Appendix C Groundwater Monitoring Well and Boring Logs

BORING AND WELL LOG INFORMATION

BORING CORE ID	COMPLETED AS A WELL?	OBTAINED LOG?	ENDNOTE CITATION	NOTES
C-1	Y	Y	AGI (1992)	
C-2	Y	Y	AGI (1992)	
C-3	Y	Y	AGI (1992)	
C-4	Y	Y	AGI (1992)	
C-5	Y	Y	AGI (1992)	
C-6	Y	Y	AGI (1992)	
MW-7	Y	Y	AGI (1992)	
MW-8	Y	Y	AGI (1992)	
MW-9	Y	Y	AGI (1992)	
MW-10	Y	Y	AGI (1992)	
MW-11	Y	Y	AGI (1992)	
MW-12	Y	Y	AGI (1992)	
MW-13	Y	Y	AGI (1992)	
MW-14	Y	Y	AGI (1992)	
PGG-1	Y	Y	Pacific Groundwater Group (2007)	
PGG-2	Y	Y	Pacific Groundwater Group (2007)	
PGG-3	Y	Y	Pacific Groundwater Group (2007)	
PGG-4	Y	Y	Pacific Groundwater Group (2007)	
PGG-5	Y	Y	Pacific Groundwater Group (2007)	
PGG-6	Y	Y	Pacific Groundwater Group (2007)	
PGG-7	Y	Y	Pacific Groundwater Group (2007)	
A	N	Y	AGI (AGI 1992)	D&M - diff locations from PEG A-F
B	N	Y	AGI (AGI 1992)	D&M - diff locations from PEG A-F
C	N	Y	AGI (AGI 1992)	D&M - diff locations from PEG A-F
D	N	Y	AGI (AGI 1992)	D&M - diff locations from PEG A-F
E	N	Y	AGI (AGI 1992)	D&M - diff locations from PEG A-F
F	N	Y	AGI (AGI 1992)	D&M - diff locations from PEG A-F
B88-1	N	Y	Dames & Moore (1989)	
B88-2	N	Y	Dames & Moore (1989)	
B88-3	N	Y	Dames & Moore (1989)	
B81-1	N	Y	Dames & Moore (1981)	Boring log label is 1
B81-2	N	Y	Dames & Moore (1981)	Boring log label is 2
B81-3	N	Y	Dames & Moore (1981)	Boring log label is 3
B81-4	N	Y	Dames & Moore (1981)	Boring log label is 4
B81-5	N	Y	Dames & Moore (1981)	Boring log label is 5

Boring Core ID	Completed as a Well?	Obtained Log?	Endnote Citation	Notes
B81-6	N	Y	Dames & Moore (1981)	Boring log label is 6
B81-7	N	Y	Dames & Moore (1981)	Boring log label is 7
B81-8	N	Y	Dames & Moore (1981)	Boring log label is 8
B81-9	N	Y	Dames & Moore (1981)	Boring log label is 9
B81-10	N	Y	Dames & Moore (1981)	Boring log label is 10
B81-11	N	Y	Dames & Moore (1981)	Boring log label is 11
B81-12	N	Y	Dames & Moore (1981)	Boring log label is 12
B81-13	N	Y	Dames & Moore (1981)	Boring log label is 13
A	N	N	Pacific Environmental Group (1991)*	PEG - diff locations from D&M A-F
B	N	N	Pacific Environmental Group (1991)*	PEG - diff locations from D&M A-F
C	N	N	Pacific Environmental Group (1991)*	PEG - diff locations from D&M A-F
D	N	N	Pacific Environmental Group (1991)*	PEG - diff locations from D&M A-F
E	N	N	Pacific Environmental Group (1991)*	PEG - diff locations from D&M A-F
F	N	N	Pacific Environmental Group (1991)*	PEG - diff locations from D&M A-F
NAT-1	N	N	Pacific Groundwater Group (2006)*	
NAT-2	N	N	Pacific Groundwater Group (2006)*	
NAT-3	N	N	Pacific Groundwater Group (2006)*	
NAT-4	N	N	Pacific Groundwater Group (2006)*	
NAT-5	N	N	Pacific Groundwater Group (2006)*	
NAT-6	N	N	Pacific Groundwater Group (2006)*	
EP-1	N	N	Pacific Groundwater Group (2006)*	Should be in PEG 1991 Environmental Investigation but boring logs are missing from Appendix
EP-2	N	N	Pacific Groundwater Group (2006)*	
EP-3	N	N	Pacific Groundwater Group (2006)*	
EP-4	N	N	Pacific Groundwater Group (2006)*	
EP-5	N	N	Pacific Groundwater Group (2006)*	
EP-6	N	N	Pacific Groundwater Group (2006)*	
EP-7	N	N	Pacific Groundwater Group (2006)*	
EP-8	N	N	Pacific Groundwater Group (2006)*	
EP-9	N	N	Pacific Groundwater Group (2006)*	
EP-10	N	N	Pacific Groundwater Group (2006)*	
EP-11	N	N	Pacific Groundwater Group (2006)*	
DUD_30C	N	N	Anchor (2007)*	
DUD_31C	N	N	Anchor (2007)*	

* – Could not find boring log, but found analytical data associated with the location

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AGI. 1992. Site assessment summary, site 64534097, 4525 Diagonal Avenue South, Seattle, Washington. Prepared for Chevron USA Products Company. Applied Geotechnology, Inc., Bellevue, WA.

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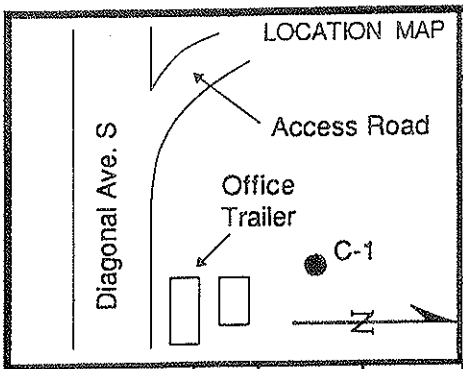
Pacific Groundwater Group. 2006. T-108 interim groundwater and shoreline soil investigation final work plan. Prepared for Port of Seattle. Pacific Groundwater Group, Seattle, WA.

Pacific Groundwater Group. 2007. Port of Seattle T-108 groundwater investigation final report. Pacific Groundwater Group, Seattle, WA.



PACIFIC ENVIRONMENTAL GROUP, INC.

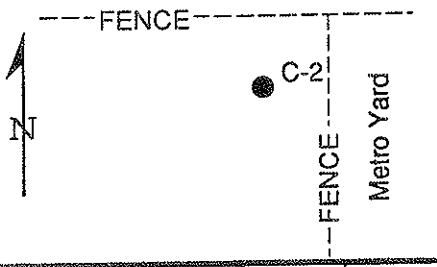
WELL / C-1
BORING NO.
PAGE 1 OF 1

PROJECT NO. 520-02.02
LOGGED BY: EL
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon
CASING TYPE: Sch 40 PVC
SLOT SIZE: 0.010"
GRAVEL PACK: 10 X 20 SAND

CLIENT: Chevron USA
DATE DRILLED: 8-16-90
LOCATION: 4525 Diagonal Ave.
HOLE DIAMETER: 8"
HOLE DEPTH: 19'
WELL DEPTH: 17'
WELL DIAMETER: 2"

WELL COMPLETION	MOISTURE CONTENT	PID READING (PPM)	PENETRATION RESISTANCE (BLOWS/FT)	DEPTH (FEET)	SAMPLE	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
CEMENT, BENTONITE, SAND	Dp	0	9	2, 4			CL	CLAY; dark grayish brown; silty; 10-20% fine gravel; stiff; no hydrocarbon-like odor.
	Dp	4.6	10	6, 8				@7.5': gray; wood fragments; soft; hydrocarbon-like odor.
	Mst	0	5	10, 12, 14			OL	ORGANIC CLAY; dark gray; silty; 20% peat; soft; no hydrocarbon-like odor.
	Wt	0	1	16, 18				@17.5': silt interbeds; very soft; no hydrocarbon-like odor.
				20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44				BOTTOM OF BORING 19' LIP OF BOX STICKUP: 2.4'

LOCATION MAP



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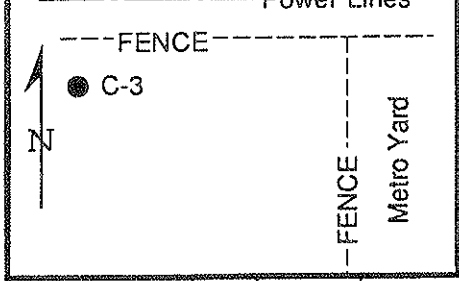
WELL / C-2
BORING NO.
PAGE 1 OF 1

PROJECT NO. 520-02.02
LOGGED BY: EL
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon
CASING TYPE: Sch 40 PVC
SLOT SIZE: 0.010"
GRAVEL PACK: 10 X 20 SAND

CLIENT: Chevron USA
DATE DRILLED: 8-16-90
LOCATION: 4525 Diagonal Ave.
HOLE DIAMETER: 8"
HOLE DEPTH: 19'
WELL DEPTH: 17'
WELL DIAMETER: 2"

WELL COMPLETION	MOISTURE CONTENT	PID READING (PPM)	PENETRATION RESISTANCE (BLOWS/FT)	DEPTH (FEET)	SAMPLE	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
CEMENT, BENTONITE, SAND	Dp	0.7	10	2, 4	■		SM	SILTY SAND; black; 20-30% fines; fine grained; medium dense; hydrocarbon-like odor.
	Mst	0	6	6, 8	■			@7.5': loose; hydrocarbon-like odor.
	Wt	0	4	10, 12, 14	■		ML	SILT; dark gray; 20-30% fine sand; firm; hydrocarbon-like odor.
	Wt	0	2	16, 18	■		CL	CLAY; dark gray; silty; soft; no hydrocarbon-like odor.
				20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44				BOTTOM OF BORING 19' LIP OF BOX STICKUP: 2.54'

LOCATION MAP



PACIFIC ENVIRONMENTAL GROUP, INC.

