−3.51
5020	4950	54560.56	−7.58	5180	5260	54528.1	0.9	5340	5380	54547.18	−5.01
5020	4960	54549.19	−22.78	5180	5270	54527.4	1.1	5340	5390	54551.05	−1.51
5020	4970	54549.23	−25.53	5180	5280	54526.22	−5.89	5340	5400	54509.15	−48.76
5020	4980	54520.86	−96.96	5180	5290	54526.7	0.5	5340	5410	54547.03	−3.78
5020	4990	54530.8	−7.1	5180	5290	54527.75	−2.6	5340	5420	54547.6	−2.48
5020	5000	54528.1	−3.2	5180	5300	54526.41	−5.05	5340	5430	54547.99	−3.37
5020	5010	54533.9	−0.6	5180	5310	54527.64	−4.28	5340	5440	54547.32	−5.85
5020	5020	54535.5	2	5180	5320	54528.2	−4.26	5340	5450	54580.27	28.51
5020	5030	54533.9	3.3	5180	5330	54530.46	−1.73	5340	5460	54550.52	−3.14
5020	5040	54529.5	4.1	5180	5340	54527.72	−4.21	5340	5470	54560.12	4.44
5020	5050	54515.1	1.1	5180	5350	54526.99	−3.42	5340	5480	54551.43	−2.32
5020	5060	54486.7	−2.5	5180	5360	54525.25	−3	5340	5490	54549.34	−1.85
5020	5070	54459.1	−35.8	5180	5370	54523.42	−4.08	5340	5500	54498.54	−57.91
5020	5080	54536.1	60.1	5180	5380	54523.29	−4.64	5340	5510	54549.11	−1.55
5020	5090	54623.3	−0.3	5180	5390	54524.05	−5.26	5340	5520	54547.92	−2.91
5020	5100	54780.7	26.6	5180	5400	54525.94	−4.39	5340	5530	54546.3	−3.55
5020	5110	54743.8	18.8	5180	5410	54528.54	−3.35	5340	5540	54546.67	−2.26
5020	5120	54670.3	−41	5180	5420	54522.73	−7.48	5340	5550	54545.86	−3.67
5020	5130	54655.4	−1	5180	5430	54522.23	−6.8	5360	4850	54463.87	−100
5020	5140	54682.6	21.5	5180	5440	54520.97	−5.26	5360	4860	54444.23	−126.82
5020	5150	54739.8	93	5180	5450	54512.52	−13.32	5360	4870	54507.16	−235.32
5020	5160	54629.7	14.9	5180	5460	54517.88	−7.58	5360	4880	54475.23	−102.73
5020	5170	54524.5	−10.3	5180	5470	54517.4	−9.51	5360	4890	54588.31	−136.26
5020	5180	54505.4	−2.4	5180	5480	54520.85	−6.23	5360	4900	54591.97	−51.03
5020	5190	54508.8	4.8	5180	5490	54520.69	−7.05	5360	4910	54957.36	207.66
5020	5200	54520.7	9	5180	5500	54523.76	−4.46	5360	4920	54510.5	−80.46
5020	5210	54526.1	10	5180	5510	54523.49	−4.67	5360	4930	54501.79	−24.66
5020	5220	54522.6	4.1	5180	5520	54524.82	−4.12	5360	4940	54491.33	−71.71
5020	5230	54522.7	0	5180	5530	54525.07	−5	5360	4950	55296.75	729.21
5020	5240	54528.8	3.4	5180	5540	54525.65	−3.73	5360	4960	54367.82	−145.87
5020	5250	54534.6	7.9	5180	5550	54520.71	−8.46	5360	4970	54528.19	56.26
5020	5300	54516.22	−2	5200	4850	54549.48	−3.42	5360	4980	53930.67	−5665.55
5020	5310	54515.76	−1.75	5200	4860	54548.78	−2.75	5360	4990	53478.34	−765.96
5020	5320	54518.83	−2.01	5200	4870	54547.75	−2.53	5360	5000	54431.68	−53.07
5020	5330	54515.59	−6.21	5200	4880	54548.76	−1.28	5360	5010	54455.05	−40.76
5020	5340	54517.61	−4.76	5200	4890	54548.84	−1.12	5360	5020	54493.58	−20.42
5020	5350	54516.49	−6.08	5200	4900	54542.04	−8.62	5360	5030	54520.25	−40.75
5020	5360	54515.78	−6.12	5200	4910	54547.86	−2.33	5360	5040	54573.63	−46.1
5020	5370	54520	−4.41	5200	4920	54547.38	−1.85	5360	5050	54552.44	3.87
5020	5380	54523.25	−1.69	5200	4930	54545.27	−3.25	5360	5060	54523.01	−10.87
5020	5390	54517.45	−8.21	5200	4940	54544.69	−4.07	5360	5070	54874.48	302.1
5020	5400	54520.07	−4.41	5200	4950	54564.08	18.63	5360	5080	54563.3	4.67
5020	5410	54523.1	−2.62	5200	4960	54540.93	−3.96	5360	5090	54523.27	−29.62
5020	5420	54522.33	−5.46	5200	4970	54538.57	−3.23	5360	5100	54528.15	−49.19
5020	5430	54524.21	−2.07	5200	4980	54528.83	−9.35	5360	5110	54535.17	−7.16
5020	5440	54520.03	−5.08	5200	4990	54510.63	−36.17	5360	5120	54527.43	−28.32
5020	5450	54518.95	−6.53	5200	5000	54538.83	−88.83	5360	5130	54537.37	−10.33
5020	5460	54521.34	−3.33	5200	5010	54520.3	−18	5360	5140	54542.2	−6.87
5020	5470	54521.03	−3.96	5200	5020	54515.3	−4.2	5360	5150	54589.05	30.17
5020	5480	54520.35	−5.8	5200	5030	54516.2	−0.7	5360	5160	54549.03	−13.35
5020	5490	54522.51	−2.71	5200	5040	54521.5	0.4	5360	5170	54544.84	0.87
5020	5500	54525.41	−0.5	5200	5050	54522.1	0.1	5360	5180	54540.5	−2.42
5020	5510	54520.09	−5.14	5200	5060	54523.2	0.4	5360	5190	54529.35	−8.3
5020	5520	54525.55	1.51	5200	5070	54523.6	0.1	5360	5200	54469.6	−75.44
5040	4850	54559.99	−4.08	5200	5080	54523.6	0	5360	5210	54510.21	−21.35
5040	4860	54553.62	−9.08	5200	5090	54524	0.3	5360	5220	54526.21	−9.66
5040	4870	54560.94	−1.66	5200	5100	54523.3	0.4	5360	5230	54538.11	−2.64
5040	4880	54563.02	−2	5200	5110	54522.8	−0.1	5360	5240	54545.05	−5.91
5040	4890	54560.74	−2.78	5200	5120	54524.1	−0.4	5360	5250	54675.09	126.91
5040	4900	54558.72	0.33	5200	5130	54522.9	−2.6	5360	5260	54547.52	−12.35
5040	4910	54524.3	−9.92	5200	5140	54523.2	0	5360	5270	54550.35	−0.1
5040	4920	54441.54	−53.41	5200	5150	54523.6	0.1	5360	5280	54554.46	−1.23
5040	4930	54485.45	−22.98	5200	5160	54524.3	1.1	5360	5290	54558.52	3.01

TABLE 1
STUDY AREA 41 – MAGNETOMETER DATA

Station	Line	Total	Gradient	Station	Line	Total	Gradient	Station	Line	Total	Gradient
5040	4940	54531.54	−6.17	5200	5170	54524.1	0.4	5360	5300	54518.88	−39.03
5040	4950	54536.01	−10.5	5200	5180	54524.8	0.4	5360	5310	54558.74	6.98
5040	4960	54539.77	−5.05	5200	5190	54524.5	0.7	5360	5320	54558.06	3.6
5040	4970	54526.14	−12.14	5200	5200	54524.8	0.6	5360	5330	54555.24	1.17
5040	4980	54492.9	−67.64	5200	5210	54524.7	0.6	5360	5340	54524.76	−50.01
5040	4990	54583.8	−21.8	5200	5220	54524.8	0.6	5360	5350	54569.99	21.32
5040	5000	54539	2.7	5200	5230	54526.6	0.4	5360	5360	54550.23	1.53
5040	5010	54534.7	−0.8	5200	5240	54528	1.3	5360	5370	54551.3	3.37
5040	5020	54536.1	−5.5	5200	5240	54536.33	0.75	5360	5380	54548.89	−0.51
5040	5030	54546.5	−8.6	5200	5250	54536.81	1.03	5360	5390	54553.2	3.78
5040	5040	54555.6	−3.2	5200	5260	54536.73	0.87	5360	5400	54523.29	−28.6
5040	5050	54507.4	−7.6	5200	5270	54537.33	2.01	5360	5410	54548.74	1.98
5040	5060	54479.5	−7.8	5200	5280	54536.79	1.8	5360	5420	54549.95	2.19
5040	5070	54454.4	−27.3	5200	5290	54536.63	1.33	5360	5430	54549.93	1.91
5040	5080	54428	−68	5200	5300	54537.35	1.96	5360	5440	54550.32	1.51
5040	5090	54442.9	−89.1	5200	5310	54535.71	3.19	5360	5450	54563.42	16.71
5040	5100	54456.2	−117.8	5200	5320	54537.16	0.35	5360	5460	54544.12	0.67
5040	5110	54573.1	8.7	5200	5330	54537.7	1.26	5360	5470	54548.05	2.44
5040	5120	54550.3	−36	5200	5340	54533.4	−3.53	5360	5480	54548.48	0.96
5040	5130	54593.6	29.6	5200	5350	54535.55	−1.78	5360	5490	54550.86	2.62
5040	5140	54569.2	22.6	5200	5360	54535.43	−0.16	5360	5500	54583.93	35.33
5040	5150	54500.3	−58.1	5200	5370	54535.55	0.67	5360	5510	54544.03	−3.64
5040	5160	54477.1	−40	5200	5380	54534.22	0.92	5360	5520	54550.19	2.16
5040	5170	54483.8	−14.1	5200	5390	54535.36	1.41	5360	5530	54552.56	2.5
5040	5180	54484.4	−5.9	5200	5400	54535.45	−0.44	5360	5540	54550.67	3.75
5040	5190	54467.3	−4.3	5200	5410	54539.05	−0.8	5360	5550	54545.69	1.66
5040	5200	54537.8	3	5200	5420	54554.56	3.8	5380	4850	54500.52	−22.98
5040	5210	54639.5	72.1	5200	5430	54542.6	1.69	5380	4860	54523.55	−11.78
5040	5220	54569.5	1.5	5200	5440	54535.55	0.51	5380	4870	54526.74	−10.37
5040	5230	54534.6	−4.2	5200	5450	54533.77	−0.1	5380	4880	54529.13	−6.03
5040	5240	54528.2	−3.2	5200	5460	54536.5	2.35	5380	4890	54521.73	−11.25
5040	5250	54528.2	−2.6	5200	5470	54536	1.66	5380	4900	54505.1	−25.03
5040	5300	54514.17	−4.64	5200	5480	54536.51	2	5380	4910	54510.85	−14.44
5040	5310	54516.52	−4.3	5200	5490	54536.45	2.07	5380	4920	54506.82	−8.3
5040	5320	54519.13	−2.96	5200	5500	54535.73	0.67	5380	4930	54379.67	−123.05
5040	5330	54518.17	−3.51	5200	5510	54537.6	1.82	5380	4940	54472.45	−23.55
5040	5340	54519.07	−3.66	5200	5520	54538.09	2.17	5380	4950	54438.44	−33.19
5040	5350	54519.08	−3.17	5200	5530	54537.3	1.96	5380	4960	54502.19	126
5040	5360	54517.57	−4.5	5200	5540	54536.1	2.23	5380	4970	53863.88	−328.94
5040	5370	54519.71	−3.21	5200	5550	54535.54	1.66	5380	4980	54145.03	−69.78
5040	5380	54518.51	−3.96	5220	4850	54548.26	−8.8	5380	4990	54352.44	−34.64
5040	5390	54517.9	−4.39	5220	4860	54549.46	−6.71	5380	5000	54344.93	−33.17
5040	5400	54520.6	−2.21	5220	4870	54551.67	−4.78	5380	5010	54442.58	−29.75
5040	5410	54520.77	−4.6	5220	4880	54552.9	−4.6	5380	5020	54463.41	−39.62
5040	5420	54518.92	−6.89	5220	4890	54552.49	−3.37	5380	5030	54520.47	−1.25
5040	5430	54519.52	−4.87	5220	4900	54489.16	−64.89	5380	5040	54478.44	−40.82
5040	5440	54520.37	−3.35	5220	4910	54546.5	−4.1	5380	5050	54538.59	14.37
5040	5450	54520.74	−2.51	5220	4920	54545.36	−6.64	5380	5060	54520.87	−17.01
5040	5460	54520.09	−4.12	5220	4930	54543.15	−8.39	5380	5070	54522.7	−19.16
5040	5470	54522.36	−1.96	5220	4940	54542.19	−7.23	5380	5080	54527.96	−14.14
5040	5480	54523.73	−1.5	5220	4950	54560.61	13.01	5380	5090	54531.2	−13.8
5040	5490	54522.22	−4.53	5220	4960	54541.17	−7.03	5380	5100	54566.94	20.01
5040	5500	54524.22	−3.14	5220	4970	54536.4	−8.42	5380	5110	54534.48	−11.96
5040	5510	54523.9	−2.23	5220	4980	54530	−8.21	5380	5120	54535.37	−11.28
5040	5520	54523.2	−3.85	5220	4990	54508.79	−29.05	5380	5130	54559.08	−4.75
5060	4850	54558.38	−3.76	5220	5000	54518.62	−79.55	5380	5140	54694.22	121.83
5060	4860	54552.76	−9.71	5220	5010	54524.9	−17.9	5380	5150	54592.06	33.44
5060	4870	54558.13	−3.71	5220	5020	54514.2	−6.6	5380	5160	54532.13	−35.28
5060	4880	54557.02	−5.16	5220	5030	54518	−1.5	5380	5170	54517.52	−33.89
5060	4890	54555.66	−3.94	5220	5040	54521.6	0	5380	5180	54525.84	−22.16
5060	4900	54543.45	−11.16	5220	5050	54523.3	0.2	5380	5190	54519.19	−22.6
5060	4910	54503.41	−18.5	5220	5060	54525.2	0.8	5380	5200	54568.03	6.33
5060	4920	54514.28	21.76	5220	5070	54525.5	0.8	5380	5210	54899.83	240.92
5060	4930	54461.58	−143.73	5220	5080	54524.8	0.5	5380	5220	54626.43	−1.17
5060	4940	54543.78	−0.98	5220	5090	54525.1	0.5	5380	5230	54527.42	−25.37
5060	4950	54550.5	3.44	5220	5100	54525.4	0.6	5380	5240	54522.22	−30.76
5060	4960	54540.12	−5.07	5220	5110	54525.1	0.9	5380	5250	54546.49	−2.58
5060	4970	54536.47	−8.12	5220	5120	54523.4	−0.1	5380	5260	54533.4	−16.64
5060	4980	54530.73	−19.03	5220	5130	54524.6	0.5	5380	5270	54537.03	−13.92
5060	4990	54580.34	−51.98	5220	5140	54524.2	0.5	5380	5280	54537.7	−15.42
5060	5000	55037.42	294.8	5220	5150	54523.2	0.1	5380	5290	54539.02	−16.64
5060	5000	54597.9	−2.6	5220	5160	54523.3	0.6	5380	5300	54504.8	−58.91
5060	5010	54527.1	−6.9	5220	5170	54522.8	1	5380	5310	54542.53	−23.01
5060	5020	54535.3	−1.1	5220	5180	54521.7	−0.1	5380	5320	54547.38	−20.16
5060	5030	54584.7	18.7	5220	5190	54522	1.4	5380	5330	54548.77	−16.53
5060	5040	54598.6	79.6	5220	5200	54522.2	0.4	5380	5340	54542.15	−22.1
5060	5050	54383.5	−159.4	5220	5210	54523	0.6	5380	5350	54554.27	−0.94
5060	5060	54428.8	−37.5	5220	5220	54522.9	0.5	5380	5360	54537.17	−14.78
5060	5070	54487	2.1	5220	5230	54524.3	0.8	5380	5370	54534.68	−17.84
5060	5080	54509.9	−6.4	5220	5240	54539.14	−2.96	5380	5380	54534.28	−18.41
5060	5090	54558.2	−9.9	5220	5240	54525.3	0.5	5380	5390	54533.97	−17.82
5060	5100	54536.4	28.9	5220	5250	54542.37	−1.1	5380	5400	54512.27	−35.66
5060	5110	54382.2	−78.1	5220	5260	54541.21	−1.51	5380	5410	54536.5	−12.41
5060	5120	54424.2	−13	5220	5270	54539.97	−3.12	5380	5420	54537.94	−13.19
5060	5130	54483.3	7.7	5220	5280	54539.78	−2.55	5380	5430	54538.52	−13.55
5060	5140	54576.1	92.5	5220	5290	54539.66	−2.5	5380	5440	54537.55	−17.17
5060	5150	54513.3	3.7	5220	5300	54540.29	−2.39	5380	5450	54547.57	−4.37
5060	5160	54506.8	3.5	5220	5310	54541.47	−1.75	5380	5460	54534.66	−16.66
5060	5170	54501.4	−2.7	5220	5320	54541.08	−1.57	5380	5470	54535.95	−14.75
5060	5180	54497	3.6	5220	5330	54539.16	−2.23	5380	5480	54535.47	−14.69
5060	5190	54454.2	−5.4	5220	5340	54536.46	−3	5380	5490	54538.11	−11.25
5060	5200	54416.8	−76.9	5220	5350	54537.88	−2.05	5380	5500	54507.93	−46.32
5060	5210	54564.6	31.7	5220	5360	54537.98	−2.25	5380	5510	54529.87	−19.92
5060	5220	54558.9	5.3	5220	5370	54537.36	−1.07	5380	5520	54531.1	−17.69
5060	5230	54537.9	3.5	5220	5380	54535.95	−1.76	5380	5530	54530.81	−16.53
5060	5240	54533	3.3	5220	5390	54534.3	−3.96	5380	5540	54531.24	−16.33
5060	5250	54531.5	2	5220	5400	54543.49	3.26	5380	5550	54517.06	34.67

TABLE 2
STUDY AREA 41 – TERRAIN CONDUCTIVITY DATA

Station	Line	Quad	In-phase	Station	Line	Quad	In-phase	Station	Line	Quad	In-phase
4990	4880	-0.396	2.013	5440	5060	5.188	-0.009	5370	5260	5.92	-0.244
5000	4880	4.09	1.853	5450	5060	5.158	-0.08	5380	5260	6.012	-0.282
5010	4880	4.792	4.588	5460	5060	4.73	-0.093	5390	5260	6.196	-0.332
5020	4880	3.112	1.346	5470	5060	4.852	-0.104	5400	5260	5.616	-0.26
5030	4880	3.51	1.304	5480	5060	5.004	-0.012	5410	5260	6.104	0.17
5040	4880	4.09	1.528	5490	5060	5.066	0.003	5420	5260	6.134	-0.279
5050	4880	4.212	2.544	5500	5060	5.126	-0.11	5430	5260	6.134	-0.295
5060	4880	3.448	0.376	5510	5060	4.882	-0.068	5440	5260	6.256	-0.328
5070	4880	3.57	0.227	5520	5060	4.73	-0.038	5450	5260	6.47	-0.345
5080	4880	3.51	0.192	5530	5060	4.608	0.134	5460	5260	6.196	-0.323
5090	4880	3.082	0.117	4850	5080	5.372	-0.319	5470	5260	6.53	-0.367
5100	4880	3.022	1.096	4860	5080	5.798	-0.277	5480	5260	6.896	-0.398
5110	4880	0.062	2.067	4870	5080	5.738	-0.009	5490	5260	7.171	-0.417
5120	4880	4.364	0.139	4880	5080	6.226	-0.233	5500	5260	6.226	-0.349
5130	4880	3.448	0.224	4890	5080	6.378	-0.189	5510	5260	6.318	-0.435
5140	4880	3.754	0.295	4900	5080	6.684	-0.191	5520	5260	6.408	-0.356
5150	4880	3.784	1.982	4910	5080	6.408	-0.194	5530	5260	6.47	-0.509
5160	4880	2.656	0.602	4920	5080	6.134	-0.244	5540	5260	6.562	-0.628
5170	4880	3.296	2.642	4930	5080	6.988	-0.735	5550	5260	6.226	-0.67
5180	4880	4.394	0.279	4940	5080	9.337	-0.521	4850	5280	4.578	-0.224
5190	4880	-15.748	0.986	4950	5080	10.01	-0.068	4860	5280	4.608	-0.224
5200	4880	4.914	0.523	4960	5080	11.566	-0.378	4870	5280	4.608	-0.181
5210	4880	-1.16	10.715	4970	5080	6.47	-0.209	4880	5280	4.578	-0.161
5220	4880	-9.98	0.402	4980	5080	6.5	-0.183	4890	5280	4.578	-0.148
5230	4880	-0.274	-0.224	4990	5080	6.928	-0.113	4900	5280	4.882	0.09
5240	4880	6.5	0.444	5000	5080	4.914	-0.519	4910	5280	4.792	-0.154
5250	4880	5.372	0.536	5270	5080	6.164	-0.104	4920	5280	4.67	-0.266
5260	4880	4.302	0.824	5280	5080	5.766	-0.123	4930	5280	4.792	-0.253
5270	4880	1.708	-1.543	5290	5080	5.798	0.029	4940	5280	4.608	-0.207
5280	4880	6.866	3.897	5300	5080	6.408	-0.137	4950	5280	4.486	-0.249
5290	4880	3.968	0.791	5310	5080	6.348	-0.073	4960	5280	4.638	-0.214
5300	4880	3.54	0.924	5320	5080	6.378	-0.099	4970	5280	4.638	-0.154
5310	4880	3.754	0.665	5330	5080	7.232	0.602	4980	5280	4.608	-0.178
5320	4880	3.936	0.115	5340	5080	7.324	0.031	4990	5280	5.158	-0.24
5330	4880	3.57	0.354	5350	5080	7.142	-0.053	5000	5280	1.19	-0.626
5340	4880	3.48	0.249	5360	5080	7.142	-0.071	5060	5280	4.608	-0.236
5350	4880	3.448	0.134	5370	5080	6.958	-0.108	5070	5280	4.394	-0.224
4850	4900	4.15	-0.292	5380	5080	6.652	-0.038	5080	5280	3.51	-8.918
4860	4900	4.212	-0.271	5390	5080	6.53	-0.135	5090	5280	5.494	21.676
4870	4900	4.426	-0.378	5400	5080	6.164	-0.042	5100	5280	3.662	-9.378
4880	4900	4.12	-0.361	5410	5080	6.378	-0.084	5110	5280	5.798	33.919
4890	4900	4.334	-0.317	5420	5080	6.012	0.051	5120	5280	3.936	-0.112
4900	4900	4.12	-0.22	5430	5080	5.34	0.124	5130	5280	4.67	-0.128
4910	4900	3.968	-0.323	5440	5080	6.378	0.001	5140	5280	4.456	-0.13
4920	4900	3.936	-0.314	5450	5080	6.164	-0.033	5150	5280	4.426	-0.108
4930	4900	3.936	-0.339	5460	5080	6.164	-0.027	5160	5280	4.578	-0.04
4940	4900	3.876	-0.226	5470	5080	5.95	-0.137	5170	5280	4.394	-0.165
4950	4900	3.876	-0.2	5480	5080	6.042	-0.126	5180	5280	4.792	-0.17
4960	4900	4.028	-0.341	5490	5080	6.134	-0.104	5190	5280	4.73	0.191
4970	4900	4.578	-0.459	5500	5080	6.042	-0.093	5200	5280	4.73	-0.137
4980	4900	9.98	-0.602	5510	5080	5.768	-0.134	5210	5280	5.096	-0.255
4990	4900	1.098	0.459	5520	5080	5.462	-0.17	5220	5280	4.548	-0.253
5000	4900	5.828	2.017	4850	5100	5.28	-0.262	5230	5280	4.852	-0.288
5010	4900	7.996	8.062	4860	5100	5.34	-0.282	5240	5280	5.25	-0.121
5020	4900	5.432	2.967	4870	5100	5.28	-0.312	5250	5280	5.066	-0.253
5030	4900	4.12	0.63	4880	5100	5.86	-0.321	5260	5280	4.882	-0.205
5040	4900	3.632	0.288	4890	5100	5.982	-0.271	5270	5280	4.73	-0.255
5050	4900	3.326	0.668	4900	5100	5.828	-0.33	5280	5280	4.7	-0.284
5060	4900	0.824	-1.396	4910	5100	6.408	-0.314	5290	5280	4.974	-0.305
5070	4900	3.814	0.231	4920	5100	6.378	-0.255	5300	5280	5.066	-0.27
5080	4900	3.876	0.455	4930	5100	6.622	-0.321	5310	5280	5.25	-0.35
5090	4900	3.692	0.213	4940	5100	12.39	1.903	5320	5280	5.554	-0.259
5100	4900	3.876	0.15	4950	5100	8.484	0.264	5330	5280	5.89	-0.338
5110	4900	3.632	0.396	4960	5100	7.366	-0.251	5340	5280	5.402	-0.246
5120	4900	3.602	0.167	4970	5100	6.408	-0.24	5350	5280	4.852	-0.04
5130	4900	3.418	0.312	4980	5100	6.562	-0.268	5360	5280	4.822	0.031
5140	4900	3.724	0.156	4990	5100	7.812	-0.259	5370	5280	5.066	-0.128
5150	4900	3.662	0.165	5000	5100	3.968	-0.529	5380	5280	5.706	-0.282
5160	4900	3.632	0.157	5300	5100	6.836	-0.308	5390	5280	5.92	-0.316
5170	4900	3.602	0.275	5310	5100	7.202	0.152	5400	5280	5.584	-0.22
5180	4900	3.936	0.378	5320	5100	6.866	0.038	5410	5280	5.816	-0.358
5190	4900	4.638	0.222	5330	5100	6.774	-0.055	5420	5280	5.494	-0.306
5200	4900	2.686	0.236	5340	5100	7.782	-0.268	5430	5280	5.554	-0.367
5210	4900	5.524	0.323	5350	5100	7.476	-0.183	5440	5280	5.676	-0.319
5220	4900	7.72	0.402	5360	5100	7.05	-0.203	5450	5280	5.766	-0.308
5230	4900	-1.19	0.012	5370	5100	6.806	-0.172	5460	5280	6.012	-0.185
5240	4900	5.218	0.786	5380	5100	6.744	-0.071	5470	5280	6.196	-0.251
5250	4900	4.792	0.83	5390	5100	6.652	-0.213	5480	5280	6.348	-0.297
5260	4900	-1.618	-1.381	5400	5100	5.766	-0.198	5490	5280	6.622	-0.356
5270	4900	-10.712	-10.526	5410	5100	6.866	-0.196	5500	5280	6.774	-0.358
5280	4900	-1.312	-3.792	5420	5100	6.44	-0.04	5510	5280	6.5	-0.292
5290	4900	4.426	0.532	5430	5100	6.684	-0.17	5520	5280	5.86	-0.051
5300	4900	3.57	0.332	5440	5100	6.744	-0.181	5530	5280	5.86	-0.062
5310	4900	3.48	0.514	5450	5100	6.592	-0.165	5540	5280	5.982	-0.273
5320	4900	3.662	0.4	5460	5100	6.684	0.091	5550	5280	6.378	-0.398
5330	4900	3.54	0.334	5470	5100	6.562	-0.148	4850	5300	4.608	-0.145
5340	4900	3.48	0.385	5480	5100	6.256	-0.106	4860	5300	4.578	-0.181
5350	4900	3.632	0.218	5490	5100	6.5	-0.097	4870	5300	4.73	-0.141
4850	4920	4.548	-0.24	5500	5100	6.562	-0.023	4880	5300	4.638	-0.123
4860	4920	4.334	-0.284	5510	5100	6.408	-0.15	4890	5300	4.638	-0.134
4870	4920	4.212	-0.36	5520	5100	6.286	-0.033	4900	5300	4.578	-0.202
4880	4920	4.302	-0.33	4850	5120	4.516	-0.29	4910	5300	4.426	-0.2
4890	4920	4.272	-0.277	4860	5120	4.486	-0.152	4920	5300	4.67	-0.18
4900	4920	3.906	-0.064	4870	5120	4.7	-0.189	4930	5300	4.334	-0.303
4910	4920	3.906	-0.128	4880	5120	4.974	-0.214	4940	5300	4.272	-0.316
4920	4920	3.356	-0.466	4890	5120	5.218	-0.187	4950	5300	4.456	-0.341
4930	4920	4.18	-0.24	4900	5120	5.25	-0.148	4960	5300	4.242	-0.128

TABLE 2
STUDY AREA 41 – TERRAIN CONDUCTIVITY DATA

Station	Line	Quad	In-phase	Station	Line	Quad	In-phase	Station	Line	Quad	In-phase
4940	4920	3.936	−0.275	4910	5120	5.676	−0.181	4970	5300	3.662	0.222
4950	4920	3.662	−0.145	4920	5120	5.89	−0.218	4980	5300	4.364	−0.279
4960	4920	4.18	−0.018	4930	5120	6.042	−0.202	4990	5300	4.792	0.003
4970	4920	5.066	−0.211	4940	5120	6.5	−0.161	5000	5300	3.418	−0.349
4990	4920	10.264	0.409	4950	5120	6.744	−0.211	5000	5300	3.632	−0.531
5000	4920	3.692	0.2	4960	5120	6.622	−0.236	5010	5300	4.456	−0.172
5010	4920	3.418	0.571	4970	5120	6.714	−0.271	5020	5300	4.272	−0.205
5020	4920	4.242	0.56	4980	5120	6.5	−0.288	5030	5300	4.15	−0.268
5030	4920	3.876	0.181	4990	5120	7.72	−0.194	5040	5300	3.998	−0.369
5040	4920	3.724	0.102	5000	5120	3.906	−0.121	5050	5300	3.998	−0.281
5050	4920	4.028	0.093	5300	5120	7.11	−0.321	5060	5300	4.15	−0.157
5060	4920	4.212	0.108	5310	5120	7.324	−0.194	5070	5300	4.548	−0.231
5070	4920	4.028	0.047	5320	5120	7.202	−0.308	5080	5300	4.242	−0.207
5080	4920	3.602	0.31	5330	5120	7.11	−0.233	5090	5300	4.426	−0.227
5090	4920	3.876	0.17	5340	5120	6.836	−0.319	5100	5300	4.028	−0.185
5100	4920	3.57	0.076	5350	5120	6.866	−0.297	5110	5300	3.998	−0.259
5110	4920	3.022	0.271	5360	5120	7.294	−0.345	5120	5300	4.302	−0.218
5120	4920	3.204	0.352	5370	5120	6.684	−0.33	5130	5300	4.608	−0.139
5130	4920	3.418	0.292	5380	5120	6.714	−0.271	5140	5300	4.76	−0.301
5140	4920	3.388	0.367	5390	5120	7.11	−0.216	5150	5300	4.486	−0.249
5150	4920	3.052	0.595	5400	5120	7.232	−0.341	5160	5300	4.548	−0.251
5160	4920	3.724	0.652	5410	5120	7.354	−0.286	5170	5300	4.548	−0.264
5170	4920	3.57	0.69	5420	5120	7.69	−0.297	5180	5300	4.944	−0.299
5180	4920	3.112	0.738	5430	5120	7.05	−0.305	5190	5300	4.974	−0.338
5190	4920	−2.198	−3.024	5440	5120	7.568	−0.213	5200	5300	5.218	−0.391
5200	4920	−4.974	−4.159	5450	5120	7.598	−0.264	5210	5300	5.402	−0.466
5210	4920	3.724	0.562	5460	5120	7.142	−0.224	5220	5300	4.974	−0.235
5220	4920	2.808	0.705	5470	5120	6.714	−0.299	5230	5300	4.456	−0.141
5230	4920	1.618	−1.052	5480	5120	6.806	−0.251	5240	5300	4.364	−0.082
5240	4920	3.296	0.058	5490	5120	6.774	−0.288	5250	5300	4.73	−0.108
5250	4920	3.814	0.663	5500	5120	6.562	−0.268	5260	5300	4.638	−0.384
5260	4920	3.632	1.379	5510	5120	6.744	−0.268	5270	5300	4.914	−0.426
5270	4920	4.028	0.632	5520	5120	6.5	−0.172	5280	5300	5.126	−0.44
5280	4920	3.602	0.121	5530	5120	6.318	−0.104	5290	5300	4.944	−0.464
5290	4920	4.09	0.633	5540	5120	6.226	−0.259	5300	5300	5.218	−0.424
5300	4920	4.15	0.442	5550	5120	5.86	−0.2	5310	5300	5.432	−0.367
5310	4920	4.058	0.817	4850	5140	4.67	−0.189	5320	5300	5.402	−0.461
5320	4920	3.814	0.501	4860	5140	4.486	−0.293	5330	5300	5.462	−0.435
5330	4920	3.54	0.235	4870	5140	4.73	−0.382	5340	5300	5.554	−0.393
5340	4920	3.448	0.349	4880	5140	4.76	−0.356	5350	5300	5.798	−0.393
5350	4920	3.448	0.124	4890	5140	4.394	−0.275	5360	5300	5.738	−0.463
4850	4940	4.456	−0.181	4900	5140	5.188	−0.323	5370	5300	5.768	−0.492
4860	4940	4.212	−0.209	4910	5140	5.738	−0.218	5380	5300	4.578	−0.266
4870	4940	4.242	−0.228	4920	5140	5.982	−0.213	5390	5300	4.394	−0.029
4880	4940	4.058	−0.286	4930	5140	5.798	−0.295	5400	5300	4.914	−0.352
4890	4940	4.09	−0.154	4940	5140	6.378	−0.258	5410	5300	5.462	−0.446
4900	4940	3.296	−0.444	4950	5140	6.47	−0.345	5420	5300	5.096	−0.402
4910	4940	3.662	−0.102	4960	5140	6.47	−0.327	5430	5300	5.616	−0.497
4920	4940	1.862	−0.804	4970	5140	6.196	−0.38	5440	5300	5.738	−0.35
4930	4940	3.57	−0.382	4980	5140	5.95	−0.29	5450	5300	6.378	−0.277
4940	4940	3.968	−0.209	4990	5140	6.47	−0.317	5460	5300	6.256	−0.328
4950	4940	3.968	−0.264	5000	5140	3.846	−0.189	5470	5300	6.806	−0.341
4960	4940	4.212	−0.244	5300	5140	6.866	−0.194	5480	5300	6.866	−0.341
4970	4940	5.158	−0.286	5310	5140	7.294	−0.192	5490	5300	6.44	−0.2
4980	4940	0.976	0.159	5320	5140	6.774	−0.211	5500	5300	6.592	−0.194
4990	4940	5.218	0.354	5330	5140	7.416	−0.282	5510	5300	6.47	−0.233
5000	4940	−2.746	−7.551	5340	5140	7.05	−0.227	5520	5300	5.95	−0.132
5010	4940	13.062	17.126	5350	5140	7.08	−0.227	5530	5300	5.92	−0.154
5020	4940	5.036	0.196	5360	5140	7.416	−0.297	5540	5300	5.096	−0.115
5030	4940	4.334	0.038	5370	5140	6.684	−0.306	5550	5300	4.73	−0.226
5040	4940	4.426	0.068	5380	5140	6.988	−0.259	4850	5320	4.608	−0.174
5050	4940	4.302	0.181	5390	5140	6.256	0.203	4860	5320	4.578	−0.255
5060	4940	4.334	0.113	5400	5140	7.171	−0.293	4870	5320	4.638	−0.277
5070	4940	3.906	0.068	5410	5140	7.538	−0.273	4880	5320	4.638	−0.255
5080	4940	3.936	0.251	5420	5140	8.148	−0.238	4890	5320	4.486	−0.303
5090	4940	3.998	0.248	5430	5140	8.178	−0.253	4900	5320	4.456	−0.11
5100	4940	3.692	0.238	5440	5140	8.88	−0.29	4910	5320	4.486	−0.213
5110	4940	3.784	0.205	5450	5140	7.782	−0.33	4920	5320	4.212	−0.147
5120	4940	3.51	0.323	5460	5140	7.598	−0.266	4930	5320	2.656	−0.143
5130	4940	3.54	0.336	5470	5140	7.171	−0.259	4940	5320	1.434	−1.344
5140	4940	4.578	0.867	5480	5140	6.348	0.084	4950	5320	4.334	−0.108
5150	4940	3.326	1.267	5490	5140	6.806	−0.257	4960	5320	3.448	0.068
5160	4940	1.862	1.944	5500	5140	6.348	−0.191	4970	5320	2.96	0.112
5170	4940	3.632	0.409	5510	5140	6.134	−0.236	4980	5320	4.212	0.073
5180	4940	3.692	1.477	5520	5140	5.89	−0.214	4990	5320	3.448	−0.051
5190	4940	5.31	1.315	5530	5140	5.31	−0.169	5000	5320	5.524	−0.224
5200	4940	1.434	0.35	5540	5140	5.372	−0.174	5010	5320	4.09	−0.231
5210	4940	3.754	1.591	5550	5140	5.096	−0.222	5020	5320	4.12	−0.181
5220	4940	2.41	1.186	4850	5160	4.67	−0.191	5030	5320	4.18	−0.167
5230	4940	3.48	1.609	4860	5160	3.906	−0.053	5040	5320	4.12	−0.235
5240	4940	3.296	1.317	4870	5160	4.792	−0.214	5050	5320	4.212	−0.203
5250	4940	3.968	0.997	4880	5160	4.882	−0.6	5060	5320	5.34	−0.477
5260	4940	4.73	0.624	4890	5160	3.234	−0.369	5070	5320	6.652	−3.888
5270	4940	4.058	1.809	4900	5160	4.486	−4.36	5080	5320	6.226	0.588
5280	4940	4.364	0.303	4910	5160	6.012	−0.022	5090	5320	4.272	−0.222
5290	4940	−6.042	−10.583	4920	5160	5.462	−0.238	5100	5320	4.364	−0.275
5300	4940	3.234	0.336	4930	5160	5.34	−0.198	5110	5320	4.426	−0.13
5310	4940	4.028	0.068	4940	5160	5.798	−0.137	5120	5320	4.364	−0.292
5320	4940	3.814	0.148	4950	5160	5.738	−0.229	5130	5320	4.548	−0.549
5330	4940	3.754	0.17	4960	5160	5.432	−0.209	5140	5320	4.456	−0.248
5340	4940	3.418	0.486	4970	5160	5.432	−0.233	5150	5320	4.548	−0.354
5350	4940	3.602	0.26	4980	5160	5.462	−0.233	5160	5320	4.792	−0.295
4850	4960	3.876	−0.123	4990	5160	6.44	−0.224	5170	5320	4.67	−0.323
4860	4960	4.028	−0.139	5000	5160	3.388	−0.211	5180	5320	4.7	−0.314
4870	4960	4.028	−0.209	5290	5160	7.264	0.137	5190	5320	4.67	−0.319
4880	4960	4.15	−0.249	5300	5160	6.866	−0.185	5200	5320	4.426	−0.264
4890	4960	3.692	−0.161	5310	5160	6.47	−0.286	5210	5320	4.364	−0.371

