Appendix G

Priority 6 (I-5) Site Data

Appendix G - Priority 6 (5 Fwy)

Geotechnical Laboratory Test Methods

General

The results of geotechnical laboratory tests undertaken on selected soil samples obtained from subsurface investigations at the Priority 6 (5 Fwy) sites are summarized in this appendix. The following types of tests were performed:

- water content tests
- liquid limit and plastic limit tests
- particle-size distribution tests
- hydraulic conductivity (permeability) tests
- pH
- organic matter content
- cation exchange capacity

Brief descriptions of the testing methods are presented below. Results of the tests are summarized on tables included in the front of the individual Priority 6 site data sections in this appendix. Plasticity charts showing plots of plasticity index versus liquid limit, and particle-size distribution plots, are also included in the site data sections and results are presented on the corresponding logs at the sample depths.

Water Content

The in situ water content of selected soil samples was tested in accordance with ASTM D 2216-98, "Standard Test Method for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass". This test method defines water content in the manner generally used in geotechnical practice: the ratio of the weight of water in the specimen to the weight of solid material, expressed as a percentage.

Liquid and Plastic Limits

Tests on selected soil samples to obtain the liquid and plastic limits and the plasticity index were performed in accordance with ASTM D 4318-98, "Standard Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils". The test results were used to aid in classification of fine-grained materials such as silt and clay and the fraction of coarse soils that was finer than the No. 40 sieve.

Particle Size Distribution

Tests on selected soil samples to obtain the distribution of particle sizes were performed in accordance with ASTM D 422-63(1998), "Standard Test Method for Particle-Size Analysis of Soils", and/or D 1140-97, "Standard Test Method for Amount of Material in Soils Finer Than the No. 200 (75-μm) Sieve".

On some samples a sieve analysis was performed, which yields the distribution of particle sizes larger than the U.S. No. 200 sieve. Sieving through the No. 200 was performed by washing.

On other samples a partial sieve analysis was performed, called a wash analysis, primarily to obtain the percent of particles passing the No. 200 sieve, i.e., fines content. The wash analysis also yielded the percent of particles passing the No. 40 and No. 100 sieves.

In other cases a hydrometer analysis was performed in addition to a sieve analysis. The hydrometer analysis yields the distribution of particle sizes smaller than the No. 200 sieve opening.

For correlation with the soil profile, the fines content1 values from sieve analyses (denoted by "SA") and wash analyses (WA) of samples from the borings and test pits are presented on the corresponding logs.

Hydraulic Conductivity (Permeability)

Hydraulic conductivity tests were performed on selected samples from Priority 6 sites in general accordance with ASTM D 5084-90 (1997), "Standard Test Method for Measurement of Hydraulic Conductivity of Saturated Porous Materials Using a Flexible Wall Permeameter".

pH

Soil pH was determined using methods consistent with the US Department of Agriculture, US Regional Salinity Laboratory, Handbook No. 60.

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[1] "Fines" is defined in this report as the soil particles passing a U.S. Standard No. 200 sieve, and "fines content" is defined as the percentage of soil particles, on a dry weight basis, passing a U.S. Standard No. 200 sieve in a sieve analysis by washing.

Organic Matter Content

Organic matter content tests were performed using the Muffle Furnace Method.

Cation Exchange Capacity

The test method involved an acid extraction followed by Inductively Coupled Plasma/Mass Spectrometer (ICPMS) analysis.

APPENDIX G

5-2 (Alondra Blvd.)

Table 1	Geotechnical Laboratory Test Data
Figure 5-2-1	Site Plan
Figure 5-2-2	Geologic Cross Section A-A'
Figure 5-2-3	Log of Boring 5-2-MW-1
Figure 5-2-4	Groundwater Monitoring Well 5-2-MW-1 Diagram
Figure 5-2-5	Groundwater Monitoring Well 5-2-MW-1 Photographs
Figure 5-2-6	Log of Boring 5-2-B-1
Figure 5-2-7	Log of Boring 5-2-B-2
Figure 5-2-8	Log of Boring 5-2-P-1
Figure 5-2-9	Infiltration Data for 5-2-P-1
Figure 5-2-10	Log of Boring 5-2-P-2
Figure 5-2-11	Infiltration Data for 5-2-P-2
Figure 5-2-12	Log of Boring 5-2-P-3
Figure 5-2-13	Infiltration Data for 5-2-P-3
Figure 5-2-14	Log of Boring 5-2-P-4
Figure 5-2-15	Infiltration Data for 5-2-P-4
Figure 5-2-16	Particle-Size Distribution Curves
Figure 5-2-17	Particle-Size Distribution Curves
Figure 5-2-18	Particle-Size Distribution Curves
Figure 5-2-19	Plasticity Chart
Figure 5-2-20	Plasticity Chart
Figure 5-2-21	Site Photographs

TABLE 1

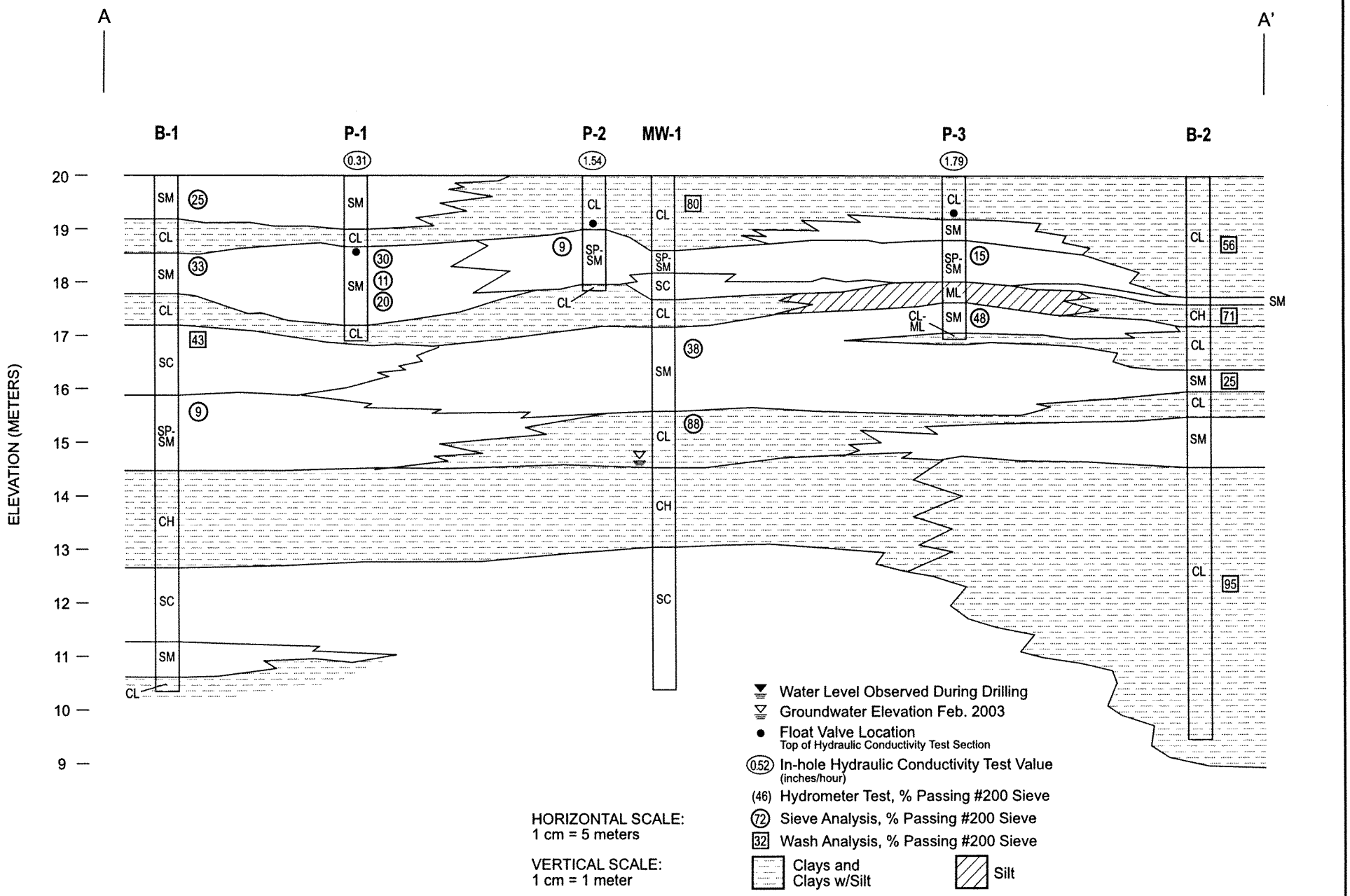
5-2 GEOTECHNICAL LABORATORY TEST DATA

Location							Atterberg Limits		Sieve				Chemical Test Data		
Exploration Number	Sample/ Specimen Number	Depth (m)	Caltrans Soil Classification	Water Content (%)	Total Unit Weight (pcf)	Dry Unit Weight (pcf)	Liquid Limit (%)	Plasticity Index (%)	Gravel (%)	Sand (%)	<#200 Fines (%)	5 microns (%)	pH	O.M.% (% organic matter)	CEC (me/g)[1]
5-2-MW-1	1	0.46	CL	17.4	-	-	-	-	-	-	80	-	-	-	-
5-2-MW-1	2	2.29	CL	-	-	-	49	24	-	-	-	-	-	-	-
5-2-MW-1	7	3.20	SM	12.0	-	-	-	-	0	62	38	-	-	-	-
5-2-MW-1	9b	4.42	CL	29.8	-	-	-	-	0	12	88	-	-	-	-
5-2-MW-1	10	6.10	CH	-	-	-	56	30	-	-	-	-	-	-	-
5-2-B-1	1a	0.46	SM	9.4	-	-	-	-	2	74	25	-	-	-	-
5-2-B-1	3	1.37	SM	3.0	-	-	-	-	0	67	33	-	-	-	-
5-2-B-1	5	2.29	CL	-	-	-	40	19	-	-	-	-	-	-	-
5-2-B-1	6	2.90	SC	-	-	-	-	-	-	-	43	-	-	-	-
5-2-B-1	9	4.12	SP-SM	-	-	-	-	-	-	91	9	-	-	-	-
5-2-B-1	10	6.55	CH	-	-	-	51	25	-	-	-	-	-	-	-
5-2-B-2	1	0.46	CL	-	-	-	45	20	-	-	-	-	-	-	-
5-2-B-2	3	1.37	CL	16.5	-	-	-	-	-	-	56	-	-	-	-
5-2-B-2	4	1.83	CL	-	-	-	27	8	-	-	-	-	-	-	-
5-2-B-2	5	2.29	CH	-	-	-	52	28	-	-	-	-	-	-	-
5-2-B-2	6	2.74	CL	-	-	-	-	-	-	-	71	-	-	-	-
5-2-B-2	8	3.66	SM	5.5	-	-	-	-	-	75	25	-	-	-	-
5-2-B-2	9	4.12	CL	-	-	-	41	16	-	-	-	-	-	-	-
5-2-B-2	11	7.62	CL	32.3	-	-	-	-	-	5	95	-	-	-	-
5-2-P-1	2a	0.76	SM	-	-	-	-	-	-	-	-	-	7.7	0.55	0.019
5-2-P-1	3b	1.37	SM	4.5	-	-	-	-	0	70	30	-	-	-	-
5-2-P-1	4	1.68	SP-SM	2.0	-	-	-	-	0	89	11	-	-	-	-
5-2-P-1	6a	2.59	SM	2.4	-	-	-	-	-	-	20	-	-	-	-
5-2-P-1	6b	2.90	CH	-	-	-	55	28	-	-	-	-	-	-	-
5-2-P-2	2a	0.76	CL	-	-	-	37	16	-	-	-	-	-	-	-
5-2-P-2	3	1.22	SP-SM	3.3	-	-	-	-	0	91	9	-	-	-	-
5-2-P-2	4b	1.98	CL	-	-	-	49	25	-	-	-	-	-	-	-
5-2-P-3	1	0.30	ML	10.6	-	-	-	-	-	-	85	-	-	-	-
5-2-P-3	3	1.22	SP-SM	-	-	-	-	-	0	85	15	-	-	-	-
5-2-P-3	6a	2.59	SM	4.6	-	-	-	-	0	52	48	-	-	-	-
5-2-P-4	1	0.46	CL	21.3	-	-	39	17	-	-	86	-	-	-	-
5-2-P-4	2b	1.07	SM	-	-	-	-	-	0	57	43	-	-	-	-
5-2-P-4	3	1.22	SP-SM	2.8	-	-	-	-	0	86	14	-	-	-	-
5-2-P-4	5	2.29	CL-CH	21.3	-	-	50	28	-	-	-	-	-	-	-

Notes: [1] Cation excange capacity, millequivalents per gram

Priority 6-5-2 (Alondra Blvd.) Site Plan

April 2003	Infiltration Basin Site Selection Study	Figure 5-2-1



PRIORITY 6 – SITE 5-2 GEOLOGIC CROSS SECTION A-A'

Date: APRIL 2003	Project: INFILTRATION BASIN SITE SELECTION STUDY	Figure 5-2-2

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Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Alondra Blvd.

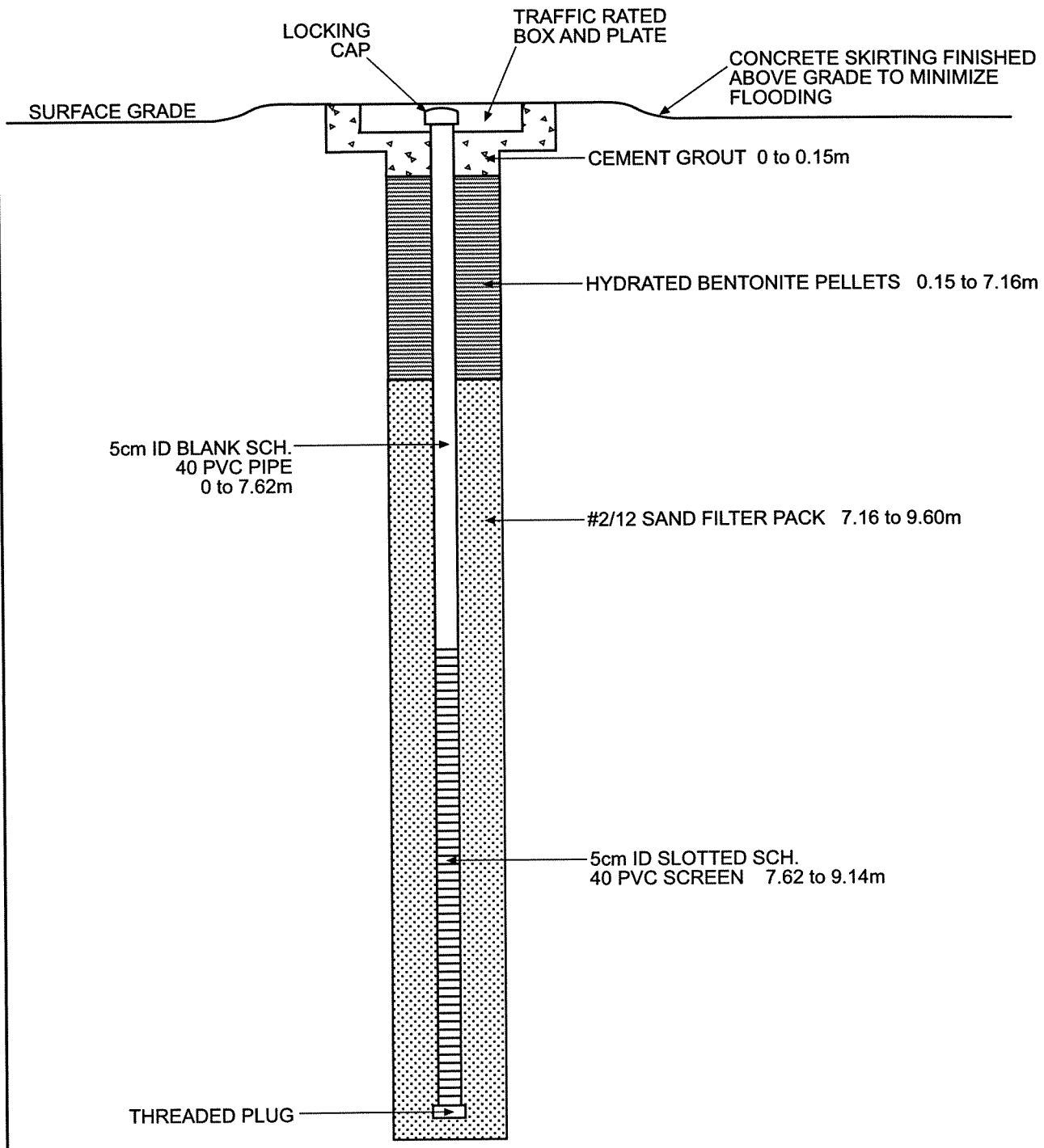
Log of Boring 5-2-MW-1

Sheet 1 of 1

Date(s) Drilled	2/20/03	Logged By	P. Salter	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	9.6 meters
Drill Rig Type	Limited Access Rig	Drilling Contractor	Prosonic	Approximate Surface Elevation	20.0 m MSL
Groundwater Level(s)	5.4 meters bgs 2/20/03	Sampling Method(s)	SPT, Modified California	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	See Well Construction	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES Type	Number	Sampling Resistance, blows/0.30m	Core Recovery, %	Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Infiltration Test Well	REMARKS AND OTHER TESTS
20	0							Topsoil			CONCRETE
			1	7				lean clay with sand (CL) loose, brown, moist, fine sand	17		WA:80%<#200
	1		2	24				Becomes dark blueish gray			BENTONITE CHIPS
			3a 3b	14				sand with silt (SP-SM) medium dense, yellowish brown, moist, poorly sorted, fine sand			CASING
18	2		4	19				Clayey sand (SC) medium dense, mottled olive brown, moist			LL=49; PI=24
			5	9				clay (CL) medium stiff, mottled brown, moist, fine sand layer of sand (SP)			
	3		6	14				Silty sand (SM), medium dense, brown, moist	12		SA:38%<#200
			7	10							
16	4		8	24							
			9a 9b	14				lean clay (CL) stiff, brown, moist	30		SA:88%<#200
	5										
14	6		10	8				fat clay (CH) medium stiff, mottled gray, moist			LL=56; PI=30
	7							Clayey sand (SC) loose, gray, moist to wet, fine sand			SLOTTED SCREEN
12	8		11	8							
	9		12	10							#2/12 FILTER SAND
10	10							Bottom of boring at 9.6 meters			

Figure 5-2-3



5-2-MW-1

Not to Scale

L:/Caltrans/GW monitoring well diag.fh10 5/03

GROUNDWATER MONITORING WELL DIAGRAM

Date: APRIL 2003	Project: INFILTRATION BASIN SITE SELECTION STUDY	Figure 5-2-4

5-2-MW-1

Date: April 2003	**Project: Caltrans IFB Site Selection Study**	Figure: 5-2-5

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Alondra Blvd.

Log of Boring 5-2-B-1

Sheet 1 of 1

Date(s) Drilled	2/20/03	Logged By	P. Salter	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	9.6 meters
Drill Rig Type	Limited Access Rig	Drilling Contractor	Prosonic	Approximate Surface Elevation	20.0 m MSL
Groundwater Level(s)	8.7 meter bgs 2/20/03	Sampling Method(s)	SPT, ModifiedCalifornia	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	Soil Cuttings, Bentonite chips	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	SAMPLES: Number	SAMPLES: Sampling Resistance, blows/0.30m	SAMPLES: Core Recovery, %	SAMPLES: Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	PID, ppm	REMARKS AND OTHER TESTS
20	0							Topsoil			
			1a 1b	14				Silty sand (SM) medium dense, yellow, moist, fine to medium sand	9		SA:25%<#200
	1		2	18				Sandy lean clay (CL) stiff, dark brown, moist			
			3	21				Silty sand (SM) medium dense, yellow becoming mottled dark brown, moist, some fine roots	3		SA:33%<#200
18	2		4	>50							
			5	28				Sandy lean clay (CL) stiff, moist, dark brown, some roots			LL=40; PI=19
	3		6	20				Clayey sand (SC) medium dense, dark brown, moist, fine to medium sand			WA:43%<#200
			7	14							
16	4		8	18							
			9	18				Sand with silt (SP-SM) medum dense, dark gray, moist, poorly graded, fine to medium sand			SA:9%<#200
	5										
14	6			12				Fat clay (CH) stiff, dark gray, moist			
	7		10	10							LL=51; PI=25
								Clayey sand (SC) medium dense, moist to wet, gray			
12	8		11	13							
	9							Silty sand (SM) medium dense, gray, wet, poorly graded, fine to medium sand			
			12a 12b	11				lean clay with sand (CL) medium dense, gray, wet			
10	10							Bottom of boring at 9.6 meters			

Figure 5-2-6

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Alondra Blvd.

Log of Boring 5-2-B-2

Sheet 1 of 1

Date(s) Drilled	2/20/03	Logged By	P. Salter	Checked By	C. Goetz
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	9.6 meters
Drill Rig Type	Limited Access Rig	Drilling Contractor	Prosonic	Approximate Surface Elevation	20.0 m MSL
Groundwater Level(s)	8.7 meter bgs 2/20/03	Sampling Method(s)	SPT, Modified California	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	Soil Cuttings, Bentonite chips	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	SAMPLES: Number	SAMPLES: Sampling Resistance, blows/0.30m	SAMPLES: Core Recovery, %	SAMPLES: Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	PID, ppm	REMARKS AND OTHER TESTS
20	0							Topsoil			
			1	8				lean clay with sand (CL) medium stiff, brown, moist			LL=45; PI=20
	1		2	15				Sandy clay (CL) medium dense, olive brown, moist	17		WA:56%<#200
			3	20							LL=27, PI=8
18	2		4	8							
			5	14				Silty sand (SM) medium dense, yellowish brown, moist, poorly			
								fat clay (CH) stiff, mottled dark brown, moist			LL=52; PI=28 WA:71%<#200
	3		6	19				lean clay with sand (CL) medium dense, brown, moist			
			7	23				Becomces sandy clay (CL)			
								Silty sand (SM) medium dense, olive brown, moist	6		WA:25%<#200
16	4		8	24							LL=41, PI=16
			9	14				clay (CL) stiff, gray, moist			
	5							Silty sand (SM) medium dense, brown, moist, fine sand			
14	6		10	10				clay (CL) stiff, gray, stiff			
	7							lean clay (CL) very stiff, gray, moist to wet			
			11	20					32		WA:95%<#200
12	8							Becomes stiff			
	9		12	10							
10	10							Bottom of boring at 9.6 meters			

Figure 5-2-7

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Alondra Blvd.

Log of Boring 5-2-P-1

Sheet 1 of 1

Date(s) Drilled	2/28/03	Logged By	P. Salter	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	3.0 meters
Drill Rig Type	Limited Access Rig	Drilling Contractor	Prosonic	Approximate Surface Elevation	20.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	See Well Construction	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	Number	Sampling Resistance, blows/0.30m	Core Recovery, %	Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Infiltration Test Well	REMARKS AND OTHER TESTS
20	0							Topsoil			BENTONITE CHIPS
			1	8				Silty sand (SM) loose, mottled orange, moist, some angular aggregate gravels			NATIVE
	1		2a 2b	12							CASING pH=7.7, OM=0.55% CEC=0.019 me/g
								lean clay (CL) medium dense, light brown, moist			COARSE AQUARIUM SAND
			3a 3b	8				Silty sand (SM) loose, light brown, moist, fine sand	5		SA:30%<#200
18	2		4	10				sand with silt (SP-SM) loose, gray brown, moist, poorly graded	2		SA:11%<200
			5								
			6a 6b	13					2		WA:20%<#200 LL=55; PI=28
	3							fat clay (CH) stiff, light gray, moist Bottom of boring at 3 meters bgs			
16	4										
	5										
14	6										
	7										
12	8										
	9										

Figure 5-2-8

5-2-P-1-2

Clock	Accumulated Time	Tank Reading (gallons)	Difference (gallons)	Accumulated Flow (gallons)	Flow Rate (gpm)	Well Temp (°F)	Reservoir Temp (°F)
8:28:00	0:00:00	59.0	0	0	0.000		
8:28:30	0:00:30	54.0	5	5	10.000		
8:29:00	0:01:00	53.5	0.5	5.5	5.500		
8:29:30	0:01:30	53.0	0.5	6	4.000		
8:30:00	0:02:00	53.0	0	6	3.000		
8:31:00	0:03:00	52.5	0.5	6.5	2.167		
8:32:30	0:04:30	52.0	0.5	7	1.556		
8:33:30	0:05:30	52.0	0	7	1.273		
8:35:30	0:07:30	51.3	0.75	7.75	1.033		
8:47:00	0:19:00	48.5	2.75	10.5	0.553		
8:49:30	0:21:30	48.0	0.5	11	0.512		
8:53:00	0:25:00	47.0	1	12	0.480		
9:13:30	0:45:30	42.5	4.5	16.5	0.363		
9:33:00	1:05:00	38.0	4.5	21	0.323		59.4
9:51:00	1:23:00	34.0	4	25	0.301		59.2
10:05:30	1:37:30	31.0	3	28	0.287		
10:22:00	1:54:00	27.0	4	32	0.281		
10:43:00	2:15:00	22.0	5	37	0.274		
11:16:00	2:48:00	15.0	7	44	0.262		61.2
11:18:30	2:50:30	56.0		44	0.258		
11:34:00	3:06:00	51.8	4.25	48.25	0.259		
11:59:00	3:31:00	44.8	7	55.25	0.262		59
12:40:00	4:12:00	36.0	8.75	64	0.254		61.3
13:24:30	4:56:30	26.0	10	74	0.250		
13:54:30	5:26:30	19.0	7	81	0.248		
13:55:30	5:27:30	43.0		81	0.247		
14:29:30	6:01:30	35.0	8	89	0.246		

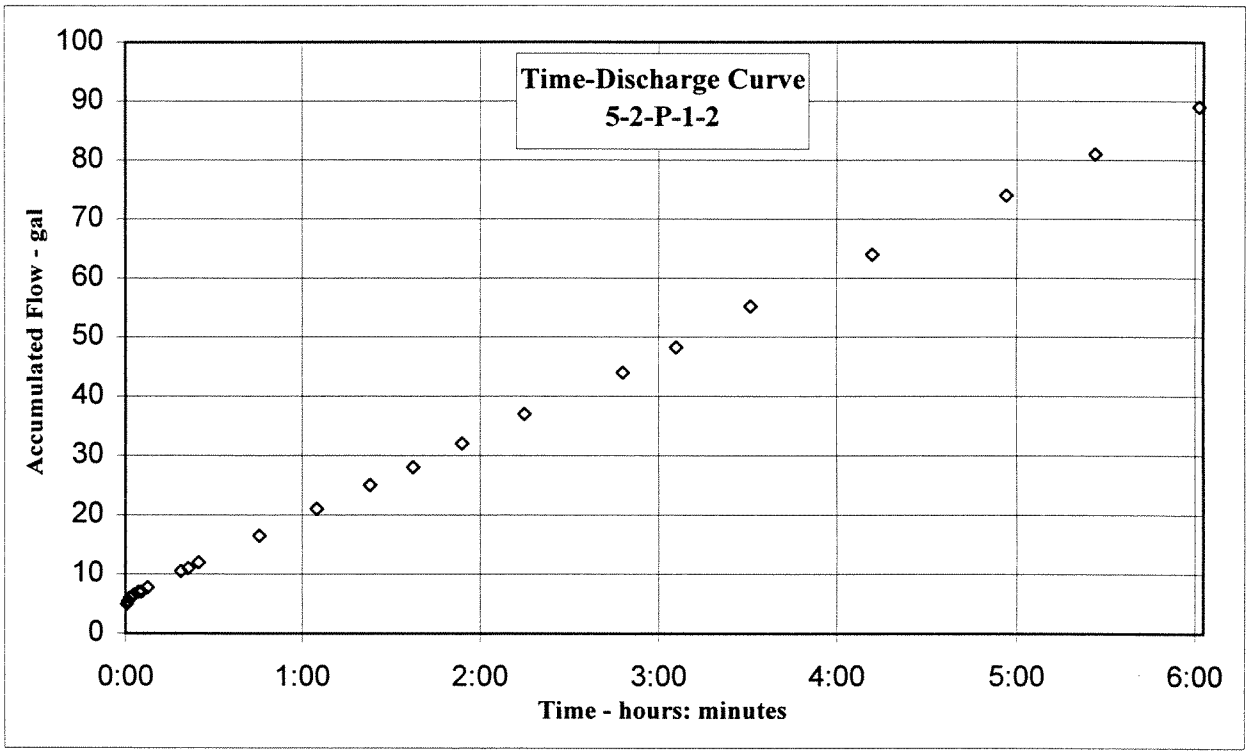


Figure 5-2-9A

Calculation of Test Condition

Float depth =	4.8 ft	1.46 meters
Borehole depth =	10 ft	3.05 meters
Height of water in test well, h =	5.2 ft	1.58 meters
Depth of water table=	17.5 ft	5.33 meters
Depth to impervious layer =	9.5 ft	2.90 meters
Unsaturated distance between water table or impervious layer and surface of well water, Tu=	4.7 ft	1.43 meters

Based on the Test Data, Condition III is the most applicable

Calculation of equivalent radius of the well, r_w

mass of sand in borehole, m_s =	150 lbs	
density of sand in borehole, ρ_s =	104.23 lbs/cu ft	
r_w =	0.30 ft	3.56 inches

Calculations for k_{20}

h =	5.20 ft	62.4 inches
Steady-state discharge rate, q =	0.224 gpm	51.85 cu.in./min
Average well water temperature, T =	60.15 °F	15.64 °C
Kinematic viscosity ratio, V =	1.1152 no units	
Condition III - k20	5.16E-03 in/min	0.3094 in/hr

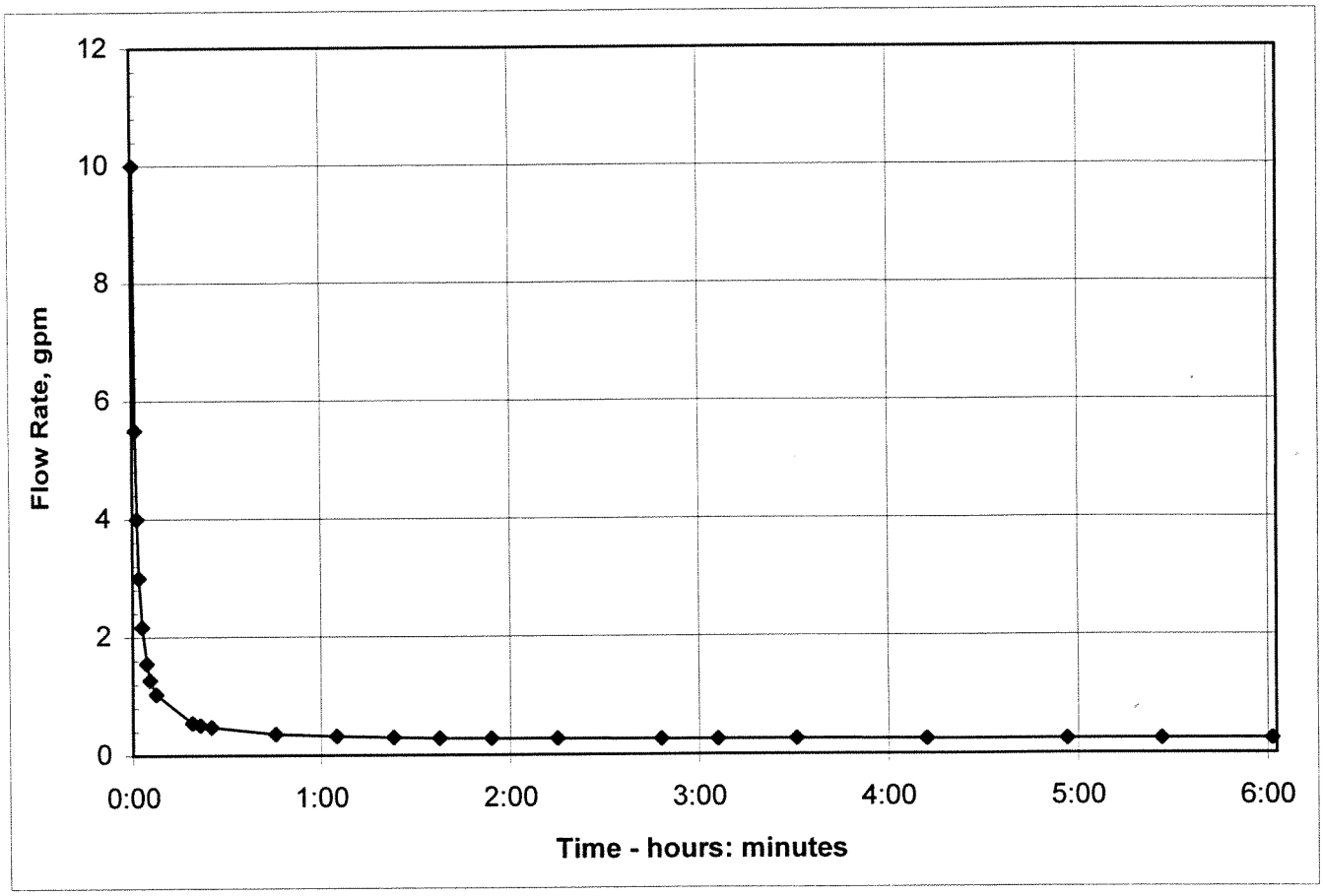


Figure 5-2-9B

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Alondra Blvd.