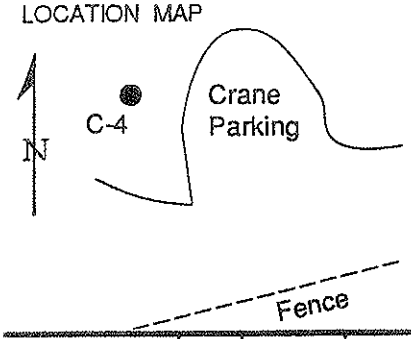
WELL / C-3
BORING NO.
PAGE 1 OF 1

PROJECT NO. 520-02.02
LOGGED BY: EL
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon
CASING TYPE: Sch 40 PVC
SLOT SIZE: 0.010"
GRAVEL PACK: 10 X 20 SAND

CLIENT: Chevron USA
DATE DRILLED: 8-16-90
LOCATION: 4525 Diagonal Ave.
HOLE DIAMETER: 8"
HOLE DEPTH: 19'
WELL DEPTH: 17'
WELL DIAMETER: 2"

WELL COMPLETION	MOISTURE CONTENT	PID READING (PPM)	PENETRATION RESISTANCE (BLOWS/FT)	DEPTH (FEET)	SAMPLE	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
CEMENT; BENTONITE; SAND	Dp	0	10	2, 4	■		SM	SILTY SAND; dark gray; 30-40% fines; fine grained; trace gravel; medium dense; hydrocarbon-like odor.
	Dp	10.5	2	6, 8	■			@7.5': wood fragments; loose; hydrocarbon-like odor.
	Mst	0	1	10, 12, 14	■		CL	@12.5': abundant wood fragments; loose; hydrocarbon-like odor. CLAY; gray; silty; peaty; very soft; no hydrocarbon-like odor.
	Wt	0	1	16, 18	■			@17.5': no hydrocarbon-like odor.
				20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44				BOTTOM OF BORING 19' LIP OF BOX STICKUP: 1.63'

LOCATION MAP



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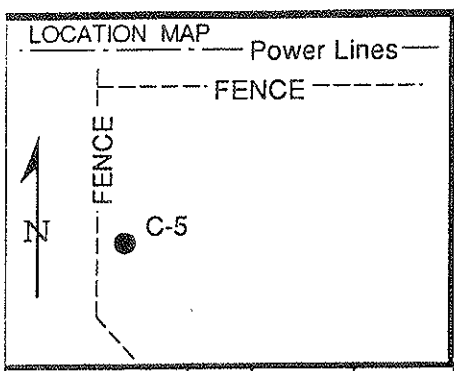
WELL / C-4
BORING NO.
PAGE 1 OF 1

PROJECT NO. 520-02.02
LOGGED BY: EL
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon
CASING TYPE: Sch 40 PVC
SLOT SIZE: 0.010"
GRAVEL PACK: 10 X 20 SAND

CLIENT: Chevron USA
DATE DRILLED: 8-16-90
LOCATION: 4525 Diagonal Ave.
HOLE DIAMETER: 8"
HOLE DEPTH: 15'
WELL DEPTH: 15'
WELL DIAMETER: 2"

WELL COMPLETION	MOISTURE CONTENT	PID READING (PPM)	PENETRATION RESISTANCE (BLOWS/FT)	DEPTH (FEET)	SAMPLE	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
CEMENT, BENTONITE, SAND	Dp	0	3	2, 4			SM	SILTY SAND; grayish brown; 15% fines; fine grained; loose; no hydrocarbon-like odor.
	Wt	0	6	6, 8				@7.5': fine to coarse grained; no hydrocarbon-like odor.
	Wt	0	2	10, 12, 14			Pt	PEAT; brown; very soft; no hydrocarbon-like odor.
				16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44				BOTTOM OF BORING 15' LIP OF BOX STICKUP: 0.83'



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WELL / C-5
BORING NO.
PAGE 1 OF 1

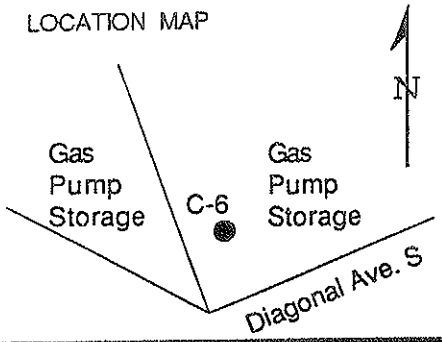
PROJECT NO. 520-02.02
LOGGED BY: EL
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon
CASING TYPE: Sch 40 PVC
SLOT SIZE: 0.010"
GRAVEL PACK: 10 X 20 SAND

CLIENT: Chevron USA
DATE DRILLED: 8-16-90
LOCATION: 4525 Diagonal Ave.
HOLE DIAMETER: 8"
HOLE DEPTH: 19'
WELL DEPTH: 17'
WELL DIAMETER: 2"

WELL COMPLETION	MOISTURE CONTENT	PID READING (PPM)	PENETRATION RESISTANCE (BLOWS/FT)	DEPTH (FEET)	SAMPLE	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
CEMENT, BENTONITE, SAND	Dp	11.4	9	2, 4	■		SM	SILTY SAND; black; 20-30% fines; fine to medium grained; loose; hydrocarbon-like odor.
	Dp	28	2	6, 8	■			@7.5': very loose; hydrocarbon-like odor.
	Wt	2.1	8	10, 12, 14	■			
	Wt	0	2	16, 18	■		CL	CLAY; gray; trace silt; peaty; very soft; hydrogen sulfide odor; no hydrocarbon-like odor.
				20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44				

BOTTOM OF BORING 19'
LIP OF BOX STICKUP: 2.75'

LOCATION MAP



PACIFIC ENVIRONMENTAL GROUP, INC.

WELL / C-6
BORING NO.
PAGE 1 OF 1

PROJECT NO. 520-02.02
LOGGED BY: EL
DRILLING METHOD: HSA
SAMPLING METHOD: Split Spoon
CASING TYPE: Sch 40 PVC
SLOT SIZE: 0.010"
GRAVEL PACK: 10 X 20 SAND

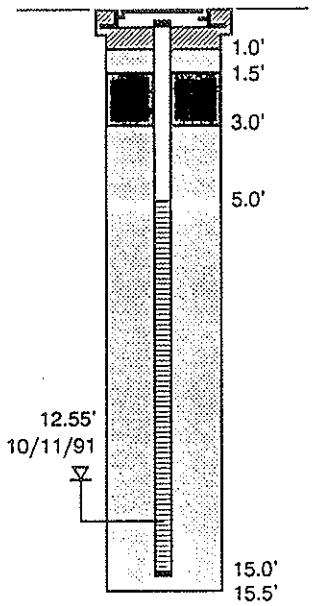
CLIENT: Chevron USA
DATE DRILLED: 8-16-90
LOCATION: 4525 Diagonal Ave.
HOLE DIAMETER: 8"
HOLE DEPTH: 15'
WELL DEPTH: 15'
WELL DIAMETER: 2"

WELL COMPLETION	MOISTURE CONTENT	PID READING (PPM)	PENETRATION RESISTANCE (BLOWS/FT)	DEPTH (FEET)	SAMPLE	GRAPHIC	SOIL TYPE	LITHOLOGY / REMARKS
CEMENT; BENTONITE; SAND	Dp	0	4	2, 4			SM	SILTY SAND; black; 20-30% fines; fine to medium grained; loose; no hydrocarbon-like odor.
	Wt	0	1	6, 8				@7.5': very loose; no hydrocarbon-like odor.
	Wt	0	2	10, 12, 14			OL	ORGANIC CLAY; dark gray; trace silt; abundant peat; very soft; hydrogen sulfide odor; no hydrocarbon-like odor.
				16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38, 40, 42, 44				BOTTOM OF BORING 15'

Equipment Mobile B-61

Land Surface Elevation ~ 8.8 feet * Date 10/8/91

Well Construction Summary



OVM (ppm)	Blows per Foot	Depth	Sample	
		0		BROWN SAND (SP) loose, moist; fine grained.
0.4	10	5		
0.4	8	10		Becomes black, wet at 9 feet.
0.0	4	15		GRAY CLAY (OL) soft, wet; with a trace of organic debris.
				Groundwater not encountered during drilling.
		20		
		25		
		30		
		35		
		40		

*Temporary Benchmark = 8.35 feet

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Log of Monitoring Well 7
Chevron/Site 64534097
Seattle, Washington

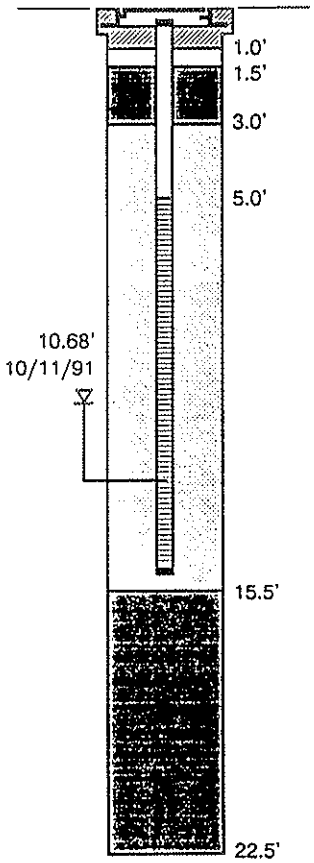
PLATE **B3**

JOB NUMBER	DRAWN	APPROVED	DATE	REVISED	DATE
15,582.022	SES	GCC	10 Aug 92		

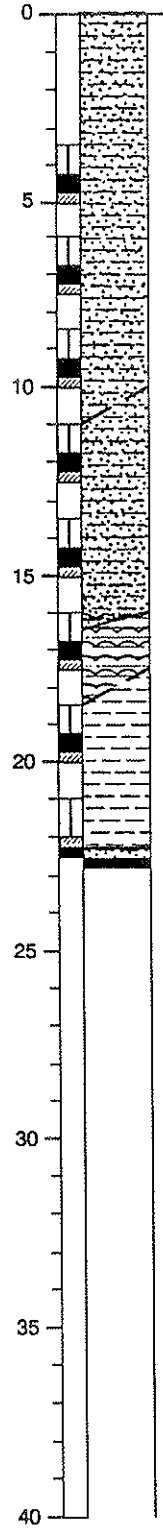
Equipment Mobile B-61

Land Surface Elevation ~ 9.3 feet * Date 10/9/91

Well Construction Summary



OVM (ppm)	Blows per Foot
2.4	14
1.9	7
1.4	2
0.9	10
0.4	4
0.4	2
0.0	2
0.0	5



DARK GRAY BROWN SILTY SAND (SM) medium dense, moist; fine to medium grained, with a trace of organic debris.

Becomes loose at 6 feet.

Becomes dark gray, very loose at 9 feet.

BROWN SILTY SAND (SM) loose, wet; medium grained.

Becomes dark gray at 14 feet.

DARK BROWN ORGANIC SILT (OL) soft, wet; with fibrous organics.

GRAY SANDY SILT (ML) soft, wet; very fine sand, with a trace of organic debris.

BLACK SILTY SAND (SM) loose, wet; fine grained.

Groundwater not encountered during drilling.

