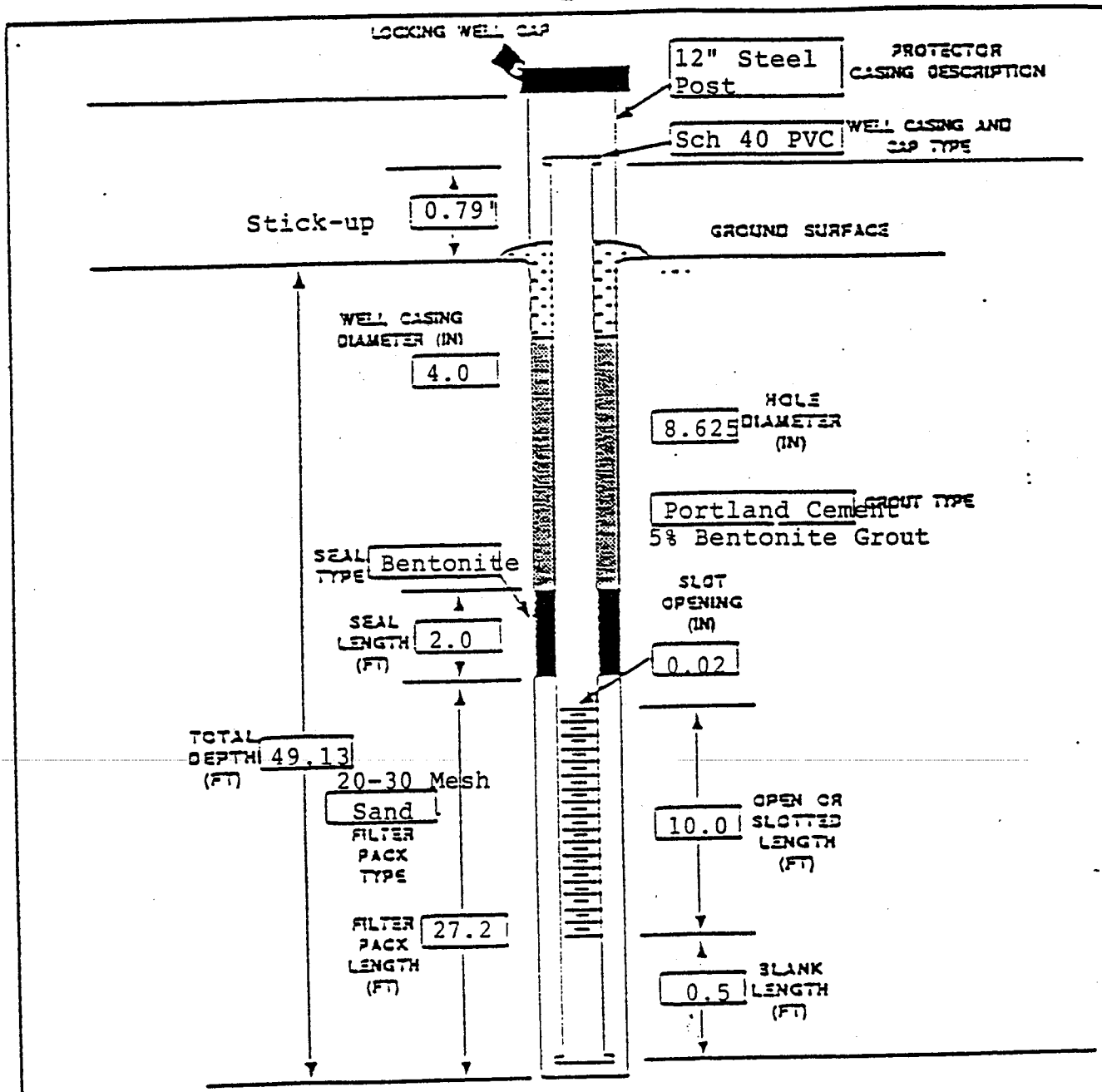
ATTACHMENT E-16
Recovery Well Construction Logs

ENVIRONMENTAL
MANAGEMENT INC.

WELL CONSTRUCTION DIAGRAM

PROJECT: Torrington Co. - Sylvania, GA
LOCATION: Off-Site at W-20
WELL NUMBER: R-1(Recovery well) ELEVATION: ☒ 130.0 Feet
DATE INSTALLED: October 10-11, 1989 ☐GROUND ☐CASING ☐PROTECTOR CASING
☐ABOVE GROUND LEVEL ☐ABOVE MEAN SEA LEVEL



COMMENTS: The well was installed as a recovery well for the contaminated intermediate depth zone at the W-20 area. The well was developed using air lifting and high-velocity jetting until clear silt-free water was obtained.

PAGE _____ OF _____

Atlanta Environmental Management, Inc.

Monitoring Well Log

Date: October 10-11.1989

Owner: Torrington/Sylvania
Well No: R-1 (Recovery Well)
Location: Offsite at W-20 area

Driller: Paul Clawson
Geologist: Mark Potts
Drilling Method: Mud/Rotary

Screened From: 48.63 ft. to 38.63 ft.
Gravel Pack: 20-30 mesh to 21.93 ft.
Bentonite Seal: 21.93 ft. to 19.93 ft.
Concrete Seal from _____ ft. to surface
Water Level: 7.715 ft. below well top
Well top elevation: 131.31 ft.

Depth (feet) From	To	Lithology	Remarks
		See well log for well 20D-The Aquifer top was at 22.0 ft with the lower confining clay occurring at 48.0 ft.	

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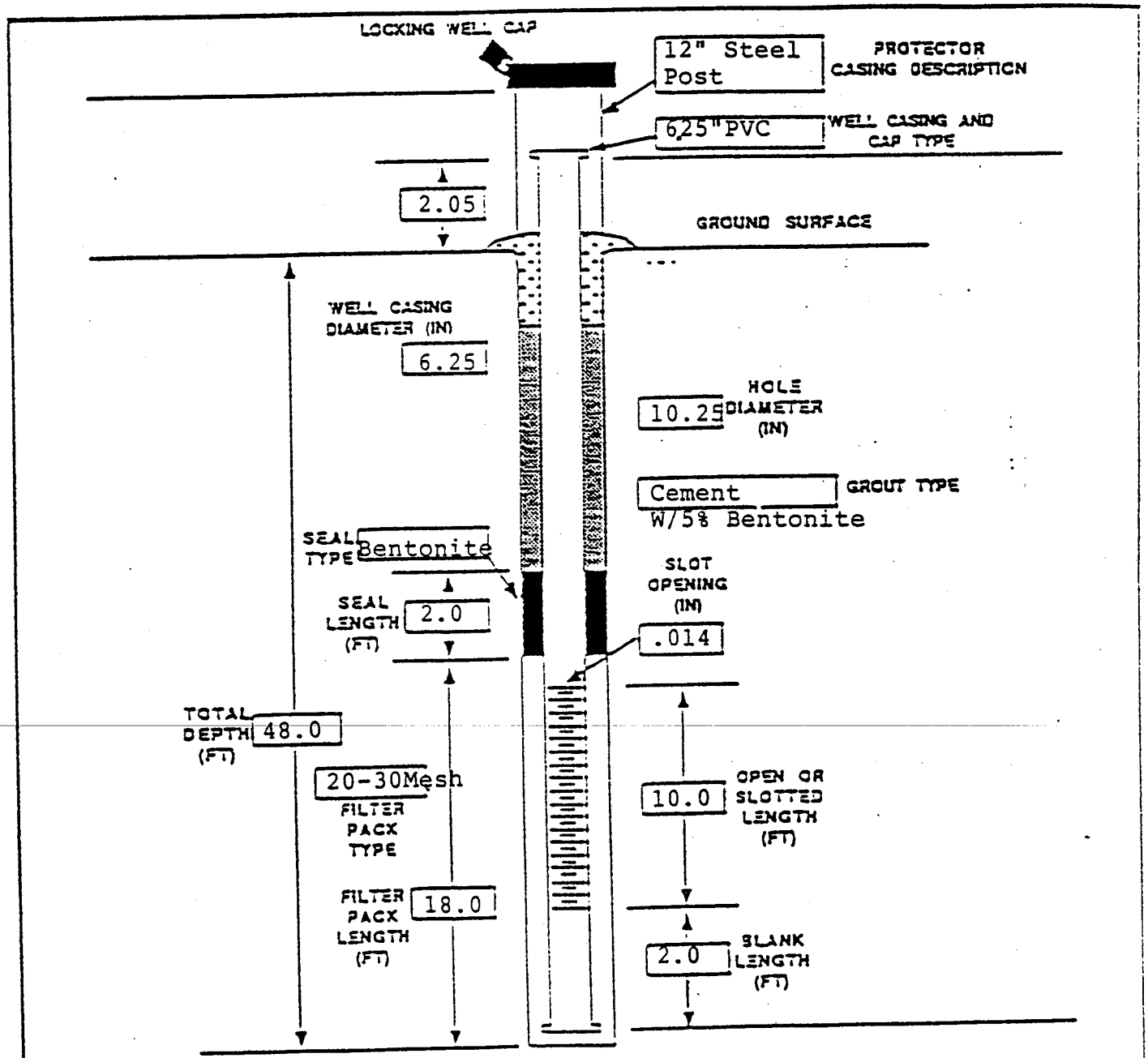
WELL CONSTRUCTION DIAGRAM

PROJECT: Torrington/Sylvania
LOCATION: Adjacent to R- 3B
WELL NUMBER: R-3A
DATE INSTALLED: December 18, 1989

ELEVATION: 146.80
☐ GROUND ☒ CASING ☐ PROTECTOR CASING
☐ ABOVE GROUND LEVEL ☒ ABOVE MEAN SEA LEVEL



COMMENTS: Well was developed using 175 cu.ft./min.
Air compressor for 4 hours

Atlanta Environmental Management, Inc.

Monitoring Well Log

Date: December 18, 1989

Owner: Torrington/Sylvania
Well No: R-3A
Location: Adjacent to R-3B
5 feet to the Northwest
Driller: Paul Clawson
Geologist: Ron Yarborough
Drilling Method: Mud/Rotary

Screened From: 46.0 ft. to 36.0 ft.
Gravel Pack: 20-30 mesh to 30.0 ft.
Bentonite Seal: 30.0 ft. to 28.0 ft.
Concrete Seal from 28.0 ft. to surface
Water Level: 15.385 ft. below well top
Well top elevation: 146.80 ft.

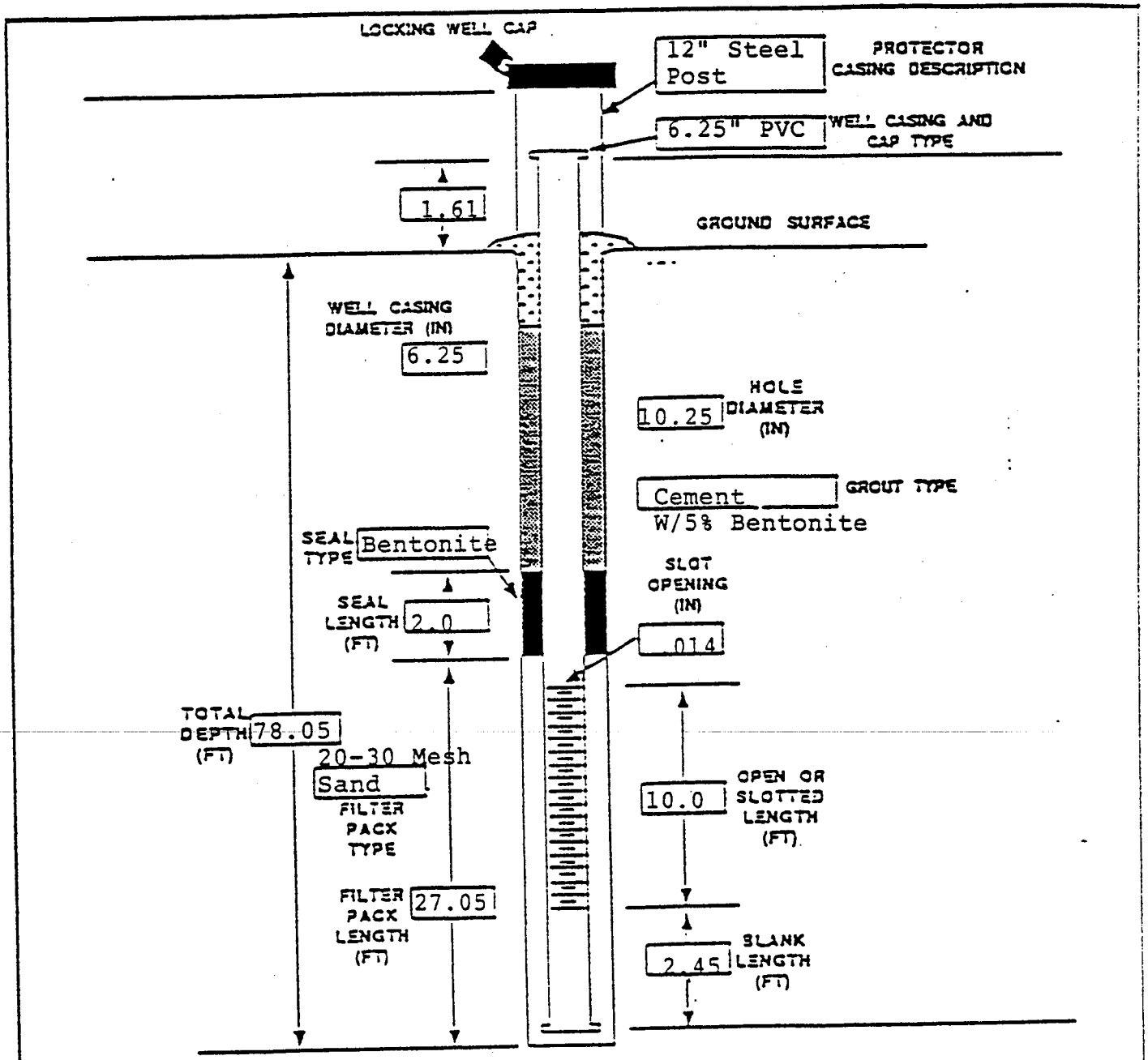
Depth (feet) From	To	Lithology	Remarks
		See well log for well R-3B	

ENVIRONMENTAL
MANAGEMENT INC.

