

*Appendix C*  
*Boring Logs*

# DRILLING LOG for Well #: MW-32



ERM  
399 Boylston Street, 6th Floor  
Boston, MA 02116

Project:	Raytheon - Wayland	Project Number:	143.45		
Client:	Raytheon	Logged by:	Ryan Bagley		
Drilling Co:	Geosearch, Inc.	Driller:	AJ/Rodney K.		
Date Started:	14-May-98	Date Finished:	14-May-98		
Location:	Wayland, Massachusetts	Drilling Method:	4.25 ID HSA		
Screen Diam:	2"	Length:	10'	Slot Size:	0.01
Casing Diam:	2"	Length:	2'	Type:	PVC
Boring Depth:	12'	Well Depth:	12'	Boring Diam.:	8"
Surface Elev.:	124.86'	MP:	PVC	Depth to GW:	0.87'
		MP Elev.:	124.43'		

**SITE MAP**

Wetlands

Dirt Road

⊕ MW-32

Wetlands

Notes: Depth to GW measured on 5/18/98

Depth	Well Log	Stratigraphy	Blowcounts per 6 inches	Recovery	Split Spoon Description/Soil Classification	Sample # & Depth	HS Conc. (ppm)	Lab Sample # & Analyses	
0		SAND	6,5	16"	Brown medium to coarse SAND, some Gravel, loose, dry to damp	S-1	0.0		
1			9,11			0'-2'			
2		SAND	8,8	18"	Brown medium to coarse SAND, some Silt, trace Gravel, wet	S-2	0.0		
3			11,6			2'-4'			
4	SAND & SILT	3,4	18"	Brown fine SAND and SILT, trace Gravel, saturated	S-3	0.0			
5		3,3			4'-6'				
6									
7									
8									
9									
10									
11		SAND & SILT	4,3	19"	Brown-grey fine SAND and SILT, well sorted, saturated	S-4	0.0		
12	3,4			10'-12'					
13					<b>Well Construction Details:</b> Protective Flushmount Roadbox 0'-0.5' Concrete surface seal 0.5'-1' Bentonite chip seal 1'-12' #1 silica sand filter pack 2'-12' 0.010" slotted PVC well screen 12' Bottom of boring				
14									
15									
16									
17									
18									
19									
20									
21									
22									
23									

**Footnotes for Blowcounts**

- (1) 140 lb. Hammer
- (2) 300 lb. Hammer
- (3) Slide Hammer

**Key to Well Construction**

	Sandpack		Well Screen		Drill Cuttings
	Bentonite Seal		Cement		

# DRILLING LOG for Well #: MW-33S



ERM  
399 Boylston Street, 6th Floor  
Boston, MA 02116

Project:	Raytheon - Wayland	Project Number:	143.45		
Client:	Raytheon	Logged by:	Ryan Bagley		
Drilling Co:	Geosearch, Inc.	Driller:	AJ/Rodney K.		
Date Started:	14-May-98	Date Finished:	14-May-98		
Location:	Wayland, Massachusetts	Drilling Method:	4.25 ID HSA		
Screen Diam:	2"	Length:	5'	Slot Size:	0.01
Casing Diam:	2"	Length:	25'	Type:	PVC
Boring Depth:	30'	Well Depth:	30'	Boring Diam.:	8"
Surface Elev.:	133.91'	MP:	PVC	Depth to GW:	17.02'
		MP Elev.:	133.79'		

## SITE MAP

Former  
Haz.  
Waste  
Storage  
Area



Notes: Depth to GW  
measured on 5/18/98

Depth	Well Log	Stratigraphy	Blowcounts per 6 inches	Recovery	Split Spoon Description/Soil Classification	Sample # & Depth	HS Conc. (ppm)	Lab Sample # & Analyses
0								
1								
2								
3								
4								
5								
6					No split spoons collected			
7								
8								
9					Well Construction Details:			
10					Steel Protective Standpipe			
11					0'-1' Cement surface seal			
12					1'-22' Portland cement/bentonite grout			
13					22'-24' Bentonite chip seal			
14					24'-30' # 1 silica sand filter pack			
15					25'-30' 0.010" slotted PVC well screen			
16					30' Bottom of boring			
17								
18								
19								
20								
21								
22								
23								

### Footnotes for Blowcounts

- (1) 140 lb. Hammer
- (2) 300 lb. Hammer
- (3) Slide Hammer

### Key to Well Construction

	Sandpack		Well Screen		Portland Cement/Bentonite Grout
	Bentonite Seal		Cement		



# DRILLING LOG for Well #: MW-33M

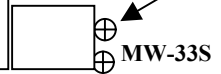


ERM  
399 Boylston Street, 6th Floor  
Boston, MA 02116

Project:	Raytheon - Wayland	Project Number:	143.45		
Client:	Raytheon	Logged by:	Ryan Bagley		
Drilling Co:	Geosearch, Inc.	Driller:	AJ/Rodney K.		
Date Started:	13-May-98	Date Finished:	13-May-98		
Location:	Wayland, Massachusetts	Drilling Method:	4.25 ID HSA		
Screen Diam:	2"	Length:	5'	Slot Size:	0.01
Casing Diam:	2"	Length:	45'	Type:	PVC
Boring Depth:	50'	Well Depth:	50'	Boring Diam.:	8"
Surface Elev.:	133.91'	MP:	PVC	Depth to GW:	17.74'
		MP Elev.:	133.57'		