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Log of Monitoring Well 8
Chevron/Site 64534097
Seattle, Washington

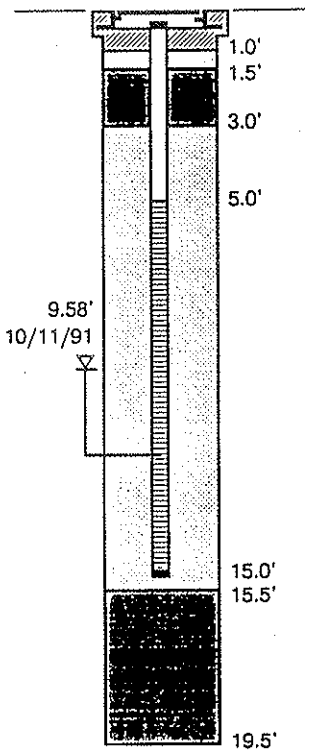
PLATE **B4**

JOB NUMBER	DRAWN	APPROVED	DATE	REVISED	DATE
15,582.022	SES	GCC	10 Aug 92		

Equipment Mobile B-61

Land Surface Elevation ~7.3 feet * Date 10/8/91

Well Construction Summary



OVM (ppm)	Blows per Foot	Depth	Sample	
		0		BROWN SILTY SAND (SM) loose, moist; fine to medium grained.
0.4	5	5		
				BROWN SAND (SP) loose, moist; medium grained.
0.4	9	10		
0.4	4	15		GRAY BROWN SILT (ML) soft, moist; with a trace of root and wood debris.
2.2	2			
0.4	2			
				Becomes wet at 19 feet.
0.0	2	20		Groundwater not encountered during drilling.
		25		
		30		
		35		
		40		

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Log of Monitoring Well 9

Chevron/Site 64534097
Seattle, Washington

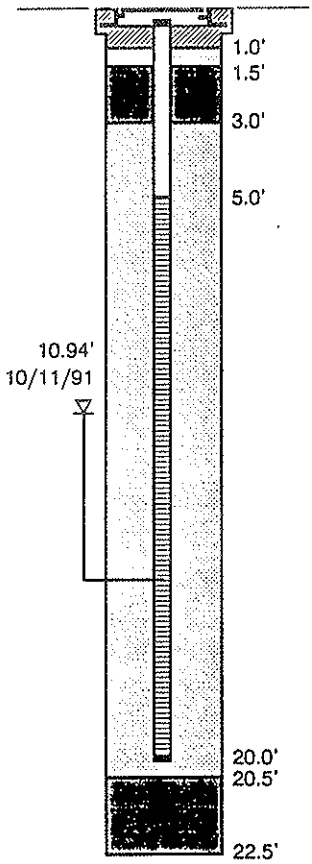
PLATE **B5**

JOB NUMBER	DRAWN	APPROVED	DATE	REVISED	DATE
15,582.022	SES	GCC	10 Aug 92		

Equipment Mobile B-61

Land Surface Elevation ~10.1 feet * Date 10/9/91

Well Construction Summary



OVM (ppm)	Blows per Foot	Depth	Sample	
		0		BROWN SILTY SAND (SM) loose, moist; fine to medium grained.
0.0	8	5		
1.4	4			DARK GRAY SANDY SILT (ML) medium stiff, moist.
0.9	5	10		Becomes black, with a trace of organics at 9.5 feet.
0.4	5			Becomes wet at 12 feet.
0.4	2	15		DARK BROWN BLACK SAND (SP) very loose, wet; medium grained, with some silt.
0.4	3			
0.4	2	20		
0.0	5			GRAY SANDY SILT (ML) medium stiff, wet; very fine sand.
				Groundwater not encountered during drilling.
		25		
		30		
		35		
		40		

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Log of Monitoring Well 10

Chevron/Site 64534097
Seattle, Washington

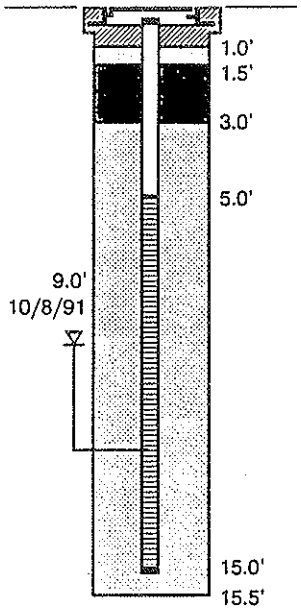
PLATE **B6**

JOB NUMBER	DRAWN	APPROVED	DATE	REVISED	DATE
15,582.022	SES	GCC	10 Aug 92		

Equipment Mobile B-61

Land Surface Elevation ~7.5 feet * Date 10/8/91

Well Construction Summary



OVM (ppm)	Blows per Foot	Depth	Sample	
		0		BROWN SILTY SAND (SM) loose, moist; fine to medium grained.
0.4	7	5		
0.4	10	10		Becomes black, saturated at 9.5 feet.
0.0	2	15		GRAY CLAY (CL) very soft, saturated; with a trace of organics.
		20		Groundwater encountered at 9 feet during drilling.
		25		
		30		
		35		
		40		

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Log of Monitoring Well 11

Chevron/Site 64534097
Seattle, Washington

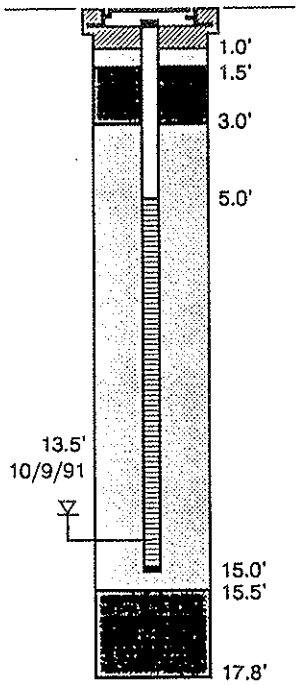
PLATE **B7**

JOB NUMBER	DRAWN	APPROVED	DATE	REVISED	DATE
15,582.022	SES	GCC	10 Aug 92		

Equipment Mobile B-61

Land Surface Elevation ~9.8 feet * Date 10/9/91

Well Construction Summary



OVM (ppm)	Blows per Foot	Depth	Sample	
		0		BROWN SILTY SAND (SM) loose, moist; fine to medium grained.
0.4	7	5		
0.9	7			Becomes gray at 7 feet.
0.4	2	10		Becomes very loose, wet at 9.5 feet.
1.4	2			Becomes gray brown, moist at 12 feet.
0.9	2	15		Becomes saturated, with a trace of organics at 14.5 feet.
0.4	3			BROWN ORGANIC SILT (OL) soft, wet; fibrous organics.
		20		Groundwater encountered at 13.5 feet during drilling.
		25		
		30		
		35		
		40		

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Log of Monitoring Well 12

Chevron/Site 64534097
Seattle, Washington

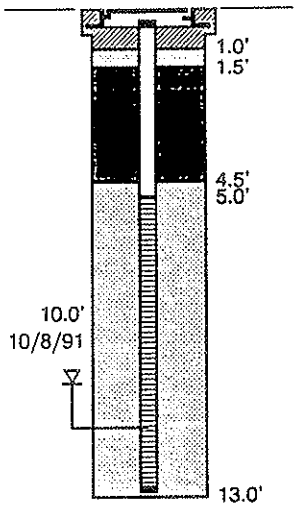
PLATE **B8**

JOB NUMBER	DRAWN	APPROVED	DATE	REVISED	DATE
15,582.022	SES	GCC	10 Aug 92		

Equipment Mobile B-61

Land Surface Elevation ~6.0 feet * Date 10/8/91

Well Construction Summary



OVM (ppm)	Blows per Foot
1.3	8
0.8	8
0.4	15

Depth: 0, 5, 10, 15, 20, 25, 30, 35, 40

Sample

DARK BROWN SAND (SP) loose, moist; fine grained, with a trace of fine gravel and silt.

BLACK SILTY SAND (SM) loose, saturated; fine grained, with some fine gravel.

DARK BROWN ORGANIC SILT (OL) stiff, saturated; with a trace of very fine sand.

Groundwater encountered at 10 feet during drilling.

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Log of Monitoring Well 13

Chevron/Site 64534097
Seattle, Washington

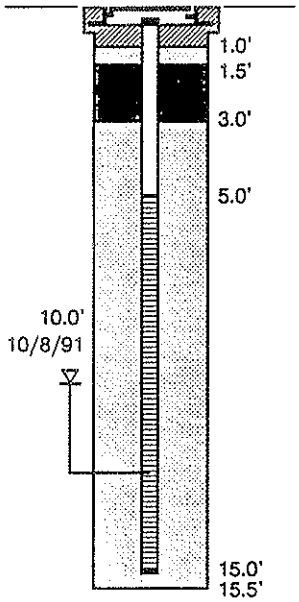
PLATE **B9**

JOB NUMBER	DRAWN	APPROVED	DATE	REVISED	DATE
15,582.022	SES	GCC	10 Aug 92		

Equipment Mobile B-61

Land Surface Elevation ~9.8 feet Date 10/8/91

Well Construction Summary



OVM (ppm)	Blows per Foot	Depth	Sample	
		0		BROWN SILTY SAND (SM) medium dense, moist; fine to medium grained, with a trace of fine gravel.
2.3	27	5		
0.4	9	10		Becomes dark gray, very fine to fine grained at 9.5 feet.
0.0	2	15		BLACK SAND (SP) loose, saturated; medium grained. DARK GRAY SANDY SILT (ML) soft, saturated; fine sand, with a trace of organics.
		20		Groundwater encountered at 10 feet during drilling.
		25		
		30		
		35		
		40		

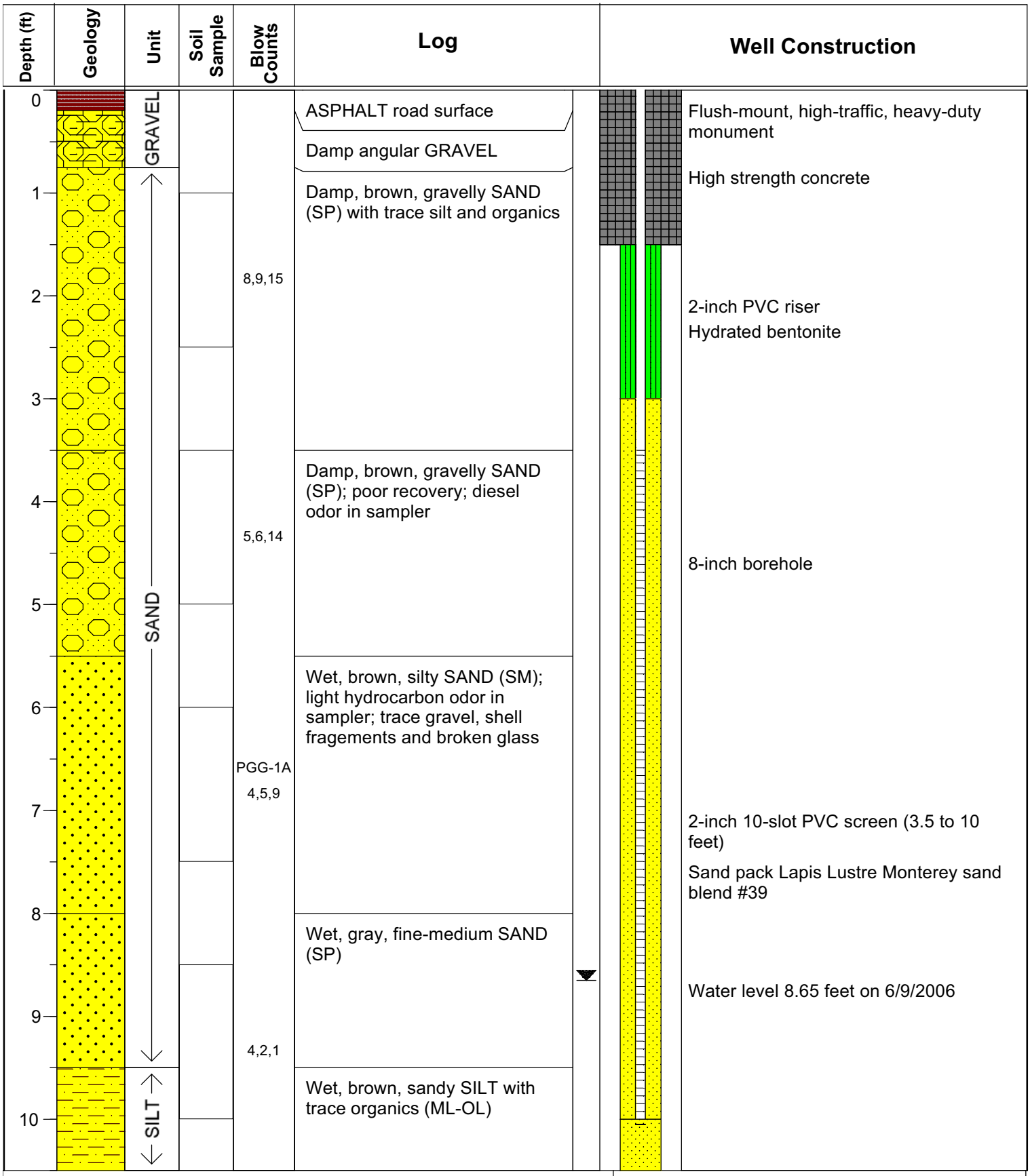
Applied Geotechnology Inc.
Geotechnical Engineering
Geology & Hydrogeology