WELL CONSTRUCTION DIAGRAM

PROJECT: Torrington/Sylvania
LOCATION: Property Boundary
WELL NUMBER: R-3B
DATE INSTALLED: December 12, 1989

ELEVATION: 146.36
☐ GROUND ☒ CASING ☐ PROTECTOR CASING
☐ ABOVE GROUND LEVEL ☒ ABOVE MEAN SEA LEVEL



COMMENTS: Well was developed using 175 cu.ft./min.
Air compressor for 8 hours.

Atlanta Environmental Management, Inc.

Monitoring Well Log

Date: December 12, 1989

Owner: Torrington/Sylvania
Well No: R-3B
Location: Property Boundary

Driller: Paul Clawson
Geologist: Ron Yarborough
Drilling Method: Mud/Rotary

Screened From: 75.85 ft. to 65.85 ft.
Gravel Pack: 20-30 mesh to 51.0 ft.
Bentonite Seal: 51.0 ft. to 49.0 ft.
Concrete Seal from 49.0 ft. to surface
Water Level: 18.825 ft. below well top
Well top elevation: 146.36 ft.

Depth (feet) From	To	Lithology	Remarks
0.0	2.0	SC-Light gray, very fine to fine grained sand with 5-10% clay and abundant organic material	3-7/8" Wellbore drilled with mud/rotary
2.0	10.0	CL-Orange sandy clay with 10-15% very fine-fine grained sand	Sample #1 9.0'-10.5' Sample #2
10.0	19.5	CH-Light gray, maroon, stiff clay with less than 5% sand	14.0'-15.5' Sample #3
19.5	25.5	CH-CL-Orange maroon, light gray mottled stiff clay interbedded with orange red sandy clay.	19.0'-20.5' Sample #4 24.0-25.5' Sample #5
25.5	30.0	CL-Light gray sandy clay with less 5% sand	29.0'-30.5'

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Monitoring Well Log

Date: December 5, 1989

Owner: Torrington/Sylvania
Well No: R-3B (continued)
Location: _____
_____
Driller: _____
Geologist: _____
Drilling Method: _____

Screened From: _____ ft. to _____ ft.
Gravel Pack: _____ mesh to _____ ft.
Bentonite Seal: _____ ft. to _____ ft.
Concrete Seal from _____ ft. to surface
Water Level: _____ ft. below well top
Well top elevation: _____ ft.

Depth (feet) From	To	Lithology	Remarks
30.0	44.5	SM- Light gray, light green very fine to medium grained unconsolidated sand with approximately 10% clay Matrix	Sample #6 34.0'-35.5' Sample #7 39.0'-40.5'
44.5	54.0	CL/SC-Light gray sandy clay with less than 10% sand interbedded with light gray orange clayey sand with 10% clay Matrix	Sample #8 44.0'-45.5' Sample #9 49.0'-50.5'
54.0	76.0	SC-Light gray, very fine grained sand grading to silt clayey sand with 10% clay Matrix	Sample #10 54.0'-55.5' Sample #11 59.0'-60.5'
76.0	-76.5'	CL-Light gray, light green Red Mottled sandy clay with less than 5% sand	Sample #12 64.0'-65.5' Sample #13 69.0-70.5' Sample #14 75.0'-76.5'

Atlanta Environmental Management, Inc.

Monitoring Well Log

Date: _____

Owner: Torrington/Sylvania
Well No: R-3B (Continued)
Location: _____
_____
Driller: _____
Geologist: _____
Drilling Method: _____

Screened From: _____ ft. to _____ ft.
Gravel Pack: _____ mesh to _____ ft.
Bentonite Seal: _____ ft. to _____ ft.
Concrete Seal from _____ ft. to surface
Water Level: _____ ft. below well top
Well top elevation: _____ ft.

Depth (feet) From	To	Lithology	Remarks
		Well was drilled using mud rotary	
		Pilot hole was drilled with 3-7/8" bit	
		then opened to 10-1/4".	
		6-1/4" ID casing was then installed to	
		a total depth of 78'.	

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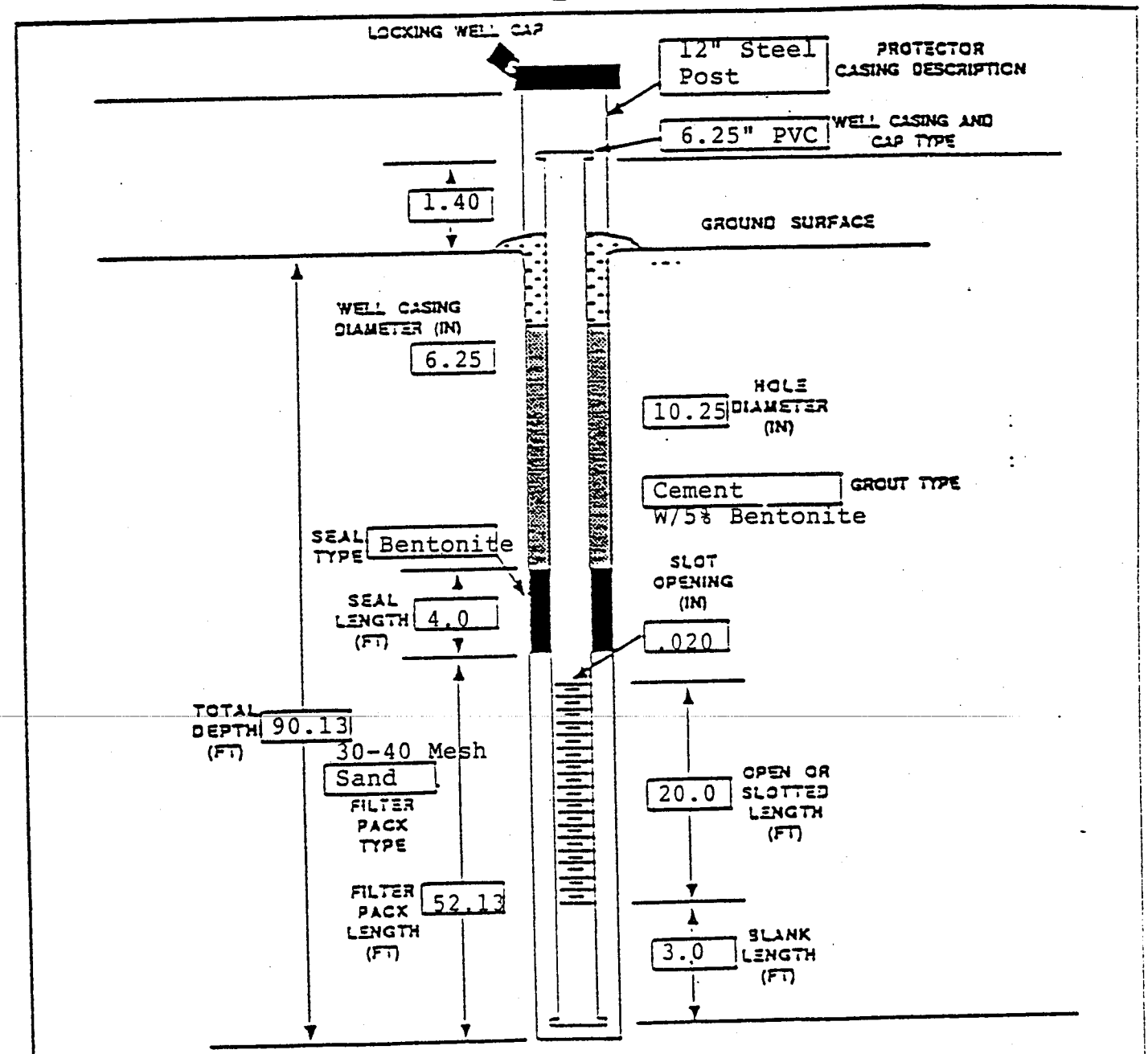
WELL CONSTRUCTION DIAGRAM

PROJECT: Torrington/Sylvania
LOCATION: Property Boundary
WELL NUMBER: R-4
DATE INSTALLED: December 14,1989

ELEVATION: 145.70
☐ GROUND ☒ CASING ☐ PROTECTOR CASING
☐ ABOVE GROUND LEVEL ☒ ABOVE MEAN SEA LEVEL



COMMENTS:

Well was developed using 175 cu.ft./min.

Air compressor for 4 hours.

Atlanta Environmental Management, Inc.

Monitoring Well Log

Date: December 14, 1989

Owner: Torrington/Sylvania
Well No: Boring R-4 Area
Location: 55' South East of Well R-3B

Driller: Paul Clawson
Geologist: Ron Yarborough
Drilling Method: Mud/Rotary

Screened From: 87.13 ft. to 67.13 ft.
Gravel Pack: 30-40 mesh to 38.0 ft.
Bentonite Seal: 38.0 ft. to 34.0 ft.
Concrete Seal from 34.0 ft. to surface
Water Level: 16.550 ft. below well top
Well top elevation: 145.70 ft.

Depth (feet) From	To	Lithology	Remarks
0.0	2.0	SC-Light gray very fine to fine grained clayey sand with abundant organic matter	Boring was instal ed using mud/rot
2.0	12.0	CL-Light gray, orange sandy clay with 5-10% sand	Samples were log from cuttings to 19'
12.0	29.5	CH-Light gray, maroon mottled stiff clay with less than 5% sand	Sample #1 19'-20.0' Sample #2 24.0'-25.5'
29.5	42.0	SC-Orange, tan clayey sand with 10-15% clay matrix	Sample #3 29.0'-30.5' Sample #4 34.0-35.5'
42.0	55.5	SM-Tan, very fine grained to medium moderately graded sand less than 5% clay	Sample #5 49.0'-50.5' Sample #6 44.0'-45.5' Sample #7 49.0'-50.5' Sample #8 54'-55.5'

Atlanta Environmental Management, Inc.

Monitoring Well Log

Date: December 14, 1989

Owner: Torrington/Sylvania
Well No: Boring R-4 Area (continued)
Location: _____
_____
Driller: _____
Geologist: _____
Drilling Method: _____

Screened From: _____ ft. to _____ ft.
Gravel Pack: _____ mesh to _____ ft.
Bentonite Seal: _____ ft. to _____ ft.
Concrete Seal from _____ ft. to surface
Water Level: _____ ft. below well top
Well top elevation: _____ ft.

Depth (feet) From	To	Lithology	Remarks
55.5	85.5	SC-Tan, light gray, fine grained	Sample #9 59.0'-60.5'
		grading to silt clayey sand with	Sample #10 64.0'-65.5'
		10-15% clay matrix	Sample #11 69.0'-70.5'
			Sample #12 74.0'-75.5'
85.5	90.5	CL-Light gray, orange, sandy clay	Sample #13 84.0'-85.5'
		with 10-15% very fine to fine grained	Sample #14 89.0'-90.5'
		sand	
		Boring was drilled to characterize	
		formation prior to installation of	
		recovery wells in area	

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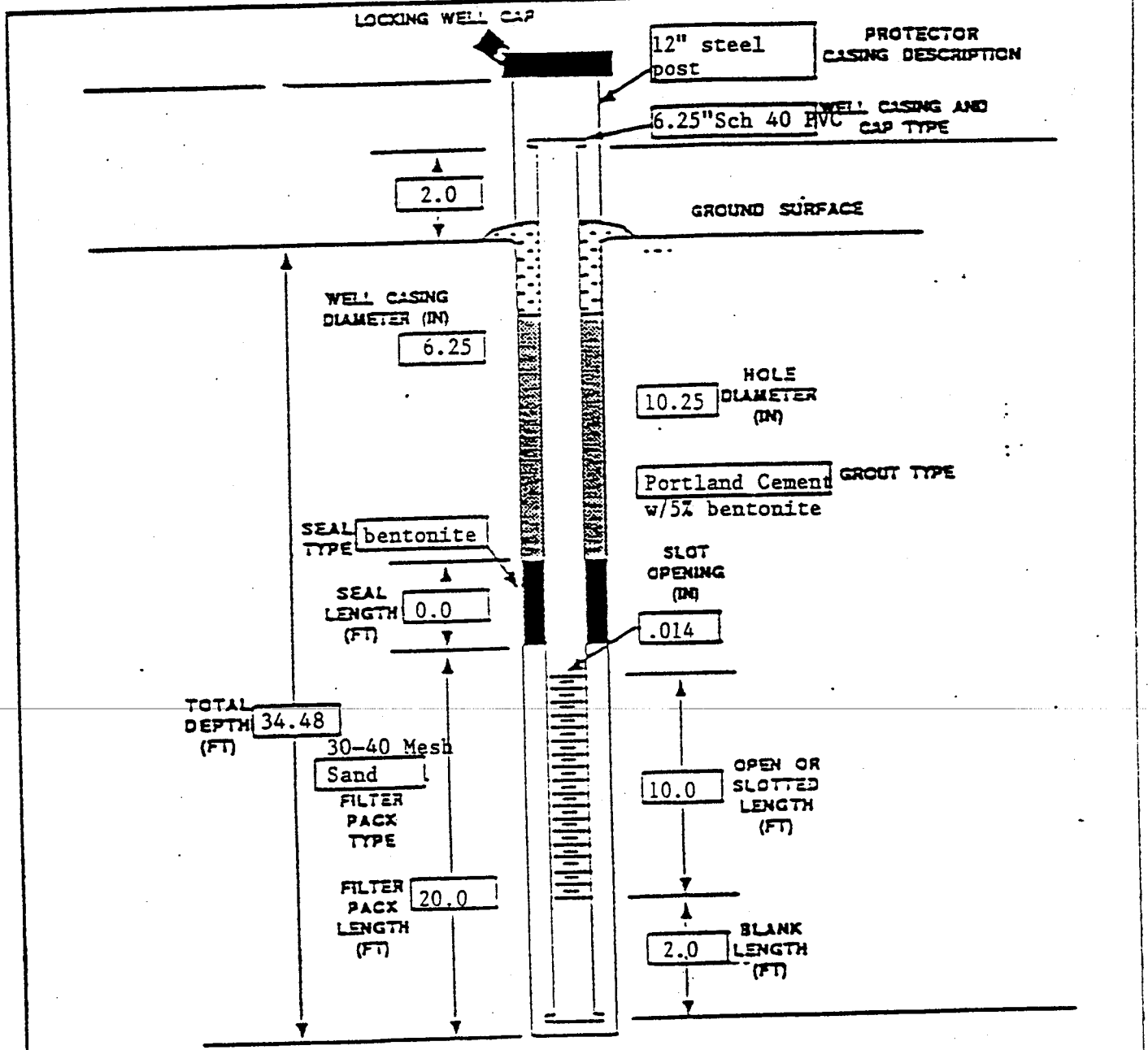
WELL CONSTRUCTION DIAGRAM

PROJECT: Torrington Company
LOCATION: Sylvania, Georgia
WELL NUMBER: R-6A
DATE INSTALLED: 7-9-90

ELEVATION:
☐ GROUND ☒ CASING ☐ PROTECTOR CASING
☐ ABOVE GROUND LEVEL ☐ ABOVE MEAN SEA LEVEL



COMMENTS: Well was drilled using mud/rotary. After installation well was developed using a 175 cu. ft./min. air compressor.