## SITE MAP

Former  
Haz.  
Waste  
Storage  
Area



Notes: Depth to GW measured on 5/18/98

Depth	Well Log	Stratigraphy	Blowcounts per 6 inches	Recovery	Split Spoon Description/Soil Classification	Sample # & Depth	HS Conc. (ppm)	Lab Sample # & Analyses
0								
1		SAND & SILT	2,2	16"	Brown medium to fine SAND and SILT, well sorted, damp	S-1 0'-2'	0.0	
2		SAND & SILT	5,6	12"	Brown medium to fine SAND and SILT, trace Gravel, damp	S-2 2'-4'	0.0	
3		SAND	6,6	20"	Brown medium to fine SAND, some Silt, trace Gravel, damp	S-3 4'-6'	0.0	
4		SAND & SILT	6,6	18"	Brown fine SAND and SILT, well sorted, damp	S-4 6'-8'	0.0	
5		SAND & SILT	7,6	16"	Brown fine SAND and SILT, well sorted, damp	S-5 8'-10'	0.0	
6		SAND	10,9	18"	Brown medium to coarse SAND, some Silt, wet	S-6 10'-12'	0.0	
7		SAND	7,7	7"	Brown medium to coarse SAND, some Silt, wet	S-7 12'-14'	0.0	
8		SAND & SILT	8,8	12"	Brown-grey fine SAND and SILT, trace Clay, well sorted, saturated	S-8 14'-16'	0.0	
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21		SAND & SILT	4,4	22"	Brown fine SAND and SILT, trace Clay, well sorted, saturated	S-9 20'-22'	0.0	
22								
23								

### Footnotes for Blowcounts

- (1) 140 lb. Hammer
- (2) 300 lb. Hammer
- (3) Slide Hammer

### Key to Well Construction

- Sandpack
- Well Screen
- Portland Cement/Bentonite Grout
- Bentonite Seal
- Cement





# DRILLING LOG for Well #: MW-33D



ERM  
399 Boylston Street, 6th Floor  
Boston, MA 02116

Project:	Raytheon - Wayland	Project Number:	143.48		
Client:	Raytheon	Logged by:	Ryan Bagley		
Drilling Co:	Geosearch, Inc.	Driller:	Tom Belsky		
Date Started:	11-Aug-99	Date Finished:	11-Aug-99		
Location:	Wayland, Massachusetts	Drilling Method:	4.25 ID HSA/Drive and Wash		
Screen Diam:	2"	Length:	5'	Slot Size:	0.01
Casing Diam:	2"	Length:	55'	Type:	PVC
Boring Depth:	60'	Well Depth:	60'	Boring Diam.:	8"
Surface Elev.:	134.13	MP:	PVC	Depth to GW:	20.05'
		MP Elev.:	133.80		

**SITE MAP**

Notes: Depth to GW measured on 8/19/99

Depth	Well Log	Stratigraphy	Blowcounts per 6 inches	Recovery	Split Spoon Description/Soil Classification	Sample # & Depth	HS Conc. (ppm)	Lab Sample # & Analyses
0								
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								

Augered using 4.25" flights from 0'-35'  
Advanced 5" casing to 40'  
Telescoped 4" casing from 40'-78'

Well Construction Details:  
Protective Flushmount Roadbox  
0'-1' Concrete surface seal  
1'-10' Native backfill  
15'-60' Grout  
60'-52' Bentonite chip seal  
53'-60' #1 silica sand filter pack  
55'-60' 0.010 slotted PVC well screen  
60' Bottom of boring

**Footnotes for Blowcounts**

- (1) 140 lb. Hammer
- (2) 300 lb. Hammer
- (3) Slide Hammer

**Key to Well Construction**

	Sandpack		Well Screen		Drill Cuttings
	Bentonite Seal		Cement		Grout



# DRILLING LOG for Well #:

MW-33D



ERM  
399 Boylston Street, 6th Floor  
Boston, MA 02116

Depth	Well Log	Stratigraphy	Blowcounts per 6 inches	Recovery	Split Spoon Description/Soil Classification	Sample # & Depth	PID Conc. (ppm) spoon/HS	Lab Sample # & Analyses
26								
27								
28								
29								
30								
31								
32								
33								
34								
35								
36								
37								
38								
39								
40								
41								
42								
43								
44								
45								
46								
47								
48								
49								
50								
51		SAND	7,4	10"	Grey medium to fine SAND, trace Silt, well sorted,	S-1	0.0	
52			7,6		saturated	50'-52'		
53		SAND	7,6	17"	Grey medium to fine SAND, trace Silt, well sorted,	S-2	0.0	
54			6,7		saturated, slight odor	52'-54'		
55		SAND	7,6,4,4	24"	Grey fine SAND, some Silt, trace Clay, w.s., saturated	S-3 54'-56'	0.0	



# DRILLING LOG for Well #: MW-33B



ERM  
399 Boylston Street, 6th Floor  
Boston, MA 02116

Project:	Raytheon - Wayland	Project Number:	143.50		
Client:	Raytheon	Logged by:	Ryan Bagley		
Drilling Co:	Geosearch, Inc.	Driller:	M. Bovenzi		
Date Started:	21-Mar-00	Date Finished:	23-Mar-00		
Location:	Wayland, Massachusetts	Drilling Method:	4.25" ID HSA/Drive and Wash/HV Rk Core		
Screen Diam:	2"	Length:	5'	Slot Size:	0.01
Casing Diam:	2"	Length:	76'	Type:	PVC
Boring Depth:	81'	Well Depth:	81'	Boring Diam.:	8"
Surface Elev.:	129.36'	MP:	PVC	Depth to GW:	17.00'
		MP Elev.:	133.88'		