TABLE 2
STUDY AREA 41 – TERRAIN CONDUCTIVITY DATA

Station	Line	Quad	In-phase	Station	Line	Quad	In-phase	Station	Line	Quad	In-phase
4900	4960	3.662	0.135	5320	5160	6.774	−0.316	5220	5320	4.822	−0.327
4910	4960	3.052	−1.896	5330	5160	6.316	−0.264	5230	5320	4.852	−0.341
4920	4960	3.144	0.244	5340	5160	6.47	−0.255	5240	5320	4.914	−0.435
4930	4960	3.724	0.407	5350	5160	6.592	−0.218	5250	5320	4.914	−0.463
4940	4960	3.876	−0.095	5360	5160	6.806	−0.295	5260	5320	5.036	−0.446
4950	4960	4.058	−0.279	5370	5160	6.47	−0.308	5270	5320	5.34	0.159
4960	4960	4.12	−0.242	5380	5160	6.896	−0.273	5280	5320	4.73	−0.029
4970	4960	5.524	−0.347	5390	5160	7.202	−0.248	5290	5320	5.736	−0.022
4980	4960	0.916	0.277	5400	5160	7.11	−0.218	5300	5320	4.914	−0.238
4990	4960	4.426	0.24	5410	5160	6.896	−0.051	5310	5320	5.126	−0.336
5000	4960	1.862	−1.973	5420	5160	7.568	−0.22	5320	5320	5.004	−0.24
5010	4960	2.38	−0.452	5430	5160	8.665	−0.15	5330	5320	5.34	−0.231
5020	4960	−0.916	−0.176	5440	5160	7.874	−0.124	5340	5320	4.914	−0.295
5030	4960	4.364	0.119	5450	5160	7.69	−0.347	5350	5320	4.822	−0.35
5040	4960	4.212	0.003	5460	5160	4.974	0.095	5360	5320	5.066	−0.176
5050	4960	3.662	0.187	5470	5160	7.324	−0.117	5370	5320	4.974	−0.084
5060	4960	3.022	0.43	5480	5160	6.684	−0.023	5380	5320	4.76	0.034
5070	4960	4.73	0.488	5490	5160	6.318	−0.073	5390	5320	4.486	−0.231
5080	4960	4.09	0.189	5500	5160	6.256	−0.172	5400	5320	4.302	−0.191
5090	4960	4.15	0.189	5510	5160	5.706	−0.062	5410	5320	4.394	−0.049
5100	4960	4.15	0.143	5520	5160	3.082	−0.101	5420	5320	4.792	−0.141
5110	4960	3.692	0.299	5530	5160	4.458	0.097	5430	5320	4.548	−0.13
5120	4960	3.724	0.226	5540	5160	4.364	0.08	5440	5320	4.486	−0.172
5130	4960	3.204	0.226	5550	5160	4.516	−0.045	5450	5320	4.18	0.126
5140	4960	2.808	0.608	4850	5180	4.76	−0.255	5460	5320	4.516	0.112
5150	4960	3.416	0.481	4860	5180	4.822	−0.172	5470	5320	4.944	−0.106
5160	4960	4.76	0.474	4870	5180	4.76	−0.191	5480	5320	5.31	−0.056
5170	4960	5.126	0.591	4880	5180	4.822	−0.176	5490	5320	5.402	−0.104
5180	4960	4.792	1.166	4890	5180	6.134	0.266	5500	5320	5.554	−0.174
5190	4960	4.028	0.953	4900	5180	5.616	−0.148	5510	5320	5.432	−0.154
5200	4960	0.794	−0.457	4910	5180	4.882	−0.211	5520	5320	5.25	−0.194
5210	4960	−6.042	−4.305	4920	5180	5.066	−0.159	5530	5320	4.882	−0.029
5220	4960	−4.058	−3.869	4930	5180	5.218	−0.238	5540	5320	4.73	−0.095
5230	4960	−1.892	−0.187	4940	5180	4.974	−0.248	5550	5320	4.638	−0.147
5240	4960	2.778	−0.029	4950	5180	5.188	−0.159	4850	5340	4.334	−0.266
5250	4960	1.954	0.123	4960	5180	5.158	−0.134	4860	5340	4.486	−0.231
5260	4960	3.144	0.319	4970	5180	4.974	−0.117	4870	5340	4.456	−0.249
5270	4960	0.732	−0.124	4980	5180	5.066	−0.251	4880	5340	4.516	−0.277
5280	4960	−7.08	−9.275	4990	5180	5.402	−0.27	4890	5340	4.302	−0.248
5290	4960	−31.158	−24.996	5000	5180	2.532	0.183	4900	5340	4.578	−0.196
5300	4960	1.74	−1.694	5280	5180	7.142	−0.36	4910	5340	4.334	−0.264
5310	4960	4.15	0.099	5290	5180	7.264	−0.251	4920	5340	4.364	−0.154
5320	4960	4.212	−0.027	5300	5180	6.44	−0.341	4930	5340	4.242	−0.17
5330	4960	3.692	0.248	5310	5180	6.562	−0.242	4940	5340	4.12	−0.17
5340	4960	3.846	0.044	5320	5180	6.226	−0.343	4950	5340	4.15	−0.11
5350	4960	3.724	0.099	5330	5180	5.86	−0.376	4960	5340	4.242	−0.128
5360	4960	3.724	−0.003	5340	5180	6.196	−0.295	4970	5340	4.7	−1.131
5370	4960	3.754	0.023	5350	5180	6.164	−0.273	4980	5340	−22.308	−7.019
5380	4960	3.724	0.001	5360	5180	6.164	−0.341	4990	5340	5.524	−1.515
5390	4960	3.54	0.26	5370	5180	6.104	−0.323	5000	5340	3.784	0.216
5400	4960	3.662	0.27	5380	5180	6.408	−0.31	5010	5340	4.18	−0.11
5410	4960	3.57	0.547	5390	5180	6.408	−0.328	5020	5340	4.09	−0.069
5420	4960	3.51	0.11	5400	5180	6.896	−0.365	5030	5340	4.12	−0.154
5430	4960	3.632	0.123	5410	5180	7.142	−0.325	5040	5340	4.212	−0.115
5440	4960	3.692	0.187	5420	5180	7.294	−0.343	5050	5340	4.18	−0.128
5450	4960	3.632	0.224	5430	5180	7.568	−0.282	5060	5340	4.15	−0.198
5460	4960	3.266	0.082	5440	5180	6.958	−0.373	5070	5340	4.334	−0.169
5470	4960	3.724	0.009	5450	5180	6.928	−0.33	5080	5340	4.364	−0.172
5480	4960	3.724	0.007	5460	5180	6.836	−0.339	5090	5340	4.518	−0.288
5490	4960	3.602	−0.018	5470	5180	6.806	−0.402	5100	5340	4.426	−0.156
5500	4960	3.57	0.04	5480	5180	6.836	−0.393	5110	5340	4.578	−0.229
5510	4960	3.54	0.016	5490	5180	6.928	−0.42	5120	5340	4.578	−0.216
5520	4960	3.754	0.003	5500	5180	6.256	−0.308	5130	5340	4.882	−0.226
4850	4980	4.302	−0.338	5510	5180	5.462	−0.174	5140	5340	5.036	−0.286
4860	4980	4.12	−0.339	5520	5180	4.516	−0.216	5150	5340	5.036	−0.253
4870	4980	4.09	−0.36	5530	5180	4.18	−0.279	5160	5340	4.822	−0.226
4880	4980	3.968	−0.321	5540	5180	3.388	−0.209	5170	5340	4.608	−0.27
4890	4980	4.09	−0.251	5550	5180	3.862	−0.26	5180	5340	4.882	−0.261
4900	4980	3.876	−0.203	4850	5200	4.638	−0.077	5190	5340	4.608	−0.301
4910	4980	3.448	−0.06	4860	5200	4.792	−0.183	5200	5340	4.87	−0.091
4920	4980	3.998	−0.099	4870	5200	4.548	−0.163	5210	5340	4.394	−0.034
4930	4980	3.326	−0.268	4880	5200	5.004	−0.233	5220	5340	5.218	0.045
4940	4980	3.998	−0.244	4890	5200	5.34	−0.121	5230	5340	4.516	−0.08
4950	4980	3.846	−0.312	4900	5200	5.372	−0.167	5240	5340	4.272	−0.157
4960	4980	4.058	−0.38	4910	5200	5.096	−0.176	5250	5340	4.058	−0.156
4970	4980	1.708	−0.503	4920	5200	5.218	−0.121	5260	5340	4.028	−0.08
5250	4980	4.334	1.238	4930	5200	5.096	−0.198	5270	5340	3.936	−0.101
5260	4980	3.998	0.005	4940	5200	4.974	−0.18	5280	5340	4.212	−0.058
5270	4980	4.334	0.038	4950	5200	5.096	−0.15	5290	5340	4.212	−0.049
5280	4980	4.426	0.648	4960	5200	4.852	−0.132	5300	5340	4.272	0.121
5290	4980	4.212	0.102	4970	5200	4.76	−0.251	5310	5340	4.212	−0.011
5300	4980	4.302	0.126	4980	5200	4.7	−0.137	5320	5340	4.76	0.224
5310	4980	3.998	0.06	4990	5200	5.92	−0.09	5330	5340	4.638	0.124
5320	4980	3.906	−0.042	5000	5200	2.472	−1.036	5340	5340	4.516	0.319
5330	4980	4.272	0.001	5240	5200	7.142	−0.327	5350	5340	4.608	0.203
5340	4980	4.272	−0.005	5250	5200	7.02	−0.305	5360	5340	4.212	0.121
5350	4980	4.272	0.301	5260	5200	6.896	−0.244	5370	5340	4.058	0.275
5360	4980	4.058	0.02	5270	5200	7.294	−0.31	5380	5340	4.334	0.023
5370	4980	4.12	0.123	5280	5200	6.714	−0.242	5390	5340	4.364	0.11
5380	4980	3.936	0.102	5290	5200	6.012	−0.207	5400	5340	4.12	0.005
5390	4980	4.028	0.154	5300	5200	6.072	−0.308	5410	5340	4.15	−0.06
5400	4980	3.936	0.222	5310	5200	6.104	−0.097	5420	5340	4.058	−0.104
5410	4980	3.876	0.194	5320	5200	5.706	−0.338	5430	5340	4.212	0.029
5420	4980	3.754	−0.009	5330	5200	5.95	−0.31	5440	5340	4.456	−0.053
5430	4980	3.784	−0.012	5340	5200	6.042	−0.22	5450	5340	4.302	−0.077
5440	4980	3.57	−0.044	5350	5200	5.982	0.723	5460	5340	4.7	−0.113
5450	4980	3.936	0.042	5360	5200	5.92	−0.273	5470	5340	4.486	−0.152

TABLE 2
STUDY AREA 41 – TERRAIN CONDUCTIVITY DATA

Station	Line	Quad	In−phase	Station	Line	Quad	In−phase	Station	Line	Quad	In−phase
5460	4980	3.448	−0.077	5370	5200	6.072	−0.178	5480	5340	4.456	−0.124
5470	4980	3.754	0.02	5380	5200	6.226	−0.319	5490	5340	4.608	−0.027
5480	4980	3.446	0.157	5390	5200	6.072	−0.292	5500	5340	4.67	−0.115
5490	4980	3.602	0.567	5400	5200	6.134	−0.286	5510	5340	4.578	−0.091
5500	4980	3.54	0.049	5410	5200	6.622	−0.262	5520	5340	4.486	−0.08
5510	4980	3.418	0.014	5420	5200	7.05	−0.034	5530	5340	4.334	−0.005
5520	4980	3.51	0.069	5430	5200	6.714	−0.317	5540	5340	4.242	−0.029
4850	5000	5.25	−0.26	5440	5200	6.47	−0.284	5550	5340	3.936	−0.176
4860	5000	5.462	−0.187	5450	5200	6.562	−0.202	4850	5360	5.31	−0.108
4870	5000	4.67	−0.137	5460	5200	6.408	−0.238	4860	5360	4.914	−0.145
4880	5000	4.608	−0.209	5470	5200	6.378	−0.2	4870	5360	6.318	0.068
4890	5000	4.334	−0.198	5480	5200	6.664	−0.191	4880	5360	12.39	1.839
4900	5000	4.426	−0.249	5490	5200	6.348	−0.203	4890	5360	6.636	0.001
4910	5000	4.458	−0.24	5500	5200	6.072	−0.196	4900	5360	9.644	0.615
4920	5000	3.602	−0.292	5510	5200	5.432	−0.316	4910	5360	5.34	0.284
4930	5000	3.57	−0.376	5520	5200	4.394	−0.301	4920	5360	4.516	−0.115
4940	5000	4.18	−0.22	5530	5200	4.272	−0.24	4930	5360	4.394	−0.012
4950	5000	4.914	−0.349	5540	5200	4.058	−0.26	4940	5360	5.798	−0.474
4960	5000	4.272	−0.229	5550	5200	4.18	−0.235	4950	5360	4.15	−0.218
4970	5000	0.092	−0.782	4850	5220	4.608	−0.174	4960	5360	4.76	−0.099
5250	5000	4.516	−0.034	4860	5220	4.608	−0.22	4970	5360	5.706	0.06
5260	5000	4.516	−0.06	4870	5220	4.792	−0.31	4980	5360	8.24	0.11
5270	5000	5.066	−0.071	4880	5220	4.882	−0.352	4990	5360	5.706	0.271
5280	5000	4.792	−0.033	4890	5220	5.126	−0.271	5000	5360	3.51	−0.611
5290	5000	4.974	−0.023	4900	5220	4.974	−0.141	5010	5360	4.486	−0.126
5300	5000	4.7	−0.088	4910	5220	4.882	−0.095	5020	5360	4.548	−0.093
5310	5000	4.914	−0.078	4920	5220	5.158	−0.242	5030	5360	4.394	−0.198
5320	5000	4.914	−0.005	4930	5220	4.73	−0.178	5040	5360	4.516	−0.227
5330	5000	4.882	−0.047	4940	5220	4.73	−0.235	5050	5360	5.738	−0.235
5340	5000	5.066	−0.029	4950	5220	4.67	−0.194	5060	5360	3.54	−0.049
5350	5000	5.31	−0.005	4960	5220	4.67	−0.214	5070	5360	5.372	−0.286
5360	5000	5.25	−0.023	4970	5220	4.578	−0.145	5080	5360	9.4	−0.415
5370	5000	4.914	−0.036	4980	5220	4.67	−0.286	5090	5360	5.706	−0.275
5380	5000	4.7	−0.051	4990	5220	5.126	−0.343	5100	5360	4.944	−0.244
5390	5000	5.004	0.025	5000	5220	2.656	−0.169	5110	5360	4.364	−0.101
5400	5000	4.426	−0.038	5240	5220	6.958	−0.292	5120	5360	4.394	−0.207
5410	5000	4.364	−0.012	5250	5220	7.171	−0.268	5130	5360	4.548	−0.058
5420	5000	4.426	−0.068	5260	5220	6.896	−0.358	5140	5360	4.456	−0.226
5430	5000	4.15	0.007	5270	5220	6.196	−0.281	5150	5360	8.148	1.012
5440	5000	4.272	0.009	5280	5220	5.92	−0.354	5160	5360	9.46	1.282
5450	5000	4.212	−0.036	5290	5220	6.012	−0.393	5170	5360	4.028	−0.255
5460	5000	3.998	−0.034	5300	5220	5.402	−0.314	5180	5360	4.548	−0.159
5470	5000	4.028	−0.038	5310	5220	5.706	−0.075	5190	5360	4.608	−0.139
5480	5000	3.692	−0.029	5320	5220	5.616	−0.26	5200	5360	2.36	−0.268
5490	5000	3.57	−0.033	5330	5220	5.676	−0.299	5210	5360	4.15	−0.075
5500	5000	3.632	0.011	5340	5220	5.554	−0.281	5220	5360	3.876	−0.192
5510	5000	3.632	−0.023	5350	5220	5.462	−0.218	5230	5360	3.906	−0.088
5520	5000	3.326	−0.025	5360	5220	5.86	−0.207	5240	5360	4.18	−0.246
4850	5020	6.47	−0.236	5370	5220	5.768	−0.295	5250	5360	1.098	0.768
4860	5020	6.012	−0.169	5380	5220	5.86	−0.292	5260	5360	3.632	−0.147
4870	5020	5.828	−0.198	5390	5220	5.768	−0.292	5270	5360	3.754	−0.038
4880	5020	5.768	−0.137	5400	5220	6.012	−0.306	5280	5360	3.662	−0.005
4890	5020	5.31	−0.202	5410	5220	6.286	−0.286	5290	5360	3.846	−0.124
4900	5020	4.974	−0.145	5420	5220	5.706	−0.51	5300	5360	3.968	−0.058
4910	5020	4.944	−0.126	5430	5220	5.88	−0.426	5310	5360	3.764	−0.064
4920	5020	3.968	−0.148	5440	5220	6.196	−0.26	5320	5360	3.906	0.047
4930	5020	5.188	−0.139	5450	5220	6.226	−0.282	5330	5360	4.058	0.014
4940	5020	5.126	−0.128	5460	5220	6.286	−0.249	5340	5360	3.876	0.023
4950	5020	5.096	−0.189	5470	5220	6.256	−0.088	5350	5360	4.09	−0.08
4960	5020	5.34	−0.147	5480	5220	6.318	−0.148	5360	5360	4.302	0.123
4970	5020	6.104	−0.132	5490	5220	6.196	−0.235	5370	5360	4.12	0.058
4980	5020	2.502	−0.226	5500	5220	6.072	−0.284	5380	5360	3.754	0.025
5300	5020	5.218	0.045	5510	5220	5.402	−0.31	5390	5360	4.15	−0.012
5310	5020	5.28	−0.031	5520	5220	5.218	−0.209	5400	5360	4.15	−0.064
5320	5020	5.432	0.112	5530	5220	4.67	−0.156	5410	5360	3.968	0.167
5330	5020	5.066	−0.06	5540	5220	4.456	−0.189	5420	5360	4.058	−0.08
5340	5020	5.462	0.097	5550	5220	4.364	−0.264	5430	5360	4.302	−0.09
5350	5020	5.584	0.016	4850	5240	4.792	−0.198	5440	5360	4.272	0.036
5360	5020	5.706	−0.141	4860	5240	4.73	−0.22	5450	5360	4.394	−0.216
5370	5020	5.096	−0.108	4870	5240	4.364	0.033	5460	5360	4.334	−0.047
5380	5020	4.944	−0.036	4880	5240	4.882	−0.119	5470	5360	4.242	−0.007
5390	5020	5.372	−0.091	4890	5240	4.76	−0.244	5480	5360	4.394	0
5400	5020	5.432	−0.13	4900	5240	5.004	−0.22	5490	5360	4.516	−0.007
5410	5020	4.852	0.033	4910	5240	5.004	−0.159	5500	5360	4.242	0.086
5420	5020	4.792	−0.165	4920	5240	4.822	−0.132	5510	5360	4.302	−0.058
5430	5020	4.974	0.531	4930	5240	4.548	−0.023	5520	5360	4.028	0.044
5440	5020	4.456	0.009	4940	5240	4.73	0.086	5530	5360	3.846	0.053
5450	5020	4.456	0.003	4950	5240	4.7	−0.082	5540	5360	3.846	0.156
5460	5020	4.456	−0.13	4960	5240	4.578	−0.194	5550	5360	3.754	0.077
5470	5020	4.548	−0.08	4970	5240	4.578	−0.135	4850	5380	4.302	−0.001
5480	5020	3.968	−0.104	4980	5240	4.578	−0.174	4860	5380	4.272	0.014
5490	5020	4.18	−0.045	4990	5240	4.914	−0.338	4870	5380	4.272	0.044
5500	5020	3.998	0.095	5000	5240	2.35	−0.791	4880	5380	4.09	0.018
5510	5020	4.058	0.15	5210	5240	6.134	−0.266	4890	5380	4.242	−0.023
5520	5020	3.998	−0.084	5220	5240	6.406	−0.178	4900	5380	4.18	0.093
4850	5040	7.508	−0.301	5230	5240	6.562	−0.181	4910	5380	4.242	−0.012
4860	5040	7.02	−0.235	5240	5240	6.012	−0.236	4920	5380	4.302	−0.025
4870	5040	8.299	−0.332	5250	5240	5.828	−0.242	4930	5380	3.968	0.049
4880	5040	6.44	−0.317	5260	5240	6.012	−0.231	4940	5380	4.334	0.588
4890	5040	6.714	−0.273	5270	5240	5.706	−0.24	4950	5380	4.028	0.15
4900	5040	5.798	−0.251	5280	5240	5.646	−0.216	4960	5380	3.936	0.038
4910	5040	5.462	−0.229	5290	5240	5.554	−0.08	4970	5380	4.15	0.214
4920	5040	4.914	−0.398	5300	5240	5.462	−0.13	4980	5380	4.058	0.729
4930	5040	5.768	−0.185	5310	5240	5.158	0.196	4990	5380	4.334	−0.011
4940	5040	5.646	−0.218	5320	5240	5.372	−0.226	5000	5380	4.212	−0.213
4950	5040	6.256	−0.325	5330	5240	5.462	−0.35	5010	5380	4.212	−0.058
4960	5040	6.684	−0.218	5340	5240	5.372	−0.312	5020	5380	3.51	0.104

TABLE 2
STUDY AREA 41 – TERRAIN CONDUCTIVITY DATA

Station	Line	Quad	In-phase	Station	Line	Quad	In-phase	Station	Line	Quad	In-phase
4970	5040	6.774	−0.286	5350	5240	5.86	−0.159	5030	5380	3.418	−0.062
4980	5040	2.93	−0.13	5360	5240	5.706	−0.227	5040	5380	4.364	−0.143
5300	5040	5.676	−0.112	5370	5240	5.92	−0.222	5050	5380	4.334	−0.047
5310	5040	5.616	−0.135	5380	5240	5.89	−0.281	5060	5380	4.18	−0.036
5320	5040	5.34	−0.073	5390	5240	6.072	−0.202	5070	5380	4.15	−0.056
5330	5040	5.768	−0.119	5400	5240	5.706	−0.211	5080	5380	4.15	−0.086
5340	5040	5.616	−0.095	5410	5240	6.134	−0.051	5090	5380	4.12	−0.084
5350	5040	5.798	−0.09	5420	5240	5.31	−0.317	5100	5380	4.058	−0.071
5360	5040	6.196	−0.115	5430	5240	6.47	−0.185	5110	5380	4.334	−0.051
5370	5040	5.31	−0.023	5440	5240	6.164	−0.095	5120	5380	4.334	0
5380	5040	5.524	−0.068	5450	5240	6.042	−0.281	5130	5380	4.456	−0.277
5390	5040	5.738	0.005	5460	5240	6.134	−0.273	5140	5380	4.456	0.042
5400	5040	5.86	−0.027	5470	5240	6.286	−0.249	5150	5380	4.334	0.314
5410	5040	4.852	−0.055	5480	5240	6.592	−0.178	5160	5380	3.876	−0.141
5420	5040	5.524	−0.055	5490	5240	6.47	−0.172	5170	5380	4.394	0.047
5430	5040	5.066	−0.014	5500	5240	5.95	−0.187	5180	5380	4.058	0.084
5440	5040	4.974	−0.007	5510	5240	5.524	−0.246	5190	5380	4.15	0.047
5450	5040	4.822	−0.025	5520	5240	5.584	−0.282	5200	5380	4.486	0.303
5460	5040	4.67	0.117	5530	5240	5.432	−0.249	5210	5380	2.746	0.034
5470	5040	4.364	−0.044	5540	5240	5.158	−0.36	5220	5380	3.632	−0.071
5480	5040	4.302	−0.034	5550	5240	5.004	−0.253	5230	5380	3.356	0.027
5490	5040	4.516	0.152	4850	5260	4.852	−0.08	5240	5380	3.326	−0.091
5500	5040	4.272	−0.009	4860	5260	4.578	−0.169	5250	5380	3.784	−0.108
5510	5040	4.334	−0.077	4870	5260	4.73	−0.231	5260	5380	3.632	−0.016
5520	5040	4.058	−0.115	4880	5260	4.882	−0.246	5270	5380	3.448	0.018
4850	5060	6.164	−0.181	4890	5260	4.548	−0.284	5280	5380	3.632	0.005
4860	5060	6.562	−0.084	4900	5260	4.882	−0.102	5290	5380	3.54	0.207
4870	5060	7.142	−0.242	4910	5260	4.486	−0.082	5300	5380	3.692	−0.058
4880	5060	6.958	−0.275	4920	5260	4.608	0	5310	5380	3.662	−0.02
4890	5060	7.142	−0.233	4930	5260	4.456	−0.231	5320	5380	3.51	−0.108
4900	5060	6.928	−0.207	4940	5260	4.974	0.112	5330	5380	3.632	−0.012
4910	5060	6.47	−0.154	4950	5260	5.218	−0.042	5340	5380	3.57	−0.077
4920	5060	5.95	−0.255	4960	5260	4.67	−0.139	5350	5380	3.51	−0.022
4930	5060	6.5	−0.216	4970	5260	4.578	−0.261	5360	5380	3.448	0.049
4940	5060	8.82	−0.214	4980	5260	4.578	−0.222	5370	5380	3.448	0.011
4950	5060	8.576	−0.203	4990	5260	6.072	−0.242	5380	5380	3.724	−0.112
4960	5060	9.124	−0.251	5000	5260	1.464	−0.521	5390	5380	3.724	−0.031
4970	5060	6.896	−0.29	5200	5260	5.86	−0.169	5400	5380	3.754	−0.034
4980	5060	7.02	−0.413	5210	5260	6.072	−0.216	5410	5380	3.936	−0.069
4990	5060	4.852	−0.205	5220	5260	6.072	−0.264	5420	5380	3.784	−0.073
5300	5060	5.676	−0.145	5230	5260	5.92	−0.24	5430	5380	4.18	−0.075
5310	5060	5.554	−0.113	5240	5260	5.584	−0.238	5440	5380	4.15	−0.095
5320	5060	5.798	−0.086	5250	5260	5.738	−0.281	5450	5380	4.18	−0.11
5330	5060	6.226	−0.207	5260	5260	5.494	−0.22	5460	5380	4.242	−0.022
5340	5060	6.104	0.09	5270	5260	5.524	−0.246	5470	5380	4.364	−0.069
5350	5060	6.134	−0.123	5280	5260	5.004	−0.093	5480	5380	4.18	−0.038
5360	5060	6.012	0.044	5290	5260	5.004	−0.209	5490	5380	4.028	−0.055
5370	5060	5.676	−0.157	5300	5260	5.554	−0.172	5500	5380	3.814	−0.128
5380	5060	5.92	0.029	5310	5260	5.402	−0.194	5510	5380	3.876	−0.139
5390	5060	5.798	−0.147	5320	5260	5.788	−0.101	5520	5380	3.418	0
5400	5060	5.798	−0.084	5330	5260	5.676	−0.06	5530	5380	3.356	−0.058
5410	5060	5.494	−0.137	5340	5260	5.676	−0.297	5540	5380	3.296	0.005
5420	5060	5.462	0.135	5350	5260	5.768	−0.341	5550	5380	1.832	−0.22
5430	5060	5.31	0.104	5360	5260	5.982	−0.191				

WELL DEVELOPMENT RECORDS

WELL DEVELOPMENT RECORD

Project: Fort Devens	Well Installation Date:		Project No. 07053.14
Client: AEC	Well Development Date: 11/9/94	Logged by: SH	Checked by:
Well/Site I.D.: 41M-94-02C	Weather: cloudy, no wind, 60°F	Start Date: 11/9/94	Finish Date: 11/11/94
Initial Water Level (ft): 31.2 TOR		Start Time: 1028	Finish Time: 0910

Water Level during Initial Pumping/Purging (ft):

Water Level at Termination of Pumping/Purging (ft):

PID = 2.6, 10/10 PID = 0 V = 33.5 water lost drilling = 60

Depth to Bottom of well = 51.3 TOR TOTAL GAL NEEDED = 417

	TIME	TEMP.	pH	Conductivity	Approximate Pumping Rate (gal/min)
BEGINNING OF WELL DEVELOPMENT					
MIDDLE OF WELL DEVELOPMENT					
END OF WELL DEVELOPMENT					

well still got water after 60 gals, WELL DOES NOT DRY UP.

NOTES:

Pumping rate: ~~3gal~~ 5gal/3min

DATE	TIME	TOTAL GAL	TEMP	COND	PH	Redox	TURB
11/9	1030	5	11.5	041	7.51	029	very
	1145	60	11.1	027	7.61	073	—
	1413	120	10.8	019	7.37	056	much clearer
11/10	0920	180	11.2	020	7.08	080	27.4
	1155	240	10.4	018	6.76	049	9.97
	1400	300	11.2	018	6.84	041	15.9
	1515 ~~1400~~	360	10.7	018	6.73	066	4.14
	1605	395	9.6	017	6.98	092	4.11
11/11	0910	417	10.4	019	7.52	092	7.59

WELL DEVELOPER'S SIGNATURE Sarah Z. Hunter

Note: Keep car running when using battery. I didn't and it died.
~~not~~ very fine gray sand coming up with water. no odors
Headspace at all ~~1st~~ ~~2~~ drum fills = 0
Pump near top of water level ≈ 20 ~~0~~ ~~1~~ the bottom
I did this for awhile, and it ran dry at that level
I tried it again later, and it did not.

WELL DEVELOPMENT RECORD

Project: Fort Devens Groups 2+7	Well Installation Date: 19 Oct 1994		Project No. 7653-14
Client: USAEC	Well Development Date: Start 26 Oct 1994	Logged by: DD	Checked by:
Well/Site I.D.: 41M-94-03B	Weather: PMly. Cloudy / 50's	Start Date: 26 Oct 94	Finish Date: 28 Oct 94
Initial Water Level (ft): 38.6'		Start Time: 1455	Finish Time: 1430

Water Level during Initial Pumping/Purging (ft): 41.0'

Water Level at Termination of Pumping/Purging (ft):

Turb. (NTU)		TIME	TEMP.	pH	Conductivity	Approximate Pumping Rate (gal/min)	Eh
15.4	BEGINNING OF WELL DEVELOPMENT (110 gals)	26 Oct 94 1455	11.3	7.1	98	2	68
4.4	MIDDLE OF WELL DEVELOPMENT (220 gals)	27 Oct 94 1440	10.8	8.1	73	2	17
13.0	middle ~~END OF~~ WELL DEVELOPMENT (330 gals)	27 Oct 94 1805	9.9	7.2	65	2	136
2.8	(440 gals.)	28 Oct 94 1020	10.0	7.0	41	2	24
3.7	(580 gals.)	28 Oct 94 1430	11.4	7.0	36	2	50

NOTES:

PID Reading = 0.0 10/26/94 @ 1330

Casing Stick up = ±3.1' (no gravel pad yet)

Casing/Well Stick up diff = 0.19

Water level = 38.60'

Bottom of Well = 66.0'

Sediment in bottom of well.

Water level after pumping 5 gals = 41.0'

Headspace reading @ 80 gals purged = 0.0

Headspace reading @ 110 gals purged = 0.0

Total Volume purge for 10/26/94 = 110 gals.

Headspace reading @ 165 gals = 0.0

Headspace reading @ 220 gals. = 0.0

Headspace reading @ 275 gals = 0.0

Headspace reading @ 330 gals = 0.0

Headspace reading @ 385 gals = 0.0

Headspace reading @ 440 gals. = 0.0

Headspace reading @ 495 gals = 0.0

Headspace reading @ 580 gals = 0.0

Total purged 580 gals

Well Development Completed 10/28/94

WELL DEVELOPER'S SIGNATURE R. David Dunmore

Notes 1.68 volume multiplier

70 gallons water lost during drilling

Total Volume purged = 27.4 × 1.68 = 46 × 5 = 230 (Gals. Well Vols to remove) + 350 (5x water lost) = 580

ABB Environmental Services, Inc.

9205133D (a)

WELL DEVELOPMENT RECORD

Project: Fort Devens	Well Installation Date: 14 Oct 94		Project No. 7053-14
Client: USAEC	Well Development Date: 28 Oct 94	Logged by: DB	Checked by:
Well/Site I.D.: 41M-94-06X	Weather: Sunny / 40's	Start Date: 10/28/94	Finish Date: 10/28/94
Initial Water Level (ft): 8.36		Start Time: 1045	Finish Time: 1230
Water Level during Initial Pumping/Purging (ft): 8.57			
Water Level at Termination of Pumping/Purging (ft): 8.45			

Turb.		TIME	TEMP.	pH	Conductivity	Approximate Pumping Rate (gal/min)	Eh
1) 818	BEGINNING OF WELL DEVELOPMENT (13 gals.)	1105	11.9	5.9	49	1	41
2) 360	MIDDLE OF WELL DEVELOPMENT (26 gals.)	1130	12.2	5.8	35	1	100
3) 138	END OF WELL DEVELOPMENT (39 gals)	1150	12.2	5.9	33	1	9
4) 136	52 gals.	1210	12.4	5.8	32	1	5
5) 6.6	66 gals	1220	12.8	5.8	32	1	6

NOTES:

Depth of well - 16.26'
Casing Stick up = 2.70
(before gravel pad in)

Casing/Well Diff = 0.11
Headspace before purging = 0.0
Headspace @ 13 gals = 0.0
Headspace @ 26 gals = 0.0
Headspace @ 39 gals = 0.0
Headspace @ 52 gals = 0.0
Headspace @ 66 gals = 0.0
Observations
- PVC shavings came up w/ pump.
- Very turbid 1st + 2nd volumes
- Good recharge.
- A lot of very fine sand evacuated

WELL DEVELOPER'S SIGNATURE _____

Volumes of water calculation = 7.9 x 1.68 = 13.27 gals x 5 = 66 gals + 0 water lost during drilling = 66 gals to be purged

ABB Environmental Services, Inc.

9205133D (a)

WELL DEVELOPMENT RECORD

Project: Ft. Devens - Groups 2,7	Well Installation Date: 20 Oct 94		Project No. 7053-14
Client: USAEC	Well Development Date: 28 Oct 94	Logged by: RP	Checked by:
Well/Site I.D.: 41M-94-07X	Weather: Sunny / 40's	Start Date: 28 Oct 94	Finish Date: 28 Oct 94
Initial Water Level (ft): 5.81		Start Time: 0930	Finish Time: 1030

Water Level during Initial Pumping/Purging (ft): 6.23

Water Level at Termination of Pumping/Purging (ft): 6.07

Turb.		TIME	TEMP.	pH	Conductivity	Approximate Pumping Rate (gal/min)	Eh
30	BEGINNING OF WELL DEVELOPMENT (7 gals.)	0940	11.8	6.5	36	1.5	5(
6.1	MIDDLE OF WELL DEVELOPMENT (14 gals)	0950	12.3	5.5	34	1.5	4E
1.7	~~END OF~~ WELL DEVELOPMENT (21 gals)	1000	12.3	5.4	32	1.5	5(
2.3	(28 gals)	1010	12.7	5.5	32	1.5	4(
8.6	End (35 gals.)	1020	12.6	5.5	34	1.5	5

NOTES:

Initial Headspace from top of well = 0.0 ppm
Casing Stick up (w/o gravel pad) = 6.50'
Casing / Well Diff = 0.18'
Well Depth = 10.09'
Headspace @ 7 gals = 0.0
Headspace @ 14 gals = 0.0
Headspace @ 21 gals = 0.0
Headspace @ 28 gals = 0.0
Headspace @ 35 gals =

Total Volume purged
36 gals.

Observations: Water was silty dark brown for 1st volume. Clear despite agitation after that, Good recharge of water.

WELL DEVELOPER'S SIGNATURE R. David Brisson

Volumes to purge calculation = (4.28 gals × 1.68) + 0 × 5 = 35.9 gals
(Well volume; Drilling water Added; # Well Volumes)

ABB Environmental Services, Inc.

9205133D (a)

WELL DEVELOPMENT RECORD

Project: Fort Devens	Well Installation Date:		Project No. 7053-14
Client: AEC	Well Development Date: 11-1-94	Logged by: SNP	Checked by:
Well/Site I.D.: 41M-94-08A	Weather: rainy - mid 50's	Start Date: 11-1-94	Finish Date:
Initial Water Level (ft): 21.0' TOR		Start Time:	Finish Time:
Water Level during Initial Pumping/Purging (ft):			
Water Level at Termination of Pumping/Purging (ft):			

	TIME	Gal	TEMP.	turb.	pH	Conductivity	Approximate Pumping Rate (gal/min)	Redox
BEGINNING OF WELL DEVELOPMENT	1430	1	10.9	offscale	7.29	228	<1 gpm	241
MIDDLE OF WELL DEVELOPMENT								
END OF WELL DEVELOPMENT								

NOTES:

Bottom 27.3 TOR Headspace 0ppm

well went dry after about 1.5 gallons

30 gallons lost during drilling

V= ~~18.2~~ 14.8 gal ≈ ~~18~~ 15 gal - seems awfully high

1545 well dry again - only pumped out 16 gallons

~~Date Time Gal~~

~~11/8/94 1215 3.5~~

~~1325 23.5~~

Date	Time	Gal	Ph	Conduct	Temp	Redx	Turb	Rate
11/8/94	1545	9.0						
11/9/94	950	16.5						
11/9/94	1010	24	7.45	75	15.4	67		
11/9/94	1150	29	—	—	—	—		
	1315	35	7.24	4	13.9	81		
	~~1515~~	~~49.5~~						

WELL DEVELOPER'S SIGNATURE _____ (cont on back)

ABB Environmental Services, Inc.

9205133D (a)

WELL DEVELOPMENT RECORD

Project: Fort Devens	Well Installation Date:		Project No. 7053-14
Client: AEC	Well Development Date: 11/1/94	Logged by: PH	Checked by:
Well/Site I.D.: 41M-94-08B	Weather:	Start Date: 11/8/94	Finish Date:
Initial Water Level (ft):		Start Time: 12 00	Finish Time:

Water Level during Initial Pumping/Purging (ft):

Water Level at Termination of Pumping/Purging (ft):

Depth to Bottom of well = 44.5' TOR Water Level 22.6 TOR

	TIME	TEMP.	pH	Conductivity	Approximate Pumping Rate (gal/min)
BEGINNING OF WELL DEVELOPMENT					
MIDDLE OF WELL DEVELOPMENT					
END OF WELL DEVELOPMENT					

volume = 33.1 Water lost during drilling 70 Total gallons needed 515.5 g PID=0

NOTES:

Date	Time	Gal	~~PID~~ PH	Ph	Conduc.	Temp	Rate	Redx	Turb
11/8/94	1215	3.5	—	—	—	—	5 g.l = 10 minutes	—	
	1325	23.5	—	—	—	—		—	
11/9/94	930	32	7.02	2	12	—		98	
	1030	44	7.51	71	13.6	—		75	
11/9/94	920	58	7.04	50	9.6			72	
	950	Reading for drum on		PID=0.2	—	—		—	
	1100	76.5	—	—	—	—		—	
	1145	81.0	—	—	—	—		—	
	1330	91.5	—	—	—	—		—	
	1520	103.0	~~33~~ 7.60	42	10.5			33	OFF THE SCALE
	1600	114.5	7.27	30	9.8			33	
11/11/94	0908	133.5	—	—	—	—		—	
	950	140	—	—	—	—		—	
	1045	146.5	8.08	34	11	5 gpm		68	
	1220	152	8.01	39	14.7			40	

WELL DEVELOPER'S SIGNATURE _____

ABB Environmental Services, Inc.

9205133D (a)

WELL DEVELOPMENT RECORD

Project: [illegible]	Well Installation Date:		Project No. 7053 14
Client: [illegible]	Well Development Date: 11/15/94	Logged by:	Checked by:
Well/Site I.D.: [illegible]	Weather: ~60s, mostly sunny	Start Date: [illegible]	Finish Date:
Initial Water Level (ft): 35.72		Start Time: 15:40	Finish Time:
Water Level during Initial Pumping/Purging (ft):			
Water Level at Termination of Pumping/Purging (ft):			

	TIME	TEMP.	pH	Conductivity	Approximate Pumping Rate (gal/min)
BEGINNING OF WELL DEVELOPMENT					
MIDDLE OF WELL DEVELOPMENT					
END OF WELL DEVELOPMENT					

Total Gallons to be pumped = 170 gal

NOTES: [illegible]

	Time	W.L. (ft)	Temp	pH	Cond	mV	Turb	Pr	Total Gal removed	Notes
										Begin pumping
11/16/94	~~10:45~~ 10:25									
	10:45	35.600								
	11:00	35.68	9.4	6.37	33	76	3.56	5gal/15 min	40	
	1:15								60	
	11:43		9.4	6.16	31	93	4.17		100	
	11:58								120	
	12:37		9.4	6.39	39		0.37		170	
	12:40	35.72							180	End pumping

WELL DEVELOPER'S SIGNATURE _____

ABB Environmental Services, Inc.

92051330 (8)

WELL DEVELOPMENT RECORD

Project: [illegible]	Well Installation Date:		Project No. 7055.14
Client: [illegible]	Well Development Date: 11/14/94	Logged by: TK	Checked by:
Well/Site I.D.: [illegible]	Weather: [illegible]	Start Date: 11/15/94	Finish Date: 11/16/94
Initial Water Level (ft): 35.05' TOC		Start Time: 14:30	Finish Time: 11:30

Water Level during Initial Pumping/Purging (ft):

Water Level at Termination of Pumping/Purging (ft):

	(TOVC) W.L.	TIME	TEMP.	pH / (mV)	Conductivity	Turb.	Approximate Pumping Rate (gal/min)	Total Gal Removed
BEGINNING OF WELL DEVELOPMENT		14:50	11.3	7.45 / 129	101	230	~0.85	5
~~MIDDLE~~ OF WELL DEVELOPMENT	36.04	15:25	9.9	7.03 / 047	65	8.5	(5 / 3.25)	30
~~END OF~~ WELL DEVELOPMENT		11:05	9.4	6.30 / 77	36	2.73		240
		11:15	9.3	6.31 / 76	36	3.45		~~260~~ 250
	35.09	11:22	9.4	5.84 / 83	34	3.36		260

NOTES:

Bottom of well 57.65' TOC

[illegible] = 32 gal [illegible] = ~20 gal

Total to be removed = 260 gallons

~~15:45 Taking over 55 gallon drum~~ TK

11/15/94 → 16:35 End Pumping - pumped approx 80 gallons

11/16/94 → 09:15 Pumped a total of Approx 120 gallons

10:25 " " " 180 gallons

11:01 " " " 240 gallons

11:23 " " " 260 gallons — End Pumping

WELL DEVELOPER'S SIGNATURE _____

ABB Environmental Services, Inc.

9205133D (a)

WELL DEVELOPMENT RECORD

Project: Fort Devens	Well Installation Date:		Project No. 7053-14
Client: AEC	Well Development Date:	Logged by: PH	Checked by:
Well/Site I.D.: 41M-94-10X	Weather: Overcast	Start Date: 11/9/94	Finish Date:
Initial Water Level (ft): 31.8 TOR		Start Time: 1350	Finish Time:

Water Level during Initial Pumping/Purging (ft):

Water Level at Termination of Pumping/Purging (ft):

	TIME	TEMP.	pH	Conductivity	Approximate Pumping Rate (gal/min)
BEGINNING OF WELL DEVELOPMENT					
MIDDLE OF WELL DEVELOPMENT					
END OF WELL DEVELOPMENT					

V=19.7 water lost during drilling 0 PID = 1

NOTES:

Date	Time	Gal.	Ph	Conduc.	Temp	Redx	Turb	Rate	W.L. (TOR)
11/10/94	1400	1st pump 5	6.88	75	10.8	52	—	—	
"	1500	6	—	—	—	—	—	Rate of Recharge 1 gph	
11/14/94	1134	Pump out [illegible] 1 Gallon							33.58
Pump on	13:27						very turbid		
Pump off	13:29	9	7.84	145	10.4	309	off-scale		
	[illegible]	[illegible]	—	—	—	—	—		
	[illegible]	[illegible]	—	—	—	—	—		
11/15	5,40	[illegible]	—			—	—		
	[illegible]	[illegible]	—	—	—	—	—		
11/16	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	277	157	(first Tailor fill)	
	[illegible]	[illegible]	—	—	—	—	—	[illegible]	
	1545	[illegible]	—	—	—	—	—		
11/17	[illegible]	[illegible]	[illegible]	173	[illegible]	[illegible]	[illegible]	([illegible] 3/4 full)	

WELL DEVELOPER'S SIGNATURE

[illegible]	[illegible]	—	—	—	—		([illegible] to get out 1/2 gal of very muddy H_2O)

ABB Environmental Services, Inc.