PAGE _____ OF _____

Atlanta Environmental Management, Inc.

Monitoring Well Log

Date: 7/9/90

Owner: The Torrington Company
Well No: R-6A
Location: Sylvania, Georgia
Property boundary
Driller: Paul Clawson
Geologist: Ron Yarborough
Drilling Method: Mud/Rotary

Screened From: 32.48 ft. to 22.48 ft.
Gravel Pack: 30-40 mesh to 14.48 ft.
Bentonite Seal: 14.48 ft. to 12.48 ft.
Concrete Seal from 12.48 ft. to surface
Water Level: 20.58 ft. below well top
Well top elevation: _____ ft.

Depth (feet) From	To	Lithology	Remarks
		See well log for well R-6B	

ATLANTA
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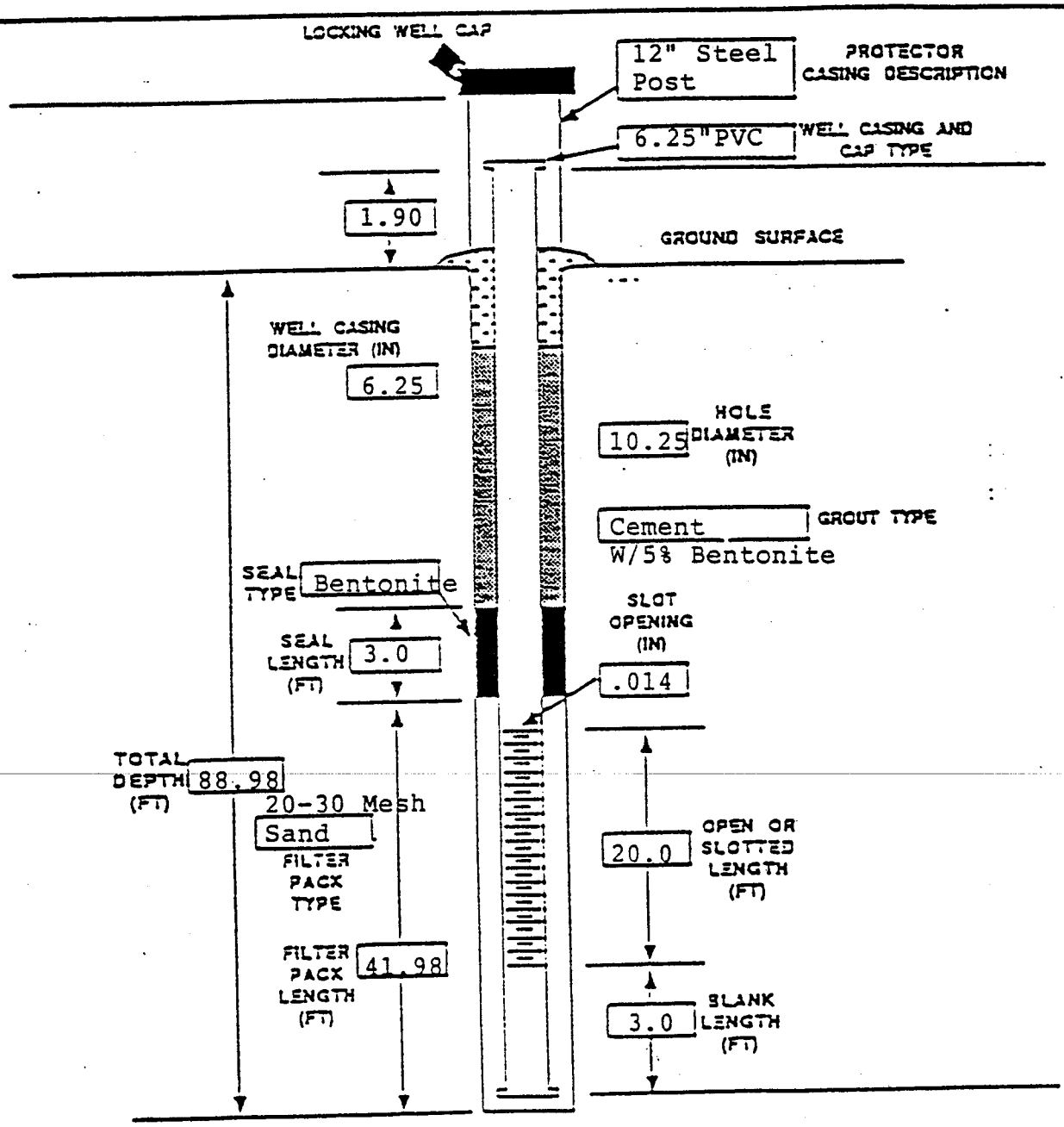
WELL CONSTRUCTION DIAGRAM

PROJECT: Torrington/Sylvania
LOCATION: Property Boundary
WELL NUMBER: R-6B
DATE INSTALLED:
ELEVATION: 147.18
☐ GROUND ☒ CASING ☐ PROTECTOR CASING
☐ ABOVE GROUND LEVEL ☒ ABOVE MEAN SEA LEVEL



COMMENTS: Well was developed using 175 cu.ft./min.
Air compressor for 8 hours.

PAGE _____ OF _____

Atlanta Environmental Management, Inc.

Monitoring Well Log

Date: December 11, 1989

Owner: Torrington/Sylvania
Well No: R-6B
Location: Property Boundary
Well 16 Area
Driller: Paul Clawson
Geologist: Ron Yarborough
Drilling Method: Mud/Rotary

Screened From: 86.0 ft. to 66.0 ft.
Gravel Pack: 20-30 mesh to 47.0 ft.
Bentonite Seal: 47.0 ft. to 44.0 ft.
Concrete Seal from 44.0 ft. to surface
Water Level: 22.175 ft. below well top
Well top elevation: 147.18 ft.

Depth (feet) From	To	Lithology	Remarks
0.0	2.0	SC-Light gray clayey sand with abundant organic material	
2.0	14.0	CH-Light bray, maroon, stiff clay with approximately 5% sand	
14.0	20.0	CL-Light gray, orange sandy clay with less than 10% sand	
20.0	39.0	SC-Light gray, orange, tan, very fine grained to medium grained sand with 10-15% clay Matrix	
39.0	47.0	CL-Light gray, tan, orange, sandy clay with 10-15% fine grained to medium grained sand	
47.0	65.0	SC-Tan, light gray, very fine to fine grained sand with 10-15% clay Matrix	

Atlanta Environmental Management, Inc.

Monitoring Well Log

Date: December 11, 1989

Owner: Torrington/Sylvania
Well No: WellR-6B (continued)
Location: _____
_____
Driller: _____
Geologist: _____
Drilling Method: _____

Screened From: _____ ft. to _____ ft.
Gravel Pack: _____ mesh to _____ ft.
Bentonite Seal: _____ ft. to _____ ft.
Concrete Seal from _____ ft. to surface
Water Level: _____ ft. below well top
Well top elevation: _____ ft.

Depth (feet) From	To	Lithology	Remarks
	65.3	Thin clay bed 65.0-65.3	
		CL-Light gray, sandy clay with	
		approximately 5% sand	
	70.5	SC-Light gray, orange laminated clayey	
		sand with 10-15% clay Matrix	
	75.5	SC-Laminated light gray, orange clayey	
		sand with 10-15% clay Matrix	
84.0	85.5	CL-Light gray, tan, sandy clay with	
		greater than 15% sand and abundant	
		milky well rounded-sub rounded gravel	
		Well was drilled using 3-7/8" bit and	
		then opened to 10-1/4". 6-1/4" casing	
		was set to 86 feet with 20 feet of	
		.014. Slot screen, well was cemeted	
		using Portland cement and 5% Bentonite	

mixture.

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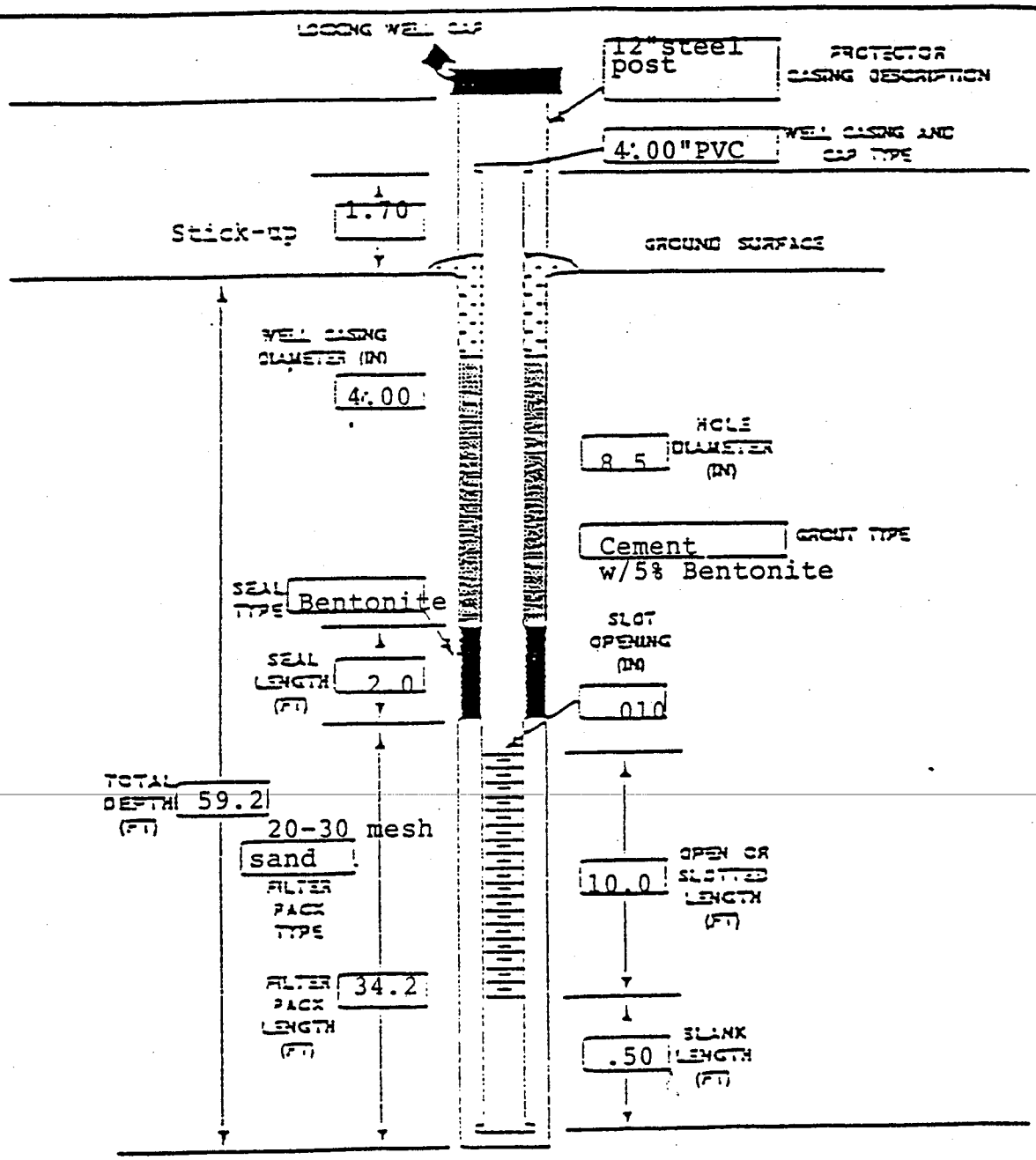
WELL CONSTRUCTION DIAGRAM

PROJECT: Torrington/Sylvania
LOCATION: Landfill Area
WELL NUMBER: R-11
DATE INSTALLED: October 18, 1989

ELEVATION: 177.17
☐ GROUND ☒ CASING ☐ PROTECTOR CASING
☐ ABOVE GROUND LEVEL ☒ ABOVE MEAN SEA LEVEL



COMMENTS: Well was installed using mud/roatry drill rig. Well was developed using 175 cu ft/min air compressor and high pressure jetting.

PAGE ____ OF ____

Atlanta Environmental Management, Inc.