**SITE MAP**

Notes: Depth to GW measured on 4/5/00

Depth	Well Log	Stratigraphy	Blowcounts per 6 inches	Recovery	Split Spoon Description/Soil Classification	Sample # & Depth	HS Conc. (ppm)	Lab Sample # & Analyses
0					No Split spoon samples collected			
2					Augered using 4.25" flights from 0'-35'			
4					Advanced 5" casing to 40'			
6					Telescoped 4" casing from 40'-60'			
8					HV Rock Core from 60'-81'			
10								
12								
14								
16					<u>Well Construction Details</u>			
18					0'-1' Concrete Surface Seal			
20					1'-5' Native Backfill			
22					5'-60' Grout			
24					60'-74' Bentonite Chip Seal			
26					74'-81' #1 silica sand filter pack			
28					76'-81' 0.010 Slotted PVC Well Screen			
30					81' Bottom of Boring			
32								
34								
36								
38								
40								
42								
44								
46								

Footnotes for Blowcounts

- (1) 140 lb. Hammer
- (2) 300 lb. Hammer
- (3) Slide Hammer

Key to Well Construction

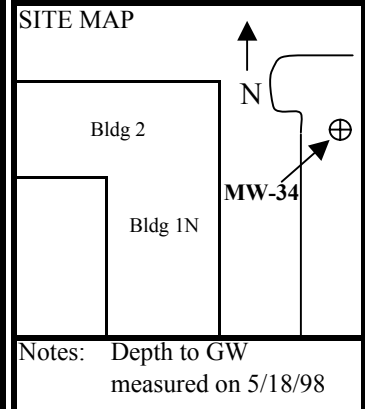
	Sandpack		Well Screen		Drill Cuttings
	Bentonite Seal		Cement		Grout



# DRILLING LOG for Well #: MW-34

ERM  
399 Boylston Street, 6th Floor  
Boston, MA 02116

Project:	Raytheon - Wayland	Project Number:	143.45		
Client:	Raytheon	Logged by:	Ryan Bagley		
Drilling Co:	Geosearch, Inc.	Driller:	AJ/Rodney K.		
Date Started:	13-May-98	Date Finished:	13-May-98		
Location:	Wayland, Massachusetts	Drilling Method:	4.25 ID HSA		
Screen Diam:	2"	Length:	10'	Slot Size:	0.01
Casing Diam:	2"	Length:	5'	Type:	PVC
Boring Depth:	15'	Well Depth:	15'	Boring Diam.:	8"
Surface Elev.:	136.97'	MP:	PVC	Depth to GW:	7.18'
		MP Elev.:	136.71'		



Depth	Well Log	Stratigraphy	Blowcounts per 6 inches	Recovery	Split Spoon Description/Soil Classification	Sample # & Depth	HS Conc. (ppm)	Lab Sample # & Analyses
0								
1		SAND	4,6	18"	Brown fine to medium SAND, some Silt, dry	S-1	0.0	
2			6,3		to damp	0'-2'		
3		SAND	5,7	12"	Light brown fine to medium SAND, some Silt, well	S-2	0.0	
4			6,6		sorted, damp	2'-4'		
5		SAND & SILT	7,7	20"	Brown-grey fine SAND and SILT, well sorted, wet	S-3	0.0	
6			9,5			4'-6'		
7		SAND & SILT	6,4	17"	Brown fine SAND and SILT, well sorted, saturated	S-4	0.0	
8			7,4			6'-8'		
9								
10								
11		SAND & SILT	10, 13	15"	Brown medium to fine SAND and SILT, trace Clay,	S-5	0.0	
12			9,10		well sorted, saturated	10'-12'		
13								
14					Well Construction Details:			
15					Protective Flushmount Roadbox			
16					0'-1' Concrete surface seal			
17					1'-2' Native backfill			
18					2'-4' Bentonite chip seal			
19					4'-15' #1 silica sand filter pack			
20					5'-15' 0.010" slotted PVC well screen			
21					15' Bottom of boring			
22								
23								

**Footnotes for Blowcounts**

- (1) 140 lb. Hammer
- (2) 300 lb. Hammer
- (3) Slide Hammer

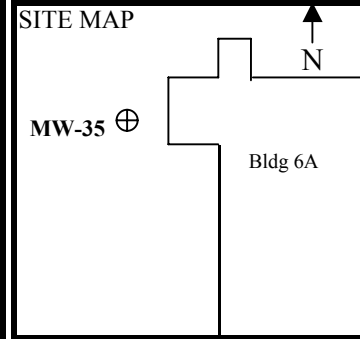
**Key to Well Construction**

- Sandpack
- Well Screen
- Drill Cuttings
- Bentonite Seal
- Cement

# DRILLING LOG for Well #: MW-35

ERM  
399 Boylston Street, 6th Floor  
Boston, MA 02116

Project:	Raytheon - Wayland	Project Number:	143.45		
Client:	Raytheon	Logged by:	Ryan Bagley		
Drilling Co:	Geosearch, Inc.	Driller:	AJ/Rodney K.		
Date Started:	11-May-98	Date Finished:	11-May-98		
Location:	Wayland, Massachusetts	Drilling Method:	4.25 ID HSA		
Screen Diam:	2"	Length:	10'	Slot Size:	0.01
Casing Diam:	2"	Length:	12'	Type:	PVC
Boring Depth:	22'	Well Depth:	22'	Boring Diam.:	8"
Surface Elev.:	133.22'	MP:	PVC	Depth to GW:	12.55'
		MP Elev.:	132.80'		