9205133D (a)

WELL DEVELOPMENT RECORD

Project: Fort Devens	Well Installation Date: 10-27-94		Project No. 7053-14
Client: AEC	Well Development Date: 11-1-94	Logged by: SNP	Checked by:
Well/Site I.D.: 41M-94-11X	Weather: rainy - high 50's	Start Date: 11-1-94	Finish Date:
Initial Water Level (ft): 38.4' TOR		Start Time: 1045	Finish Time:

Water Level during Initial Pumping/Purging (ft): well went dry after ~15 gal.

Water Level at Termination of Pumping/Purging (ft):

	TIME	Gal.	TEMP.	pH	Conductivity	turbid	Approximate Pumping Rate (gal/min)	Redox
BEGINNING OF WELL DEVELOPMENT	1055	0	12.1	8.53	98	off scale	<1 gpm	210
MIDDLE OF WELL DEVELOPMENT								
END OF WELL DEVELOPMENT								

NOTES: 11/10 Headspace = 0
Headspace 0 ppm - Not containerizing
35 gallons lost during drilling x5 = 175
well Volume = 15 gal. x 5 = 75
TOTAL NEEDED = 250
bottom of well ~50' TOR - very silty
water is very brown - silty
stick-up - 2.60'
difference riser-casing - 0.2'

Note: well has no PVC cap!

Pump: bottom super whale plus 2 inline pump worked with running car battery - was faster with 2 batteries but well dried up.

	Gal.	time	temp(°C)	pH	Conductivity(um/cm)	turbidity(NTUs)	Redox	Pumping rate
	0	1055	12.1	8.53	98	off scale	210	<1 gpm
	20	1345	11.6	8.85	99	off scale	214	<1
		~~1350~~ 50						
11-8	30.5	1211						
11-9	35.5	0845	11.2	8.37	034	—	028	1 gpm
	43	0909	—	—	—	—	—	
11-10	48	0830	9.6	7.57	028	turbid	051	
	55.5	0835	—	—	—	very	—	

WELL DEVELOPER'S SIGNATURE ~~[illegible]~~ whoops - Not done yet!

Recharge rate - in ~2 hrs. well only recharged 1/2 way - 6 gallons removed after 2 hrs.
note - pump will not work with the wire spool must hook up pump wires directly to car battery.

ABB Environmental Services, Inc.

9205133D (a)

WELL DEVELOPMENT RECORD

Project: Fort Stevens	Well Installation Date: 10/27/94		Project No. 07053.14
Client: AEC	Well Development Date: 11/1/94 - 11/17/94	Logged by: JMP/JK	Checked by:
Well/Site I.D.: 41M - 94 - 11X	Weather:	Start Date: 11/1/94	Finish Date: 11/17/94
Initial Water Level (ft): 38.4 TOPVC		Start Time:	Finish Time:
Water Level during Initial Pumping/Purging (ft):			
Water Level at Termination of Pumping/Purging (ft):			

Page 2 of 2

	TIME	TEMP.	pH	Conductivity	Approximate Pumping Rate (gal/min)
BEGINNING OF WELL DEVELOPMENT					
MIDDLE OF WELL DEVELOPMENT					
END OF WELL DEVELOPMENT					

NOTES:

Date	Time	TOPVC Inch	Temp	pH	Cond	mV	Turb	Pr	Total Gal. removed	Notes
11/17/94	0930								145	- Dry
	11:15		10.5	8.77	071	5	454		147.5	
	12:20								149	
	13.50		11.2	7.66	048	060	203		150.5	
	14:55								151.5	
	16.10		10.5	8.21	65	66	435		152.5	End of Development

WELL DEVELOPER'S SIGNATURE _____

ABB Environmental Services, Inc.

9205133D (a)

WELL DEVELOPMENT RECORD

Project: Fort Devens	Well Installation Date:		Project No. 7053.14
Client: AEC	Well Development Date: 11/16/94	Logged by: JK	Checked by:
Well/Site I.D.: 41M9412X	Weather: 50s, mostly cloudy	Start Date: 11/16/94	Finish Date: 11/17/94
Initial Water Level (ft): 29.70' TOR		Start Time: 12:23	Finish Time: 16:00

Water Level during Initial Pumping/Purging (ft):

Water Level at Termination of Pumping/Purging (ft):

	TIME	TEMP.	pH	Conductivity	Approximate Pumping Rate (gal/min)
BEGINNING OF WELL DEVELOPMENT					
MIDDLE OF WELL DEVELOPMENT					
END OF WELL DEVELOPMENT					

NOTES: V = 14.4 gal 4x0 Lost = 15 gal Total removed 147 gal

BOTTOM OF WELL = 39.21'

Date	Time	(TOPVC) WL	Temp	pH	Cond	mV	Turb	Pr	Total Gal Removed	Notes
11/16/94	12:33									Begin pumping = very silty-brown
	1:30								5	stop pump, pump settled up
	1:55									resume pumping
	1305								15	went dry
	1515								14	" "
	16:35								24	" "
11/17/94	08:50									begin pumping
	0900		8.7	7.58	141	28	>1000		31	
	0907								36	went dry
	10:14								41	" "
	11:25		10.6	8.52	158	-004	698		44	" "
	12:30								48	" "
	13:40		11.0	6.84	142	243	767		52	
	14:40								55.5	
	16:00		10.6	7.01	118	-003	>1000		54.0	End of Development

WELL DEVELOPER'S SIGNATURE

ABB Environmental Services, Inc.

92051330 (a)

WELL DEVELOPMENT RECORD

Project: Fort Dearborn	Well Installation Date:		Project No.
Client: AEC	Well Development Date: 11/16/94	Logged by:	Checked by:
Well/Site I.D.: 41M 94 13X	Weather: Cloudy and [illegible]	Start Date:	Finish Date:
Initial Water Level (ft): 22.1' TOR		Start Time: 11:02	Finish Time:

Water Level during Initial Pumping/Purging (ft):

Water Level at Termination of Pumping/Purging (ft):

	TIME	TEMP.	pH	Conductivity	Approximate Pumping Rate (gal/min)
BEGINNING OF WELL DEVELOPMENT					
MIDDLE OF WELL DEVELOPMENT					
END OF WELL DEVELOPMENT					

NOTES: [illegible] total 175 gal

[illegible] to bottom of well

Time	Total Gal	Temp	pH	Cond.	Redox	Turb.
11:04	5.0	10.3	6.65	60	381	[illegible]
11:11	7.0	—	—	—	—	—
12:20	15.0	—	—	—	—	—
12:42	21.5	[illegible]	6.46	68	412	468
11:44 10:00	31.0	9.0	6.23	63	431	577
11:30	40	10.2	6.48	69	52	88.4
1254	48.5	—	—	—	—	—
1345	54.5	—	—	—	—	—
1500	63.0	7.9	6.69	74	405	80.5
1545	70.0	10.1	6.70	79	403	46.0

WELL DEVELOPER'S SIGNATURE _____

ABB Environmental Services, Inc.

9205133D (a)

WELL DEVELOPMENT RECORD

Project: Fort Devens	Well Installation Date: 10-20-94		Project No. 7053-14
Client: AEC	Well Development Date: 11-1-94	Logged by: SNP	Checked by:
Well/Site I.D.: 41M-94-~~DBB~~ SP 14X	Weather: rainy - mid 50's	Start Date: ~~SP 1450~~ 11-1-94	Finish Date: 11-1-94
Initial Water Level (ft): ~~21.70' TOR~~ SP 3.8' TOR		Start Time: 1430	Finish Time: 1600
Water Level during Initial Pumping/Purging (ft):			
Water Level at Termination of Pumping/Purging (ft):			

	TIME	Gal	TEMP.	turbid	pH	Conductivity	Approximate Pumping Rate (gal/min)	Redox
BEGINNING OF WELL DEVELOPMENT	1500	1	14.3	off scale	5.74	64	~1gpm	305
MIDDLE OF WELL DEVELOPMENT				see	below			
END OF WELL DEVELOPMENT								

NOTES:

well bottom ~~~43' TOR~~ SP 10.1' TOR Headspace 0ppm

V = 12.8 gal. 0 gallons lost during drilling

time	Gal	temp.	turbidity	pH	Conductivity	Redox	Pumping rate
1515	20	14.1	5.61	5.73	40	318	~1.5
1535	50	14.0	2.65	5.6	46	340	~1.5
1550	65	13.9	1.15	5.5	40	350	~1.5

stick-up = water cleared up after about 5-10 gallons

No odor

difference riser/casing = PID-0

WELL DEVELOPER'S SIGNATURE Shelley Pressley

ABB Environmental Services, Inc.

9205133D (a)

FIELD SAMPLE DATA RECORDS

[redacted]

ABB ENVIRONMENTAL SERVICES, INC.

PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 1 0 1 X 2

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SITE ID: 4 1 M - 9 2 - 0 1 X

JOB NUMBER: 7053-04

PROGRAM: C

SAMPLING DATE: 1.7.93 (1.7.93 purge)

FILE NAME: CGW

WEATHER: Sunny, 40's

LOCATION ACTIVITY: START 1520 END 1540

WATER LEVEL / WELL DATA

WELL DEPTH: 32.9 FT

WATER DEPTH: 24.80 FT

☒ MEASURED ☐ HISTORICAL

☒ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 1.9± FT

PROTECTIVE CASING/WELL DIFF.: +.12 FT

HEIGHT OF WATER COLUMN: 3.1 FT

13.6 GAL/VOL

14.5 TOTAL GAL PURGED

WELL INTEGRITY:

	YES	NO	N/A
PROT. CASING SECURE	☐	☐	☑
CONCRETE COLLAR INTACT	☑	☐	☐
WELL LOCKED	☑	☐	☐
PVC WELL CAP	☑	☐	☐

RISER ELEVATION:

GROUNDWATER ELEVATION:

PID READINGS: AMBIENT AIR 0.0 PPM; WELL MOUTH 0.0 PPM

WELL DIAMETER: ☐ 2 INCH ☑ 4 INCH ☐ ___ INCH

PURGE DATA

PURGE VOLUME	@ 8 GAL	@ 11 GAL	@ 14.5 GAL	@ ____ GAL	@ ____ GAL
TEMP, DEG C	9.3	9.3	9.4		
pH, UNITS ☐ pH PAPER	6.8	6.7	6.7		
SPECIFIC CONDUCTIVITY umhos/cm	63	62	57		
PUMP RATE, GPM (tubing, btys)					
	>1000	>1000	>1000		

SAMPLE OBSERVATIONS: ☐ CLEAR ☐ CLOUDY ☐ COLORED ☒ TURBID ☐ ODOR ☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING	
☐	☐	PERISTALTIC PUMP
☐	☑	SUBMERSIBLE PUMP
☑	☐	BAILER
☐	☐	PVC/~~SILICON~~ TUBING
☐	☐	IN-LINE/DISPOSABLE FILTER
☑	☐	OTHER: waste sump pump

EQUIPMENT ID: ISCO #____ ☑ 2" ☐ 4" # teflon

DECON FLUIDS USED: ☐ POTABLE WATER ☐ LIQUINOX ☑ STEAM CLEANING (source H2O)

WATER LEVEL EQUIP. USED: ☑ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ PRESSURE TRANSDUCER

GROUND ELEVATION:

NUMBER OF FILTERS USED: 0

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS
☑ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☑	254A / 254B / 254C / 254D
☑ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☑	254E / 254F
☑ PEST/PCB	UH02	EC	4 DEG C	(3) 1 L AG	☑	254H / 254I / 254J
	UH13					
☑ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☑	254R / 254S
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2			
☑ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☑	254K / 254L / 254M
	UW32					
☑ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☑	254G
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG		
☑ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☑	254P
	TT10	C	4 DEG C	1 L P-CUBE	☑	254N
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☑	254Q
☑ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☑	254O
☐ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☐	
		C	4 DEG C	1 L P-CUBE	☐	
		N	HNO3 TO pH<2	1 L P-CUBE	☐	
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

Filter, inorganics sample only

1.7.93 0951 Dry at 13 gal. let recharge for 1 more gal. ~1/4 gal of sand + silt removed during purging by pump

RECEIVED BY: Thom C. Jurasek

SIGNATURE: JJ/MR/SS

ABB ENVIRONMENTAL SERVICES, INC.

PAGE 1 OF 1

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 1 0 1 X 1

Purge - 10/14/93

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SITE ID: 4 1 M - 9 2 - 0 1 X

JOB NUMBER: 7053-10

SAMPLING DATE: 10/15/93

FILE NAME: CGW

PROGRAM: C

LOCATION ACTIVITY: START 10/14 14:50 END 10/15 12:00

WEATHER: Sunny 50's

WATER LEVEL / WELL DATA

☒ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 1.90 ± FT

PROTECTIVE CASING/WELL DIFF.: -0.12 FT

WELL DEPTH: 32.85 FT ☒ MEASURED ☐ HISTORICAL

WATER DEPTH: 27.46 FT

RISER ELEVATION:

9.1 GAL/VOL

TOTAL GAL PURGED

HEIGHT OF WATER COLUMN: 5.39 FT

WELL INTEGRITY:	YES	NO	N/A
PROT. CASING SECURE			
CONCRETE COLLAR INTACT			
WELL LOCKED			
PVC WELL CAP			

GROUNDWATER ELEVATION:

Assume 1.65 gal/ft
X 5.39 = 9.1

PID READINGS: AMBIENT AIR 0.0 PPM; WELL MOUTH 0.0 PPM; Top Hd Space - 0.0 PPM

WELL DIAMETER: ☐ 2 INCH ☒ 4 INCH ☐ INCH

PURGE DATA

PURGE VOLUME	@ 2 GAL	@ 6 GAL	@ 9 GAL	@ 14 GAL	@ GAL
	14:53	14:58	15:10	16:32	
TEMP, DEG C	10.0	9.4	9.8	~~10~~ 9.7	
pH, UNITS ☐ pH PAPER	6.80	6.78	6.69	6.6	
SPECIFIC CONDUCTIVITY umhos/cm	058	046	051	057	
PUMP RATE, GPM ≈ 1.5	1.5	1.5	<1.0	<1.0	
	>200	>200	>200	>200	

ORP 287

SAMPLE OBSERVATIONS: ☐ CLEAR ☐ CLOUDY ☐ COLORED ☒ TURBID ☐ ODOR ☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING		EQUIPMENT ID
☐	☐	PERISTALTIC PUMP	ISCO #
☐	☐	SUBMERSIBLE PUMP	☒ 2" ☐ 4" #
☐	☐	BAILER	
☒	☒	* PVC/SILICON TUBING	
	☒	* IN-LINE/DISPOSABLE FILTER 0.45 µm	
☒	☒	* OTHER whale	

DECON FLUIDS USED: ☐ POTABLE WATER ☐ LIQUINOX ☐ STEAM CLEANING ☒ AGC approved 5 Rest

NUMBER OF FILTERS USED: 2

WATER LEVEL EQUIP. USED: ☒ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ PRESSURE TRANSDUCER

GROUND ELEVATION:

ANALYTICAL PARAMETERS

* Used for filtered metal only

	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS
☒ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☒	482 A / B / C / D
☒ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☒	482E / 482F
☒ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☒	482G / H / I
	UM13					
☒ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☒	482N / 482O (Filtered)
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2			
☒ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☒	482J / K / L
	UW32					
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	
	TT10	C	4 DEG C	1 L P-CUBE	☐	
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	
☒ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☒	482M
☐ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☐	
		C	4 DEG C	1 L P-CUBE	☐	
		N	HNO3 TO pH<2	1 L P-CUBE	☐	
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

* Water very silty w/ fine gray to brown silt.

16:23

Out of water 15:16 / 1:00 67 min 4 gallons

RECEIVED BY:

SIGNATURE:

2.856 gpm

16:31 / 16:23 1.5 gal/8 min = 0.188 gpm

ABB ENVIRONMENTAL SERVICES, INC.

PAGE 1 OF 1

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 1 0 2 A 1

Purge 10/13 & 14

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SAMPLING DATE: 10/15

SITE ID: 4 1 N - 9 3 - 0 2 A

JOB NUMBER: 7053-10

FILE NAME: CGW

LOCATION ACTIVITY: START 10/13 13 RDS 17:00 END 10/15 13:00

PROGRAM: C

WEATHER: Sunny 50's

WATER LEVEL / WELL DATA

WELL DEPTH: 8.15 FT

WATER DEPTH: 6.20 FT

☒ MEASURED ☐ HISTORICAL

☒ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.75 FT

PROTECTIVE CASING/WELL DIFF.: +0.28 FT

HEIGHT OF WATER COLUMN: 1.95 FT

1.0 GAL/VOL

2.0 TOTAL GAL PURGED

WELL INTEGRITY:

	YES	NO	N/A
PROT. CASING SECURE	☒	☐	☒
CONCRETE COLLAR INTACT	☐	☒	☒
WELL LOCKED	☐	☒	☒
PVC WELL CAP	☒	☐	☐

RISER ELEVATION:

GROUNDWATER ELEVATION:

Use .554 for 6" bore hole 2" well

0.554 X 1.95 =

PID READINGS: AMBIENT AIR 0.0 PPM WELL MOUTH 0.0 PPM

WELL DIAMETER: ☒ 2 INCH ☐ 4 INCH ☐ ___ INCH

PURGE DATA

PURGE VOLUME	@ 1 GAL (10/13 17:00 out of water)	@ 2 GAL (12:00 out of water 10:15)	@ ___ GAL	@ ___ GAL	@ ___ GAL
TEMP, DEG C	13.0	14.4			
pH, UNITS ☐ pH PAPER	8.99	11.72			
SPECIFIC CONDUCTIVITY umhos/cm	309	660			
PUMP RATE, GPM	2 gpm (Rup) 2	2 bailer			
Turbidity (NTU) on water	29	133			

URP: 0.63

SAMPLE OBSERVATIONS
- ☒ CLEAR
- ☐ CLOUDY
- ☐ COLORED ___
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING	
☐	☐	PERISTALTIC PUMP
☐	☐	SUBMERSIBLE PUMP
☒	☒	BAILER
	☐	PVC/SILICON TUBING
	☐	IN-LINE/DISPOSABLE FILTER
☒	☒	OTHER: whale pump

EQUIPMENT ID: ISCO # ___ ☒ 2" ☐ 4" # ___

DECON FLUIDS USED
- ☐ POTABLE WATER
- ☐ LIQUINOX
- ☐ STEAM CLEANING
- ☒ AES Approved
- 5 post

NUMBER OF FILTERS USED ___

WATER LEVEL EQUIP. USED
- ☒ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ PRESSURE TRANSDUCER

GROUND ELEVATION:

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS
☒ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☒	733A / B / C / D
☐ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☐	
☐ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG		
	UM13					
☐ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☐	
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2			
☐ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☐	
	UW32					
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG		
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE		
	TT10	C	4 DEG C	1 L P-CUBE		
	310.1	N	HNO3 TO pH <2	1 L P-CUBE		
☐ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE		
☐ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE		
		C	4 DEG C	1 L P-CUBE		
		N	HNO3 TO pH<2	1 L P-CUBE		
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

Note: A & B designations reversed from that recorded for well development

RECEIVED BY: ___

SIGNATURE: RJ

2 gallons out (ie; the 2" well was called 028

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PAGE 1 OF 1

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: AX4102B1

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SITE ID: 41M-93-02B

JOB NUMBER: 7053-10

SAMPLING DATE: 10/14/93

LOCATION ACTIVITY: START 10-14 11:34 END 10/15 15:30

PROGRAM: C

FILE NAME: CGW

WEATHER: Sunny 50s

WATER LEVEL / WELL DATA

WELL DEPTH: 35.35 FT

WATER DEPTH: 29.89 FT

HEIGHT OF WATER COLUMN: 5.46 FT

☒ MEASURED ☐ HISTORICAL

☒ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 3.20± FT

PROTECTIVE CASING/WELL DIFF.: -0.27 FT

9.2 GAL/VOL

12 TOTAL GAL PURGED

WELL INTEGRITY:

	YES	NO	N/A
PROT. CASING SECURE	☒	☐	☐
CONCRETE COLLAR INTACT	☒	☐	☐
WELL LOCKED	☒	☐	☐
PVC WELL CAP	☒	☐	☐

RISER ELEVATION:

GROUNDWATER ELEVATION:

WELL DIAMETER: ☐ 2 INCH ☒ 4 INCH ☐ ___ INCH

5.46 x 1.68 = 9.2

PID READINGS: AMBIENT AIR 0.0 PPM; WELL MOUTH 0.0 PPM

Top of Head Space = 0.0 ppm

PURGE DATA

11:38 — 11:44 (7 gal) — 13:24 — 16:00 ← To check recharge (<0.5 ppm)

PURGE VOLUME (Pumps dry)	@ 4.5 GAL	@ 9 GAL	@ 12 GAL	@ ___ GAL	@ ___ GAL
TEMP, DEG C	9.7	9.8			
pH, UNITS ☐ pH PAPER	8.91	7.33			
SPECIFIC CONDUCTIVITY umhos/cm	077	081			
PUMP RATE, GPM	<1gpm	<1gpm			
Turbidity (NTU)	>200	>200			

SAMPLE OBSERVATIONS: ☐ CLEAR ☐ CLOUDY ☐ COLORED ☒ TURBID ☐ ODOR ☐ OTHER (SEE NOTES)

ORP = 174

EQUIPMENT DOCUMENTATION

PURGING / SAMPLING:
- ☐ ☐ PERISTALTIC PUMP
- ☐ ☐ SUBMERSIBLE PUMP
- ☐ ☒ BAILER
- ☒ ☒ * PVC/SILICON TUBING
- ☐ ☒ * IN-LINE/DISPOSABLE FILTER 0.45µm
- ☒ ☒ * OTHER whale

EQUIPMENT ID: ISCO # ___ ☒ 2" ☐ 4" #___

DECON FLUIDS USED: ☐ POTABLE WATER ☐ LIQUINOX ☒ STEAM CLEANING — AEC approved S. Rost

NUMBER OF FILTERS USED: 1

WATER LEVEL EQUIP. USED: ☒ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ PRESSURE TRANSDUCER

GROUND ELEVATION:

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS
☒ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☒	484A / B / C / D
☒ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☒	484E / F
☒ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☒	484G / H / I
	UM13					
☒ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☒	484N / 484O (Filtered)
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2			
☒ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☒	484J / K / L
	UW32					
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	
	TT10	C	4 DEG C	1 L P-CUBE	☐	
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	
☒ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☒	484M
☐ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☐	
		C	4 DEG C	1 L P-CUBE	☐	
		N	HNO3 TO pH<2	1 L P-CUBE	☐	
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	

* For filtered metals only

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

* Recharge computed @ less than 0.5 gpm

RECEIVED BY: ___

SIGNATURE: [signature]

7 gallons out

33 35

dB ENVIRONMENTAL SERVICES, INC.

PAGE 1 OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 1 0 3 X 1

Purge Date 10/13/93

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SAMPLING DATE: 10/14/93

SITE ID: 4 1 M - 9 3 - 0 3 X

JOB NUMBER: 7053-10

FILE NAME: CGW

LOCATION ACTIVITY: START 10/13 14:20 END

PROGRAM: C

WEATHER: Sunny 50's

WATER LEVEL / WELL DATA

WELL DEPTH: 46.75 FT [X] MEASURED [ ] HISTORICAL

[X] TOP OF WELL [ ] TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): ± 2.5 FT

PROTECTIVE CASING/WELL DIFF.: + 0.35 FT

WATER DEPTH: 38.75 FT

13.5 GAL/VOL

WELL INTEGRITY: YES / NO / N/A
- PROT. CASING SECURE: [X] / [ ] / [ ]
- CONCRETE COLLAR INTACT: [ ] / [ ] / [X]
- WELL LOCKED: [X] / [ ] / [ ]
- PVC WELL CAP: [X] / [ ] / [ ]

RISER ELEVATION: ____

HEIGHT OF WATER COLUMN: 8 FT

53 TOTAL GAL PURGED

GROUNDWATER ELEVATION: ____

Assume 1.65 gal/ft x 8 = 13.5 gal

PID READINGS: AMBIENT AIR 0.0 to 2.0 PPM; WELL MOUTH 0.0 to 2.0 PPM (Bkgrd)

Jar Head Space = 2.0 ppm (Bkgrd)

WELL DIAMETER: [ ] 2 INCH [X] 4 INCH [ ] ___ INCH

PURGE DATA

PURGE VOLUME	@ Initial GAL (10/13 14:42)	@ 13.5 GAL (15:00)	@ 27 GAL (15:29)	@ 40.5 GAL (15:58)	@ 54 GAL (16:32)
TEMP, DEG C	11.2	10.1	10.3	10.0	10.1
pH, UNITS [ ] pH PAPER	7.48	7.45	7.31	7.27	7.32
SPECIFIC CONDUCTIVITY umhos/cm	.070	.048	.047	.047	.041
PUMP RATE, GPM	<1.0 gpm	<1.0 gpm	<1.0 gpm	<1.0	<1.0
Turbidity =	162	155	69	47	51

Out of water @ 18.5 gallons; Out of water @ 23.5 gallons (15:12)

ORP = 240 mV

SAMPLE OBSERVATIONS: 67.5 [ ] CLEAR; 10.0 [ ] CLOUDY; 7.31 [ ] COLORED ____; .047 [ ] TURBID; <1.0 [ ] ODOR; [ ] OTHER (SEE NOTES)

70

EQUIPMENT DOCUMENTATION

PURGING / SAMPLING:
- [ ] / [ ] PERISTALTIC PUMP
- [ ] / [ ] SUBMERSIBLE PUMP
- [ ] / [ ] BAILER
- [ ] / [ ] PVC/SILICON TUBING
- [ ] / [ ] IN-LINE/DISPOSABLE FILTER
- [ ] / [ ] OTHER ____

EQUIPMENT ID: ISCO # ____ [ ] 2" [ ] 4" # ____

DECON FLUIDS USED:
- [ ] POTABLE WATER
- [ ] LIQUINOX
- [ ] STEAM CLEANING
- [X] USAEC Approved S. Post

NUMBER OF FILTERS USED ____

WATER LEVEL EQUIP. USED:
- [X] ELECTRIC COND. PROBE
- [ ] FLOAT ACTIVATED
- [ ] PRESSURE TRANSDUCER
- ____

GROUND ELEVATION: ____

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS
[ ] VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	[ ]	____
[ ] SVOC	UM18	MS	4 DEG C	(2) 1 L AG	[ ]	____
[ ] PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	[ ]	____
	UM13					____
[ ] PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	[ ]	____
[ ] LEAD ONLY	SD20	N	HNO3 TO pH<2		[ ]	____
[ ] EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	[ ]	____
	UW32					____
[ ] TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	[ ]	____
[ ] TOC	415.1	O	H2SO4 TO pH <2	1 L AG	[ ]	____
[ ] ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	[ ]	____
	TT10	C	4 DEG C	1 L P-CUBE	[ ]	____
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	[ ]	____
[ ] TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	[ ]	____
[ ] H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	[ ]	____
		C	4 DEG C	1 L P-CUBE	[ ]	____
		N	HNO3 TO pH<2	1 L P-CUBE	[ ]	____
[ ] COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	[ ]	____

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

Initial Jar Head Space Read = 2.0 (Believed to be Bkgrd)
However Headspace of Vol 1, 2 + 3 Read 6.0 ppm
* Decon water similarly heated read 0.0 ppm
Water was contaminated

RECEIVED BY: ____

SIGNATURE: ____

ABB ENVIRONMENTAL SERVICES, INC.

PAGE 1 OF 1

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 1 0 4 X 1

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SITE ID: 41 M - 93 - 04 X — Note: labeled opposite of development records (OSX)

JOB NUMBER: 7053-10

SAMPLING DATE: 10-14-93

FILE NAME: CGW

LOCATION ACTIVITY: START 10-14 12:50 END 10-14 16:00

PROGRAM: C

WEATHER: Sunny 50s

WATER LEVEL / WELL DATA

☒ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 3.25 FT

PROTECTIVE CASING/WELL DIFF.: +0.17 FT

WELL DEPTH: 11.05 FT ☐ MEASURED ☐ HISTORICAL

WATER DEPTH: 7.35 FT

2.0 GAL/VOL

HEIGHT OF WATER COLUMN: 3.7 FT

10+ TOTAL GAL PURGED

WELL INTEGRITY:

	YES	NO	N/A
PROT. CASING SECURE	☒	☐	☐
CONCRETE COLLAR INTACT	☐	☐	☒
WELL LOCKED	☒	☐	☐
PVC WELL CAP	☐	☒	☐

RISER ELEVATION:

GROUNDWATER ELEVATION:

WELL DIAMETER: ☒ 2 INCH ☐ 4 INCH ☐ ___ INCH

Use .554 for 6" bore hole

PID READINGS: AMBIENT AIR 0.0 PPM; WELL MOUTH 0.0 PPM

Jar Head Space = 0.0 ppm

PURGE DATA

	12:51	12:53	12:55	12:57	12:59
PURGE VOLUME	@ 2 GAL	@ 4 GAL	@ 6 GAL	@ 8 GAL	@ 10 GAL
TEMP, DEG C	13.2	13.2	13.3	13.4	13.2
pH, UNITS ☐ pH PAPER	6.47	6.41	6.35	6.37	6.31
SPECIFIC CONDUCTIVITY umhos/cm	041	042	040	040	039
PUMP RATE, GPM	2	2	2	2	2
	15	15	18	16	15

SAMPLE OBSERVATIONS: ☐ CLEAR ☐ CLOUDY ☐ COLORED ___ ☐ TURBID ☐ ODOR ☐ OTHER (SEE NOTES)

ORP= 093 mV

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING	
☐	☐	PERISTALTIC PUMP
☐	☐	SUBMERSIBLE PUMP
☒	☒	BAILER
	☒	PVC/SILICON TUBING
	☒	IN-LINE/DISPOSABLE FILTER 0.45 µm
☒	☐	OTHER Whale pump

EQUIPMENT ID: ISCO # ___ ☒ 2" ☐ 4" #

DECON FLUIDS USED: ☐ POTABLE WATER ☐ LIQUINOX ☐ STEAM CLEANING ☒ AFC approved S. Posy

NUMBER OF FILTERS USED ___

WATER LEVEL EQUIP. USED: ☒ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ PRESSURE TRANSDUCER

GROUND ELEVATION:

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS
☐ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☐	
☐ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☐	
☐ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☐	
	UM13					
☐ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☐	
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2		☐	
☐ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☐	
	UW32					
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	
	TT10	C	4 DEG C	1 L P-CUBE	☐	
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	
☐ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☐	
☐ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☐	
		C	4 DEG C	1 L P-CUBE	☐	
		N	HNO3 TO pH<2	1 L P-CUBE	☐	
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	

* Filtered metals only

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

Note: Water is a bright orange color upon initial purge but clears after ≈ 2 gallons

RECEIVED BY: ___

SIGNATURE: ___

ABB ENVIRONMENTAL SERVICES, INC.

PAGE 1 OF 1

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 1 0 5 X 1

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

Sampling date 10-15-93

SITE ID: 4 1 M - 9 3 - 0 5 X (Note: labeled opposite from development (04X))

JOB NUMBER: 7053-16

~~SAMPLING~~ Purge DATE: 10-14-93

FILE NAME: CGW

LOCATION ACTIVITY: START 10/14 12:20 END 10/15 11:00

PROGRAM: C

WEATHER: Sunny - 50's

WATER LEVEL / WELL DATA

WELL DEPTH: ~~7.90~~ 10.25 FT

☒ MEASURED ☐ HISTORICAL

WATER DEPTH: 7.90 FT

HEIGHT OF WATER COLUMN: 2.35 FT

1.3 GAL/VOL

10 TOTAL GAL PURGED

☒ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.70 I FT

PROTECTIVE CASING/WELL DIFF.: +0.26 FT

RISER ELEVATION:

GROUNDWATER ELEVATION:

WELL INTEGRITY:

	YES	NO	N/A
PROT. CASING SECURE	☒	☐	☐
CONCRETE COLLAR INTACT	☐	☒	☒
WELL LOCKED	☐	☐	☐
PVC WELL CAP	☒	☐	☐

WELL DIAMETER: ☒ 2 INCH ☐ 4 INCH ☐ ___ INCH

Use .554 x for 6" base now

PID READINGS: AMBIENT AIR 0.0 PPM WELL MOUTH 0.0 PPM

Jar Head Space = 0.0 PPM

PURGE DATA

	12:20	12:24	12:26	12:28	12:30
PURGE VOLUME	@ 2 GAL	@ 4 GAL	@ 6 GAL	@ 8 GAL	@ 10 GAL
TEMP, DEG C	13.2	13.6	13.5	13.5	13.4
pH, UNITS ☐ pH PAPER	7.53	7.27	7.28	7.12	7.1
SPECIFIC CONDUCTIVITY umhos/cm	072	041	054	051	049
PUMP RATE, GPM 2 gpm	2	2	2	2	2
Turbidity (NTU)	22	16	15	15	17

SAMPLE OBSERVATIONS: ☒ CLEAR ☐ CLOUDY ☐ COLORED ☐ TURBID ☐ ODOR ☐ OTHER (SEE NOTES)

ORP = 23 mV

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING	
☐	☐	PERISTALTIC PUMP
☐	☐	SUBMERSIBLE PUMP
☐	☒	BAILER
	☒	* PE/PVC/SILICON TUBING
	☒	* IN-LINE/DISPOSABLE FILTER 0.45 um
☒	☒	* OTHER Whale Pump

EQUIPMENT ID: ISCO # ___ ☒ 2" ☐ 4" #___

DECON FLUIDS USED: ☐ POTABLE WATER ☐ LIQUINOX ☒ STEAM CLEANING ☒ AEC approved S. Rost

NUMBER OF FILTERS USED: 1

WATER LEVEL EQUIP. USED: ☒ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ PRESSURE TRANSDUCER

GROUND ELEVATION:

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS
☒ VOC (* For Filtered metal Sample Only)	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☒	490A / B / C / D
☒ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☒	490E / F
☒ PEST/PCB	UM02 UM13	EC	4 DEG C	(3) 1 L AG	☒	490G / H / I
☐ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☐	490N / 490O (Filtered)
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2			
☒ EXPLOSIVES	UW19 UW32	LC	4 DEG C	(3) 1 L AG	☒	490J / K / L
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	
	TT10	C	4 DEG C	1 L P-CUBE	☐	
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	
☒ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☒	490M
☐ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☐	
		C	4 DEG C	1 L P-CUBE	☐	
		N	HNO3 TO pH<2	1 L P-CUBE	☐	
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	

NOTES: PAL INORGANICS: ICP METALS (SB10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

RECEIVED BY: ___

SIGNATURE: [signature]

ABB ENVIRONMENTAL SERVICES, INC.

PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 1 0 1 X 4

PROJECT: USATHAMA-FT.DEVENS

SITE ID: 4 1 M 9 9 7 - 0 1 X

SITE TYPE: WELL PVC

JOB NUMBER: 07053.94

PROGRAM: C

SAMPLING DATE: 12-7-94

FILE NAME: CGW

WEATHER: RAIN

LOCATION ACTIVITY: START 1445 END

WATER LEVEL / WELL DATA

WELL DEPTH: 35.00 FT

WATER DEPTH: 25.45 FT

HEIGHT OF WATER COLUMN: 9.55 FT x 1.68

16.04 GAL/VOL

16 TOTAL GAL PURGED

☒ MEASURED ☐ HISTORICAL

☒ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.15 FT

PROTECTIVE CASING/WELL DIFF.: + 0.18 FT

RISER ELEVATION:

GROUNDWATER ELEVATION:

WELL INTEGRITY:

	YES	NO	N/A
PROT. CASING SECURE	☒	☐	☐
CONCRETE COLLAR INTACT	☒	☐	☐
WELL LOCKED	☒	☐	☒
PVC WELL CAP	☒	☐	☒

PID READINGS: AMBIENT AIR 0 PPM; WELL MOUTH 0 PPM

WELL DIAMETER: ☐ 2 INCH ☒ 4 INCH ☐ ___ INCH

PURGE DATA

	1515	1520	1610		
PURGE VOLUME	@ 5 GAL	@ 10 GAL	@ 16.04 GAL	@ ___ GAL	@ ___ GAL
TEMP, DEG C	16.8	16.5	15.8		
pH, UNITS ☐ pH PAPER	5.97	5.61	6.7		
SPECIFIC CONDUCTIVITY umhos/cm	38	38	39		
PUMP RATE, GPM					

SAMPLE OBSERVATIONS: ☐ CLEAR ☐ CLOUDY ☐ COLORED ___ ☐ TURBID ☐ ODOR ☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING / SAMPLING: ☐ PERISTALTIC PUMP; ☐ SUBMERSIBLE PUMP; ☒ BAILER; ☐ PVC/SILICON TUBING; ☐ IN-LINE/DISPOSABLE FILTER; ☐ OTHER

EQUIPMENT ID: ISCO # ___ ☒ 2" ☐ 4" # ___

DECON FLUIDS USED: ☐ POTABLE WATER ☐ LIQUINOX ☐ STEAM CLEANING

WATER LEVEL EQUIP. USED: ☐ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ PRESSURE TRANSDUCER

GROUND ELEVATION:

NUMBER OF FILTERS USED: ___

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS (030A / B / C / D)
☒ VOC	UH20	VP	HCL, 4 DEG C	(4) 60 ML	☒	E / F
☒ SVOC	UH18	MS	4 DEG C	(2) 1 L AG	☒	
☐ PEST/PCB	UH02	EC	4 DEG C	(3) 1 L AG	☐	
	UH13					
☒ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☒	N / Z
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2		☐	
☒ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☐	G / H / I
	UW32					
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	
	TT10	C	4 DEG C	1 L P-CUBE	☐	
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	
☒ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☒	J / K
☒ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☒	L
		C	4 DEG C	1 L P-CUBE	☐	
		N	HNO3 TO pH<2	1 L P-CUBE	☐	
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

RECEIVED BY: ___

SIGNATURE: [illegible]

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PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 1 0 2 A 4

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SITE ID: 4 1 M - 9 4 - 0 2 A

JOB NUMBER: 7053-14

SAMPLING DATE: 12-6-94

FILE NAME: CGW

LOCATION ACTIVITY: START ~~1015~~ 1100 END 1245

PROGRAM: C

WEATHER: OVERCAST

WATER LEVEL / WELL DATA

☐ TOP OF WELL
☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.66 FT

PROTECTIVE CASING/WELL DIFF.: -0.30 FT

WELL DEPTH: 8.1 FT

☐ MEASURED
☐ HISTORICAL

WATER DEPTH: 5.85 FT

3.78 GAL/VOL

WEIGHT OF WATER COLUMN: 2.25 FT x 1.68

4.5 TOTAL GAL PURGED

WELL INTEGRITY:

	YES	NO	N/A
PROT. CASING SECURE	☐	☐	☐
CONCRETE COLLAR INTACT	☐	☐	☐
WELL LOCKED	☐	☐	☐
PVC WELL CAP	☐	☐	☐

RISER ELEVATION: ____

GROUNDWATER ELEVATION: ____

PID READINGS: AMBIENT AIR 0.1 PPM; WELL MOUTH 0.3 PPM

WELL DIAMETER: ☒ 2 INCH ☐ 4 INCH ☐ ___ INCH

PURGE DATA

	1115	11:30	1200		
PURGE VOLUME	@ 2.0 GAL	@ 3 GAL	@ 4 GAL	@ ____ GAL	@ ____ GAL
TEMP, DEG C	13.7	13.0	12.4		
pH, UNITS ☐ pH PAPER	5.99	6.33	6.50		
SPECIFIC CONDUCTIVITY umhos/cm	71	77	81		
PUMP RATE, GPM					

SAMPLE OBSERVATIONS
☐ CLEAR
☐ CLOUDY
☐ COLORED ____
☐ TURBID
☐ ODOR
☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING		EQUIPMENT ID
☐	☒	PERISTALTIC PUMP	ISCO # ____
☒	☒	SUBMERSIBLE PUMP	☒ 2" ☐ 4" # ____
☐	☐	BAILER	
	☒	PVC/SILICON TUBING	
	☐	IN-LINE/DISPOSABLE FILTER	____
☐	☐	OTHER	____

DECON FLUIDS USED
☒ POTABLE WATER
☐ LIQUINOX
☐ STEAM CLEANING
____

WATER LEVEL EQUIP. USED
☒ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ PRESSURE TRANSDUCER
____

GROUND ELEVATION: ____

NUMBER OF FILTERS USED ____

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS
☒ VOC	UH20	VP	HCL, 4 DEG C	(4) 60 ML	☒	A / B / C / D
☒ SVOC	UH18	MS	4 DEG C	(2) 1 L AG	☒	E / F
☐ PEST/PCB	UH02	EC	4 DEG C	(3) 1 L AG	☐	
	UH13					
☒ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☒	N / O
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2			
☒ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☒	G / H / I
	UW32					
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	
	TT10	C	4 DEG C	1 L P-CUBE	☐	
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	
☒ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☒	J / K
☒ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☒	L
		C	4 DEG C	1 L P-CUBE	☐	
		N	HNO3 TO pH<2	1 L P-CUBE	☐	
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

TURBIDITY METER DIED

RECEIVED BY: ____

SIGNATURE: [illegible]

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PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M N 4 1 0 2 B 3

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL PVC

SAMPLING DATE: 12 6 -94

SITE ID: 4 1 M - 9 3 - 0 2 B

JOB NUMBER: 7053-14

FILE NAME: CGW

LOCATION ACTIVITY: START 1000 END 1215

PROGRAM: C

WEATHER: OVERCAST

WATER LEVEL / WELL DATA

WELL DEPTH: 35.15 FT

WATER DEPTH: 28.20 FT

HEIGHT OF WATER COLUMN: 6.95 FT

■ MEASURED ☐ HISTORICAL

11.68 GAL/VOL

12 TOTAL GAL PURGED

■ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 3.25 FT

PROTECTIVE CASING/WELL DIFF.: -0.29 FT

RISER ELEVATION:

GROUNDWATER ELEVATION:

WELL INTEGRITY:	YES	NO	N/A
PROT. CASING SECURE	■	☐	■
CONCRETE COLLAR INTACT	■	☐	■
WELL LOCKED	■	☐	■
PVC WELL CAP	■	☐	■

WELL DIAMETER: ☐ 2 INCH ■ 4 INCH ☐ ___ INCH

6.63 PID READINGS: AMBIENT AIR 0.1 PPM; WELL MOUTH 0.3 PPM

PURGE DATA

	1130	1140	1155		
PURGE VOLUME	@ 4 GAL	@ 8 GAL	@ 12 GAL	@ ___ GAL	@ ___ GAL
TEMP, DEG C	13.7	13.2	13.2		
pH, UNITS ☐ pH PAPER	6.38	6.42	6.54		
SPECIFIC CONDUCTIVITY umhos/cm	52	51	52		
PUMP RATE, GPM					

SAMPLE OBSERVATIONS: ☐ CLEAR ☐ CLOUDY ☐ COLORED ___ ☐ TURBID ☐ ODOR ☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING		EQUIPMENT ID	DECON FLUIDS USED	WATER LEVEL EQUIP. USED
☐	☐	PERISTALTIC PUMP	ISCO # ___	■ POTABLE WATER	■ ELECTRIC COND. PROBE
■	■	SUBMERSIBLE PUMP		☐ LIQUINOX	☐ FLOAT ACTIVATED
☐	☐	BAILER	■ 2" ☐ 4" # ___	☐ STEAM CLEANING	☐ PRESSURE TRANSDUCER
	■	PVC/SILICON TUBING		☐ ___	☐ ___
	☐	IN-LINE/DISPOSABLE FILTER ___			
☐	☐	OTHER ___			

NUMBER OF FILTERS USED: 1

GROUND ELEVATION:

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
■ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	■
■ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	■
☐ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☐
	UM13				
■ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	■
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2		☐
■ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	■
	UW32				
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐
	TT10	C	4 DEG C	1 L P-CUBE	☐
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐
■ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	■
■ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	■
		C	4 DEG C	1 L P-CUBE	☐
		N	HNO3 TO pH<2	1 L P-CUBE	☐
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐

SAMPLE BOTTLE ID NUMBERS: A / B / C / D; E / F; N / O; G / H / I; J / K; L

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

TURBIDITY METER NOT FUNCTIONING

SAMPLE ~~[illegible]~~ FILTERED OUT OF BAILER

RECEIVED BY: ___

SIGNATURE: [signature]

ABB ENVIRONMENTAL SERVICES, INC.

PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 1 0 2 X X

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL PVC

SITE ID: 41M-94-02C

JOB NUMBER: 7053-14

SAMPLING DATE: 12-6-94

PROGRAM: C

FILE NAME: CGW

LOCATION ACTIVITY: START 1015 END 1600

WEATHER: OVERCAST

WATER LEVEL / WELL DATA

☒ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.41 FT

PROTECTIVE CASING/WELL DIFF.: -0.18

WELL DEPTH: 51.80 FT ☐ MEASURED ☐ HISTORICAL

WATER DEPTH: 31.05 FT

34.86 GAL/VOL

HEIGHT OF WATER COLUMN: 20.75 FT × 1.68

180 TOTAL GAL PURGED

WELL INTEGRITY:	YES	NO	N/A
PROT. CASING SECURE	☒	☐	☐
CONCRETE COLLAR INTACT	☒	☐	☐
WELL LOCKED	☒	☐	☐
PVC WELL CAP	☒	☐	☐

RISER ELEVATION: ____

GROUNDWATER ELEVATION: ____

WELL DIAMETER: ☐ 2 INCH ☒ 4 INCH ☐ ___ INCH

PID READINGS: AMBIENT AIR 0.1 PPM; WELL MOUTH 0.6 PPM

PURGE DATA

	1250	1330	1420	1510	1545
PURGE VOLUME	@ 35 GAL	@ 70 GAL	@ 105 GAL	@ 140 GAL	@ 175 GAL
TEMP, DEG C	13.6	13.6	15.7	16.0	16.3
pH, UNITS ☐ pH PAPER	6.63	6.05	6.25	6.49	6.29
SPECIFIC CONDUCTIVITY umhos/cm	34	32	29	27	28
PUMP RATE, GPM					

SAMPLE OBSERVATIONS: ☐ CLEAR ☐ CLOUDY ☐ COLORED ____ ☐ TURBID ☐ ODOR ☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING		EQUIPMENT ID
☒	☒	PERISTALTIC PUMP	ISCO # ____
☒	☒	SUBMERSIBLE PUMP	☒ 2" ☐ 4" # ____
☐	☐	BAILER	
	☒	PVC/SILICON TUBING	
	☒	IN-LINE/DISPOSABLE FILTER ____	
☐	☐	OTHER ____	

DECON FLUIDS USED: ☒ POTABLE WATER ☐ LIQUINOX ☐ STEAM CLEANING ____

WATER LEVEL EQUIP. USED: ☒ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ PRESSURE TRANSDUCER ____

GROUND ELEVATION: ____

NUMBER OF FILTERS USED: 1

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS
☒ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☒	203 A / B / C / D
☒ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☒	E / F
☐ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☐	
	UM13					
☒ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☒	N / O
☒ LEAD ONLY	SD20	N	HNO3 TO pH<2		☒	
☒ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☒	G / H / I
	UW32					
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	
	TT10	C	4 DEG C	1 L P-CUBE	☐	
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	
☒ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☒	J / K
☒ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☒	L
		C	4 DEG C	1 L P-CUBE	☒	
		N	HNO3 TO pH<2	1 L P-CUBE	☐	
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

MS/MSD

MATRIX SPIKE & M.S. DUPL.

RECEIVED BY: ____

SIGNATURE: [illegible]

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PAGE 1 OF 1

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: MX41O3X3

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SITE ID: 41M-93-03X

JOB NUMBER: 7053-14

SAMPLING DATE: 6 Dec 1994

PROGRAM: C

FILE NAME: CGW

LOCATION ACTIVITY: START 1120 END 1430

WEATHER: Cloudy, 50's

WATER LEVEL / WELL DATA

WELL DEPTH: 46.07 FT [✓] MEASURED [ ] HISTORICAL

WATER DEPTH: 37.75 FT

HEIGHT OF WATER COLUMN: 8.32 FT

[✓] TOP OF WELL [ ] TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 1.9 FT

PROTECTIVE CASING/WELL DIFF.: -0.35 FT

14 GAL/VOL

70 TOTAL GAL PURGED

WELL INTEGRITY:

	YES	NO	N/A
PROT. CASING SECURE	✓		
CONCRETE COLLAR INTACT	✓		
WELL LOCKED	✓		
PVC WELL CAP		✓	

RISER ELEVATION:

GROUNDWATER ELEVATION:

PID READINGS: AMBIENT AIR 0.0 PPM WELL MOUTH 0.6 PPM

WELL DIAMETER: [ ] 2 INCH [✓] 4 INCH [ ] ___ INCH

PURGE DATA

PURGE VOLUME	@ 14 GAL	@ 28 GAL	@ 42 GAL	@ 56 GAL	@ 70 GAL
TEMP, DEG C	11.4	10.9	10.9	10.9	10.9
pH, UNITS [ ] pH PAPER	7.3	8.0	8.1	8.1	8.2
SPECIFIC CONDUCTIVITY umhos/cm	46	47	48	48	49
PUMP RATE, GPM	≈1.5-2	≈1.5-2.0	≈1.5	≈1.5	≈1.5

SAMPLE OBSERVATIONS
[✓] CLEAR but turbid 1st vol
[ ] CLOUDY
[ ] COLORED ____
[ ] TURBID
[ ] ODOR
[ ] OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING	
[ ]	[ ]	PERISTALTIC PUMP
[✓]	[✓]	SUBMERSIBLE PUMP
[ ]	[ ]	BAILER
[ ]	[✓]	PVC/SILICON TUBING
	[ ]	IN-LINE/DISPOSABLE FILTER ____
[ ]	[ ]	OTHER ____

EQUIPMENT ID: ISCO # ____ [ ] 2" [ ] 4" # ____

DECON FLUIDS USED:
[ ] POTABLE WATER
[ ] LIQUINOX
[ ] STEAM CLEANING
[✓] none dedicated equipment

NUMBER OF FILTERS USED ____

WATER LEVEL EQUIP. USED:
[✓] ELECTRIC COND. PROBE
[ ] FLOAT ACTIVATED
[ ] PRESSURE TRANSDUCER

GROUND ELEVATION:

Sample/Duplicate

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS 034/202A	034/202B	034/202C	034/202D
[✓] VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	[✓]	E	F		
[✓] SVOC	UM18	MS	4 DEG C	(2) 1 L AG	[✓]				
[ ] PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	[ ]				
	UM13								
[✓] PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	2 L P-CUBE	[✓]	O N	B		
[ ] LEAD ONLY	SD20	N	HNO3 TO pH<2	(above filt)					
[✓] EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	[✓]	G	H	I	
	UW32								
[ ] TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	[ ]				
[ ] TOC	415.1	O	H2SO4 TO pH <2	1 L AG	[ ]				
[✓] ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	[✓]				
	TT10	C	4 DEG C	1 L P-CUBE	[✓]				
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	[✓]				
[✓] TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	[✓]	J	K		
[✓] H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	[✓]	L			
		C	4 DEG C	1 L P-CUBE	[✓]	M			
		N	HNO3 TO pH<2	1 L P-CUBE	[✓]	N			
[ ] COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	[ ]				

NOTES PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

No turbidity measurements because turbidimeter malfunctioning.
Duplicate collected @ this location.

RECEIVED BY: ____

SIGNATURE: R. David Simmons

ABB ENVIRONMENTAL SERVICES, INC.

PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: MX41 03 B3

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SAMPLING DATE: ~~6~~ 8 Dec 1994

SITE ID: 41M-94-03B

JOB NUMBER: 7053-14

FILE NAME: CGW

LOCATION ACTIVITY: START ~~1545~~ 0850 END 1230

PROGRAM: C

WEATHER: ~~Cloudy, 40s~~ Sunny, 20s

WATER LEVEL / WELL DATA

WELL DEPTH: 66.88 FT

WATER DEPTH: 38.70 FT

HEIGHT OF WATER COLUMN: 28.18 FT

☑ MEASURED ☐ HISTORICAL

☑ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.6 FT

PROTECTIVE CASING/WELL DIFF.: -0.20 FT

47 GAL/VOL

235 TOTAL GAL PURGED

WELL INTEGRITY:

	YES	NO	N/A
PROT. CASING SECURE	☑	☐	☐
CONCRETE COLLAR INTACT	☑	☐	☐
WELL LOCKED	☑	☐	☐
PVC WELL CAP	☑	☐	☐

RISER ELEVATION:

GROUNDWATER ELEVATION:

PID READINGS: AMBIENT AIR 0.0 PPM; WELL MOUTH 1.1 PPM

WELL DIAMETER: ☐ 2 INCH ☑ 4 INCH ☐ ___ INCH

PURGE DATA

PURGE VOLUME	@ 47 GAL	@ 94 GAL	@ 141 GAL	@ 188 GAL	@ 235 GAL
TEMP, DEG C	9.4	9.3	9.4	9.5	9.5
pH, UNITS ☐ pH PAPER	8.4	8.6	7.8	7.6	7.6
SPECIFIC CONDUCTIVITY umhos/cm	Broken				
PUMP RATE, GPM					

SAMPLE OBSERVATIONS
- ☑ CLEAR
- ☐ CLOUDY
- ☐ COLORED ____
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING	
☑	☑	PERISTALTIC PUMP
☐	☑	SUBMERSIBLE PUMP
☐	☐	BAILER
	☑	PVC/SILICON TUBING
	☑	IN-LINE/DISPOSABLE FILTER
☐	☐	OTHER ____

EQUIPMENT ID: ISCO # ____ ☐ 2" ☐ 4" # ____

DECON FLUIDS USED
- ☐ POTABLE WATER
- ☐ LIQUINOX
- ☐ STEAM CLEANING
- ☑ none, dedicated equipment

NUMBER OF FILTERS USED ____

WATER LEVEL EQUIP. USED
- ☑ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ PRESSURE TRANSDUCER

GROUND ELEVATION:

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS (20CA / 20CB / 20CC / 20CD)
☑ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☑	E / F
☑ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☑	
☐ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☐	
	UM13					
☑ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☑	G
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2		☐	
☑ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☐	C / H / I
	UW32					
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	
	TT10	C	4 DEG C	1 L P-CUBE	☐	
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	
☑ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☑	J
☐ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☑	
		C	4 DEG C	1 L P-CUBE	☑	K
		N	HNO3 TO pH<2	1 L P-CUBE	☑	L
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

RECEIVED BY: ____

SIGNATURE: [illegible]

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PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 1 0 4 X 3

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SITE ID: 4 1 M - 9 ~~4~~ 3 - 0 4 X

JOB NUMBER: 07053-14

SAMPLING DATE: 12-7-94

FILE NAME: CGW

LOCATION ACTIVITY: START 1135 END 1145

PROGRAM: C

WEATHER: DRIZZLE

WATER LEVEL / WELL DATA

WELL DEPTH: 10.2 FT

WATER DEPTH: 6.58 FT

HEIGHT OF WATER COLUMN: 3.62 FT

☒ MEASURED ☐ HISTORICAL

☒ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.78 FT

PROTECTIVE CASING/WELL DIFF.: -.25 FT

2.0 GAL/VOL

10 TOTAL GAL PURGED

WELL INTEGRITY:

	YES	NO	N/A
PROT. CASING SECURE	☒	☐	☐
CONCRETE COLLAR INTACT	☒	☐	☒
WELL LOCKED	☒	☐	☐
PVC WELL CAP	☒	☐	☐

RISER ELEVATION: ____

GROUNDWATER ELEVATION: ____

WELL DIAMETER: ☒ 2 INCH ☐ 4 INCH ☐ ___ INCH

PID READINGS: AMBIENT AIR 0 PPM; WELL MOUTH 0 PPM

PURGE DATA

	1140	1142	1145		
PURGE VOLUME	@ 2.0 GAL	@ 6 GAL	@ 10 GAL	@ ____ GAL	@ ____ GAL
TEMP, DEG C	15.0	14.6	13.0		
pH, UNITS ☐ pH PAPER		1.59	~~2.44~~ 6.30		
SPECIFIC CONDUCTIVITY umhos/cm	30	33	30		
PUMP RATE, GPM					

SAMPLE OBSERVATIONS
☐ CLEAR
☐ CLOUDY
☐ COLORED ____
☐ TURBID
☐ ODOR
☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING	
☐	☐	PERISTALTIC PUMP
☒	☒	SUBMERSIBLE PUMP
☐	☐	BAILER
	☒	PVC/SILICON TUBING
	☒	IN-LINE/DISPOSABLE FILTER ____
☐	☐	OTHER ____

EQUIPMENT ID: ISCO # ____ ☒ 2" ☐ 4" # ____

DECON FLUIDS USED: ☐ POTABLE WATER ☐ LIQUINOX ☐ STEAM CLEANING ____

WATER LEVEL EQUIP. USED: ☐ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ PRESSURE TRANSDUCER ____

GROUND ELEVATION: ____

NUMBER OF FILTERS USED ____

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS
☒ VOC	UH20	VP	HCL, 4 DEG C	(4) 60 ML	☒	A / B / C / D
☒ SVOC	UH18	MS	4 DEG C	(2) 1 L AG	☒	E / F
☐ PEST/PCB	UH02	EC	4 DEG C	(3) 1 L AG	☐	
	UH13					
☒ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☒	N / O
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2			
☒ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☒	G / H / I
	UW32					
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	
	TT10	C	4 DEG C	1 L P-CUBE	☐	
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	
☒ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☐	
☒ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☒	J / K
		C	4 DEG C	1 L P-CUBE	☐	L
		N	HNO3 TO pH<2	1 L P-CUBE	☐	
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

PH NOT LOGICAL (meter not functioning)

RECEIVED BY: ____

SIGNATURE: [illegible]

ABB ENVIRONMENTAL SERVICES, INC.

PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X4 1 0 5 X 3

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL PVC

SAMPLING DATE: 12-7-94

SITE ID: 4 1 M - 9 ~~4~~ 3 . 0 5 X

JOB NUMBER: 07053-14

FILE NAME: CGW

LOCATION ACTIVITY: START 1050 END 1115

PROGRAM: C

WEATHER: OVERCAST SPRINKLES

WATER LEVEL / WELL DATA

WELL DEPTH: 10.95 FT

☒ MEASURED ☐ HISTORICAL

☒ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 3.44 FT

PROTECTIVE CASING/WELL DIFF.: -.14 FT

WATER DEPTH: 6.0 FT

2.72 GAL/VOL

HEIGHT OF WATER COLUMN: 4.95 FT

18 TOTAL GAL PURGED

WELL INTEGRITY:

	YES	NO	N/A
PROT. CASING SECURE	☒	☐	☒
CONCRETE COLLAR INTACT	☒	☐	☒
WELL LOCKED	☒	☐	☐
PVC WELL CAP	☒	☐	☐

RISER ELEVATION: ____

GROUNDWATER ELEVATION: ____

WELL DIAMETER: ☒ 2 INCH ☐ 4 INCH ☐ ___ INCH

PID READINGS: AMBIENT AIR 0 PPM; WELL MOUTH 0 PPM

PURGE DATA

	1055	1100	1105		
PURGE VOLUME	@ 2.73 GAL	@ 7.0 GAL	@ 14 GAL	@ ____ GAL	@ ____ GAL
TEMP, DEG C	15.1	14.5	13.9		
pH, UNITS ☐ pH PAPER	5.33	3.92	4.04		
SPECIFIC CONDUCTIVITY umhos/cm	50	31	29		
PUMP RATE, GPM					

SAMPLE OBSERVATIONS
- ☐ CLEAR
- ☐ CLOUDY
- ☐ COLORED ____
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING		EQUIPMENT ID
☒	☒	PERISTALTIC PUMP	ISCO # ____
☒	☒	SUBMERSIBLE PUMP	☒ 2" ☐ 4" # ___
☐	☐	BAILER	
	☒	PVC/SILICON TUBING	
	☒	IN-LINE/DISPOSABLE FILTER	____
☐	☐	OTHER ____	

DECON FLUIDS USED
- ☒ POTABLE WATER
- ☐ LIQUINOX
- ☐ STEAM CLEANING
- ____

WATER LEVEL EQUIP. USED
- ☒ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ PRESSURE TRANSDUCER
- ____

GROUND ELEVATION: ____

NUMBER OF FILTERS USED ____

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS
☒ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☒	038 A / B / C / D
☒ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☒	E / F
☐ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☐	
	UM13					
☒ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☒	N / O
☒ LEAD ONLY	SD20	N	HNO3 TO pH<2		☒	
☒ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☒	G / H / I
	UW32					
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	
	TT10	C	4 DEG C	1 L P-CUBE	☐	
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	
☒ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☐	
☒ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☒	J / K
		C	4 DEG C	1 L P-CUBE	☒	L
		N	HNO3 TO pH<2	1 L P-CUBE	☐	
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

RECEIVED BY: ____

SIGNATURE: [illegible]

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PAGE 1 OF 1

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 1 0 7 X 3

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SAMPLING DATE: 7 Dec 1994

SITE ID: 4 1 M - 9 4 - 0 6 X

JOB NUMBER: 7053-14

FILE NAME: CGW

LOCATION ACTIVITY: START 1430 END 1630

PROGRAM: C

WEATHER: Rain, 40's

WATER LEVEL / WELL DATA

WELL DEPTH: 16.40 FT

☑ MEASURED ☐ HISTORICAL

☑ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.15 FT

PROTECTIVE CASING/WELL DIFF.: -0.12 FT

WATER DEPTH: 7.57 FT

HEIGHT OF WATER COLUMN: 8.83 FT

14.83 GAL/VOL

75 TOTAL GAL PURGED

WELL INTEGRITY:

	YES	NO	N/A
PROT. CASING SECURE	☑	☐	☐
CONCRETE COLLAR INTACT	☑	☐	☐
WELL LOCKED	☐	☐	☐
PVC WELL CAP	☐	☐	☐

RISER ELEVATION:

GROUNDWATER ELEVATION:

PID READINGS: AMBIENT AIR 0.0 PPM; WELL MOUTH 0.5 PPM

WELL DIAMETER: ☐ 2 INCH ☑ 4 INCH ☐ ___ INCH

PURGE DATA

PURGE VOLUME	@ 15 GAL	@ 30 GAL	@ 45 GAL	@ 60 GAL	@ 75 GAL
TEMP, DEG C	10.4	10.6	10.8	10.5	10.5
pH, UNITS ☐ pH PAPER	6.5	6.4	6.3	6.3	6.3
SPECIFIC CONDUCTIVITY umhos/cm	47	44	Batt. Dead	Batt. Dead	Batt. dead
PUMP RATE, GPM	≈2				

SAMPLE OBSERVATIONS
☑ CLEAR
☐ CLOUDY
☐ COLORED ___
☐ TURBID
☐ ODOR
☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING	
☑	☑	PERISTALTIC PUMP
☐	☑	SUBMERSIBLE PUMP
☐	☑	BAILER
	☑	PVC/SILICON TUBING
	☑	IN-LINE/DISPOSABLE FILTER
☐	☐	OTHER

EQUIPMENT ID: ISCO # ___ ☐ 2" ☐ 4" # ___

DECON FLUIDS USED
☐ POTABLE WATER
☐ LIQUINOX
☑ STEAM CLEANING
None, dedicated equipment

NUMBER OF FILTERS USED ___

WATER LEVEL EQUIP. USED
☑ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ PRESSURE TRANSDUCER

GROUND ELEVATION:

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS (040A / 040B / 040C / 040D)
☑ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☑	E / F / /
☐ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☑	/ / /
☐ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☐	/ / /
	UM13					/ / /
☑ PAL INORGANICS (SPECIFIED BELOW)		M	HNO3 TO pH<2	1 L P-CUBE	☑	O / / /
☐ LEAD ONLY	SD20	M	HNO3 TO pH<2			/ / /
☑ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☑	G / H / I /
	UW32					/ / /
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	/ / /
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	/ / /
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	/ / /
	TT10	C	4 DEG C	1 L P-CUBE	☐	/ / /
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	/ / /
☑ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☑	J / / /
☑ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☑	L / / /
		C	4 DEG C	1 L P-CUBE	☑	K / / /
		N	HNO3 TO pH<2	1 L P-CUBE	☑	N / / /
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	/ / /

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

Turbidimeter broken, Conductivity meter battery dead.

RECEIVED BY: ___

SIGNATURE: [illegible]

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PAGE 1 OF 1

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 1 0 7 X 3

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SITE ID: 4 1 M - 9 4 - 0 7 X

JOB NUMBER: 7053-14

SAMPLING DATE: 7Dec94

FILE NAME: CGW

LOCATION ACTIVITY: START 1300 END

PROGRAM: C

WEATHER: Rain, 40's

WATER LEVEL / WELL DATA

WELL DEPTH: 10.00 FT

☑ MEASURED ☐ HISTORICAL

☑ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.2 FT

PROTECTIVE CASING/WELL DIFF.: -0.18 FT

WATER DEPTH: 4.88 FT

8.6 GAL/VOL

HEIGHT OF WATER COLUMN: 5.12 FT

42.5 TOTAL GAL PURGED

WELL INTEGRITY:	YES	NO	N/A
PROT. CASING SECURE	☑	☐	☐
CONCRETE COLLAR INTACT	☑	☐	☐
WELL LOCKED	☐	☐	☐
PVC WELL CAP	☐	☐	☐

RISER ELEVATION:

GROUNDWATER ELEVATION:

PID READINGS: AMBIENT AIR 0.0 PPM; WELL MOUTH 0.0 PPM

WELL DIAMETER: ☐ 2 INCH ☑ 4 INCH ☐ ___ INCH

PURGE DATA

PURGE VOLUME	@ 8.6 GAL	@ 17 GAL	@ 25.5 GAL	@ 34 GAL	@ 42.5 GAL
TEMP, DEG C	9.4	9.2	9.2	9.2	9.2
pH, UNITS ☐ pH PAPER	6.1	6.0	5.9	5.9	5.9
SPECIFIC CONDUCTIVITY umhos/cm	26	24	22	21	22
PUMP RATE, GPM	≈2	≈2	≈2	≈2	≈2

SAMPLE OBSERVATIONS: ☑ CLEAR ☐ CLOUDY ☐ COLORED ☐ TURBID ☐ ODOR ☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING: ☑ ☑ ☐ ☐

SAMPLING: ☑ PERISTALTIC PUMP ☑ SUBMERSIBLE PUMP ☐ BAILER ☑ PVC/SILICON TUBING ☑ IN-LINE/DISPOSABLE FILTER ☐ OTHER

EQUIPMENT ID: ISCO # ___ ☐ 2" ☐ 4" # ___

DECON FLUIDS USED: ☐ POTABLE WATER ☐ LIQUINOX ☐ STEAM CLEANING ☑ none dedicated equipment

NUMBER OF FILTERS USED ___

WATER LEVEL EQUIP. USED: ☑ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ PRESSURE TRANSDUCER

GROUND ELEVATION:

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS (C42A / C42B / C42C / C42D)
☑ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☑	E / F
☐ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☐	
☐ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☐	
	UM13					
☑ PAL INORGANICS (SPECIFIED BELOW)		M	HNO3 TO pH<2	1 L P-CUBE	☑	C
☐ LEAD ONLY	SD20	M	HNO3 TO pH<2			
☐ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☑	G / H / I
	UW32					
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	
	TT10	C	4 DEG C	1 L P-CUBE	☐	
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	
☑ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☑	J
☑ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☑	L
		C	4 DEG C	1 L P-CUBE	☑	
		N	HNO3 TO pH<2	1 L P-CUBE	☑	K
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	N

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

Turbidimeter broken.

RECEIVED BY: ___

SIGNATURE: [illegible]

ABB ENVIRONMENTAL SERVICES, INC.

PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M Y 4 1 D 8 A 3

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SAMPLING DATE: 12-7-94

SITE ID: 4 1 M - 9 4 - 0 8 A

JOB NUMBER: 07053-14

FILE NAME: CGW

LOCATION ACTIVITY: START 1620 END 0910

PROGRAM: C

WEATHER: OVERCAST

WATER LEVEL / WELL DATA

WELL DEPTH: 29.35 FT

☐ MEASURED ☐ HISTORICAL

☒ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.43 FT

PROTECTIVE CASING/WELL DIFF.: -.21 FT

WATER DEPTH: 20.50 FT

14.87 GAL/VOL

HEIGHT OF WATER COLUMN: 8.85 FT

15 TOTAL GAL PURGED

x 1.68

WELL INTEGRITY:

	YES	NO	N/A
PROT. CASING SECURE	☒	☐	☒
CONCRETE COLLAR INTACT	☒	☐	☐
WELL LOCKED	☒	☐	
PVC WELL CAP	☒	☐	

RISER ELEVATION: ____

GROUNDWATER ELEVATION: ____

WELL DIAMETER: ☐ 2 INCH ☒ 4 INCH ☐ ___ INCH

PID READINGS: AMBIENT AIR 0.0 PPM | WELL MOUTH 0.0 PPM

PURGE DATA

PURGE VOLUME	@ 5 GAL	@ 10 GAL	@ 15 GAL	@ ____ GAL	@ ____ GAL
	1635	1700	0900		
TEMP, DEG C	16.3	15.7	16.7		
pH, UNITS ☐ pH PAPER	6.15	6.32	5.91		
SPECIFIC CONDUCTIVITY umhos/cm	71	70	84		
PUMP RATE, GPM					

SAMPLE OBSERVATIONS
☒ CLEAR
☐ CLOUDY
☐ COLORED ____
☐ TURBID
☐ ODOR
☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING		EQUIPMENT ID	DECON FLUIDS USED	WATER LEVEL EQUIP. USED
☒	☒	PERISTALTIC PUMP	ISCO # ____	☒ POTABLE WATER	☒ ELECTRIC COND. PROBE
☒	☒	SUBMERSIBLE PUMP	☒ 2" ☐ 4" # ____	☐ LIQUINOX	☐ FLOAT ACTIVATED
☐	☐	BAILER		☐ STEAM CLEANING	☐ PRESSURE TRANSDUCER
	☒	PVC/SILICON TUBING		____	____
	☒	IN-LINE/DISPOSABLE FILTER ____			
☐	☐	OTHER ____			

NUMBER OF FILTERS USED: 1

GROUND ELEVATION: ____

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS 044A / B / C / D
☒ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☒	E / F / /
☒ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☒	/ / /
☐ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☐	/ / /
	UM13					/ / /
☒ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☒	N / O / /
☒ LEAD ONLY	SD20	N	HNO3 TO pH<2			/ / /
☒ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☒	G / H / I /
	UW32					/ / /
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	/ / /
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	/ / /
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	/ / /
	TT10	C	4 DEG C	1 L P-CUBE	☐	/ / /
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	/ / /
☒ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☒	J / K / /
☒ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☒	L / / /
		C	4 DEG C	1 L P-CUBE	☐	/ / /
		N	HNO3 TO pH<2	1 L P-CUBE	☐	/ / /
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	/ / /

NOTES
1525 PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

1637 DRY @ 7 gal
1700 PURGE DRY @ 10 gal
0855 BEGIN PURGE

RECEIVED BY: ____

SIGNATURE: [signature]

ABB ENVIRONMENTAL SERVICES, INC.

PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: 4 X M 1 0 8 B 9

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL PVC

SITE ID: 4 1 M - 9 4 - 0 8 B

JOB NUMBER: 07053-14

SAMPLING DATE: 12- -94

PROGRAM: C

FILE NAME: CGW

LOCATION ACTIVITY: START 1615 END 0930

WEATHER: OVERCAST

WATER LEVEL / WELL DATA

WELL DEPTH: 44.80 FT

WATER DEPTH: 21.55 FT

☒ MEASURED ☐ HISTORICAL

☒ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.42 FT

PROTECTIVE CASING/WELL DIFF.: -.18 FT

HEIGHT OF WATER COLUMN: 23.25 FT

X1.68

39.06 GAL/VOL

TOTAL GAL PURGED

WELL INTEGRITY:	YES	NO	N/A
PROT. CASING SECURE	☒	☐	☐
CONCRETE COLLAR INTACT	☒	☐	☒
WELL LOCKED	☒	☐	☐
PVC WELL CAP	☒	☐	☐

RISER ELEVATION

GROUNDWATER ELEVATION

PID READINGS: AMBIENT AIR 0.0 PPM; WELL MOUTH 0.0 PPM

WELL DIAMETER: ☐ 2 INCH ☒ 4 INCH ☐ ___ INCH

PURGE DATA

	0925	0920			
PURGE VOLUME	@ 39 GAL	@ 98 GAL	@ 105 GAL	@ ____ GAL	@ ____ GAL
TEMP, DEG C	14.5	8.9			
pH, UNITS ☐ pH PAPER	7.64	8.60			
SPECIFIC CONDUCTIVITY umhos/cm	64	66			
PUMP RATE, GPM					

SAMPLE OBSERVATIONS
☐ CLEAR
☐ CLOUDY
☐ COLORED ____
☐ TURBID
☐ ODOR
☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING		EQUIPMENT ID
☒	☐	PERISTALTIC PUMP	ISCO # ____
☐	☒	SUBMERSIBLE PUMP	☒ 2" ☐ 4" # ____
☐	☐	BAILER	
	☒	PVC/SILICON TUBING	
	☐	IN-LINE/DISPOSABLE FILTER ____	
☐		OTHER ____	

DECON FLUIDS USED
☒ POTABLE WATER
☐ LIQUINOX
☐ STEAM CLEANING
☐ ____

WATER LEVEL EQUIP. USED
☒ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ PRESSURE TRANSDUCER
☐ ____

GROUND ELEVATION

NUMBER OF FILTERS USED ____

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS
☒ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☒	3x A / B / C / D
☒ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☒	E / F
☐ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☐	
	UM13					
☒ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☒	M / O
☒ LEAD ONLY	SD20	N	HNO3 TO pH<2			
☒ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☒	G / H / I
	UW32					
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	
	TT10	C	4 DEG C	1 L P-CUBE	☐	
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	
☒ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☒	J / K
☒ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☒	L
		C	4 DEG C	1 L P-CUBE	☐	
		N	HNO3 TO pH<2	1 L P-CUBE	☐	
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

1111 DRY @ 22 gal @ 1647

1715 DRY 24 gal total

0930 DRY @ 44 gal

" 1000 DRY @ 49 gal

1400 DRY @ 66 gal

BAIL PRECAUTIONS THEN SAMPLE FROM BAILER

RECEIVED BY: ____

SIGNATURE: [signature]

ABB ENVIRONMENTAL SERVICES, INC.

PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: MX41 09A3

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SITE ID: H1M-94-09A

JOB NUMBER: 7053-14

SAMPLING DATE: 6 Dec 94

PROGRAM: C

FILE NAME: CGW

LOCATION ACTIVITY: START 1645 END 1845

WEATHER: Cloudy, 40's

WATER LEVEL / WELL DATA

WELL DEPTH: 41.6 FT

☑ MEASURED ☐ HISTORICAL

☑ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.33 FT

PROTECTIVE CASING/WELL DIFF.: -0.9 FT

WATER DEPTH: 35.0 FT

11.1 GAL/VOL

RISER ELEVATION:

HEIGHT OF WATER COLUMN: 6.6 FT

55 TOTAL GAL PURGED

WELL INTEGRITY:

	YES	NO	N/A
PROT. CASING SECURE	☑	☐	☐
CONCRETE COLLAR INTACT	☑	☐	☐
WELL LOCKED	☑	☐	☐
PVC WELL CAP	☑	☐	☐

GROUNDWATER ELEVATION:

PID READINGS: AMBIENT AIR 0.0 PPM; WELL MOUTH 0.0 PPM

WELL DIAMETER: ☐ 2 INCH ☑ 4 INCH ☐ ___ INCH

PURGE DATA

PURGE VOLUME	@ 11 GAL	@ 22 GAL	@ 33 GAL	@ 44 GAL	@ 55 GAL
TEMP, DEG C	9.6	9.1	9.5	9.3	9.3
pH, UNITS ☐ pH PAPER	8.5	7.7	7.7	7.6	7.5
SPECIFIC CONDUCTIVITY umhos/cm	29	29	29	27	26
PUMP RATE, GPM	≈1.5	≈1.5	≈1.5	≈1.5	≈1.5

SAMPLE OBSERVATIONS: ☑ CLEAR ☐ CLOUDY ☐ COLORED ☐ TURBID ☐ ODOR ☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING	
☑	☑	PERISTALTIC PUMP
☐	☑	SUBMERSIBLE PUMP
☐	☑	BAILER
☐	☑	PVC/SILICON TUBING
☐	☑	IN-LINE/DISPOSABLE FILTER
☐	☐	OTHER

EQUIPMENT ID: ISCO # ____ ☐ 2" ☐ 4" # ____

DECON FLUIDS USED: ☐ POTABLE WATER ☐ LIQUINOX ☑ STEAM CLEANING — Dedicated equip. no decon.

NUMBER OF FILTERS USED ____

WATER LEVEL EQUIP. USED: ☑ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ PRESSURE TRANSDUCER

GROUND ELEVATION:

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS 048A	048B	048C	048D
☑ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☑				
☑ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☑	E	F		
☐ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☐				
	UM13								
☑ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☑	D			
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2						
☑ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☑	G	H	I	
	UW32								
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐				
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐				
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐				
	TT10	C	4 DEG C	1 L P-CUBE	☐				
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐				
☐ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☑	J			
☑ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☑	K			
		C	4 DEG C	1 L P-CUBE	☑	L			
		N	HNO3 TO pH<2	1 L P-CUBE	☑	N			
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐				

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

MS/MSD Collected at this location.

RECEIVED BY: ____

SIGNATURE: R. David Rinaman

ABB ENVIRONMENTAL SERVICES, INC.

PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X4 0 9 B X

PROJECT: USATHAMA-FT.DEVENS

SITE ID: 4 1 M - 9 4 - 0 9 B

LOCATION ACTIVITY: START 1130 END 1600

SITE TYPE: WELL PVC

JOB NUMBER: 07053-14

PROGRAM: C

SAMPLING DATE: 12-5-94

FILE NAME: CGW

WEATHER: RAIN 40°F

WATER LEVEL / WELL DATA

WELL DEPTH: 60.95 FT

WATER DEPTH: 34.80 FT

HEIGHT OF WATER COLUMN: 26.15 FT × 1.63

☒ MEASURED ☐ HISTORICAL

☒ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.36 FT

PROTECTIVE CASING/WELL DIFF.: −0.18 FT

RISER ELEVATION:

GROUNDWATER ELEVATION:

43.93 GAL/VOL

TOTAL GAL PURGED

WELL INTEGRITY:	YES	NO	N/A
PROT. CASING SECURE	☒	☐	☐
CONCRETE COLLAR INTACT	☒	☐	☐
WELL LOCKED	☒	☐	☐
PVC WELL CAP	☒	☐	☐

WELL DIAMETER: ☑ 2 INCH ☒ 4 INCH ☐ ___ INCH

PID READINGS: AMBIENT AIR 0.0 PPM; WELL MOUTH 0.0 PPM

PURGE DATA

	1228	1312	1356	1445	1530
PURGE VOLUME	@ 44 GAL	@ 88 GAL	@ 132 GAL	@ 176 GAL	@ 220 GAL
TEMP, DEG C	9.70	9.6	9.7	9.8	
pH, UNITS ☐ pH PAPER	5.64	5.01	6.23	6.28	5.68
SPECIFIC CONDUCTIVITY umhos/cm	38	32	34	32	32
PUMP RATE GPM NR6	4.12	3.01	2.90	2.53	2.42

SAMPLE OBSERVATIONS: ☒ CLEAR ☐ CLOUDY ☐ COLORED ☐ TURBID ☐ ODOR ☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING	
☒	☒	PERISTALTIC PUMP
☐	☒	SUBMERSIBLE PUMP
☐	☐	BAILER
	☒	PVC/SILICON TUBING
	☒	IN-LINE/DISPOSABLE FILTER
☐	☐	OTHER

EQUIPMENT ID: ISCO # ____ ☒ 2" ☐ 4" # ____

DECON FLUIDS USED: ☒ POTABLE WATER ☐ LIQUINOX ☐ STEAM CLEANING

WATER LEVEL EQUIP. USED: ☒ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ PRESSURE TRANSDUCER

GROUND ELEVATION:

NUMBER OF FILTERS USED ____

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS
☒ VOC	UH20	VP	HCL, 4 DEG C	(4) 60 ML	☒	05A / B / C / D
☒ SVOC	UH18	MS	4 DEG C	(2) 1 L AG	☒	E / F
☐ PEST/PCB	UH02	EC	4 DEG C	(3) 1 L AG	☐	
	UH13					
☒ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☒	N / O
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2			
☒ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☒	G / H / I
	UW32					
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	
	TT10	C	4 DEG C	1 L P-CUBE	☐	
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	
☒ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☒	J / K
☒ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☒	L
		C	4 DEG C	1 L P-CUBE	☐	
		N	HNO3 TO pH<2	1 L P-CUBE	☐	
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

6 min/5 gal

RECEIVED BY: ____

SIGNATURE: [signature]

ABB ENVIRONMENTAL SERVICES, INC.

PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M W 4 1 1 0 X 3

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL PVC

SITE ID: 4 1 M - 9 4 - 1 0 X

JOB NUMBER: 070 55 14

SAMPLING DATE: 12-8-94

PROGRAM: C

FILE NAME: CGW

LOCATION ACTIVITY: START 0950 END ~~0930~~ 1030

WEATHER: OVERCAST

WATER LEVEL / WELL DATA

WELL DEPTH: 39.60 FT

WATER DEPTH: 32.80 FT

HEIGHT OF WATER COLUMN: 6.8 FT X 1.68

☒ MEASURED ☐ HISTORICAL

11.42 GAL/VOL

TOTAL GAL PURGED

☒ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.05 FT

PROTECTIVE CASING/WELL DIFF.: -0.18 FT

RISER ELEVATION:

GROUNDWATER ELEVATION:

WELL INTEGRITY:	YES	NO	N/A
PROT. CASING SECURE	☒	☐	☐
CONCRETE COLLAR INTACT	☒	☐	☐
WELL LOCKED	☒	☐	☐
PVC WELL CAP	☒	☐	☐

PID READINGS: AMBIENT AIR 0.0 PPM; WELL MOUTH 0.0 PPM

WELL DIAMETER: ☐ 2 INCH ☒ 4 INCH ☐ ___ INCH

PURGE DATA

PURGE VOLUME	@ ~~1015~~ 1015 GAL	@ ~~1223~~ 1230 GAL	@ ~~1345~~ 1415 GAL	@ ____ GAL	@ ____ GAL
TEMP, DEG C	10.9	8.5			
pH, UNITS ☐ pH PAPER	5.48	7.60			
SPECIFIC CONDUCTIVITY umhos/cm	121	125			
PUMP RATE, GPM					

SAMPLE OBSERVATIONS: ☐ CLEAR ☐ CLOUDY ☐ COLORED ____ ☐ TURBID ☐ ODOR ☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING		EQUIPMENT ID
☒	☒	PERISTALTIC PUMP	ISCO # ____
	☒	SUBMERSIBLE PUMP	☒ 2" ☐ 4" # ____
☐	☒	BAILER	
	☒	PVC/SILICON TUBING	
	☒	IN-LINE/DISPOSABLE FILTER ____	
☐	☐	OTHER ____	

DECON FLUIDS USED: ☒ POTABLE WATER ☐ LIQUINOX ☐ STEAM CLEANING ____

WATER LEVEL EQUIP. USED: ☒ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ PRESSURE TRANSDUCER ____

GROUND ELEVATION:

NUMBER OF FILTERS USED ____

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS
☒ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☒	204A / B / C / D
☒ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☒	E / F
☐ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☐	
	UM13					
☒ PAL INORGANICS (SPECIFIED BELOW)		M	HNO3 TO pH<2	1 L P-CUBE	☒	N / O
☐ LEAD ONLY	SD20	M	HNO3 TO pH<2			
☒ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☒	G / H / I
	UW32					
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	
	TT10	C	4 DEG C	1 L P-CUBE	☐	
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	
☒ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☒	J / K
☒ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☒	L
		C	4 DEG C	1 L P-CUBE	☐	
		N	HNO3 TO pH<2	1 L P-CUBE	☐	
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

PUMP WILLED NOT PUMP OUT WATER BAILED PURGE VOLUME

1030 PURGE DRY, ALLOW RECHARGE 5 gal
1300 PURGE DRY @ 0.5 gal = 5.5 gal
1700 PURGE ANOTHER 0.5 gal = 6 gal
1005 DRY @ 7.5 gal
1430 DRY @ 8
1000 DRY @ 3 liters SAMPLED

RECEIVED BY: ____

SIGNATURE: [signature]

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PAGE 1 OF 1

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: MX411 1X3

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SAMPLING DATE: 6 Dec 1994

SITE ID: 41M-94-11X

JOB NUMBER: 7053-14

FILE NAME: CGW

LOCATION ACTIVITY: START 0910 END 1100 (Purged 10/5/94 @ 16:00)

PROGRAM: C

WEATHER: Cloudy, 50's

WATER LEVEL / WELL DATA

WELL DEPTH: 52.0 FT

WATER DEPTH: 38.7 FT

HEIGHT OF WATER COLUMN: 13.3 FT

☑ MEASURED ☐ HISTORICAL

22.3 GAL/VOL

22 TOTAL GAL PURGED

☑ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.3 FT

PROTECTIVE CASING/WELL DIFF.: 0.21 FT

RISER ELEVATION:

GROUNDWATER ELEVATION:

WELL INTEGRITY:	YES	NO	N/A
PROT. CASING SECURE	☑	☐	☐
CONCRETE COLLAR INTACT	☑	☐	☐
WELL LOCKED	☑	☐	☐
PVC WELL CAP	☑	☐	☐

PID READINGS: AMBIENT AIR 0.0 PPM; WELL MOUTH 0.0 PPM

WELL DIAMETER: ☐ 2 INCH ☑ 4 INCH ☐ ___ INCH

PURGE DATA

PURGE VOLUME	@ 22 GAL	@ ___ GAL	@ ___ GAL	@ ___ GAL	@ ___ GAL
TEMP, DEG C	10.7				
pH, UNITS ☐ pH PAPER	7.7				
SPECIFIC CONDUCTIVITY umhos/cm	65				
PUMP RATE, GPM					

SAMPLE OBSERVATIONS: ☐ CLEAR ☑ CLOUDY ☐ COLORED ___ ☐ TURBID ☐ ODOR ☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING		EQUIPMENT ID
☑	☑	PERISTALTIC PUMP	ISCO # ___
☑	☑	SUBMERSIBLE PUMP	☐ 2" ☐ 4" # ___
☐	☐	BAILER	
	☐	PVC/SILICON TUBING	
	☐	IN-LINE/DISPOSABLE FILTER ___	
☐	☐	OTHER ___	

DECON FLUIDS USED: ☐ POTABLE WATER ☐ LIQUINOX ☐ STEAM CLEANING ☐ None dedicated equip

WATER LEVEL EQUIP. USED: ☑ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ PRESSURE TRANSDUCER ___

GROUND ELEVATION:

NUMBER OF FILTERS USED ___

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS (054A / 054B / 054C / 054D)
☑ VOC	UH20	VP	HCL, 4 DEG C	(4) 60 ML	☑	
☑ SVOC	UH18	MS	4 DEG C	(2) 1 L AG	☑	E / F
☐ PEST/PCB	UH02	EC	4 DEG C	(3) 1 L AG	☐	
	UH13					
☑ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☑	CN / B
☑ LEAD ONLY	SD20	N	HNO3 TO pH<2			
☑ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☑	G / H / I
	UW32					
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	
☑ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☑	
	TT10	C	4 DEG C	1 L P-CUBE	☐	
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	
☑ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☐	J
☑ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☑	K
		C	4 DEG C	1 L P-CUBE	☑	L
		N	HNO3 TO pH<2	1 L P-CUBE	☑	M / N
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

Only 1 Volume purged due to poor rechargability. Well purged 10/5/94 and allowed to recharge overnight. Samples Collected 10/6/94.
Turbidimeter broken; no readings

RECEIVED BY: ___

SIGNATURE: [signature]

ABB ENVIRONMENTAL SERVICES, INC.

PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 1 1 2 X 3

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL PVC

SITE ID: 4 1 M - 9 4 - 1 2 X

JOB NUMBER: 07053-14

SAMPLING DATE: 12-8-94

FILE NAME: CGW

LOCATION ACTIVITY: START 1550 END 0345

PROGRAM: C

WEATHER: DRIZZLE

WATER LEVEL / WELL DATA

WELL DEPTH: 40.00 FT

WATER DEPTH: 29.75 FT

HEIGHT OF WATER COLUMN: 10.25 FT

☒ MEASURED ☐ HISTORICAL

☒ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.29 FT

PROTECTIVE CASING/WELL DIFF.: -0.22 FT

17.22 GAL/VOL

TOTAL GAL PURGED

WELL INTEGRITY:	YES	NO	N/A
PROT. CASING SECURE	☒	☐	☒
CONCRETE COLLAR INTACT	☒	☐	☐
WELL LOCKED	☒	☐	☐
PVC WELL CAP	☒	☐	☐

RISER ELEVATION: ____

GROUNDWATER ELEVATION: ____

WELL DIAMETER: ☐ 2 INCH ☒ 4 INCH ☐ ____ INCH

PID READINGS: AMBIENT AIR 0 PPM; WELL MOUTH 0 PPM

PURGE DATA

	1555	1600	0825		
PURGE VOLUME	@ 5 GAL	@ 10 GAL	@ 17.3 GAL	@ ____ GAL	@ ____ GAL
TEMP, DEG C	15.9	16.5	9.8		
pH, UNITS ☐ pH PAPER	5.99	6.75	6.4		
SPECIFIC CONDUCTIVITY umhos/cm	71	93	85		
PUMP RATE, GPM					

SAMPLE OBSERVATIONS
☐ CLEAR
☐ CLOUDY
☐ COLORED ____
☐ TURBID
☐ ODOR
☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING	
☒	☒	PERISTALTIC PUMP
☐	☒	SUBMERSIBLE PUMP
☐	☐	BAILER
	☒	PVC/SILICON TUBING
	☒	IN-LINE/DISPOSABLE FILTER ____
☐	☐	OTHER ____

EQUIPMENT ID: ISCO # ____ ☒ 2" ☐ 4" # ____

DECON FLUIDS USED: ☒ POTABLE WATER ☐ LIQUINOX ☐ STEAM CLEANING ____

WATER LEVEL EQUIP. USED: ☒ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ PRESSURE TRANSDUCER ____

GROUND ELEVATION: ____

NUMBER OF FILTERS USED ____

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS
☒ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☐	0956 A / B / C / D
☒ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☐	E / F
☐ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☐	
	UM13					
☒ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☐	N / O
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2		☐	
☒ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☐	G / H / I
	UW32					
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	
	TT10	C	4 DEG C	1 L P-CUBE	☐	
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	
☒ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☐	J / K
☒ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☐	L
		C	4 DEG C	1 L P-CUBE	☐	
		N	HNO3 TO pH<2	1 L P-CUBE	☐	
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

0325 DRY

RECEIVED BY: ____

SIGNATURE: [illegible]

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PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 1 1 3 X 3

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL PVC

SITE ID: 4 1 M - 9 4 - 1 3 X

JOB NUMBER: 07053-14

SAMPLING DATE: 12- -94

FILE NAME: CGW

LOCATION ACTIVITY: START 1615 END 1600

PROGRAM: C

WEATHER: CLEAR 25°F

WATER LEVEL / WELL DATA

WELL DEPTH: 30.37 FT

☒ MEASURED ☐ HISTORICAL

☒ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 1.99 FT

PROTECTIVE CASING/WELL DIFF.: - .35 FT

WATER DEPTH: 21.54 FT

15 GAL/VOL

75 TOTAL GAL PURGED

HEIGHT OF WATER COLUMN: 8.79 FT

WELL INTEGRITY:

	YES	NO	N/A
PROT. CASING SECURE	☒	☐	☐
CONCRETE COLLAR INTACT	☒	☐	☐
WELL LOCKED	☒	☐	☐
PVC WELL CAP	☒	☐	☐

RISER ELEVATION: ____

GROUNDWATER ELEVATION: ____

WELL DIAMETER: ☐ 2 INCH ☒ 4 INCH ☐ ___ INCH

PID READINGS: AMBIENT AIR <1.0 PPM; WELL MOUTH 0.0 PPM

PURGE DATA

	1050	1121	1215	1350	1540
PURGE VOLUME	@ 15 GAL	@ 30 GAL	@ 45 GAL	@ 60 GAL	@ 75 GAL
TEMP, DEG C	9.5	10.2	10.0	9.9	10.3
pH, UNITS ☐ pH PAPER	7.4	7.2	7.3	7.0	7.0
SPECIFIC CONDUCTIVITY umhos/cm	54	54	55	50	54
PUMP RATE, GPM					

SAMPLE OBSERVATIONS
☐ CLEAR
☐ CLOUDY
☐ COLORED ____
☒ TURBID
☐ ODOR
☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING		EQUIPMENT ID
☒	☒	PERISTALTIC PUMP	ISCO # ____
☐	☒	SUBMERSIBLE PUMP	☒ 2" ☐ 4" # ____
☐	☒	BAILER	
	☒	PVC/SILICON TUBING	
	☒	IN-LINE/DISPOSABLE FILTER	1
☐	☐	OTHER ____	

DECON FLUIDS USED
☒ POTABLE WATER
☐ LIQUINOX
☐ STEAM CLEANING
☐ ____

WATER LEVEL EQUIP. USED
☒ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ PRESSURE TRANSDUCER
☐ ____

GROUND ELEVATION: ____

NUMBER OF FILTERS USED: 1

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS (204 A / B / C / D)
☒ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☒	E / F / /
☒ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☒	/ / /
☐ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☐	/ / /
	UM13					/ / /
☒ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☒	N / / /
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2			/ / /
☒ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☒	G / H / /
	UW32					/ / /
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	/ / /
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	/ / /
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	/ / /
	TT10	C	4 DEG C	1 L P-CUBE	☐	/ / /
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	/ / /
☒ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☒	J / K / /
☒ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☒	L / / /
		C	4 DEG C	1 L P-CUBE	☐	/ / /
		N	HNO3 TO pH<2	1 L P-CUBE	☐	/ / /
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	/ / /

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

1050 DAY @ 15 gal
Rerun @ 1050 DAY @ 25 gal 1055
DAY-1123 75 gal

DAY @ 1139 75 gal
DAY @ 1545 75 gal

RECEIVED BY: ____

SIGNATURE: [signature]

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PAGE 1 OF 1

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 1 1 4 X 3

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SAMPLING DATE: 7 Dec 94

SITE ID: 41M-94-14X

JOB NUMBER: 7053-14

FILE NAME: CGW

LOCATION ACTIVITY: START 0930 END 1100

PROGRAM: C

WEATHER: Drizzle, 40's

WATER LEVEL / WELL DATA

WELL DEPTH: 9.83 FT

☐ MEASURED ☐ HISTORICAL

☑ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 1.8 FT

PROTECTIVE CASING/WELL DIFF.: -0.19 FT

WATER DEPTH: 3.18 FT

11.2 GAL/VOL

RISER ELEVATION:

HEIGHT OF WATER COLUMN: 6.65 FT

55 TOTAL GAL PURGED

WELL INTEGRITY:	YES	NO	N/A
PROT. CASING SECURE	☑	☐	☐
CONCRETE COLLAR INTACT	☑	☐	☐
WELL LOCKED	☑	☐	☐
PVC WELL CAP	☑	☐	☐

GROUNDWATER ELEVATION:

PID READINGS: AMBIENT AIR 0.0 PPM; WELL MOUTH 2.6 PPM

WELL DIAMETER: ☐ 2 INCH ☐ 4 INCH ☐ ___ INCH

PURGE DATA

PURGE VOLUME	@ 11 GAL	@ 22 GAL	@ 33 GAL	@ 44 GAL	@ 55 GAL
TEMP, DEG C	10.4	10.2	10.4	10.3	10.5
pH, UNITS ☐ pH PAPER	6.5	6.4	6.3	6.2	6.2
SPECIFIC CONDUCTIVITY umhos/cm	26	26	25	26	28
PUMP RATE, GPM	≈2	≈2	≈2	≈2	≈2

SAMPLE OBSERVATIONS
- ☑ CLEAR 3rd, 4th, 5th VOL.
- ☑ CLOUDY 2nd VOL
- ☐ COLORED
- ☑ TURBID 1st VOL.
- ☐ ODOR
- ☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING	
☑	☐	PERISTALTIC PUMP
☐	☑	SUBMERSIBLE PUMP
☐	☐	BAILER
	☑	PVC/SILICON TUBING
	☐	IN-LINE/DISPOSABLE FILTER
☐		OTHER

EQUIPMENT ID: ISCO # ___ ☐ 2" ☐ 4" # ___

DECON FLUIDS USED:
- ☑ POTABLE WATER
- ☐ LIQUINOX
- ☐ STEAM CLEANING
- ☑ none, dedicated equipment

NUMBER OF FILTERS USED: ___

WATER LEVEL EQUIP. USED:
- ☑ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ PRESSURE TRANSDUCER

GROUND ELEVATION:

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS (Sample/Dup) 206/205A	206/205B	206/205C	206/205D
☑ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☑	E	F		
☑ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☑				
☐ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☐				
	UM13								
☑ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☑	O			
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2						
☑ EXPLOSIVES	UW19	LC	4 DEG C	(2) 1 L AG	☑	G	H	I	
	UW32								
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐				
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG					
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE					
	TT10	C	4 DEG C	1 L P-CUBE					
	310.1	N	HNO3 TO pH <2	1 L P-CUBE					
☑ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☑	J			
☑ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☑	L			
		C	4 DEG C	1 L P-CUBE		K			
		N	HNO3 TO pH<2	1 L P-CUBE					
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	N			

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

Duplicate Collected @ this location. MS/MSD also Collected
Turbidimeter broken.

RECEIVED BY: ___

SIGNATURE: R. Daniel Dressman

ENVIRONMENTAL SERVICES, INC.

PAGE 1 OF 1

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 1 Ø 1 X 2

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SITE ID: 4 1 H - 9 2 - Ø 1 X

JOB NUMBER: 07053-04

SAMPLING DATE: 1/26/94

FILE NAME: CGW

LOCATION ACTIVITY: START 0900 END 1615

PROGRAM: C

WEATHER: part. sunny, 0-10°F

WATER LEVEL / WELL DATA

☑ TOP OF WELL ☐ TOP OF CASING

WELL DEPTH: 34.4± FT ☑ MEASURED ☐ HISTORICAL

WATER DEPTH: 25.67 FT

HEIGHT OF WATER COLUMN: 8.7 FT

14.62 GAL/VOL

TOTAL GAL PURGED

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.0± FT

PROTECTIVE CASING/WELL DIFF.: +0.12 FT

RISER ELEVATION:

GROUNDWATER ELEVATION:

WELL INTEGRITY:

	YES	NO	N/A
PROT. CASING SECURE	☑	☐	☑
CONCRETE COLLAR INTACT	☐	☐	☑
WELL LOCKED	☑	☐	
PVC WELL CAP	☑	☐	

PID READINGS: AMBIENT AIR 0.0 PPM; WELL MOUTH 0.0 PPM

WELL DIAMETER: ☐ 2 INCH ☑ 4 INCH ☐ ___ INCH

PURGE DATA

PURGE VOLUME	@ 3 GAL	@ 6 GAL	@ 9 GAL	@ 12 GAL	@ 15 GAL
TEMP, DEG C	7.9	7.5	7.4	7.5	6.4
pH, UNITS ☐ pH PAPER	7.8	7.0	7.1	6.9	~~6.9~~ 7.0
SPECIFIC CONDUCTIVITY umhos/cm	50	49	50	52	76
~~PURGE RATE, GPM~~ ORP/Redox			200	8	9
Turbidity (ntu's)	>200	>200	>200	>200	>200

SAMPLE OBSERVATIONS: ☐ CLEAR ☐ CLOUDY ☐ COLORED ☑ TURBID ☐ ODOR ☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING	
☑	☑	PERISTALTIC PUMP
☑	☑	SUBMERSIBLE PUMP
☑	☑	BAILER
	☑	PVC/SILICON TUBING
	☑	IN-LINE/DISPOSABLE FILTER
☐	☐	OTHER

EQUIPMENT ID: ISCO # ___ ☐ 2" ☐ 4" # ___

DECON FLUIDS USED (AEC Approved): ☑ POTABLE WATER ☐ LIQUINOX ☐ STEAM CLEANING

WATER LEVEL EQUIP. USED: ☑ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ PRESSURE TRANSDUCER

GROUND ELEVATION:

NUMBER OF FILTERS USED: 3

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS
☑ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☑	483 A, B, C, D 321403
☑ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☑	483 E, F 319022
☑ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☑	483 G, H, I (RD) 319002
	UM13					
☑ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☑	483 N, O 327252
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2			
☑ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☑	483 J, K, L 319022
	UW32					
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	
	TT10	C	4 DEG C	1 L P-CUBE	☐	
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	
☑ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☑	483 M 322962
☐ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☐	
		C	4 DEG C	1 L P-CUBE	☐	
		N	HNO3 TO pH<2	1 L P-CUBE	☐	
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

INORGANICS COLLECTED AS FILTERED AND UNFILTERED SAMPLES

MS/MSD ⇒ ONLY COLLECT TRIPLE VOLUME OF INORGANICS, EXP, + PEST./R

RECEIVED BY: ___

PURGE WATER CONTAINERIZED

SIGNATURE: Tony [illegible]

3.7
1.68
475
5228
8728
10K:6

(1050)

1615

ABB ENVIRONMENTAL SERVICES, INC.

PAGE 1 OF ___

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 1 Ø 2 B 2

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SAMPLING DATE: 1-26-94

SITE ID: 4 1 N - 9 3 - Ø 2 B

JOB NUMBER: 67053-04

FILE NAME: CGW

LOCATION ACTIVITY: START 10:00 END 1700

PROGRAM: C

WEATHER: part. sunny, 0-10°F

WATER LEVEL / WELL DATA

WELL DEPTH: 35.2± FT

☑ MEASURED ☐ HISTORICAL

☑ TOP OF WELL ☐ TOP OF CASING ___

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.8± FT

PROTECTIVE CASING/WELL DIFF.: -0.28 FT

WATER DEPTH: 28.7± FT

10.92 GAL/VOL

RISER ELEVATION: ___

WELL INTEGRITY:

	YES	NO	N/A
PROT. CASING SECURE	☑	☐	☐
CONCRETE COLLAR INTACT	☐	☐	☑
WELL LOCKED	☑	☐	☐
PVC WELL CAP	☑	☐	☐

HEIGHT OF WATER COLUMN: 6.5 FT

11 TOTAL GAL PURGED

GROUNDWATER ELEVATION: ___

PID READINGS: AMBIENT AIR 0.0 PPM; WELL MOUTH 0.0 PPM

WELL DIAMETER: ☐ 2 INCH ☑ 4 INCH ☐ ___ INCH

PURGE DATA

PURGE VOLUME	@ 1 GAL	@ 5 GAL	@ 8 GAL	@ 10 GAL	@ 11 GAL
TEMP, DEG C	6.2	7.8	7.3	7.4	TP 5-5 6.4
pH, UNITS ☐ pH PAPER	6.3	6.6	6.7	6.7	6.2
SPECIFIC CONDUCTIVITY umhos/cm	078	069	069	068	071
PUMP RATE, GPM Tub (NH)	>200	>200	>200	>200	>200
RED X (OIV)	28mV	23mV	20mV	16mV	[illegible]

SAMPLE OBSERVATIONS: ☐ CLEAR ☑ CLOUDY ☐ COLORED ___ ☐ TURBID ☐ ODOR ☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING: ☑ ☑ ☑ ☐

SAMPLING: ☑ PERISTALTIC PUMP; ☑ SUBMERSIBLE PUMP; ☑ BAILER; ☑ PVC/SILICON TUBING; ☑ IN-LINE/DISPOSABLE FILTER (w/ Ixd); ☐ OTHER ___

EQUIPMENT ID: ISCO # ___ ☐ 2" ☐ 4" # ___

DECON FLUIDS USED: AEC Approved ☑ POTABLE WATER; ☐ LIQUINOX; ☐ STEAM CLEANING ___

WATER LEVEL EQUIP. USED: ☑ ELECTRIC COND. PROBE; ☐ FLOAT ACTIVATED; ☐ PRESSURE TRANSDUCER ___

GROUND ELEVATION: ___

NUMBER OF FILTERS USED: 1

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS	Lot No.
☑ VOC	UH20	VP	HCL, 4 DEG C	(4) 60 ML	☑	485 A / B / C / D	321404
☑ SVOC	UH18	MS	4 DEG C	(2) 1 L AG	☑	485 E / F /	3190022
☑ PEST/PCB	UH02 UH13	EC	4 DEG C	(3) 1 L AG	☑	485 G / H / I /	3190022
☑ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☑	485 N / O /	3272152
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2				
☑ EXPLOSIVES	UW19 UW32	LC	4 DEG C	(3) 1 L AG	☑	485 J / K / L /	3190022
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐		
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐		
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐		
	TT10	C	4 DEG C	1 L P-CUBE	☐		
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐		
☑ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☑	485M /	3272152
☐ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☐		
		C	4 DEG C	1 L P-CUBE	☐		
		N	HNO3 TO pH<2	1 L P-CUBE	☐		
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐		

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

INORGANICS COLLECTED AS FILTERED AND UNFILTERED SAMPLES

(0955) Purge well

PURGE WATER CONTAINERIZED

RECEIVED BY: ___

SIGNATURE: [signature]

65 × 1.68 = 520; 520 × 60 = 31200; 6500; 109120

ABB ENVIRONMENTAL SERVICES, INC.

PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 1 0 3 X 2

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SITE ID: 4 1 H - 9 3 - 0 3 X

JOB NUMBER: 7053.10

SAMPLING DATE: 1-20-94

FILE NAME: CGW

LOCATION ACTIVITY: START 0900 END 1700

PROGRAM: C

WEATHER: -3°F cold

WATER LEVEL / WELL DATA

WELL DEPTH: -5.8 FT

☑ MEASURED ☐ HISTORICAL

☐ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.45 FT

PROTECTIVE CASING/WELL DIFF.: -.35 FT

WATER DEPTH: 37.55 FT

1 GAL/VOL

70 TOTAL GAL PURGED

HEIGHT OF WATER COLUMN: 8.25 FT

≈1.6

WELL INTEGRITY:

	YES	NO	N/A
PROT. CASING SECURE	☑	☐	☐
CONCRETE COLLAR INTACT	☑	☐	☑
WELL LOCKED	☑	☐	☐
PVC WELL CAP	☑	☐	☐

RISER ELEVATION: ____

GROUNDWATER ELEVATION: ____

WELL DIAMETER: ☐ 2 INCH ☑ 4 INCH ☐ ___ INCH

PID READINGS: AMBIENT AIR — PPM WELL MOUTH — PPM

No PID broken

PURGE DATA

PURGE VOLUME	@ 1 GAL	@ 28 GAL (1113)	@ 42 GAL (1140)	@ 56 GAL (1205)	@ 70 GAL (1237)
TEMP, DEG C	8	7.7	7.9	7.5	7.9
pH, UNITS ☐ pH PAPER	10.00	10.3	10.2	10.1	10.0
SPECIFIC CONDUCTIVITY umhos/cm	1140	969	933	910	944
~~PUMP RATE, GPM~~ turbidity NTUS	110	32	70	60	>200 * 170

SAMPLE OBSERVATIONS: ☐ CLEAR ☐ CLOUDY ☐ COLORED ____ ☐ TURBID ☐ ODOR ☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING: ☑ ☑ ☐ ☐

SAMPLING: ☑ PERISTALTIC PUMP ☑ SUBMERSIBLE PUMP ☑ BAILER ☑ PVC/SILICON TUBING ☑ IN-LINE/DISPOSABLE FILTER ☐ OTHER ____

EQUIPMENT ID: ISCO # ____ ☐ 2" ☐ 4" # ____

DECON FLUIDS USED: ☑ POTABLE WATER ☐ LIQUINOX ☐ STEAM CLEANING

WATER LEVEL EQUIP. USED: ☑ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ PRESSURE TRANSDUCER

GROUND ELEVATION: ____

NUMBER OF FILTERS USED: ____

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS
☑ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☑	487 A / B / C / D
☑ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☑	487 E / F /
☑ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☑	487 G / H / I /
	UM13					
☑ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☑	487 N / O /
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2		☐	
☑ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☑	487 J / K / L /
	UW32					
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	
	TT10	C	4 DEG C	1 L P-CUBE	☐	
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	
☑ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☑	487 M /
☐ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☐	
		C	4 DEG C	1 L P-CUBE	☐	
		N	HNO3 TO pH<2	1 L P-CUBE	☐	
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

* pump stirred up water

INORGANICS COLLECTED AS BOTH FILT. AND UNFILT.

Bottle lot No.: 1L A.G 3173012, 3190022

Cubes 3238042

Acid 3242013

RECEIVED BY: [signature]

SIGNATURE: ____

NOTE: SAMPLES SPLIT w/ JIM PAVLIK (CDM)
LOST BAILER DOWN HOLE FINISHED SAMPLING WITH NEW BAILER

ABB ENVIRONMENTAL SERVICES, INC.

PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 1 Ø 4 X 2

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SITE ID: 4 1 M - 9 3 - Ø 4 X

JOB NUMBER: 07053 - 04

SAMPLING DATE: 1/26/94

FILE NAME: CGW

LOCATION ACTIVITY: START 0900 END 1430

PROGRAM: C

WEATHER: part sunny, 0-10°F

WATER LEVEL / WELL DATA

WELL DEPTH: 10.9± FT

WATER DEPTH: 6.81 FT

HEIGHT OF WATER COLUMN: 4.1 FT

☑ MEASURED ☐ HISTORICAL

☑ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 3.3± FT

PROTECTIVE CASING/WELL DIFF.: -0.13 FT

2.25 GAL/VOL

13 TOTAL GAL PURGED

WELL INTEGRITY:

	YES	NO	N/A
PROT. CASING SECURE	☑	☐	☑
CONCRETE COLLAR INTACT	☐	☐	☐
WELL LOCKED	☑	☑	☐
PVC WELL CAP	☐	☐	☐

RISER ELEVATION: ____

GROUNDWATER ELEVATION: ____

WELL DIAMETER: ☑ 2 INCH ☐ 4 INCH ☐ ___ INCH

PID READINGS: AMBIENT AIR 0.0 PPM; WELL MOUTH 0.0 PPM

PURGE DATA

PURGE VOLUME	@ 3 GAL	@ 4 GAL	@ 7 GAL	@ 10 GAL	@ 13 GAL
TEMP, DEG C	3.1	2.7	3.0	2.7	2.9
pH, UNITS ☐ pH PAPER	6.3	6.2	6.2	6.1	6.1
SPECIFIC CONDUCTIVITY umhos/cm	33	3.2	33	34	32
PUMP RATE, GPM Turb (NTU)	1.5	1.2	0.4	0.7	0.4
mV	39	43	43	46	47

SAMPLE OBSERVATIONS: ☑ CLEAR ☐ CLOUDY ☐ COLORED ____ ☐ TURBID ☐ ODOR ☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING: ☑ ☑ ☑ ☐

SAMPLING: ☐ PERISTALTIC PUMP ☑ SUBMERSIBLE PUMP ☑ BAILER ☑ PVC/SILICON TUBING ☐ IN-LINE/DISPOSABLE FILTER ____ ☐ OTHER ____

EQUIPMENT ID: ISCO # ____ ☐ 2" ☐ 4" # ____

DECON FLUIDS USED (Acc Approved): ☑ POTABLE WATER ☐ LIQUINOX ☐ STEAM CLEANING ____

WATER LEVEL EQUIP. USED: ☑ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ PRESSURE TRANSDUCER ____

GROUND ELEVATION: ____

NUMBER OF FILTERS USED: 1

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS	Lot No's
☑ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☑	489A / B / C / D	32140L
☑ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☑	489E / F / /	3190022
☑ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☑	489G / H / I /	3190022
	UM13					/ / /	
☑ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☑	489N / O / /	3272152
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2			/ / /	
☑ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☑	489J / K / L /	3190022
	UW32					/ / /	
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	/ / /	
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	/ / /	
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	/ / /	
	TT10	C	4 DEG C	1 L P-CUBE	☐	/ / /	
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	/ / /	
☑ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☑	489M / / /	3272152
☐ N2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☐	/ / /	
		C	4 DEG C	1 L P-CUBE	☐	/ / /	
		N	HNO3 TO pH<2	1 L P-CUBE	☐	/ / /	
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	/ / /	

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
N2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

INORGANICS COLLECTED AS FILTERED AND UNFILTERED

RECEIVED BY: ____

SIGNATURE: Tony Salvo

ABB ENVIRONMENTAL SERVICES, INC.

PAGE 1 OF 1

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: MX41Ø5X2

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SITE ID: 41M-93-Ø5X

JOB NUMBER: 7053-04

SAMPLING DATE: 1/26/94

FILE NAME: CGW

LOCATION ACTIVITY: START 0900 END 1500

PROGRAM: C

WEATHER: part. sunny, 0-10°

WATER LEVEL / WELL DATA

WELL DEPTH: 10.2I FT

☑ MEASURED ☐ HISTORICAL

☑ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.5I FT

PROTECTIVE CASING/WELL DIFF.: -0.26 FT

WATER DEPTH: 7.33 FT

1.60 GAL/VOL

HEIGHT OF WATER COLUMN: 2.9 FT

10 TOTAL GAL PURGED

WELL INTEGRITY:

	YES	NO	N/A
PROT. CASING SECURE	☑	☐	☐
CONCRETE COLLAR INTACT	☐	☐	☑
WELL LOCKED	☑	☐	
PVC WELL CAP	☐		

RISER ELEVATION:

GROUNDWATER ELEVATION:

WELL DIAMETER: ☑ 2 INCH ☐ 4 INCH ☐ __ INCH

PID READINGS: AMBIENT AIR 0.0 PPM; WELL MOUTH 0.0 PPM

PURGE DATA

PURGE VOLUME	@ 2 GAL	@ 4 GAL	@ 6 GAL	@ 8 GAL	@ 10 GAL
TEMP, DEG C	3.4	3.8	3.7	4.0	4.2
pH, UNITS ☐ pH PAPER	6.4	6.6	6.5	6.5	6.5
SPECIFIC CONDUCTIVITY umhos/cm	0.46	0.55	0.57	0.57	0.57
PUMP RATE, GPM (turb (ntu))	8	3	4	3	2
ORP (mV)	20	23	38	30	35

SAMPLE OBSERVATIONS: ☑ CLEAR ☐ CLOUDY ☐ COLORED ☐ TURBID ☐ ODOR ☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING	
☑	☑	PERISTALTIC PUMP
☐	☑	SUBMERSIBLE PUMP
☑	☑	BAILER
	☑	PVC/SILICON TUBING
	☑	IN-LINE/DISPOSABLE FILTER (w/pump)
☐	☐	OTHER

EQUIPMENT ID: ISCO # ; ☐ 2" ☐ 4" #

DECON FLUIDS USED: ☑ POTABLE WATER (NEC Approved) ☐ LIQUINOX ☐ STEAM CLEANING

WATER LEVEL EQUIP. USED: ☑ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ PRESSURE TRANSDUCER

GROUND ELEVATION:

NUMBER OF FILTERS USED: 1

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS	LAB #
☑ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☑	491 A / B / C / D	321401
☑ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☑	491 E / F /	321002
☑ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☑	491 G / H / I /	31900.
	UM13					/ / /	
☑ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☑	491 N / O / /	321605 321 605
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2		☐	/ / /	
☑ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☑	491 J / K / L /	321002
	UW32					/ / /	
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	/ / /	
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	/ / /	
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	/ / /	
	TT10	C	4 DEG C	1 L P-CUBE	☐	/ / /	
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	/ / /	
☑ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☑	491 M / / /	327115
☐ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☐	/ / /	
		C	4 DEG C	1 L P-CUBE	☐	/ / /	
		N	HNO3 TO pH<2	1 L P-CUBE	☐	/ / /	
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	/ / /	

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

INORGANICS COLLECTED AS FILTERED AND UNFILTERED SAMPLES.

RECEIVED BY:

SIGNATURE: Tony Dolan

2.9
.55
145
1450
1595

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PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 1 0 1 X 4

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL PVC

SITE ID: 4 1 M 9 9 4 - 0 1 X

JOB NUMBER: 07053.94

SAMPLING DATE: 12-7-94

FILE NAME: CGW

LOCATION ACTIVITY: START 1445 END

PROGRAM: C

WEATHER: RAIN

WATER LEVEL / WELL DATA

WELL DEPTH: 35.00 FT

WATER DEPTH: 25.45 FT

HEIGHT OF WATER COLUMN: 9.55 FT

x 1.68

16.04 GAL/VOL

TOTAL GAL PURGED

☒ MEASURED ☐ HISTORICAL

☒ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.15 FT

PROTECTIVE CASING/WELL DIFF.: + 0.18 FT

RISER ELEVATION

GROUNDWATER ELEVATION

WELL INTEGRITY:	YES	NO	N/A
PROT. CASING SECURE	☒	☐	☒
CONCRETE COLLAR INTACT	☒	☐	☒
WELL LOCKED	☒	☐	☒
PVC WELL CAP	☒	☐	☒

PID READINGS: AMBIENT AIR 0 PPM | WELL MOUTH 0 PPM

WELL DIAMETER: ☐ 2 INCH ☒ 4 INCH ☐ ___ INCH

PURGE DATA

	1515	1520	1610		
PURGE VOLUME	@ 5 GAL	@ 10 GAL	@ 16.04 GAL	@ ___ GAL	@ ___ GAL
TEMP, DEG C	16.9	16.5	15.8		
pH, UNITS ☐ pH PAPER	5.97	5.61	6.7		
SPECIFIC CONDUCTIVITY umhos/cm	38	38	39		
PUMP RATE, GPM					

SAMPLE OBSERVATIONS
- ☐ CLEAR
- ☐ CLOUDY
- ☐ COLORED ____
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING	
☐	☐	PERISTALTIC PUMP
☐	☐	SUBMERSIBLE PUMP
☐	☒	BAILER
☐	☐	PVC/SILICON TUBING
	☐	IN-LINE/DISPOSABLE FILTER ____
☐	☐	OTHER ____

EQUIPMENT ID: ISCO # ____ ☒ 2" ☐ 4" # ____

DECON FLUIDS USED
- ☐ POTABLE WATER
- ☐ LIQUINOX
- ☐ STEAM CLEANING
- ☐ ____

WATER LEVEL EQUIP. USED
- ☐ ELECTRIC COND. PROBE
- ☐ FLOAT ACTIVATED
- ☐ PRESSURE TRANSDUCER
- ____

GROUND ELEVATION

NUMBER OF FILTERS USED ____

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS
						030 A / B / C / D
☒ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☒	E / F
☐ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☐	
☐ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☐	
	UM13					
☒ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☒	N / [illegible]
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2		☐	
☒ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☐	G / H / I
	UW32					
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	
	TT10	C	4 DEG C	1 L P-CUBE	☐	
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	
☒ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☒	J / K
☒ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☒	L
		C	4 DEG C	1 L P-CUBE	☐	
		N	HNO3 TO pH<2	1 L P-CUBE	☐	
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

RECEIVED BY: ____

SIGNATURE: [illegible]

ABB ENVIRONMENTAL SERVICES, INC.

PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 1 0 2 A 4

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SAMPLING DATE: 12-6-94

SITE ID: 4 1 M - 9 4 - 0 2 A

JOB NUMBER: 7053-14

FILE NAME: CGW

LOCATION ACTIVITY: START ~~1015~~ 1100 END 1245

PROGRAM: C

WEATHER: OVERCAST

WATER LEVEL / WELL DATA

☐ TOP OF WELL
☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.66 FT

PROTECTIVE CASING/WELL DIFF.: -0.30 FT

WELL DEPTH: 8.1 FT

☐ MEASURED
☐ HISTORICAL

WATER DEPTH: 5.85 FT

3.78 GAL/VOL

HEIGHT OF WATER COLUMN: 2.25 FT x 1.68

4.5 TOTAL GAL PURGED

WELL INTEGRITY:

	YES	NO	N/A
PROT. CASING SECURE	☐	☐	☐
CONCRETE COLLAR INTACT	☐	☐	☐
WELL LOCKED	☐	☐	☐
PVC WELL CAP	☐	☐	☐

RISER ELEVATION: ____

GROUNDWATER ELEVATION: ____

PID READINGS: AMBIENT AIR 0.1 PPM; WELL MOUTH 0.3 PPM

WELL DIAMETER: ☒ 2 INCH ☐ 4 INCH ☐ ___ INCH

PURGE DATA

	1115	11:30	1200		
PURGE VOLUME	@ 2.0 GAL	@ 3 GAL	@ 4 GAL	@ ____ GAL	@ ____ GAL
TEMP, DEG C	13.7	13.0	12.4		
pH, UNITS ☐ pH PAPER	5.99	6.33	6.58		
SPECIFIC CONDUCTIVITY umhos/cm	71	77	81		
PUMP RATE, GPM					

SAMPLE OBSERVATIONS
☐ CLEAR
☐ CLOUDY
☐ COLORED ____
☐ TURBID
☐ ODOR
☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING	
☒	☒	PERISTALTIC PUMP
	☒	SUBMERSIBLE PUMP
☐		BAILER
	☒	PVC/SILICON TUBING
	☒	IN-LINE/DISPOSABLE FILTER ____
☐	☐	OTHER ____

EQUIPMENT ID: ISCO # ____ ☒ 2" ☐ 4" # ____

DECON FLUIDS USED
☒ POTABLE WATER
☐ LIQUINOX
☐ STEAM CLEANING
☐ ____

WATER LEVEL EQUIP. USED
☒ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ PRESSURE TRANSDUCER
____

GROUND ELEVATION: ____

NUMBER OF FILTERS USED ____

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS (A / B / C / D)
☒ VOC	UH20	VP	HCL, 4 DEG C	(4) 60 ML	☒	A / B / /
☒ SVOC	UH18	MS	4 DEG C	(2) 1 L AG	☒	E / F / /
☐ PEST/PCB	UH02	EC	4 DEG C	(3) 1 L AG	☐	/ / /
	UH13					/ / /
☒ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☒	N / O / /
☒ LEAD ONLY	SD20	N	HNO3 TO pH<2			/ / /
☒ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☒	G / H / I /
	UW32					/ / /
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	/ / /
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	/ / /
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	/ / /
	TT10	C	4 DEG C	1 L P-CUBE	☐	/ / /
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	/ / /
☒ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☒	J / K / /
☒ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☒	/ / /
		C	4 DEG C	1 L P-CUBE	☐	/ / /
		N	HNO3 TO pH<2	1 L P-CUBE	☐	/ / /
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	/ / /

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

TURBIDITY METER DIED

RECEIVED BY: ____

SIGNATURE: [illegible]

ABB ENVIRONMENTAL SERVICES, INC.

PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 1 0 2 B 3

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL PVC

SITE ID: 41M-93-02B

JOB NUMBER: 7053.14

SAMPLING DATE: 12-6-94

PROGRAM: C

FILE NAME: CGW

LOCATION ACTIVITY: START 1000 END 1215

WEATHER: OVERCAST

WATER LEVEL / WELL DATA

WELL DEPTH: 35.15 FT

WATER DEPTH: 28.20 FT

HEIGHT OF WATER COLUMN: 6.95 FT

■ MEASURED ☐ HISTORICAL

11.68 GAL/VOL

12 TOTAL GAL PURGED

■ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 3.25 FT

PROTECTIVE CASING/WELL DIFF.: -0.29 FT

RISER ELEVATION:

GROUNDWATER ELEVATION:

WELL INTEGRITY:	YES	NO	N/A
PROT. CASING SECURE	■	☐	■
CONCRETE COLLAR INTACT	■	☐	☐
WELL LOCKED	■	☐	☐
PVC WELL CAP	■	☐	☐

PID READINGS: 1.69 AMBIENT AIR 0.1 PPM WELL MOUTH 0.3 PPM

WELL DIAMETER: ☐ 2 INCH ■ 4 INCH ☐ ___ INCH

PURGE DATA

PURGE VOLUME	@ 4 GAL (1130)	@ 8 GAL (1140)	@ 12 GAL (1155)	@ ___ GAL	@ ___ GAL
TEMP, DEG C	13.7	13.2	13.2		
pH, UNITS ☐ pH PAPER	6.38	6.42	6.54		
SPECIFIC CONDUCTIVITY umhos/cm	52	51	52		
PUMP RATE, GPM					

SAMPLE OBSERVATIONS: ☐ CLEAR ☐ CLOUDY ☐ COLORED ___ ☐ TURBID ☐ ODOR ☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING	
☐	☐	PERISTALTIC PUMP
■	■	SUBMERSIBLE PUMP
■	☐	BAILER
	■	PVC/SILICON TUBING
	☐	IN-LINE/DISPOSABLE FILTER ___
☐	☐	OTHER ___

EQUIPMENT ID: ISCO # ___ ■ 2" ☐ 4" # ___

DECON FLUIDS USED: ■ POTABLE WATER ☐ LIQUINOX ☐ STEAM CLEANING ___

WATER LEVEL EQUIP. USED: ■ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ PRESSURE TRANSDUCER ___

GROUND ELEVATION:

NUMBER OF FILTERS USED: 1

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS
■ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	■	A / B / C / D
■ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	■	E / F
☐ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☐	
	UM13					
■ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	■	N / O
■ LEAD ONLY	SD20	N	HNO3 TO pH<2		■	
■ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	■	G / H / I
	UW32					
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	
	TT10	C	4 DEG C	1 L P-CUBE	☐	
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	
■ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	■	J / K
■ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	■	L
		C	4 DEG C	1 L P-CUBE	☐	
		N	HNO3 TO pH<2	1 L P-CUBE	☐	
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

TURBIDITY METER NOT FUNCTIONING

SAMPLE ~~[illegible]~~ FILTERED OUT OF BAILER

RECEIVED BY: ___

SIGNATURE: [illegible]

ABB ENVIRONMENTAL SERVICES, INC.

PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 1 0 2 C 4

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL PVC

SITE ID: 41M-94-02C

JOB NUMBER: 7053-14

SAMPLING DATE: 12-6-94

PROGRAM: C

FILE NAME: CGW

LOCATION ACTIVITY: START 1015 END 1600

WEATHER: OVERCAST

WATER LEVEL / WELL DATA

WELL DEPTH: 51.80 FT

☐ MEASURED ☐ HISTORICAL

☒ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.41 FT

PROTECTIVE CASING/WELL DIFF.: -0.18 FT

WATER DEPTH: 31.05 FT

34.86 GAL/VOL

HEIGHT OF WATER COLUMN: 20.75 FT × 1.68

180 TOTAL GAL PURGED

WELL INTEGRITY:

	YES	NO	N/A
PROT. CASING SECURE	☒	☐	☒
CONCRETE COLLAR INTACT	☒	☐	☐
WELL LOCKED	☒	☐	☐
PVC WELL CAP	☒	☐	☐

RISER ELEVATION

GROUNDWATER ELEVATION

PID READINGS: AMBIENT AIR 0.1 PPM; WELL MOUTH 0.6 PPM

WELL DIAMETER: ☐ 2 INCH ☒ 4 INCH ☐ ___ INCH

PURGE DATA

	1250	1330	1420	1510	1545
PURGE VOLUME	@ 35 GAL	@ 70 GAL	@ 105 GAL	@ 140 GAL	@ 175 GAL
TEMP, DEG C	13.6	13.6	15.7	16.0	16.3
pH, UNITS ☐ pH PAPER	6.63	6.05	6.25	6.49	6.29
SPECIFIC CONDUCTIVITY umhos/cm	34	32	29	27	28
PUMP RATE, GPM					

SAMPLE OBSERVATIONS: ☐ CLEAR ☐ CLOUDY ☐ COLORED ☐ TURBID ☐ ODOR ☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING		EQUIPMENT ID
☒	☐	PERISTALTIC PUMP	ISCO #____
☐	☒	SUBMERSIBLE PUMP	☒ 2" ☐ 4" #____
☐	☐	BAILER	
	☒	PVC/SILICON TUBING	
	☒	IN-LINE/DISPOSABLE FILTER	
☐	☐	OTHER	

DECON FLUIDS USED: ☒ POTABLE WATER ☐ LIQUINOX ☐ STEAM CLEANING

WATER LEVEL EQUIP. USED: ☒ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ PRESSURE TRANSDUCER

GROUND ELEVATION

NUMBER OF FILTERS USED: 1

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS
						203 A / B / C / D
☒ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☒	E / F
☒ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☒	
☐ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☐	
	UM13					
☒ PAL INORGANICS (SPECIFIED BELOW)		M	HNO3 TO pH<2	1 L P-CUBE	☒	N / O
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2		☐	
☒ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☒	G / H / I
	UW32					
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	
	TT10	C	4 DEG C	1 L P-CUBE	☐	
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	
☒ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☒	J / K
☒ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☒	L
		C	4 DEG C	1 L P-CUBE	☐	
		N	HNO3 TO pH<2	1 L P-CUBE	☐	
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

MS/MSD

MATRIX SPIKE & M.S. DUPL.

RECEIVED BY: ____

SIGNATURE: Carolyn C Barr

ABB ENVIRONMENTAL SERVICES, INC.

PAGE 1 OF 1

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: MX41O3X3

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SITE ID: 41M-93-03X

JOB NUMBER: 7053-14

SAMPLING DATE: 6 Dec 1994

FILE NAME: CGW

LOCATION ACTIVITY: START 1120 END 1430

PROGRAM: C

WEATHER: Cloudy, 50's

WATER LEVEL / WELL DATA

☑ TOP OF WELL
☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 1.9 FT

PROTECTIVE CASING/WELL DIFF.: -0.35 FT

WELL DEPTH: 46.07 FT ☑ MEASURED ☐ HISTORICAL

WATER DEPTH: 37.75 FT

HEIGHT OF WATER COLUMN: 8.32 FT

14 GAL/VOL

70 TOTAL GAL PURGED

WELL INTEGRITY:	YES	NO	N/A
PROT. CASING SECURE	☑	☐	☐
CONCRETE COLLAR INTACT	☑	☐	☐
WELL LOCKED	☑	☐	☐
PVC WELL CAP	☐	☑	☐

RISER ELEVATION:

GROUNDWATER ELEVATION:

PID READINGS: AMBIENT AIR 0.0 PPM; WELL MOUTH 0.6 PPM

WELL DIAMETER: ☐ 2 INCH ☑ 4 INCH ☐ ___ INCH

PURGE DATA

PURGE VOLUME	@ 14 GAL	@ 28 GAL	@ 42 GAL	@ 56 GAL	@ 70 GAL
TEMP, DEG C	11.4	10.9	10.9	10.9	10.9
pH, UNITS ☐ pH PAPER	7.3	5.0	8.1	8.1	5.1
SPECIFIC CONDUCTIVITY umhos/cm	46	47	48	48	49
PUMP RATE, GPM	≈1.5-2	≈1.5-2.0	≈1.5	≈1.5	≈1.5

SAMPLE OBSERVATIONS
☑ CLEAR but turbid 1st vol.
☐ CLOUDY
☐ COLORED
☐ TURBID
☐ ODOR
☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING	
☑	☑	PERISTALTIC PUMP
☑	☑	SUBMERSIBLE PUMP
☐	☑	BAILER
☐	☑	PVC/SILICON TUBING
	☑	IN-LINE/DISPOSABLE FILTER
☐	☐	OTHER

EQUIPMENT ID: ISCO # ___ ☐ 2" ☐ 4" # ___

DECON FLUIDS USED:
☐ POTABLE WATER
☐ LIQUINOX
☑ STEAM CLEANING
none dedicated equipment

WATER LEVEL EQUIP. USED:
☑ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ PRESSURE TRANSDUCER

GROUND ELEVATION:

NUMBER OF FILTERS USED: ___ Sample/Duplicate

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS 034/202A	034/202B	034/202C	034/202D
☑ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☑	E	E		
☑ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☑				
☐ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☐				
	UM13								
☑ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	2 1 L P-CUBE	☑	O	N		
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2	1 above filt	☐				
☑ EXPLOSIVES	UW19	LC	4 DEG C	(2) 1 L AG	☑	G	H	I	
	UW32								
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐				
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐				
☑ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☑				
	TT10	C	4 DEG C	1 L P-CUBE	☑				
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☑				
☑ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☑	J	K		
☑ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☑	K			
		C	4 DEG C	1 L P-CUBE	☑	L			
		N	HNO3 TO pH<2	1 L P-CUBE	☑	M			
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐				

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

No turbidity measurements because turbidimeter malfunctioning.
Duplicate collected @ this location.

RECEIVED BY: ___

SIGNATURE: [illegible]

ABB ENVIRONMENTAL SERVICES, INC.

PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: MX41O3B3

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SAMPLING DATE: ~~6~~ 8 Dec 1994

SITE ID: 41M-94-03B

JOB NUMBER: 7053-14

FILE NAME: CGW

LOCATION ACTIVITY: START ~~1545~~ 0850 END 1230

PROGRAM: C

WEATHER: ~~Cloudy, 40s~~ Sunny, 20s

WATER LEVEL / WELL DATA

WELL DEPTH: 66.88 FT

☑ MEASURED ☐ HISTORICAL

☑ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.6 FT

PROTECTIVE CASING/WELL DIFF.: -0.20 FT

WATER DEPTH: 38.70 FT

47 GAL/VOL

HEIGHT OF WATER COLUMN: 28.18 FT

235 TOTAL GAL PURGED

WELL INTEGRITY:	YES	NO	N/A
PROT. CASING SECURE	☑	☐	☐
CONCRETE COLLAR INTACT	☑	☐	☐
WELL LOCKED	☑	☐	☐
PVC WELL CAP	☑	☐	☐

RISER ELEVATION: ____

GROUNDWATER ELEVATION: ____

WELL DIAMETER: ☐ 2 INCH ☑ 4 INCH ☐ ___ INCH

PID READINGS: AMBIENT AIR 0.0 PPM; WELL MOUTH 1.1 PPM

PURGE DATA

PURGE VOLUME	@ 47 GAL	@ 94 GAL	@ 141 GAL	@ 185 GAL	@ 235 GAL
TEMP, DEG C	9.4	9.3	9.4	9.5	9.5
pH, UNITS ☐ pH PAPER	8.4	8.0	7.8	7.6	7.6
SPECIFIC CONDUCTIVITY umhos/cm	Broken				
PUMP RATE, GPM					

SAMPLE OBSERVATIONS: ☑ CLEAR ☐ CLOUDY ☐ COLORED ____ ☐ TURBID ☐ ODOR ☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING: ☐ ☐ ☐ ☐

SAMPLING: ☐ PERISTALTIC PUMP ☑ SUBMERSIBLE PUMP ☐ BAILER ☐ PVC/SILICON TUBING ☑ IN-LINE/DISPOSABLE FILTER ____ ☐ OTHER ____

EQUIPMENT ID: ISCO # ____ ☐ 2" ☐ 4" # ____

DECON FLUIDS USED: ☐ POTABLE WATER ☐ LIQUINOX ☐ STEAM CLEANING ☑ none, dedicated equipment

NUMBER OF FILTERS USED ____

WATER LEVEL EQUIP. USED: ☑ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ PRESSURE TRANSDUCER ____

GROUND ELEVATION: ____

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS 200A	200B	200C	200D
☑ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☑	E	F		
☑ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☑				
☐ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☐				
	UM13								
☑ PAL INORGANICS (SPECIFIED BELOW)		M	HNO3 TO pH<2	1 L P-CUBE	☑	G			
☐ LEAD ONLY	SD20	M	HNO3 TO pH<2		☐				
☑ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☐	C	H	I	
	UW32								
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐				
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐				
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐				
	TT10	C	4 DEG C	1 L P-CUBE	☐				
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐				
☑ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☑	J			
☐ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☑	L			
		C	4 DEG C	1 L P-CUBE	☑	K			
		N	HNO3 TO pH<2	1 L P-CUBE	☑	N			
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐				

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

RECEIVED BY: ____

SIGNATURE: [illegible]

ABB ENVIRONMENTAL SERVICES, INC.

PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 1 0 4 X 3

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SITE ID: 4 1 M - 9 ~~4~~ 3 - 0 4 X

JOB NUMBER: 07053-14

SAMPLING DATE: 12-7-94

FILE NAME: CGW

PROGRAM: C

WEATHER: DRIZZLE

LOCATION ACTIVITY: START 1135 END 1145

WATER LEVEL / WELL DATA

WELL DEPTH: 10.2 FT

☒ MEASURED ☐ HISTORICAL

☒ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.78 FT

PROTECTIVE CASING/WELL DIFF.: -.25 FT

WATER DEPTH: 6.58 FT

HEIGHT OF WATER COLUMN: 3.62 FT

2.0 GAL/VOL

TOTAL GAL PURGED

WELL INTEGRITY:

	YES	NO	N/A
PROT. CASING SECURE	☒	☐	☐
CONCRETE COLLAR INTACT	☒	☐	☒
WELL LOCKED	☒	☐	☐
PVC WELL CAP	☒	☐	☐

RISER ELEVATION

GROUNDWATER ELEVATION

WELL DIAMETER: ☒ 2 INCH ☐ 4 INCH ☐ ___ INCH

PID READINGS: AMBIENT AIR 0 PPM | WELL MOUTH 0 PPM

PURGE DATA

	1140	1142	1145		
PURGE VOLUME	@ 2.0 GAL	@ 6 GAL	@ 10 GAL	@ ___ GAL	@ ___ GAL
TEMP, DEG C	15.0	14.6	15.0		
pH, UNITS ☐ pH PAPER		1.59	~~2.41~~ 6.30		
SPECIFIC CONDUCTIVITY umhos/cm	30	33	30		
PUMP RATE, GPM					

SAMPLE OBSERVATIONS: ☐ CLEAR ☐ CLOUDY ☐ COLORED ___ ☐ TURBID ☐ ODOR ☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING	
☒	☒	PERISTALTIC PUMP
☒	☒	SUBMERSIBLE PUMP
☐	☒	BAILER
	☒	PVC/SILICON TUBING
	☒	IN-LINE/DISPOSABLE FILTER
☐	☐	OTHER

EQUIPMENT ID: ISCO # ___ ☒ 2" ☐ 4" # ___

DECON FLUIDS USED: ☐ POTABLE WATER ☐ LIQUINOX ☐ STEAM CLEANING ☐ ___

WATER LEVEL EQUIP. USED: ☐ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ PRESSURE TRANSDUCER ___

GROUND ELEVATION

NUMBER OF FILTERS USED ___

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS
☒ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☒	A / B / C / P
☒ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☒	E / F
☐ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☐	
	UM13					
☒ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☒	N / O
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2		☐	
☒ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☒	G / H
	UW32					
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	
	TT10	C	4 DEG C	1 L P-CUBE	☐	
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	
☒ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☐	
☒ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☒	J / K
		C	4 DEG C	1 L P-CUBE	☒	L
		N	HNO3 TO pH<2	1 L P-CUBE	☐	
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

PH NOT LOGICAL

RECEIVED BY: ___

SIGNATURE: [illegible]

ABB ENVIRONMENTAL SERVICES, INC.

PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X4 1 0 5 X 3

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL PVC

SITE ID: 4 1 M - 9 ~~4~~ 3 - 0 5 X

JOB NUMBER: 07053-14

SAMPLING DATE: 12-7-94

FILE NAME: CGW

LOCATION ACTIVITY: START 1050 END 1115

PROGRAM: C

WEATHER: OVERCAST SPRINKLES

WATER LEVEL / WELL DATA

WELL DEPTH: 10.95 FT

☒ MEASURED ☐ HISTORICAL

☒ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 3.44 FT

PROTECTIVE CASING/WELL DIFF.: -.14 FT

WATER DEPTH: 6.0 FT

2.72 GAL/VOL

HEIGHT OF WATER COLUMN: 4.95 FT

18 TOTAL GAL PURGED

WELL INTEGRITY:

	YES	NO	N/A
PROT. CASING SECURE	☒	☐	☐
CONCRETE COLLAR INTACT	☐	☐	☒
WELL LOCKED	☒	☐	☐
PVC WELL CAP	☒	☐	☐

RISER ELEVATION: ____

GROUNDWATER ELEVATION: ____

WELL DIAMETER: ☒ 2 INCH ☐ 4 INCH ☐ ___ INCH

PID READINGS: AMBIENT AIR 0 PPM; WELL MOUTH 0 PPM

PURGE DATA

	1055	1100	1105		
PURGE VOLUME	@ 2.73 GAL	@ 7.0 GAL	@ 13 GAL	@ ____ GAL	@ ____ GAL
TEMP, DEG C	15.1	14.5	13.9		
pH, UNITS ☐ pH PAPER	5.33	3.92	4.04		
SPECIFIC CONDUCTIVITY umhos/cm	50	31	29		
PUMP RATE, GPM					

SAMPLE OBSERVATIONS
☐ CLEAR
☐ CLOUDY
☐ COLORED ____
☐ TURBID
☐ ODOR
☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING		EQUIPMENT ID
☐	☐	PERISTALTIC PUMP	ISCO # ____
☒	☒	SUBMERSIBLE PUMP	☒ 2" ☐ 4" # ____
☐	☐	BAILER	
	☒	PVC/SILICON TUBING	
	☒	IN-LINE/DISPOSABLE FILTER ____	
☐	☐	OTHER ____	

DECON FLUIDS USED
☒ POTABLE WATER
☐ LIQUINOX
☐ STEAM CLEANING ____

WATER LEVEL EQUIP. USED
☒ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ PRESSURE TRANSDUCER ____

GROUND ELEVATION: ____

NUMBER OF FILTERS USED ____

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS
						038 A / B / C / D
☒ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☒	E / F / /
☒ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☒	/ / /
☐ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☐	/ / /
	UM13					/ / /
☒ PAL INORGANICS (SPECIFIED BELOW)		M	HNO3 TO pH<2	1 L P-CUBE	☒	N / O / /
☐ LEAD ONLY	SD20	M	HNO3 TO pH<2		☐	/ / /
☒ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☒	G / H / I /
	UW32					/ / /
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	/ / /
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	/ / /
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	/ / /
	TT10	C	4 DEG C	1 L P-CUBE	☐	/ / /
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	/ / /
☒ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☐	/ / /
☒ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☒	J / K / /
		C	4 DEG C	1 L P-CUBE	☐	L / / /
		N	HNO3 TO pH<2	1 L P-CUBE	☐	/ / /
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	/ / /

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

RECEIVED BY: ____

SIGNATURE: [illegible]

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PAGE 1 OF 1

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 1 0 7 X 3

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SAMPLING DATE: 7 Dec 1994

SITE ID: 4 1 M - 9 4 - 0 6 X

JOB NUMBER: 7053-14

FILE NAME: CGW

LOCATION ACTIVITY: START 1430 END 1630

PROGRAM: C

WEATHER: Rain, 40's

WATER LEVEL / WELL DATA

☑ TOP OF WELL
☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.15 FT

PROTECTIVE CASING/WELL DIFF.: -0.12 FT

WELL DEPTH: 16.40 FT ☑ MEASURED ☐ HISTORICAL

WATER DEPTH: 7.57 FT

14.83 GAL/VOL

HEIGHT OF WATER COLUMN: 8.83 FT

75 TOTAL GAL PURGED

WELL INTEGRITY:	YES	NO	N/A
PROT. CASING SECURE	☑	☐	☐
CONCRETE COLLAR INTACT	☑	☐	☐
WELL LOCKED	☐	☐	☐
PVC WELL CAP	☐	☐	☐

RISER ELEVATION:

GROUNDWATER ELEVATION:

PID READINGS: AMBIENT AIR 0.0 PPM WELL MOUTH 0.5 PPM

WELL DIAMETER: ☐ 2 INCH ☑ 4 INCH ☐ ___ INCH

PURGE DATA

PURGE VOLUME	@ 15 GAL	@ 30 GAL	@ 45 GAL	@ 60 GAL	@ 75 GAL
TEMP, DEG C	10.4	10.6	10.8	10.5	10.5
pH, UNITS ☐ pH PAPER	6.5	6.7	6.3	6.3	6.3
SPECIFIC CONDUCTIVITY umhos/cm	47	47	Batt. Dead	Batt. Dead	Batt. dead
PUMP RATE, GPM	≈2				

SAMPLE OBSERVATIONS
☑ CLEAR
☐ CLOUDY
☐ COLORED
☐ TURBID
☐ ODOR
☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING		EQUIPMENT ID
☐	☐	PERISTALTIC PUMP	ISCO #
☑	☑	SUBMERSIBLE PUMP	☐ 2" ☐ 4" #
☐	☑	BAILER	
☐	☑	PVC/SILICON TUBING	
☐	☑	IN-LINE/DISPOSABLE FILTER	
☐	☐	OTHER	

DECON FLUIDS USED
☐ POTABLE WATER
☐ LIQUINOX
☑ STEAM CLEANING
None dedicated equipment

NUMBER OF FILTERS USED

WATER LEVEL EQUIP. USED
☑ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ PRESSURE TRANSDUCER

GROUND ELEVATION

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS (040A / 040B / 040C / 040D)
☑ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☑	E / F / /
☑ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☑	/ / /
☐ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☐	/ / /
	UM13					/ / /
☑ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☑	D / / /
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2			/ / /
☑ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☑	G / H / I /
	UW32					/ / /
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	/ / /
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	/ / /
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	/ / /
	TT10	C	4 DEG C	1 L P-CUBE	☐	/ / /
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	/ / /
☑ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☑	J / / /
☑ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☑	/ / /
		C	4 DEG C	1 L P-CUBE	☑	K / / /
		N	HNO3 TO pH<2	1 L P-CUBE	☑	N / / /
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	/ / /

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

Turbidimeter broken, Conductivity meter battery dead.

RECEIVED BY:

SIGNATURE: [signature]

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PAGE 1 OF 1

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 1 0 7 X 3

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SAMPLING DATE: 7Dec94

SITE ID: 41M-94-07X

JOB NUMBER: 7053-14

FILE NAME: CGW

LOCATION ACTIVITY: START 1300 END

PROGRAM: C

WEATHER: Rain, 40's

WATER LEVEL / WELL DATA

WELL DEPTH: 10.00 FT

☑ MEASURED ☐ HISTORICAL

☑ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.2 FT

PROTECTIVE CASING/WELL DIFF.: -0.18 FT

WATER DEPTH: 4.88 FT

8.6 GAL/VOL

HEIGHT OF WATER COLUMN: 5.12 FT

42.5 TOTAL GAL PURGED

WELL INTEGRITY:

	YES	NO	N/A
PROT. CASING SECURE	☑	☐	☐
CONCRETE COLLAR INTACT	☑	☐	☐
WELL LOCKED	☑	☐	☐
PVC WELL CAP	☐	☐	☐

RISER ELEVATION:

GROUNDWATER ELEVATION:

PID READINGS: AMBIENT AIR 0.0 PPM; WELL MOUTH 0.0 PPM

WELL DIAMETER: ☐ 2 INCH ☑ 4 INCH ☐ ___ INCH

PURGE DATA

PURGE VOLUME	@ 8.6 GAL	@ 17 GAL	@ 25.5 GAL	@ 34 GAL	@ 42.5 GAL
TEMP, DEG C	9.4	9.2	9.2	9.2	9.2
pH, UNITS ☐ pH PAPER	6.1	6.0	3.9	3.9	3.9
SPECIFIC CONDUCTIVITY umhos/cm	36	34	32	31	33
PUMP RATE, GPM	<2	<2	<2	<2	<2

SAMPLE OBSERVATIONS: ☑ CLEAR ☐ CLOUDY ☐ COLORED ☐ TURBID ☐ ODOR ☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING: ☑ ☐ ☐ ☐

SAMPLING: ☐ PERISTALTIC PUMP; ☑ SUBMERSIBLE PUMP; ☐ BAILER; ☐ PVC/SILICON TUBING; ☑ IN-LINE/DISPOSABLE FILTER; ☐ OTHER

EQUIPMENT ID: ISCO # ___ ☐ 2" ☐ 4" # ___

DECON FLUIDS USED: ☐ POTABLE WATER; ☐ LIQUINOX; ☐ STEAM CLEANING; ☑ None Dedicated Equipment

NUMBER OF FILTERS USED: ___

WATER LEVEL EQUIP. USED: ☑ ELECTRIC COND. PROBE; ☐ FLOAT ACTIVATED; ☐ PRESSURE TRANSDUCER

GROUND ELEVATION:

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS (042A / 042B / 042C / 042D)
☑ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☑	E / F / /
☑ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☑	/ / /
☐ PEST/PCB	UH02	EC	4 DEG C	(3) 1 L AG	☐	/ / /
	UH13					/ / /
☑ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☑	O / / /
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2			/ / /
☐ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☑	G / H / I /
	UW32					/ / /
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	/ / /
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	/ / /
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	/ / /
	TT10	C	4 DEG C	1 L P-CUBE	☐	/ / /
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	/ / /
☑ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☑	T / / /
☑ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☑	/ / /
		C	4 DEG C	1 L P-CUBE	☑	/ / /
		N	HNO3 TO pH<2	1 L P-CUBE	☑	N / / /
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	/ / /

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

Turbidimeter broken.

RECEIVED BY: ___

SIGNATURE: [illegible]

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PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: MY41O8A3

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SAMPLING DATE: 12-7-94

SITE ID: 41M-9-08A

JOB NUMBER: 07053-14

FILE NAME: CGW

LOCATION ACTIVITY: START 1620 END 0910

PROGRAM: C

WEATHER: OVERCAST

WATER LEVEL / WELL DATA

WELL DEPTH: 29.35 FT

WATER DEPTH: 20.50 FT

☐ MEASURED ☐ HISTORICAL

☒ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.43 FT

PROTECTIVE CASING/WELL DIFF.: -.21 '

RISER ELEVATION:

GROUNDWATER ELEVATION:

HEIGHT OF WATER COLUMN: 8.85 FT

x 1.68

14.87 GAL/VOL

TOTAL GAL PURGED

WELL INTEGRITY:	YES	NO	N/A
PROT. CASING SECURE	☒	☐	☒
CONCRETE COLLAR INTACT	☒	☐	☐
WELL LOCKED	☒	☐	☐
PVC WELL CAP	☒	☐	☐

PID READINGS: AMBIENT AIR 0.0 PPM | WELL MOUTH 0.0 PPM

WELL DIAMETER: ☐ 2 INCH ☒ 4 INCH ☐ ___ INCH

PURGE DATA

	1635	1700	0900		
PURGE VOLUME	@ 5 GAL	@ 10 GAL	@ 15.0 GAL	@ ___ GAL	@ ___ GAL
TEMP, DEG C	16.3	15.7	16.7		
pH, UNITS ☐ pH PAPER	6.15	6.32	5.91		
SPECIFIC CONDUCTIVITY umhos/cm	71	70	84		
PUMP RATE, GPM					

SAMPLE OBSERVATIONS: ☒ CLEAR ☐ CLOUDY ☐ COLORED ☐ TURBID ☐ ODOR ☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING		EQUIPMENT ID
☐	☐	PERISTALTIC PUMP	ISCO # ___
☒	☒	SUBMERSIBLE PUMP	☒ 2" ☐ 4" # ___
☐	☐	BAILER	
	☒	PVC/SILICON TUBING	
	☒	IN-LINE/DISPOSABLE FILTER	
☐	☐	OTHER	

DECON FLUIDS USED: ☒ POTABLE WATER ☐ LIQUINOX ☐ STEAM CLEANING

WATER LEVEL EQUIP. USED: ☒ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ PRESSURE TRANSDUCER

GROUND ELEVATION:

NUMBER OF FILTERS USED: 1

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS (044A / B / C / D)
☒ VOC	UH20	VP	HCL, 4 DEG C	(4) 60 ML	☒	E / F
☒ SVOC	UH18	MS	4 DEG C	(2) 1 L AG	☒	
☐ PEST/PCB	UH02	EC	4 DEG C	(3) 1 L AG	☐	
	UH13					
☒ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☒	N / O
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2		☐	
☒ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☒	G / H / I
	UW32					
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	
	TT10	C	4 DEG C	1 L P-CUBE	☐	
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	
☒ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☒	J / K
☒ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☒	L
		C	4 DEG C	1 L P-CUBE	☐	
		N	HNO3 TO pH<2	1 L P-CUBE	☐	
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

1637 DRY @ 7 gal
1700 PURGE DRY @ 10 gal
0855 BEGIN PURGE

RECEIVED BY: ___

SIGNATURE: [signature]

ABB ENVIRONMENTAL SERVICES, INC.

PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X4 1 0 8 B 3

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL PVC

SAMPLING DATE: 12- -94

SITE ID: 4 1 M - 9 4 - 0 8 B

JOB NUMBER: 07053-14

FILE NAME: CGW

LOCATION ACTIVITY: START 1615 END 0930

PROGRAM: C

WEATHER: OVERCAST

WATER LEVEL / WELL DATA

WELL DEPTH: 44.80 FT

WATER DEPTH: 21.55 FT

HEIGHT OF WATER COLUMN: 23.25 FT

X1.68

39.06 GAL/VOL

TOTAL GAL PURGED

☒ MEASURED ☐ HISTORICAL

☒ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.42 FT

PROTECTIVE CASING/WELL DIFF.: -.18 FT

RISER ELEVATION

GROUNDWATER ELEVATION

WELL INTEGRITY:	YES	NO	N/A
PROT. CASING SECURE	☒	☐	☒
CONCRETE COLLAR INTACT	☒	☐	
WELL LOCKED	☒	☐	
PVC WELL CAP	☒	☐	

WELL DIAMETER: ☐ 2 INCH ☒ 4 INCH ☐ ___ INCH

PID READINGS: AMBIENT AIR 0.0 PPM; WELL MOUTH 0.0 PPM

PURGE DATA

		0925	0920		
PURGE VOLUME	@ 39 GAL	@ 98 GAL	@ 105 GAL	@ ____ GAL	@ ____ GAL
TEMP, DEG C	14.5	8.9			
pH, UNITS ☐ pH PAPER	7.64	8.60			
SPECIFIC CONDUCTIVITY umhos/cm	44	66			
PUMP RATE, GPM					

SAMPLE OBSERVATIONS
☐ CLEAR
☐ CLOUDY
☐ COLORED ____
☐ TURBID
☐ ODOR
☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING		EQUIPMENT ID
☒	☐	PERISTALTIC PUMP	ISCO # ____
☒	☒	SUBMERSIBLE PUMP	☒ 2" ☐ 4" # ____
☐	☐	BAILER	
	☒	PVC/SILICON TUBING	
	☒	IN-LINE/DISPOSABLE FILTER ____	
☐	☐	OTHER ____	

DECON FLUIDS USED
☒ POTABLE WATER
☐ LIQUINOX
☐ STEAM CLEANING
☐ ____

WATER LEVEL EQUIP. USED
☒ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ PRESSURE TRANSDUCER
☐ ____

GROUND ELEVATION

NUMBER OF FILTERS USED ____

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS (SC A / B / C / D)
☒ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☒	E / F
☒ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☒	
☐ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☐	
	UM13					
☒ PAL INORGANICS (SPECIFIED BELOW)		M	HNO3 TO pH<2	1 L P-CUBE	☒	P / Q
☐ LEAD ONLY	SD20	M	HNO3 TO pH<2			
☒ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☒	G / H / I
	UW32					
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	
	TT10	C	4 DEG C	1 L P-CUBE	☐	
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	
☒ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☒	J / K
☒ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☐	L
		C	4 DEG C	1 L P-CUBE	☐	
		N	HNO3 TO pH<2	1 L P-CUBE	☐	
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

1111 DRY @ 22 gal @ 1647

1715 DRY 24 gal total

0930 DRY @ 44 gal

1000 DRY @ 49 gal

1400 DRY @ 66 gal

BAIL PARAMETERS THEN SAMPLE FROM BAILER

RECEIVED BY: ____

SIGNATURE: [signature]

ABB ENVIRONMENTAL SERVICES, INC.

PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 1 0 9 A 3

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SAMPLING DATE: 6 Dec 94

SITE ID: 4 1 M - 9 4 - 0 9 A

JOB NUMBER: 7053-14

FILE NAME: CGW

LOCATION ACTIVITY: START 1645 END 1845

PROGRAM: C

WEATHER: Cloudy, 40's

WATER LEVEL / WELL DATA

☑ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.33 FT

PROTECTIVE CASING/WELL DIFF.: -0.9 FT

WELL DEPTH: 41.6 FT ☑ MEASURED ☐ HISTORICAL

WATER DEPTH: 35.0 FT

11.1 GAL/VOL

HEIGHT OF WATER COLUMN: 6.6 FT

55 TOTAL GAL PURGED

WELL INTEGRITY:	YES	NO	N/A
PROT. CASING SECURE	☑	☐	☐
CONCRETE COLLAR INTACT	☑	☐	☐
WELL LOCKED	☑	☐	☐
PVC WELL CAP	☑	☐	☐

RISER ELEVATION: ____

GROUNDWATER ELEVATION: ____

WELL DIAMETER: ☐ 2 INCH ☑ 4 INCH ☐ ___ INCH

PID READINGS: AMBIENT AIR 0.0 PPM; WELL MOUTH 0.0 PPM

PURGE DATA

PURGE VOLUME	@ 11 GAL	@ 22 GAL	@ 33 GAL	@ 44 GAL	@ 55 GAL
TEMP, DEG C	9.6	9.1	9.5	9.3	9.3
pH, UNITS ☐ pH PAPER	3.9	7.7	7.7	7.6	7.5
SPECIFIC CONDUCTIVITY umhos/cm	27	27	27	27	26
PUMP RATE, GPM	≈1.5	≈1.5	≈1.5	≈1.5	≈1.5

SAMPLE OBSERVATIONS
☑ CLEAR
☐ CLOUDY
☐ COLORED ____
☐ TURBID
☐ ODOR
☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING	
☑	☑	PERISTALTIC PUMP
	☑	SUBMERSIBLE PUMP
	☑	BAILER
	☑	PVC/SILICON TUBING
	☑	IN-LINE/DISPOSABLE FILTER ____
☐	☐	OTHER ____

EQUIPMENT ID: ISCO # ____ ☐ 2" ☐ 4" # ____

DECON FLUIDS USED
☐ POTABLE WATER
☐ LIQUINOX
☐ STEAM CLEANING
☑ Dedicated equip. no decon.

NUMBER OF FILTERS USED ____

WATER LEVEL EQUIP. USED
☑ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ PRESSURE TRANSDUCER

GROUND ELEVATION: ____

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS (048A / 048B / 048C / 048D)
☑ VOC	UH20	VP	HCL, 4 DEG C	(4) 60 ML	☑	
☑ SVOC	UH18	MS	4 DEG C	(2) 1 L AG	☑	E / F / /
☐ PEST/PCB	UH02	EC	4 DEG C	(3) 1 L AG	☐	
	UH13					
☑ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☑	D / / /
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2		☐	
☑ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☑	G / H / I /
	UW32					
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	
	TT10	C	4 DEG C	1 L P-CUBE	☐	
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	
☐ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☑	J / / /
☑ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☑	
		C	4 DEG C	1 L P-CUBE	☑	K / / /
		N	HNO3 TO pH<2	1 L P-CUBE	☑	L / / /
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

MS/MSD Collected at this location.

RECEIVED BY: ____

SIGNATURE: R. David Romano

ABB ENVIRONMENTAL SERVICES, INC.

PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 0 9 B X

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL PVC

SITE ID: 4 1 M - 9 4 - 0 9 B

JOB NUMBER: 07053-14

SAMPLING DATE: 12-5-94

PROGRAM: C

FILE NAME: CGW

LOCATION ACTIVITY: START 1130 END 1600

WEATHER: RAIN 40°F

WATER LEVEL / WELL DATA

WELL DEPTH: 60.95 FT

☒ MEASURED ☐ HISTORICAL

☒ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.36 FT

PROTECTIVE CASING/WELL DIFF.: -0.18 FT

WATER DEPTH: 34.80 FT

43.93 GAL/VOL

TOTAL GAL PURGED

HEIGHT OF WATER COLUMN: 26.15 FT

x 1.63

WELL INTEGRITY:

	YES	NO	N/A
PROT. CASING SECURE	☒	☐	☒
CONCRETE COLLAR INTACT	☒	☐	
WELL LOCKED	☒	☐	
PVC WELL CAP	☒	☐	

RISER ELEVATION: ____

GROUNDWATER ELEVATION: ____

WELL DIAMETER: ☒ 2 INCH ☒ 4 INCH ☐ ___ INCH

PID READINGS: AMBIENT AIR 0.0 PPM; WELL MOUTH 0.0 PPM

PURGE DATA

	1228	1312	1356	1445	1530
PURGE VOLUME	@ 44 GAL	@ 88 GAL	@ 132 GAL	@ 176 GAL	@ 220 GAL
TEMP, DEG C	9.70	9.6	9.7	9.8	
pH, UNITS ☐ pH PAPER	5.64	5.61	6.23	6.28	5.68
SPECIFIC CONDUCTIVITY umhos/cm	38	32	34	32	32
PUMP RATE GPM 0.26	4.12	3.01	2.90	2.53	2.42

SAMPLE OBSERVATIONS
☒ CLEAR
☐ CLOUDY
☐ COLORED ____
☐ TURBID
☐ ODOR
☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING	
☒	☒	PERISTALTIC PUMP
	☒	SUBMERSIBLE PUMP
☐	☐	BAILER
	☒	PVC/SILICON TUBING
	☒	IN-LINE/DISPOSABLE FILTER ____
☐	☐	OTHER ____

EQUIPMENT ID: ISCO # ____ ☒ 2" ☐ 4" # ____

DECON FLUIDS USED: ☒ POTABLE WATER ☐ LIQUINOX ☐ STEAM CLEANING ____

WATER LEVEL EQUIP. USED: ☒ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ PRESSURE TRANSDUCER ____

GROUND ELEVATION: ____

NUMBER OF FILTERS USED ____

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS
☒ VOC	UH20	VP	HCL, 4 DEG C	(4) 60 ML	☒	056A / B / C / D
☒ SVOC	UH18	MS	4 DEG C	(2) 1 L AG	☒	E / F
☐ PEST/PCB	UH02	EC	4 DEG C	(3) 1 L AG	☐	
	UH13					
☒ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☒	N / O
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2			
☒ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☒	G / H / I
	UW32					
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	
	TT10	C	4 DEG C	1 L P-CUBE	☐	
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	
☒ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☐	
☒ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☒	J / K
		C	4 DEG C	1 L P-CUBE	☐	L
		N	HNO3 TO pH<2	1 L P-CUBE	☐	
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

RECEIVED BY: ____

SIGNATURE: [signature]

ABB ENVIRONMENTAL SERVICES, INC.

PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: A Y 4 1 1 0 X 3

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL TVC

SITE ID: 4 1 M - 9 4 - 1 0 X

JOB NUMBER: 07053.14

SAMPLING DATE: 12-8-94

PROGRAM: C

FILE NAME: CGW

LOCATION ACTIVITY: START 0950 END ~~0930~~ 1030

WEATHER: OVERCAST

WATER LEVEL / WELL DATA

WELL DEPTH: 39.60 FT [x] MEASURED [ ] HISTORICAL

WATER DEPTH: 32.80 FT

[x] TOP OF WELL [ ] TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.05 FT

PROTECTIVE CASING/WELL DIFF.: -0.18 FT

HEIGHT OF WATER COLUMN: 6.8 FT X 1.68 = 11.42 GAL/VOL

TOTAL GAL PURGED

WELL INTEGRITY:	YES	NO	N/A
PROT. CASING SECURE	[x]	[ ]	[ ]
CONCRETE COLLAR INTACT	[ ]	[ ]	[x]
WELL LOCKED	[x]	[ ]	[ ]
PVC WELL CAP	[x]	[ ]	[ ]

RISER ELEVATION

GROUNDWATER ELEVATION

PID READINGS: AMBIENT AIR 0.0 PPM; WELL MOUTH 0.0 PPM

WELL DIAMETER: [ ] 2 INCH [x] 4 INCH [ ] ___ INCH

PURGE DATA

PURGE VOLUME	@ ~~4.5~~ 10.15 GAL	@ ~~7.5~~ 8 GAL	@ ~~11.5~~ GAL	@ ____ GAL	@ ____ GAL
TEMP, DEG C	10.9	10.5			
pH, UNITS [ ] pH PAPER	5.40	7.60			
SPECIFIC CONDUCTIVITY umhos/cm	121	125			
PUMP RATE, GPM					

SAMPLE OBSERVATIONS: [ ] CLEAR [ ] CLOUDY [ ] COLORED ____ [ ] TURBID [ ] ODOR [ ] OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING	
[x]	[x]	PERISTALTIC PUMP
[ ]	[x]	SUBMERSIBLE PUMP
[ ]	[x]	BAILER
	[x]	PVC/SILICON TUBING
[ ]	[ ]	IN-LINE/DISPOSABLE FILTER ____
		OTHER ____

EQUIPMENT ID: ISCO # ____ [x] 2" [ ] 4" # ____

DECON FLUIDS USED: [x] POTABLE WATER [ ] LIQUINOX [ ] STEAM CLEANING ____

WATER LEVEL EQUIP. USED: [x] ELECTRIC COND. PROBE [ ] FLOAT ACTIVATED [ ] PRESSURE TRANSDUCER ____

GROUND ELEVATION

NUMBER OF FILTERS USED ____

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS
[x] VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	[x]	A / B / C / D
[x] SVOC	UM18	MS	4 DEG C	(2) 1 L AG	[x]	E / F
[ ] PEST/PCB	UH02	EC	4 DEG C	(3) 1 L AG	[ ]	
	UH13					
[x] PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	[x]	N / O
[ ] LEAD ONLY	SD20	N	HNO3 TO pH<2		[ ]	
[x] EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	[x]	G / H / I
	UW32					
[ ] TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	[ ]	
[ ] TOC	415.1	O	H2SO4 TO pH <2	1 L AG	[ ]	
[ ] ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	[ ]	
	TT10	C	4 DEG C	1 L P-CUBE	[ ]	
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	[ ]	
[x] TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	[x]	J / K
[x] H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	[x]	L
		C	4 DEG C	1 L P-CUBE	[ ]	
		N	HNO3 TO pH<2	1 L P-CUBE	[ ]	
[ ] COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	[ ]	

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

PUMP WOULD NOT PUMP UP WATER BAILED PURGE VOLUME

1030 PURGE DRY, ALLOW RECHARGE 5 gal
1300 PURGE DRY @ 0.5 gal = 5.5 gal
1700 PURGE ANOTHER 0.5 gal = 6 gal
1005 DRY @ 7.5 gal
1430 DRY @ 8

RECEIVED BY: ____

SIGNATURE: [signature]

1600 DRY @ 5 liters SAMPLED

0235

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PAGE 1 OF 1

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: MX411 1X3

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SAMPLING DATE: 6 Dec 1994

SITE ID: 41M-94-11X

JOB NUMBER: 7053-14

FILE NAME: CGW

Purged 10/5/94 @ 16:00

LOCATION ACTIVITY: START 0910 END 1100

PROGRAM: C

WEATHER: Cloudy, 50's

WATER LEVEL / WELL DATA

WELL DEPTH: 52.0 FT

☑ MEASURED ☐ HISTORICAL

☑ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.3 FT

PROTECTIVE CASING/WELL DIFF.: -0.21 FT

WATER DEPTH: 38.7 FT

22.3 GAL/VOL

22 TOTAL GAL PURGED

HEIGHT OF WATER COLUMN: 13.3 FT

WELL INTEGRITY:	YES	NO	N/A
PROT. CASING SECURE	☑	☐	☐
CONCRETE COLLAR INTACT	☑	☐	☐
WELL LOCKED	☑	☐	☐
PVC WELL CAP	☑	☐	☐

RISER ELEVATION:

GROUNDWATER ELEVATION:

WELL DIAMETER: ☐ 2 INCH ☑ 4 INCH ☐ ___ INCH

PID READINGS: AMBIENT AIR 0.0 PPM; WELL MOUTH 0.0 PPM

PURGE DATA

PURGE VOLUME	@ 22 GAL	@ ___ GAL	@ ___ GAL	@ ___ GAL	@ ___ GAL
TEMP, DEG C	10.7				
pH, UNITS ☐ pH PAPER	7.7				
SPECIFIC CONDUCTIVITY umhos/cm	65				
PUMP RATE, GPM					

SAMPLE OBSERVATIONS: ☐ CLEAR ☑ CLOUDY ☐ COLORED ___ ☐ TURBID ☐ ODOR ☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING	
☐	☐	PERISTALTIC PUMP
☑	☑	SUBMERSIBLE PUMP
☑	☑	BAILER
☐	☐	PVC/SILICON TUBING
	☐	IN-LINE/DISPOSABLE FILTER ___
☐	☐	OTHER ___

EQUIPMENT ID: ISCO # ___ ☐ 2" ☐ 4" # ___

DECON FLUIDS USED: ☐ POTABLE WATER ☐ LIQUINOX ☐ STEAM CLEANING ☐ None dedicated equip

NUMBER OF FILTERS USED ___

WATER LEVEL EQUIP. USED: ☑ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ PRESSURE TRANSDUCER ___

GROUND ELEVATION:

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS (054A, 054B, 054C, 054D)
☑ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☑	
☑ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☑	E / F
☐ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☐	
	UM13					
☑ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☑	CN / D
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2			
☑ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☑	G / H / I
	UW32					
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	
☑ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☑	
	TT10	C	4 DEG C	1 L P-CUBE	☐	
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	
☑ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☐	
☑ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☑	J
		C	4 DEG C	1 L P-CUBE	☑	K
		N	HNO3 TO pH<2	1 L P-CUBE	☑	L
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☑	M

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

Only 1 volume purged due to poor rechargability. Well purged 10/5/94 and allowed to recharge overnight. Samples Collected 10/6/94.
Turbidimeter broken; no readings.

RECEIVED BY: ___

SIGNATURE: [signature]

ABB ENVIRONMENTAL SERVICES, INC.

PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 1 1 2 X 3

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL PVC

SITE ID: 4 1 M - 9 4 - 1 2 X

JOB NUMBER: 07053-14

SAMPLING DATE: 12-8-94

FILE NAME: CGW

LOCATION ACTIVITY: START 1550 END 0845

PROGRAM: C

WEATHER: DRIZZLE

WATER LEVEL / WELL DATA

WELL DEPTH: 40.00 FT

☒ MEASURED ☐ HISTORICAL

☒ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 2.29 FT

PROTECTIVE CASING/WELL DIFF.: -0-22 FT

WATER DEPTH: 29.75 FT

17.22 GAL/VOL

TOTAL GAL PURGED

HEIGHT OF WATER COLUMN: 10.25 FT

WELL INTEGRITY:

	YES	NO	N/A
PROT. CASING SECURE	☒	☐	☒
CONCRETE COLLAR INTACT	☐	☐	☐
WELL LOCKED	☒	☐	☐
PVC WELL CAP	☐	☐	☐

RISER ELEVATION

GROUNDWATER ELEVATION

WELL DIAMETER: ☐ 2 INCH ☒ 4 INCH ___ INCH

PID READINGS: AMBIENT AIR 0 PPM; WELL MOUTH 0 PPM

PURGE DATA

	1555	1600	0825		
PURGE VOLUME	@ 5 GAL	@ 10 GAL	@ 17.3 GAL	@ ___ GAL	@ ___ GAL
TEMP, DEG C	15.9	16.5	9.8		
pH, UNITS ☐ pH PAPER	5.99	6.75	6.4		
SPECIFIC CONDUCTIVITY umhos/cm	71	93	85		
PUMP RATE, GPM					

SAMPLE OBSERVATIONS: ☐ CLEAR ☐ CLOUDY ☐ COLORED ___ ☐ TURBID ☐ ODOR ☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING	
☐	☐	PERISTALTIC PUMP
☒	☒	SUBMERSIBLE PUMP
☐	☐	BAILER
☐	☒	PVC/SILICON TUBING
☐	☐	IN-LINE/DISPOSABLE FILTER ___
☐	☐	OTHER ___

EQUIPMENT ID: ISCO # ___ ☒ 2" ☐ 4" # ___

DECON FLUIDS USED: ☒ POTABLE WATER ☐ LIQUINOX ☐ STEAM CLEANING ___

WATER LEVEL EQUIP. USED: ☒ ELECTRIC COND. PROBE ☐ FLOAT ACTIVATED ☐ PRESSURE TRANSDUCER ___

GROUND ELEVATION

NUMBER OF FILTERS USED ___

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED
☒ VOC	UH20	VP	HCL, 4 DEG C	(4) 60 ML	☐
☒ SVOC	UH18	MS	4 DEG C	(2) 1 L AG	☐
☐ PEST/PCB	UH02	EC	4 DEG C	(3) 1 L AG	☐
	UH13				
☒ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☐
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2		☐
☒ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☐
	UW32				
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐
	TT10	C	4 DEG C	1 L P-CUBE	☐
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐
☒ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☐
☒ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☐
		C	4 DEG C	1 L P-CUBE	☐
		N	HNO3 TO pH<2	1 L P-CUBE	☐
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐

SAMPLE BOTTLE ID NUMBERS

0856 A / B / C / D

E / F

N / O

G / H / I

J / K

L

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

SITE DRY

RECEIVED BY: ___

SIGNATURE: Kendra C Barron

ABB ENVIRONMENTAL SERVICES, INC.

PAGE ____ OF ____

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 1 1 3 X 3

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL PVC

SAMPLING DATE: 12- -94

SITE ID: 4 1 M - 9 4 - 1 3 X

JOB NUMBER: 07053-14

FILE NAME: CGW

LOCATION ACTIVITY: START 1015 END 1600

PROGRAM: C

WEATHER: CLEAR 25°F

WATER LEVEL / WELL DATA

WELL DEPTH: 30.37 FT ☒ MEASURED ☐ HISTORICAL

☒ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 1.99 FT

PROTECTIVE CASING/WELL DIFF.: - .35 FT

WATER DEPTH: 21.54 FT

HEIGHT OF WATER COLUMN: 8.79 FT

15 GAL/VOL

75 TOTAL GAL PURGED

WELL INTEGRITY: YES NO N/A
PROT. CASING SECURE ☒ ☐ ☒
CONCRETE COLLAR INTACT ☒ ☐ ☐
WELL LOCKED ☒ ☐ ☐
PVC WELL CAP

RISER ELEVATION

GROUNDWATER ELEVATION

PID READINGS: AMBIENT AIR <1.65 PPM; WELL MOUTH 0.0 PPM

WELL DIAMETER: ☐ 2 INCH ☒ 4 INCH ☐ ___ INCH

PURGE DATA

	1050	1121	1215	1350	1540
PURGE VOLUME	@ 15 GAL	@ 30 GAL	@ 45 GAL	@ 60 GAL	@ 75 GAL
TEMP, DEG C	9.5	10.2	10.0	9.9	10.3
pH, UNITS ☐ pH PAPER	7.4	7.2	7.3	7.0	7.0
SPECIFIC CONDUCTIVITY umhos/cm	54	54	55	70	54
PUMP RATE, GPM					

SAMPLE OBSERVATIONS
☐ CLEAR
☐ CLOUDY
☐ COLORED ____
☒ TURBID
☐ ODOR
☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING		EQUIPMENT ID
☒	☒	PERISTALTIC PUMP	ISCO # ____
	☒	SUBMERSIBLE PUMP	☒ 2" ☐ 4" # ____
☐		BAILER	
	☒	PVC/SILICON TUBING	
	☒	IN-LINE/DISPOSABLE FILTER	1
☐	☐	OTHER ____	

DECON FLUIDS USED
☒ POTABLE WATER
☐ LIQUINOX
☐ STEAM CLEANING

WATER LEVEL EQUIP. USED
☒ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ PRESSURE TRANSDUCER

GROUND ELEVATION

NUMBER OF FILTERS USED: 1

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS (204 A / B / C / D)
☒ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☒	E / F / /
☒ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☒	/ / /
☐ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☐	/ / /
	UM13					/ / /
☒ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☒	N / O / /
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2			/ / /
☒ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☒	G / H / L /
	UW32					/ / /
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐	/ / /
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG	☐	/ / /
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE	☐	/ / /
	TT10	C	4 DEG C	1 L P-CUBE	☐	/ / /
	310.1	N	HNO3 TO pH <2	1 L P-CUBE	☐	/ / /
☒ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☒	J / K / /
☒ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☒	L / / /
		C	4 DEG C	1 L P-CUBE	☐	/ / /
		N	HNO3 TO pH<2	1 L P-CUBE	☐	/ / /
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	/ / /

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

1050 DRY @ 15 gal
Rewell @ 1050 DRY @ 25 gal 1055
IFY=110.3 35 gal

DRY @ 1530 70 gal
DRY @ 1545 75 gal

RECEIVED BY: ____

SIGNATURE: [signature]

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PAGE 1 OF 1

FIELD DATA RECORD - GROUNDWATER

FIELD SAMPLING NUMBER: M X 4 1 1 4 X 3

PROJECT: USATHAMA-FT.DEVENS

SITE TYPE: WELL

SITE ID: 41M-94-14X

JOB NUMBER: 7053-14

SAMPLING DATE: 7 Dec 94

FILE NAME: CGW

LOCATION ACTIVITY: START 0930 END 1100

PROGRAM: C

WEATHER: Drizzle, 40's

WATER LEVEL / WELL DATA

WELL DEPTH: 9.83 FT

☐ MEASURED ☐ HISTORICAL

☑ TOP OF WELL ☐ TOP OF CASING

PROTECTIVE CASING STICK-UP (FROM GROUND): 1.8 FT

PROTECTIVE CASING/WELL DIFF.: -0.19 FT

WATER DEPTH: 3.18 FT

11.2 GAL/VOL

HEIGHT OF WATER COLUMN: 6.65 FT

55 TOTAL GAL PURGED

WELL INTEGRITY:

	YES	NO	N/A
PROT. CASING SECURE	☑	☐	☐
CONCRETE COLLAR INTACT	☑	☐	☐
WELL LOCKED	☑	☐	☐
PVC WELL CAP	☑	☐	☐

RISER ELEVATION:

GROUNDWATER ELEVATION:

WELL DIAMETER: ☐ 2 INCH ☐ 4 INCH ☐ ___ INCH

PID READINGS: AMBIENT AIR 0.0 PPM; WELL MOUTH 2.6 PPM

PURGE DATA

PURGE VOLUME	@ 11 GAL	@ 22 GAL	@ 33 GAL	@ 44 GAL	@ 55 GAL
TEMP, DEG C	10.4	10.2	10.4	10.3	10.5
pH, UNITS ☐ pH PAPER	6.5	6.4	6.3	6.2	6.2
SPECIFIC CONDUCTIVITY umhos/cm	26	26	25	26	28
PUMP RATE, GPM	≈2	≈2	≈2	≈2	≈2

SAMPLE OBSERVATIONS
☑ CLEAR 3rd, 4th, 5th vol.
☐ CLOUDY 2nd vol
☐ COLORED ___
☑ TURBID 1st vol.
☐ ODOR
☐ OTHER (SEE NOTES)

EQUIPMENT DOCUMENTATION

PURGING	SAMPLING	
☑	☐	PERISTALTIC PUMP
☐	☑	SUBMERSIBLE PUMP
☐	☐	BAILER
☐	☑	PVC/SILICON TUBING
	☐	IN-LINE/DISPOSABLE FILTER
☐	☐	OTHER

EQUIPMENT ID: ISCO # ___ ☐ 2" ☐ 4" # ___

DECON FLUIDS USED:
☑ POTABLE WATER
☐ LIQUINOX
☑ STEAM CLEANING
none, dedicated equipment

NUMBER OF FILTERS USED ___

WATER LEVEL EQUIP. USED:
☑ ELECTRIC COND. PROBE
☐ FLOAT ACTIVATED
☐ PRESSURE TRANSDUCER

GROUND ELEVATION:

ANALYTICAL PARAMETERS	METHOD NUMBER	FRACTION CODE	PRESERVATION METHOD	VOLUME REQUIRED	SAMPLE COLLECTED	SAMPLE BOTTLE ID NUMBERS (Sample/Dup) 206/205A	206/205B	206/205C	206/205D
☑ VOC	UM20	VP	HCL, 4 DEG C	(4) 60 ML	☑	E	F		
☑ SVOC	UM18	MS	4 DEG C	(2) 1 L AG	☑				
☐ PEST/PCB	UM02	EC	4 DEG C	(3) 1 L AG	☐				
	UM13								
☑ PAL INORGANICS (SPECIFIED BELOW)		N	HNO3 TO pH<2	1 L P-CUBE	☑	O			
☐ LEAD ONLY	SD20	N	HNO3 TO pH<2						
☑ EXPLOSIVES	UW19	LC	4 DEG C	(3) 1 L AG	☑	G	H	I	
	UW32								
☐ TPHC	418.1	O	H2SO4 TO pH<2	1 L AG	☐				
☐ TOC	415.1	O	H2SO4 TO pH <2	1 L AG					
☐ ANIONS	TF22	S	H2SO4 TO pH <2	1 L P-CUBE					
	TT10	C	4 DEG C	1 L P-CUBE					
	310.1	N	HNO3 TO pH <2	1 L P-CUBE					
☑ TSS ONLY	160.2	C	4 DEG C	1 L P-CUBE	☑	J			
☐ H2O QUALITY (SPECIFIED BELOW)		S	H2SO4 TO pH<2	1 L P-CUBE	☑	L			
		C	4 DEG C	1 L P-CUBE		K			
		N	HNO3 TO pH<2	1 L P-CUBE		M			
☐ COLIFORM	303,909		4 DEG C	(1) 4 OZ STERILE	☐	N			

NOTES: PAL INORGANICS: ICP METALS (SS10); AS (SD22); SE (SD21); TL (SD09); SB (SD28); PB (SD20); HG (SB01).
H2O QUALITY: PO4 (TF27); TKN (TF26); NIT (TF22); CL/SO4 (TT10); TSS (160.2); ALK (301.0); HARDNESS.
ALL PARAMETERS COLLECTED AS TOTALS, IE: NON-FILTERED

Duplicate Collected @ this location. MS/MSD also Collected.
Turbidimeter broken.

RECEIVED BY: ___

SIGNATURE: R. Lewis Dessmore

ABB ENVIRONMENTAL SERVICES, INC. FIELD DATA RECORD - GROUNDWATER SITE ID: 4 1 M - 9 2 - 0 1 X

PROJECT NAME: FORT DEVENS	PROJECT NO.: 7053-14	CLIENT: USAEC	SAMPLING DATE: March 16, 1995	START 0927 END 1035
FIELD SAMPLING NO.:	SITE TYPE: WELL	PROGRAM: C	FILE NAME: CGW	WEATHER: Overcast 40-50 °F

WELL DEPTH: 34.58 - WATER DEPTH: 24.65 = HEIGHT OF WATER COLUMN: 9.93 X WELL VOL. = TOTAL PURGE GAL.: 16.68 (1.69)

WELL ID SIZE:	PROTECTIVE CASING STICKUP:	PROTECTIVE CAS. TO WELL DIFF.:	PVC STICKUP:

WELL INTEGRITY

	YES	NO
PROTECTIVE CASING SECURE	☒	☐
WELL LOCKED		
PVC WELL CAP INPLACE	☒	☐ NO CAP

PID HEADSPACE READINGS

BREATHING ZONE: 0 ppm

WELL HEAD: 0 ppm

DT 1030

0930 0938

PARAMETER	INITIAL	VOLUME #1 (5 gal)	VOLUME #2 (10 gal)	VOLUME #3 (15 gal)	VOLUME #4	VOLUME #5
TEMPERATURE		9.9	9.9	10.0		
pH		6.13	6.25	6.20		
CONDUCTIVITY		60	60	49		
TURBIDITY		—	-	> 100		
DESCRIPTION		cloudy	TURBID	V. TURBID		
REDOX		218	191	204		

SAMPLE OBSERVATION: ☐ CLEAR ☐ CLOUDY ☐ COLORED ☐ TURBID ☐ ODOR ☐ OTHER(SEE NOTES)

SAMPLE PARAMETERS	COLLECTED	METHOD #	FRACTION CODE	PRESERATIVE	VOLUME	SAMPLE BOTTLE NUMBER
VOC	☒	UM20	VP	HCL,4C	4- 40 ml AG	A, B, C, D
SVOCS	☒	UM18	MS	4C	2- 1L AG	E, F
EXPLOSIVES	☒	UW19	LC	4C	3- 1L AG	G, H,
INORGANICS-FILTERED	☒	*	N	HNO3 pH<2	1- 1L Poly	O
INORGANICS-UNFILTERED	☒	*	N	HNO3 pH<2	1- 1L Poly	N
TSS	☒	160.2	C	4C	1- 1L Poly	J
WATER QUALITY PARAM.	☒	*	S	H2SO4 pH<2	1- 1L Poly	K
			C	4C	1- 1L Poly	
			N	HNO3 pH<2	1- 1L Poly	L

SAMPLING EQUIPMENT

PURGING	SAMPLING	
☒	☒	SUBMERSIBLE PUMP
☐	☐	BAILER (DEDICATED)
☐	☐	IN-LINE FILTER (INORGANICS)
☐	☐	OTHER

WATER LEVEL EQUIPMENT USED: ELECTRONIC COND. PROBE

NUMBER OF IN-LINE FILTERS USED:

Notes: * PAL inorganics: ICP metals (SS10), AS (SD21), SE (SD21), TL (SD09), SB (SD28), PB (SD20), HG (SB01).
Water Quality Parameters: PO4 (TF27), TKN (TF26), NIT (TF22), CL/SO4 (TT10), TSS (160.2), ALK (301.0), HARDNESS.

DRY @ 0940 14 gal

ABB ENVIRONMENTAL SERVICES, INC. FIELD DATA RECORD - GROUNDWATER SITE ID: 4 1 M - 9 3 - 0 2 B

PROJECT NAME: FORT DEVENS	PROJECT NO.: 7053-14	CLIENT: USAEC	SAMPLING DATE: March , 1995	START 1118 END 1230
FIELD SAMPLING NO.:	SITE TYPE: WELL	PROGRAM: C	FILE NAME: CGW	WEATHER: Overcast 40-50°

WELL DEPTH: 7.9 - WATER DEPTH: 5.8 = HEIGHT OF WATER COLUMN: 2.1 X WELL VOL. .55 = TOTAL PURGE GAL.: 1.155 gal/vol.

WELL ID SIZE: 2"	PROTECTIVE CASING STICKUP:	PROTECTIVE CAS. TO WELL DIFF.:	PVC STICKUP:

WELL INTEGRITY

	YES	NO
PROTECTIVE CASING SECURE	☒	☐
WELL LOCKED	☒	☐
PVC WELL CAP INPLACE	☒	☐

PID HEADSPACE READINGS

BREATHING ZONE: ppm

WELL HEAD: ppm

BT 1130

PARAMETER	INITIAL	VOLUME #1 1120 2 gal	VOLUME #2	VOLUME #3	VOLUME #4	VOLUME #5
TEMPERATURE		6.8				
pH		6.95				
CONDUCTIVITY		56				
TURBIDITY		35				
DESCRIPTION		clear				
REDOX		✓				

SAMPLE OBSERVATION

- ☐ CLEAR
- ☐ CLOUDY
- ☐ COLORED _____
- ☐ TURBID
- ☐ ODOR
- ☐ OTHER(SEE NOTES)

SAMPLE PARAMETERS	COLLECTED	METHOD #	FRACTION CODE	PRESERATIVE	VOLUME	SAMPLE BOTTLE NUMBER
VOC	☒	UM20	VP	HCL,4C	4- 40 ml AG	
SVOCS	☒	UM18	MS	4C	2- 1L AG	
EXPLOSIVES	☒	UW19	LC	4C	3- 1L AG	
INORGANICS-FILTERED	☒	*	N	HNO3 pH<2	1- 1L Poly	
INORGANICS-UNFILTERED	☒	*	N	HNO3 pH<2	1- 1L Poly	
TSS	☒	160.2	C	4C	1- 1L Poly	
WATER QUALITY PARAM.	☒	*	S	H2SO4 pH<2	1- 1L Poly	
			C	4C	1- 1L Poly	
			N	HNO3 pH<2	1- 1L Poly	

SAMPLING EQUIPMENT

PURGING	SAMPLING	
☒	☒	SUBMERSIBLE PUMP
☐	☐	BAILER (DEDICATED)
☐	☐	IN-LINE FILTER (INORGANICS)
☐	☐	OTHER

WATER LEVEL EQUIPMENT USED: ELECTRONIC COND. PROBE

NUMBER OF IN-LINE FILTERS USED:

Notes: * PAL inorganics: ICP metals (SS10), AS (SD21), SE (SD21), TL (SD09), SB (SD28), PB (SD20), HG (SB01).
Water Quality Parameters: PO4 (TF27), TKN (TF26), NIT (TF22), CL/SO4 (TT10), TSS (160.2), ALK (301.0), HARDNESS.

ABB ENVIRONMENTAL SERVICES, INC. FIELD DATA RECORD - GROUNDWATER SITE ID: 4 1 M - 2 3 - 0 2 B

PROJECT NAME: FORT DEVENS	PROJECT NO.: 7053-14	CLIENT: USAEC	SAMPLING DATE: March 16, 1995	START END 1500
FIELD SAMPLING NO.:	SITE TYPE: WELL	PROGRAM: C	FILE NAME: CGW	WEATHER: OVER CAST 40°-50°

WELL DEPTH: 34.75 - WATER DEPTH: 27.35 = HEIGHT OF WATER COLUMN: 7.4 X WELL VOL. 1.68 = TOTAL PURGE GAL.: 12.43

WELL ID SIZE:	PROTECTIVE CASING STICKUP:	PROTECTIVE CAS. TO WELL DIFF.:	PVC STICKUP:

BT 1415

WELL INTEGRITY	YES	NO
PROTECTIVE CASING SECURE	☒	
WELL LOCKED		
PVC WELL CAP INPLACE		

PID HEADSPACE READINGS

BREATHING ZONE: ppm

WELL HEAD: ppm

PARAMETER	INITIAL	VOLUME #1 (1 gal) 1440	VOLUME #2 (1 gal) 1445	VOLUME #3	VOLUME #4	VOLUME #5
TEMPERATURE		10.7	11.1			
pH		6.55	6.64			
CONDUCTIVITY		76	77			
TURBIDITY		793	261			
DESCRIPTION		TURBID	TURBID			
REDOX		—	—			

SAMPLE OBSERVATION

- [ ] CLEAR
- [ ] CLOUDY
- [ ] COLORED
- [ ] TURBID
- [ ] ODOR
- [ ] OTHER(SEE NOTES)

SAMPLE PARAMETERS	COLLECTED	METHOD #	FRACTION CODE	PRESERATIVE	VOLUME	SAMPLE BOTTLE NUMBER
VOC	☒	UM20	VP	HCL,4C	4- 40 ml AG	
SVOCS	☒	UM18	MS	4C	2- 1L AG	
EXPLOSIVES	☒	UW19	LC	4C	3- 1L AG	
INORGANICS-FILTERED	☒	*	N	HNO3 pH<2	1- 1L Poly	
INORGANICS-UNFILTERED	☒	*	N	HNO3 pH<2	1- 1L Poly	
TSS	☒	160.2	C	4C	1- 1L Poly	
WATER QUALITY PARAM.	☒	*	S	H2SO4 pH<2	1- 1L Poly	
			C	4C	1- 1L Poly	
			N	HNO3 pH<2	1- 1L Poly	

SAMPLING EQUIPMENT

PURGING	SAMPLING	
☒	☒	SUBMERSIBLE PUMP
☐	☐	BAILER (DEDICATED)
☐	☐	IN-LINE FILTER (INORGANICS)
☐	☐	OTHER

WATER LEVEL EQUIPMENT USED: ELECTRONIC COND. PROBE

NUMBER OF IN-LINE FILTERS USED:

Notes: * PAL inorganics: ICP metals (SS10), AS (SD21), SE (SD21), TL (SD09), SB (SD28), PB (SD20), HG (SB01).
Water Quality Parameters: PO4 (TF27), TKN (TF26), NIT (TF22), CL/SO4 (TT10), TSS (160.2), ALK (301.0), HARDNESS.

ABB ENVIRONMENTAL SERVICES, INC. FIELD DATA RECORD - GROUNDWATER SITE ID: 4 1 M - 3 4 - 0 2 C

PROJECT NAME: FORT DEVENS	PROJECT NO.: 7053-14	CLIENT: USAEC	SAMPLING DATE: March 16, 1995	START 1055 END
FIELD SAMPLING NO.: M X 4 1 0 2 C 4	SITE TYPE: WELL	PROGRAM: C	FILE NAME: CGW	WEATHER: overcast 40's F

WELL DEPTH: 52.05 - WATER DEPTH: 30.25 = HEIGHT OF WATER COLUMN: 21.8 X WELL VOL. 1.65 = TOTAL PURGE GAL.: 36.6 x5 = 18.

WELL ID SIZE: 4	PROTECTIVE CASING STICKUP:	PROTECTIVE CAS. TO WELL DIFF.:	PVC STICKUP:

WELL INTEGRITY

	YES	NO
PROTECTIVE CASING SECURE	X	
WELL LOCKED	X	
PVC WELL CAP INPLACE	X	

PID HEADSPACE READINGS

BREATHING ZONE: 0 ppm

WELL HEAD: 0 ppm

PARAMETER	INITIAL	VOLUME #1 (1137, 40 gal)	VOLUME #2 (1205, 72)	VOLUME #3 (108)	VOLUME #4 (1430, 144)	VOLUME #5 (1515, 184)
TEMPERATURE		10.2	10.1		10.2	10.3
pH		7.39	7.3		7.44	6.57
CONDUCTIVITY		50	49		43	57
TURBIDITY	–	2	1		1	1
DESCRIPTION		clear	Clear		clear	Clear
REDOX		–	–		–	–

SAMPLE OBSERVATION

✓	CLEAR
	CLOUDY
	COLORED
	TURBID
	ODOR
	OTHER(SEE NOTES)

#1518 146.71

SAMPLE PARAMETERS	COLLECTED	METHOD #	FRACTION CODE	PRESERATIVE	VOLUME	SAMPLE BOTTLE NUMBER
VOC	✓	UM20	VP	HCL,4C	4- 40 ml AG	
SVOCS	✓	UM18	MS	4C	2- 1L AG	
EXPLOSIVES	✓	UM19	LC	4C	3- 1L AG	
INORGANICS-FILTERED	✓	*	N	HNO3 pH<2	1- 1L Poly	
INORGANICS-UNFILTERED	✓	*	N	HNO3 pH<2	1- 1L Poly	
TSS	✓	160.2	C	4C	1- 1L Poly	
WATER QUALITY PARAM.	✓	*	S	H2SO4 pH<2	1- 1L Poly	
			C	4C	1- 1L Poly	
			N	HNO3 pH<2	1- 1L Poly	

SAMPLING EQUIPMENT

PURGING	SAMPLING	
✓	✓	SUBMERSIBLE PUMP
	✓	BAILER (DEDICATED)
	✓	IN-LINE FILTER (INORGANICS)
		OTHER

WATER LEVEL EQUIPMENT USED: ELECTRONIC COND. PROBE

NUMBER OF IN-LINE FILTERS USED: 1

Notes: * PAL Inorganics: ICP metals (SS10), AS (SD21), SE (SD21), TL (SD09), SB (SD28), PB (SD20), HG (SB01).
Water Quality Parameters: PO4 (TF27), TKN (TF26), NIT (TF22), CL/SO4 (TT10), TSS (160.2), ALK (301.0), HARDNESS.

Insta. Stat. For [illegible] 1235
Resume 1400

ABB ENVIRONMENTAL SERVICES, INC. FIELD DATA RECORD - GROUNDWATER SITE ID: 4 1 m - 9 3 - G 3 X

PROJECT NAME: FORT DEVENS	PROJECT NO.: 7053-14	CLIENT: USAEC	SAMPLING DATE: March 20 , 1995	START 1010 END 1230

FIELD SAMPLING NO.: m x 4 1 0 3 x 4	SITE TYPE: WELL	PROGRAM: C	FILE NAME: CGW	WEATHER: PA

WELL DEPTH: 48.0 - WATER DEPTH: 36.79' = HEIGHT OF WATER COLUMN: 11.21 X WELL VOL. X 1.68 = TOTAL PURGE GAL.: 18.85 gal 1 = 9

WELL ID SIZE:	PROTECTIVE CASING STICKUP:	PROTECTIVE CAS. TO WELL DIFF.:	PVC STICKUP:

WELL INTEGRITY

	YES	NO
PROTECTIVE CASING SECURE	X	
WELL LOCKED		
PVC WELL CAP INPLACE		X

PID HEADSPACE READINGS

BREATHING ZONE: 0 ppm

WELL HEAD: 0 ppm

BT 1230

PARAMETER	INITIAL	VOLUME #1 (1050, 20)	VOLUME #2 (1110, 40)	VOLUME #3 (1130, 60)	VOLUME #4 (1150, 80)	VOLUME #5 (1210, 90 gal)
TEMPERATURE		10.0	10.0	10.0	10.0	
pH		8.50	7.78	7.67	7.85	
CONDUCTIVITY		58	59	59	63	
TURBIDITY		669	359	317	163	
DESCRIPTION		TURBID	TURBID	TURBID - CLOUDY	CLOUDY	
REDOX		103	115	116	96	

SAMPLE OBSERVATION

- [ ] CLEAR
- [ ] CLOUDY
- [ ] COLORED
- [ ] TURBID
- [ ] ODOR
- [ ] OTHER(SEE NOTES)

SAMPLE PARAMETERS	COLLECTED	METHOD #	FRACTION CODE	PRESERATIVE	VOLUME	SAMPLE BOTTLE NUMBER
VOC	X	UM20	VP	HCL,4C	4- 40 ml AG	035 A, B, C, D
SVOCS	X	UM18	MS	4C	2- 1L AG	E, F
EXPLOSIVES	X	UM19	LC	4C	3- 1L AG	G, H,
INORGANICS-FILTERED	X	*	N	HNO3 pH<2	1- 1L Poly	O
INORGANICS-UNFILTERED	X	*	N	HNO3 pH<2	1- 1L Poly	
TSS	X	160.2	C	4C	1- 1L Poly	N
WATER QUALITY PARAM.	X	*	S	H2SO4 pH<2	1- 1L Poly	X
			C	4C	1- 1L Poly	
			N	HNO3 pH<2	1- 1L Poly	

SAMPLING EQUIPMENT

PURGING	SAMPLING	
X	X	SUBMERSIBLE PUMP
	X	BAILER (DEDICATED)
	X	IN-LINE FILTER (INORGANICS)
		OTHER

WATER LEVEL EQUIPMENT USED: ELECTRONIC COND. PROBE

NUMBER OF IN-LINE FILTERS USED:

Notes: * PAL inorganics: ICP metals (SS10), AS (SD21), SE (SD21), TL (SD09), SB (SD28), PB (SD20), HG (SB01).
Water Quality Parameters: PO4 (TF27), TKN (TF26), NIT (TF22), CL/SO4 (TT10), TSS (160.2), ALK (301.0), HARDNESS.

.8 gal/min

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ABB ENVIRONMENTAL SERVICES, INC. FIELD DATA RECORD - GROUNDWATER SITE ID: 41M-94-03B

PROJECT NAME: FORT DEVENS	PROJECT NO.: 7053-14	CLIENT: USAEC	SAMPLING DATE: March 20, 1995 START 0950 END

FIELD SAMPLING NO.: M X 4 1 0 3 B 4 | SITE TYPE: WELL | PROGRAM: C | FILE NAME: CGW | WEATHER: Partly cloudy

WELL DEPTH: 67.15' - WATER DEPTH: 37.8' = HEIGHT OF WATER COLUMN: 29.35 X WELL VOL. = TOTAL PURGE GAL.: 49.3 x 5 = 2

WELL ID SIZE: 4" | PROTECTIVE CASING STICKUP: | PROTECTIVE CAS. TO WELL DIFF.: | PVC STICKUP:

WELL INTEGRITY	YES	NO
PROTECTIVE CASING SECURE	X	
WELL LOCKED	X	
PVC WELL CAP INPLACE	X	

PID HEADSPACE READINGS 1530

BREATHING ZONE: 0 ppm

WELL HEAD: 0 ppm

PARAMETER	INITIAL	VOLUME #1 (1040, 50 gal)	VOLUME #2 (1130, 100 gal)	VOLUME #3 (1237, 150 gal)	VOLUME #4 (1410, 200 gal)	VOLUME #5
TEMPERATURE °C	9.9	9.9	9.9	10.0	10.0	
pH	9.65	9.65	9.69	9.55	9.45	
CONDUCTIVITY	129	129	84	84	67	
TURBIDITY NTU	1Ch	13	8.08	17.6	4.19	
DESCRIPTION	Clear	Clear	Clear	Clear	CLEAR	
REDOX	21	21	34	29	29	

SAMPLE OBSERVATION: CLEAR / CLOUDY / COLORED / TURBID / ODOR / OTHER(SEE NOTES)

SAMPLE PARAMETERS	COLLECTED	METHOD #	FRACTION CODE	PRESERATIVE	VOLUME	SAMPLE BOTTLE NUMBER
VOC	X	UM20	VP	HCL,4C	4- 40 ml AG	201 A, B, C, D
SVOCS	X	UM18	MS	4C	2- 1L AG	E, F
EXPLOSIVES	X	UW19	LC	4C	3- 1L AG	G, H,
INORGANICS-FILTERED	X	*	N	HNO3 pH<2	1- 1L Poly	O
INORGANICS-UNFILTERED	X	*	N	HNO3 pH<2	1- 1L Poly	N
TSS	X	160.2	C	4C	1- 1L Poly	J
WATER QUALITY PARAM.	X	*	S	H2SO4 pH<2	1- 1L Poly	K
			C	4C	1- 1L Poly	
			N	HNO3 pH<2	1- 1L Poly	L

SAMPLING EQUIPMENT

PURGING	SAMPLING	
	X	SUBMERSIBLE PUMP
		BAILER (DEDICATED)
		IN-LINE FILTER (INORGANICS)
		OTHER

WATER LEVEL EQUIPMENT USED: ELECTRONIC COND. PROBE

NUMBER OF IN-LINE FILTERS USED:

Notes: * PAL inorganics: ICP metals (SS10), AS (SD21), SE (SD21), TL (SD09), SB (SD28), PB (SD20), HG (SB01).
Water Quality Parameters: PO4 (TF27), TKN (TF26), NIT (TF22), CL/SO4 (TT10), TSS (160.2), ALK (301.0), HARDNESS.

1 gal/min

Break for lunch stop purge at 1237 @ 170 gal
Resume PURGE @ 1337

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ABB ENVIRONMENTAL SERVICES, INC. FIELD DATA RECORD - GROUNDWATER SITE ID: 4 1 M - 9 4 - 0 4 X

PROJECT NAME: FORT DEVENS	PROJECT NO.: 7053-14	CLIENT: USAEC	SAMPLING DATE: March , 1995	START 0930 END 1220
FIELD SAMPLING NO.:	SITE TYPE: WELL	PROGRAM: C	FILE NAME: CGW	WEATHER:

WELL DEPTH: 10 24 - WATER DEPTH: 6.52 = HEIGHT OF WATER COLUMN: 3.72 x 0.55 X WELL VOL. = TOTAL PURGE GAL.: 2.05 gal/vol x 5 = 10

WELL ID SIZE:	PROTECTIVE CASING STICKUP:	PROTECTIVE CAS. TO WELL DIFF.:	PVC STICKUP:

TOTAL purge = 20 gal

WELL INTEGRITY	YES	NO
PROTECTIVE CASING SECURE	X	
WELL LOCKED	X	
PVC WELL CAP INPLACE	X	

PID HEADSPACE READINGS

BREATHING ZONE: 0.0 ppm

WELL HEAD: 0 ppm

PARAMETER	INITIAL	VOLUME #1 (0935, 2.5)	VOLUME #2 (0940, 5.0)	VOLUME #3 (0945, 10.0)	VOLUME #4	VOLUME #5
TEMPERATURE		4.0	4.0	4.0		
pH		5.65	5.57	5.88		
CONDUCTIVITY		56	58	58		
TURBIDITY		40	36	5		
DESCRIPTION						
REDOX		-	171	172		

SAMPLE OBSERVATION

- [x] CLEAR
- [ ] CLOUDY
- [ ] COLORED
- [ ] TURBID
- [ ] ODOR
- [ ] OTHER(SEE NOTES)

SAMPLE PARAMETERS	COLLECTED	METHOD #	FRACTION CODE	PRESERATIVE	VOLUME	SAMPLE BOTTLE NUMBER
VOC	X	UM20	VP	HCL,4C	4- 40 ml AG	057 A, B, C, D
SVOCS	X	UM18	MS	4C	2- 1L AG	E, F
EXPLOSIVES	X	UW19	LC	4C	3- 1L AG	G, H,
INORGANICS-FILTERED	X	*	N	HNO3 pH<2	1- 1L Poly	O
INORGANICS-UNFILTERED	X	*	N	HNO3 pH<2	1- 1L Poly	M
TSS	X	160.2	C	4C	1- 1L Poly	
WATER QUALITY PARAM.	X	*	S	H2SO4 pH<2	1- 1L Poly	
			C	4C	1- 1L Poly	
			N	HNO3 pH<2	1- 1L Poly	

SAMPLING EQUIPMENT

PURGING	SAMPLING	
		SUBMERSIBLE PUMP
		BAILER (DEDICATED)
		IN-LINE FILTER (INORGANICS)
		OTHER

WATER LEVEL EQUIPMENT USED: ELECTRONIC COND. PROBE

NUMBER OF IN-LINE FILTERS USED:

Notes: * PAL inorganics: ICP metals (SS10), AS (SD21), SE (SD21), TL (SD09), SB (SD28), PB (SD20), HG (SB01).
Water Quality Parameters: PO4 (TF27), TKN (TF26), NIT (TF22), CL/SO4 (TT10), TSS (160.2), ALK (301.0), HARDNESS.