Log of Boring 5-2-P-2

Sheet 1 of 1

Date(s) Drilled	2/28/03	Logged By	P. Salter	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	2.1 meters
Drill Rig Type	Limited Access Rig	Drilling Contractor	Prosonic	Approximate Surface Elevation	20.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	See Well Construction	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	Number	Sampling Resistance, blows/0.30m	Core Recovery, %	Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Infiltration Test Well	REMARKS AND OTHER TESTS
20	0							Topsoil			BENTONITE CHIPS; CASING
			1	10				lean clay (CL) stiff, brown, moist			LL=37; PI=16
	1		2a 2b	10							
			3	10				sand with silt (SP-SM) medium dense, brown, moist, poorly graded, fine sand	3		SA:9%<#200 (COARSE AQUARIUM SAND)
18	2		4a 4b	10							LL=49; PI=25; SLOUGH
								lean clay (CL) stiff, gray brown, moist Bottom of boring at 2.1 meters bgs			
16	4										
	5										
14	6										
	7										
12	8										
	9										

Figure 5-2-10

5-2-P-2-2

Clock	Accumulated Time	Tank Reading	Difference	Accumulated Flow	Flow Rate	Well Temp	Reservoir Temp
		(gallons)	(gallons)	(gallons)	(gpm)	(°F)	(°F)
8:40:00	0:00:00	60.0	0	0	0.000		
8:40:30	0:00:30	53.0	7	7	14.000		
8:41:30	0:01:30	52.0	1	8	5.333		
8:43:00	0:03:00	51.5	0.5	8.5	2.833		
8:44:00	0:04:00	51.0	0.5	9	2.250		
8:45:30	0:05:30	50.0	1	10	1.818		
8:48:30	0:08:30	48.0	2	12	1.412		
8:53:30	0:13:30	45.5	2.5	14.5	1.074		
9:12:30	0:32:30	35.0	10.5	25	0.769		
9:30:30	0:50:30	25.0	10	35	0.693		59.4
9:55:30	1:15:30	12.0	13	48	0.636		
9:57:00	1:17:00	60.0		48	0.623		
10:05:00	1:25:00	54.0	6	54	0.635		
10:29:30	1:49:30	44.0	10	64	0.584		
10:44:30	2:04:30	32.5	11.5	75.5	0.606		
11:20:00	2:40:00	12.0	20.5	96	0.600		
11:20:30	2:40:30	56.0		96	0.598		
11:33:00	2:53:00	48.0	8	104	0.601		
12:00:00	3:20:00	34.0	14	118	0.590		60.8
12:41:00	4:01:00	12.0	22	140	0.581		
12:43:00	4:03:00	56.0		140	0.576		
13:25:00	4:45:00	33.0	23	163	0.572		
13:51:00	5:11:00	19.0	14	177	0.569		
13:53:00	5:13:00	48.0		177	0.565		
14:41:30	6:01:30	23.0	25	202	0.559		59.7

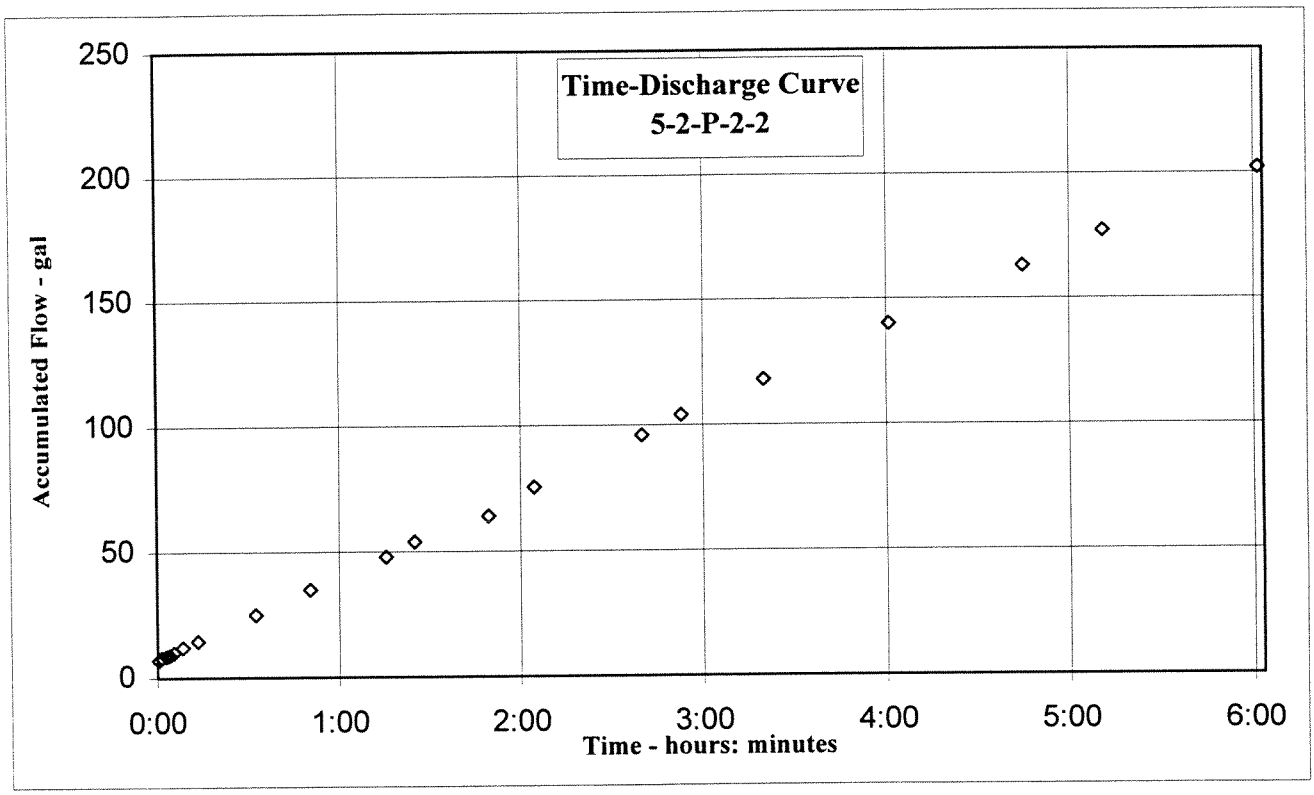


Figure 5-2-11A

Calculation of Test Condition

Float depth =	3 ft	0.91 meters
Borehole depth =	6.5 ft	1.98 meters
Height of water in test well, h =	3.5 ft	1.07 meters
Depth of water table =	17.5 ft	5.33 meters
Depth to impervious layer =	6.5 ft	1.98 meters
Unsaturated distance between water table or impervious layer and surface of well water, Tu=	3.5 ft	1.07 meters

Based on the Test Data, Condition II is the most applicable

Calculation of equivalent radius of the well, r_w

mass of sand in borehole, m_s =	125 lbs	
density of sand in borehole, ρ_s =	102.42 lbs/cu ft	
r_w =	0.333 ft	4.00 inches

Calculations for k_{20}

h =	3.5 ft	42 inches
Steady-state discharge rate, q =	0.5207 gpm	120.3 cu.in./min
Average well water temperature, T =	60.25 °F	15.69 °C
Kinematic viscosity ratio, V =	1.1134 no units	
Condition II - k20 =	0.0568 in/min	3.4104 in/hr
Condition I - k20 =	0.02584 in/min	1.5501 in/hr

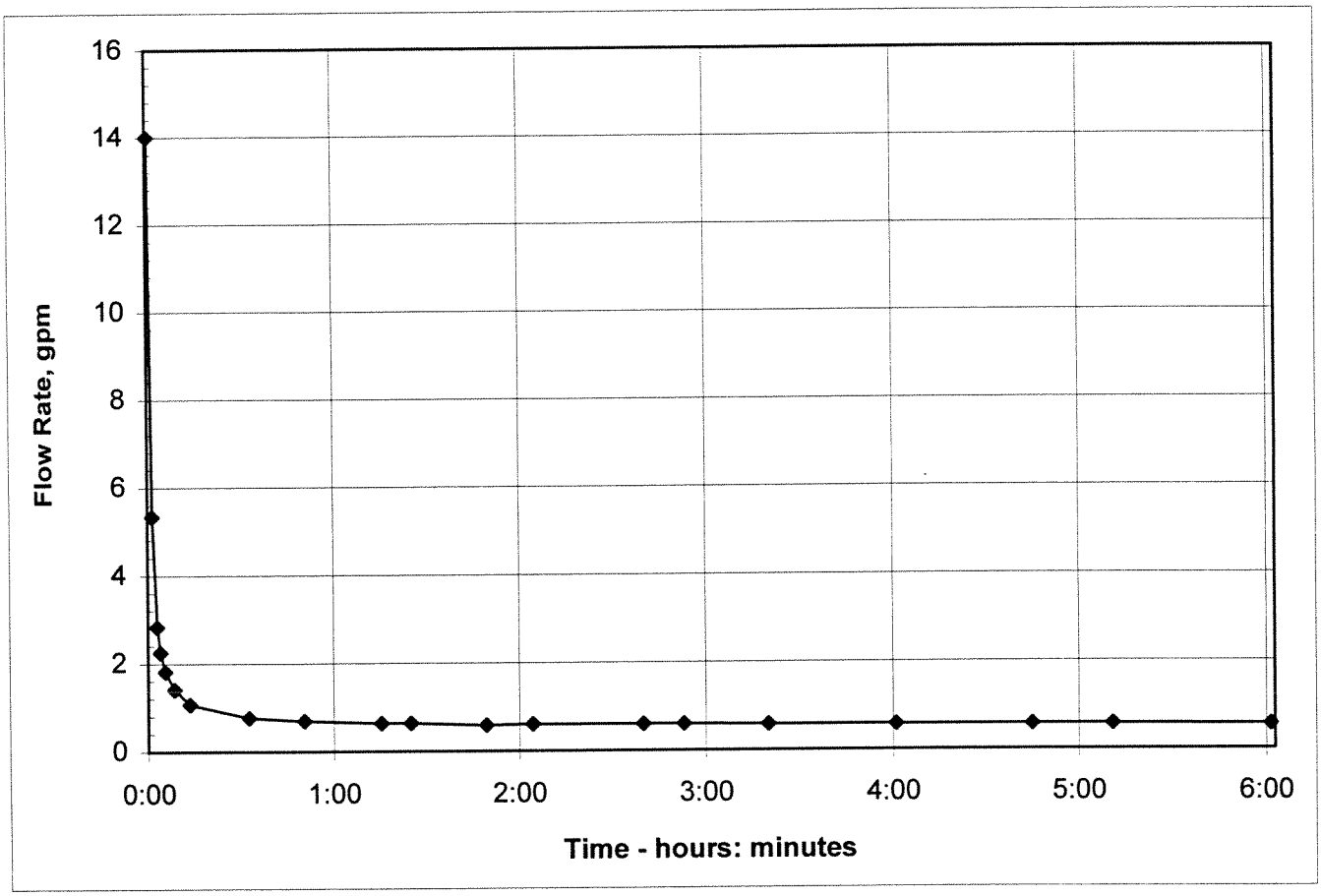


Figure 5-2-11B

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Alondra Blvd.

Log of Boring 5-2-P-3

Sheet 1 of 1

Date(s) Drilled	2/28/03	Logged By	P. Salter	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	3.0 meters
Drill Rig Type	Limited Access Rig	Drilling Contractor	Prosonic	Approximate Surface Elevation	20.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	See Well Construction	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	SAMPLES: Number	SAMPLES: Sampling Resistance, blows/0.30m	SAMPLES: Core Recovery, %	SAMPLES: Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Infiltration Test Well	REMARKS AND OTHER TESTS
20	0							Topsoil			BENTONITE CHIPS WA:85%<#200 CASING
			1	10				silt (ML) medium dense, light brown, moist	11		
	1		2	10				sand with silt (SP-SM) medium dense, light brown, moist, poorly graded, fine sand			SA:15%<#200
			3	10							
18	2		4a 4b	13							SLOUGH
			5a 5b	12				lean silt (ML) stiff, light brown, moist			
			6	14				Silty sand (SM) medium dense, brown, moist, fine sand	5		SA:48%<#200
	3							lean clay (CL) stiff, brown, moist Bottom of boring at 3 meters bgs			
16	4										
	5										
14	6										
	7										
12	8										
	9										

Figure 5-2-12

5-2-P-3-2

Clock	Accumulated Time	Tank Reading	Difference	Accumulated Flow	Flow Rate	Well Temp	Reservoir Temp
		(gallons)	(gallons)	(gallons)	(gpm)	(°F)	(°F)
8:24:00	0:00:00	60.0	0	0	0.000		60.8
8:25:00	0:01:00	53.0	7	7	7.000		
8:26:00	0:02:00	50.0	3	10	5.000		
8:27:00	0:03:00	47.5	2.5	12.5	4.167		
8:28:00	0:04:00	46.0	1.5	14	3.500		
8:29:00	0:05:00	44.0	2	16	3.200		
8:34:00	0:10:00	37.0	7	23	2.300		
8:44:00	0:20:00	23.0	14	37	1.850		
8:45:00	0:21:00	21.5	1.5	38.5	1.833		
8:46:00	0:22:00	20.0	1.5	40	1.818		
8:48:00	0:24:00	55.5		40	1.667		
8:49:00	0:25:00	54.0	1.5	41.5	1.660		
8:50:00	0:26:00	52.5	1.5	43	1.654		
8:51:00	0:27:00	51.0	1.5	44.5	1.648		
9:09:00	0:45:00	30.5	20.5	65	1.444		
9:10:00	0:46:00	29.5	1	66	1.435		
9:11:00	0:47:00	28.5	1	67	1.426		
9:12:00	0:48:00	27.0	1.5	68.5	1.427		
9:13:00	0:49:00	56.0		68.5	1.398		
9:14:00	0:50:00	54.5	1.5	70	1.400		
9:15:00	0:51:00	53.0	1.5	71.5	1.402		
9:16:00	0:52:00	52.0	1	72.5	1.394		60.3
9:57:00	1:33:00	11.0	41	113.5	1.220		
9:59:00	1:35:00	56.0		113.5	1.195		
10:00:00	1:36:00	55.0	1	114.5	1.193		
10:02:00	1:38:00	53.0	2	116.5	1.189		
10:03:00	1:39:00	52.0	1	117.5	1.187		
10:33:00	2:09:00	23.0	29	146.5	1.136		
10:42:00	2:18:00	14.5	8.5	155	1.123		
10:43:00	2:19:00	13.0	1.5	156.5	1.126		
10:44:30	2:20:30	55.0		156.5	1.114		
10:46:00	2:22:00	53.0	2	158.5	1.116		
10:47:00	2:23:00	52.0	1	159.5	1.115		
10:48:00	2:24:00	51.5	0.5	160	1.111		
10:50:00	2:26:00	49.3	2.2	162.2	1.111		
11:21:00	2:57:00	20.8	28.5	190.7	1.077		
11:22:00	2:58:00	19.8	1	191.7	1.077		
11:24:00	3:00:00	55.0		191.7	1.065		
11:25:00	3:01:00	53.8	1.2	192.9	1.066		
11:58:00	3:34:00	23.8	30	222.9	1.042		
12:02:00	3:38:00	55.0		222.9	1.022		
12:44:00	4:20:00	17.0	38	260.9	1.003		
12:45:00	4:21:00	16.0	1	261.9	1.003		
12:48:00	4:24:00	56.5		261.9	0.992		
12:51:00	4:27:00	53.0	3.5	265.4	0.994		
13:23:00	4:59:00	24.7	28.3	293.7	0.982		
13:30:00	5:06:00	18.5	6.2	299.9	0.980		
13:33:00	5:09:00	54.5		299.9	0.971		
14:09:00	5:45:00	23.0	31.5	331.4	0.961		
14:30:00	6:06:00	5.5	17.5	348.9	0.953		

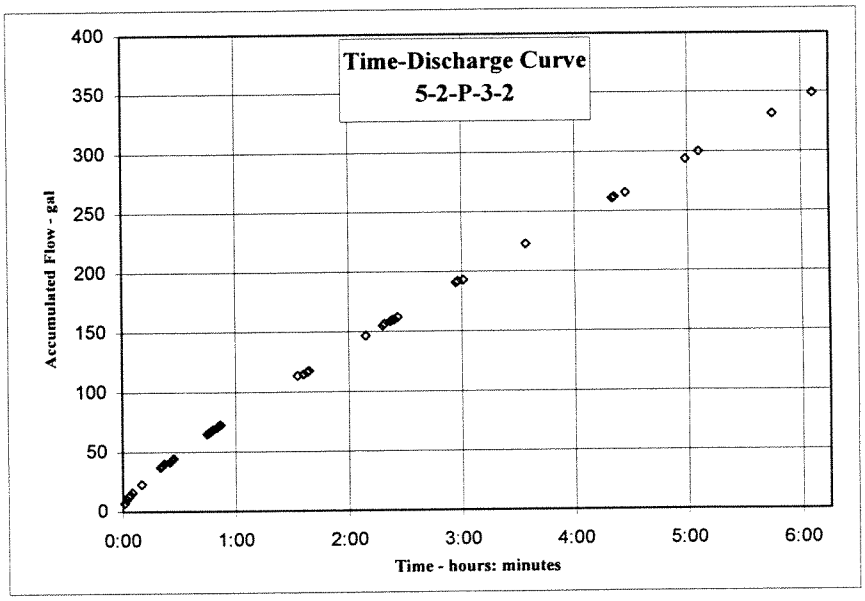


Figure 5-2-13A

Calculation of Test Condition

Float depth =	1.75 ft	0.53 meters
Borehole depth =	6 ft	1.83 meters
Height of water in test well, h =	4.25 ft	1.30 meters
Depth of water table =	17.5 ft	5.33 meters
Depth to impervious layer =	6.5 ft	1.98 meters
Unsaturated distance between water table or impervious layer and surface of well water, Tu=	4.75 ft	1.45 meters

Based on the Test Data, Condition II is the most applicable

Calculation of equivalent radius of the well, r_w

mass of sand in borehole, m_s =	175 lbs	
density of sand in borehole, ρ_s =	101.66 lbs/cu ft	
r_w =	0.359 ft	4.31 inches

Calculations for k_{20}

h =	4.25 ft	51 inches
Steady-state discharge rate, q =	0.8413 gpm	194.4 cu.in./min
Average well water temperature, T =	60.30 °F	15.72 °C
Kinematic viscosity ratio, V =	1.1126 no units	
Condition II - k20 =	0.06064 in/min	3.6385 in/hr
Condition I - k20 =	0.02973 in/min	1.7840 in/hr

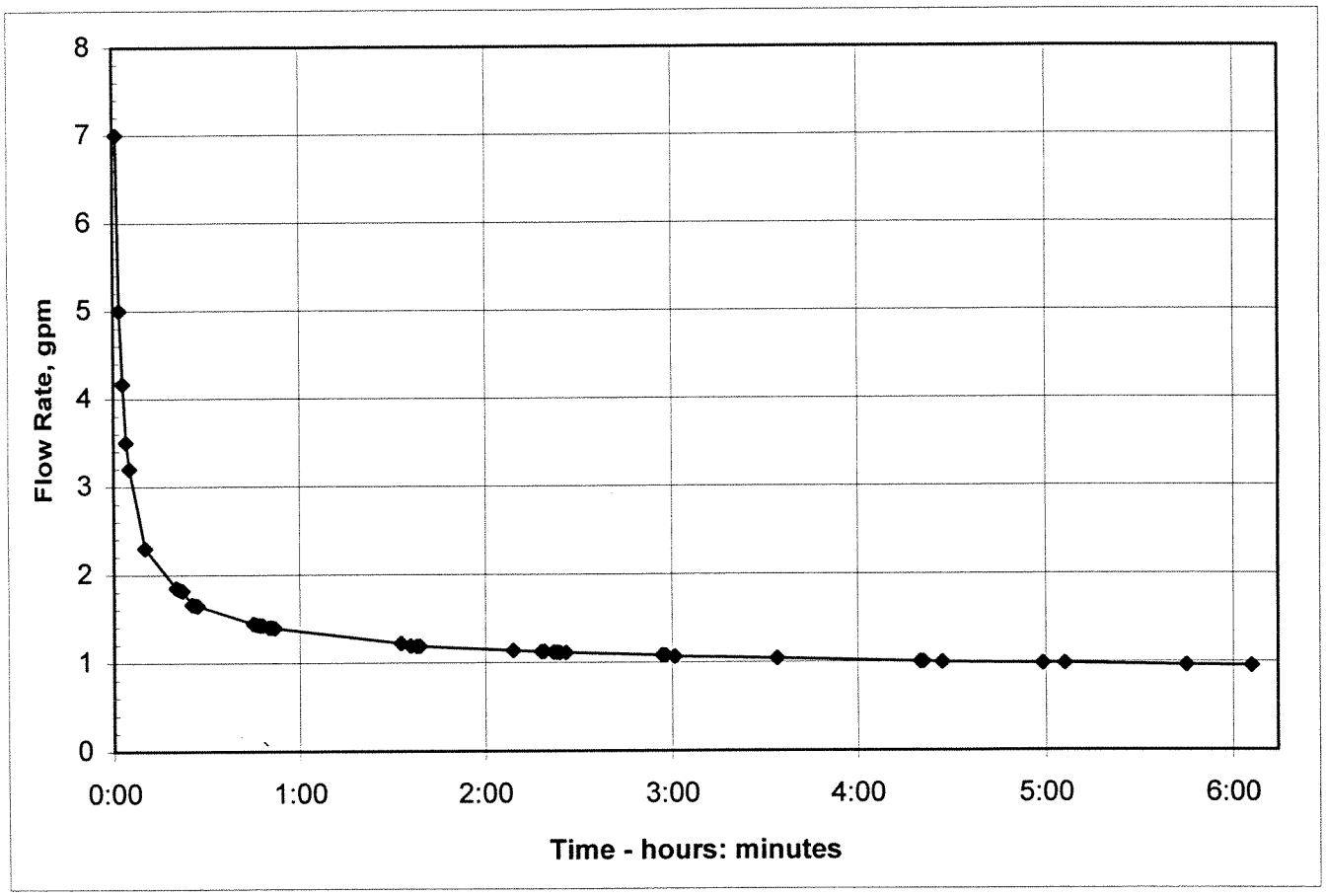


Figure 5-2-13B

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Alondra Blvd.

Log of Boring 5-2-P-4

Sheet 1 of 1

Date(s) Drilled	2/28/03	Logged By	P. Salter	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	2.7 meters
Drill Rig Type	Limited Access Rig	Drilling Contractor	Prosonic	Approximate Surface Elevation	20.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	See Well Construction	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	SAMPLES: Number	SAMPLES: Sampling Resistance, blows/0.30m	SAMPLES: Core Recovery, %	SAMPLES: Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Infiltration Test Well	REMARKS AND OTHER TESTS
20	0							Topsoil			BENTINITE CHIPS
								Sandy lean clay (CL) stiff, brown, moist, fine sand	21		CASING WA:86%<#200 LL=39; PI=17
			1	16							
	1		2a 2b	12				Silty sand (SM) medium dense, moist, brown			SA:43%<#200 SA:14%<#200
			3	12				sand with silt (SP-SM) medium dense, brown, moist, poorly graded, fine sand	3		(COARSE AQUARIUM SAND)
18	2		4a 4b	15							
			5	12				lean to fat clay (CL-CH) stiff, mottled dark brown, moist	21		LL=50; PI=28
	3							Bottom of Boring at 2.7 meters bgs			
16	4										
	5										
14	6										
	7										
12	8										
	9										

Figure 5-2-14

5-2-P-4-1

Clock	Accumulated Time	Tank Reading	Difference	Accumulated Flow	Flow Rate	Well Temp	Reservoir Temp
		(gallons)	(gallons)	(gallons)	(gpm)	(°F)	(°F)
8:30:00	0:00:00	58.0	0	0	0.000	60.6	
8:31:00	0:01:00	57.0	1	1	1.000		
8:52:00	0:22:00	56.0	1	2	0.091		
8:58:00	0:28:00	56.0	0	2	0.071		
10:49:00	2:19:00	52.0	4	6	0.043		
11:58:00	3:28:00	51.0	1	7	0.034		
13:24:00	4:54:00	49.5	1.5	8.5	0.029		

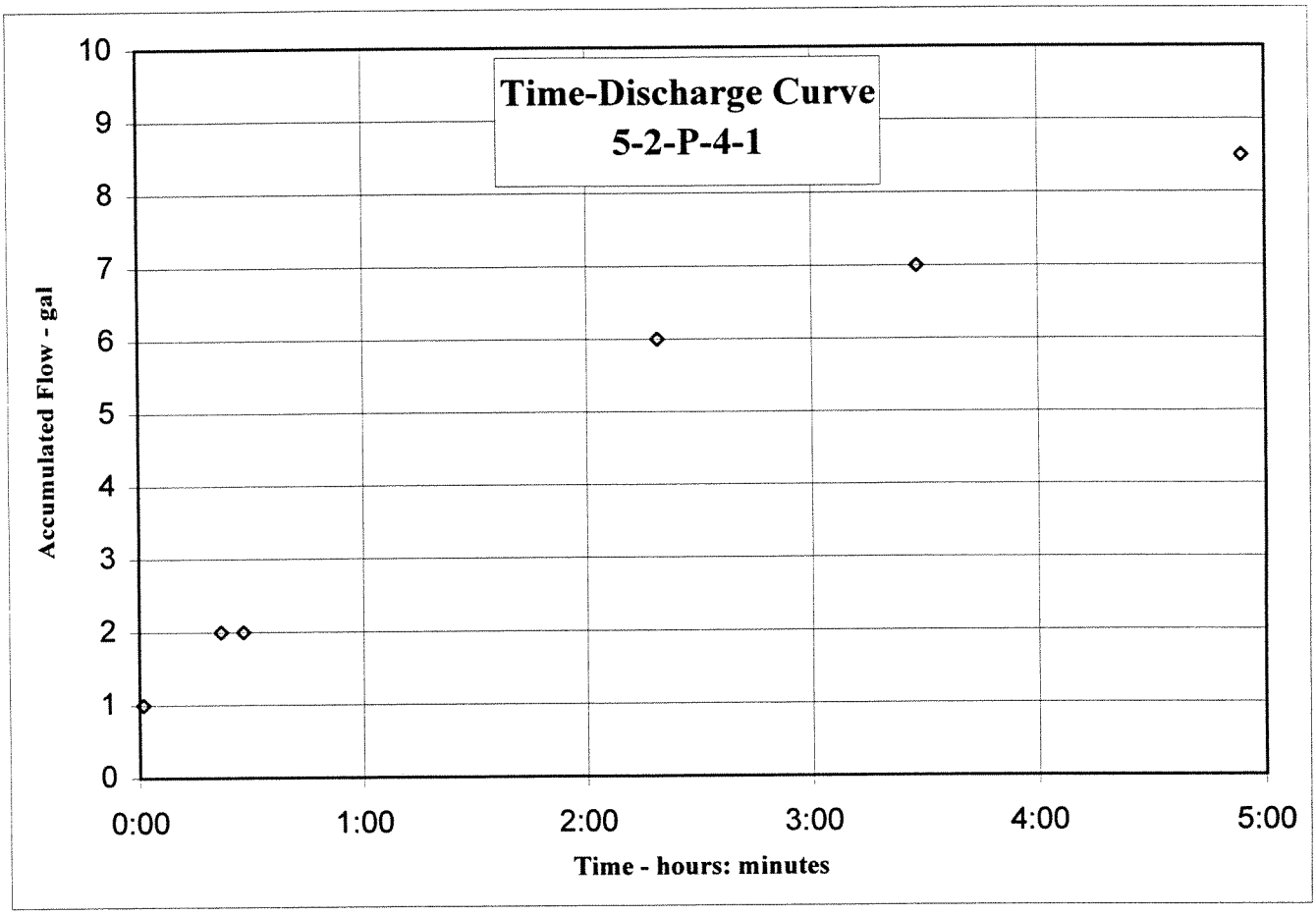


Figure 5-2-15A

Calculation of Test Condition

Float depth =	1 ft	0.30 meters
Borehole depth =	9 ft	2.74 meters
Height of water in test well, h =	8 ft	2.44 meters
Depth of water table =	17.5 ft	5.33 meters
Depth to impervious layer =	7.2 ft	2.19 meters
Unsaturated distance between water table or impervious layer and surface of well water, Tu=	6.2 ft	1.89 meters

Based on the Test Data, Condition III is the most applicable

Calculation of equivalent radius of the well, r_w

mass of sand in borehole, m_s =	250 lbs	
density of sand in borehole, ρ_s =	102.44 lbs/cu ft	
r_w =	0.312 ft	3.74 inches

Calculations for k_{20}

h =	8 ft	96 inches
Steady-state discharge rate, q =	0.0162 gpm	3.74 cu.in./min
Average well water temperature, T =	60.60 °F	15.89 °C
Kinematic viscosity ratio, V =	1.1074 no units	
Condition III - k20	2.16E-04 in/min	0.0129 in/hr