Monitoring Well Log

Date: October 18, 1989

Owner: Torrington/Sylvania
Well No: R-11
Location: Landfill Area

Driller: Paul Clawson
Geologist: Ron Yarborough/Mark Potts
Drilling Method: Mud Rotary

Screened From: 58.7 ft. to 48.7 ft.
Gravel Pack: 20-30 mesh to 25.0 ft.
Bentonite Seal: 25.0 ft. to 23.0 ft.
Concrete Seal from 23.0 ft. to surface
Water Level: 29.285 ft. below well top
Well top elevation: 177.17 ft.

Depth (feet) From	To	Lithology	Remarks
0.0	5.0	SC-Yellow, brown, medium grained to coarse grained clayey sand	Sample #1 20.0' from cuttings
	8.0	SC-White clayey sand with approximately 30% sand	
12.5	13.0	CH-Gray, white stiff clay	
	20.0	Light gray, purple mottled stiff clay with less than 5% sand	
	21.5	CH-Light gray, light green stiff clay with less than 5% sand	Sample #2 20.0'-21.5'
	24.0	CH-Light green, light gray stiff clay with less than 5% sand	Sample #3 23.0-24.5'
24.0	24.5	CL-Orange silty sandy clay with 10-15% very fine grained sand	
26.0	27.0	SC-Light green, light gray, orange sandy clay	Sample #4 26.0'-27.5'

Atlanta Environmental Management, Inc.

Monitoring Well Log

Date: October 18, 1989

Owner: Torrington/Sylvania
Well No: K-11 (continued)
Location: _____
_____
Driller: _____
Geologist: _____
Drilling Method: _____

Screened From: _____ ft. to _____ ft.
Gravel Pack: _____ mesh to _____ ft.
Bentonite Seal: _____ ft. to _____ ft.
Concrete Seal from _____ ft. to surface
Water Level: _____ ft. below well top
Well top elevation: _____ ft.

Depth (feet) From	To	Lithology	Remarks
	27.5	SC-Orange very fine grained silty clayey sand	
	30.5	SP-Reddish orange, pink laminated, fine grained to very fine grained sand with less than 5% orange pink silt	Sample #5 29.0'-30.5'
	33.5	SP-Pink yellow well sorted fine grained sand with less than 10% clay and less than 10% medium grained sand	Sample #6 32.0'-33.5'
	36.5	SP-Greenish gray fine grained to very fine grained well sorted sand with less than 5% silt increasing to 10% at 36.0'	Sample #7 35.0'-36.5'
	39,5	SP-Greenish gray, fine grained to very fine grained well sorted sand with 10% or less clay, presence of major minerals	Sample #8 38.0'-39.5'

Atlanta Environmental Management, Inc.

Monitoring Well Log

Date: October 18, 1989

Owner: Torrington/Sylvania
Well No: R-11 (continued)
Location: _____
_____
Driller: _____
Geologist: _____
Drilling Method: _____

Screened From: _____ ft. to _____ ft.
Gravel Pack: _____ mesh to _____ ft.
Bentonite Seal: _____ ft. to _____ ft.
Concrete Seal from _____ ft. to surface
Water Level: _____ ft. below well top
Well top elevation: _____ ft.

Depth (feet) From	To	Lithology	Remarks
	42.5	SP-Greenish gray uniform fine grained	Sample #9
		to very fine grained well sorted sand	41.0'-42.5'
		with less than 10% medium grained sand,	
		less than 5% clay	
	45.5	SP-Light gray very fine to fine grained	Sample #10
		sand with less than 5% clay	44.0'-45.5'
	48.5	SP-Light gray, very fine to fine	Sample #11
		grained sand with less than 5% clay	47.5'-48.5'
		and less than 10% medium grained sand	
	51.5	SP-Light gray, white, very fine grained	Sample #12
		to fine grained sand well sorted with	50.0'-51.5'
		less than 5% clay	
	54.0	SC-Grayish white very fine grained,	Sample #13
		moderately well sorted clayey sand	53.0'-54.5'
	54.5	SC-As above lithified well cemented	

Atlanta Environmental Management, Inc.

Monitoring Well Log

Date: October 18, 1989

Owner: Torrington/Sylvania
Well No: R-11 (continued)
Location: _____
_____
Driller: _____
Geologist: _____
Drilling Method: _____

Screened From: _____ ft. to _____ ft.
Gravel Pack: _____ mesh to _____ ft.
Bentonite Seal: _____ ft. to _____ ft.
Concrete Seal from _____ ft. to surface
Water Level: _____ ft. below well top
Well top elevation: _____ ft.

Depth (feet) From	To	Lithology	Remarks
		sand with approximately 15% clay	
55.0	56.0	CH-Thin bed grayish white stiff clay	Sample #14
			56.0'-57.5'
56.0	57.5	SC-Grayish white, very fine grained	
		moderately to poorly sorted clayey sand	
		with 15.0-20.0% clay likely gradational	
	59.5	SC-CH-Greenish gray fine grained to	Sample #15
		very fine grained moderately well	59.0'-60.5'
		sorted clayey sand interbedded with	
		stiff pot clay	
		SC-Greenish gray fine grained sand,	
		moderately well sorted clayey sand with	
		5-10% clay and approximately 10%	
		medium grained sand	

ATLANTA
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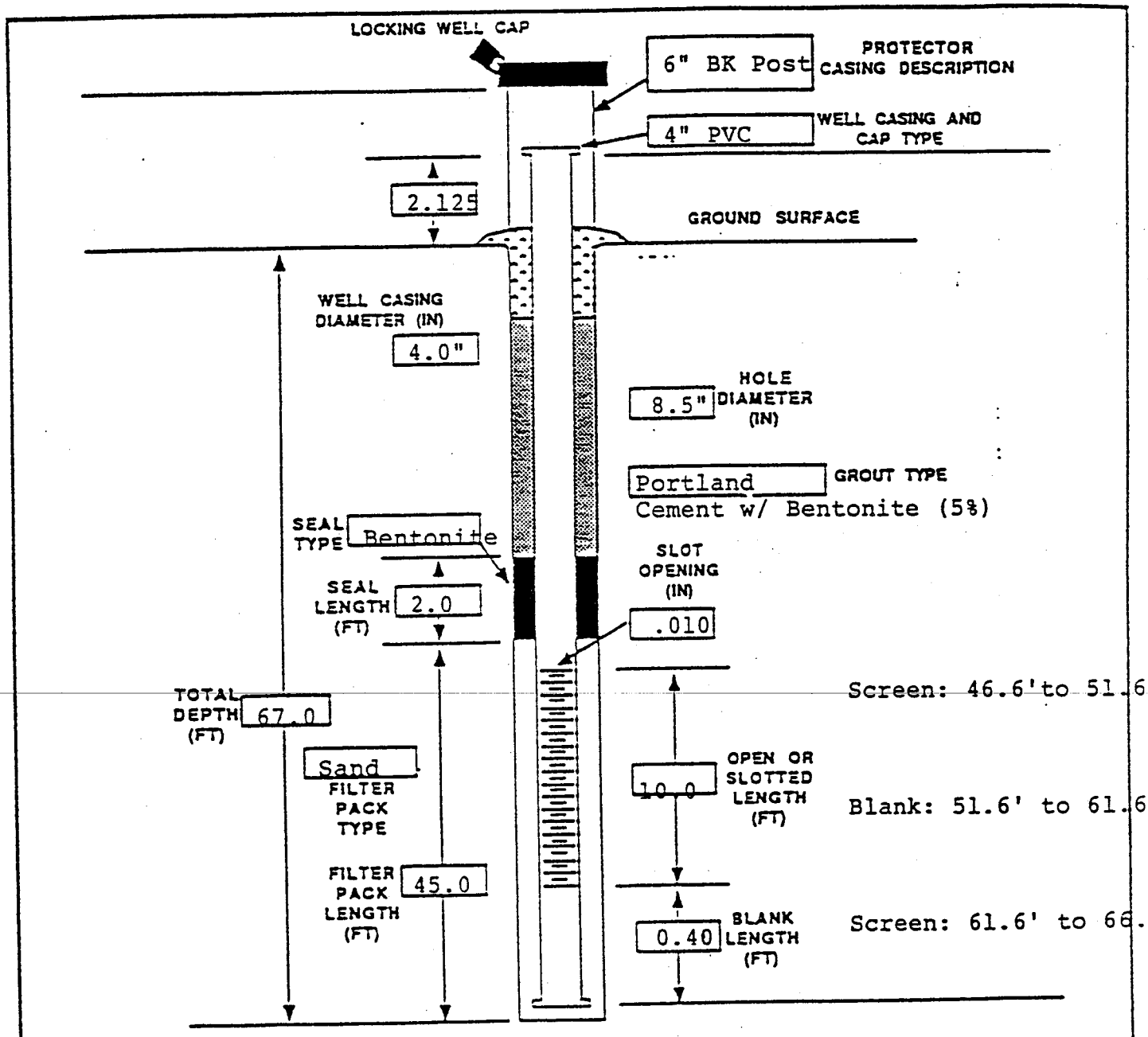
MANAGEMENT INC.

WELL CONSTRUCTION DIAGRAM

PROJECT: Torrington/Sylvania
LOCATION: Landfill
WELL NUMBER: R-12
DATE INSTALLED: 3/30/89
ELEVATION: 178.31
☐ GROUND ☒ CASING ☐ PROTECTOR CASING
☐ ABOVE GROUND LEVEL ☒ ABOVE MEAN SEA LEVEL



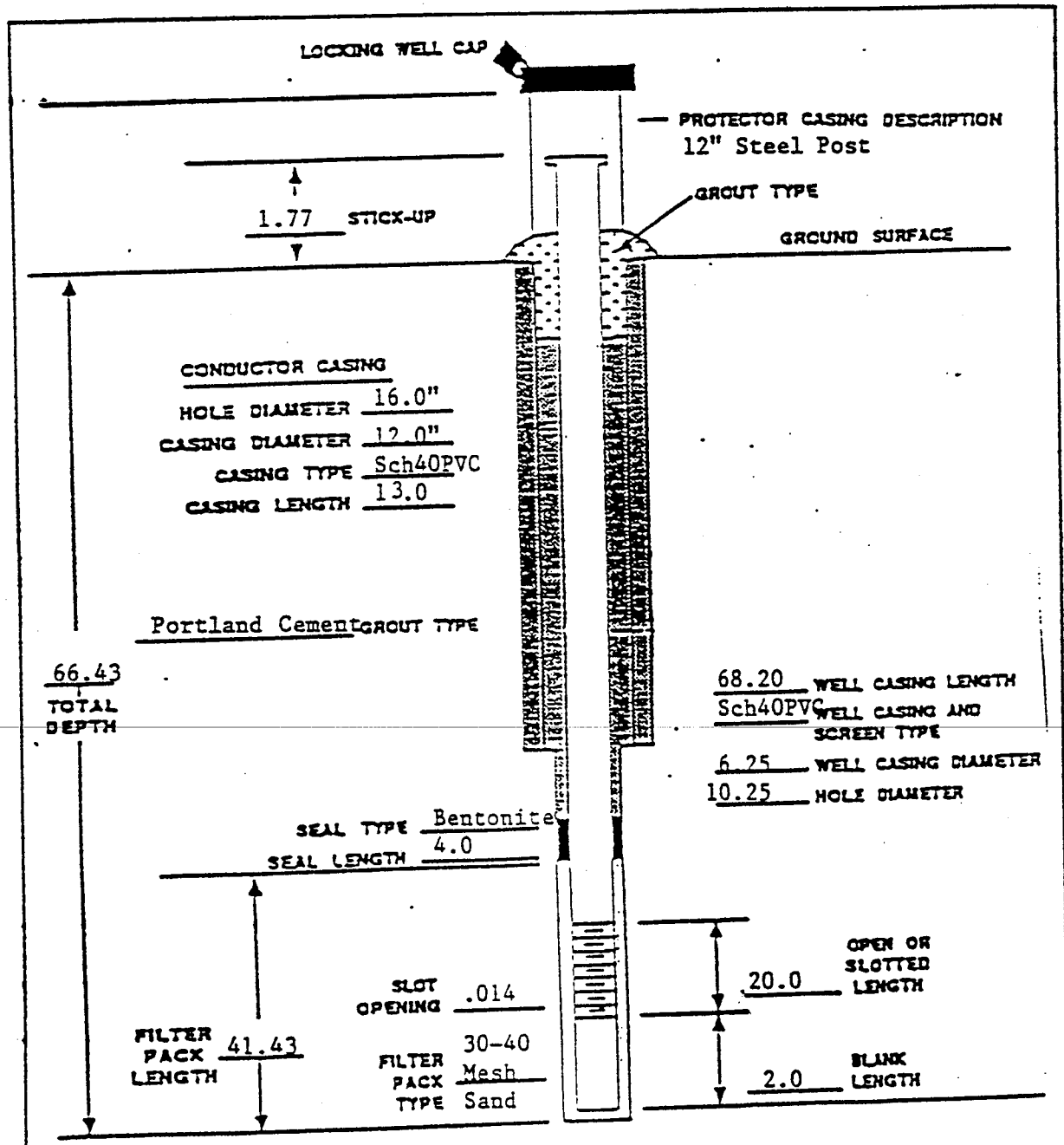
COMMENTS: Well was drilled using mud rotary and cemented using 1" Tremie pipe. Screen was split due to the presence of a clay bed from approximately 58' to 62'. For lithology see well L-1D.

PAGE _____ OF _____

ATLANTA ENVIRONMENTAL MANAGEMENT INC.

WELL CONSTRUCTION DIAGRAM

Project: Torrington/Sylvania
Location: UST-Area
Well Number: R-13
Date Installed: 7/13/90
Elevation:
☐ Ground ☒ Casing ☐ Protector Casing
☐ Above Ground Level ☐ Above Mean Sea Level



COMMENTS: 3 5/8" pilot hole was drilled using mud rotary. Hole was then opened to 10.25" after setting 6.25" casing well was developed using a 175 cu/ft min air compressor.