Log of Monitoring Well 14

Chevron/Site 64534097
Seattle, Washington

PLATE **B10**

JOB NUMBER	DRAWN	APPROVED	DATE	REVISED	DATE
15,582.022	SES	GCC	10 Aug 92		



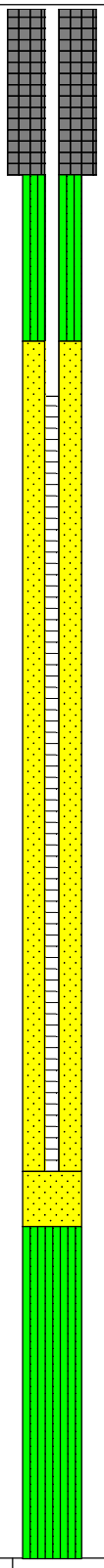
Project Name: T-108
Drilling Method: Hollow Stem Auger
Driller: Andy Flanagan
Firm: Cascade Drilling
Consulting Firm: PGG
Logged by: Glen Wallace
Location: Terminal 108, Seattle, Washington

Well Name: PGG-1
Ecology ID: APQ005
MP Elevation:15.04
Datum: MLLW
Installed: 6/6/2006

Figure A-1
GEOLOGIC LOG AND AS-BUILT FOR WELL PGG-1
Port of Seattle T-108
Seattle, Washington
JK0410, 6/6/2006

PgG

Depth (ft)	Geology	Unit	Soil Sample	Blow Counts	Log	Well Construction
0		SAND			Damp, brown, medium SAND (SP); trace silt and gravel; poorly graded/sorted	Flush-mount monument Concrete
1						
2				6,6,5		Hydrated bentonite 2-inch PVC riser
3						
4					Damp, light gray, silty SAND (SM/SP); silt occurs as thin, irregular layers with oxidation at contact with sand	
5				3,3,3		2-inch 10-slot PVC screen (3.5 to 10.5 feet)
6					Moist, dark gray, fine silty SAND (SP) with isolated fragments of tan silt; trace gravel	
7				3,3,3		Water level 7.22 ft on 6/8/2006 Sand pack Lapis Lustre Monterey Sand blend #39
8						
9		SILT			Moist, dark gray sandy SILT (SM) with trace organics, trace shell fragments; light diesel odor in sampler	
10				PGG-2A 3,3,3		8-inch borehole
11					Wet, dark gray, sandy SILT (OL/CL) with trace organics and mixed peaty layers; light diesel odor in sampler	
12				PGG-2B 6,5,5		Bentonite
13						
14						



Project Name: T-108
Drilling Method: Hollow Stem Auger
Driller: Andy Flanagan
Firm: Cascade Drilling
Consulting Firm: PGG
Logged by: Glen Wallace
Location: Terminal 108, Seattle, Washington

Well Name: PGG-2
Ecology ID: APQ002
MP Elevation:18.82
Datum: MLLW
Installed: 6/5/2006

Figure A-2

GEOLOGIC LOG AND AS-BUILT FOR WELL PGG-2

Port of Seattle T-108
Seattle, Washington
JK0410, 6/6/2006

PgG

Depth (ft)	Geology	Unit	Soil Sample	Blow Counts	Log	Well Construction
0		SAND			Moist, brown-gray, fine SAND (SP); poorly sorted, poorly graded	Flush-mount monument
1						Concrete
2				5,6,5		2-inch PVC riser Hydrated bentonite
3						
4						
4		SILT		4,4,4	Wet, tan, SILT (CL)	
5		SAND			Wet, brown, fine SAND (SP); faint paleosol at silt contact	2-inch 10-slot PVC screen (3.5 to 11 feet)
6					Moist, gray, fine-medium SAND (SP)	
7				4,5,6		Water level 6.92 feet 6/8/2006
8						Sand pack Lapis Lustre Monterey Sand blend #39
9					Wet, gray, fine-medium SAND (SP); poorly sorted, poorly graded	
10				1,2,3		8-inch borehole
11						
12		SILT		1,1,2	Wet, brown SILT (OL); trace sand at top of sample; trace organics increase downwards	Bentonite
13						

Project Name: T-108
Drilling Method: Hollow Stem Auger
Driller: Andy Flanagan
Firm: Cascade Drilling
Consulting Firm: PGG
Logged by: Glen Wallace
Location: Terminal 108, Seattle, Washington

Well Name: PGG-3
Ecology ID: APQ004
MP Elevation: 13.26
Datum: MLLW
Installed: 6/5/2006

Figure A-3
GEOLOGIC LOG AND AS-BUILT FOR WELL PGG-3
Port of Seattle T-108
Seattle, Washington
JK0410, 6/6/2006

PgG

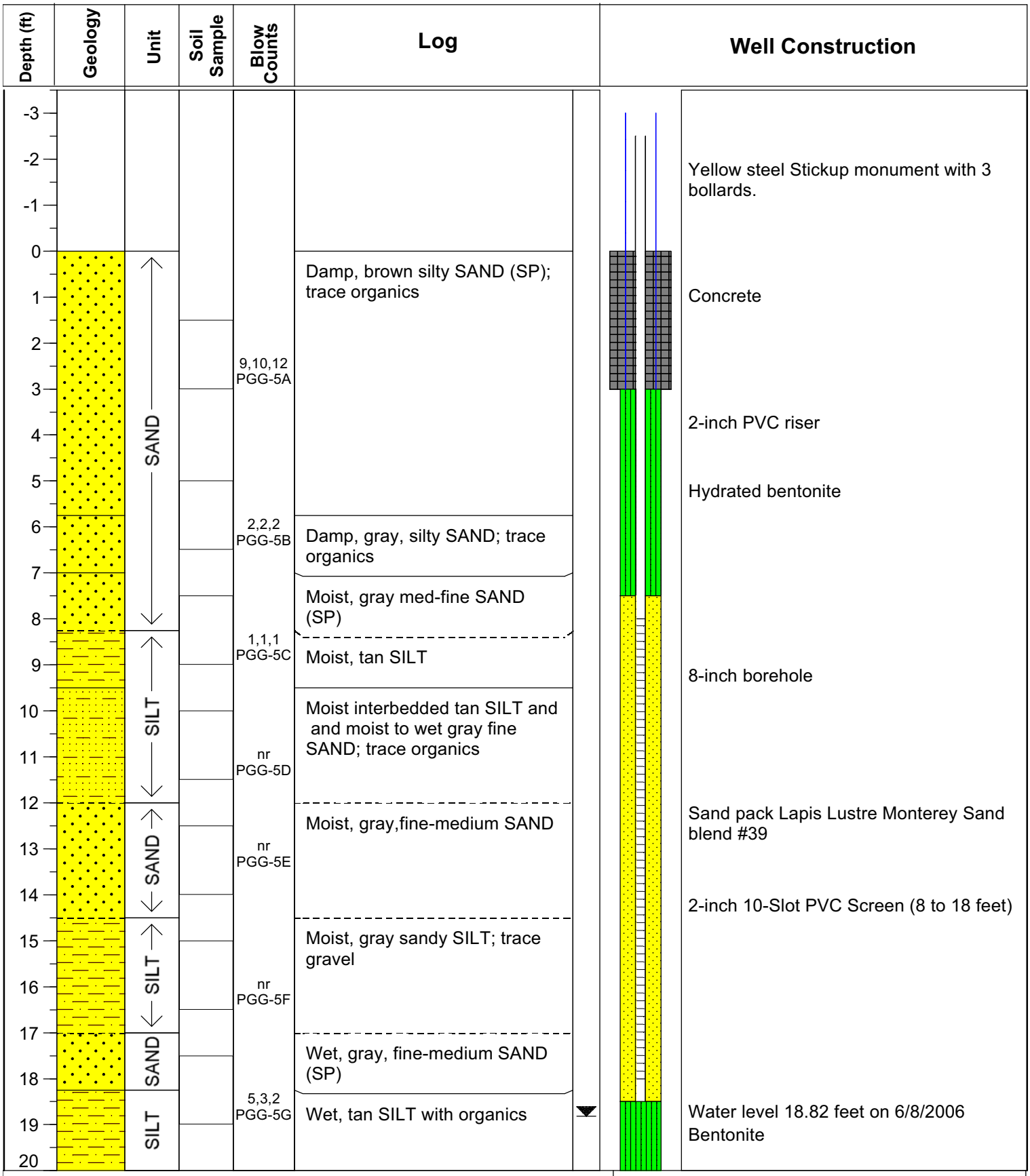
Depth (ft)	Geology	Unit	Soil Sample	Blow Counts	Log	Well Construction
0		AS.			ASPHALT	Flush-mount monument
		GRVL.			GRAVEL	Concrete
1		SAND			Damp, brown to dark brown, gravelly SAND (SP); trace organic material; no odor	2-inch PVC riser
				10,18,11		
2						Hydrated bentonite
3						
4				4,4,4	Damp, grayish brown, med-fine SAND (SP); trace silt; homogeneous	
5						Sand pack Lapis Lustre Monterey Sand blend #39
6					Damp, gray, fine SAND (SP); trace silt	
7				4,5,4		10-slot PVC screen (3.5 to 10 feet)
8						8-inch borehole
9					Wet, gray,fine SAND (SP)	
				nr		Water level 9.47 feet on 6/8/2006
10		SILT			Wet, dark gray, SILT (MM); trace organics	