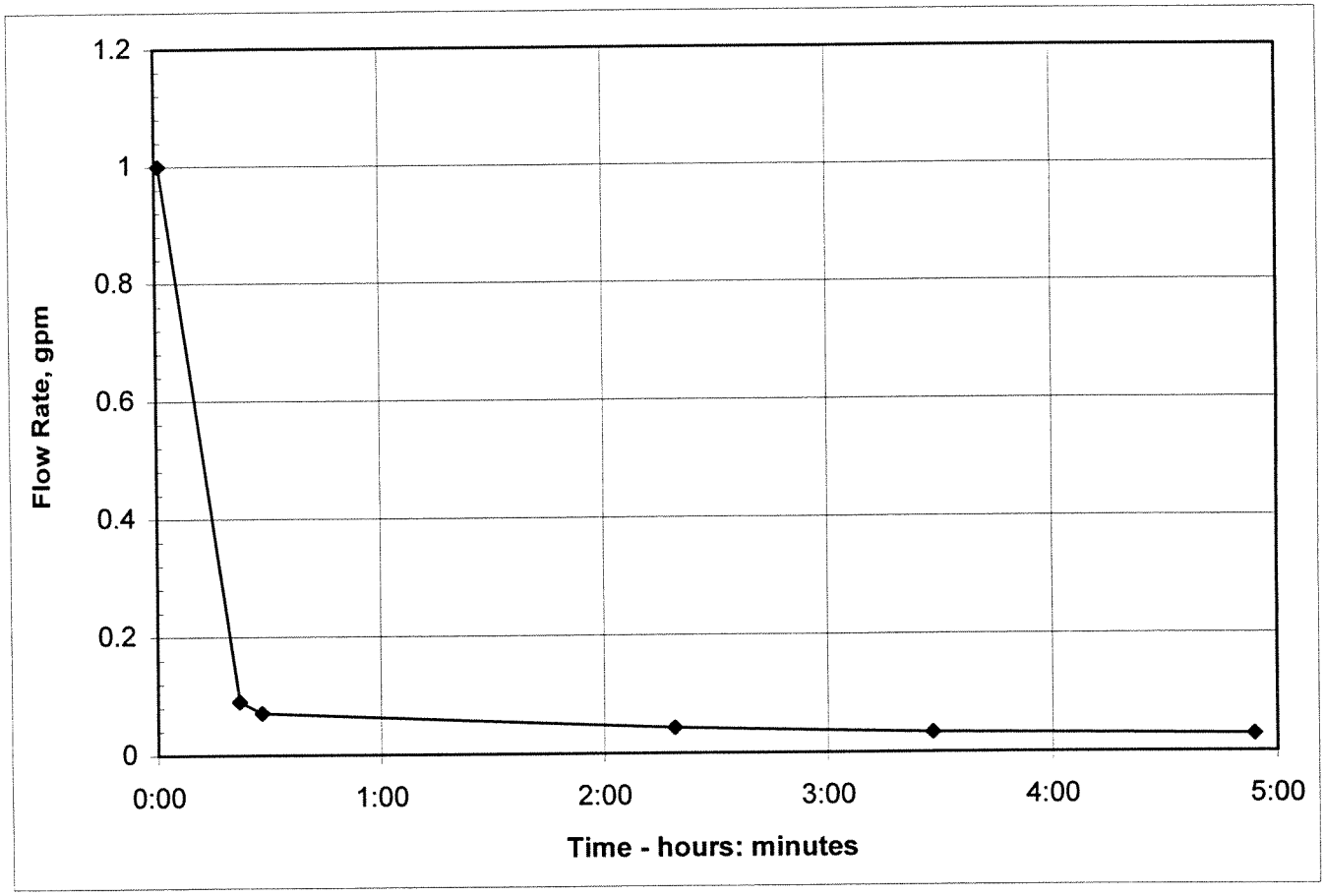
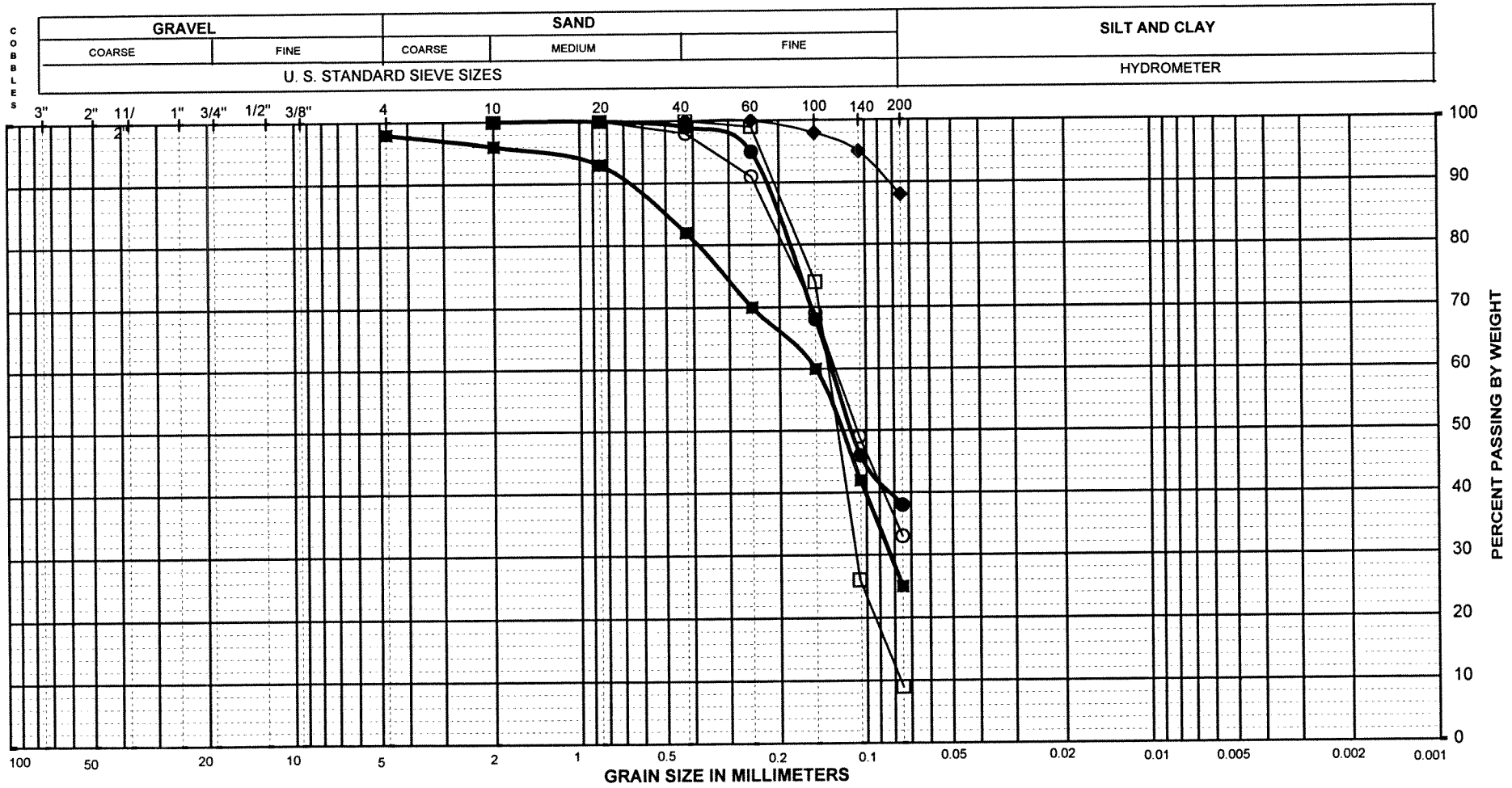


Figure 5-2-15B

UNIFIED SOIL CLASSIFICATION



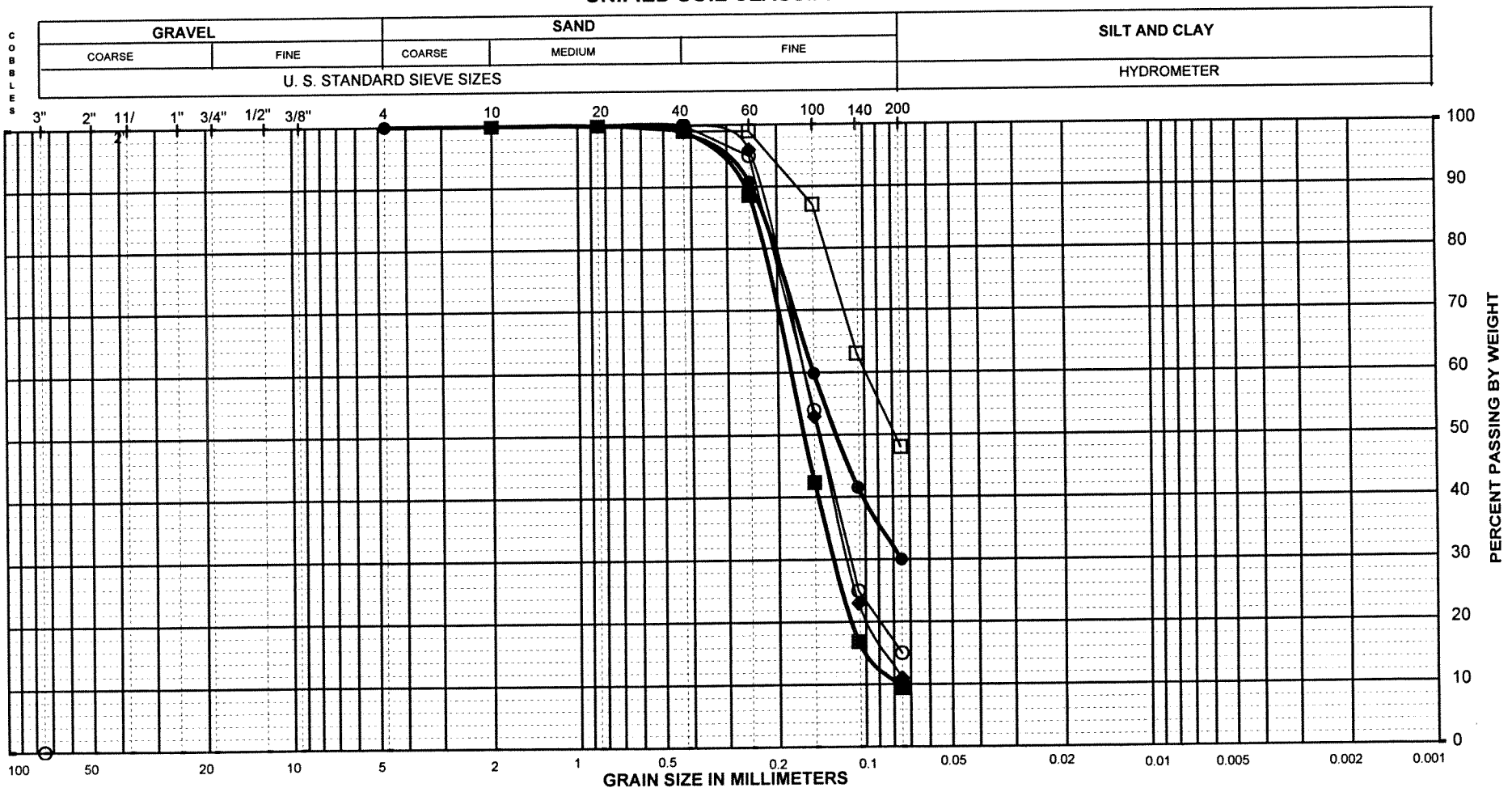
Exploration No.	Sample No.	Depth (m)	SYMBOL	Wn (%)	LL	PI	% Clay	Description and Classification	D_{60}	D_{30}	D_{10}	C_u	C_c
5-2-MW-1	7	3.20	●	12.0				**Brown silty Sand (SM)**	0.13				
5-2-MW-1	9B	4.42	◆	29.8				**Brown lean Clay (CL)**					
5-2-B-1	1a	0.46	■	9.4				**Yellow silty Sand (SM)**	0.15	0.08			
5-2-B-1	3	1.37	○	3.0				**Yellow silty Sand (SM)**	0.13				
5-2-B-1	9	4.11	□					**Dark gray Sand with silt (SP-SM)**	0.14	0.11	0.08	1.8	1.1

PROJECT NAME: Caltrans IFB Site Selection Study

PARTICLE-SIZE DISTRIBUTION CURVES

Figure: 5-2-16

UNIFIED SOIL CLASSIFICATION



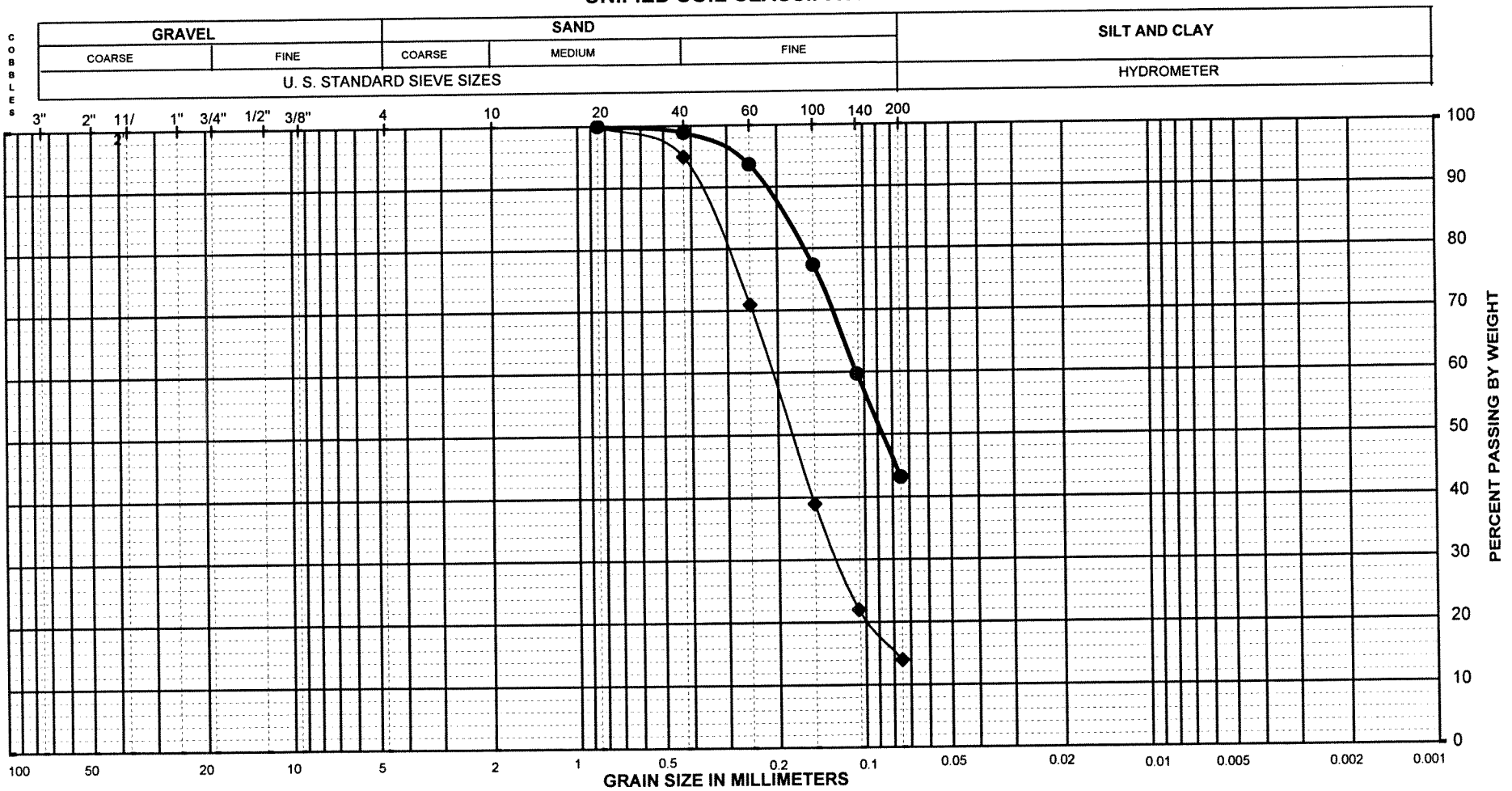
Exploration No.	Sample No.	Depth (m)	SYMBOL	Wn (%)	LL	PI	% Clay	Description and Classification	D_{60}	D_{30}	D_{10}	C_u	C_c
5-2-P-1	3b	1.37	●	4.5				Light brown silty Sand (SM)	0.15	0.08			
5-2-P-1	4	1.68	◆	2.0				Grey brown Sand with silt (SP-SM)	0.16	0.12			
5-2-P-2	3	1.22	■	3.3				Brown Sand with silt (SP-SM)	0.18	0.13	0.08	2.3	1.2
5-2-P-3	3	1.22	○					Light brown Sand with silt (SP-SM)	0.16	0.12			
5-2-P-3	6a	2.90	□	4.6				Brown silty Sand (SM)	0.1				

PROJECT NAME: **Caltrans IFB Site Selection Study**

PARTICLE-SIZE DISTRIBUTION CURVES

Figure: 5-2-17

UNIFIED SOIL CLASSIFICATION

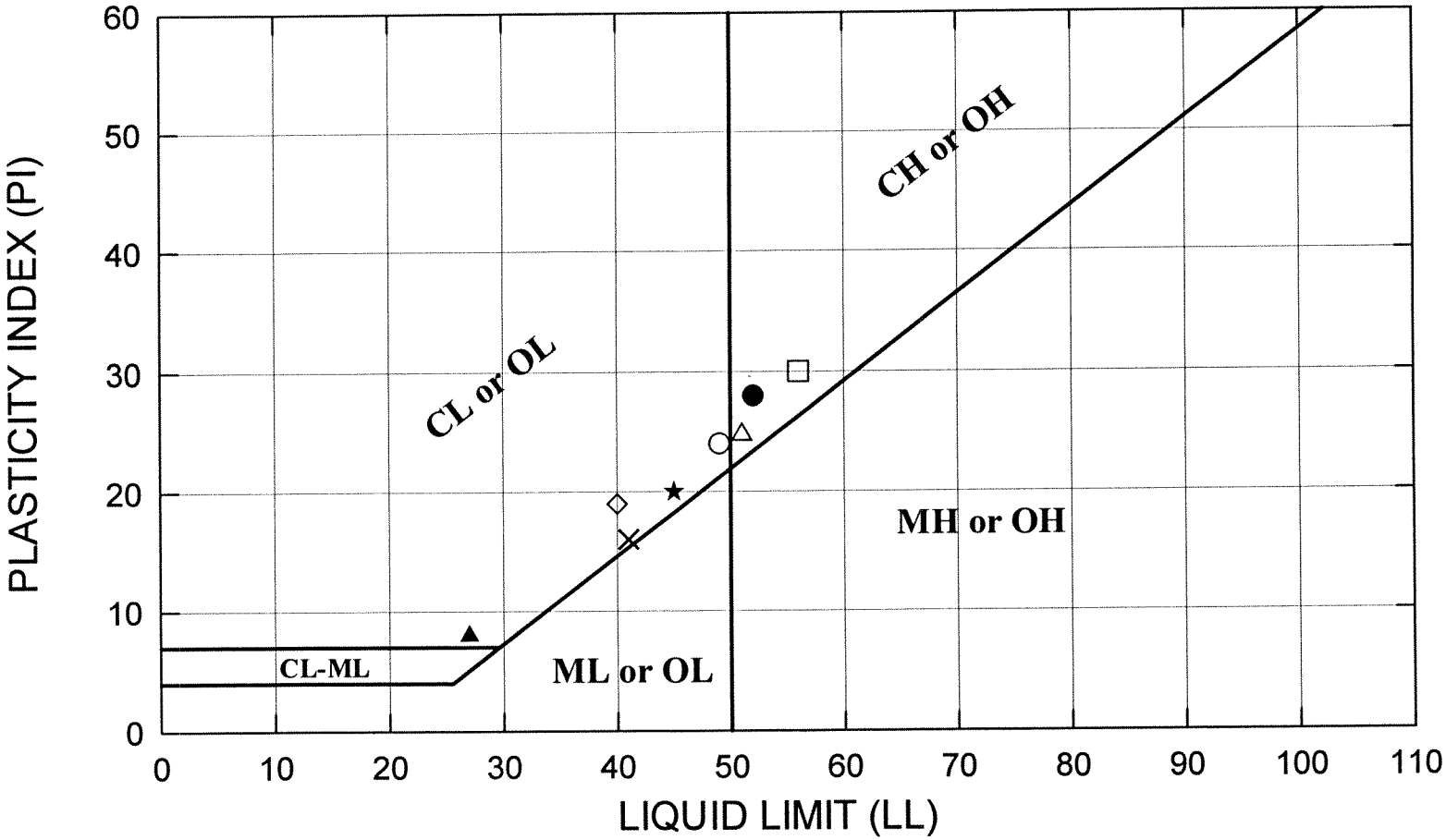


Exploration No.	Sample No.	Depth (m)	SYMBOL	Wn (%)	LL	PI	% Clay	Description and Classification	D_{60}	D_{30}	D_{10}	C_u	C_c
5-2-P-4	2b	1.07	●					**Brown silty Sand (SM)**	0.11				
5-2-P-4	3	1.37	◆	2.8				**Brown Sand with silt (SP-SM)**	0.21	0.13			

PROJECT NAME: Caltrans IFB Site Selection Study

PARTICLE-SIZE DISTRIBUTION CURVES

Figure: 5-2-18



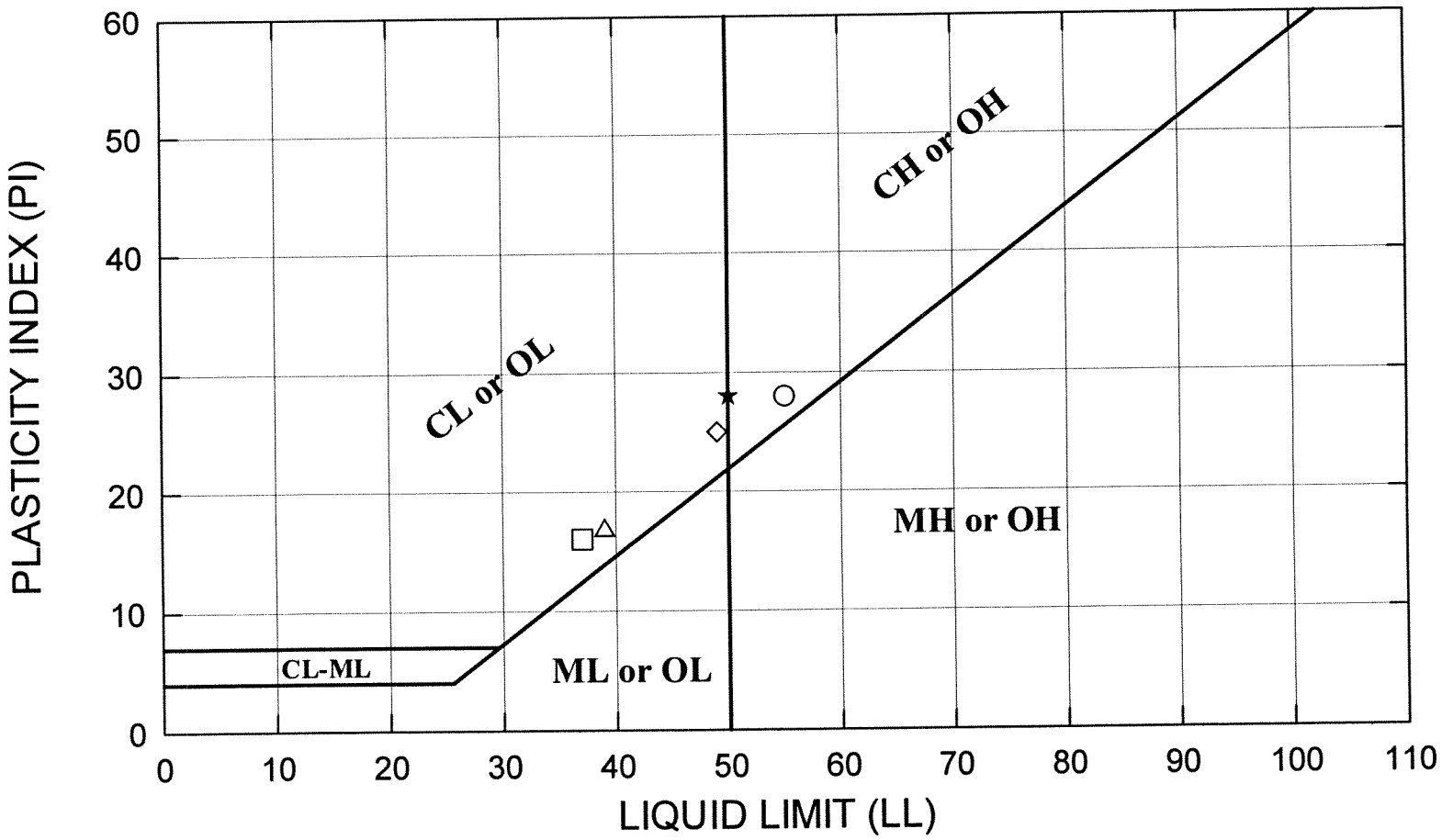
LEGEND:

○ 5-2-MW-1@2.29m	◇ 5-2-B-1@2.29m	★ 5-2-B-2@0.46m	● 5-2-B-2@2.29m
□ 5-2-MW-1@6.10m	△ 5-2-B-1@6.55m	▲ 5-2-B-2@1.83m	✕ 5-2-B-2@4.12m

PLASTICITY CHART

Date: April 2003	Project: Caltrans Infiltration Basin Project	Figure 5-2-19

s.mikesmith.PiChart.PiMaster.GRF



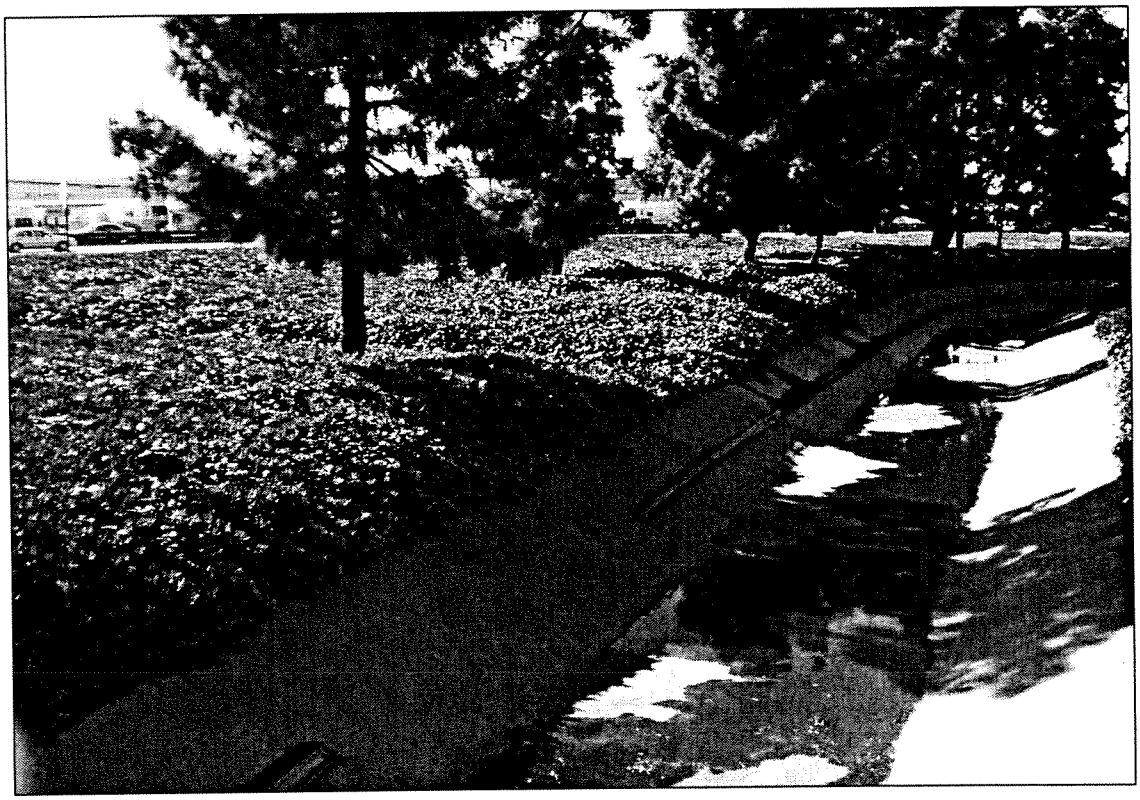
LEGEND: ○ 5-2-P-1@2.90m ◇ 5-2-P-2@1.98m ★ 5-2-P-4@2.29m ● _____

□ 5-2-P-2@0.76m △ 5-2-P-4@0.46m ▲ _____ × _____

PLASTICITY CHART

	Date: April 2003	Project: Caltrans Infiltration Basin Project	Figure 5-2-20

s.mikesmith.PiChart.PiMaster.GRF



Priority 6-5-2 (Alondra Blvd.) Site Photographs

Date: April 2003	**Project: Caltrans IFB Site Selection Study**	Figure: 5-2-21

APPENDIX G

5-4b (Rosecrans Ave.)