Page _____ of _____

Atlanta Environmental Management, Inc.

Monitoring Well Log

Date: 7/13/90

Owner: The Torrington Company
Well No: R-13
Location: Sylvania, Georgia
UST-Area
Driller: Paul Clawson
Geologist: Ron Yarborough
Drilling Method: Mud/Rotary

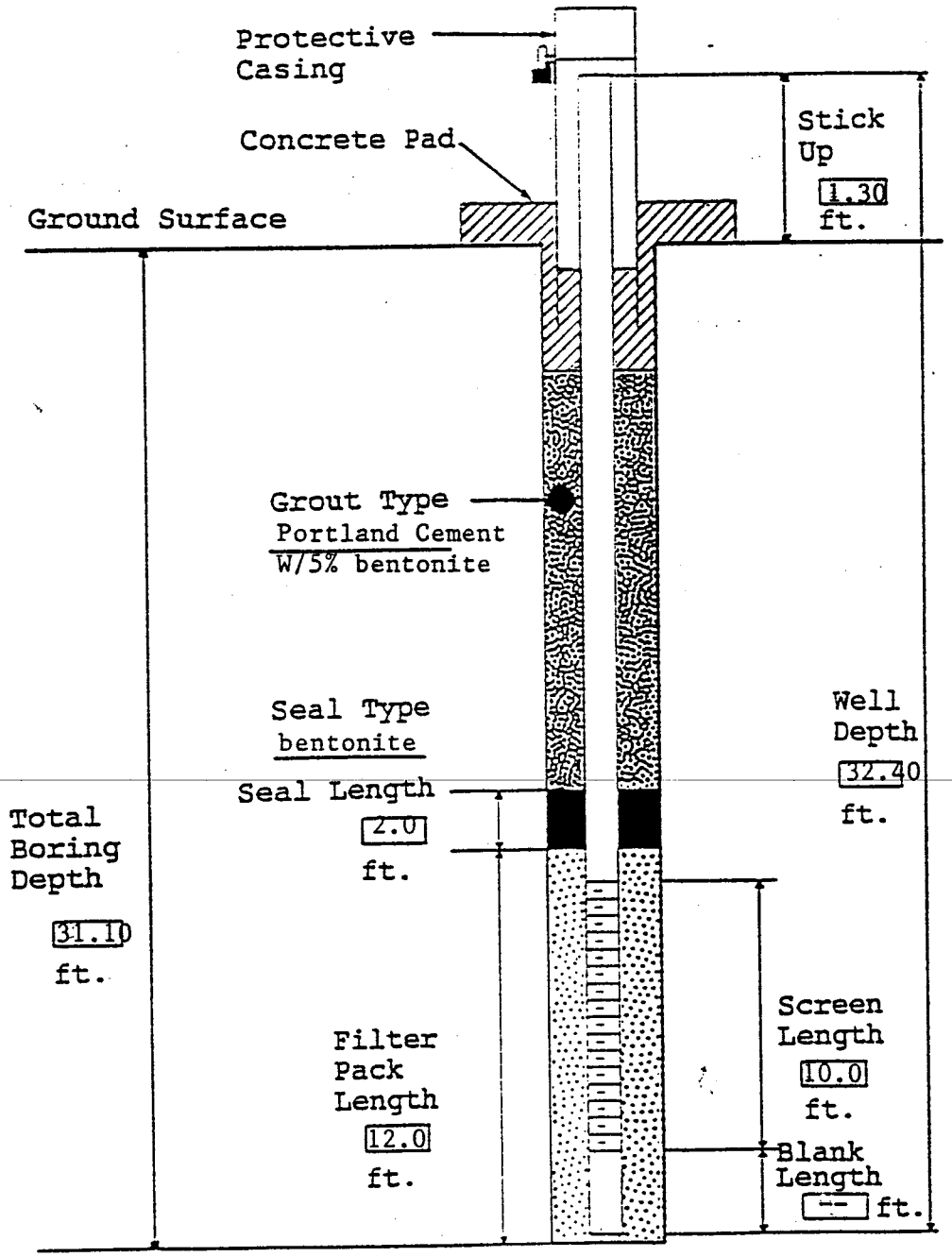
Screened From: 64.43 ft. to 44.43 ft.
Gravel Pack: 30-40 mesh to 25.0 ft.
Bentonite Seal: 25.0 ft. to 21.0 ft.
Concrete Seal from 21.0 ft. to surface
Water Level: 33.45 ft. below well top
Well top elevation: _____ ft.

Depth (feet) From	To	Lithology	Remarks
0.0	12.0	SC-orange, tan fine to medium grained clavey sand	
12.0	38.5	CH-light gray, Maroon stiff Clay with less than 5% sand	Sample #1 20.0'-21.5' Sample #2 30.0'-31.5'
38.5	41.5	SC-light gray, orange, very fine grained unconsolidated sand with less than 5% clay	Sample #3 40.0'-41.5'
	51.5	SC-light gray very fine grained sand with less than 5% clay	Sample #4 50.0'-51.5'
	62.0	SC-light gray fine to medium grained sand with less than 5% clay	Sample #5 60.0'-62.0'
		Drilling was terminated at 67.0 ft.-sufficient depth for recovery well. Well was developed using a 125 cu ft/min air compressor	

ATLANTA ENVIRONMENTAL MANAGEMENT, INC.

WELL CONSTRUCTION DIAGRAM

Project: Torrington Company
Location: Sylvania, Georgia
Well Number: R-14
Date Installed: 12/9/91
Hole Diameter[in]: 10.50
Well Casing Diameter[in]: 6.25
Ground Elevation(AMSL): 175.81
Casing Elevation(AMSL): 177.11
Filter Pack Type: 20-30 Mesh Sand
Slot Opening[in]: 0.014



Comments: Well was installed using mud/rotary drilling and terminated when confining limestone bed was encountered.

Well Development: Well was developed using a 175 CFM air compressor

Atlanta Environmental Management, Inc.
Monitoring Well Log

Date: 12/9/91

Owner: Torrington Company
Well No: R-14
Location: Sylvania, Georgia

Driller: Paul Clawson
Geologist: Ron Yarborough
Drilling Method: Mud/Rotary

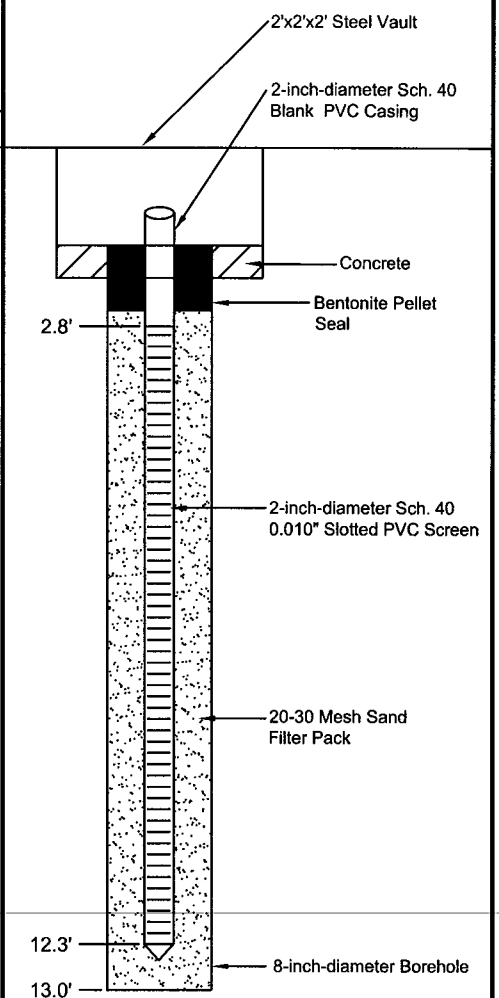
Screened From: 31.10 ft. to 21.10 ft.
Gravel Pack: 20-30 mesh to 19.10 ft.
Bentonite Seal: 19.10 ft. to 17.10 ft.
Concrete Seal from 17.10 ft. to surface
Water Level: _____ ft. below well top
Well top elevation: 177.11 ft.

Depth (feet) From	To	Lithology	Remarks
		See well log for monitoring well B-2D	

Dual-Phase Vacuum Extraction Well DVE-4

Project: ***IR - Sylvania***	Drill Rig: ***Geoprobe 66 DT HSA***	Top of Casing Elevation: ***NM***
Date: ***July 20, 2004***	Sampler: ***Macro Core***	Initial Groundwater Depth: ***NM***
Logged By: ***Gerald Ingle***	Hole Diameter: ***8-inch***	Final Groundwater Depth: ***NM***

Description	USCS Class	Graphic Log	Depth	Sample Interval	Blows / 6"
Turf grass/rooted zone fill			0		
Light brown, very fine to fine quartz SAND, dry	SW		1–3		
Light tan, very fine to fine SAND, trace to some silt, dry, no odor	SM		4		
Same as 4'-5' with some clay and trace to some silt, low to medium plasticity	SM/ SC		5–6	☒	
Orange-gray mottled clayey SILT, some very fine to fine sand, medium plasticity, dry, no odor	ML		7–10		
Orange-gray mottled hard CLAY, trace very fine sand, high plasticity, damp at 11', no odor	CH		11–12	☒	
Terminate boring			13–20		



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Notes:
1. USCS = Unified Soil Classification System.
2. Groundwater measured from top of casing.

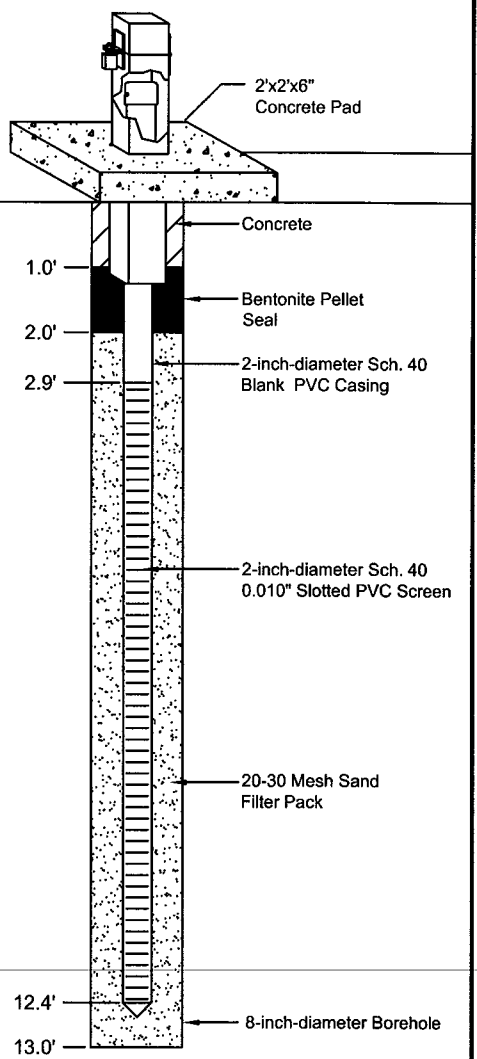
File name: C:\DWG\1162-0410-5\well logs.dwg | Print Date: Sep 27, 2004 - 1:52pm

Project No. ***1162-0410-5***

Dual-Phase Vacuum Extraction Well DVE-5

Project: ***IR - Sylvania***	Drill Rig: ***Geoprobe 66 DT HSA***	Top of Casing Elevation: ***NM***
Date: ***July 20, 2004***	Sampler: ***Macro Core***	Initial Groundwater Depth: ***NM***
Logged By: ***Gerald Ingle***	Hole Diameter: ***8-inch***	Final Groundwater Depth: ***NM***

Description	USCS Class	Graphic Log	Depth	Sample Interval	Blows / 6"
Turf grass/rooted zone fill			0		
Light brown, very fine to fine quartz SAND, dry	SW		1		
			2		
			3		
Orange-red mottled very fine sandy SILT, some clay, low to medium plasticity, hard, compact, dry, no odor	ML		4		
			5	☒	
			6		
Orange/tan silty very fine SAND, trace clay, hard, compact, dry no odor	SM		7		
Tan-gray-orange very fine to medium sandy SILT, trace to some clay, low plasticity, hard, compact, damp, no odor	ML		8		
			9		
Orange-gray mottled CLAY, hard, some very fine sand "stringers" throughout	CH		10		
			11	☒	
			12		
Terminate boring			13		
			14		
			15		
			16		
			17		
			18		
			19		
			20		



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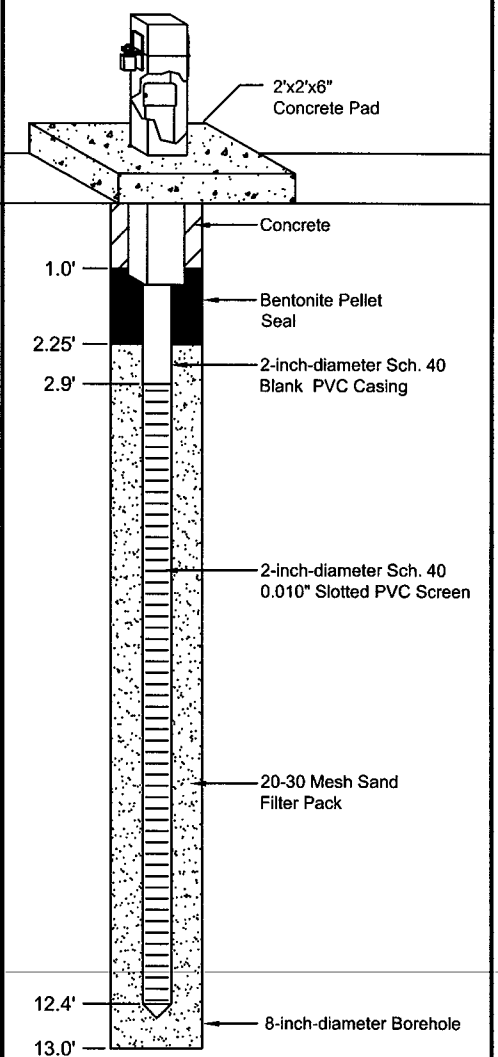
Project No. ***1162-0410-5***