Notes: Depth to GW measured on 5/18/98

Depth	Well Log	Stratigraphy	Blowcounts per 6 inches	Recovery	Split Spoon Description/Soil Classification	Sample # & Depth	HS Conc. (ppm)	Lab Sample # & Analyses
0		SAND	25,18	18"	Brown-grey medium SAND, some Cobbles and Rock fragments, damp	S-1	0.0	
1			15,14			0'-2'		
2		SAND	21,19	8"	Brown medium SAND, trace Cobbles and Rock fragments, damp	S-2	0.0	
3			24,17			2'-4'		
4		SAND	10,12	16"	Brown-grey medium SAND, some coarse Gravel, trace Rock fragments, damp	S-3	0.0	
5			13,14			4'-6'		
6		SAND	36,63	16"	Light brown medium to fine SAND, trace Gravel, well sorted, damp	S-4	0.0	
7			17,10			6'-8'		
8			10,12	0'	No Sample recovered in spoon	S-5	0.0	
9			12,15			8'-10'		
10		SAND	10,12	15"	Brown medium to fine SAND, some coarse Gravel, trace Rock fragments, damp	S-6	0.0	
11			9,13			10'-12'		
12		SAND	9,10	15"	Brown medium to fine SAND, trace coarse Gravel, damp to wet	S-7	0.0	
13			8,9			12'-14'		
14								
15								
16								
17								
18								
19		SAND	19,21	2"	Brown medium to fine SAND, trace Gravel, saturated	S-8	0.0	
20			24,25			19'-21'		
21								
22								
23					Well Construction Details on Following Page			

**Footnotes for Blowcounts**

- (1) 140 lb. Hammer
- (2) 300 lb. Hammer
- (3) Slide Hammer

**Key to Well Construction**

	Sandpack		Well Screen		Drill Cuttings
	Bentonite Seal		Cement		

**DRILLING LOG for Well #:**

MW-35



ERM  
399 Boylston Street, 6th Floor  
Boston, MA 02116

Depth	Well Log	Stratigraphy	Blowcounts per 6 inches	Recovery	Split Spoon Description/Soil Classification	Sample # & Depth	PID Conc. (ppm) spoon/HS	Lab Sample # & Analyses
					Well Construction Details: Protective Flushmount Roadbox 0'-1' Concrete surface seal 1'-9' Native backfill 9'-11' Bentonite chip seal 11'-22' #1 silica sand filter pack 12'-22' 0.010" slotted PVC well screen 22' Bottom of boring			

# DRILLING LOG for Well #: MW-36



ERM  
399 Boylston Street, 6th Floor  
Boston, MA 02116

Project:	Raytheon - Wayland	Project Number:	143.45
Client:	Raytheon	Logged by:	Ryan Bagley
Drilling Co:	Geosearch, Inc.	Driller:	AJ/Rodney K.
Date Started:	12-May-98	Date Finished:	12-May-98
Location:	Wayland, Massachusetts	Drilling Method:	4.25 ID HSA
Screen Diam:	2"	Length:	10'
Casing Diam:	2"	Length:	12'
Boring Depth:	22'	Well Depth:	22'
Surface Elev.:	132.94'	MP:	PVC
		MP Elev.:	132.52'
		Slot Size:	0.01
		Type:	PVC
		Boring Diam.:	8"
		Depth to GW:	14.10'

**SITE MAP**

Notes: Depth to GW measured on 5/18/98

Depth	Well Log	Stratigraphy	Blowcounts per 6 inches	Recovery	Split Spoon Description/Soil Classification	Sample # & Depth	HS Conc. (ppm)	Lab Sample # & Analyses
0								
1		SAND	27,19	18"	Brown fine SAND, trace Asphalt, dry	S-1	0.0	
2			9,9			0'-2'		
3		SAND	14,7	18"	Brown medium to fine SAND, trace Gravel, dry	S-2	0.0	
4			7,6			2'-4'		
5		SAND	9,17	14"	Brown medium to fine SAND, some Gravel, dry	S-3	0.0	
6			14,15			4'-6'		
7		SAND	11,14	18"	Brown fine SAND, well sorted, dry to damp	S-4	0.0	
8			15,17			6'-8'		
9		SAND & SILT	11,14	12"	Brown fine SAND and SILT, well sorted, damp	S-5	0.0	
10			14,16			8'-10'		
11		SAND & SILT	13,15	12"	Brown fine SAND and SILT, well sorted, damp	S-6	0.0	
12			15,18			10'-12'		
13		SAND & SILT	16,19	12"	Brown fine SAND and SILT, well sorted, damp to wet	S-7	0.0	
14			19,22			12'-14'		
15		SAND & SILT	17,19	16"	Brown fine SAND and SILT, well sorted, wet to saturated	S-8	0.0	
16			22,21			14'-16'		
17		SAND & SILT	16,21	17"	Brown fine SAND and SILT, well sorted, saturated	S-9	0.0	
18			22,27			16'-18'		
19								
20								
21		SAND & SILT	13,11	24"	Brown fine SAND and SILT, well sorted, saturated	S-10	0.0	
22			14,12			20'-22'		
23								

Well Construction Details on Following Page

**Footnotes for Blowcounts**

- (1) 140 lb. Hammer
- (2) 300 lb. Hammer
- (3) Slide Hammer

**Key to Well Construction**

	Sandpack		Well Screen		Drill Cuttings
	Bentonite Seal		Cement		



**DRILLING LOG for Well #:**

MW-36



ERM  
399 Boylston Street, 6th Floor  
Boston, MA 02116

Depth	Well Log	Stratigraphy	Blowcounts per 6 inches	Recovery	Split Spoon Description/Soil Classification	Sample # & Depth	PID Conc. (ppm) spoon/HS	Lab Sample # & Analyses
					<p>Well Construction Details:</p> <p>Protective Flushmount Roadbox</p> <p>0'-1' Concrete surface seal</p> <p>1'-9' Native backfill</p> <p>9'-11' Bentonite chip seal</p> <p>11'-22' #1 silica sand filter pack</p> <p>12'-22' 0.010" slotted PVC well screen</p> <p>22' Bottom of boring</p>			