Table 1	Geotechnical Laboratory Test Data
Figure 5-4b-1	Site Plan
Figure 5-4b-2	Geologic Cross Section A-A'
Figure 5-4b-3	Log of Boring 5-4b-MW-1
Figure 5-4b-4	Groundwater Monitoring Well 5-4b-MW-1 Diagram
Figure 5-4b-5	Groundwater Monitoring Well 5-4b-MW-1 Photographs
Figure 5-4b-6	Log of Boring 5-4b-B-1
Figure 5-4b-7	Log of Boring 5-4b-B-2
Figure 5-4b-8	Log of Boring 5-4b-P-1
Figure 5-4b-9	Infiltration Data for 5-4b-P-1
Figure 5-4b-10	Log of Boring 5-4b-P-2
Figure 5-4b-11	Infiltration Data for 5-4b-P-2
Figure 5-4b-12	Log of Boring 5-4b-P-3
Figure 5-4b-13	Infiltration Data for 5-4b-P-3
Figure 5-4b-14	Log of Boring 5-4b-P-4
Figure 5-4b-15	Infiltration Data for 5-4b-P-4
Figure 5-4b-16	Particle-Size Distribution Curves
Figure 5-4b-17	Particle-Size Distribution Curves
Figure 5-4b-18	Plasticity Chart
Figure 5-4b-19	Plasticity Chart
Figure 5-4b-20	Site Photographs

TABLE 1

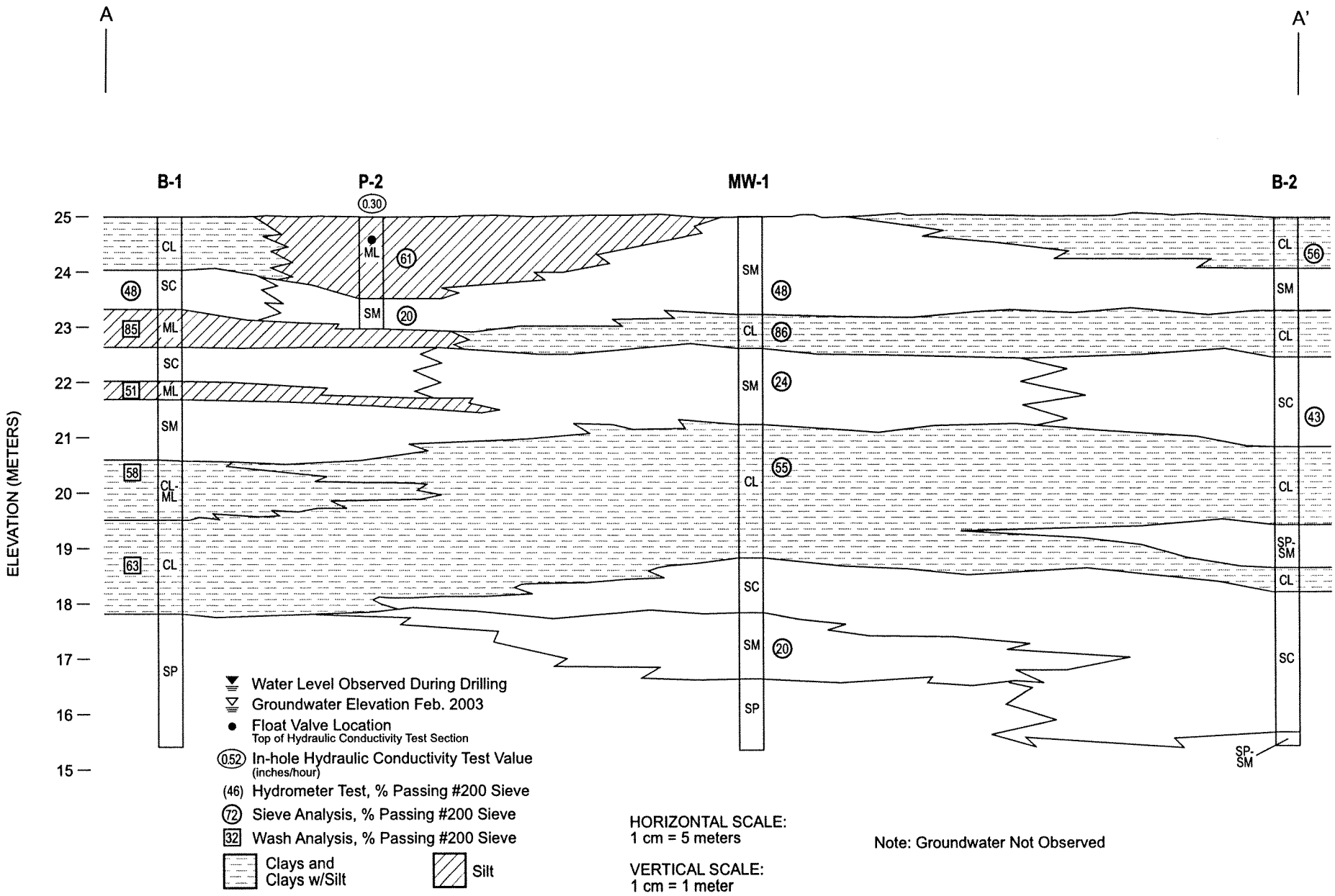
5-4b GEOTECHNICAL LABORATORY TEST DATA

Location							Atterberg Limits		Sieve				Chemical Test Data		
Exploration Number	Sample/ Specimen Number	Depth (m)	Caltrans Soil Classification	Water Content (%)	Total Unit Weight (pcf)	Dry Unit Weight (pcf)	Liquid Limit (%)	Plasticity Index (%)	Gravel (%)	Sand (%)	<#200 Fines (%)	5 microns (%)	pH	O.M.% (% organic matter)	CEC (me/g)[1]
5-4b-MW-1	2	1.07	SM	6.5	-	-	-	-	0	52	48	-	-	-	-
5-4b-MW-1	4	1.98	CL	6.8	-	-	31	11	-	-	86	-	-	-	-
5-4b-MW-1	6	2.90	SM	3.0	-	-	-	-	0	76	24	-	-	-	-
5-4b-MW-1	9	4.27	CL	5.3	-	-	-	-	0	45	55	-	-	-	-
5-4b-MW-1	11	7.62	SM	3.4	-	-	-	-	0	80	20	-	-	-	-
5-4b-B-1	2	1.07	SC	24.4	-	-	-	-	2	50	48	-	-	-	-
5-4b-B-1	3b	1.68	ML	21.8	-	-	-	-	-	-	85	-	-	-	-
5-4b-B-1	5	2.90	ML	10.6	-	-	25	4	-	-	57	-	-	-	-
5-4b-B-1	7	4.27	CL-ML	8.4	-	-	25	6	-	-	58	-	-	-	-
5-4b-B-1	8a	6.10	CL	21.2	-	-	-	-	-	-	63	-	-	-	-
5-4b-B-2	2	0.30	CL	12.1	-	-	-	-	0	44	56	-	-	-	-
5-4b-B-2	4	1.98	CL	7.1	-	-	20	5	-	-	-	-	-	-	-
5-4b-B-2	7	3.35	SC	7.3	-	-	-	-	0	57	43	-	-	-	-
5-4b-B-2	9	4.27	CL	-	-	-	28	11	-	-	-	-	-	-	-
5-4b-B-2	11	6.55	CL	-	-	-	28	9	-	-	-	-	-	-	-
5-4b-P-1	2	1.07	CL-ML	6.0	-	-	22	5	-	-	52	-	-	-	-
5-4b-P-1	4	1.98	CL	6.7	-	-	32	10	-	-	83	-	-	-	-
5-4b-P-2	1	0.61	ML	17.9	-	-	-	-	0	39	61	-	-	-	-
5-4b-P-2	3	1.52	SM	1.6	-	-	-	-	0	80	20	-	-	-	-
5-4b-P-3	1	0.61	ML	5.4	-	-	-	-	-	-	56	-	-	-	-
5-4b-P-3	2	1.07	ML	-	-	-	-	-	-	-	-	-	8.5	0.4	0.014
5-4b-P-3	4	1.98	ML	7.2	-	-	22	4	-	-	73	-	-	-	-
5-4b-P-4	1	0.61	SM	4.4	-	-	-	-	-	-	45	-	-	-	-
5-4b-P-4	2	1.07	SM	5.0	-	-	-	-	0	52	48	-	-	-	-

Notes: [1] Cation excange capacity, millequivalents per gram

Priority 6-5-4b (Rosecrans Ave.) Site Plan

April 2003	Infiltration Basin Site Selection Study	Figure 5-4b-1



PRIORITY 6 – SITE 5-4b GEOLOGIC CROSS SECTION A-A'

Date: APRIL 2003	Project: INFILTRATION BASIN SITE SELECTION STUDY	Figure 5-4b-2

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Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Rosecrans

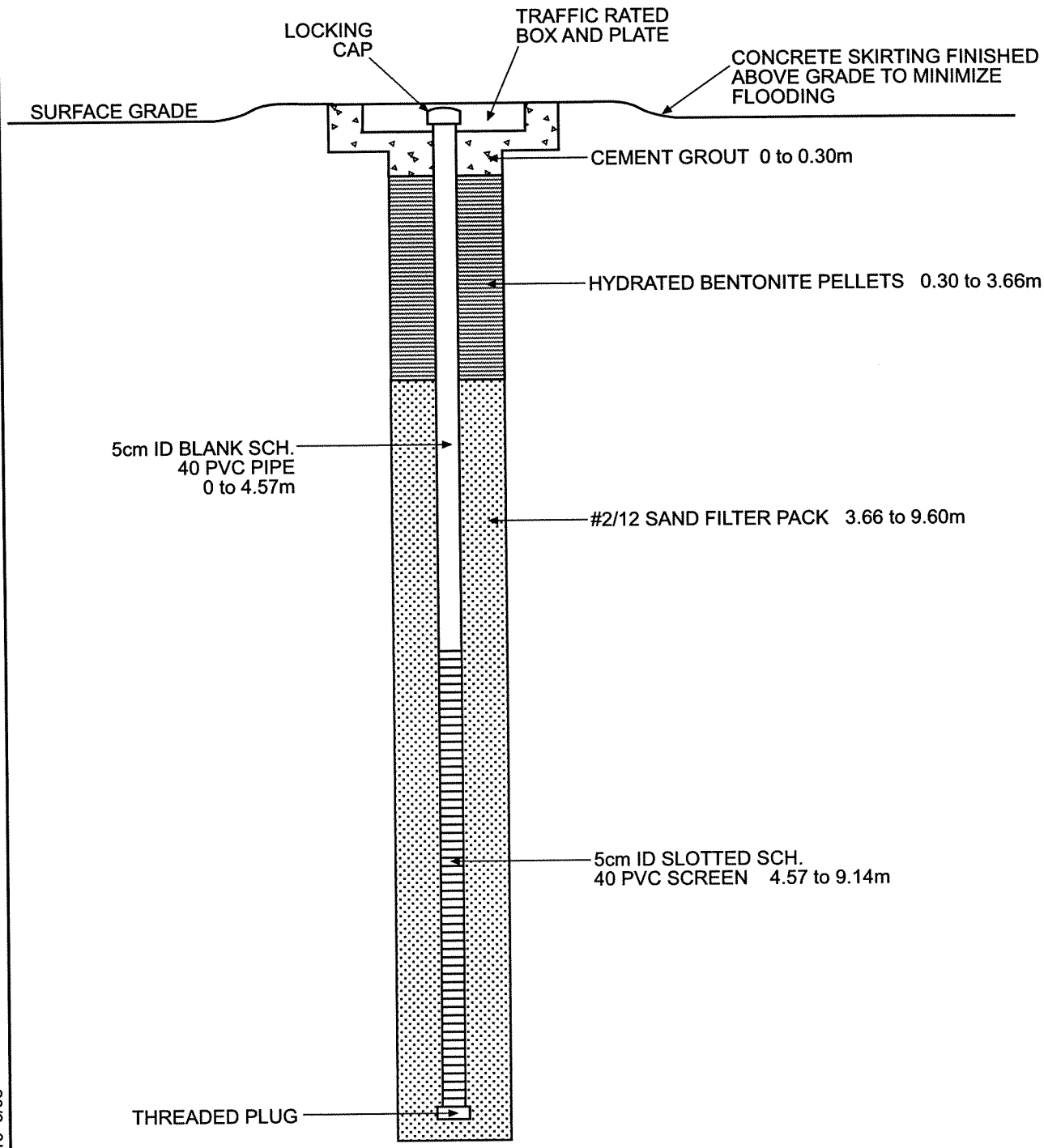
Log of Boring 5-4b-MW-1

Sheet 1 of 1

Date(s) Drilled	2/19/03	Logged By	P. Salter	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	9.6 meters
Drill Rig Type	Limited Access Rig	Drilling Contractor	Prosonic	Approximate Surface Elevation	25.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT, Modified California	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	See Well Construction	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES Type	Number	Sampling Resistance, blows/0.30m	Core Recovery, %	Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Infiltration Test Well	REMARKS AND OTHER TESTS
	0							Topsoil			CONCRETE
								Silty sand (SM) medium dense, yellowish brown, moist, fine sand			BENTONITE
24	1		1	11							CASING
			2	22					7		SA:48%<#200
			3	22							
	2							Sandy clay (CL) medium dense, light brown, moist	7		
			4	18							WA: 86%<#200 LL=31;PI=11
			5	24				Silty sand (SM) medium dense, brown, moist, fine to medium sand			
22	3		6	29					3		SA:24%<#200
								Becomes dense			
			7	30							
	4							Sandy lean clay (CL) hard, light brown, moist			#2/12 FILTER SAND
			8	42							
			9	27				Becomes stiff	5		SA:55%<#200
20	5										SLOTTED SCREEN
								Becomes dark gray			
	6		10	31				Clayey sand (SC) dense, gray, moist, fine to medium sand			
18	7							Silty sand (SM) very dense, light gray brown, moist			
			11	54					3		SA:20%<#200
	8										
								sand (SP) light gray, poorly graded, medium sand			
16	9		12	N.R							
								Bottom of boring at 9.6 meters bgs			
	10										

Figure 5-4b-3



5-4b-MW-1

Not to Scale

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GROUNDWATER MONITORING WELL DIAGRAM

Date: APRIL 2003	Project: INFILTRATION BASIN SITE SELECTION STUDY	Figure 5-4b-4

5-4b-MW-1

Date: April 2003	**Project: Caltrans IFB Site Selection Study**	Figure: 5-4b-5

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Rosecrans

Log of Boring 5-4b-B-1

Sheet 1 of 1

Date(s) Drilled	2/18/03	Logged By	P. Salter	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	9.6 meters
Drill Rig Type	Limited Access Rig	Drilling Contractor	Prosonic	Approximate Surface Elevation	25.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT, Modified California	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	Soil Cuttings, Bentonite pellets	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	Number	Sampling Resistance, blows/0.30m	Core Recovery, %	Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	PID, ppm	REMARKS AND OTHER TESTS
	0							Topsoil			
								clay with organics (CL) medium stiff, dark brown, moist, fine to medium sand			
24	1		1	8							
			2	10				Clayey sand (SC) medium dense, brown, moist, fine to medium sand	24		SA:48%<#200
			3a 3b	11				Sandy silt (ML) medium dense, brown, moist, fine sand	22		WA:85%<#200
	2			15							
			4	20				Clayey sand (SC) medium dense, brown, moist			WA:57%<#200
22	3		5	18				Sandy silt (ML) medium dense, brown, moist	11		LL=25; PI=4
				20				Silty sand (SM) medium dense, brown, moist, fine sand			
	4		6	26							
			7	16				Sandy, sitly clay (CL-ML) olive brown, moist	8		WA:58%<#200 LL=25; PI=6
20	5										
								lean clay with sand (CL) medium dense, brown, moist			
	6		8a 8b	14					21		WA:63%<#200
18	7										
								sand (SP) medium dense, light brown, moist, poorly sorted, medium sand			
	8		9	25							
16	9										
			10	12							
	10							Bottom of boring at 9.6 meters			

Figure 5-4b-6

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Rosecrans

Log of Boring 5-4b-B-2

Sheet 1 of 1

Date(s) Drilled	2/19/03	Logged By	P. Salter	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	9.6 meters
Drill Rig Type	Limited Access Rig	Drilling Contractor	Prosonic	Approximate Surface Elevation	25.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT, Modified California	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	Soil Cuttings, Bentonite pellets	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	Number	Sampling Resistance, blows/0.30m	Core Recovery, %	Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	PID, ppm	REMARKS AND OTHER TESTS
	0							Topsoil			
								Sandy clay (CL) medium dense, dark brown, moist	12		SA:56%<#200
24	1		1	21							
			2	23				Silty sand (SM) medium dense, light brown, moist, fine sand			
			3	14				Sandy clay (CL) dense, light brown, moist			
	2		4	32					7		LL=20; PI=5
			5a 5b	20				Clayey sand (SC) medium dense, brown, moisty, fine sand			
22	3		6	27					7		SA:43%<#200
			7	15				Becomes gray			
	4		8a 8b	16				Becomes brown			
			9	34				lean clay with sand (CL) medium dense, dark brown, moist			LL=28; PI=11
20	5										
	6		10a 10b	16				sand with silt (SP-SM) medium dense, brown, moist, poorly graded, fine to medium sand			
			11	16				Sandy clay (CL) stiff, dark gray brown, moist			LL=28; PI=9
18	7							Clayey sand (SC) medium dense, dark gray, moist			
	8			26							
			12	22							
								Becomes mottled blue gray			
16	9		13a 13b	18				lense of sandy clay (CL)			
	10							Bottom of boring at 9.6 meters			

Figure 5-4b-7

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Rosecrans

Log of Boring 5-4b-P-1

Sheet 1 of 1

Date(s) Drilled	2/19/03	Logged By	P. Salter	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	2.4 meters
Drill Rig Type	Limited Access Rig	Drilling Contractor	Prosonic	Approximate Surface Elevation	25.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT, Modified California	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	See Well Construction	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	Number	Sampling Resistance, blows/0.30m	Core Recovery, %	Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Infiltration Test Well	REMARKS AND OTHER TESTS
	0							Topsoil			BENTONITE PELLETS
								Sandy, sitly clay (CL-ML) stiff, light brown, moist			CASING
24	1		1	12							
			2	11					6		WA:52%<#200 LL=22; PI=5
			3a 3b	16				sand (SP) medium dense, light brown, poorly sorted, fine to medium sand			#2/12 FILTER SAND
	2		4	17				lean clay with sand (CL) very stiff, light brown, moist	7		WA:83%<#200 LL=32; PI=10
22	3							Bottom of boring at 2.4 meters bgs			
	4										
20	5										
	6										
18	7										
	8										
16	9										

Figure 5-4b-8

5-4b-P-1-1

Clock	Accumulated Time	Tank Reading (gallons)	Difference (gallons)	Accumulated Flow (gallons)	Flow Rate (gpm)	Well Temp (°F)	Reservoir Temp (°F)
8:35:00	0:00:00	58.0	0	0	0.000		
8:38:00	0:03:00	53.0	5	5	1.667		
8:40:15	0:05:15	53.0	0	5	0.952		
8:41:30	0:06:30	53.0	0	5	0.769		
8:53:00	0:18:00	52.0	1	6	0.333		
8:55:00	0:20:00	52.0	0	6	0.300		
9:00:00	0:25:00	52.0	0	6	0.240		
9:10:00	0:35:00	51.5	0.5	6.5	0.186		
9:13:30	0:38:30	51.5	0	6.5	0.169		
9:24:00	0:49:00	51.0	0.5	7	0.143		
9:37:30	1:02:30	51.0	0	7	0.112	71.1	
9:57:30	1:22:30	50.0	1	8	0.097	72.1	
10:29:15	1:54:15	49.0	1	9	0.079	72.5	
11:08:15	2:33:15	48.0	1	10	0.065	72.5	
11:39:15	3:04:15	47.0	1	11	0.060	73	
12:12:30	3:37:30	46.5	0.5	11.5	0.053	73.4	
12:59:00	4:24:00	45.0	1.5	13	0.049	73.6	
13:30:00	4:55:00	44.0	1	14	0.047	73.6	
14:05:30	5:30:30	43.0	1	15	0.045	74.1	
14:38:00	6:03:00	42.5	0.5	15.5	0.043	74.3	

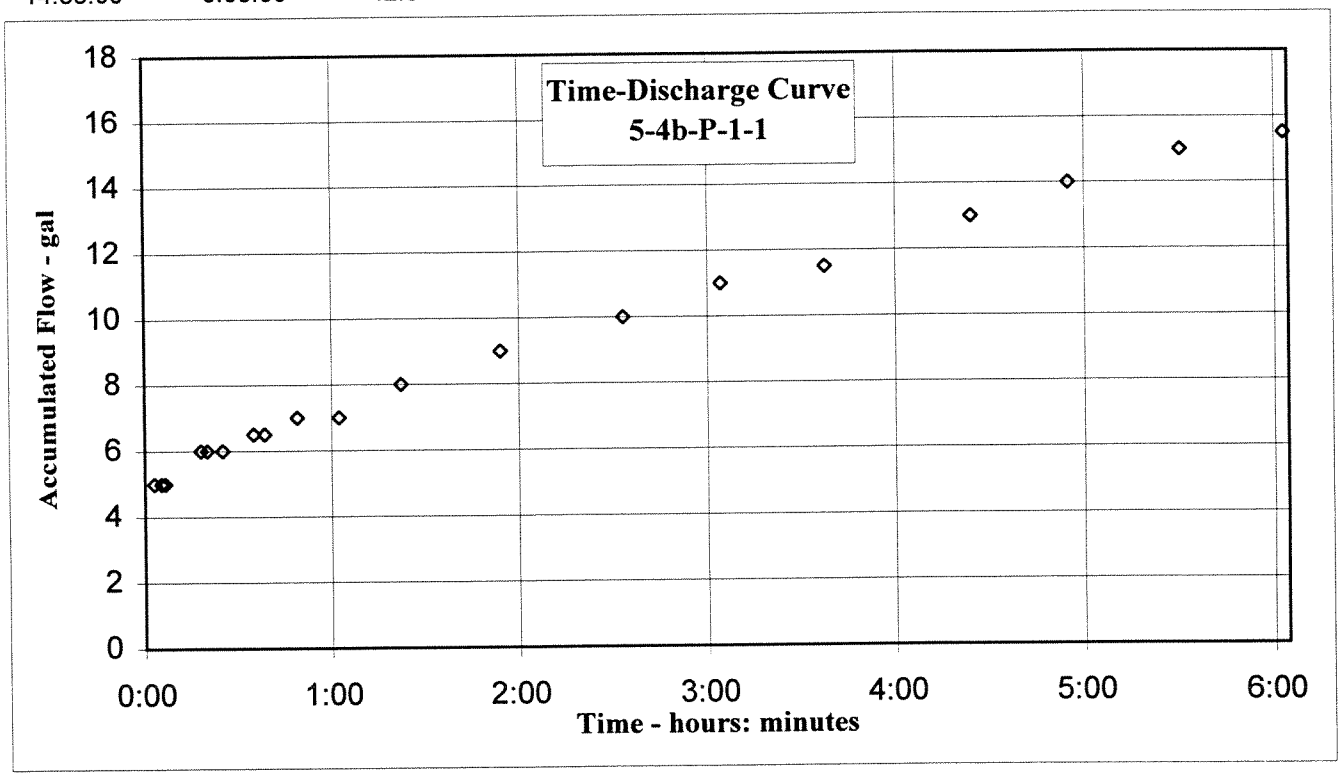


Figure 5-4b-9A

Calculation of Test Condition

Float depth =	2.5 ft	0.76 meters
Borehole depth =	8 ft	2.44 meters
Height of water in test well, h =	5.5 ft	1.68 meters
Depth of water table =	29.74 ft	9.06 meters
Depth to impervious layer =	21.2 ft	6.46 meters
Unsaturated distance between water table or impervious layer and surface of well water, Tu=	18.7 ft	5.70 meters

Based on the Test Data, Condition I is the most applicable

Calculation of equivalent radius of the well, r_w

mass of sand in borehole, m_s =	200 lbs	
density of sand in borehole, ρ_s =	102.74 lbs/cu ft	
r_w =	0.336 ft	4.03 inches

Calculations for k_{20}

h =	5.5 ft	66 inches
Steady-state discharge rate, q =	0.0255 gpm	5.903 cu.in./min
Average well water temperature, T =	73.90 °F	23.28 °C
Kinematic viscosity ratio, V =	0.9105 no units	
Condition I - k20=	5.01E-04 in/min	3.00E-02 in/hr

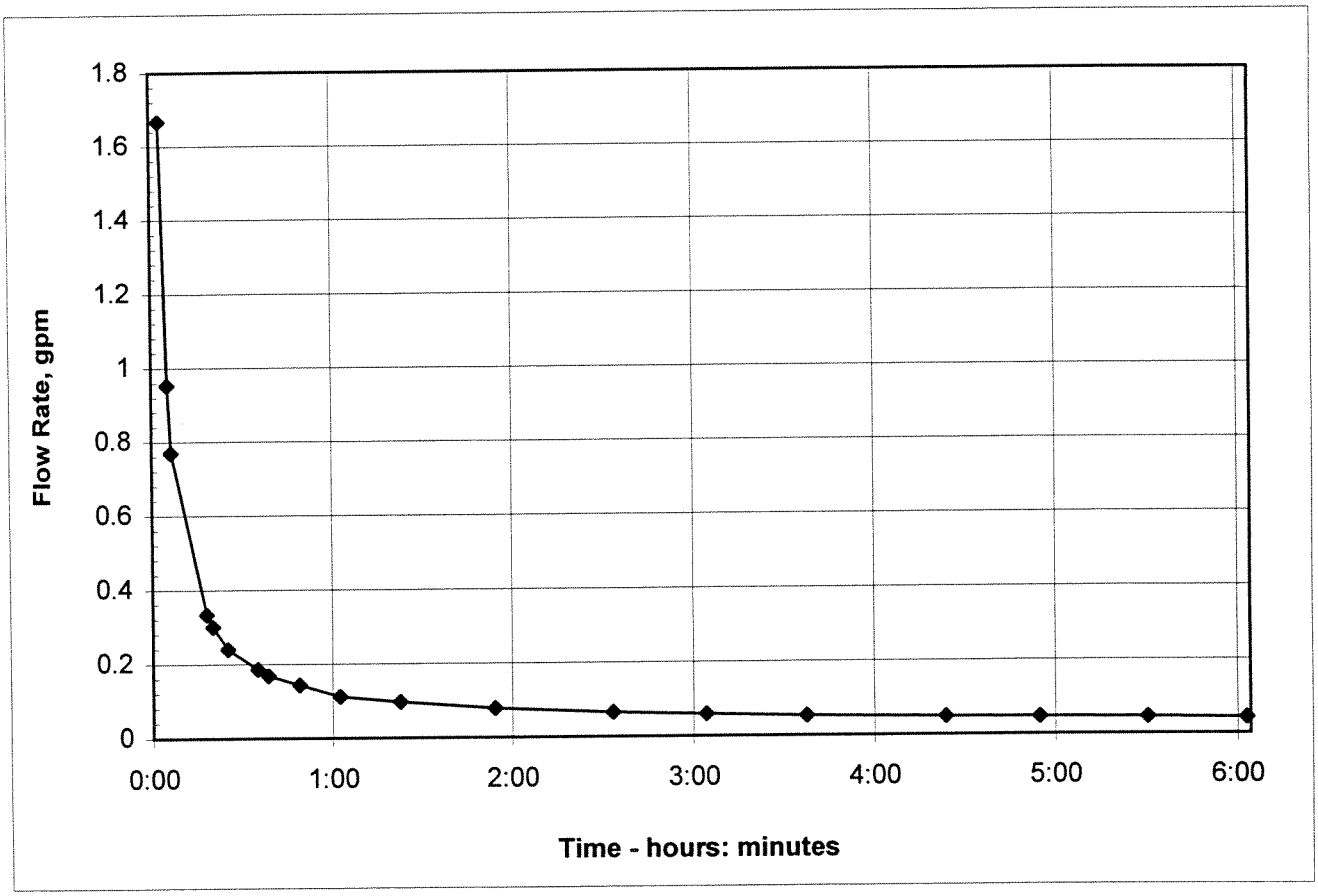


Figure 5-4b-9B

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Rosecrans

Log of Boring 5-4b-P-2

Sheet 1 of 1

Date(s) Drilled	2/19/03	Logged By	P. Salter	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	2.0 meters
Drill Rig Type	Limited Access Rig	Drilling Contractor	Prosonic	Approximate Surface Elevation	25.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	See Well Construction	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES Type	Number	Sampling Resistance, blows/0.30m	Core Recovery, %	Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Infiltration Test Well	REMARKS AND OTHER TESTS
	0							Topsoil			BENTONITE PELLETS
								Sandy silt (ML) loose, dark brown, moist, organics			CASING
24	1		1	8				Becomes dense, fewer organics	18		SA:61%<#200
			2	18							#2/12 FILTER SAND
			3	13				Silty sand (SM) medium dense, light yellowish brown, fine to medium sand	2		SA:20%<#200
	2							Bottom of boring at 2 meters bgs			
22	3										
	4										
20	5										
	6										
18	7										
	8										
16	9										

Figure 5-4b-10

5-4b-P-2-1

Clock	Accumulated Time	Tank Reading (gallons)	Difference (gallons)	Accumulated Flow (gallons)	Flow Rate (gpm)	Well Temp (°F)	Reservoir Temp (°F)
9:01:00	0:00:00	56.0	0	0	0.000	63.1	
9:02:00	0:01:00	54.5	1.5	1.5	1.500	63.1	
9:04:30	0:03:30	53.0	1.5	3	0.857	63.1	
9:08:15	0:07:15	52.0	1	4	0.552	63.3	
9:12:30	0:11:30	51.0	1	5	0.435	63.3	
9:18:00	0:17:00	50.0	1	6	0.353	63.1	
9:24:30	0:23:30	49.0	1	7	0.298	63.3	
9:37:00	0:36:00	47.0	2	9	0.250	63.5	
9:57:00	0:56:00	43.0	4	13	0.232	64	
10:28:30	1:27:30	37.5	5.5	18.5	0.211	64.4	
11:07:30	2:06:30	31.5	6	24.5	0.194	65.3	
11:38:30	2:37:30	26.0	5.5	30	0.190	66.4	
12:12:00	3:11:00	21.0	5	35	0.183	67.3	
12:58:00	3:57:00	13.5	7.5	42.5	0.179	68.9	
13:19:30	4:18:30	10.0	3.5	46	0.178	69.6	
13:21:45	4:20:45	43.0		46	0.176	69.3	
14:04:45	5:03:45	35.5	7.5	53.5	0.176	67.9	
15:02:00	6:01:00	26.0	9.5	63	0.175	68.4	

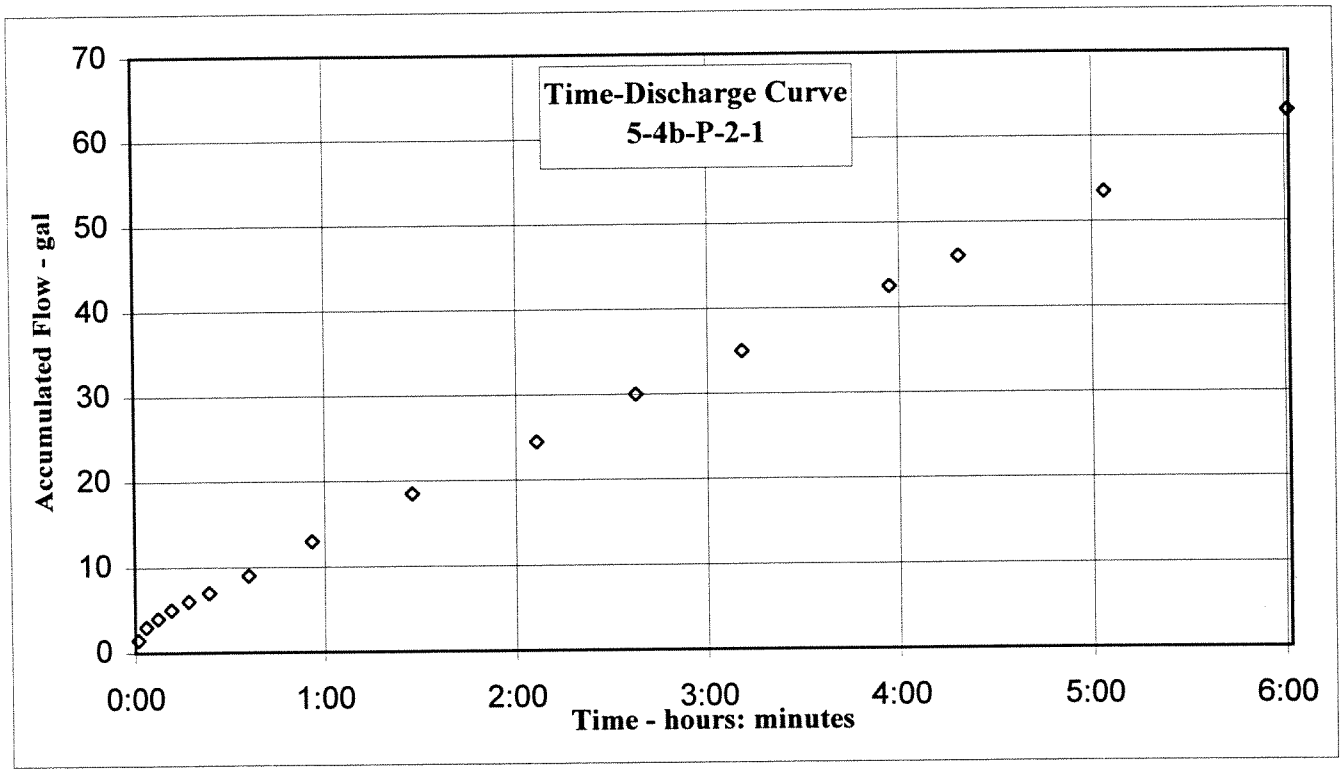


Figure 5-4b-11A

Calculation of Test Condition

Float depth =	2 ft	0.61 meters
Borehole depth =	6.5 ft	1.98 meters
Height of water in test well, h =	4.5 ft	1.37 meters
Depth of water table =	29.74 ft	9.06 meters
Depth to impervious layer =	19.9 ft	6.07 meters
Unsaturated distance between water table or impervious layer and surface of well water, Tu=	17.9 ft	5.46 meters

Based on the Test Data, Condition I is the most applicable

Calculation of equivalent radius of the well, r_w

mass of sand in borehole, m_s =	150 lbs	
density of sand in borehole, ρ_s =	101.99 lbs/cu ft	
r_w =	0.323 ft	3.87 inches

Calculations for k_{20}

h =	4.5 ft	54 inches
Steady-state discharge rate, q =	0.162 gpm	37.49 cu.in./min
Average well water temperature, T =	67.50 °F	19.72 °C
Kinematic viscosity ratio, V =	0.9983 no units	
Condition I - k20=	4.90E-03 in/min	0.2941 in/hr