Project Name: T-108
Drilling Method: Hollow Stem Auger
Driller: Andy Flanagan
Firm: Cascade Drilling
Consulting Firm: PGG
Logged by: Glen Wallace
Location: Terminal 108, Seattle, Washington

Well Name: PGG-4
Ecology ID: APQ006
MP Elevation: 15.21
Datum: MLLW
Installed: 6/6/2006

Figure A-4
GEOLOGIC LOG AND AS-BUILT FOR WELL PGG-4
CORRECTION
Port of Seattle T-108, Seattle, WA
JK0410, 6/6/2006

PgG

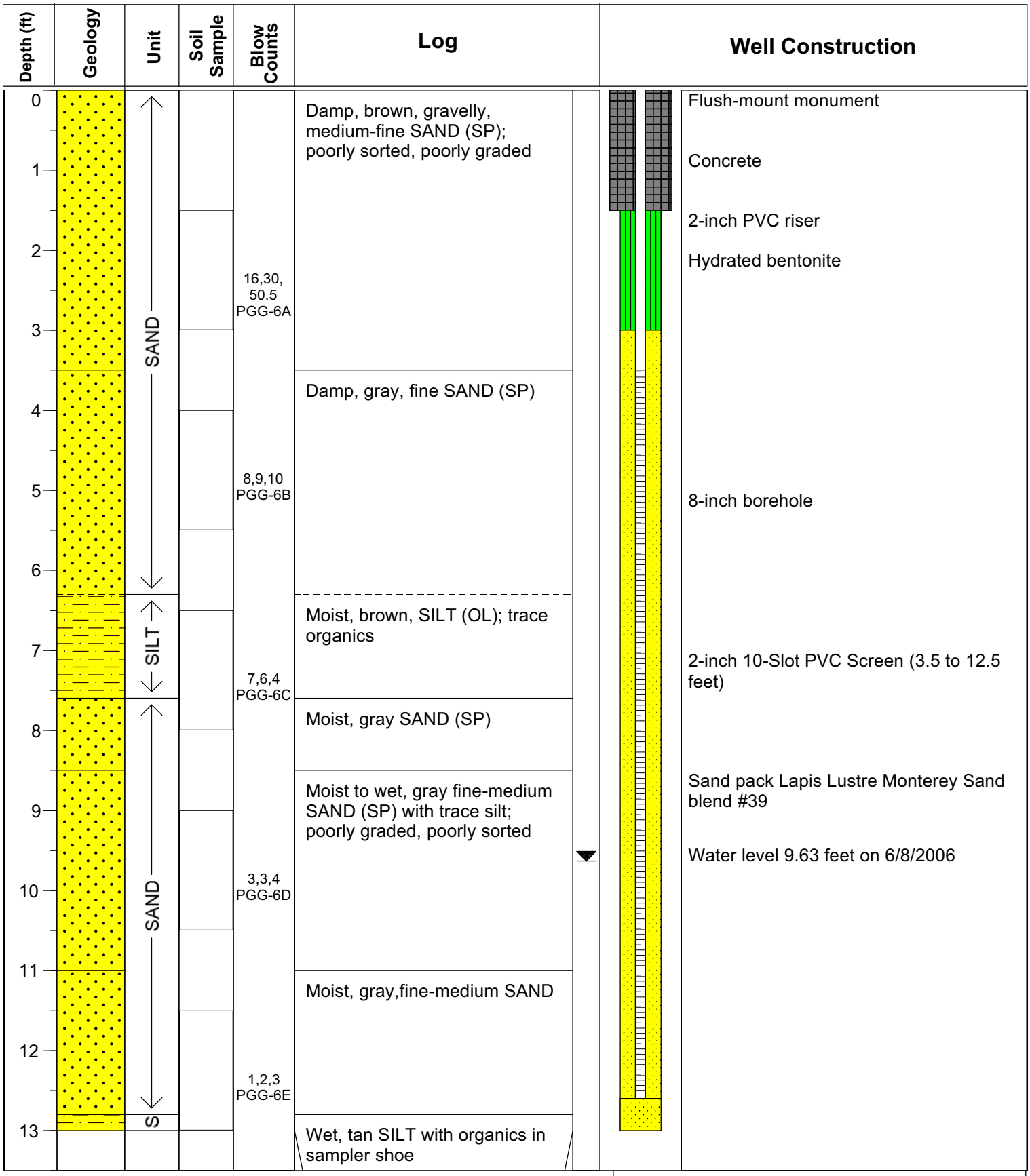


Project Name: T-108
Drilling Method: Hollow Stem Auger
Driller: Andy Flanagan
Firm: Cascade Drilling
Consulting Firm: PGG
Logged by: Glen Wallace
Location: Terminal 108, Seattle, Washington

Well Name: PGG-5
Ecology ID: APQ007
MP Elevation: 22.81
Datum: MLLW
Installed: 6/6/2006
nr = not recorded

Figure A-5
GEOLOGIC LOG AND AS-BUILT FOR WELL PGG-5
Port of Seattle T-108
Seattle, Washington
JK0410, 6/6/2006

PgG

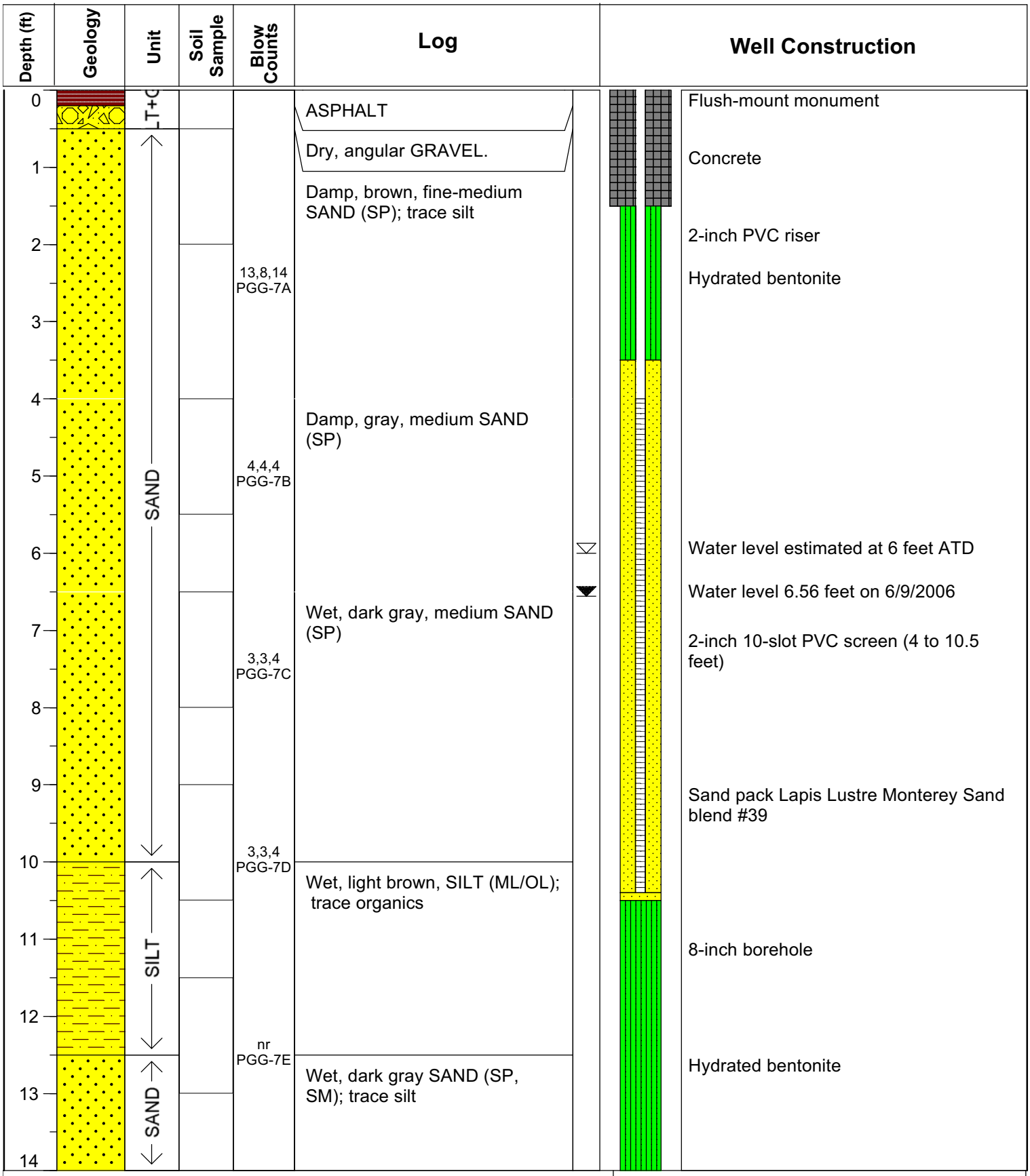


Project Name: T-108
Drilling Method: Hollow Stem Auger
Driller: Andy Flanagan
Firm: Cascade Drilling
Consulting Firm: PGG
Logged by: Glen Wallace
Location: Terminal 108, Seattle, Washington

Well Name: PGG-6
Ecology ID: APQ003
MP Elevation: 15.03
Datum: MLLW
Installed: 6/5/2006

Figure A-6
GEOLOGIC LOG AND AS-BUILT FOR WELL PGG-6
Port of Seattle T-108
Seattle, Washington
JK0410, 6/6/2006

PgG



Project Name: T-108
Drilling Method: Hollow Stem Auger
Driller: Andy Flanagan
Firm: Cascade Drilling
Consulting Firm: PGG
Logged by: Glen Wallace
Location: Terminal 108, Seattle, Washington

Well Name: PGG-7
Ecology ID: APQ001
MP Elevation: 12.24
Datum: MLLW
Installed: 6/5/2006
nr = not recorded

Figure A-7
GEOLOGIC LOG AND AS-BUILT FOR WELL PGG-7
Port of Seattle T-108
Seattle, Washington
JK0410, 6/6/2006

PgG

Boring A

ELEVATION 19 ±

DEPTH IN FEET			
0	6	SM	BROWN AND GRAY SILTY FINE TO MEDIUM SAND (LOOSE) (FILL)
5	4		
10	7	SP	BROWN AND GRAY FINE TO MEDIUM SAND (LOOSE) (FILL)
15	2	ML	GRAY SILT WITH A TRACE OF ORGANIC MATERIAL (MEDIUM STIFF)
20	3	SM	DARK GRAY SILTY FINE TO MEDIUM SAND (VERY LOOSE)
25			

BORING COMPLETED 10-26-81
GROUND WATER ENCOUNTERED AT DEPTH OF 10.7' ON 10-26-81
2" DIAMETER PVC WELL CASING INSTALLED TO DEPTH OF 19', SCREENED IN LOWER 5'