# DRILLING LOG for Well #: MW-37



ERM  
399 Boylston Street, 6th Floor  
Boston, MA 02116

SITE MAP



Project:	Raytheon - Wayland	Project Number:	143.45
Client:	Raytheon	Logged by:	Ryan Bagley
Drilling Co:	Geosarch, Inc.	Driller:	AJ/Rodney K.
Date Started:	12-May-98	Date Finished:	12-May-98
Location:	Wayland, Massachusetts	Drilling Method:	4.25 ID HSA
Screen Diam:	2"	Length:	10'
		Slot Size:	0.01
Casing Diam:	2"	Length:	12'
		Type:	PVC
Boring Depth:	22'	Well Depth:	22'
		Boring Diam.:	8"
Surface Elev.:	134.72'	MP:	PVC
		Depth to GW:	13.52'
		MP Elev.:	134.41'

Bldg 5

FHWSA

MW-37

Notes: Depth to GW measured on 5/18/98

Depth	Well Log	Stratigraphy	Blowcounts per 6 inches	Recovery	Split Spoon Description/Soil Classification	Sample # & Depth	HS Conc. (ppm)	Lab Sample # & Analyses
0		SAND	7,5	12"	Brown medium to coarse SAND, trace Gravel, dry to damp	S-1 0'-2'	0.0	
1			4,4					
2		SAND	9,13	14"	Brown medium to fine SAND, some Silt, trace Gravel, dry to damp	S-2 2'-4'	0.0	
3			12,15					
4		SAND	7,9	18"	Brown medium SAND, little Silt, trace Gravel, damp	S-3 4'-6'	0.0	
5			11,11					
6		SAND	7,9	16"	Brown medium SAND, little Silt, trace Gravel, damp	S-4 6'-8'	0.0	
7			6,6					
8		SAND & SILT	8,6	16"	Brown medium to fine SAND and SILT, trace Gravel, damp	S-5 8'-10'	0.0	
9			7,5					
10		SAND & SILT	5,5	19"	Brown fine SAND and SILT, trace Gravel, damp	S-6 10'-12'	0.0	
11			5,6					
12		SAND	5,9	12"	Brown-grey fine SAND, some Silt, trace Gravel, wet	S-7 12'-14'	0.0	
13			11,16					
14		SAND & SILT	7,9	20"	Brown fine SAND and SILT, saturated	S-8 14'-16'	0.0	
15			14,22					
16								
17								
18								
19								
20								
21		SAND & SILT	4,9	20"	Brown fine SAND and SILT, well sorted, saturated	S-9 20'-22'	0.0	
22	11,14							
23								

Well Construction Details on Following Page

Footnotes for Blowcounts

- (1) 140 lb. Hammer
- (2) 300 lb. Hammer
- (3) Slide Hammer

Key to Well Construction

- Sandpack
- Well Screen
- Drill Cuttings
- Bentonite Seal
- Cement

**DRILLING LOG for Well #:**

MW-37



ERM  
399 Boylston Street, 6th Floor  
Boston, MA 02116

Depth	Well Log	Stratigraphy	Blowcounts per 6 inches	Recovery	Split Spoon Description/Soil Classification	Sample # & Depth	PID Conc. (ppm) spoon/HS	Lab Sample # & Analyses
					Well Construction Details: Protective Flushmount Roadbox 0'-1' Concrete surface seal 1'-9' Native backfill 9'-11' Bentonite chip seal 11'-22' #1 silica sand filter pack 12'-22' 0.010 slotted PVC well screen 22' Bottom of boring			

# DRILLING LOG for Well #: MW-37M



ERM  
399 Boylston Street, 6th Floor  
Boston, MA 02116

Project:	Raytheon - Wayland	Project Number:	143.45		
Client:	Raytheon	Logged by:	Ryan Bagley		
Drilling Co:	Geosearch, Inc.	Driller:	Mike D'Amico		
Date Started:	2-Nov-98	Date Finished:	2-Nov-98		
Location:	Wayland, Massachusetts	Drilling Method:	4.25 ID HSA		
Screen Diam:	2"	Length:	5'	Slot Size:	0.01
Casing Diam:	2"	Length:	45'	Type:	PVC
Boring Depth:	50'	Well Depth:	50'	Boring Diam.:	8"
Surface Elev.:	134.72'	MP:	PVC	Depth to GW:	17.93'
		MP Elev.:	134.38'		

**SITE MAP**

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Building

MW-33M  
MW-37M  
MW-33S

Notes: Depth to GW measured on 11/17/98

Depth	Well Log	Stratigraphy	Blowcounts per 6 inches	Recovery	Split Spoon Description/Soil Classification	Sample # & Depth	HS Conc. (ppm)	Lab Sample # & Analyses
0								
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21		SAND	14,10	14"	Brown medium to fine SAND, well sorted,	S-1	2.0	
22			8,8		saturated	20'-22'		
23		SAND	8,9	24"	Brown fine SAND, trace Silt, well sorted,	S-2	1.0	
24			9,11		saturated [iron staining]	22'-24'		

**Footnotes for Blowcounts**

- (1) 140 lb. Hammer
- (2) 300 lb. Hammer
- (3) Slide Hammer

**Key to Well Construction**

	Sandpack		Well Screen		Drill Cuttings
	Bentonite Seal		Cement		Grout





# DRILLING LOG for Well #: MW-38



ERM  
399 Boylston Street, 6th Floor  
Boston, MA 02116

SITE MAP



Project:	Raytheon - Wayland	Project Number:	143.45
Client:	Raytheon	Logged by:	Ryan Bagley
Drilling Co:	Geosearch, Inc.	Driller:	AJ/Rodney K.
Date Started:	12-May-98	Date Finished:	12-May-98
Location:	Wayland, Massachusetts	Drilling Method:	4.25 ID HSA
Screen Diam:	2"	Length:	10'
Casing Diam:	2"	Length:	12'
Boring Depth:	22'	Well Depth:	22'
Surface Elev.:	134.76'	MP:	PVC
		MP Elev.:	134.46'
		Slot Size:	0.01
		Type:	PVC
		Boring Diam.:	8"
		Depth to GW:	13.41'