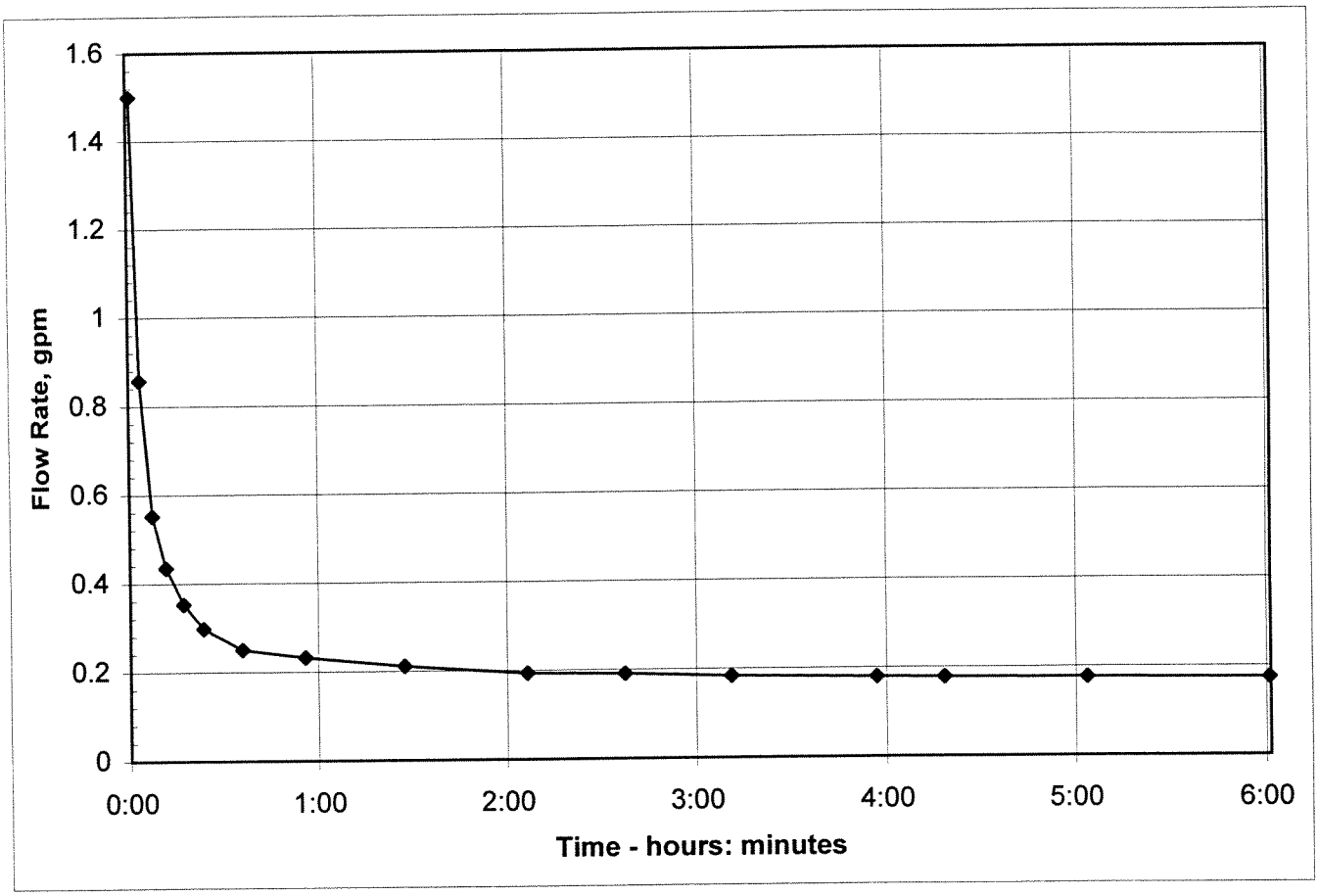


Figure 5-4b-11B

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Rosecrans

Log of Boring 5-4b-P-3

Sheet 1 of 1

Date(s) Drilled	2/19/03	Logged By	P. Salter	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	3.4 meters
Drill Rig Type	Limited Access Rig	Drilling Contractor	Prosonic	Approximate Surface Elevation	25.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT, Modified California	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	See Well Construction	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	Number	Sampling Resistance, blows/0.30m	Core Recovery, %	Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Infiltration Test Well	REMARKS AND OTHER TESTS
	0							Topsoil			BENTONITE PELLETS
								Sandy silt (ML) medium dense, light brown, moist			
24	1		1	18					5		WA:56%<#200
			2	23							CASING
			3a 3b	20				Silty sand (SM) medium dense, light brown, moist			pH=8.5, OM=0.4% CEC=0.014 me/g
	2		4	18				Sandy silt (ML) medium dense, light brown, moist	7		
			5	18				Silty sand (SM) medium dense, dark brown, moist, fine to medium sand			WA:73%<#200 LL=22; PI=4
22	3		6	15							#2/12 FILTER SAND
								Bottom of boring at 3.4 meters bgs			
	4										
20	5										
	6										
18	7										
	8										
16	9										

Figure 5-4b-12

5-4b-P-3-1

Clock	Accumulated Time	Tank Reading (gallons)	Difference (gallons)	Accumulated Flow (gallons)	Flow Rate (gpm)	Well Temp (°F)	Reservoir Temp (°F)
8:35:00	0:00:00	60.0	0	0	0.000	61.3	
8:36:00	0:01:00	59.0	1	1	1.000		
8:37:00	0:02:00	58.0	1	2	1.000		
8:38:00	0:03:00	57.0	1	3	1.000		
8:39:00	0:04:00	56.0	1	4	1.000		
8:40:00	0:05:00	55.0	1	5	1.000		
8:41:00	0:06:00	54.5	0.5	5.5	0.917		
8:42:00	0:07:00	54.0	0.5	6	0.857		
8:43:00	0:08:00	53.5	0.5	6.5	0.813		
8:44:00	0:09:00	53.0	0.5	7	0.778		
8:45:00	0:10:00	52.5	0.5	7.5	0.750		
8:50:00	0:15:00	50.0	2.5	10	0.667		
9:05:00	0:30:00	44.0	6	16	0.533		
9:20:00	0:45:00	40.5	3.5	19.5	0.433		
9:40:00	1:05:00	36.0	4.5	24	0.369		
9:50:00	1:15:00	33.0	3	27	0.360	64.8	
10:20:00	1:45:00	27.0	6	33	0.314	65.7	
10:50:00	2:15:00	21.0	6	39	0.289	66.6	
11:20:00	2:45:00	15.0	6	45	0.273	68	
11:50:00	3:15:00	10.0	5	50	0.256		
11:55:00	3:20:00	9.8	0.2	50.2	0.251		
11:58:00	3:23:00	58.0		50.2	0.247	71.2	
12:20:00	3:45:00	52.0	6	56.2	0.250	70.9	
12:50:00	4:15:00	47.0	5	61.2	0.240	71.2	
13:20:00	4:45:00	42.0	5	66.2	0.232		
13:50:00	5:15:00	37.0	5	71.2	0.226	71.6	
14:20:00	5:45:00	32.0	5	76.2	0.221	71.4	
14:35:00	6:00:00	29.5	2.5	78.7	0.219	72	

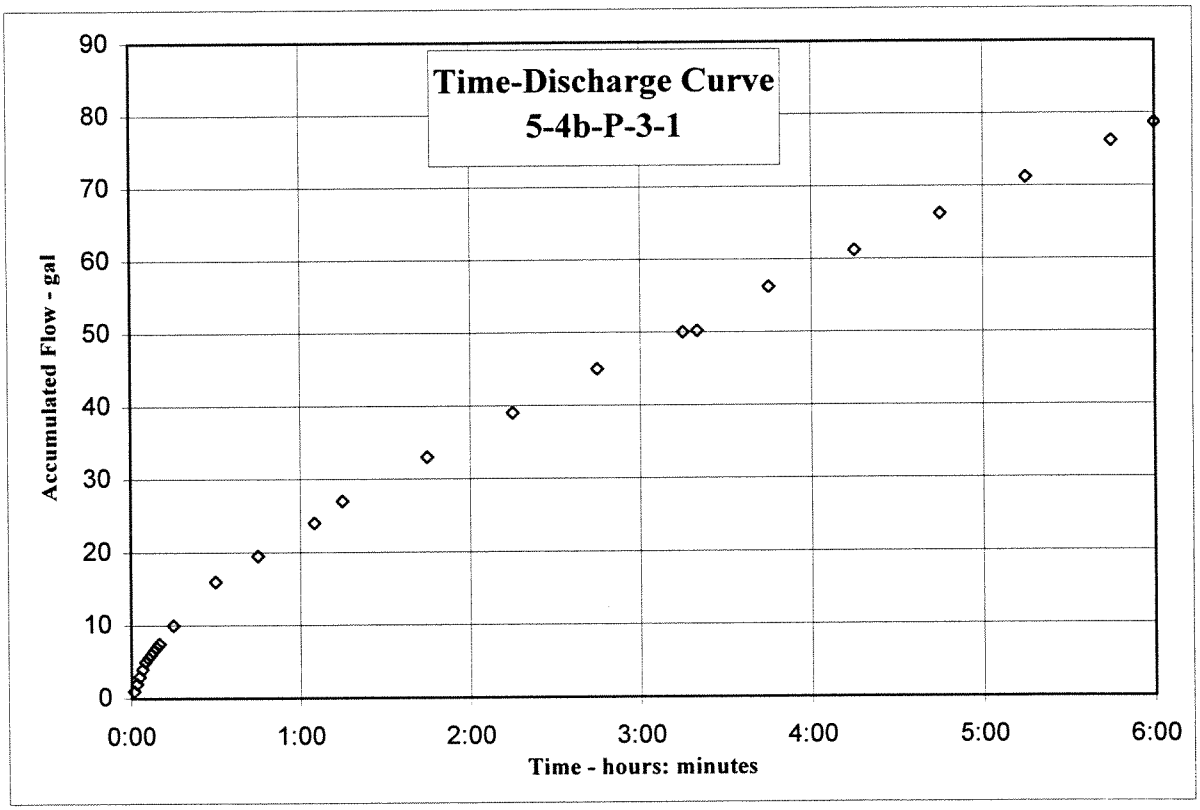


Figure 5-4b-13A

Calculation of Test Condition

Float depth =	4.5 ft	1.37 meters
Borehole depth =	11 ft	3.35 meters
Height of water in test well, h =	6.5 ft	1.98 meters
Depth of water table =	19.5 ft	5.94 meters
Depth to impervious layer =	18.5 ft	5.64 meters
Unsaturated distance between water table or impervious layer and surface of well water, Tu=	14 ft	4.27 meters

Based on the Test Data, Condition II is the most applicable

Calculation of equivalent radius of the well, r_w

mass of sand in borehole, m_s =	200 lbs	
density of sand in borehole, ρ_s =	104.43 lbs/cu ft	
r_w =	0.306 ft	3.67 inches

Calculations for k_{20}

h =	6.5 ft	78 inches
Steady-state discharge rate, q =	0.167 gpm	38.51 cu.in./min
Average well water temperature, T =	71.42 °F	21.90 °C
Kinematic viscosity ratio, V =	0.9431 no units	
Condition II - k20 =	3.28E-03 in/min	0.1969 in/hr
Condition I - k20 =	2.66E-03 in/min	0.1593 in/hr

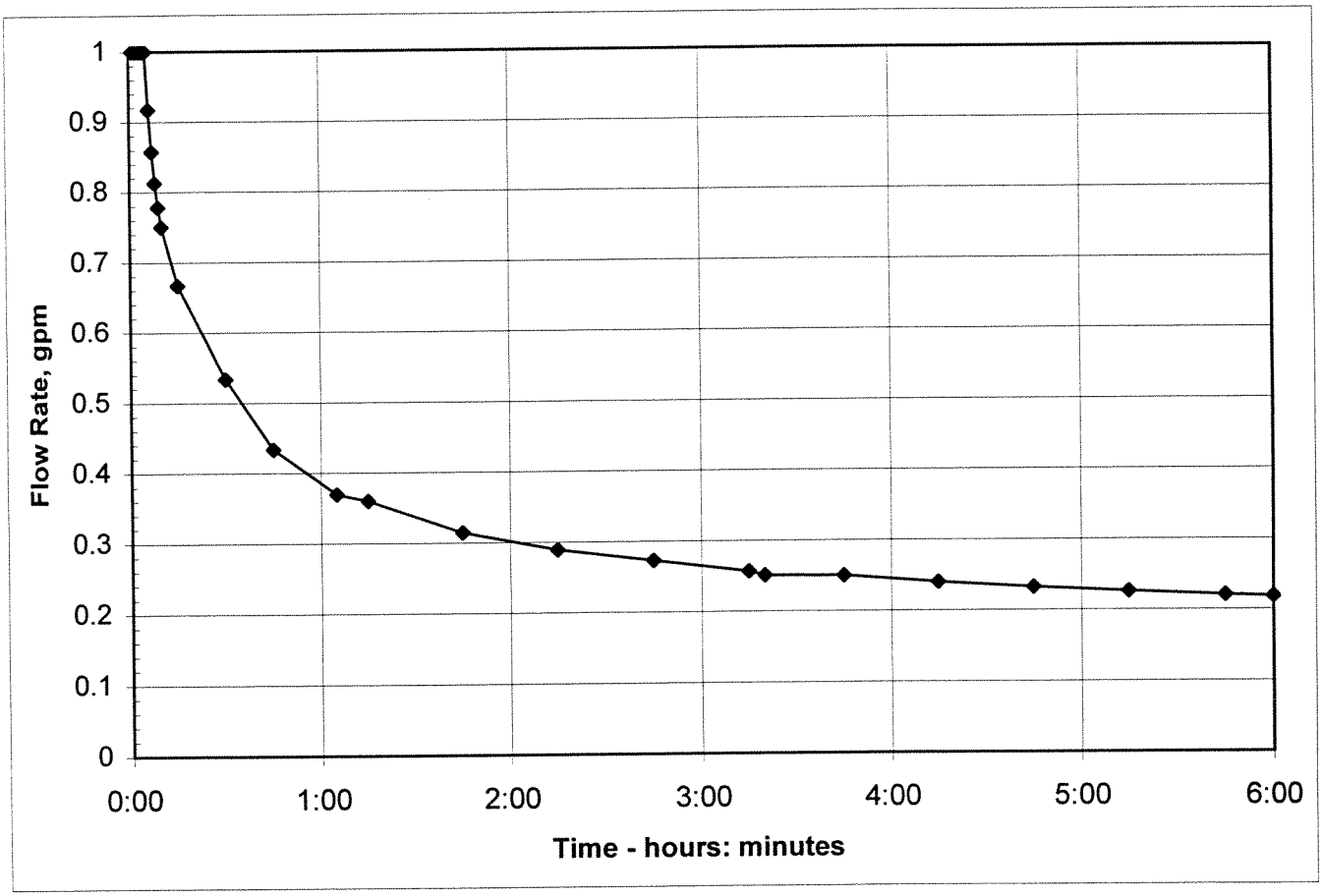


Figure 5-4b-13B

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Rosecrans

Log of Boring 5-4b-P-4

Sheet 1 of 1

Date(s) Drilled	2/19/03	Logged By	P. Salter	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	2.0 meters
Drill Rig Type	Limited Access Rig	Drilling Contractor	Prosonic	Approximate Surface Elevation	25.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	See Well Construction	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	Number	Sampling Resistance, blows/0.30m	Core Recovery, %	Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Infiltration Test Well	REMARKS AND OTHER TESTS
	0							Topsoil			BENTONITE PELLETS
								Silty sand (SM) loose, light brown, moist, fine sand			CASING
24	1		1	10					4		WA:45%<#200
								Becomes medium dense			
			2	26					5		SA:48%<#200
											#2/12 FILTER SAND
			3	16							
	2							Bottom of boring at 2 meters bgs			
22	3										
	4										
20	5										
	6										
18	7										
	8										
16	9										

Figure 5-4b-14

5-4b-P-4-1

Clock	Accumulated Time	Tank Reading (gallons)	Difference (gallons)	Accumulated Flow (gallons)	Flow Rate (gpm)	Well Temp (°F)	Reservoir Temp (°F)
8:20:00	0:00:00	60.0	0	0	0.000	63.2	
8:21:00	0:01:00	58.5	1.5	1.5	1.500		
8:22:00	0:02:00	57.0	1.5	3	1.500		
8:23:00	0:03:00	55.0	2	5	1.667		
8:24:00	0:04:00	53.0	2	7	1.750		
8:25:00	0:05:00	52.0	1	8	1.600		
8:26:00	0:06:00	51.0	1	9	1.500		
8:27:00	0:07:00	50.0	1	10	1.429		
8:28:00	0:08:00	49.5	0.5	10.5	1.313		
8:29:00	0:09:00	49.0	0.5	11	1.222		
8:30:00	0:10:00	48.5	0.5	11.5	1.150		
8:35:00	0:15:00	48.0	0.5	12	0.800		
8:41:00	0:21:00	47.0	1	13	0.619		
8:45:00	0:25:00	46.5	0.5	13.5	0.540		
8:50:00	0:30:00	46.0	0.5	14	0.467		
9:05:00	0:45:00	44.0	2	16	0.356		
9:20:00	1:00:00	43.0	1	17	0.283		
9:50:00	1:30:00	40.0	3	20	0.222		
10:20:00	2:00:00	37.0	3	23	0.192		
10:50:00	2:30:00	34.0	3	26	0.173		
11:20:00	3:00:00	32.0	2	28	0.156		
11:50:00	3:30:00	29.0	3	31	0.148	65.2	
12:20:00	4:00:00	26.5	2.5	33.5	0.140		
12:50:00	4:30:00	24.0	2.5	36	0.133	70	
13:20:00	5:00:00	21.0	3	39	0.130		
13:25:00	5:05:00	59.0		39	0.128		
13:50:00	5:30:00	56.0	3	42	0.127	72	
14:20:00	6:00:00	53.0	3	45	0.125		

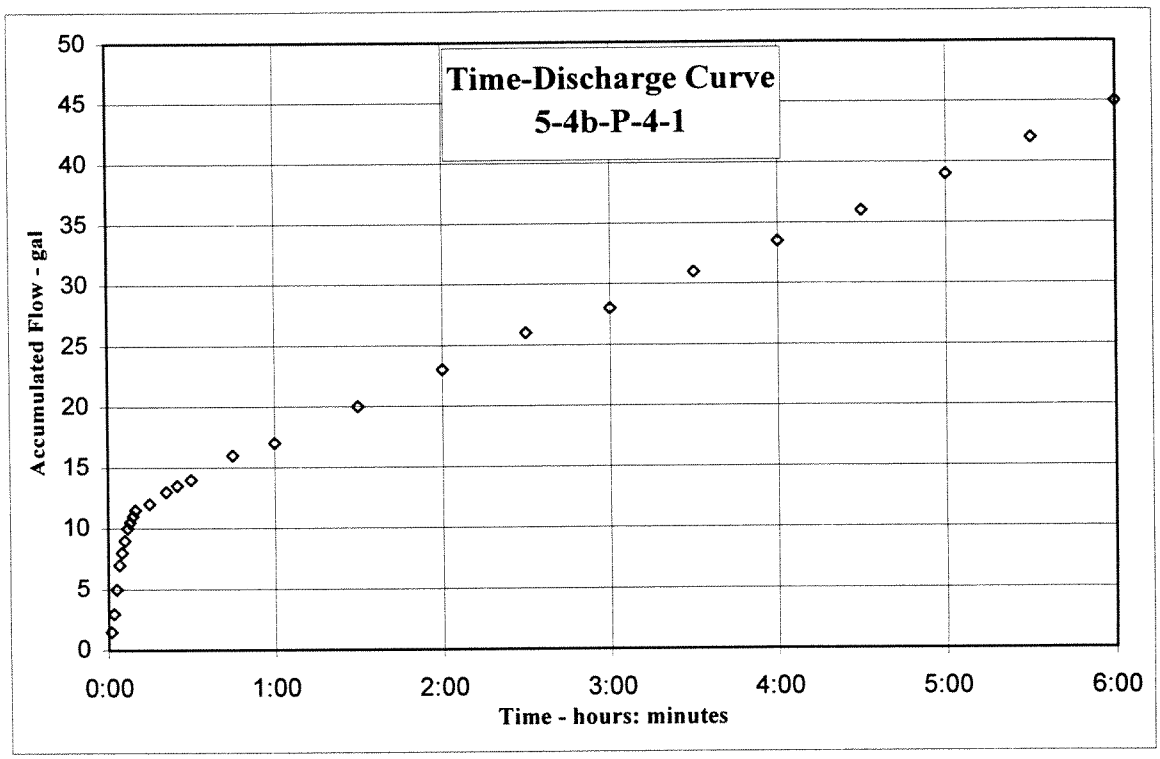


Figure 5-4b-15A

Calculation of Test Condition

Float depth =	1.5 ft	0.46 meters
Borehole depth =	6.5 ft	1.98 meters
Height of water in test well, h =	5 ft	1.52 meters
Depth of water table =	30 ft	9.14 meters
Depth to impervious layer =	19.6 ft	5.97 meters
Unsaturated distance between water table or impervious layer and surface of well water, Tu=	18.1 ft	5.52 meters

Based on the Test Data, Condition I is the most applicable

Calculation of equivalent radius of the well, r_w

mass of sand in borehole, m_s =	100 lbs	
density of sand in borehole, ρ_s =	101.76 lbs/cu ft	
r_w =	0.250 ft	3.00 inches

Calculations for k_{20}

h =	5 ft	60 inches
Steady-state discharge rate, q =	0.0899 gpm	20.78 cu.in./min
Average well water temperature, T =	69.07 °F	20.59 °C
Kinematic viscosity ratio, V =	0.9757 no units	
Condition I - k20=	2.45E-03 in/min	0.1472 in/hr

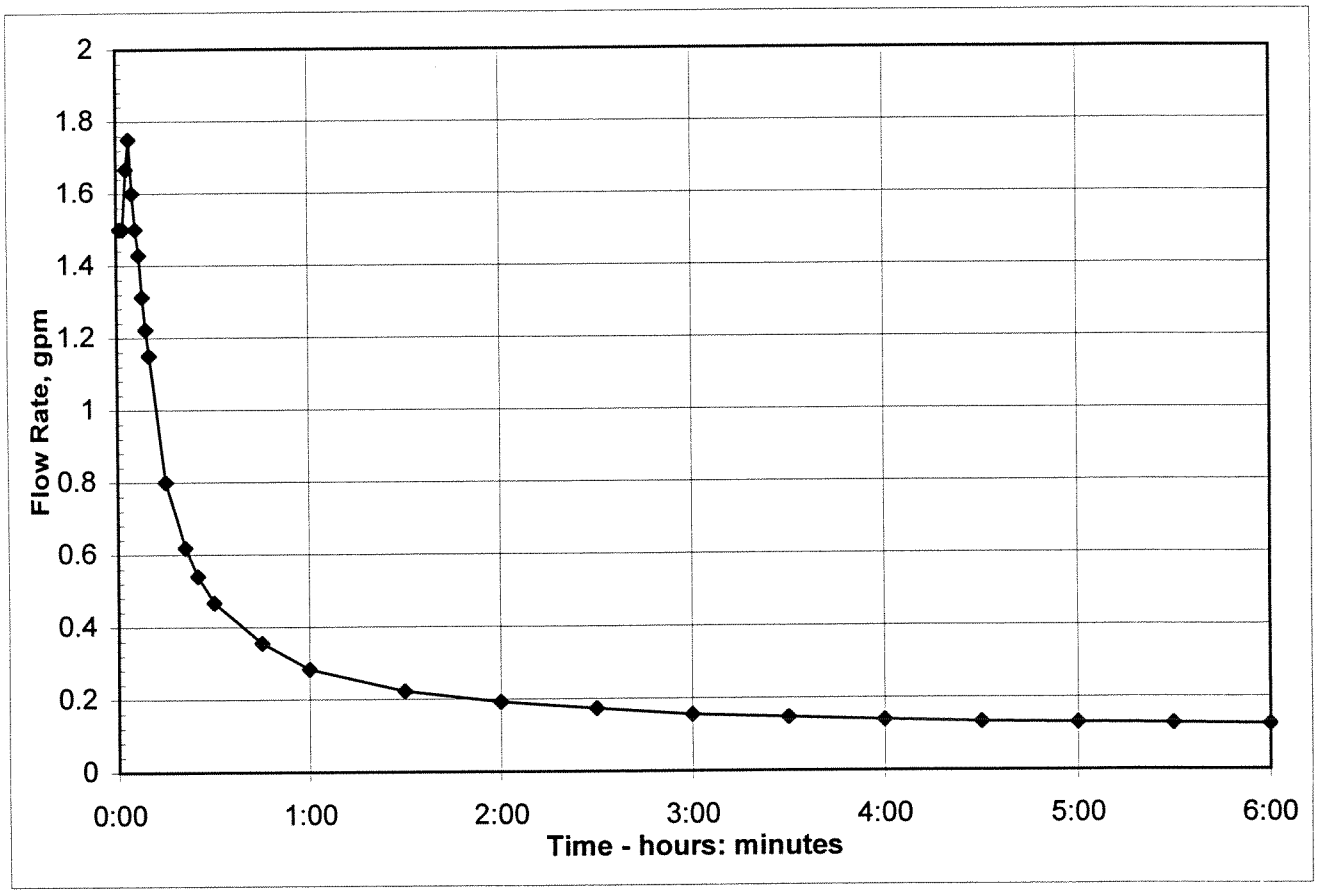
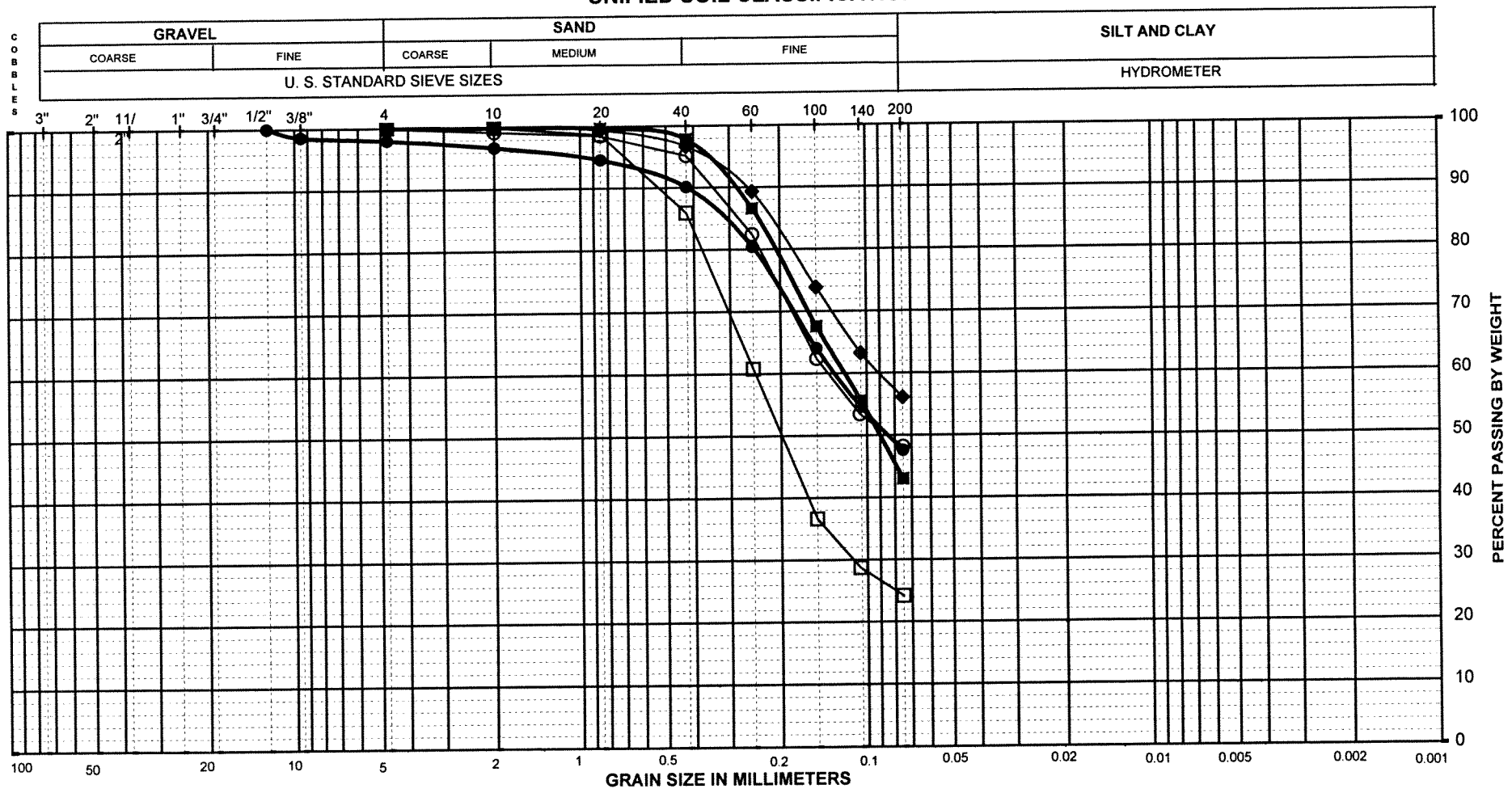


Figure 5-4b-15B

UNIFIED SOIL CLASSIFICATION



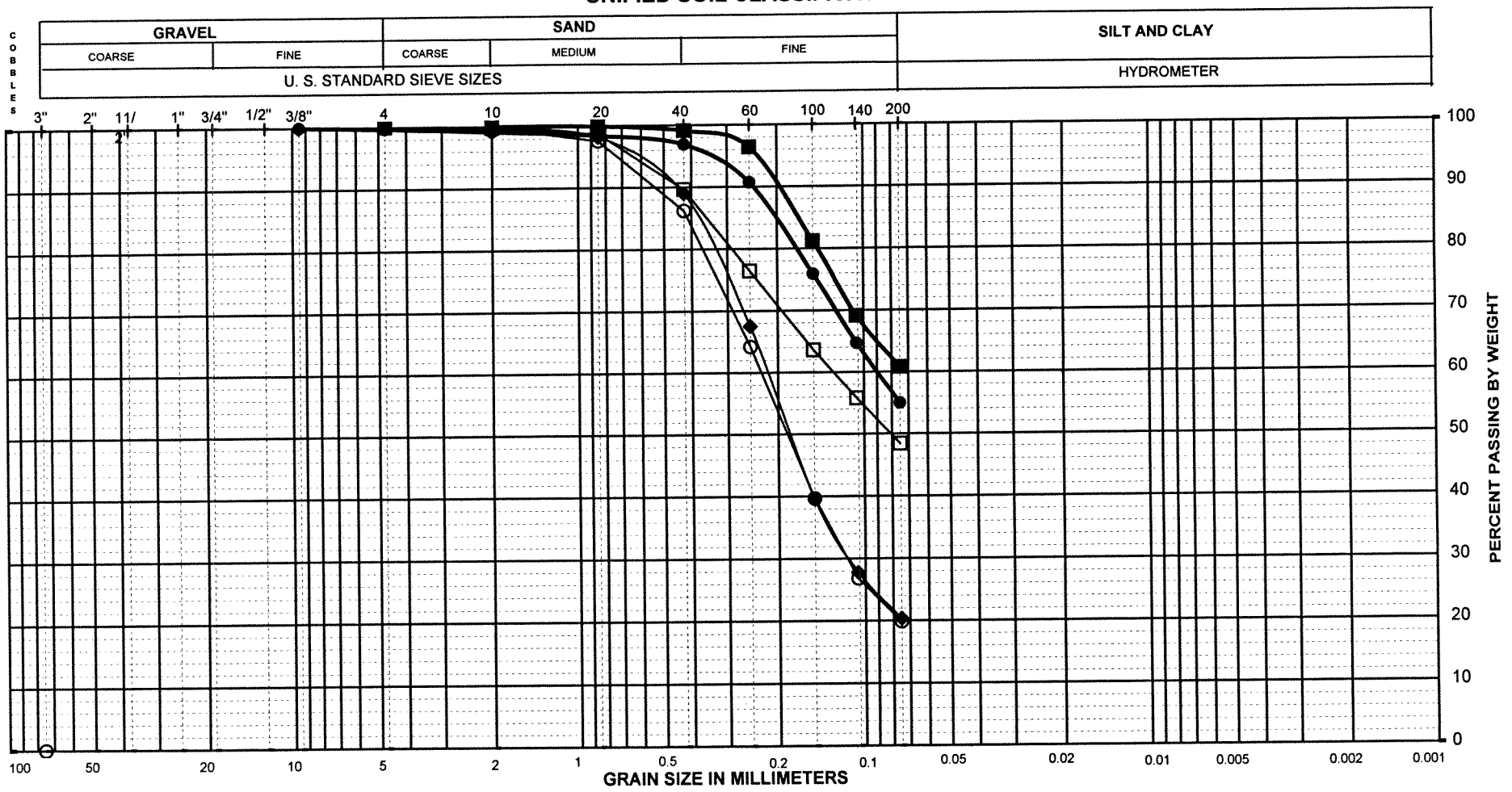
Exploration No.	Sample No.	Depth (m)	SYMBOL	Wn (%)	LL	PI	% Clay	Description and Classification	D_{60}	D_{30}	D_{10}	C_u	C_c
5-4b-B-1	2	1.07	●	24.4				Dark gray clayey Sand (SC)	0.13				
5-4b-B-2	1	0.30	◆	12.1				Very dark brown sandy Clay (CL)	0.09				
5-4b-B-2	7	3.35	■	7.3				Gray silty Sand (SM)	0.12				
5-4b-MW-1	2	1.07	○	6.5				Gray silty Sand (SM)	0.14				
5-4b-MW-1	6	2.90	□	3.0				Dark gray silty Sand (SM)	0.25	0.12			