Boring B

ELEVATION 20 ±

DEPTH IN FEET			
0	4	SM	DARK BROWN AND BLACK SILTY FINE TO MEDIUM SAND WITH OCCASIONAL LUMPS OF GRAY, CLAYEY SILT (LOOSE) (FILL)
5	7		GRADES WITH GRAVEL AND DECAYED ORGANIC MATERIAL
10	2		
15	18"	ML	DARK GRAY AND BLACK SILT WITH ORGANIC MATERIAL (VERY SOFT)
		OL	
20	2	SM	DARK GRAY TO BROWN SILTY FINE TO MEDIUM SAND WITH ORGANIC MATERIAL (VERY LOOSE)
	18"	ML	
25	1		GRAY SILT WITH A TRACE OF ORGANIC MATERIAL (VERY SOFT)
	18"		

BORING COMPLETED 10-26-81
GROUND WATER ENCOUNTERED AT DEPTH OF 11.2' ON 10-26-81
2" DIAMETER PVC WELL CASING INSTALLED TO DEPTH OF 19', SCREENED IN LOWER 5'

Boring C

ELEVATION 19 ±

DEPTH IN FEET			
0	10	SM	BROWN AND BLACK SILTY FINE TO MEDIUM SAND WITH A TRACE OF GRAVEL AND ORGANIC (LOOSE) (FILL) MATERIAL
5	6	SP	DARK GRAY AND BROWN FINE TO MEDIUM SAND (LOOSE) (FILL)
10	6	ML	GRAY SANDY SILT WITH A TRACE OF ORGANIC MATERIAL (MEDIUM STIFF)
15	2		GRADES WITH A TRACE OF CLAY AND TO VERY SOFT
20	3		
25			

BORING COMPLETED 10-26-81
GROUND WATER ENCOUNTERED AT DEPTH OF 13.4' ON 10-26-81
2" DIAMETER PVC WELL CASING INSTALLED TO DEPTH OF 20', SCREENED IN LOWER 5'

Boring D

ELEVATION 16 ±

DEPTH IN FEET			
0	4	SM	BROWN AND DARK GRAY SILTY FINE TO MEDIUM SAND (VERY LOOSE) (FILL)
5	1		GRADES TO BLACK WITH LUMPS OF GRAY SILT AND ORGANIC MATERIAL
10	13		GRADES TO MEDIUM DENSE
15	1	ML	GRAY SANDY SILT (VERY SOFT)
20	2		
25			

BORING COMPLETED 10-26-81
GROUND WATER ENCOUNTERED AT DEPTH OF 12.1' ON 10-27-81
2" DIAMETER PVC WELL CASING INSTALLED TO DEPTH OF 19', SCREENED IN LOWER 5'

Key:

BLOWS REQUIRED TO DRIVE DAMES & MOORE SAMPLER ONE FOOT WITH A HAMMER WEIGHT OF 325 LBS. AND A STROKE OF 30 INCHES.

6 INDICATES DEPTH AT WHICH UNDISTURBED DAMES & MOORE SAMPLE WAS EXTRACTED.

INDICATES DEPTH AT WHICH DISTURBED DAMES & MOORE SAMPLE WAS EXTRACTED.

Notes:

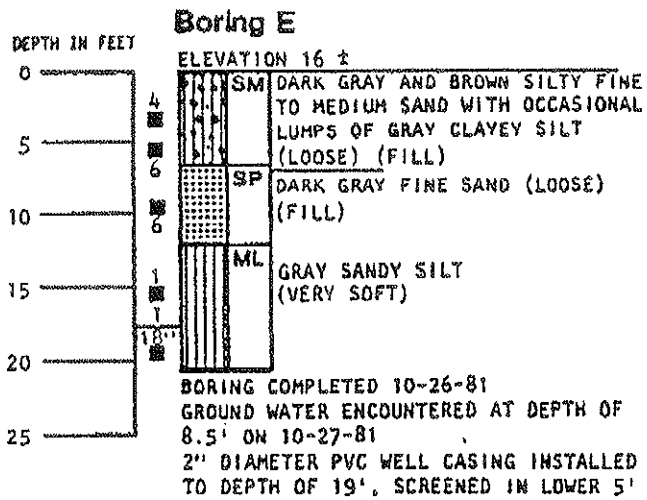
1. THE DISCUSSION IN THE TEXT OF THIS REPORT IS NECESSARY FOR A PROPER UNDERSTANDING OF THE NATURE OF THE SUBSURFACE MATERIAL.
2. THE ELEVATIONS SHOWN HAVE BEEN ESTIMATED FROM MAPS AND SHOULD BE CONSIDERED APPROXIMATE; DATUM IS MLLW.