Dual-Phase Vacuum Extraction Well DVE-6

Project: ***IR - Sylvania***	Drill Rig: ***Geoprobe 66 DT HSA***	Top of Casing Elevation: ***NM***
Date: ***July 20, 2004***	Sampler: ***Macro Core***	Initial Groundwater Depth: ***NM***
Logged By: ***Gerald Ingle***	Hole Diameter: ***8-inch***	Final Groundwater Depth: ***NM***

Description	USCS Class	Graphic Log	Depth	Sample Interval	Blows / 6"
Turf grass/rooted zone fill			0		
Light brown, very fine to fine quartz SAND, dry	SW		1		
			2		
			3		
Concrete rubble			4		
No recovery			5		
			6		
			7		
Orange-tan very fine sandy SILT, trace to some clay, low to medium plasticity, damp, no odor	ML		8	☒	
			9		
Orange-gray, mottled, hard CLAY, trace very fine sand, high plasticity, wet at 11', no odor	CH		10		
			11	☒	
			12		
Terminate boring			13		
			14		
			15		
			16		
			17		
			18		
			19		
			20		



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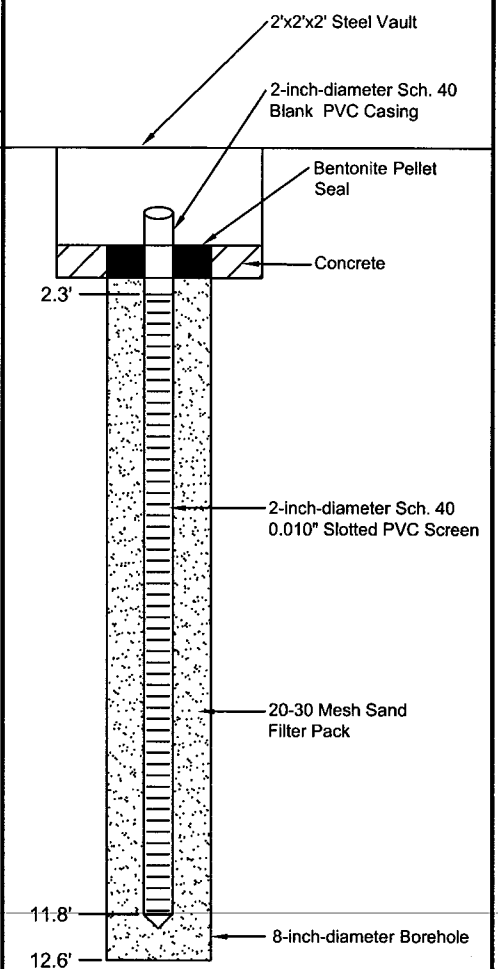
Project No. ***1162-0410-5***

Dual-Phase Vacuum Extraction Well DVE-7

Project: ***IR - Sylvania***	Drill Rig: ***Geoprobe 66DT HSA***	Top of Casing Elevation: ***NM***
Date: ***February 4, 2004***	Sampler: ***Macro Core***	Initial Groundwater Depth: ***NM***
Logged By: ***Gerald Ingle***	Hole Diameter: ***8-inch***	Final Groundwater Depth: ***NM***

Description	USCS Class	Graphic Log	Depth	Sample Interval	Blows / 6"
Brown silty CLAY, abundant gravel (fill)			0		
Light brown, very fine to fine quartz SAND, dry	SW		1 – 3		
Orange-red mottled very fine sandy SILT, some clay, low to medium plasticity, hard, compact, dry, no odor	ML		4 – 5	☒	
Orange/tan silty very fine SAND, trace clay, hard, compact, dry, no odor	SM		6 – 9		
Same as 6.5'-9' with slightly more clay	SM		9 – 10		
Orange-gray mottled CLAY, hard, trace very fine sand, high plasticity, damp to 11', no odor	CH		10 – 11	☒	
Terminate boring			12 – 20		



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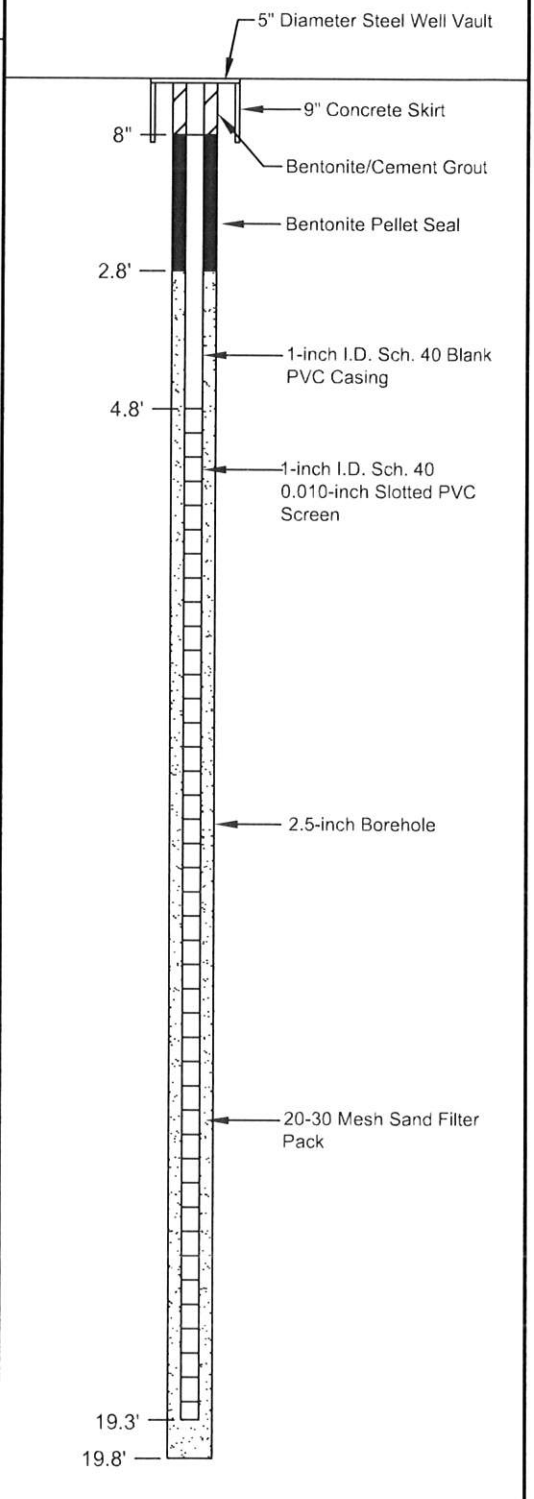
Project No. ***1162-0410-5***

Pilot Test Boring PTB-03 (DVE-09)

Project: ***IR-Sylvania***	Drill Rig: ***Geoprobe 6610DT***	Top of Casing Elevation: ***186.89 ft. AMSL***
Installation Date: ***December 21, 2009***	Sampler: ***N/A***	Initial Groundwater Depth: ***N/A***
Logged By: ***Gerald Ingle***	Hole Diameter: ***2.5 - inch***	Final Groundwater Depth: ***16.36 ft. BTOC***

Description	USCS Class	Graphic Log	Depth	Sample Interval	Blows / 6"
Refer to Lithology for MW-C1			0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20		



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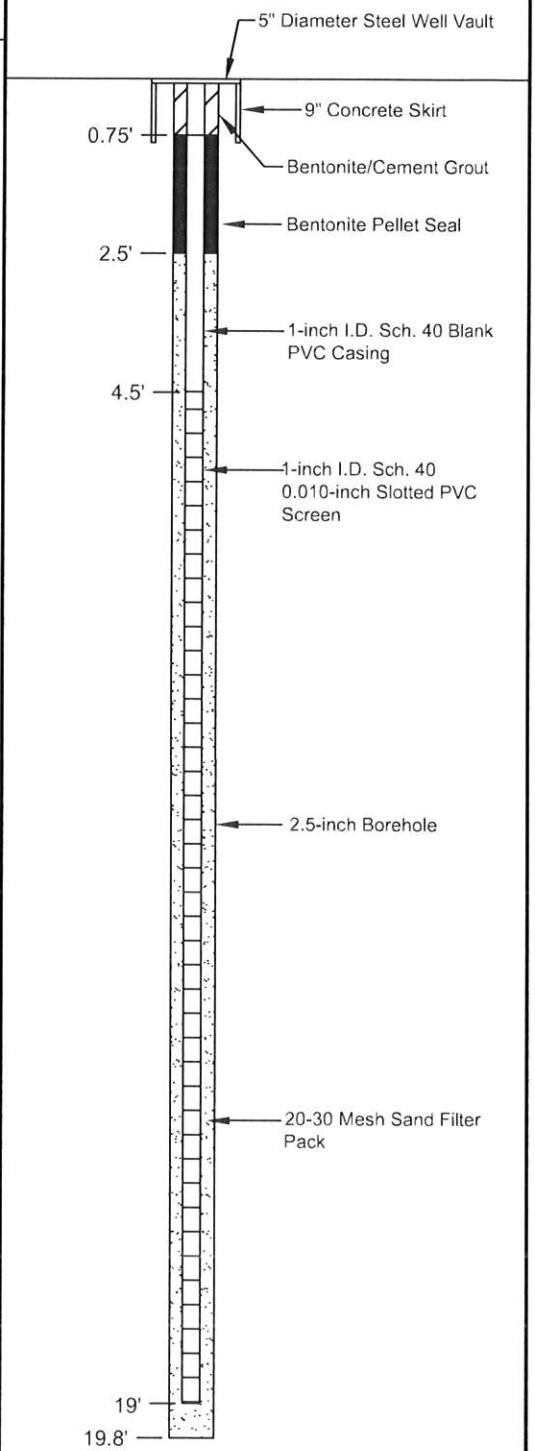
Project No. ***1162-1001-5***

Pilot Test Boring PTB-05

Project: ***IR-Sylvania***	Drill Rig: ***Geoprobe 6610DT***	Top of Casing Elevation: ***186.77 ft. AMSL***
Installation Date: ***December 22, 2009***	Sampler: ***N/A***	Initial Groundwater Depth: ***N/A***
Logged By: ***Gerald Ingle***	Hole Diameter: ***2.5 - inch***	Final Groundwater Depth: ***16.10 ft. BTOC***

Description	USCS Class	Graphic Log	Depth	Sample Interval	Blows / 6"
Refer to Lithology for DGA-4D			0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20		



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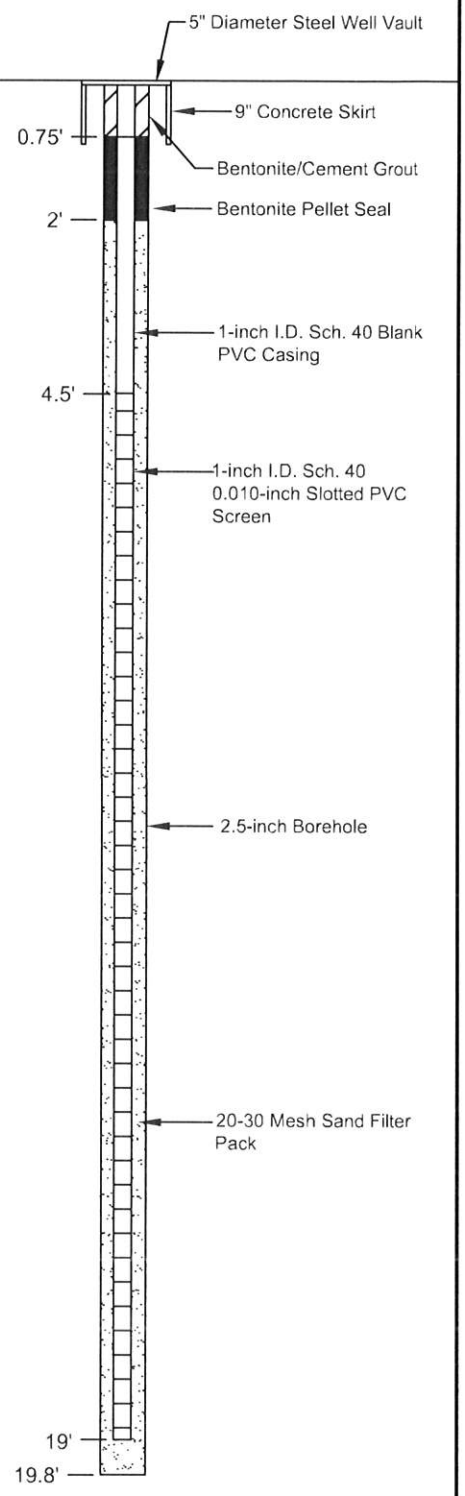
Project No. ***1162-1001-5***

Pilot Test Boring PTB-06 (DVE-10)

Project: ***IR-Sylvania***	Drill Rig: ***Geoprobe 6610DT***	Top of Casing Elevation: ***186.82 ft. AMSL***
Installation Date: ***December 22, 2009***	Sampler: ***N/A***	Initial Groundwater Depth: ***N/A***
Logged By: ***Gerald Ingle***	Hole Diameter: ***2.5 - inch***	Final Groundwater Depth: ***16.67 ft. BTOC***

Description	USCS Class	Graphic Log	Depth	Sample Interval	Blows / 6"
Refer to Lithology for SH-106			0 – 20		