PROJECT NAME: **Caltrans IFB Site Selection Study**

PARTICLE-SIZE DISTRIBUTION CURVES

Figure: 5-4b-16

UNIFIED SOIL CLASSIFICATION

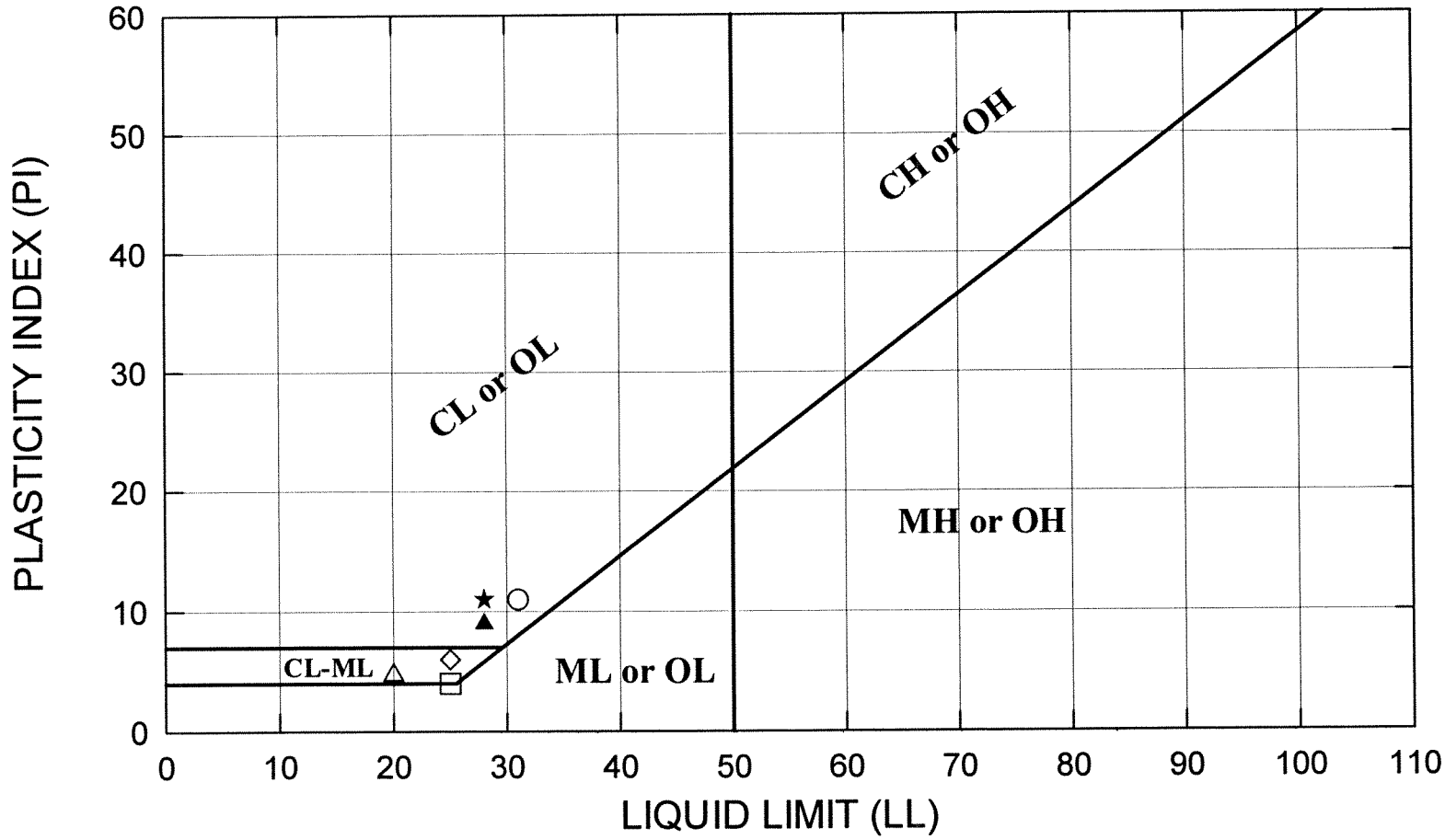


Exploration No.	Sample No.	Depth (m)	SYMBOL	Wn (%)	LL	PI	% Clay	Description and Classification	D_{60}	D_{30}	D_{10}	C_u	C_c
5-4b-MW-1	9	4.27	●	5.3				Gray sandy Clay (CL)	0.09				
5-4b-MW-1	11	7.62	◆	3.4				Gray silty Sand (SM)	0.22	0.12			
5-4b-P-2	1	0.61	■	17.9				Gray sandy Silt (ML)					
5-4b-P-2	3	1.52	○	1.6				Light brown silty Sand (SM)	0.23	0.12			
5-4b-P-4	2	1.07	□	5.0				Dark gray silty Sand (SM)	0.13				

PROJECT NAME: **Caltrans IFB Site Selection Study**

PARTICLE-SIZE DISTRIBUTION CURVES

Figure: 5-4b-17



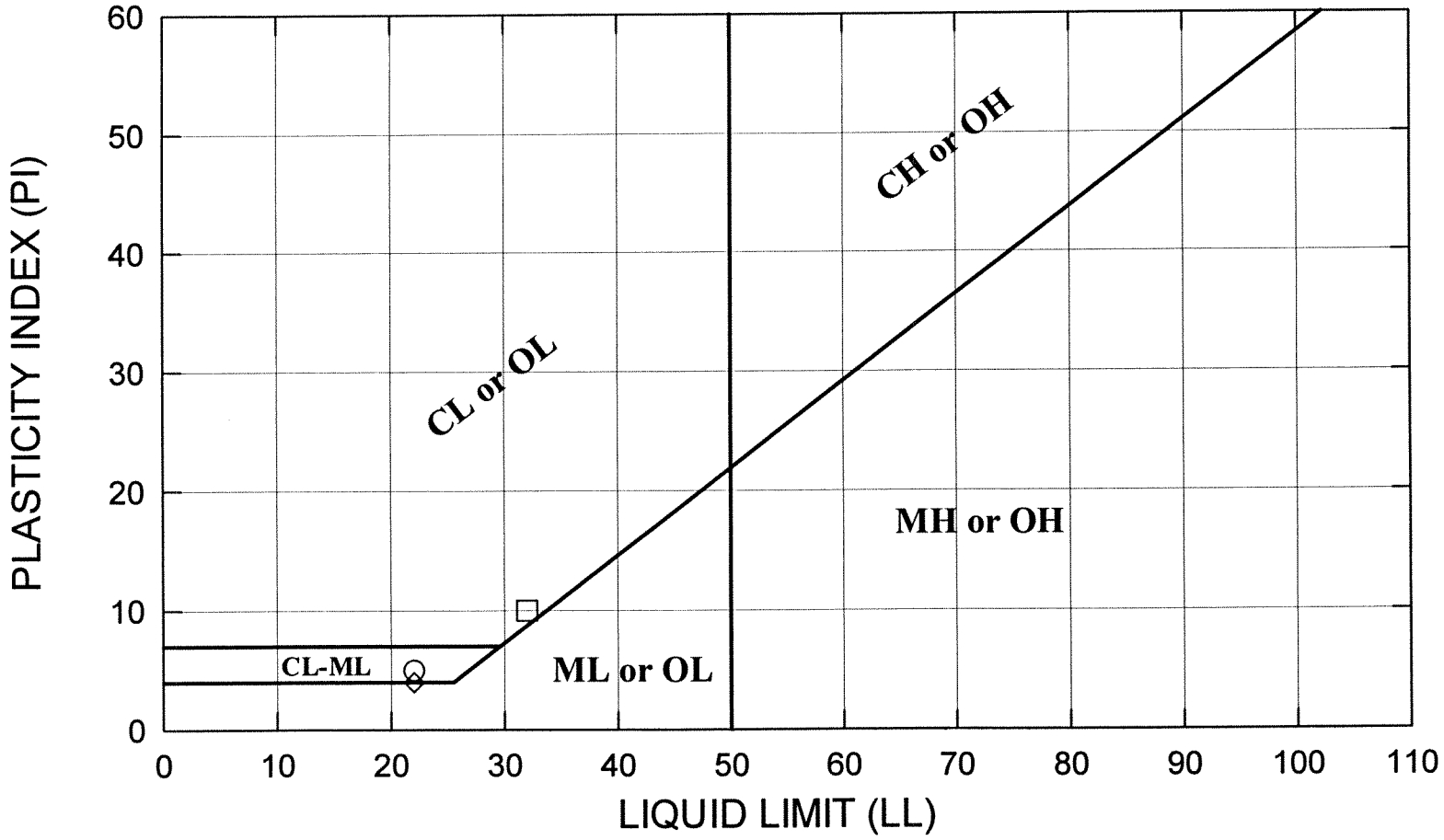
LEGEND: ○ 5-4b-MW-1@1.98m ◇ 5-4b-B-1@4.27m ★ 5-4bB-2@4.27m ● _____

□ 5-4b-B-1@2.90m △ 5-4b-B-2@1.98m ▲ 5-4b-B-2@6.55m × _____

PLASTICITY CHART

	Date: April 2003	Project: Caltrans Infiltration Basin Project	Figure 5-4b-18

s.mikesmith.PiChart.PiMaster.GRF



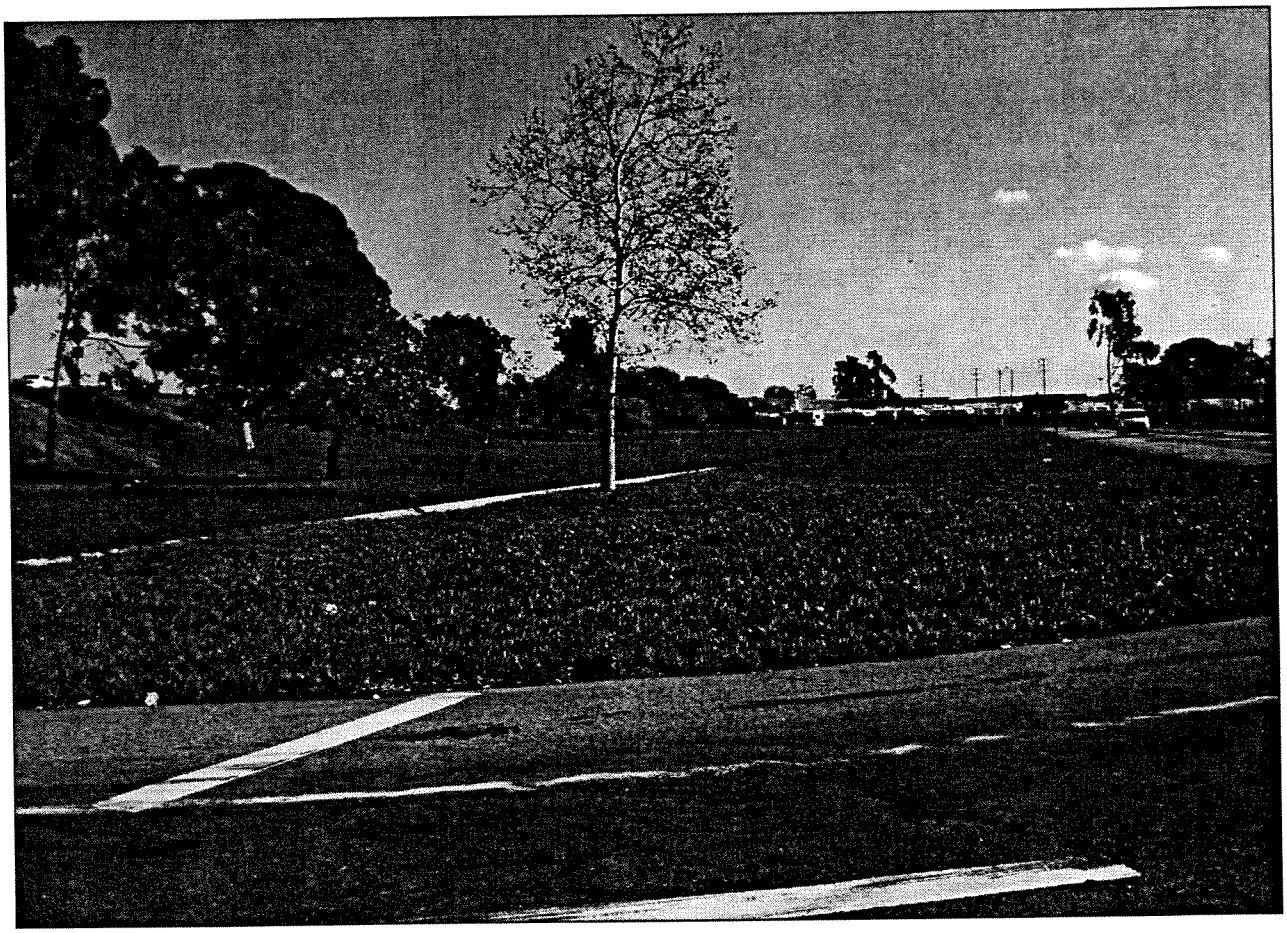
LEGEND: ○ 5-4b-P-1@1.07m ◇ 5-4b-P-3@1.98m ★ _____ ● _____

□ 5-4b-P-1@1.98m △ _____ ▲ _____ × _____

PLASTICITY CHART

	Date: April 2003	Project: Caltrans Infiltration Basin Project	Figure 5-4b-19

s:mikesmith.PiChart.PiMaster.GRF



Priority 6-5-4b (Rosecrans Ave.) Site Photograph

Date: April 2003	**Project: Caltrans IFB Site Selection Study**	Figure: 5-4b-20

APPENDIX G

5-4d (Firestone Blvd.)

Table 1	Geotechnical Laboratory Test Data
Figure 5-4d-1	Site Plan
Figure 5-4d-2	Geologic Cross Section A-A'
Figure 5-4d-3	Log of Boring 5-4d-MW-1
Figure 5-4d-4	Groundwater Monitoring Well 5-4d-MW-1 Diagram
Figure 5-4d-5	Groundwater Monitoring Well 5-4d-MW-1 Photographs
Figure 5-4d-6	Log of Boring 5-4d-B-1
Figure 5-4d-7	Log of Boring 5-4d-B-2
Figure 5-4d-8	Log of Boring 5-4d-P-1
Figure 5-4d-9	Infiltration Data for 5-4d-P-1
Figure 5-4d-10	Log of Boring 5-4d-P-2
Figure 5-4d-11	Infiltration Data for 5-4d-P-2
Figure 5-4d-12	Log of Boring 5-4d-P-3
Figure 5-4d-13	Infiltration Data for 5-4d-P-3
Figure 5-4d-14	Log of Boring 5-4d-P-4
Figure 5-4d-15	Infiltration Data for 5-4d-P-4
Figure 5-4d-16	Particle-Size Distribution Curves
Figure 5-4d-17	Particle-Size Distribution Curves
Figure 5-4d-18	Particle-Size Distribution Curves
Figure 5-4d-19	Plasticity Chart
Figure 5-4d-20	Site Photographs

TABLE 1

5-4d GEOTECHNICAL LABORATORY TEST DATA

Location							Atterberg Limits		Sieve				Chemical Test Data		
Exploration Number	Sample/ Specimen Number	Depth (m)	Caltrans Soil Classification	Water Content (%)	Total Unit Weight (pcf)	Dry Unit Weight (pcf)	Liquid Limit (%)	Plasticity Index (%)	Gravel (%)	Sand (%)	<#200 Fines (%)	5 microns (%)	pH	O.M.% (% organic matter)	CEC (me/g)[1]
5-4d-MW-1	1	0.15	SM	11.7	-	-	-	-	0	73	27	-	-	-	-
5-4d-MW-1	4	1.52	CL/SC	6.0	-	-	-	-	0	49	51	-	-	-	-
5-4d-MW-1	6	2.44	SM	2.2	-	-	-	-	-	-	19	-	-	-	-
5-4d-MW-1	8	3.35	SP-SM	1.6	-	-	-	-	0	94	6	-	-	-	-
5-4d-MW-1	9	3.81	SP	1.5	-	-	-	-	-	-	4	-	-	-	-
5-4d-MW-1	12	7.62	ML	8.4	-	-	29	5	-	-	73	-	-	-	-
5-4d-MW-1	13	9.14	ML	-	-	-	41	9	-	-	-	-	-	-	-
5-4d-B-1	2	0.61	SM	6.5	-	-	-	-	0	72	28	-	-	-	-
5-4d-B-1	3	1.07	SM	4.6	-	-	-	-	-	-	24	-	-	-	-
5-4d-B-1	4	1.52	SM	4.2	-	-	-	-	1	63	36	-	-	-	-
5-4d-B-1	8	3.35	SP-SM	2.0	-	-	-	-	0	95	5	-	-	-	-
5-4d-B-1	12	7.62	ML	23.8	-	-	35	8	-	-	76	-	-	-	-
5-4d-B-2	2	0.61	SM	9.1	-	-	-	-	0	78	23	-	-	-	-
5-4d-B-2	3	1.07	SM	4.9	-	-	-	-	-	-	23	-	-	-	-
5-4d-B-2	5	1.98	SP-SM	1.8	-	-	-	-	0	91	9	-	-	-	-
5-4d-B-2	7	2.90	SP	1.4	-	-	-	-	0	98	1	-	-	-	-
5-4d-B-2	11	6.10	SM	3.0	-	-	-	-	-	-	20	-	-	-	-
5-4d-B-2	14	9.75	CL	-	-	-	40	15	-	-	-	-	-	-	-
5-4d-P-1	2	0.61	SM	11.0	-	-	-	-	0	75	25	-	-	-	-
5-4d-P-2	2	0.91	SM	9.5	-	-	-	-	6	66	28	-	-	-	-
5-4d-P-3	3	1.07	SM	4.2	-	-	-	-	0	77	23	-	-	-	-
5-4d-P-4	4	1.52	ML	9.6	-	-	36	9	-	-	79	-	-	-	-
5-4d-P-4	5	1.98	SP-SM	2.0	-	-	-	-	0	93	7	-	-	-	-
5-4d-P-4	6	2.44	SP-SM	2.8	-	-	-	-	0	89	11	-	-	-	-

Notes: [1] Cation excange capacity, millequivalents per gram

N

10 0 10 20 Meters

One Centimeter Equals 10 Meters

Boring

Monitoring Well

In-Hole Hydraulic Conductivity Test Well

A A'

Geologic Cross Section

5

Firestone Blvd.

A

P-4

B-2

P-1

MW-1

B-1

A'

P-2

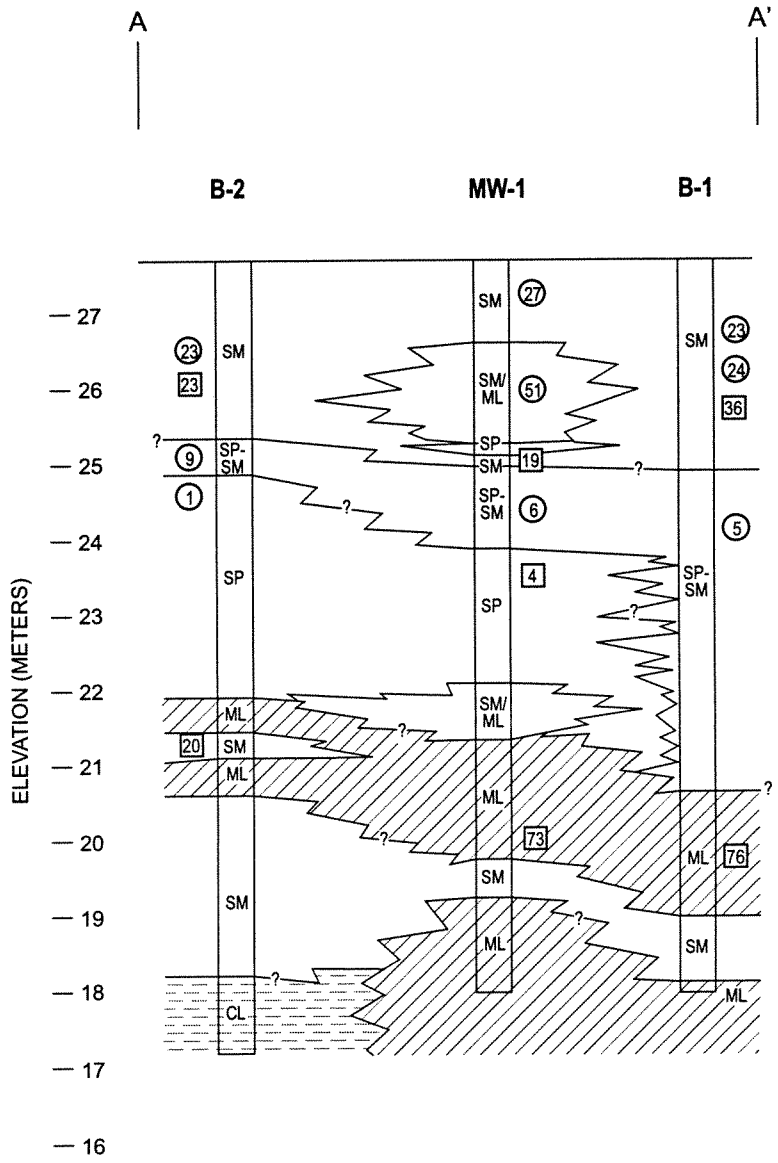
P-3

5-4d

5-4e

Priority 6-5-4d (Firestone Blvd.) Site Plan

April 2003	Infiltration Basin Site Selection Study	Figure 5-4d-1



Note: Groundwater Not Observed

HORIZONTAL SCALE:
1 cm = 5 meters

VERTICAL SCALE:
1 cm = 1 meter

- Water Level Observed During Drilling
- Groundwater Elevation Feb. 2003
- Float Valve Location
  Top of Hydraulic Conductivity Test Section
- (0.52) In-hole Hydraulic Conductivity Test Value (inches/hour)
- (46) Hydrometer Test, % Passing #200 Sieve
- (72) Sieve Analysis, % Passing #200 Sieve
- [32] Wash Analysis, % Passing #200 Sieve
- Clays and Clays w/Silt
- Silt

PRIORITY 6 - SITE 5-4d GEOLOGIC CROSS SECTION A-A'

Date: APRIL 2003	Project: INFILTRATION BASIN SITE SELECTION STUDY	Figure 5-4d-2

L:/CALTRANS/C GOETZ/xsect 5-4D A_A.FH10

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Firestone Blvd.

Log of Boring 5-4d-MW-1

Sheet 1 of 2

Date(s) Drilled	2/18/03	Logged By	M. Siem	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	9.6 meters
Drill Rig Type	CME 75	Drilling Contractor	Prosonic	Approximate Surface Elevation	27.6 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	See Well Construction Diagram	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	Number	Sampling Resistance, blows/0.30m	Core Recovery, %	Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	PID, ppm	REMARKS AND OTHER TESTS
	0							Silty sand (SM) very loose, dark olive brown, moist, fine grained sand	12		SA: 27%<#200
			1	4							
			2	1							
	1							Silty sand to sandy silt (SM/ML) loose, brownish gray, moist, fine grained sand			
			3	5							
26								Decreasing silt content, medium dense			
			4	12				Silt (ML) from 1.83m to 1.92m stiff, yellow brown, orange mottling, dry	6		SA: 51%<#200
	2										
			5	14							
			6	16				Poorly graded sand (SP) medium dense, light brownish gray, dry, fine grained sand			
								Silty sand (SM) medium dense, light brownish gray, dry, fine grained sand	2		WA: 19%<#200
	3		7	15				Poorly graded sand with silt (SP-SM) medium dense, gray, dry, fine to medium grained sand			
24			8	22					2		SA: 6%<#200
	4		9	26				Poorly graded sand (SP) medium dense, light brownish gray, dry, fine grained sand	2		WA: 4%<#200
			10	22				Becomes gray with slight orange mottling, fine to medium grained			
	5										
22								Silty sand to sandy silt (SM/ML) medium dense, light brownish gray with orange mottling, dry, fine grained sand			
	6		11	18							
								Sandy silt (ML) very stiff, light brownish gray with orange mottling, dry, fine grained sand			
	7										
20											
			12	18					8		WA: 73%<#200 LL=29; PI=5
	8							Silty sand (SM) medium dense, light brownish gray, dry, fine grained sand			
								Silt (ML) medium dense, dark olive green, moist			
	9										

Figure 5-4d-3

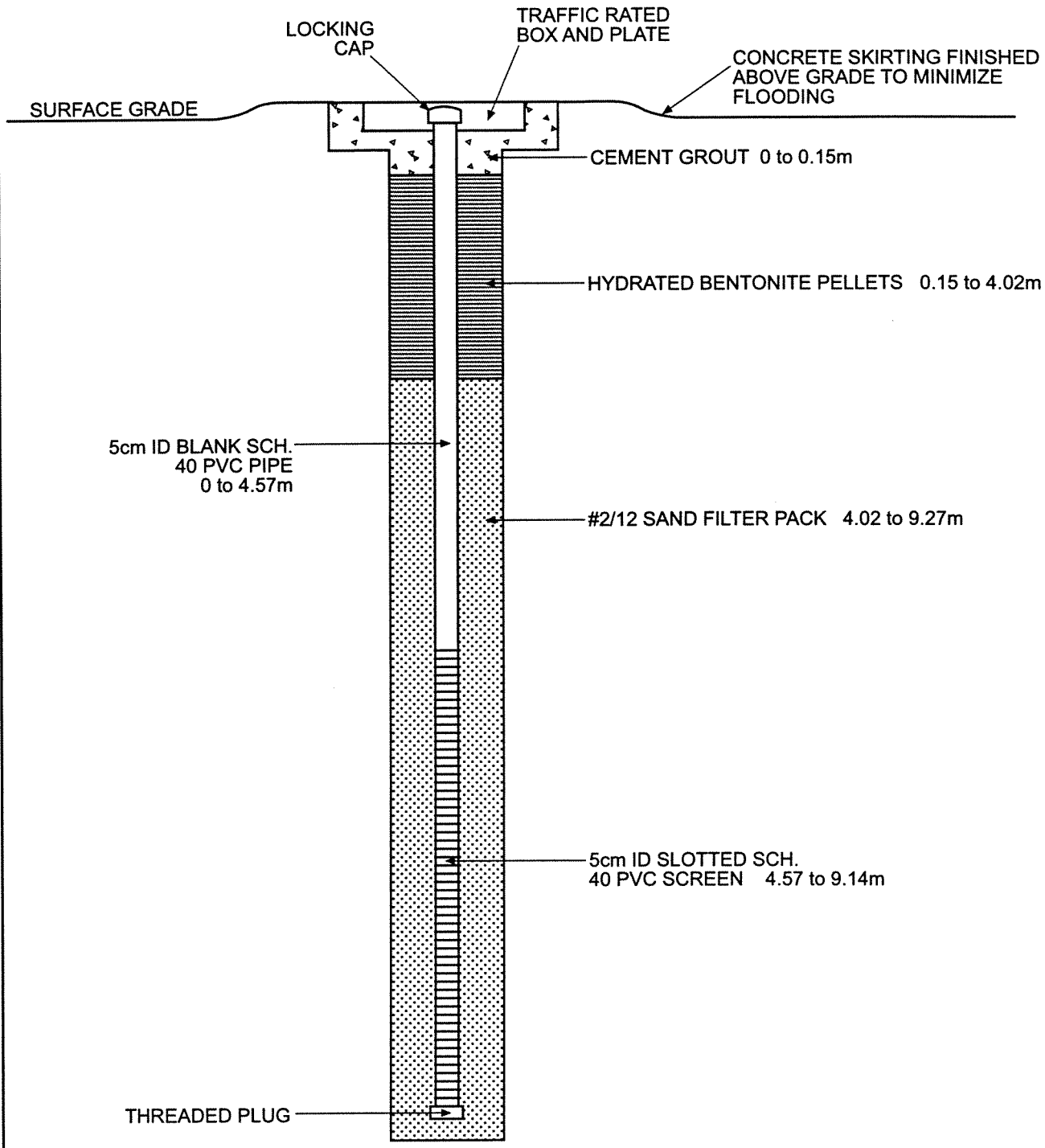
Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Firestone Blvd.

Log of Boring 5-4d-MW-1

Sheet 2 of 2

Elevation, meters	Depth, meters	SAMPLES: Type	SAMPLES: Number	SAMPLES: Sampling Resistance, blows/0.30m	SAMPLES: Core Recovery, %	SAMPLES: Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	PID, ppm	REMARKS AND OTHER TESTS
18	0		13	16							LL=41; PI=9
								← Becomes dark gray to black, with organic fragments, fossiliferous			
	10							Bottom of boring at 9.6 meters			
	11										
16											
	12										
	13										
14											
	14										
	15										
12											
	16										
	17										
10											
	18										
	19										
8											

Figure 5-4d-3



Note: Hole collapse 9.27 to 9.60m

5-4d-MW-1

Not to Scale

GROUNDWATER MONITORING WELL DIAGRAM

Date: APRIL 2003	Project: INFILTRATION BASIN SITE SELECTION STUDY	Figure 5-4d-4

L:/Caltrans/GW monitoring well diag.fh10 5/03

5-4d-MW-1

Date: April 2003	**Project: Caltrans IFB Site Selection Study**	Figure: 5-4d-5

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Firestone Blvd.

Log of Boring 5-4d-B-1

Sheet 1 of 2

Date(s) Drilled	2/18/03	Logged By	C. Goetz	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	9.6 meters
Drill Rig Type	CME 75	Drilling Contractor	Prosonic	Approximate Surface Elevation	27.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	Soil Cuttings	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	Number	Sampling Resistance, blows/0.30m	Core Recovery, %	Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	PID, ppm	REMARKS AND OTHER TESTS
	0							Silty sand (SM) loose, dark brown, moist, fine grained sand			
			1	8							
			2	7				Becomes reddish-brown	7		SA: 28%<#200
26	1		3	6				Becomes light brown, moist to dry	5		WA: 24%<#200
			4	13				Becomes medium dense	4		SA: 36%<#200
	2		5	12							
			6	13				Poorly graded sand with silt (SP-SM) medium dense, light brown, moist to dry, fine grained sand Becomes light brown to gray			
24	3		7	15							
			8	20					2		SA: 5%<#200
	4		9	23							
			10	31				Becomes dense			
22	5							Becomes medium dense			
	6		11	27							
20	7							Silt with sand (ML) medium dense, brown, moist, fine grained sand			
			12	16					24		WA: 76%<#200 LL=35; PI=8
	8										
	9							Silty sand (SM) medium dense, light gray to grayish-brown, moist, fine grained sand			
18											

Figure 5-4d-6

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Firestone Blvd.