DUP /MS MSD

MS/MSD = EXPLOS & INORG (FILTERED & NON FILTERED)

FINISH PUMP STOPPED 0943

DUP = 218

ABB ENVIRONMENTAL SERVICES, INC. FIELD DATA RECORD - GROUNDWATER SITE ID: 4 1 M - 9 4 - 0 5 X

PROJECT NAME: FORT DEVENS	PROJECT NO.: 7053-14	CLIENT: USAEC	SAMPLING DATE: March , 1995	START 1100 END
FIELD SAMPLING NO.:	SITE TYPE: WELL	PROGRAM: C	FILE NAME: CGW	WEATHER:

WELL DEPTH: 11.04 - WATER DEPTH: 5.97 = HEIGHT OF WATER COLUMN: 5.07 X WELL VOL. = TOTAL PURGE GAL.: 2.79 = 1

WELL ID SIZE:	PROTECTIVE CASING STICKUP:	PROTECTIVE CAS. TO WELL DIFF.:	PVC STICKUP:

WELL INTEGRITY

	YES	NO
PROTECTIVE CASING SECURE		
WELL LOCKED		
PVC WELL CAP INPLACE		

PID HEADSPACE READINGS

BREATHING ZONE: 0 ppm

WELL HEAD: 0 ppm

PARAMETER	INITIAL	VOLUME #1 3 (1108)	VOLUME #2 6 (1110)	VOLUME #3 9 (1112)	VOLUME #4 12 (1114)	VOLUME #5 15 (1116)
TEMPERATURE		2.6	2.6	2.6	2.6	2.6
pH		5.61	5.56	5.53	5.50	5.50
CONDUCTIVITY		37	37	37	36	36
TURBIDITY		1	1	1	1	1
DESCRIPTION		Clear	Clear	Clear	Clear	Clear
REDOX		294	292	287	285	282

SAMPLE OBSERVATION

- [x] CLEAR
- [ ] CLOUDY
- [ ] COLORED
- [ ] TURBID
- [ ] ODOR
- [ ] OTHER(SEE NOTES)

SAMPLE PARAMETERS	COLLECTED	METHOD #	FRACTION CODE	PRESERATIVE	VOLUME	SAMPLE BOTTLE NUMBER
VOC	X	UM20	VP	HCL,4C	4- 40 ml AG	
SVOCS	X	UM18	MS	4C	2- 1L AG	
EXPLOSIVES	X	UW19	LC	4C	3- 1L AG	
INORGANICS-FILTERED	X	*	N	HNO3 pH<2	1- 1L Poly	
INORGANICS-UNFILTERED	X	*	N	HNO3 pH<2	1- 1L Poly	
TSS	X	160.2	C	4C	1- 1L Poly	
WATER QUALITY PARAM.	X	*	S	H2SO4 pH<2	1- 1L Poly	
			C	4C	1- 1L Poly	
			N	HNO3 pH<2	1- 1L Poly	

SAMPLING EQUIPMENT

PURGING	SAMPLING	
	X	SUBMERSIBLE PUMP
		BAILER (DEDICATED)
	X	IN-LINE FILTER (INORGANICS)
		OTHER

WATER LEVEL EQUIPMENT USED: ELECTRONIC COND. PROBE

NUMBER OF IN-LINE FILTERS USED:

Notes: * PAL inorganics: ICP metals (SS10), AS (SD21), SE (SD21), TL (SD09), SB (SD28), PB (SD20), HG (SB01).
Water Quality Parameters: PO4 (TF27), TKN (TF26), NIT (TF22), CL/SO4 (TT10), TSS (160.2), ALK (301.0), HARDNESS.

ABB ENVIRONMENTAL SERVICES, INC. FIELD DATA RECORD - GROUNDWATER SITE ID: 4 1 M - 9 4 - 0 6 X

PROJECT NAME: FORT DEVENS	PROJECT NO.: 7053-14	CLIENT: USAEC	SAMPLING DATE: March 13, 1995	START 1120 END
FIELD SAMPLING NO.: M X 4 1 6 6 X 4	SITE TYPE: WELL	PROGRAM: C	FILE NAME: CGW	WEATHER: Sunny-50s

WELL DEPTH: 16.48 - WATER DEPTH: 7.47 = HEIGHT OF WATER COLUMN: 9.01 X ~~WELL VOL.~~ 1.68 = TOTAL PURGE GAL.: 15.13 = 75g

WELL ID SIZE: 4"	PROTECTIVE CASING STICKUP: 2.5	PROTECTIVE CAS. TO WELL DIFF.: .15	PVC STICKUP: 2.35

WELL INTEGRITY

	YES	NO
PROTECTIVE CASING SECURE	✓	
WELL LOCKED	✓	
PVC WELL CAP INPLACE	✓	

PID HEADSPACE READINGS

BREATHING ZONE: 0 ppm

WELL HEAD: 0 ppm

PARAMETER	INITIAL	VOLUME #1 (15)	VOLUME #2 (30)	VOLUME #3 (45)	VOLUME #4 (60)	VOLUME #5 (75)
TEMPERATURE	NA	6.4	6.2	6.1	6.1	6.1
pH		5.87	6.02	6.4	6.1	6.61
CONDUCTIVITY		25	28	28	28	28
TURBIDITY		16.0	1.0	1.0	1.0	1.0
DESCRIPTION		Clear	Clear	Clear	Clear	
REDOX		NA	NA	NA	NA	* 236

SAMPLE OBSERVATION

- ✓ CLEAR
- CLOUDY
- COLORED
- TURBID
- ODOR
- OTHER(SEE NOTES)

SAMPLE PARAMETERS	COLLECTED	METHOD #	FRACTION CODE	PRESERATIVE	VOLUME	SAMPLE BOTTLE NUMBER
VOC	✓	UM20	VP	HCL,4C	4- 40 ml AG	041A, B, C, D
SVOCS	✓	UM18	MS	4C	2- 1L AG	E, F
EXPLOSIVES	✓	UM19	LC	4C	3- 1L AG	G, ~~H~~, I
INORGANICS-FILTERED	✓	*	N	HNO3 pH<2	1- 1L Poly	M
INORGANICS-UNFILTERED	✓	*	N	HNO3 pH<2	1- 1L Poly	O
TSS	✓	160.2	C	4C	1- 1L Poly	J
WATER QUALITY PARAM.	✓	*	S	H2SO4 pH<2	1- 1L Poly	~~K~~ L
			C	4C	1- 1L Poly	~~K~~
			N	HNO3 pH<2	1- 1L Poly	~~L~~ BS

SAMPLING EQUIPMENT

PURGING	SAMPLING	
✓	✓	SUBMERSIBLE PUMP (Inerts)
	✓	BAILER (DEDICATED)
	✓	IN-LINE FILTER (INORGANICS)
		OTHER

WATER LEVEL EQUIPMENT USED: ELECTRONIC COND. PROBE

NUMBER OF IN-LINE FILTERS USED: 1

Notes: * PAL inorganics: ICP metals (SS10), AS (SD21), SE (SD21), TL (SD09), SB (SD28), PB (SD20), HG (SB01).
Water Quality Parameters: PO4 (TF27), TKN (TF26), NIT (TF22), CL/SO4 (TT10), TSS (160.2), ALK (301.0), HARDNESS.

Ek = 269 Vol. #1
253 Vol. #2
243 Vol. #3
262 Vol. #4
* 236 Vol. #5

N and H Not Shipped
Volume not needed.

ABB ENVIRONMENTAL SERVICES, INC. FIELD DATA RECORD - GROUNDWATER SITE ID: 4 1 M - 9 4 - 0 7 X

PROJECT NAME: FORT DEVENS	PROJECT NO.: 7053-14	CLIENT: USAEC	SAMPLING DATE: March , 1995	START 1325 END 1410

FIELD SAMPLING NO.: M X 4 1 0 7 X 4	SITE TYPE: WELL	PROGRAM: C	FILE NAME: CGW	WEATHER: SUNNY 50's

WELL DEPTH: 10.2 - WATER DEPTH: 4.8 = HEIGHT OF WATER COLUMN: 5.4 x 1.08 X WELL VOL. 5.83 = TOTAL PURGE GAL.: 27.23

WELL ID SIZE: 4"	PROTECTIVE CASING STICKUP:	PROTECTIVE CAS. TO WELL DIFF.:	PVC STICKUP:

WELL INTEGRITY

	YES	NO
PROTECTIVE CASING SECURE	X	
WELL LOCKED	X	
PVC WELL CAP INPLACE	X	

PID HEADSPACE READINGS

BREATHING ZONE: 0 ppm

WELL HEAD: 0 ppm

PARAMETER	INITIAL	VOLUME #1 1330 13.5	VOLUME #2 1346 20.0 gal	VOLUME #3 1350 27.00	VOLUME #4	VOLUME #5
TEMPERATURE		4.4	4.5	4.5		
pH		5.8	5.63	5.63		
CONDUCTIVITY		36	34	35		
TURBIDITY		4.0	2.0	1.0		
DESCRIPTION		clear	clear	clear		
REDOX (pH)		270	290	300		

SAMPLE OBSERVATION

X	CLEAR
	CLOUDY
	COLORED
	TURBID
	ODOR
	OTHER(SEE NOTES)

SAMPLE PARAMETERS	COLLECTED	METHOD #	FRACTION CODE	PRESERATIVE	VOLUME	SAMPLE BOTTLE NUMBER
VOC	X	UM20	VP	HCL,4C	4- 40 ml AG	A, B, C, D
SVOCS	X	UM18	MS	4C	2- 1L AG	E, F
EXPLOSIVES	X	UW19	LC	4C	3- 1L AG	G, H, I
INORGANICS-FILTERED	X	*	N	HNO3 pH<2	1- 1L Poly	O
INORGANICS-UNFILTERED	X	*	N	HNO3 pH<2	1- 1L Poly	M
TSS	X	160.2	C	4C	1- 1L Poly	J
WATER QUALITY PARAM.	X	*	S	H2SO4 pH<2	1- 1L Poly	L
			C	4C	1- 1L Poly	K
			N	HNO3 pH<2	1- 1L Poly	

SAMPLING EQUIPMENT

PURGING	SAMPLING	
X	X	SUBMERSIBLE PUMP INCRH
	X	BAILER (DEDICATED)
	X	IN-LINE FILTER (INORGANICS)
		OTHER

WATER LEVEL EQUIPMENT USED: ELECTRONIC COND. PROBE

NUMBER OF IN-LINE FILTERS USED: 1

Notes: * PAL inorganics: ICP metals (SS10), AS (SD21), SE (SD21), TL (SD09), SB (SD28), PB (SD20), HG (SB01).
Water Quality Parameters: PO4 (TF27), TKN (TF26), NIT (TF22), CL/SO4 (TT10), TSS (160.2), ALK (301.0), HARDNESS.

ABB ENVIRONMENTAL SERVICES, INC. FIELD DATA RECORD - GROUNDWATER SITE ID: 41M-94-08A

PROJECT NAME: FORT DEVENS	PROJECT NO.: 7053-14	CLIENT: USAEC	SAMPLING DATE: March 13, 1995	START 1430 END 1330 3/14
FIELD SAMPLING NO.: MX41 08A4	SITE TYPE: WELL	PROGRAM: C	FILE NAME: CGW	WEATHER: Sunny - 50's - low 60's

WELL DEPTH: 33.0 - WATER DEPTH: 20.03 = HEIGHT OF WATER COLUMN: 8.97 x 1.68 X WELL VOL. = TOTAL PURGE GAL.: 15 gal vol 45.2

WELL ID SIZE: 4.0"	PROTECTIVE CASING STICKUP: 2.6	PROTECTIVE CAS. TO WELL DIFF.: 0.2	PVC STICKUP: 2.4

WELL INTEGRITY

	YES	NO
PROTECTIVE CASING SECURE	✓	
WELL LOCKED	✓	
PVC WELL CAP INPLACE	✓	

PID HEADSPACE READINGS

BREATHING ZONE: 0 ppm

WELL HEAD: 0 ppm

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PARAMETER	INITIAL	VOLUME #1 1125	VOLUME #2	VOLUME #3	VOLUME #4	VOLUME #5
TEMPERATURE		9.2				
pH		6.49				
CONDUCTIVITY		103				
TURBIDITY		72				
DESCRIPTION		clear				
REDOX		235				

SAMPLE OBSERVATION

- ✓ CLEAR
- CLOUDY
- COLORED
- TURBID
- ODOR
- OTHER(SEE NOTES)

SAMPLE PARAMETERS	COLLECTED	METHOD #	FRACTION CODE	PRESERATIVE	VOLUME	SAMPLE BOTTLE NUMBER
VOC	✓	UM20	VP	HCL,4C	4- 40 ml AG	045 A, B, C, D
SVOCS	✓	UM18	MS	4C	2- 1L AG	E, F
EXPLOSIVES	✓	UW19	LC	4C	3- 1L AG	G, H,
INORGANICS-FILTERED	✓	*	M	HNO3 pH<2	1- 1L Poly	J
INORGANICS-UNFILTERED	✓	*	M	HNO3 pH<2	1- 1L Poly	
TSS	✓	160.2	C	4C	1- 1L Poly	K
WATER QUALITY PARAM.	✓	*	S	H2SO4 pH<2	1- 1L Poly	L
			C	4C	1- 1L Poly	M
			N	HNO3 pH<2	1- 1L Poly	N

SAMPLING EQUIPMENT

PURGING	SAMPLING	
✓	✓	SUBMERSIBLE PUMP
	✓	BAILER (DEDICATED)
	✓	IN-LINE FILTER (INORGANICS)
		OTHER

WATER LEVEL EQUIPMENT USED: ELECTRONIC COND. PROBE

NUMBER OF IN-LINE FILTERS USED: 1

Notes: * PAL inorganics: ICP metals (SS10), AS (SD21), SE (SD21), TL (SD09), SB (SD28), PB (SD20), HG (SB01).
Water Quality Parameters: PO4 (TF27), TKN (TF26), NIT (TF22), CL/SO4 (TT10), TSS (160.2), ALK (301.0), HARDNESS.

Due to the low recharge of this well only one volume of well water will be removed prior to sampling.
Purging to place from 3/13 to 3/14 and sample was collected on 3/14/95

BR 18

ABB ENVIRONMENTAL SERVICES, INC. FIELD DATA RECORD - GROUNDWATER SITE ID: 4 1 M - 9 4 - 0 B B

PROJECT NAME: FORT DEVENS	PROJECT NO.: 7053-14	CLIENT: USAEC	SAMPLING DATE: March 13th, 1995	START 1440 END

FIELD SAMPLING NO.: M X 4 1 0 8 B 4	SITE TYPE: WELL	PROGRAM: C	FILE NAME: CGW	WEATHER: Sunny - 60's

WELL DEPTH: 44.40 - WATER DEPTH: 20.95 = HEIGHT OF WATER COLUMN: 23.45 X WELL VOL. = TOTAL PURGE GAL.: ~~[illegible]~~ 43 .7 ~~[illegible]~~ 48.

WELL ID SIZE: 4.0"	PROTECTIVE CASING STICKUP: 2.4'	PROTECTIVE CAS. TO WELL DIFF.: 0.15'	PVC STICKUP: 2.3'

WELL INTEGRITY

	YES	NO
PROTECTIVE CASING SECURE	✓	
WELL LOCKED	✓	
PVC WELL CAP INPLACE	✓	

PID HEADSPACE READINGS

BREATHING ZONE: 0 ppm

WELL HEAD: 0 ppm

PARAMETER	~~INITIAL~~	VOLUME #1	VOLUME #2	VOLUME #3	VOLUME #4	VOLUME #5
TEMPERATURE	~~[illegible]~~	9.1				
pH	~~[illegible]~~	6.2				
CONDUCTIVITY	~~[illegible]~~	112				
TURBIDITY	~~[illegible]~~	63				
DESCRIPTION	Sl. Cloudy →					
REDOX		241				

SAMPLE OBSERVATION: CLEAR ☐ CLOUDY ✓ COLORED ☐ TURBID ☐ ODOR ☐ OTHER(SEE NOTES) ☐

SAMPLE PARAMETERS	COLLECTED	METHOD #	FRACTION CODE	PRESERATIVE	VOLUME	SAMPLE BOTTLE NUMBER
VOC	✓	UM20	VP	HCL,4C	4- 40 ml AG	047A B, C, D
SVOCS	✓	UM18	MS	4C	2- 1L AG	E, F
EXPLOSIVES	✓	UM19	LC	4C	3- 1L AG	G, H
INORGANICS-FILTERED	✓	*	M	HNO3 pH<2	1- 1L Poly	O
INORGANICS-UNFILTERED	✓	*	M	HNO3 pH<2	1- 1L Poly	N
TSS	✓	160.2	C	4C	1- 1L Poly	J
WATER QUALITY PARAM.	✓	*	S	H2SO4 pH<2	1- 1L Poly	K
			C	4C	1- 1L Poly	L
			N	HNO3 pH<2	1- 1L Poly	—

SAMPLING EQUIPMENT

PURGING	SAMPLING	
✓	✓	SUBMERSIBLE PUMP
	✓	BAILER (DEDICATED)
	✓	IN-LINE FILTER (INORGANICS)
		OTHER

WATER LEVEL EQUIPMENT USED: ELECTRONIC COND. PROBE

NUMBER OF IN-LINE FILTERS USED: 1

Notes: * PAL inorganics: ICP metals (SS10), AS (SD21), SE (SD21), TL (SD09), SB (SD28), PB (SD20), HG (SB01).
Water Quality Parameters: PO4 (TF27), TKN (TF26), NIT (TF22), CL/SO4 (TT10), TSS (160.2), ALK (301.0), HARDNESS.

Due to slow recharge only one well volume will be removed from -08B. Purging began on 3/13 and 12 gals were removed. Purging resumed on 3/14 and 20 gal were removed by 1330.
3/15 - Purged 8 more gals.
3/16 - Purged the final 4.5 gals and sampled

ABB ENVIRONMENTAL SERVICES, INC. FIELD DATA RECORD - GROUNDWATER SITE ID: 4 1 m - 9 4 - 0 9 4

PROJECT NAME: FORT DEVENS	PROJECT NO.: 7053-14	CLIENT: USAEC	SAMPLING DATE: March , 1995 START 1330 END

FIELD SAMPLING NO.:	SITE TYPE: WELL	PROGRAM: C	FILE NAME: CGW WEATHER:

WELL DEPTH: 41.58 - WATER DEPTH: 34.22 = HEIGHT OF WATER COLUMN: 7.36 X WELL VOL. = TOTAL PURGE GAL.: 12.36 x 5 = 61.

WELL ID SIZE:	PROTECTIVE CASING STICKUP:	PROTECTIVE CAS. TO WELL DIFF.:	PVC STICKUP:

WELL INTEGRITY

	YES	NO
PROTECTIVE CASING SECURE		
WELL LOCKED		
PVC WELL CAP INPLACE		

PID HEADSPACE READINGS

BT 1500

BREATHING ZONE: 0 ppm

WELL HEAD: 0 ppm

PARAMETER	INITIAL	VOLUME #1 (1400, 35 gal)	VOLUME #2 (1415, 60)	VOLUME #3	VOLUME #4	VOLUME #5
TEMPERATURE		9.3	9.3			
pH		6.15	6.15			
CONDUCTIVITY		40	40			
TURBIDITY		1	1			
DESCRIPTION		clear	clear			
REDOX		293	311			

SAMPLE OBSERVATION

- [ ] CLEAR
- [ ] CLOUDY
- [ ] COLORED
- [ ] TURBID
- [ ] ODOR
- [ ] OTHER(SEE NOTES)

SAMPLE PARAMETERS	COLLECTED	METHOD #	FRACTION CODE	PRESERATIVE	VOLUME	SAMPLE BOTTLE NUMBER
VOC		UM20	VP	HCL,4C	4- 40 ml AG	049 A, B, C, D
SVOCS		UM18	MS	4C	2- 1L AG	E, F
EXPLOSIVES		UW19	LC	4C	3- 1L AG	G, H,
INORGANICS-FILTERED		*	M	HNO3 pH<2	1- 1L Poly	O
INORGANICS-UNFILTERED		*	N	HNO3 pH<2	1- 1L Poly	N
TSS		160.2	C	4C	1- 1L Poly	J
WATER QUALITY PARAM.		*	S	H2SO4 pH<2	1- 1L Poly	K
			C	4C	1- 1L Poly	
			N	HNO3 pH<2	1- 1L Poly	L

SAMPLING EQUIPMENT

PURGING	SAMPLING	
		SUBMERSIBLE PUMP
		BAILER (DEDICATED)
		IN-LINE FILTER (INORGANICS)
		OTHER

WATER LEVEL EQUIPMENT USED: ELECTRONIC COND. PROBE

NUMBER OF IN-LINE FILTERS USED:

Notes: * PAL inorganics: ICP metals (SS10), AS (SD21), SE (SD21), TL (SD09), SB (SD28), PB (SD20), MG (SB01).
Water Quality Parameters: PO4 (TF27), TKN (TF26), NIT (TF22), CL/SO4 (TT10), TSS (160.2), ALK (301.0), HARDNESS.

ABB ENVIRONMENTAL SERVICES, INC. FIELD DATA RECORD - GROUNDWATER SITE ID: 41X-94-098

PROJECT NAME: FORT DEVENS	PROJECT NO.: 7053-14	CLIENT: USAEC	SAMPLING DATE: March 15, 1995	START 1330 END
FIELD SAMPLING NO.: MX4 [illegible]	SITE TYPE: WELL	PROGRAM: C	FILE NAME: CGW	WEATHER: Cloudy-50's

WELL DEPTH: 57.70 - WATER DEPTH: 34.00 = HEIGHT OF WATER COLUMN: 23.7 X WELL VOL. = TOTAL PURGE GAL.: 39.82 X 5 =

WELL ID SIZE: 4.0"	PROTECTIVE CASING STICKUP:	PROTECTIVE CAS. TO WELL DIFF.:	PVC STICKUP:

WELL INTEGRITY

	YES	NO
PROTECTIVE CASING SECURE	✓	
WELL LOCKED	✓	
PVC WELL CAP INPLACE	✓	

PID HEADSPACE READINGS

BREATHING ZONE: ppm

WELL HEAD: ppm

PARAMETER	INITIAL	VOLUME #1	VOLUME #2	VOLUME #3	VOLUME #4	VOLUME #5
		39	78	117	156	199
TEMPERATURE		9.7	9.2	9.2	9.2	9.3
pH		4.4	6.7	6.2	6.3	6.3
CONDUCTIVITY		44	41	40	40	39
TURBIDITY		7.0	14	10	10	10
DESCRIPTION		Clear	Clear	Clear	Clear	Clear
REDOX		NA	NA	NA	NA	

SAMPLE OBSERVATION

- ✓ CLEAR
- CLOUDY
- COLORED
- TURBID
- ODOR
- OTHER(SEE NOTES)

SAMPLE PARAMETERS	COLLECTED	METHOD #	FRACTION CODE	PRESERATIVE	VOLUME	SAMPLE BOTTLE NUMBER
VOC	✓	UM20	VP	HCL,4C	4- 40 ml AG	051A, B, C, D
SVOCS	✓	UM18	MS	4C	2- 1L AG	E, F
EXPLOSIVES	✓	UW19	LC	4C	3- 1L AG	G, H,
INORGANICS-FILTERED	✓	*	N	HNO3 pH<2	1- 1L Poly	O
INORGANICS-UNFILTERED	✓	*	N	HNO3 pH<2	1- 1L Poly	N
TSS	✓	160.2	C	4C	1- 1L Poly	J
WATER QUALITY PARAM.	✓	*	S	H2SO4 pH<2	1- 1L Poly	K
			C	4C	1- 1L Poly	L
			N	HNO3 pH<2	1- 1L Poly	

SAMPLING EQUIPMENT

PURGING	SAMPLING	
✓	✓	SUBMERSIBLE PUMP
	✓	BAILER (DEDICATED)
	✓	IN-LINE FILTER (INORGANICS)
		OTHER

WATER LEVEL EQUIPMENT USED: ELECTRONIC COND. PROBE

NUMBER OF IN-LINE FILTERS USED: 1

Notes: * PAL inorganics: ICP metals (SS10), AS (SD21), SE (SD21), TL (SD09), SB (SD28), PB (SD20), HG (SB01).
Water Quality Parameters: PO4 (TF27), TKN (TF26), NIT (TF22), CL/SO4 (TT10), TSS (160.2), ALK (301.0), HARDNESS.

Eh
Vol #2 = 314
Vol # 3 = 279
Vol # 4 = 268
Vol # 5 262

ABB ENVIRONMENTAL SERVICES, INC. FIELD DATA RECORD - GROUNDWATER SITE ID: 41M-94-10X

PROJECT NAME: FORT DEVENS	PROJECT NO.: 7053-14	CLIENT: USAEC	SAMPLING DATE: March , 1995	START 1500 END 0850 3/1
FIELD SAMPLING NO.: M X 4 1 1 0 X 4	SITE TYPE: WELL	PROGRAM: C	FILE NAME: CGW	WEATHER: Sunny - 50's

WELL DEPTH: 40.5 - WATER DEPTH: 31.7 = HEIGHT OF WATER COLUMN: 8.8 X ~~WELL VOL.~~ 1.05 = TOTAL PURGE GAL.: 15.8

WELL ID SIZE: 4.0"	PROTECTIVE CASING STICKUP:	PROTECTIVE CAS. TO WELL DIFF.:	PVC STICKUP:

BT 0900 3-17-95

WELL INTEGRITY

	YES	NO
PROTECTIVE CASING SECURE	✓	
WELL LOCKED	✓	
PVC WELL CAP INPLACE	✓	

0530 3-17-95

PID HEADSPACE READINGS

BREATHING ZONE: 0 ppm

WELL HEAD: 0 ppm

PARAMETER	INITIAL	VOLUME #1	VOLUME #2	VOLUME #3	VOLUME #4	VOLUME #5
TEMPERATURE	8.1	9.0				
pH	7.3	6.71				
CONDUCTIVITY	149	105				
TURBIDITY	102	110				
DESCRIPTION	Sl. Cloudy	cloudy / turbid				
REDOX	NA	130				

SAMPLE OBSERVATION

- [ ] CLEAR
- [ ] CLOUDY
- [ ] COLORED
- [ ] TURBID
- [ ] ODOR
- [ ] OTHER(SEE NOTES)

SAMPLE PARAMETERS	COLLECTED	METHOD #	FRACTION CODE	PRESERATIVE	VOLUME	SAMPLE BOTTLE NUMBER
VOC	✓	UM20	VP	HCL,4C	4- 40 ml AG	053 A, B, C, D
SVOCS	✓	UM18	MS	4C	2- 1L AG	E, F
EXPLOSIVES	✓	UM19	LC	4C	3- 1L AG	G, H,
INORGANICS-FILTERED	✓	*	N	HNO3 pH<2	1- 1L Poly	D
INORGANICS-UNFILTERED	✓	*	N	HNO3 pH<2	1- 1L Poly	N
TSS	✓	160.2	C	4C	1- 1L Poly	J
WATER QUALITY PARAM.	✓	*	S	H2SO4 pH<2	1- 1L Poly	K
			C	4C	1- 1L Poly	L
			N	HNO3 pH<2	1- 1L Poly	

SAMPLING EQUIPMENT

PURGING SAMPLING

- [ ] SUBMERSIBLE PUMP
- [ ] BAILER (DEDICATED)
- [ ] IN-LINE FILTER (INORGANICS)
- [ ] OTHER ISCO PUMP FOR FILTERED

WATER LEVEL EQUIPMENT USED: ELECTRONIC COND. PROBE

NUMBER OF IN-LINE FILTERS USED: 1

Notes: * PAL Inorganics: ICP metals (SS10), AS (SD21), SE (SD21), TL (SD09), SB (SD28), PB (SD20), HG (SB01).
Water Quality Parameters: PO4 (TF27), TKN (TF26), NIT (TF22), CL/SO4 (TT10), TSS (160.2), ALK (301.0), HARDNESS.

Due to the slow recharge of this well only 1 volume of well water will be removed prior to sampling.
3/13 - Removed 6 gal. of water well went dry. Will bail more on 3/14
3/14 - Removed 2.5 gal
3/15 - Removed 3.0 gal.
3/16 - Removed final 4.5 gals. Will sample on 3/17.

3/17/95 [illegible] 40°F

ABB ENVIRONMENTAL SERVICES, INC. FIELD DATA RECORD - GROUNDWATER SITE ID: 41x-94-11x

PROJECT NAME: FORT DEVENS	PROJECT NO.: 7053-14	CLIENT: USAEC	SAMPLING DATE: March , 1995	START 1315 END 1640 3/15
FIELD SAMPLING NO.:	SITE TYPE: WELL	PROGRAM: C	FILE NAME: CGW	WEATHER: OVERCAST 40's F

WELL DEPTH: 48.65 - WATER DEPTH: 37.7 = HEIGHT OF WATER COLUMN: 10.98 X WELL VOL. = TOTAL PURGE GAL.: 18.45 x 1 (1.68)

WELL ID SIZE: 6"	PROTECTIVE CASING STICKUP:	PROTECTIVE CAS. TO WELL DIFF.:	PVC STICKUP:

BT 1410

WELL INTEGRITY	YES	NO
PROTECTIVE CASING SECURE	X	
WELL LOCKED	X	
PVC WELL CAP INPLACE	X	

PID HEADSPACE READINGS

BREATHING ZONE: 0.0 ppm

WELL HEAD: 0.0 ppm

PARAMETER	INITIAL	VOLUME #1 (1325, 6)	VOLUME #2 (1335, 12)	VOLUME #3 (1435, 15)	VOLUME #4 (0845 3/15, 18)	VOLUME #5
TEMPERATURE		10.1	10.0	10.1	9.9	
pH		7.73	7.96	~~9.12~~ 8.01	7.0	
CONDUCTIVITY		73	91	89	72	
TURBIDITY		10	7	93	10	
DESCRIPTION		CLEAR	CLEAR	TURBID	Clear	
REDOX		131	108	131	185	

SAMPLE OBSERVATION: CLEAR; CLOUDY; COLORED ____; TURBID; ODOR; OTHER(SEE NOTES)

SAMPLE PARAMETERS	COLLECTED	METHOD #	FRACTION CODE	PRESERATIVE	VOLUME	SAMPLE BOTTLE NUMBER
VOC		UM20	VP	HCL,4C	4- 40 ml AG	
SVOCS		UM18	MS	4C	2- 1L AG	
EXPLOSIVES		UW19	LC	4C	3- 1L AG	
INORGANICS-FILTERED		*	N	HNO3 pH<2	1- 1L Poly	
INORGANICS-UNFILTERED		*	N	HNO3 pH<2	1- 1L Poly	
TSS		160.2	C	4C	1- 1L Poly	
WATER QUALITY PARAM.		*	S	H2SO4 pH<2	1- 1L Poly	
			C	4C	1- 1L Poly	
			N	HNO3 pH<2	1- 1L Poly	

SAMPLING EQUIPMENT

PURGING	SAMPLING	
		SUBMERSIBLE PUMP
		BAILER (DEDICATED)
		IN-LINE FILTER (INORGANICS)
		OTHER

WATER LEVEL EQUIPMENT USED: ELECTRONIC COND. PROBE

NUMBER OF IN-LINE FILTERS USED:

Notes: * PAL inorganics: ICP metals (SS10), AS (SD21), SE (SD21), TL (SD09), SB (SD28), PB (SD20), HG (SB01).
Water Quality Parameters: PO4 (TF27), TKN (TF26), NIT (TF22), CL/SO4 (TT10), TSS (160.2), ALK (301.0), HARDNESS.

1345 DRY @ 14 gal
1440 DRY @ 15 gal
1630 DRY @ 17.5 gal
0845 FINISH PURGE
DROPPED BAILER TWINE CARDBOARD SPOOL DOWN WELL
BAILER STUCK
1015 RETURN ; BAILER FREE SAMPLE. FINISH 1040 3/15/95

ABB ENVIRONMENTAL SERVICES, INC. FIELD DATA RECORD - GROUNDWATER SITE ID: 4 1 M - 9 4 - 1 2 X

PROJECT NAME: FORT DEVENS	PROJECT NO.: 7053-14	CLIENT: USAEC	SAMPLING DATE: March 14 , 1995	START END 1015 3/15
FIELD SAMPLING NO.: M X 4 1 1 2 X 4	SITE TYPE: WELL	PROGRAM: C	FILE NAME: CGW	WEATHER: OVERCAST

WELL DEPTH: 39.89 - WATER DEPTH: 28.7 = HEIGHT OF WATER COLUMN: 11.19 X WELL VOL. 1.66 = TOTAL PURGE GAL.: 18.80

WELL ID SIZE:	PROTECTIVE CASING STICKUP:	PROTECTIVE CAS. TO WELL DIFF.:	PVC STICKUP:

BT 0945

WELL INTEGRITY

	YES	NO
PROTECTIVE CASING SECURE	✓	
WELL LOCKED	✓	
PVC WELL CAP INPLACE	✓	

PID HEADSPACE READINGS

BREATHING ZONE: 0 ppm

WELL HEAD: 0 ppm

PARAMETER	INITIAL	VOLUME #1 (0913, 16.5)	VOLUME #2 (0915, 19)	VOLUME #3	VOLUME #4	VOLUME #5
TEMPERATURE		9.6	9.7			
pH		7.0	6.8			
CONDUCTIVITY		118	119			
TURBIDITY		45	56			
DESCRIPTION		CLOUDY	CLEAR/CLOUDY			
REDOX		248	239			

SAMPLE OBSERVATION

- [ ] CLEAR
- [ ] CLOUDY
- [ ] COLORED
- [ ] TURBID
- [ ] ODOR
- [ ] OTHER(SEE NOTES)

SAMPLE PARAMETERS	COLLECTED	METHOD #	FRACTION CODE	PRESERATIVE	VOLUME	SAMPLE BOTTLE NUMBER
VOC	☐	UM20	VP	HCL,4C	4- 40 ml AG	
SVOCS	☐	UM18	MS	4C	2- 1L AG	
EXPLOSIVES	☐	UW19	LC	4C	3- 1L AG	
INORGANICS-FILTERED	☐	*	N	HNO3 pH<2	1- 1L Poly	
INORGANICS-UNFILTERED	☐	*	N	HNO3 pH<2	1- 1L Poly	
TSS	☐	160.2	C	4C	1- 1L Poly	
WATER QUALITY PARAM.	☐	*	S	H2SO4 pH<2	1- 1L Poly	
			C	4C	1- 1L Poly	
			N	HNO3 pH<2	1- 1L Poly	

SAMPLING EQUIPMENT

PURGING	SAMPLING	
☐	☐	SUBMERSIBLE PUMP
☐	☐	BAILER (DEDICATED)
☐	☐	IN-LINE FILTER (INORGANICS)
☐	☐	OTHER

WATER LEVEL EQUIPMENT USED: ELECTRONIC COND. PROBE

NUMBER OF IN-LINE FILTERS USED:

Notes: * PAL inorganics: ICP metals (SS10), AS (SD21), SE (SD21), TL (SD09), SB (SD28), PB (SD20), HG (SB01).
Water Quality Parameters: PO4 (TF27), TKN (TF26), NIT (TF22), CL/SO4 (TT10), TSS (160.2), ALK (301.0), HARDNESS.

Purged 16 gal. on 3/14.
0920 DRY 20 gal on 3/15
0945 RESUME SAMPLING

ABB ENVIRONMENTAL SERVICES, INC. FIELD DATA RECORD - GROUNDWATER SITE ID: 41M-94-13X

PROJECT NAME: FORT DEVENS	PROJECT NO.: 7053-14	CLIENT: USAEC	SAMPLING DATE: March , 1995	START 1155 END ~~1500~~ 1600
FIELD SAMPLING NO.: M X 4 1 1 3 X 4	SITE TYPE: WELL	PROGRAM: C	FILE NAME: CGW	WEATHER:

WELL DEPTH: 30.10 - WATER DEPTH: 20.35 = HEIGHT OF WATER COLUMN: 9.75 X WELL VOL. = TOTAL PURGE GAL.: 16.38 X 5=

WELL ID SIZE: 4"	PROTECTIVE CASING STICKUP:	PROTECTIVE CAS. TO WELL DIFF.:	PVC STICKUP:

BT 1530 3/16/95

WELL INTEGRITY	YES	NO
PROTECTIVE CASING SECURE	X	
WELL LOCKED	X	
PVC WELL CAP INPLACE	X	

PID HEADSPACE READINGS

BREATHING ZONE: 0.0 ppm

WELL HEAD: 0.0 ppm

PARAMETER	INITIAL	VOLUME #1 16	VOLUME #2 32	VOLUME #3 48	VOLUME #4 64	VOLUME #5 80
TEMPERATURE		10.1				
pH		6.61				
CONDUCTIVITY		119				
TURBIDITY		7.0				
DESCRIPTION		Clear				
REDOX		[illegible]				

SAMPLE OBSERVATION

- [x] CLEAR
- [ ] CLOUDY
- [ ] COLORED
- [ ] TURBID
- [ ] ODOR
- [ ] OTHER(SEE NOTES)

SAMPLE PARAMETERS	COLLECTED	METHOD #	FRACTION CODE	PRESERATIVE	VOLUME	SAMPLE BOTTLE NUMBER
VOC	X	UM20	VP	HCL,4C	4- 40 ml AG	205 A, B, C, D
SVOCS	X	UM18	MS	4C	2- 1L AG	E, F
EXPLOSIVES	X	UW19	LC	4C	3- 1L AG	G, H,
INORGANICS-FILTERED	X	*	N	HNO3 pH<2	1- 1L Poly	J
INORGANICS-UNFILTERED	X	*	N	HNO3 pH<2	1- 1L Poly	N
TSS	X	160.2	C	4C	1- 1L Poly	J
WATER QUALITY PARAM.	X	*	S	H2SO4 pH<2	1- 1L Poly	K
			C	4C	1- 1L Poly	
			N	HNO3 pH<2	1- 1L Poly	L

SAMPLING EQUIPMENT

PURGING	SAMPLING	
X	X	SUBMERSIBLE PUMP
	X	BAILER (DEDICATED)
	X	IN-LINE FILTER (INORGANICS)
		OTHER

WATER LEVEL EQUIPMENT USED: ELECTRONIC COND. PROBE

NUMBER OF IN-LINE FILTERS USED: 1

Notes: * PAL inorganics: ICP metals (SS10), AS (SD21), SE (SD21), TL (SD09), SB (SD28), PB (SD20), HG (SB01).
Water Quality Parameters: PO4 (TF27), TKN (TF26), NIT (TF22), CL/SO4 (TT10), TSS (160.2), ALK (301.0), HARDNESS.

[illegible] 15 gal

ABB ENVIRONMENTAL SERVICES, INC. FIELD DATA RECORD - GROUNDWATER SITE ID: 4 1 M - 9 4 - 1 4 X

PROJECT NAME: FORT DEVENS	PROJECT NO.: 7053-14	CLIENT: USAEC	SAMPLING DATE: March 13, 1995	START 1445 END 1540

FIELD SAMPLING NO.: M X 4 1 1 4 X 4	SITE TYPE: WELL	PROGRAM: C	FILE NAME: CGW	WEATHER: SUNNY 50's

WELL DEPTH: 9.94 - WATER DEPTH: 3.09 = HEIGHT OF WATER COLUMN: 6.85 x 1.66 X WELL VOL. = TOTAL PURGE GAL.: 11.5/vol 34.5 gal

WELL ID SIZE: 4"	PROTECTIVE CASING STICKUP:	PROTECTIVE CAS. TO WELL DIFF.:	PVC STICKUP:

WELL INTEGRITY	YES	NO
PROTECTIVE CASING SECURE	X	
WELL LOCKED	X	
PVC WELL CAP INPLACE	X	

PID HEADSPACE READINGS

BREATHING ZONE: 0 ppm

WELL HEAD: 0 ppm

PARAMETER	INITIAL	VOLUME #1 (1510, 35 gal)	VOLUME #2 (1525, ~~70 gal~~ 65)	VOLUME #3	VOLUME #4	VOLUME #5
TEMPERATURE		5.4	5.4			
pH		6.22	6.24			
CONDUCTIVITY		38	39			
TURBIDITY		1.0	1.0			
DESCRIPTION		Clear	Clear			
REDOX (EH)		302	294			

SAMPLE OBSERVATION: [X] CLEAR [ ] CLOUDY [ ] COLORED [ ] TURBID [ ] ODOR [ ] OTHER(SEE NOTES)

SAMPLE PARAMETERS	COLLECTED	METHOD #	FRACTION CODE	PRESERATIVE	VOLUME	SAMPLE BOTTLE NUMBER
VOC	X	UM20	VP	HCL,4C	4- 40 ml AG	A, B, C, D
SVOCS	X	UM18	MS	4C	2- 1L AG	E, F
EXPLOSIVES	X	UW19	LC	4C	3- 1L AG	G, H, I
INORGANICS-FILTERED	X	*	N	HNO3 pH<2	1- 1L Poly	~~M~~ N
INORGANICS-UNFILTERED	X	*	N	HNO3 pH<2	1- 1L Poly	O
TSS	X	160.2	C	4C	1- 1L Poly	~~J~~
WATER QUALITY PARAM.	X	*	S	H2SO4 pH<2	1- 1L Poly	~~K~~ L
			C	4C	1- 1L Poly	~~K~~ K
			N	HNO3 pH<2	1- 1L Poly	~~L~~

SAMPLING EQUIPMENT

PURGING	SAMPLING	
X	X	SUBMERSIBLE PUMP (for only)
	X	BAILER (DEDICATED)
	X	IN-LINE FILTER (INORGANICS)
		OTHER

WATER LEVEL EQUIPMENT USED: ELECTRONIC COND. PROBE

NUMBER OF IN-LINE FILTERS USED: 1

Notes: * PAL inorganics: ICP metals (SS10), AS (SD21), SE (SD21), TL (SD09), SB (SD28), PB (SD20), HG (SB01).
Water Quality Parameters: PO4 (TF27), TKN (TF26), NIT (TF22), CL/SO4 (TT10), TSS (160.2), ALK (301.0), HARDNESS.

TOTAL PURGED = 65 gal