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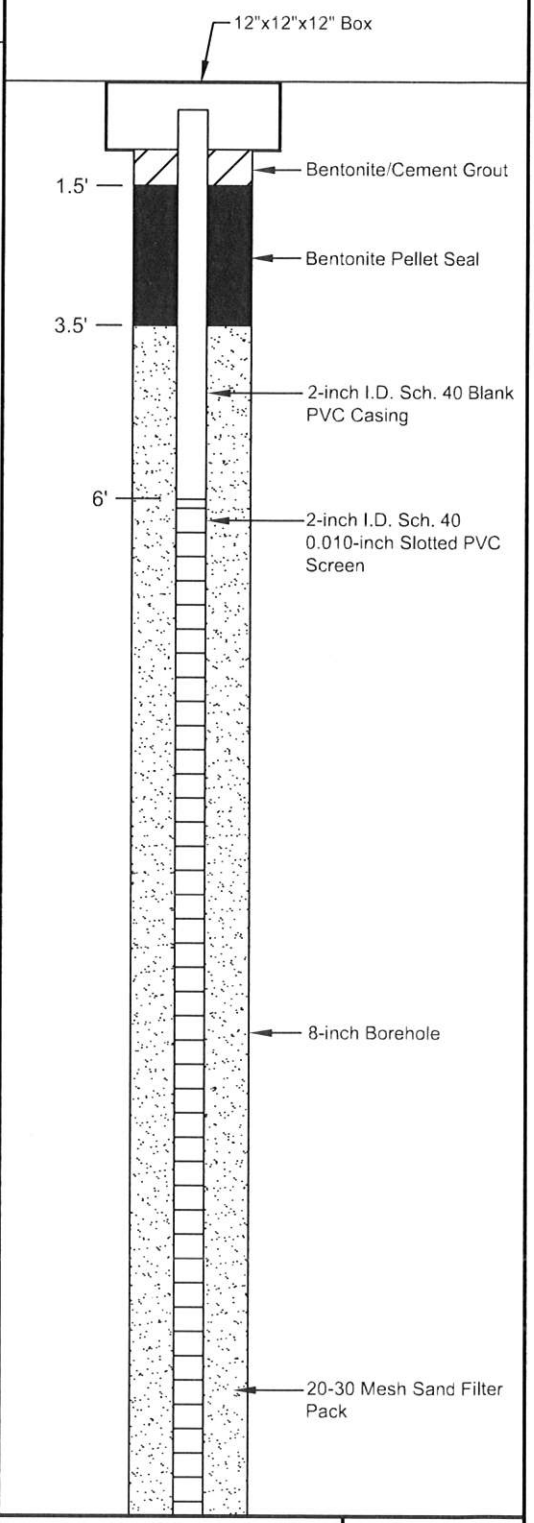
Project No. ***1162-1001-5***

DVE Recovery Well DVE-8

Project: ***IR-Sylvania***	Drill Rig: ***Geoprobe 6610DT***	Top of Casing Elevation: ***186.05 ft. AMSL***
Installation Date: ***March 28, 2011***	Sampler: ***N/A***	Initial Groundwater Depth: ***N/A***
Logged By: ***Gerald Ingle***	Hole Diameter: ***8 - inch***	Final Groundwater Depth: ***20.80 ft. BTOC***

Description	USCS Class	Graphic Log	Depth	Sample Interval	Blows / 6"
Refer to Lithology for DGA-4D			0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20		



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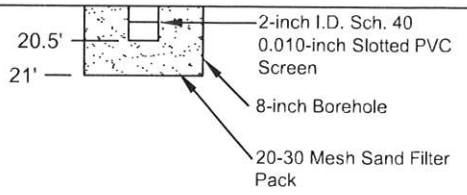
Project No. ***1162-1001-5***

DVE Recovery Well DVE-8

Project: ***IR-Sylvania***	Drill Rig: ***Geoprobe 6610DT***	Top of Casing Elevation: ***186.05 ft. AMSL***
Installation Date: ***March 28, 2011***	Sampler: ***N/A***	Initial Groundwater Depth: ***N/A***
Logged By: ***Gerald Ingle***	Hole Diameter: ***8 - inch***	Final Groundwater Depth: ***20.80 ft. BTOC***

Description	USCS Class	Graphic Log	Depth	Sample Interval	Blows / 6"
Refer to Lithology for DGA-4D			20 – 40		



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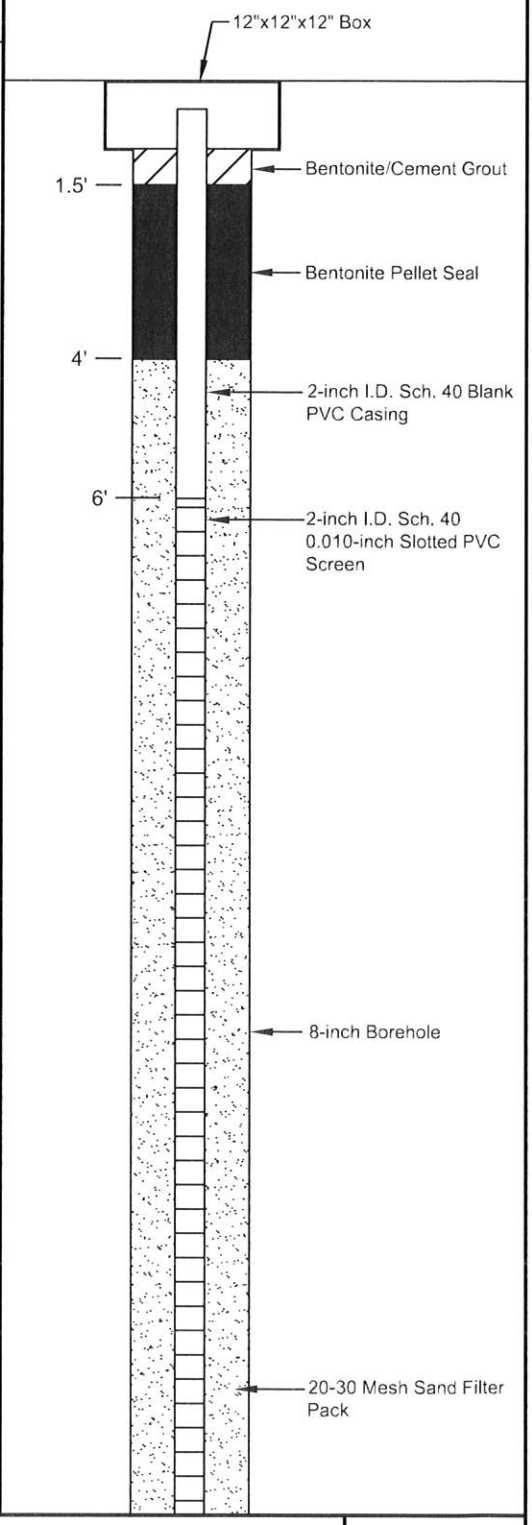
Project No. ***1162-1001-5***

DVE Recovery Well DVE-11

Project: ***IR-Sylvania***	Drill Rig: ***Geoprobe 6610DT***	Top of Casing Elevation: ***186.51 ft. AMSL***
Installation Date: ***March 30, 2011***	Sampler: ***N/A***	Initial Groundwater Depth: ***N/A***
Logged By: ***Gerald Ingle***	Hole Diameter: ***8 - inch***	Final Groundwater Depth: ***21.24 ft. BTOC***

Description	USCS Class	Graphic Log	Depth	Sample Interval	Blows / 6"
Refer to Lithology for P-3 and SH-103			0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20		



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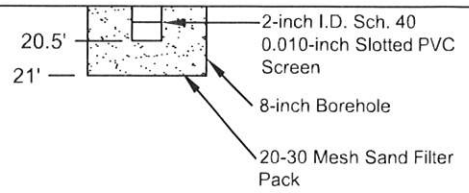
Project No. ***1162-1001-5***

DVE Recovery Well DVE-11

Project: ***IR-Sylvania***	Drill Rig: ***Geoprobe 6610DT***	Top of Casing Elevation: ***186.51 ft. AMSL***
Installation Date: ***March 30, 2011***	Sampler: ***N/A***	Initial Groundwater Depth: ***N/A***
Logged By: ***Gerald Ingle***	Hole Diameter: ***8 - inch***	Final Groundwater Depth: ***21.24 ft. BTOC***

Description	USCS Class	Graphic Log	Depth	Sample Interval	Blows / 6"
Refer to Lithology for P-3 and SH-103			20 – 40		



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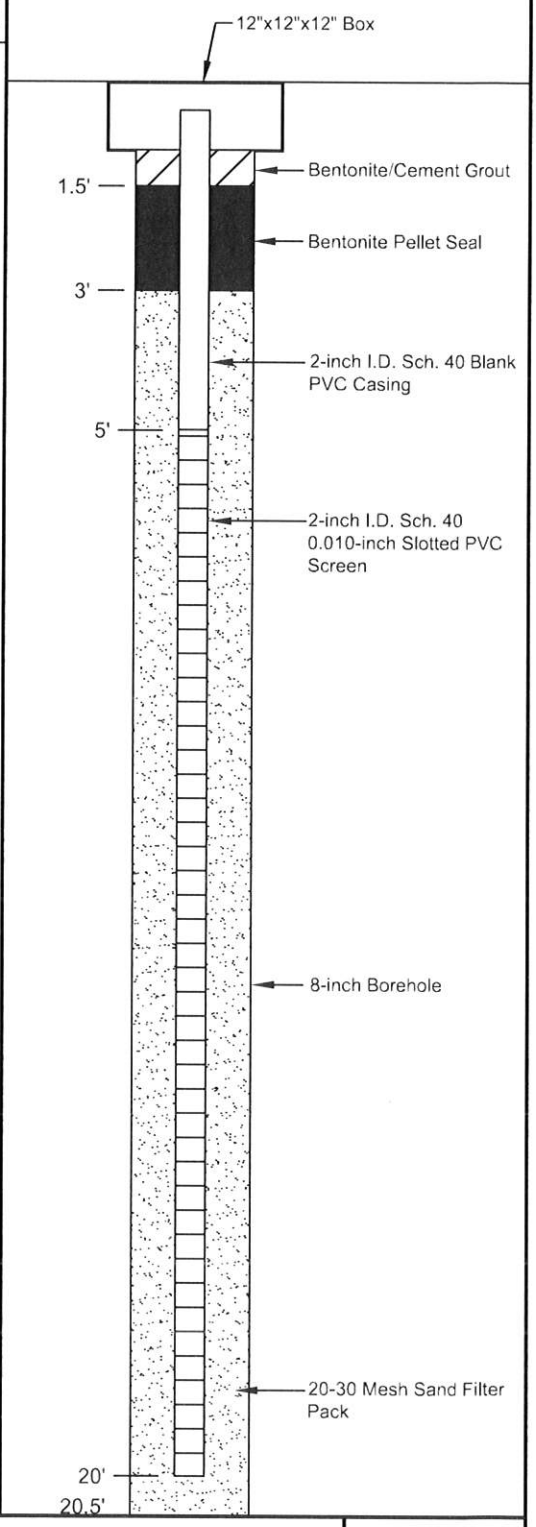
Project No. ***1162-1001-5***

DVE Recovery Well DVE-12

Project: ***IR-Sylvania***	Drill Rig: ***Geoprobe 6610DT***	Top of Casing Elevation: ***186.27 ft. AMSL***
Installation Date: ***March 30, 2011***	Sampler: ***N/A***	Initial Groundwater Depth: ***N/A***
Logged By: ***Gerald Ingle***	Hole Diameter: ***8 - inch***	Final Groundwater Depth: ***20.30 ft. BTOC***

Description	USCS Class	Graphic Log	Depth	Sample Interval	Blows / 6"
Refer to Lithology for P-3 and SH-103			0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20		



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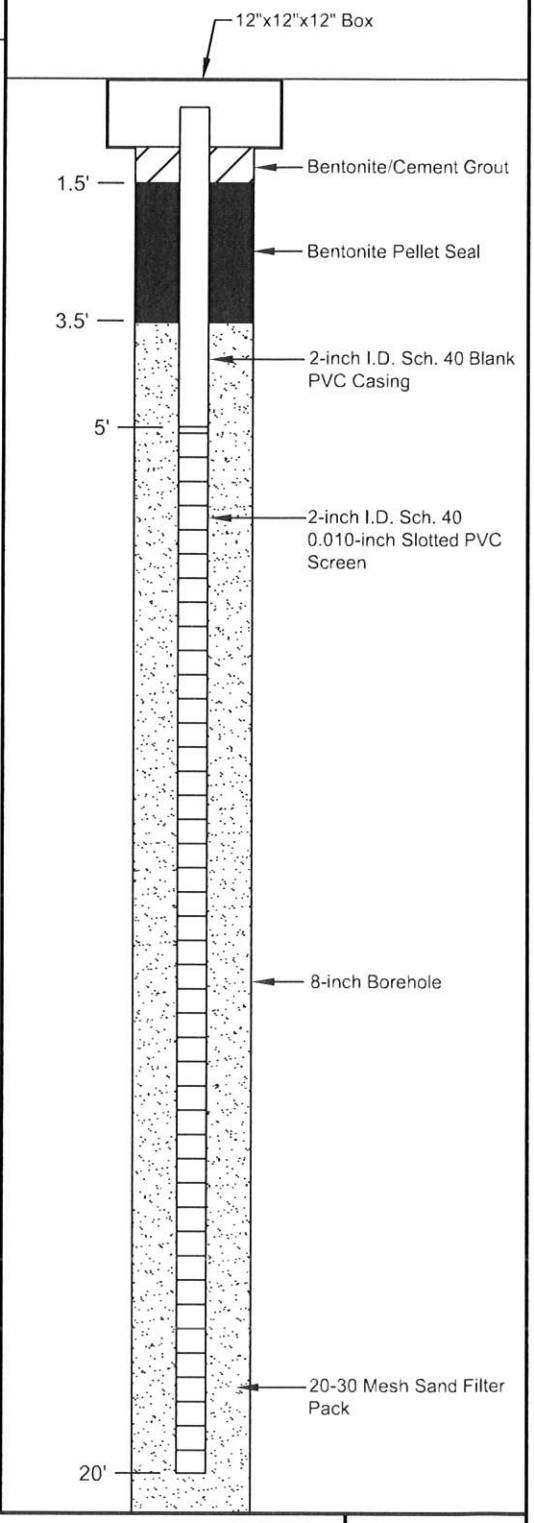
Project No. ***1162-1001-5***