Log of Boring 5-4d-B-1

Sheet 2 of 2

Elevation, meters	Depth, meters	SAMPLES: Type	SAMPLES: Number	SAMPLES: Sampling Resistance, blows/0.30m	SAMPLES: Core Recovery, %	SAMPLES: Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	PID, ppm	REMARKS AND OTHER TESTS
			13	20				← 20mm thick gray clay from bottom of boring			
								Bottom of boring at 9.6 meters			
	10										
16	11										
	12										
14	13										
	14										
12	15										
	16										
10	17										
	18										
8	19										

Figure 5-4d-6

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Firestone Blvd.

Log of Boring 5-4d-B-2

Sheet 1 of 2

Date(s) Drilled	2/18/03	Logged By	C. Goetz	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	10.2 meters
Drill Rig Type	CME 75	Drilling Contractor	Prosonic	Approximate Surface Elevation	27.6 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT, Modified California	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	Soil Cuttings	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES Type	Number	Sampling Resistance, blows/0.30m	Core Recovery, %	Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	PID, ppm	REMARKS AND OTHER TESTS
	0							Silty sand (SM) very loose, dark brown, moist, fine grained sand			
			1	2							
			2	3				Becomes reddish-brown	9		SA: 23%<#200
	1										
			3	6				Becomes loose light brown, moist to dry	5		WA: 23%<#200
26											
			4	10				Becomes medium dense			
	2										
			5	13				Poorly graded sand with silt (SP-SM) medium dense, light brown, moist to dry, fine grained sand	2		SA: 9%<#200
			6	19							
	3							Sand (SP) medium dense, light brown, dry			
			7	16					1		SA: 1%<#200
24											
			8	18							
	4										
			9	19							
			10	23							
	5										
22								Silt (ML) medium dense, light brown, dry-moist with fine sand			
	6										
			11	22				Silty sand (SM) medium dense, light brown, dry, fine grained sand	3		WA: 20%<#200
								Silt with sand (ML) medium dense, brown, dry to moist, fine grained sand			
	7										
								Silty fine sand (SM) medium dense, brown, dry to moist, fine grained sand			
20											
			12	20							
	8										
	9										

Figure 5-4d-7

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Firestone Blvd.

Log of Boring 5-4d-B-2

Sheet 2 of 2

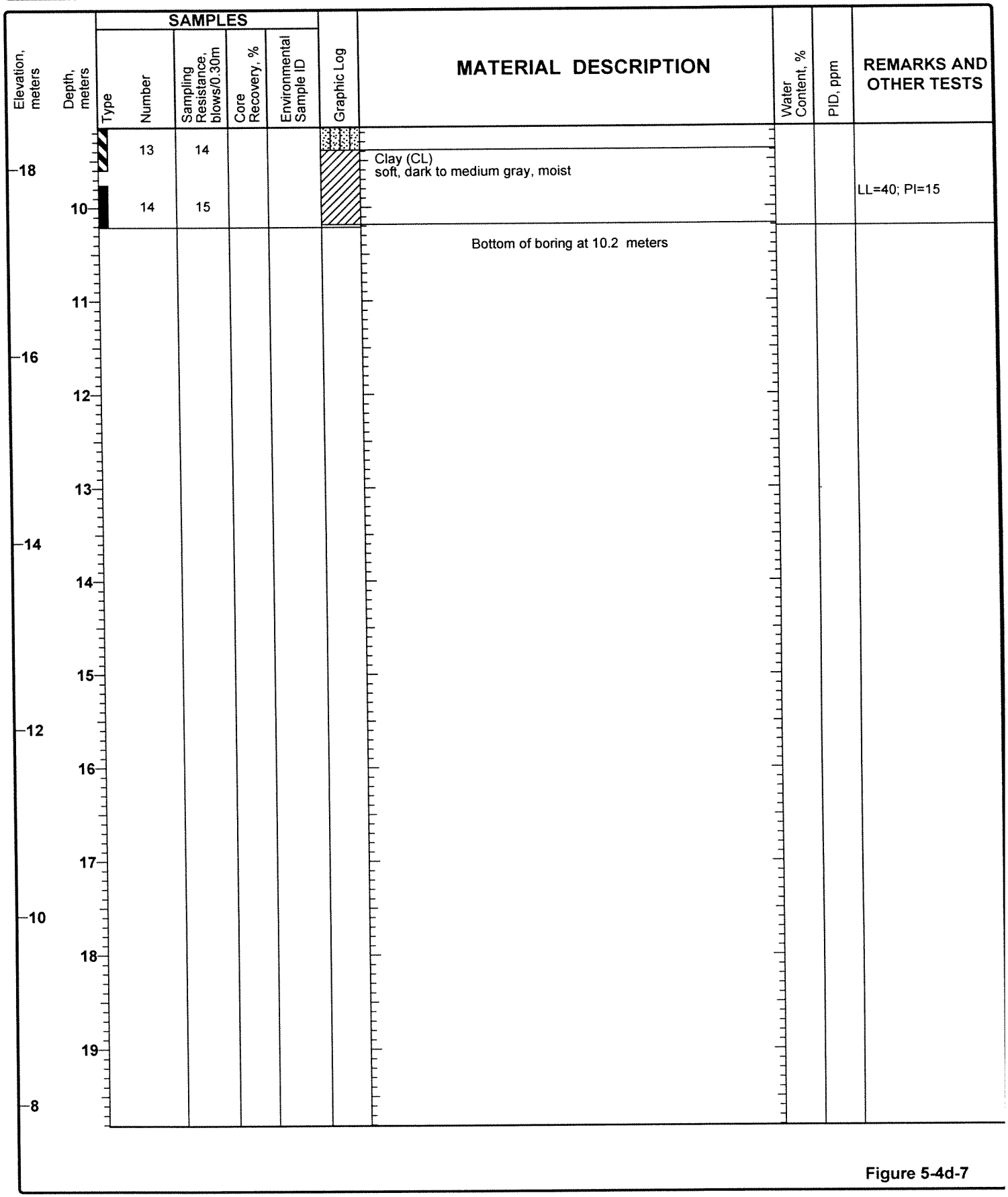


Figure 5-4d-7

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Firestone Blvd.

Log of Boring 5-4d-P-1

Sheet 1 of 1

Date(s) Drilled	2/18/03	Logged By	C. Goetz	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	1.1 meters
Drill Rig Type	CME 75	Drilling Contractor	Prosonic	Approximate Surface Elevation	27.6 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	See Well Construction Diagram	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	SAMPLES: Number	SAMPLES: Sampling Resistance, blows/0.30m	SAMPLES: Core Recovery, %	SAMPLES: Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Infiltration Test Well	REMARKS AND OTHER TESTS
	0							Silty sand (SM) very loose, dark brown, moist, fine grained sand			NATIVE
			1	2							CASING
			2	3							(COARSE AQUARIUM SAND)
	1								11		SA: 25%<#200
								Bottom of boring at 1.07 meters			
26	2										
	3										
24	4										
	5										
22	6										
	7										
20	8										
	9										

Figure 5-4d-8

5-4d-P-1-1

Clock	Accumulated Time	Tank Reading (gallons)	Difference (gallons)	Accumulated Flow (gallons)	Flow Rate (gpm)	Well Temp (°F)	Reservoir Temp (°F)
8:25:00	0:00:00	61.0	0	0	0.000	61.7	64.2
8:26:00	0:01:00	59.0	2	2	2.000	61.7	64.2
8:27:00	0:02:00	57.0	2	4	2.000	61.7	64.2
8:28:00	0:03:00	56.5	0.5	4.5	1.500	61.7	64.2
8:29:00	0:04:00	56.0	0.5	5	1.250	61.7	64.2
8:30:00	0:05:00	56.0	0	5	1.000	61.7	64.2
8:31:00	0:06:00	56.0	0	5	0.833	61.7	64.2
8:32:00	0:07:00	56.0	0	5	0.714	61.7	64.2
8:33:00	0:08:00	55.9	0.1	5.1	0.637	61.7	64.2
8:34:00	0:09:00	55.8	0.1	5.2	0.578	61.7	64.2
8:35:00	0:10:00	55.7	0.1	5.3	0.530	61.7	64.2
8:40:00	0:15:00	55.1	0.6	5.9	0.393	61.7	65.2
8:45:00	0:20:00	54.9	0.2	6.1	0.305	61.7	65.2
8:50:00	0:25:00	54.6	0.3	6.4	0.256	61.7	65.2
8:55:00	0:30:00	54.0	0.6	7	0.233	61.5	63.2
9:10:00	0:45:00	53.0	1	8	0.178	61.5	63.2
9:25:00	1:00:00	52.0	1	9	0.150	61.5	63.2
9:40:00	1:15:00	51.0	1	10	0.133	61.2	62.8
9:55:00	1:30:00	50.0	1	11	0.122		
10:10:00	1:45:00	49.0	1	12	0.114		
10:25:00	2:00:00	48.0	1	13	0.108	60.8	62.3
10:40:00	2:15:00	47.0	1	14	0.104		
11:00:00	2:35:00	46.0	1	15	0.097		
11:30:00	3:05:00	44.0	2	17	0.092	60.8	62.1
12:00:00	3:35:00	43.0	1	18	0.084		
12:30:00	4:05:00	41.0	2	20	0.082		
13:00:00	4:35:00	39.0	2	22	0.080		
13:30:00	5:05:00	37.0	2	24	0.079	63.3	
14:00:00	5:35:00	35.0	2	26	0.078		
14:25:00	6:00:00	34.0	1	27	0.075		
14:45:00	6:20:00	33.0	1	28	0.074		

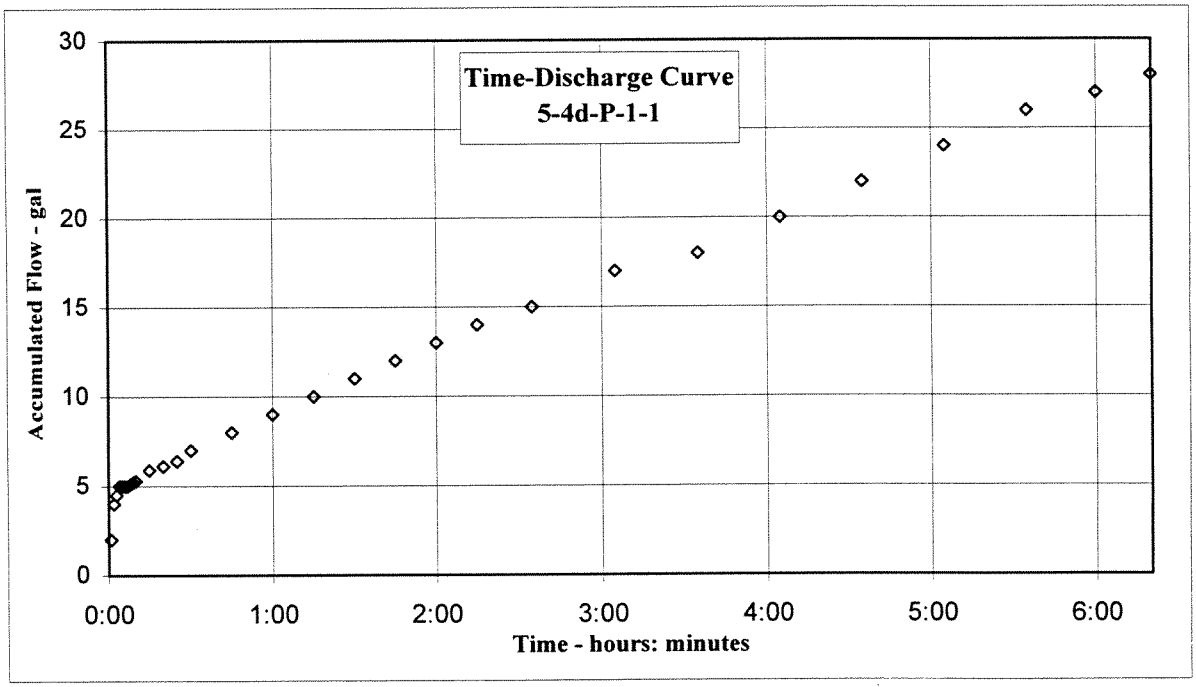


Figure 5-4d-9A

Calculation of Test Condition

Float depth =	1.8 ft	0.55 meters
Borehole depth =	3.5 ft	1.07 meters
Height of water in test well, h =	1.7 ft	0.52 meters
Depth of water table =	30 ft	9.14 meters
Depth to impervious layer =	21 ft	6.40 meters
Unsaturated distance between water table or impervious layer and surface of well water, Tu=	19.2 ft	5.85 meters

Based on the Test Data, Condition I is the most applicable

Calculation of equivalent radius of the well, r_w

mass of sand in borehole, m_s =	38 lbs	
density of sand in borehole, ρ_s =	100.64 lbs/cu ft	
r_w =	0.266 ft	3.19 inches

Calculations for k_{20}

h =	1.7 ft	20.4 inches
Steady-state discharge rate, q =	0.0586 gpm	13.54 cu.in./min
Average well water temperature, T =	61.63 °F	16.46 °C
Kinematic viscosity ratio, V =	1.0900 no units	
Condition I - k20=	9.59E-03 in/min	0.5754 in/hr

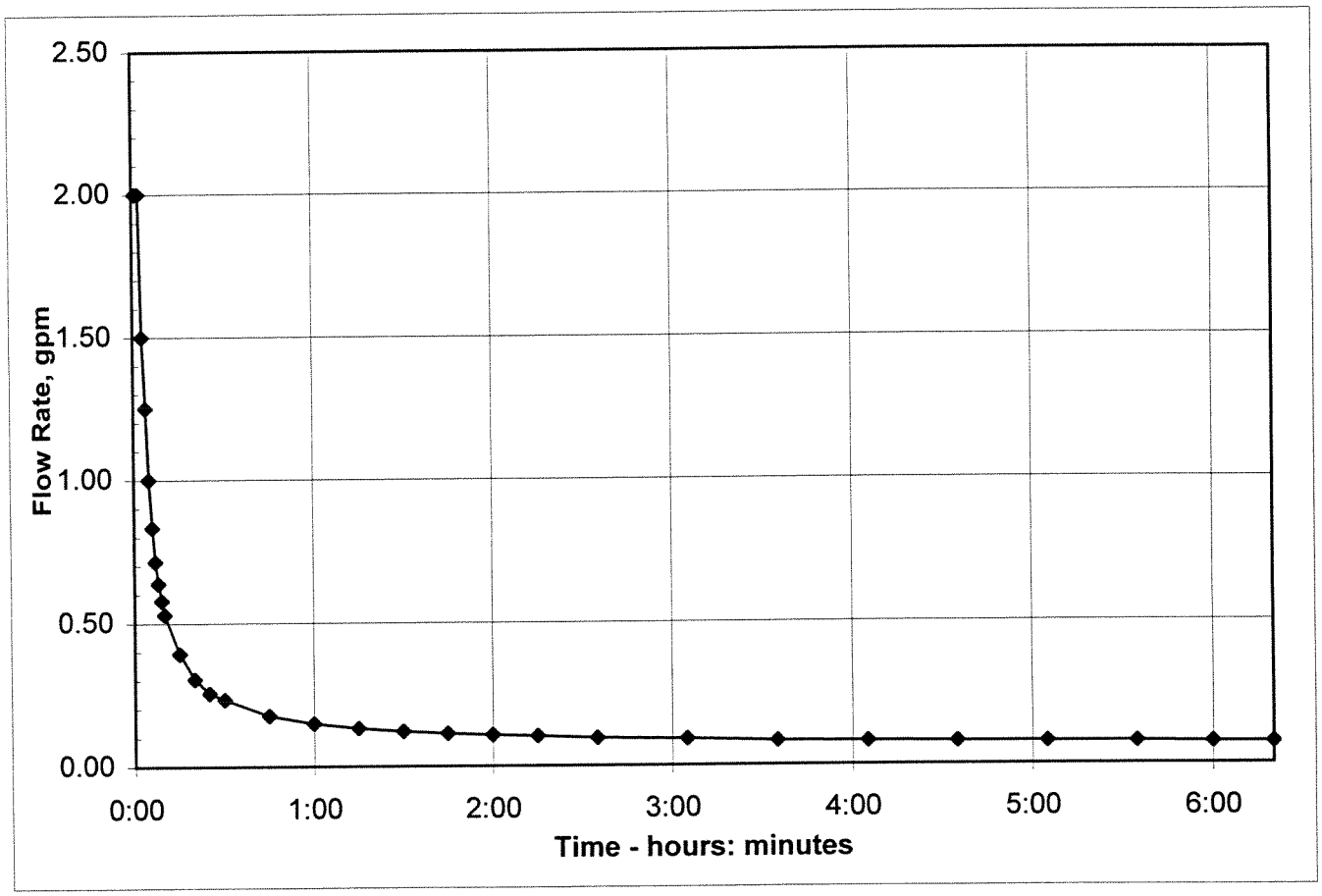


Figure 5-4d-9B

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Firestone Blvd.

Log of Boring 5-4d-P-2

Sheet 1 of 1

Date(s) Drilled	2/18/03	Logged By	C. Goetz	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	1.4 meters
Drill Rig Type	CME 75	Drilling Contractor	Prosonic	Approximate Surface Elevation	27.6 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	See Well Construction Diagram	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	SAMPLES: Number	SAMPLES: Sampling Resistance, blows/0.30m	SAMPLES: Core Recovery, %	SAMPLES: Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Infiltration Test Well	REMARKS AND OTHER TESTS
	0							Silty sand (SM) loose, brown, moist, fine grained sand			NATIVE
			1	3							CASING
	1							Becomes lighter brown, less silt			(COARSE AQUARIUM SAND)
			2	3					10		SA: 28%<#200
-26								Bottom of boring at 1.37 meters			
	2										
	3										
-24											
	4										
	5										
-22											
	6										
	7										
-20											
	8										
	9										

Figure 5-4d-10

5-4d-P-2-1

Clock	Accumulated Time	Tank Reading (gallons)	Difference (gallons)	Accumulated Flow (gallons)	Flow Rate (gpm)	Well Temp (°F)	Reservoir Temp (°F)
8:31:00	0:00:00	59.0	0	0	0.000		
8:32:00	0:01:00	58.5	0.5	0.5	0.500		
8:33:00	0:02:00	58.0	0.5	1	0.500		
8:34:00	0:03:00	57.0	1	2	0.667		
8:35:00	0:04:00	57.0	0	2	0.500	63.5	
8:36:00	0:05:00	56.0	1	3	0.600	63.5	
8:37:00	0:06:00	55.5	0.5	3.5	0.583	63.5	
8:38:00	0:07:00	55.0	0.5	4	0.571	63.5	
8:39:00	0:08:00	55.0	0	4	0.500	63.5	
8:40:00	0:09:00	54.5	0.5	4.5	0.500	63.5	
8:41:00	0:10:00	54.0	0.5	5	0.500	63.5	
8:47:00	0:16:00	53.0	1	6	0.375	63.5	
8:50:00	0:19:00	52.0	1	7	0.368		
8:54:15	0:23:15	51.5	0.5	7.5	0.323	63.3	
8:55:15	0:24:15	51.0	0.5	8	0.330	63.3	
8:56:15	0:25:15	51.0	0	8	0.317	63.1	
8:58:15	0:27:15	50.5	0.5	8.5	0.312	63.1	
9:04:45	0:33:45	50.0	0.5	9	0.267	63.1	
9:10:15	0:39:15	49.5	0.5	9.5	0.242	63.1	
9:16:00	0:45:00	49.0	0.5	10	0.222	63	
9:33:30	1:02:30	47.0	2	12	0.192	63	
9:50:00	1:19:00	45.0	2	14	0.177	63.3	
10:21:00	1:50:00	42.0	3	17	0.155		
10:49:40	2:18:40	39.5	2.5	19.5	0.141		
11:22:00	2:51:00	36.0	3.5	23	0.135		
11:52:00	3:21:00	33.5	2.5	25.5	0.127		
12:25:00	3:54:00	31.0	2.5	28	0.120		
12:57:15	4:26:15	28.0	3	31	0.116		
13:34:15	5:03:15	24.0	4	35	0.115	67.3	
14:10:30	5:39:30	21.0	3	38	0.112	68.5	
14:45:00	6:14:00	18.0	3	41	0.110	70.2	

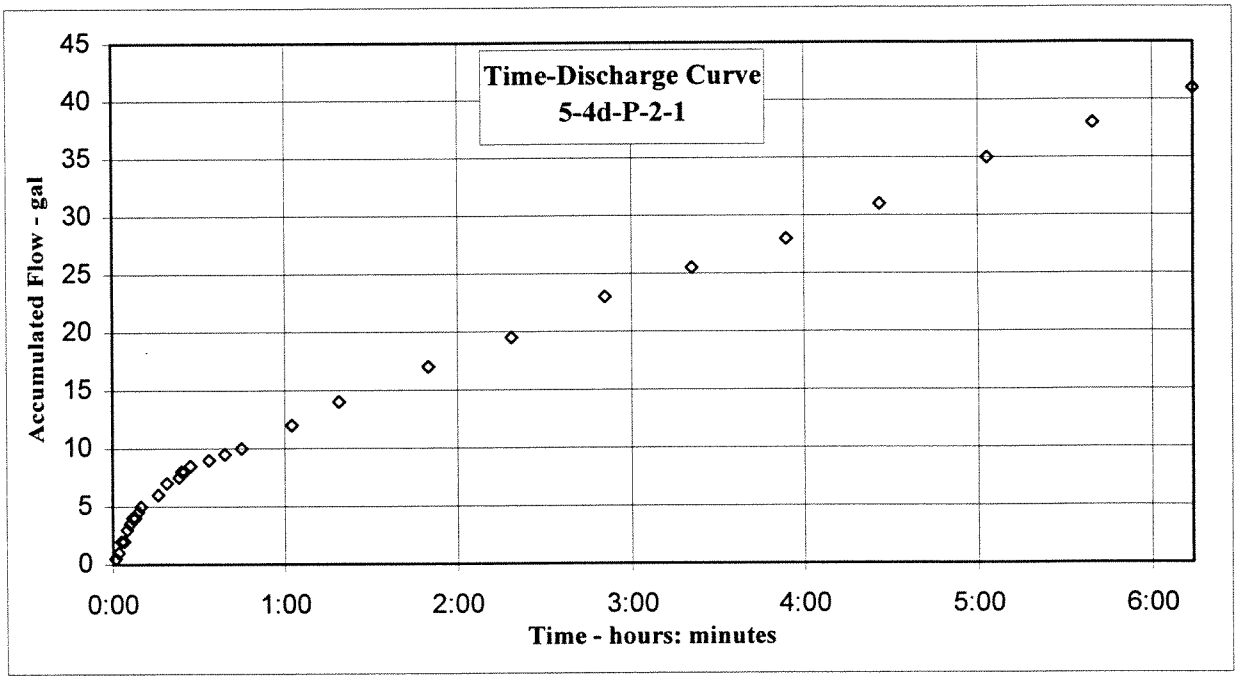


Figure 5-4d-11A

Calculation of Test Condition

Float depth =	1.7 ft	0.52 meters
Borehole depth =	4.5 ft	1.37 meters
Height of water in test well, h =	2.8 ft	0.85 meters
Depth of water table =	29.8 ft	9.08 meters
Depth to impervious layer =	21 ft	6.40 meters
Unsaturated distance between water table or impervious layer and surface of well water, Tu=	19.3 ft	5.88 meters

Based on the Test Data, Condition I is the most applicable

Calculation of equivalent radius of the well, r_w

mass of sand in borehole, m_s =	100 lbs	
density of sand in borehole, ρ_s =	101.04 lbs/cu ft	
r_w =	0.335 ft	4.03 inches

Calculations for k_{20}

h =	2.8 ft	33.6 inches
Steady-state discharge rate, q =	0.0909 gpm	21.00 cu.in./min
Average well water temperature, T =	68.67 °F	20.37 °C
Kinematic viscosity ratio, V =	0.9814 no units	
Condition I - k20=	5.61E-03 in/min	0.3366 in/hr

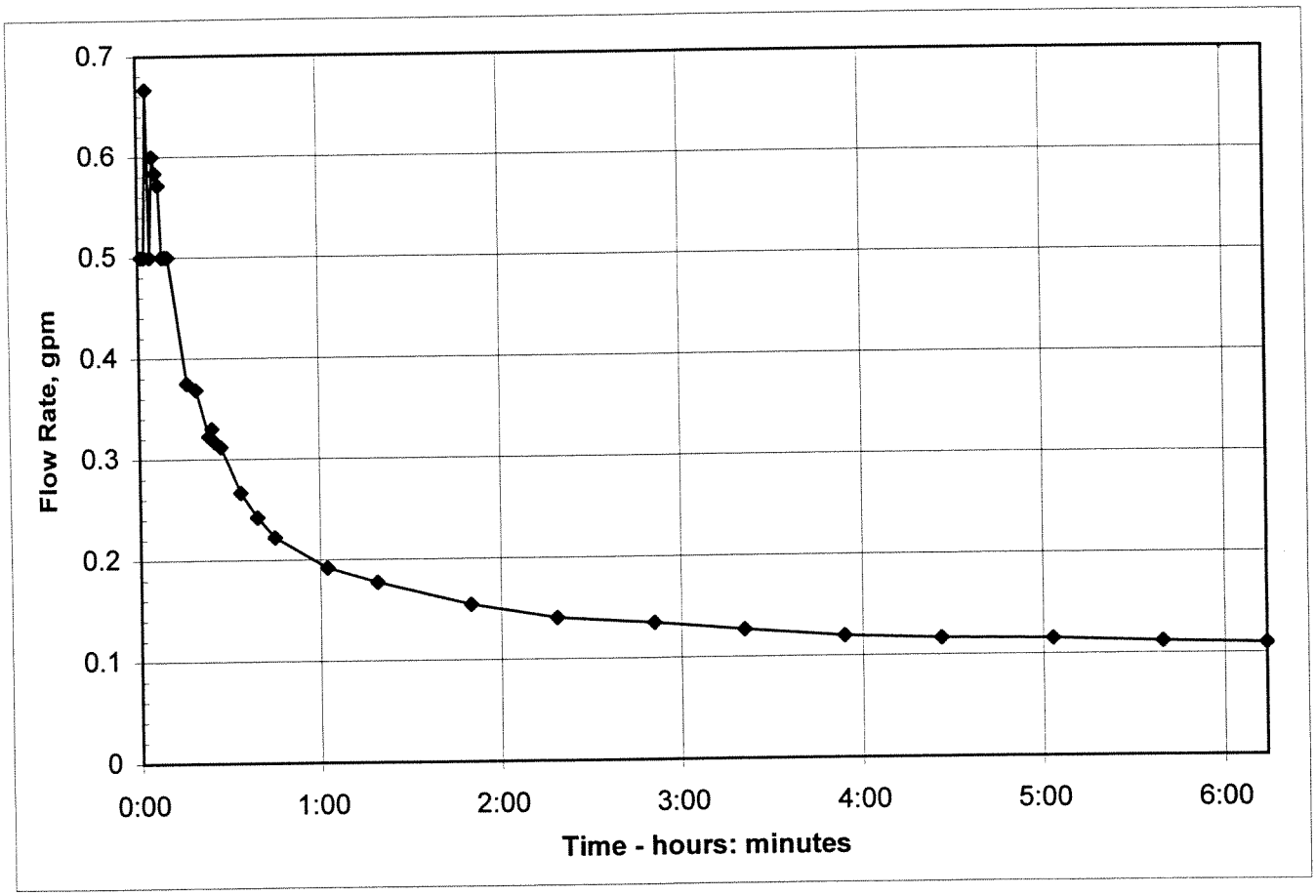


Figure 5-4d-11B

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Firestone Blvd.