Bldg 5

MW-37  
⊕

MW-38  
⊕

Notes: Depth to GW measured on 5/18/98

Depth	Well Log	Stratigraphy	Blowcounts per 6 inches	Recovery	Split Spoon Description/Soil Classification	Sample # & Depth	HS Conc. (ppm)	Lab Sample # & Analyses
0								
1		SAND & SILT	9,11	14"	Brown medium to coarse SAND and SILT, some Gravel, trace Rock fragments, damp	S-1 0'-2'	0.0	
2			13,14					
3		SAND & SILT	4,4	14"	Brown medium to coarse SAND and SILT, some Gravel, damp	S-2 2'-4'	0.0	
4			6,7					
5		SAND & SILT	9,14	14"	Brown medium to coarse SAND and SILT, trace Gravel, damp	S-3 4'-6'	0.0	
6			17,15					
7		SAND & SILT	22,21	15"	Brown medium to coarse SAND and SILT, some Gravel, damp	S-4 6'-8'	0.0	
8			22,21					
9		SAND & SILT	8,10	12"	Brown medium to coarse SAND and SILT, some Gravel, damp	S-5 8'-10'	0.0	
10			9,10					
11		SAND & SILT	4,6	9"	Brown medium to fine SAND and SILT, trace Gravel, damp to wet	S-6 10'-12'	0.0	
12			6,25					
13			25,25	0"	No sample recovered in spoon	S-7 12'-14'	0.0	
14			25,23					
15		SAND & SILT	6,5	15"	Brown medium SAND and SILT, trace Gravel, saturated	S-8 14'-16'	0.0	
16			5,7					
17								
18								
19								
20								
21		SAND & SILT	18,19	18"	Brown medium SAND and SILT, trace Clay, saturated	S-9 20'-22'	0.0	
22			21,20					
23								

Well Construction Details on Following Page

Footnotes for Blowcounts

- (1) 140 lb. Hammer
- (2) 300 lb. Hammer
- (3) Slide Hammer

Key to Well Construction

	Sandpack		Well Screen		Drill Cuttings
	Bentonite Seal		Cement		

**DRILLING LOG for Well #:**

MW-38



ERM  
399 Boylston Street, 6th Floor  
Boston, MA 02116

Depth	Well Log	Stratigraphy	Blowcounts per 6 inches	Recovery	Split Spoon Description/Soil Classification	Sample # & Depth	PID Conc. (ppm) spoon/HS	Lab Sample # & Analyses
					Well Construction Details: Protective Flushmount Roadbox 0'-1' Concrete surface seal 1'-9' Native backfill 9'-11' Bentonite chip seal 11'-22' #1 silica sand filter pack 12'-22' 0.010" slotted PVC well screen 22' Bottom of boring			

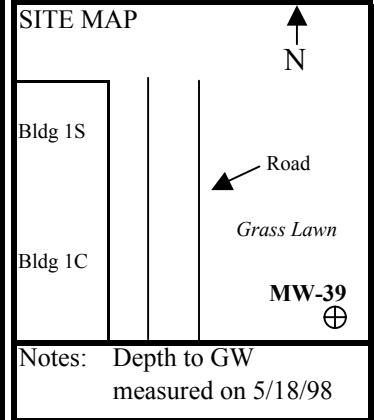


# DRILLING LOG for Well #: MW-39



ERM  
399 Boylston Street, 6th Floor  
Boston, MA 02116

Project:	Raytheon - Wayland	Project Number:	143.45
Client:	Raytheon	Logged by:	Ryan Bagley
Drilling Co:	Geosearch, Inc.	Driller:	AJ/Rodney K.
Date Started:	12-May-98	Date Finished:	12-May-98
Location:	Wayland, Massachusetts	Drilling Method:	4.25 ID HSA
Screen Diam:	2"	Length:	10'
Casing Diam:	2"	Length:	12'
Boring Depth:	22'	Well Depth:	22'
Surface Elev.:	135.20'	MP:	PVC
		MP Elev.:	134.89'
		Slot Size:	0.01
		Type:	PVC
		Boring Diam.:	8"
		Depth to GW:	13.56'



Notes: Depth to GW measured on 5/18/98

Depth	Well Log	Stratigraphy	Blowcounts per 6 inches	Recovery	Split Spoon Description/Soil Classification	Sample # & Depth	HS Conc. (ppm)	Lab Sample # & Analyses
0								
1		SAND	9,11	18"	Brown medium to fine SAND, well sorted, loose, damp	S-1 0'-2'	0.0	
2			7,7					
3		SAND	6,6	18"	Brown medium to fine SAND, well sorted, loose, damp	S-2 2'-4'	0.0	
4			10,9					
5		SAND	4,6	24"	Brown fine SAND, trace Silt, well sorted, loose, damp	S-3 4'-6'	0.0	
6			6,7					
7		SAND & SILT	9,11	20"	Brown fine SAND and SILT, well sorted, damp	S-4 6'-8'	0.0	
8			10,12					
9		SAND & SILT	5,6	18"	Brown fine SAND and SILT, well sorted, damp to wet	S-5 8'-10'	0.0	
10			6,5					
11		SAND & SILT	15,13	18"	Brown fine SAND and SILT, trace Clay, well sorted, damp to wet	S-6 10'-12'	0.0	
12			10,9					
13		SAND & SILT	25,20	16"	Brown medium to fine SAND and SILT, well sorted, loose, wet	S-7 12'-14'	0.0	
14			15,15					
15		SAND & SILT	6,10	16"	Brown fine SAND and SILT, trace Clay, well sorted, saturated	S-8 14'-16'	0.0	
16			10,10					
17								
18								
19								
20								
21		SAND & SILT	6,7	24"	Brown fine SAND and SILT, well sorted, saturated	S-9 20'-22'	0.0	
22			8,7					
23								