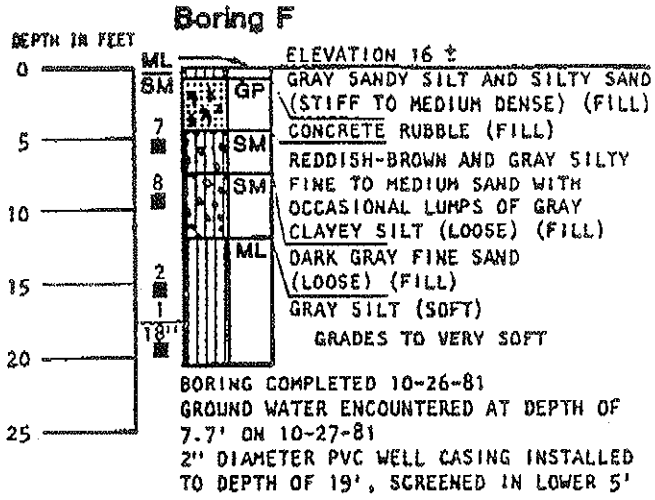
LOG OF BORINGS

Dames & Moore

1910-058

Plate 2

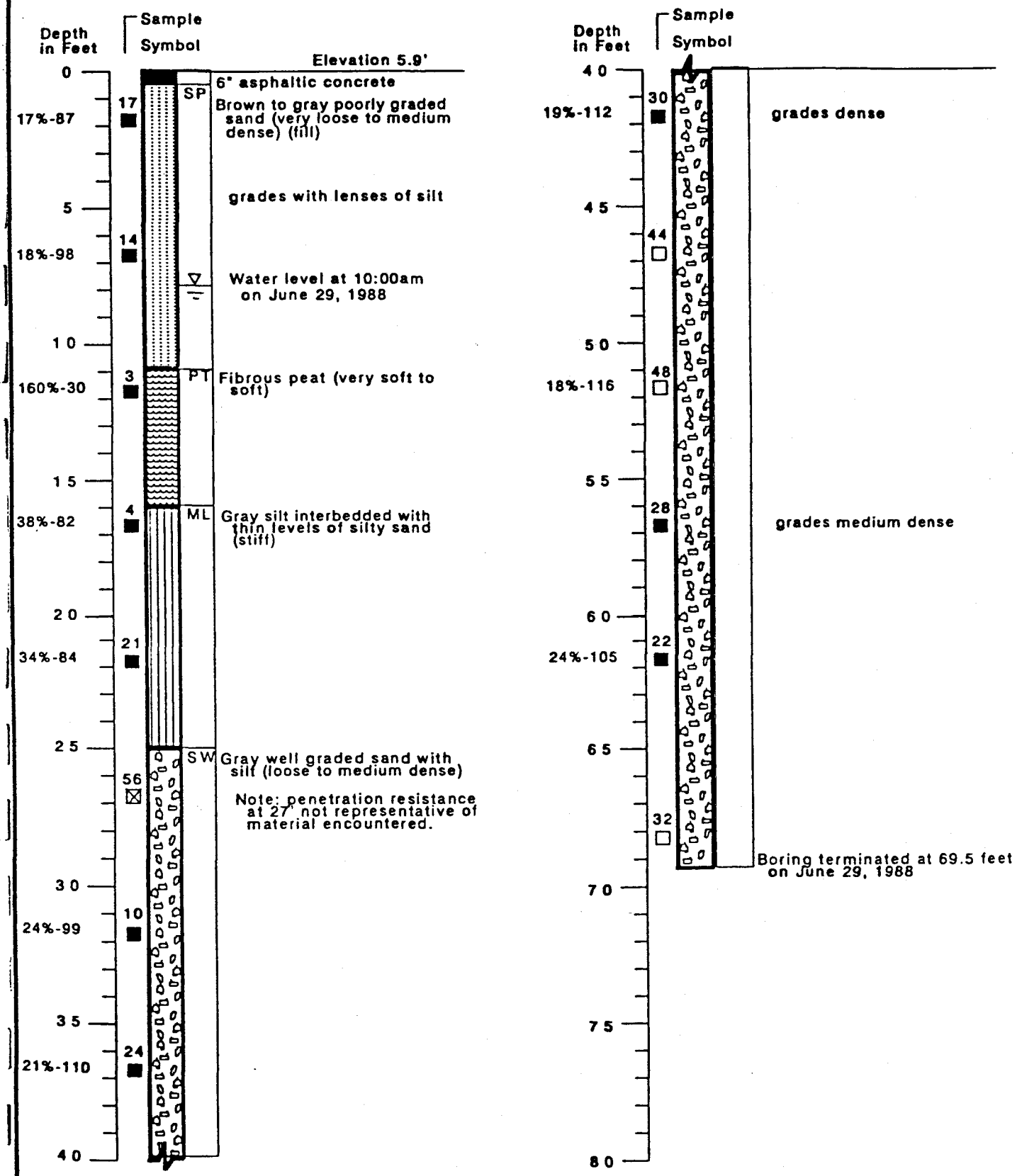




LOG OF BORINGS

Dames & Moore

Boring 88-1

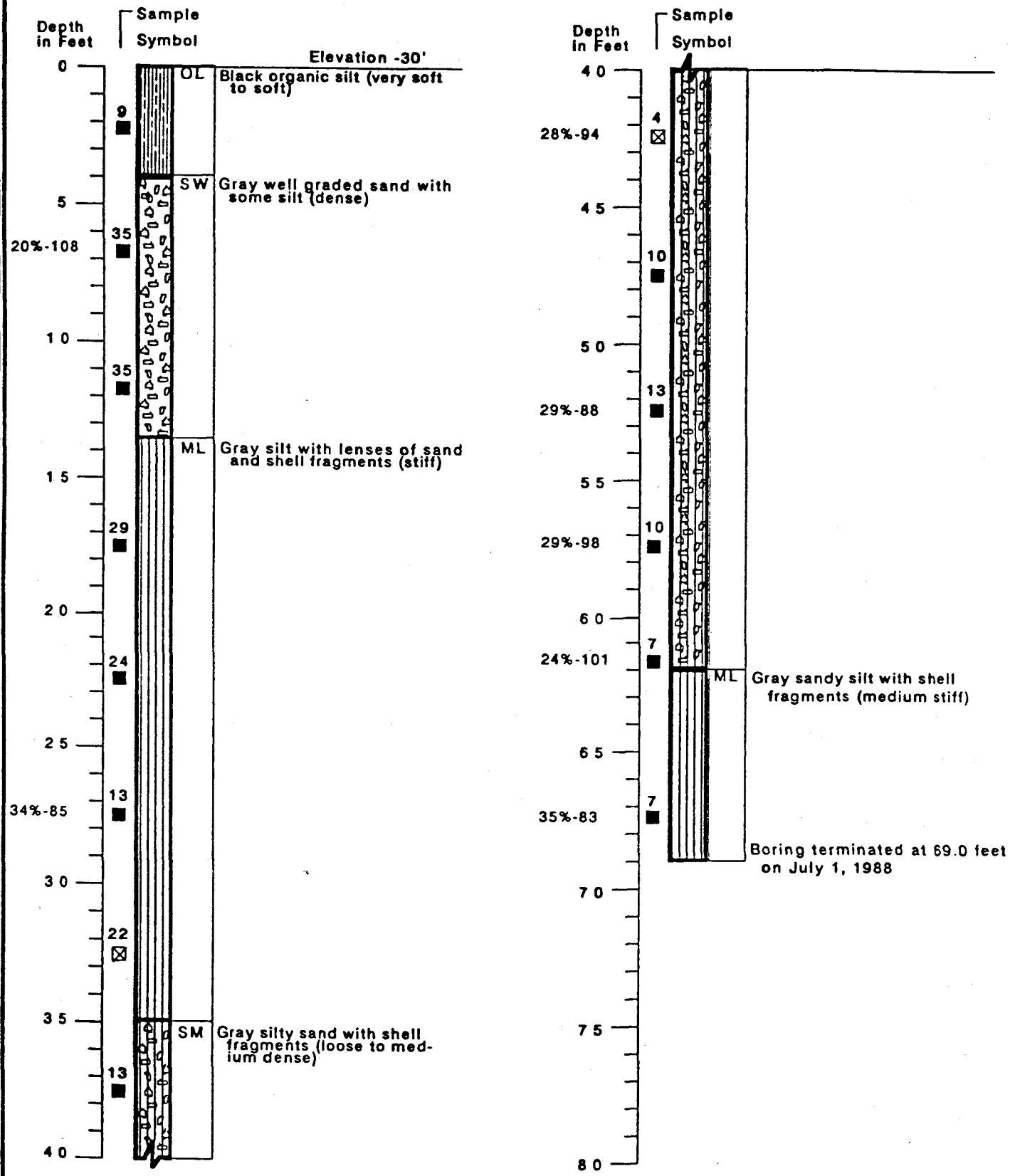


Log of Borings

Dames & Moore

Job No. 17405-001-016

Boring 88-2

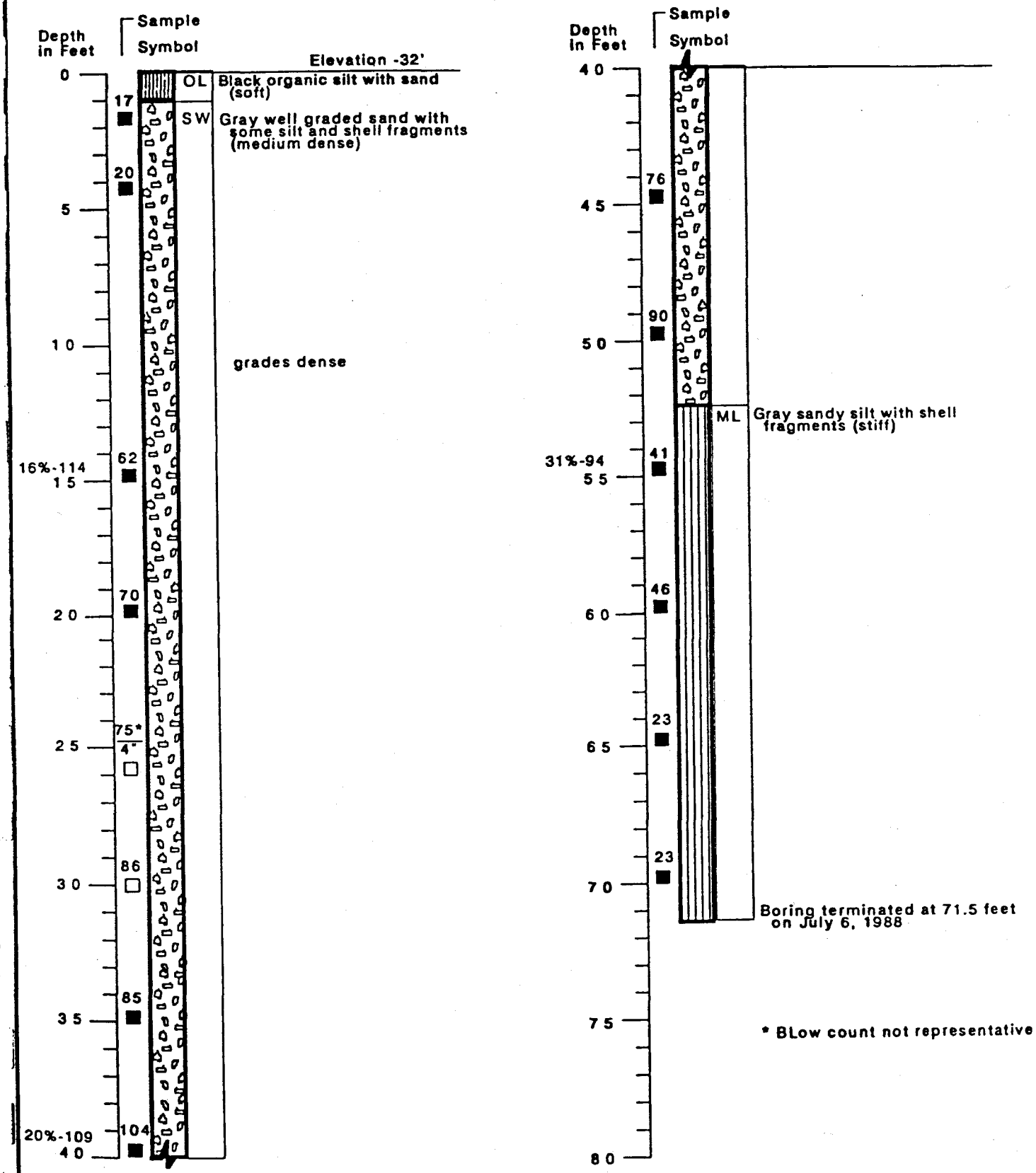


Log of Borings

Dames & Moore

Job No. 17405-001-016

Boring 88-3



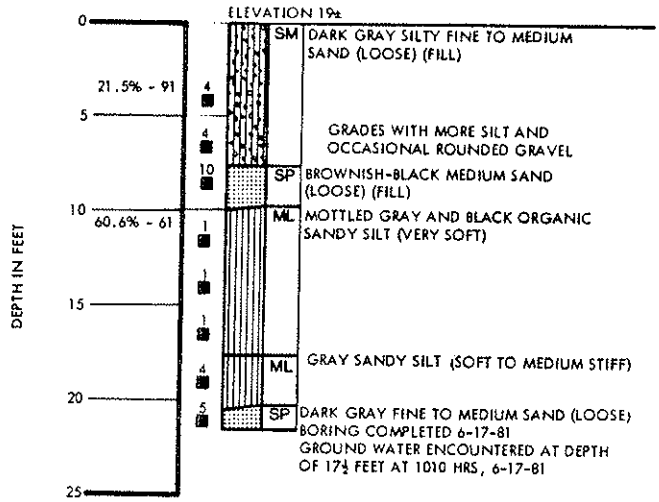
Log of Borings

Dames & Moore

Job No. 17405-001-016

Plate A-3

BORING 1



KEY:

4 — BLOWS REQUIRED TO DRIVE DAMES AND MOORE SAMPLER ONE FOOT WITH A HAMMER WEIGHT OF 325 LBS., AND A STROKE OF 18 INCHES.

MOISTURE CONTENT 21.5%-91 DRY DENSITY IN PCF — INDICATES DEPTH AT WHICH UNDISTURBED SAMPLE WAS EXTRACTED.

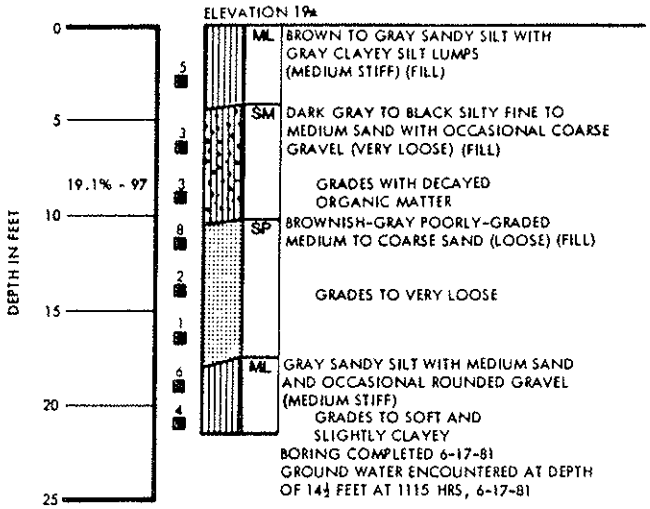
INDICATES DEPTH AT WHICH DISTURBED SAMPLE WAS EXTRACTED.

INDICATES SAMPLING ATTEMPT WITH NO RECOVERY.

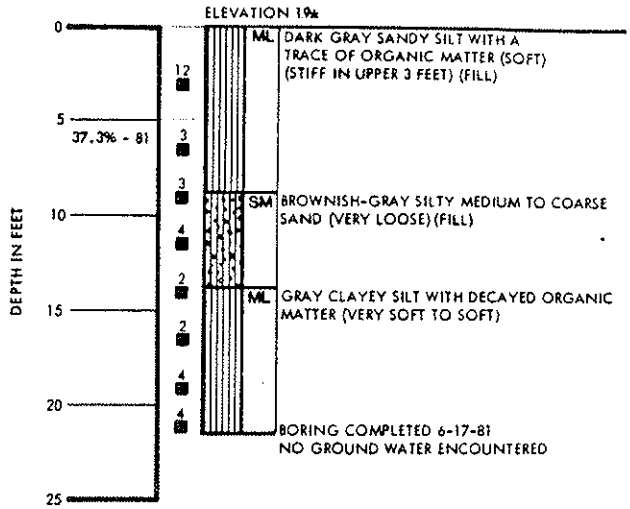
NOTES:
1. THE DISCUSSION IN THE TEXT OF THIS REPORT IS NECESSARY FOR A PROPER UNDERSTANDING OF THE NATURE OF THE SUBSURFACE MATERIALS.
2. THE ELEVATIONS SHOWN HAVE BEEN ESTIMATED FROM MAPS AND SHOULD BE CONSIDERED APPROXIMATE; DATUM IS MLLW.