DVE Recovery Well DVE-13

Project: ***IR-Sylvania***	Drill Rig: ***Geoprobe 6610DT***	Top of Casing Elevation: ***186.27 ft. AMSL***
Installation Date: ***March 30, 2011***	Sampler: ***N/A***	Initial Groundwater Depth: ***N/A***
Logged By: ***Gerald Ingle***	Hole Diameter: ***8 - inch***	Final Groundwater Depth: ***20.30 ft. BTOC***

Description	USCS Class	Graphic Log	Depth	Sample Interval	Blows / 6"
			0		
Not logged.			1		
			2		
Tan-orange, SILTY, very fine to fine sand, dry, no noticeable odor.	SM		3		
			4		
Orange/red, Very fine sandy SILT, trace of fine sands, dry, no odor.	SC		5		
			6		
			7		
			8		
			9		
Same as 5'-10'			10		
			11		
			12		
Orange/tan, very fine to fine sand, some silt.	SM		13		
Purplish gray-white, very heterogeneous, silty CLAY, dry, no odor, low plasticity.	ML		14		
No recovery.			15		
Orange, very fine to medium SAND, wet, no odor.	SW		16		
Purple to gray ~(20'), fat clay, little or no fines, medium to high plasticity, damp, no odor, (transition from purple (17'-19') to gray clay (19'-20') was abrupt).	CH		17		
			18		
			19		
Gray hard fat clay, medium to high plasticity.	CH		20		



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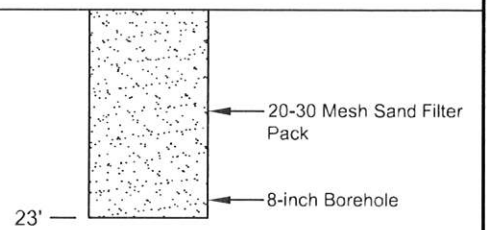
Project No. ***1162-1001-5***

DVE Recovery Well DVE-13

Project: ***IR-Sylvania***	Drill Rig: ***Geoprobe 6610DT***	Top of Casing Elevation: ***186.37 ft. AMSL***
Installation Date: ***March 29, 2011***	Sampler: ***N/A***	Initial Groundwater Depth: ***N/A***
Logged By: ***Gerald Ingle***	Hole Diameter: ***8 - inch***	Final Groundwater Depth: ***NM***

Description	USCS Class	Graphic Log	Depth	Sample Interval	Blows / 6"
			20		
			21		
			22		
			23		
Terminate Boring.			24		
			25		
			26		
			27		
			28		
			29		
			30		
			31		
			32		
			33		
			34		
			35		
			36		
			37		
			38		
			39		
			40		



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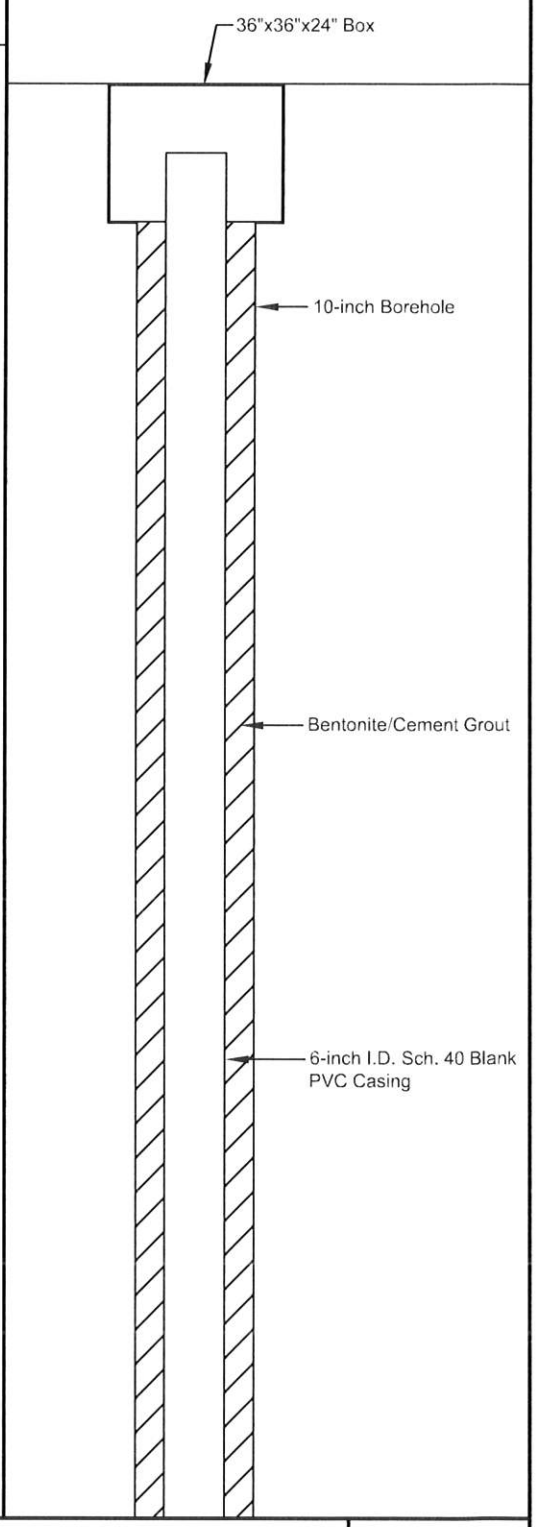
Project No. ***1162-1001-5***

Recovery Well R-16

Project: ***IR-Sylvania***	Drill Rig: ***Rotosonic***	Top of Casing Elevation: ***182.92 ft. AMSL***
Installation Date: ***June 6-7, 2011***	Sampler: ***5.25-inch OD Sampler***	Initial Groundwater Depth: ***N/A***
Logged By: ***Gerald Ingle***	Hole Diameter: ***10 - inch (20 feet)***	Final Groundwater Depth: ***43.43' ft. BTOC***

Description	USCS Class	Graphic Log	Depth	Sample Interval	Blows / 6"
Orange/red, very fine sandy SILT, trace clay, dry, no odor.	ML		0 – 5		
Dark red/orange/gray, very fine sandy SILT, trace to some clay, no odor.	ML		6		
Same as 6'-7'.			7 – 11		
Tan-pink, silty, very fine to fine SAND, damp at 12', no clay noticeable.	SM		12 – 13		
Purple with gray, mottled, high plasticity, trace of very fine sand.	CH		14 – 16		
Same as 14'-17'; may have 1' of laminated sand from 19'-20'.			17 – 20		



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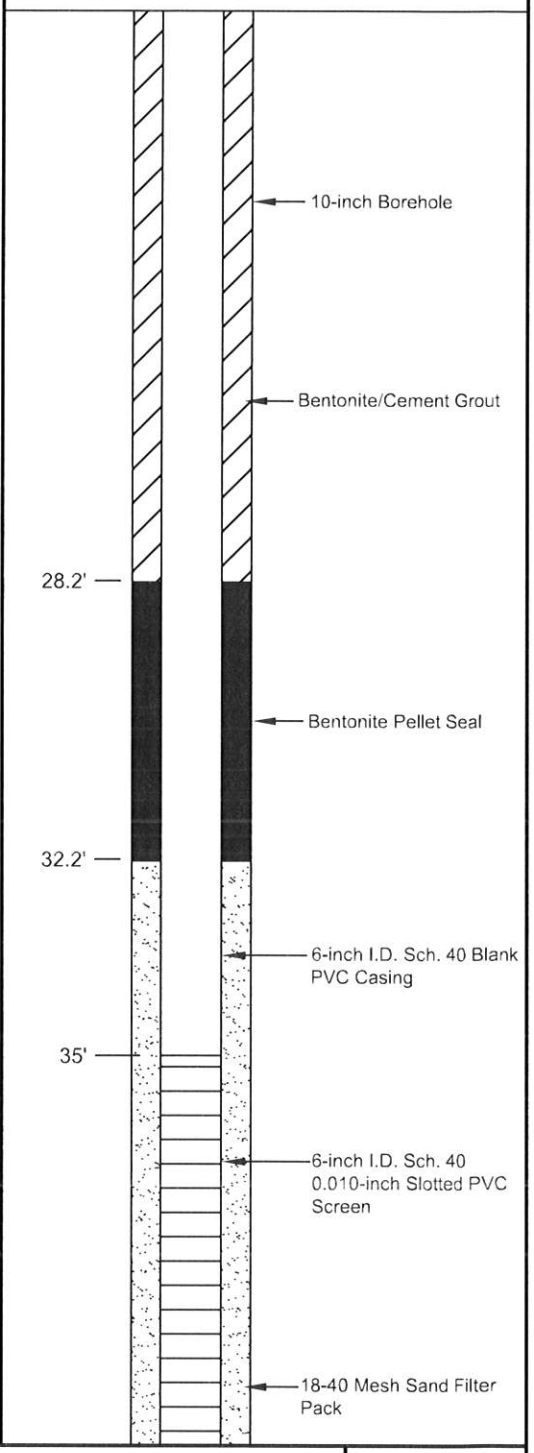
Project No. ***1162-1001-5***

Recovery Well R-16

Project: ***IR-Sylvania***	Drill Rig: ***Rotosonic***	Top of Casing Elevation: ***182.92 ft. AMSL***
Installation Date: ***June 6-7, 2011***	Sampler: ***5.25-inch OD Sampler***	Initial Groundwater Depth: ***N/A***
Logged By: ***Gerald Ingle***	Hole Diameter: ***10 - inch (20 feet)***	Final Groundwater Depth: ***43.43' ft. BTOC***

Description	USCS Class	Graphic Log	Depth	Sample Interval	Blows / 6"
			20		
			21		
			22		
			23		
No recovery but driller thinks its softer material.			24		
			25		
Gray, CLAY, fat, very little fines, high plasticity.	CH		26		
			27		
			28		
			29		
			30		
			31		
			32		
			33		
Pink/tan, silty, very fine to medium SANDS.	SM		34		
			35		
			36		
Same as 34'-37'.			37		
			38		
			39		
			40		



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Notes:
1. USCS = Unified Soil Classification System.
2. Groundwater measured from top of casing.

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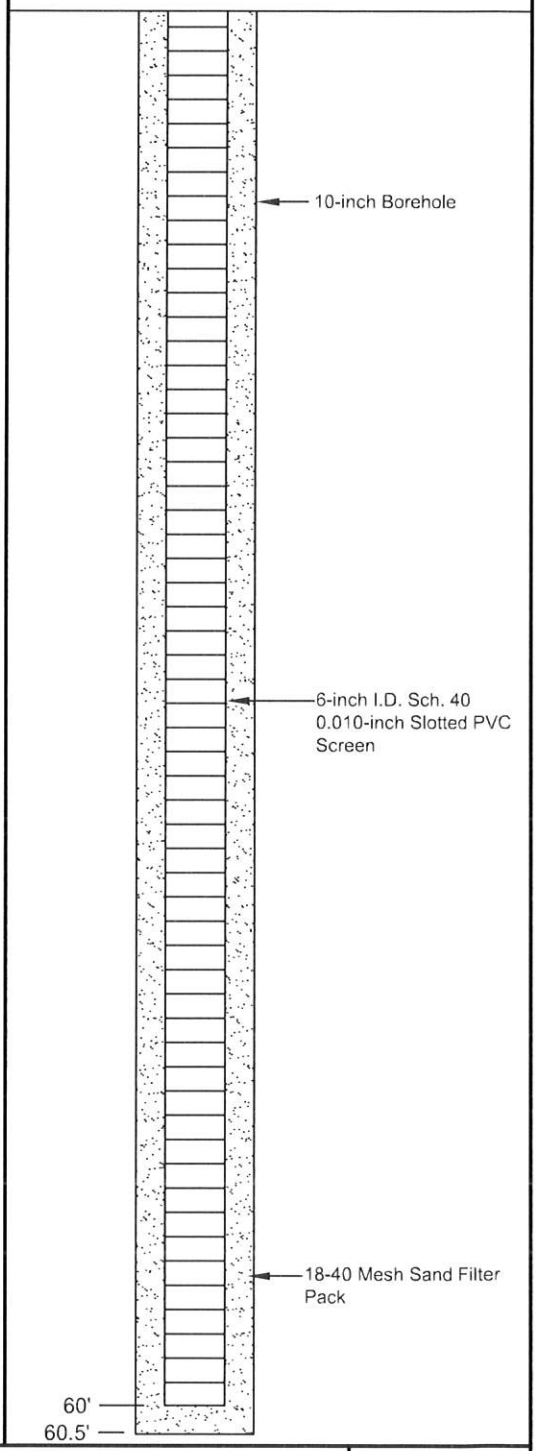
Project No. ***1162-1001-5***

Recovery Well R-16

Project: ***IR-Sylvania***	Drill Rig: ***Rotosonic***	Top of Casing Elevation: ***182.92 ft. AMSL***
Installation Date: ***June 6-7, 2011***	Sampler: ***5.25-inch OD Sampler***	Initial Groundwater Depth: ***N/A***
Logged By: ***Gerald Ingle***	Hole Diameter: ***10 - inch (20 feet)***	Final Groundwater Depth: ***43.43' ft. BTOC***

Description	USCS Class	Graphic Log	Depth	Sample Interval	Blows / 6"
Gray/tan, very fine to fine SANDS, trace clay/silt, but only in seams.	CL		40 – 46		
Same as 40'-47'.			47		
Pink/gray, fine to coarse SAND, some clay "nodules".	SC		48 – 56		
Same as 48'-57'.			57 – 58		
Compacted pink/tan to green SILTS; assumed transition zone between upper horizon and clay separation barrier (between upper and lower sands).	SM		59		
Terminate boring.			60		



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Project No. ***1162-1001-5***