Well Construction Details on Following Page

Footnotes for Blowcounts

- (1) 140 lb. Hammer
- (2) 300 lb. Hammer
- (3) Slide Hammer

Key to Well Construction

- Sandpack
- Well Screen
- Drill Cuttings
- Bentonite Seal
- Cement

**DRILLING LOG for Well #:**

MW-39



ERM  
399 Boylston Street, 6th Floor  
Boston, MA 02116

Depth	Well Log	Stratigraphy	Blowcounts per 6 inches	Recovery	Split Spoon Description/Soil Classification	Sample # & Depth	PID Conc. (ppm) spoon/HS	Lab Sample # & Analyses
					Well Construction Details: Protective Flushmount Roadbox 0'-1' Concrete surface seal 1'-9' Native backfill 9'-11' Bentonite chip seal 11'-22' #1 silica sand filter pack 12'-22' 0.010" slotted PVC well screen 22' Bottom of boring			

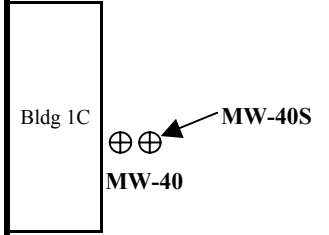
# DRILLING LOG for Well #: MW-40



ERM  
399 Boylston Street, 6th Floor  
Boston, MA 02116

Project:	Raytheon - Wayland	Project Number:	143.45		
Client:	Raytheon	Logged by:	Ryan Bagley		
Drilling Co:	Geosearch, Inc.	Driller:	AJ/Rodney K.		
Date Started:	12-May-98	Date Finished:	12-May-98		
Location:	Wayland, Massachusetts	Drilling Method:	4.25 ID HSA		
Screen Diam:	2"	Length:	10'	Slot Size:	0.01
Casing Diam:	2"	Length:	12'	Type:	PVC
Boring Depth:	22'	Well Depth:	22'	Boring Diam.:	8"
Surface Elev.:	135.21'	MP:	PVC	Depth to GW:	13.65'
		MP Elev.:	134.88'		

## SITE MAP



Notes: Depth to GW measured on 5/18/98

Depth	Well Log	Stratigraphy	Blowcounts per 6 inches	Recovery	Split Spoon Description/Soil Classification	Sample # & Depth	HS Conc. (ppm)	Lab Sample # & Analyses
0								
1		SAND & SILT	17,14	12"	Brown fine SAND and SILT, trace Gravel, dry to damp	S-1	0.0	
2			12,11			0'-2'		
3		SAND & SILT	7,7	14"	Brown fine SAND and SILT, trace Gravel, dry to damp	S-2	0.0	
4			6,4			2'-4'		
5		SAND & SILT	6,6	20"	Brown fine SAND and SILT, trace Clay, wet	S-3	0.0	
6			8,7			4'-6'		
7		SAND & SILT	7,11	16"	Brown fine SAND and SILT, trace Clay, damp to wet	S-4	0.0	
8			10,9			6'-8'		
9		SAND & SILT	6,9	14"	Brown fine SAND and SILT, well sorted, damp	S-5	0.0	
10			10,9			8'-10'		
11		SAND & SILT	5,7	17"	Brown fine SAND and SILT, well sorted, damp	S-6	0.0	
12			8,9			10'-12'		
13		SAND & SILT	15,17	16"	Brown fine SAND and SILT, trace Clay, well sorted, damp to wet	S-7	0.0	
14			23,22			12'-14'		
15		SAND & SILT	7,14	18"	Brown fine SAND and SILT, trace Clay, well sorted, saturated	S-8	0.0	
16			21,27			14'-16'		
17								
18								
19								
20								
21		SAND & SILT	8,12	24"	Brown medium to fine SAND and SILT, trace Clay, saturated	S-9	0.0	
22			14,18			20'-22'		
23								

Well Construction Details on Following Page

### Footnotes for Blowcounts

- (1) 140 lb. Hammer
- (2) 300 lb. Hammer
- (3) Slide Hammer

### Key to Well Construction

	Sandpack		Well Screen		Drill Cuttings
	Bentonite Seal		Cement		

**DRILLING LOG for Well #:**

MW-40



ERM  
399 Boylston Street, 6th Floor  
Boston, MA 02116

Depth	Well Log	Stratigraphy	Blowcounts per 6 inches	Recovery	Split Spoon Description/Soil Classification	Sample # & Depth	PID Conc. (ppm) spoon/HS	Lab Sample # & Analyses
					Well Construction Details: Protective Flushmount Roadbox 0'-1' Concrete surface seal 1'-9' Native backfill 9'-11' Bentonite chip seal 11'-22' # 1 silica sand filter pack 12'-22' 0.010" slotted PVC well screen 22' Bottom of boring			

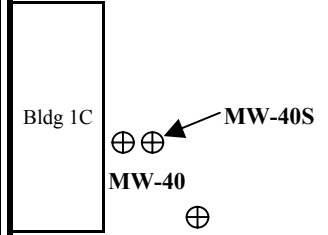
# DRILLING LOG for Well #: MW-40S



ERM  
399 Boylston Street, 6th Floor  
Boston, MA 02116

Project:	Raytheon - Wayland	Project Number:	143.45		
Client:	Raytheon	Logged by:	Ryan Bagley		
Drilling Co:	Geosearch, Inc.	Driller:	AJ/Rodney K.		
Date Started:	14-May-98	Date Finished:	14-May-98		
Location:	Wayland, Massachusetts	Drilling Method:	4.25 ID HSA		
Screen Diam:	2"	Length:	5'	Slot Size:	0.01
Casing Diam:	2"	Length:	25'	Type:	PVC
Boring Depth:	30'	Well Depth:	30'	Boring Diam.:	8"
Surface Elev.:	135.21'	MP:	PVC	Depth to GW:	13.64'
		MP Elev.:	134.87'		