LOG OF BORINGS

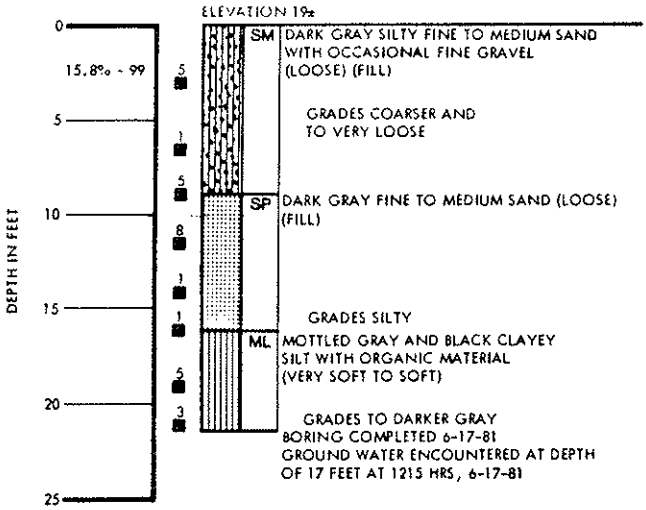
BORING 2



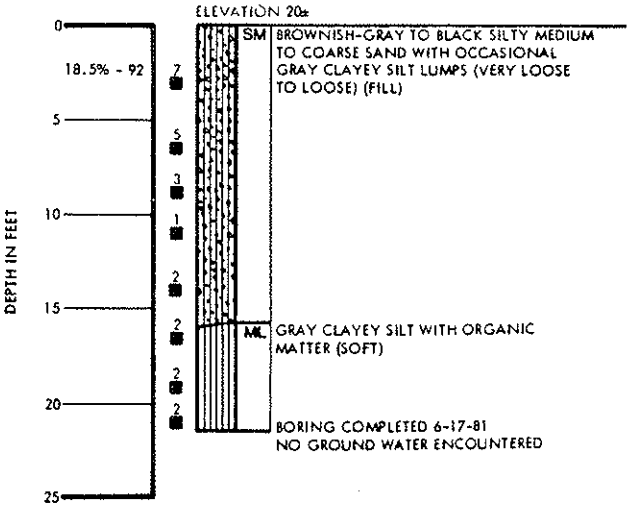
BORING 4



BORING 3

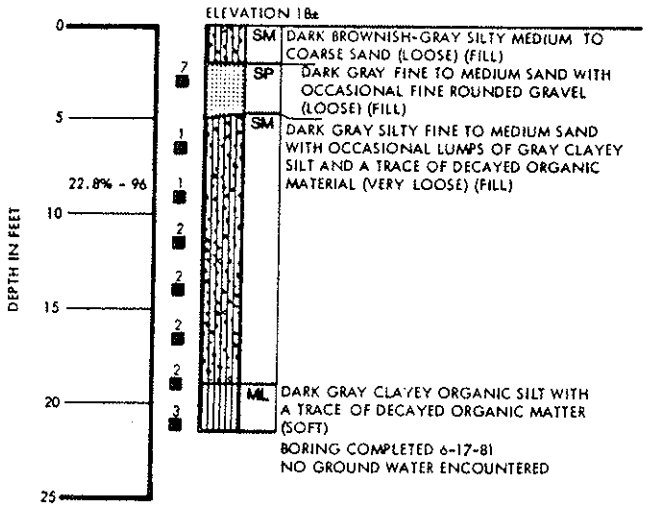


BORING 5

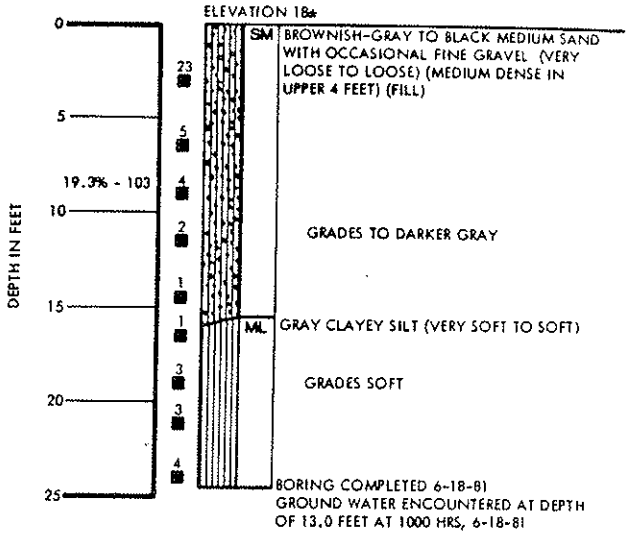


LOG OF BORINGS

BORING 6



BORING 8



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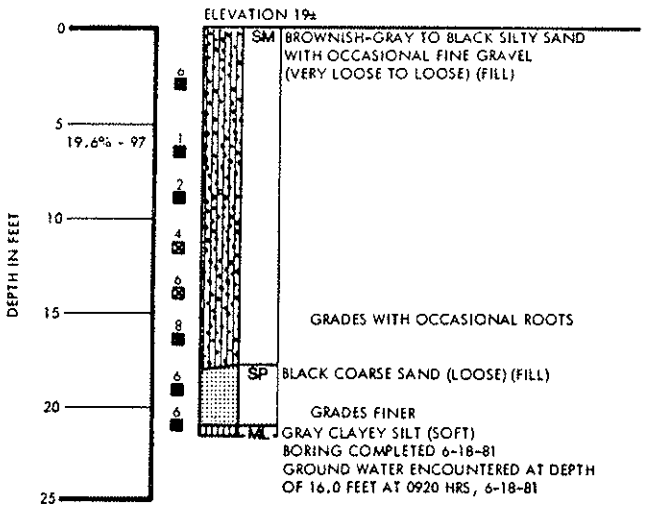
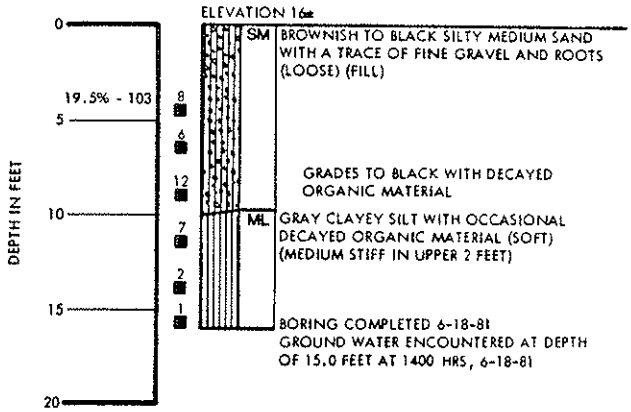
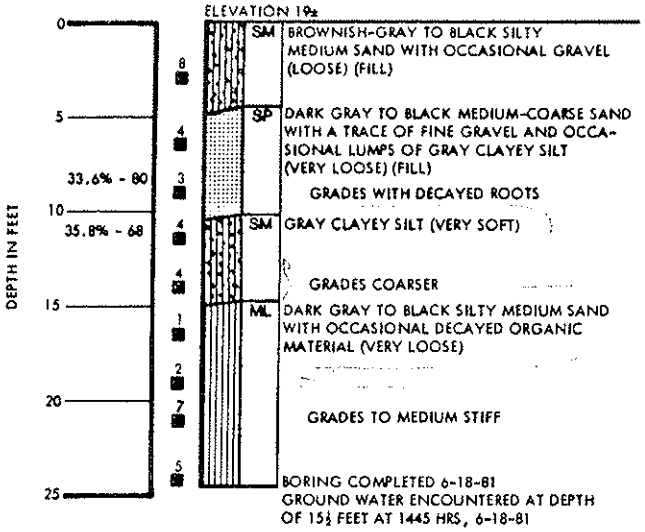


BORING 9

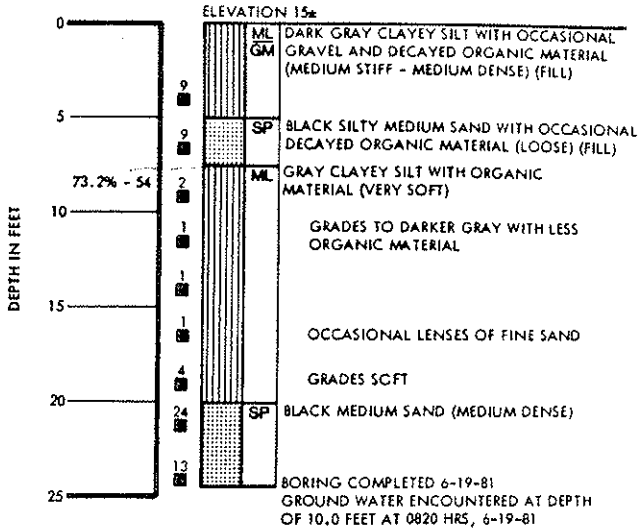


LOG OF BORINGS

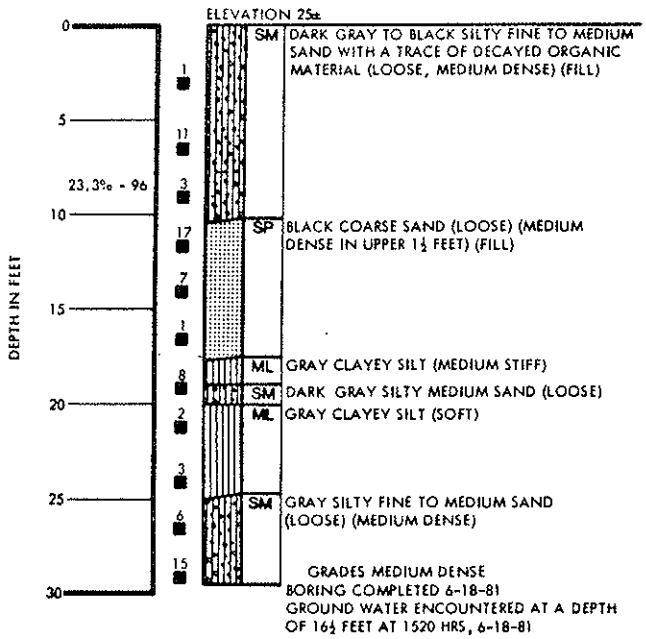
BORING 10



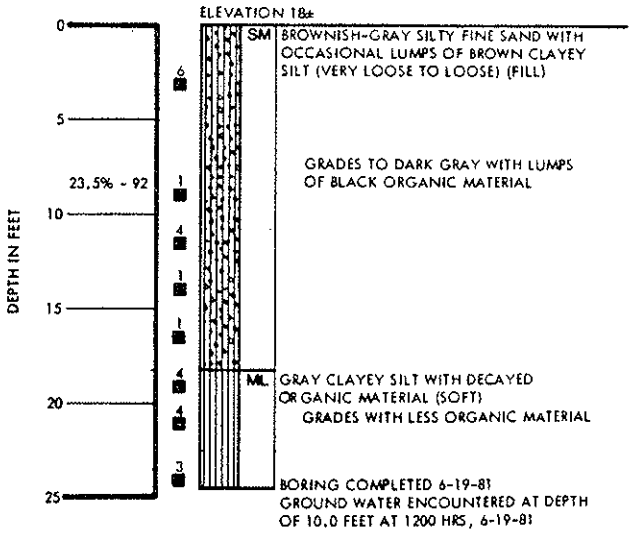
BORING 12



BORING 11



BORING 13



LOG OF BORINGS