## SITE MAP



Notes: Depth to GW measured on 5/18/98

Depth	Well Log	Stratigraphy	Blowcounts per 6 inches	Recovery	Split Spoon Description/Soil Classification	Sample # & Depth	HS Conc. (ppm)	Lab Sample # & Analyses
0								
1								
2								
3								
4								
5								
6								
7								
8					Well Couplet with MW-40			
9					No split spoons advanced prior to 25' bgs			
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								

### Footnotes for Blowcounts

- (1) 140 lb. Hammer
- (2) 300 lb. Hammer
- (3) Slide Hammer

### Key to Well Construction

	Sandpack		Well Screen		Portland Cement/Bentonite Grou
	Bentonite Seal		Cement		

# DRILLING LOG for Well #:

MW-40S



ERM  
399 Boylston Street, 6th Floor  
Boston, MA 02116

Depth	Well Log	Stratigraphy	Blowcounts per 6 inches	Recovery	Split Spoon Description/Soil Classification	Sample # & Depth	PID Conc. (ppm) spoon/HS	Lab Sample # & Analyses
25		SAND	21,24	20"	Brown medium SAND, some Silt, trace Clay and Gravel, saturated	S-1	0.0	
26			26,28			25'-27'		
27								
28								
29								
30								
31		SAND & SILT	11,11	14"	Grey fine SAND and SILT, trace Clay, saturated	S-2 30'-32'	0.0	
32			15,20					
33		SAND & SILT	12,10	16"	Grey fine SAND and SILT, trace Clay, saturated	S-3 32'-34'	0.0	
34			11,11					
					Well Construction Details: Protective Flushmount Roadbox 0'-1' Concrete surface seal 1'-22' Portland cement & bentonite grout 22'-24' Bentonite chip seal 24'-30' # 1 silica sand filter pack 25'-30' 0.010" slotted PVC well screen 30' Bottom of boring			

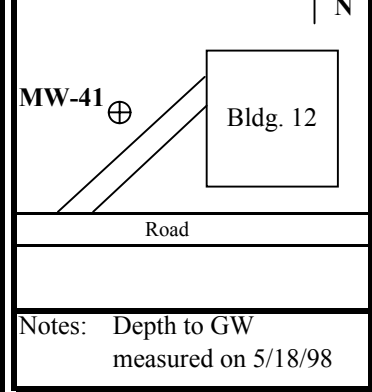
# DRILLING LOG for Well #: MW-41



ERM  
399 Boylston Street, 6th Floor  
Boston, MA 02116

Project:	Raytheon - Wayland	Project Number:	143.45		
Client:	Raytheon	Logged by:	Ryan Bagley		
Drilling Co:	Geosearch, Inc.	Driller:	AJ/Rodney K.		
Date Started:	11-May-98	Date Finished:	11-May-98		
Location:	Wayland, Massachusetts	Drilling Method:	4.25 ID HSA		
Screen Diam:	2"	Length:	10'	Slot Size:	0.01
Casing Diam:	2"	Length:	7'	Type:	PVC
Boring Depth:	17'	Well Depth:	17'	Boring Diam.:	8"
Surface Elev.:	125.21'	MP:	PVC	Depth to GW:	10.54'
		MP Elev.:	127.43'		

## SITE MAP



Depth	Well Log	Stratigraphy	Blowcounts per 6 inches	Recovery	Split Spoon Description/Soil Classification	Sample # & Depth	HS Conc. (ppm)	Lab Sample # & Analyses
0								
1		SAND	6,7	6"	Brown medium to coarse SAND, some cobbles, trace rock fragments, poorly sorted, damp	S-1 0'-2'	0.0	
2			14,27					
3		SAND	17,19	11"	Brown medium to coarse SAND, some cobbles and rock fragments, poorly sorted, damp	S-2 2'-4'	0.0	
4			27,54					
5		SAND	17,14	16"	Brown medium SAND, some cobbles, trace rock fragments, poorly sorted, damp	S-3 4'-6'	0.0	
6			21,12					
7		SAND	36,31	10"	Brown-grey medium to coarse SAND, some coarse gravel, cobbles and rock fragments, poorly sorted, damp	S-4 6'-8'	0.0	
8			17,14					
9		SAND	12,12	7"	Brown medium SAND, some coarse gravel and rock fragments, poorly sorted, damp to wet	S-5 8'-10'	0.0	
10			7,7					
11		SAND	10,7	8"	Brown medium SAND, some cobbles and rock fragments, saturated	S-6 10'-12'	0.0	
12			7,9					
13								
14								
15		SAND	14,9	7"	Brown, medium to fine SAND, trace gravel, saturated	S-7 14'-16'	0.0	
16			7,7					
17								
18					Well Construction Details:			
19					Steel Protective Standpipe			
20					0'-4' Native backfill			
21					4'-6' Bentonite chip seal			
22					6'-17' # 1 silica sand filter pack			
23					7'-17' #0.01 slotted PVC well screen			
					17' Bottom of boring			

### Footnotes for Blowcounts

- (1) 140 lb. Hammer
- (2) 300 lb. Hammer
- (3) Slide Hammer

### Key to Well Construction

	Sandpack		Well Screen		Drill Cuttings
	Bentonite Seal		Cement		