Log of Boring 5-4d-P-3

Sheet 1 of 1

Date(s) Drilled	2/18/03	Logged By	C. Goetz	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	2.0 meters
Drill Rig Type	CME 75	Drilling Contractor	Prosonic	Approximate Surface Elevation	27.6 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	See Well Construction Diagram	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	SAMPLES: Number	SAMPLES: Sampling Resistance, blows/0.30m	SAMPLES: Core Recovery, %	SAMPLES: Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Infiltration Test Well	REMARKS AND OTHER TESTS
	0							Silty sand (SM) very loose, brown, moist, fine grained sand			NATIVE
			1	4							CASING
								Becomes loose			
			2	7							
	1							dry to moist			
			3	5					4		SA: 23%<#200
26								Becomes medium dense			(COARSE AQUARIUM SAND)
			4	12							
	2							Silt (ML) medium dense, light brown, moist			
								Bottom of boring at 1.98 meters			
	3										
24											
	4										
	5										
22											
	6										
	7										
20											
	8										
	9										

Figure 5-4d-12

5-4d-P-3-1

Clock	Accumulated Time	Tank Reading	Difference	Accumulated Flow	Flow Rate	Well Temp	Reservoir Temp
		(gallons)	(gallons)	(gallons)	(gpm)	(°F)	(°F)
8:31:30	0:00:00	51.5	0	0	0.000		
8:32:30	0:01:00	48.0	3.5	3.5	3.500		
8:33:30	0:02:00	47.0	1	4.5	2.250		
8:34:30	0:03:00	46.0	1	5.5	1.833		
8:35:30	0:04:00	45.0	1	6.5	1.625	64.2	
8:36:30	0:05:00	44.5	0.5	7	1.400	64.2	
8:37:30	0:06:00	44.0	0.5	7.5	1.250	64	
8:38:30	0:07:00	43.5	0.5	8	1.143	64	
8:39:30	0:08:00	43.0	0.5	8.5	1.063	64	
8:40:30	0:09:00	42.5	0.5	9	1.000	64	
8:41:30	0:10:00	42.5	0	9	0.900	64	
8:47:30	0:16:00	40.5	2	11	0.688	64	
8:53:30	0:22:00	38.0	2.5	13.5	0.614	64	
8:59:00	0:27:30	36.0	2	15.5	0.564	64	
9:05:00	0:33:30	34.5	1.5	17	0.507	64	
9:11:00	0:39:30	33.0	1.5	18.5	0.468	64	
9:16:30	0:45:00	31.5	1.5	20	0.444	64	
9:34:00	1:02:30	26.5	5	25	0.400	64	
9:50:15	1:18:45	22.5	4	29	0.368	64	
10:21:30	1:50:00	15.0	7.5	36.5	0.332	63.7	
10:47:00	2:15:30	9.0	6	42.5	0.314	63.7	
10:49:00	2:17:30	55.0		42.5	0.309	64	
11:21:20	2:49:50	47.0	8	50.5	0.297	63.5	
11:51:30	3:20:00	40.0	7	57.5	0.288	64	
12:24:30	3:53:00	32.5	7.5	65	0.279	64.9	
12:56:30	4:25:00	25.0	7.5	72.5	0.274	66.2	
13:33:30	5:02:00	17.0	8	80.5	0.267	67.1	
14:07:15	5:35:45	10.0	7	87.5	0.261	68.5	
14:09:30	5:38:00	49.5		87.5	0.259	70.3	
14:45:20	6:13:50	41.5	8	95.5	0.255	77.2	

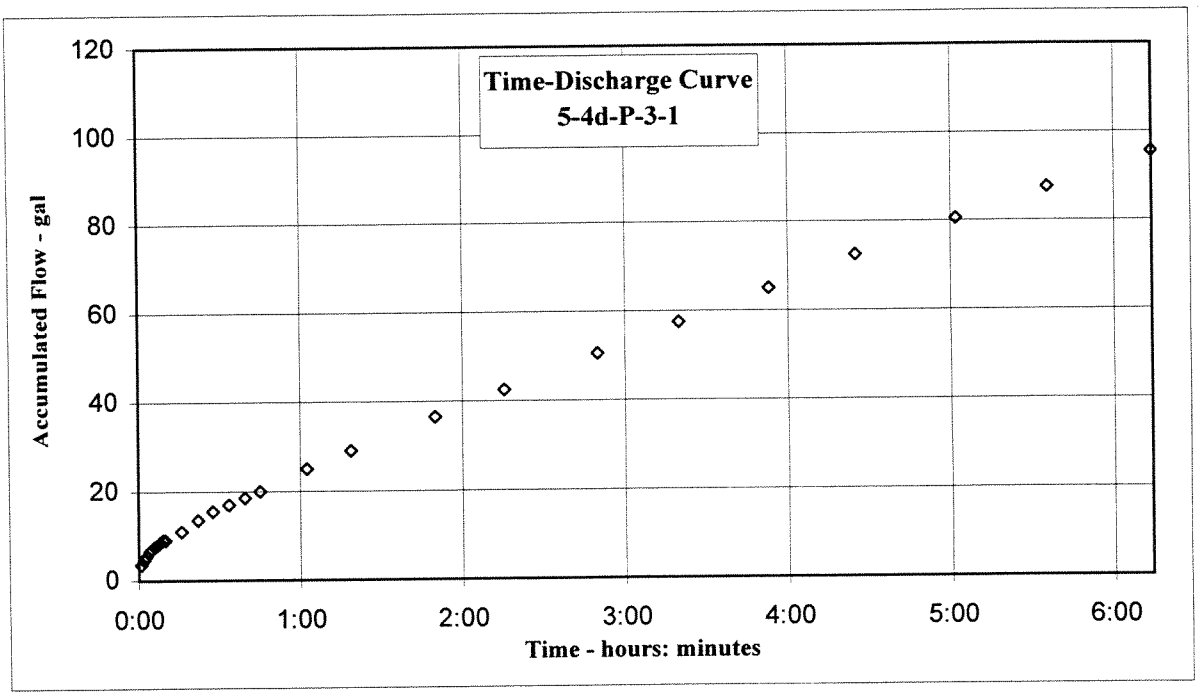


Figure 5-4d-13A

Calculation of Test Condition

Float depth =	3.6 ft	1.10 meters
Borehole depth =	7.5 ft	2.29 meters
Height of water in test well, h =	3.9 ft	1.19 meters
Depth of water table =	29.8 ft	9.08 meters
Depth to impervious layer =	21 ft	6.40 meters
Unsaturated distance between water table or impervious layer and surface of well water, Tu=	17.4 ft	5.30 meters

Based on the Test Data, Condition I is the most applicable

Calculation of equivalent radius of the well, r_w

mass of sand in borehole, m_s =	125 lbs	
density of sand in borehole, ρ_s =	103.00 lbs/cu ft	
r_w =	0.315 ft	3.78 inches

Calculations for k_{20}

h =	3.9 ft	46.8 inches
Steady-state discharge rate, q =	0.218 gpm	50.25 cu.in./min
Average well water temperature, T =	68.31 °F	20.17 °C
Kinematic viscosity ratio, V =	0.9865 no units	
Condition I - k20=	8.25E-03 in/min	0.4948 in/hr

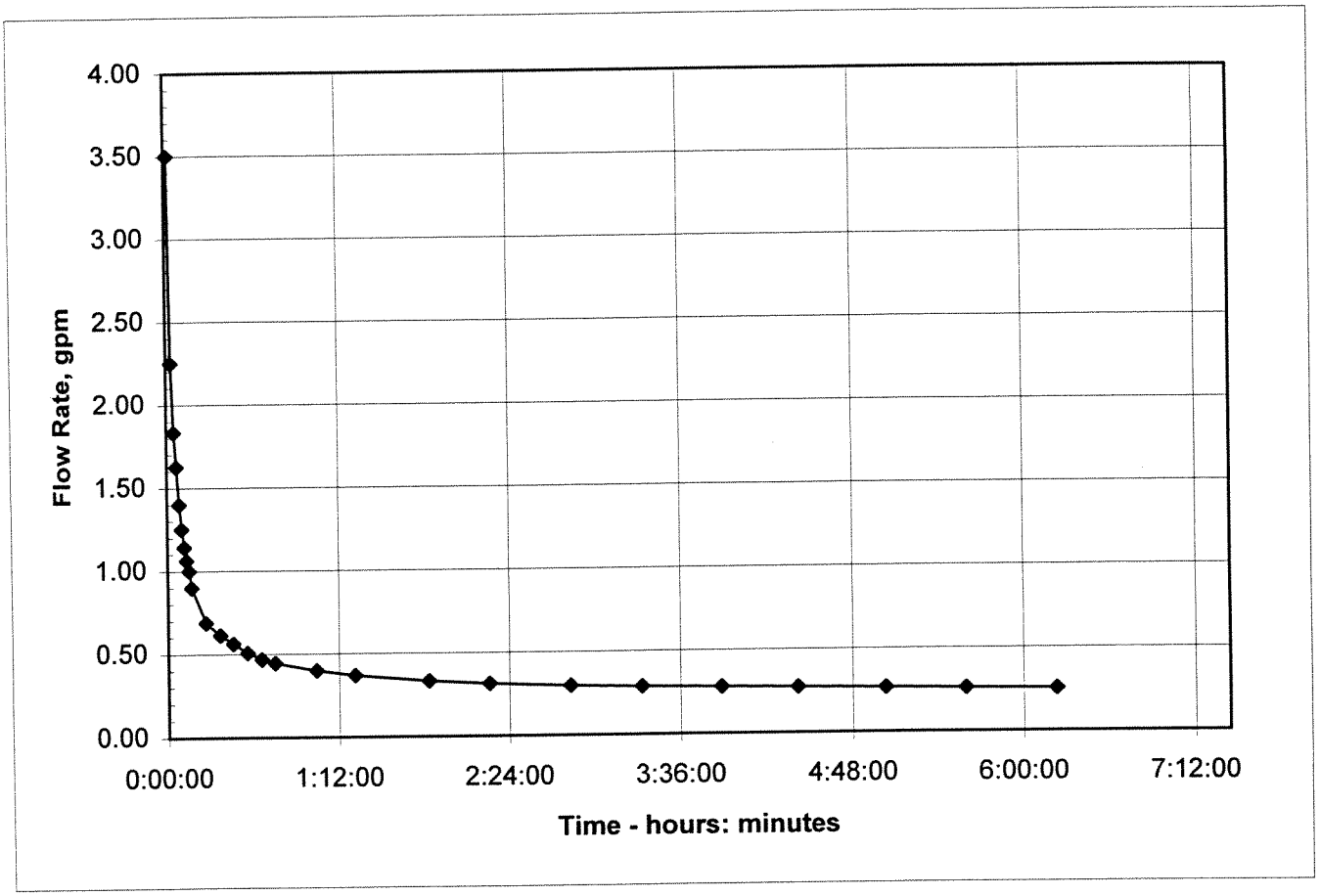


Figure 5-4d-13B

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Firestone Blvd.

Log of Boring 5-4d-P-4

Sheet 1 of 1

Date(s) Drilled	2/18/03	Logged By	C. Goetz	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	2.9 meters
Drill Rig Type	CME 75	Drilling Contractor	Prosonic	Approximate Surface Elevation	27.6 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	See Well Construction Diagram	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	Number	Sampling Resistance, blows/0.30m	Core Recovery, %	Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Infiltration Test Well	REMARKS AND OTHER TESTS
	0										
			1	4				Silty sand (SM) very loose, brown, moist, fine grained sand			BENTONITE
	1		2	2							NATIVE
			3	8				Poorly graded sand with silt (SP-SM) loose, light brown, dry to moist, very fine grained sand			CASING
26			4	14				Silt with sand (ML) medium dense, light brown, dry to moist	10		LL=36; PI=9 SA: 79%<#200
	2		5	12				Poorly graded sand with silt (SP-SM) medium dense, light brown, dry, fine grained sand	2		SA: 7%<#200 (COARSE AQUARIUM SAND)
			6	14					3		WA: 11%<#200
	3							Bottom of boring at 2.9 meters			
24											
	4										
	5										
22											
	6										
	7										
20											
	8										
	9										

Figure 5-4d-14

5-4d-P-4-1

Clock	Accumulated Time	Tank Reading	Difference	Accumulated Flow	Flow Rate	Well Temp	Reservoir Temp
		(gallons)	(gallons)	(gallons)	(gpm)	(°F)	(°F)
8:25:00	0:00:00	61.0	0	0	0.000	62.2	64.2
8:26:00	0:01:00	59.0	2	2	2.000	62.2	64.2
8:27:00	0:02:00	58.0	1	3	1.500	62.2	64.2
8:28:00	0:03:00	56.0	2	5	1.667	62.2	64.2
8:29:00	0:04:00	54.0	2	7	1.750	62.2	64.2
8:30:00	0:05:00	53.4	0.6	7.6	1.520	62.2	64.2
8:31:00	0:06:00	53.0	0.4	8	1.333	62.2	64.2
8:32:00	0:07:00	51.0	2	10	1.429	62.2	64.2
8:33:00	0:08:00	49.0	2	12	1.500	62.2	64.2
8:34:00	0:09:00	47.0	2	14	1.556	62.2	64.2
8:35:00	0:10:00	46.0	1	15	1.500	62.2	64.2
8:40:00	0:15:00	39.0	7	22	1.467	62.4	63.8
8:45:00	0:20:00	33.0	6	28	1.400		
8:50:00	0:25:00	25.0	8	36	1.440		
8:55:00	0:30:00	18.0	7	43	1.433	62.8	63.2
8:59:00	0:34:00	13.0	5	48	1.412		
9:00:00	0:35:00	62.0		48	1.371		
9:10:00	0:45:00	47.0	15	63	1.400		
9:25:00	1:00:00	31.0	16	79	1.317		
9:40:00	1:15:00	17.0	14	93	1.240		
9:44:00	1:19:00	14.0	3	96	1.215		
9:45:00	1:20:00	60.0		96	1.200	62.7	63.2
9:55:00	1:30:00	49.0	11	107	1.189		
10:10:00	1:45:00	38.0	11	118	1.124		
10:25:00	2:00:00	27.0	11	129	1.075	61.9	62.2
10:40:00	2:15:00	18.0	9	138	1.022		
10:44:00	2:19:00	15.0	3	141	1.014		
10:45:00	2:20:00	63.0		141	1.007		
11:00:00	2:35:00	49.0	14	155	1.000		
11:30:00	3:05:00	30.0	19	174	0.941		
12:00:00	3:35:00	12.0	18	192	0.893	62.4	64.2
12:01:00	3:36:00	63.0		192	0.889		
12:30:00	4:05:00	43.0	20	212	0.865		
13:00:00	4:35:00	31.0	12	224	0.815		
13:30:00	5:05:00	18.0	13	237	0.777	65.3	63.2
13:33:00	5:08:00	17.0	1	238	0.773		
13:35:00	5:10:00	60.0		238	0.768		
14:00:00	5:35:00	48.0	12	250	0.746		
14:25:00	6:00:00	37.0	11	261	0.725		

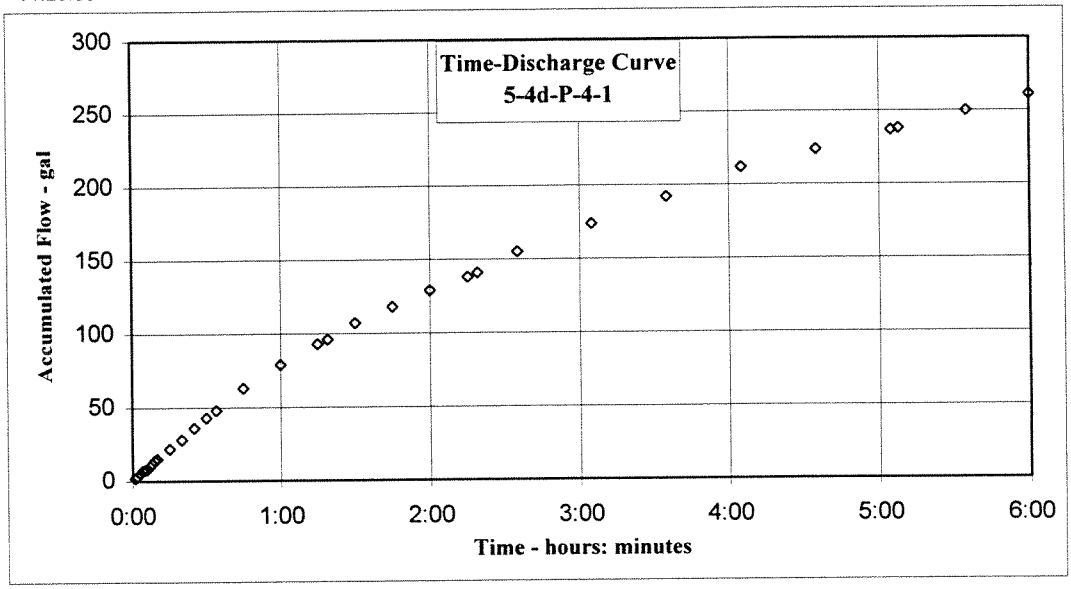


Figure 5-4d-15A

Calculation of Test Condition

Float depth =	6.3 ft	1.92 meters
Borehole depth =	9.5 ft	2.90 meters
Height of water in test well, h =	3.2 ft	0.98 meters
Depth of water table =	30 ft	9.14 meters
Depth to impervious layer =	21 ft	6.40 meters
Unsaturated distance between water table or impervious layer and surface of well water, Tu=	14.7 ft	4.48 meters

Based on the Test Data, Condition I is the most applicable

Calculation of equivalent radius of the well, r_w

mass of sand in borehole, m_s =	100 lbs	
density of sand in borehole, ρ_s =	104.57 lbs/cu ft	
r_w =	0.308 ft	3.70 inches

Calculations for k_{20}

h =	3.2 ft	38.4 inches
Steady-state discharge rate, q =	0.427 gpm	98.55 cu.in./min
Average well water temperature, T =	65.30 °F	18.50 °C
Kinematic viscosity ratio, V =	1.0313 no units	
Condition I - k20=	0.0233 in/min	1.400 in/hr

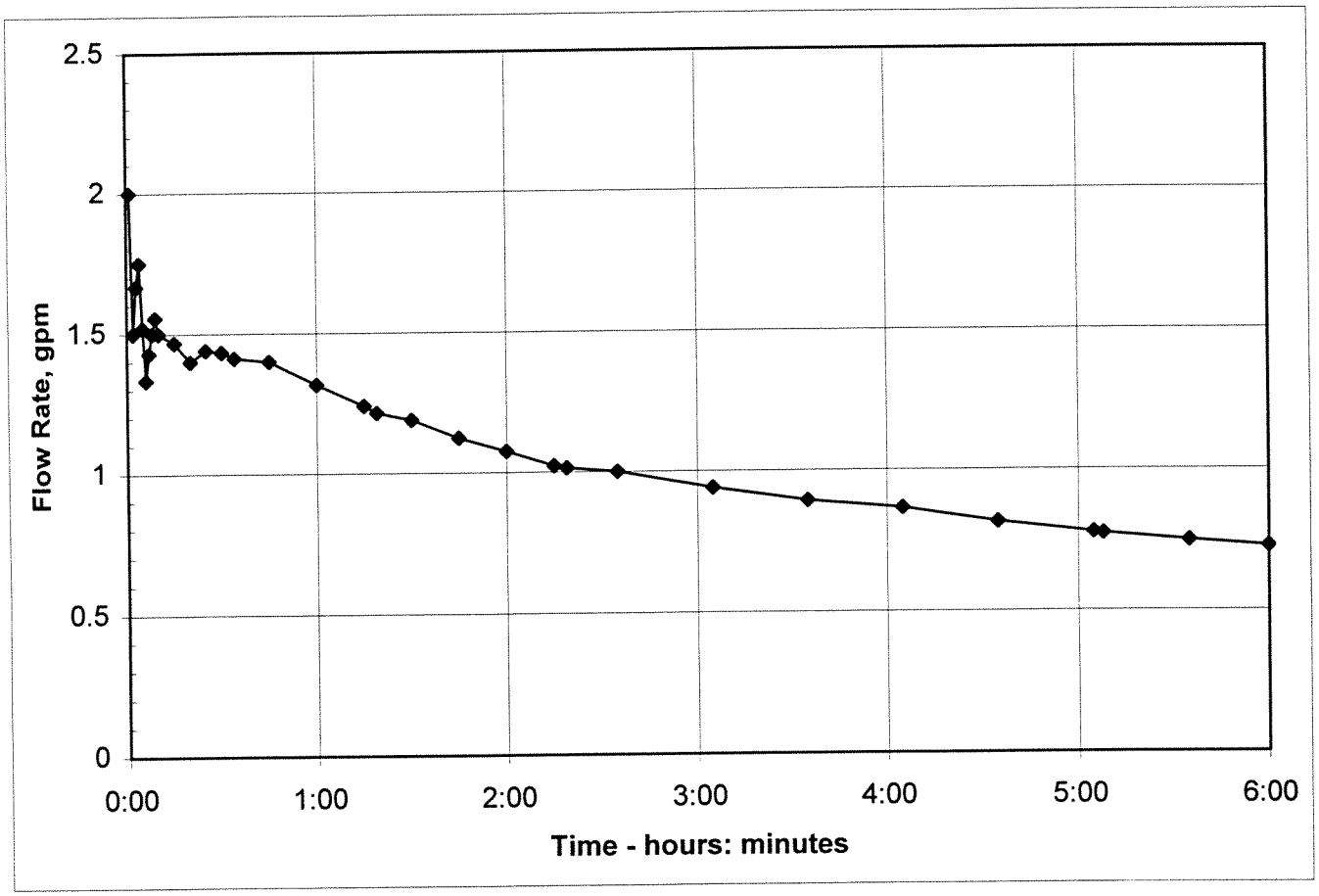
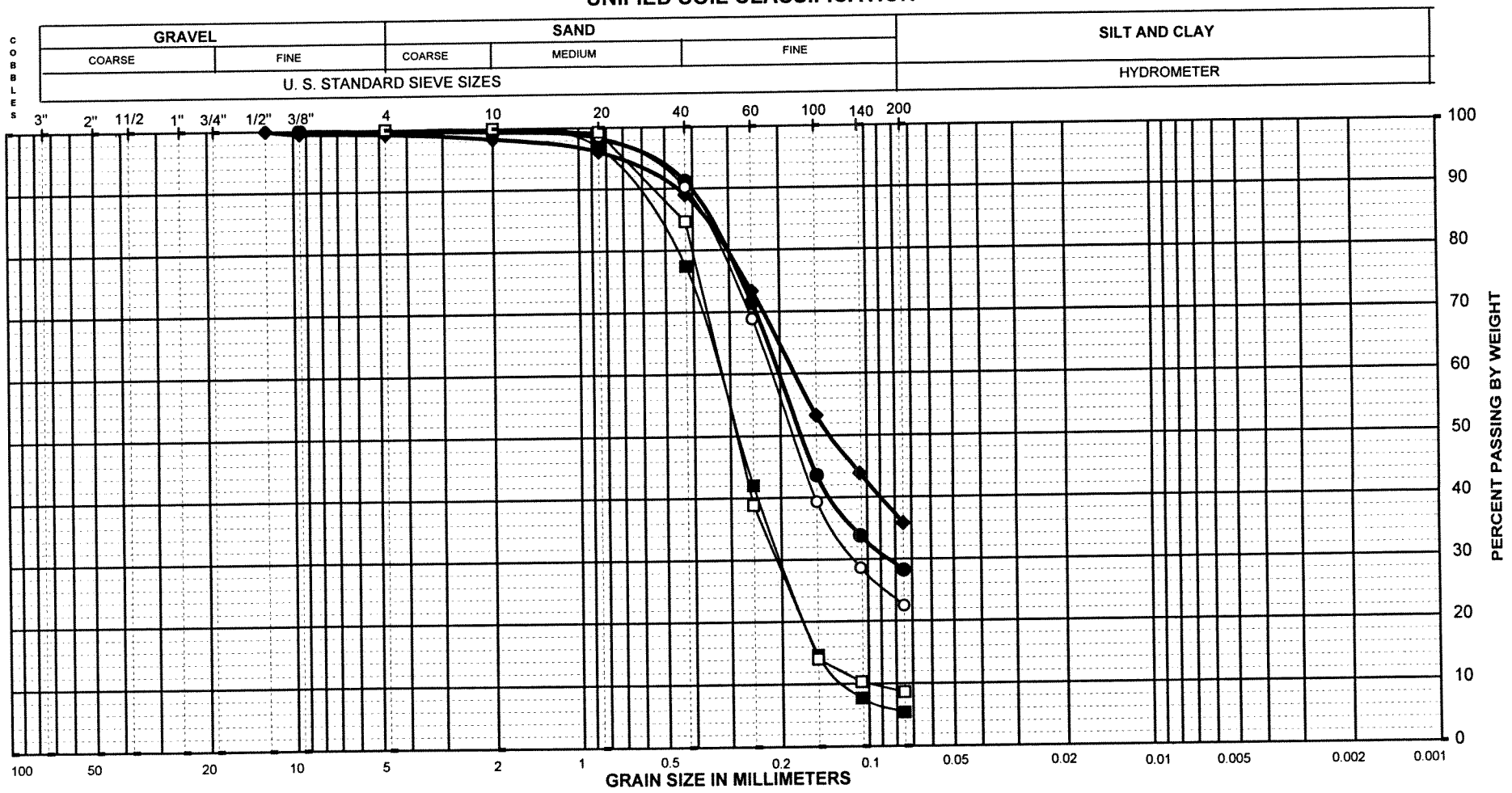


Figure 5-4d-15B

UNIFIED SOIL CLASSIFICATION



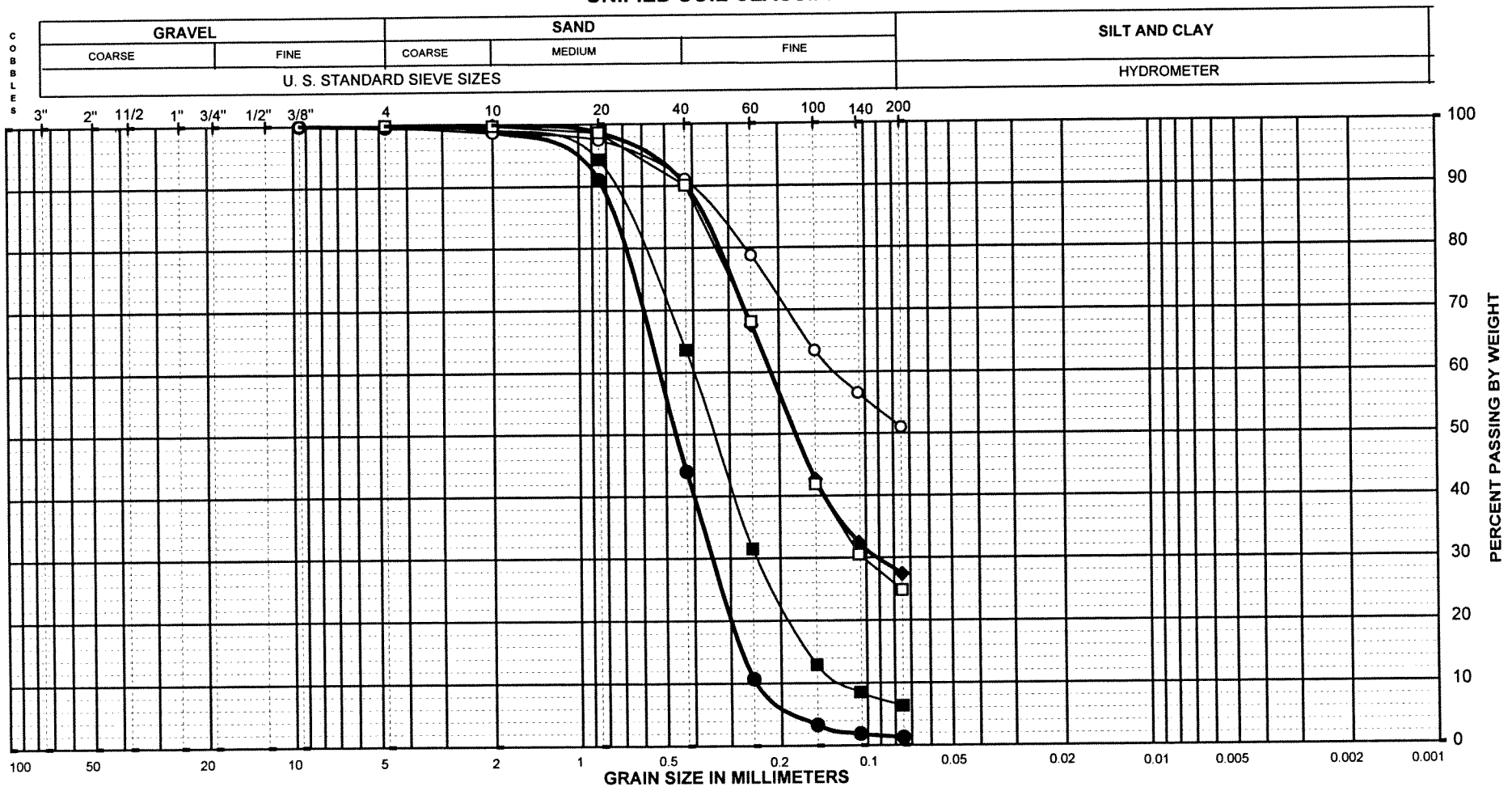
Exploration No.	Sample No.	Depth (m)	SYMBOL	Wn (%)	LL	PI	% Clay	Description and Classification	D_{60}	D_{30}	D_{10}	C_u	C_c
5-4d-B-1	2	0.61	●	6.5				Reddish brown silty Sand (SM)	0.20	0.09			
5-4d-B-1	4	1.52	◆	4.2				Light brown silty Sand (SM)	0.18				
5-4d-B-1	8	3.35	■	2.0				Light gray poorly graded Sand with silt (SP-SM)	0.33	0.21	0.14	2.4	1.0
5-4d-B-2	2	0.61	○	9.1				Olive brown silty Sand (SM)	0.22	0.11			
5-4d-B-2	5	1.98	□	1.8				Light gray poorly graded Sand with silt (SP-SM)	0.32	0.21	0.1	3.2	1.4

PROJECT NAME: **Caltrans IFB Site Selection Study**

PARTICLE-SIZE DISTRIBUTION CURVES

Figure: 5-4d-16

UNIFIED SOIL CLASSIFICATION



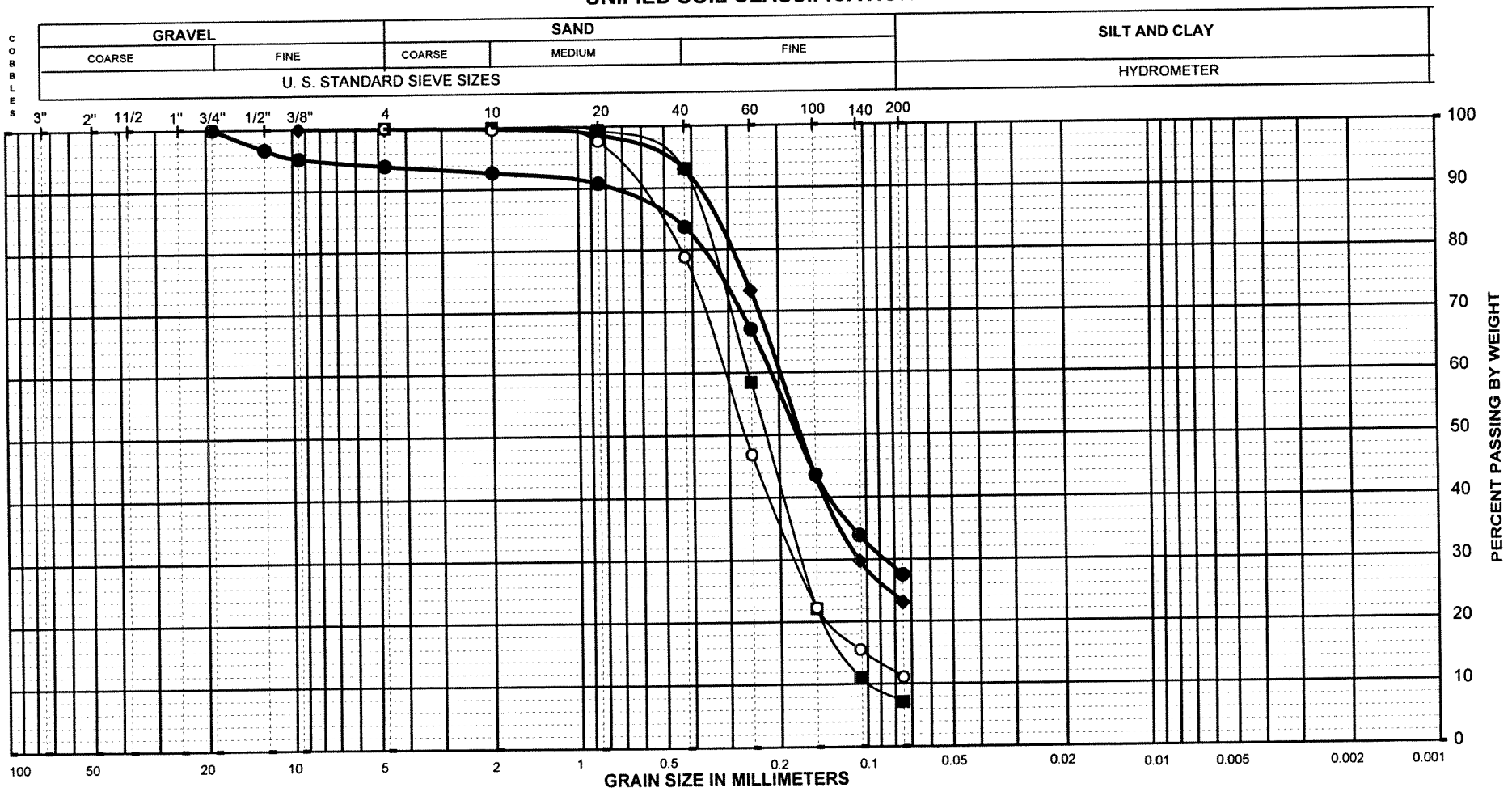
Exploration No.	Sample No.	Depth (m)	SYMBOL	Wn (%)	LL	PI	% Clay	Description and Classification	D_{60}	D_{30}	D_{10}	C_u	C_c
5-4d-B-2	7	2.90	●	1.4				Light gray poorly graded Sand (SP)	0.52	0.36	0.25	2.1	1.0
5-4d-MW-1	1	0.15	◆	11.7				Dark brown silty Sand (SM)	0.22	0.09			
5-4d-MW-1	8	3.35	■	1.6				Light gray poorly graded Sand with silt (SP-SM)	0.4	0.25	0.14	2.9	1.1
5-4d-MW-1	4	1.52	○	6.0				Light olive brown sandy Clay (CL/SC)	0.13				
5-4d-P-1	2	0.61	□	11.0				Grayish brown silty Sand (SM)	0.22	0.11			

PROJECT NAME: Caltrans IFB Site Selection Study

PARTICLE-SIZE DISTRIBUTION CURVES

Figure: 5-4d-17

UNIFIED SOIL CLASSIFICATION

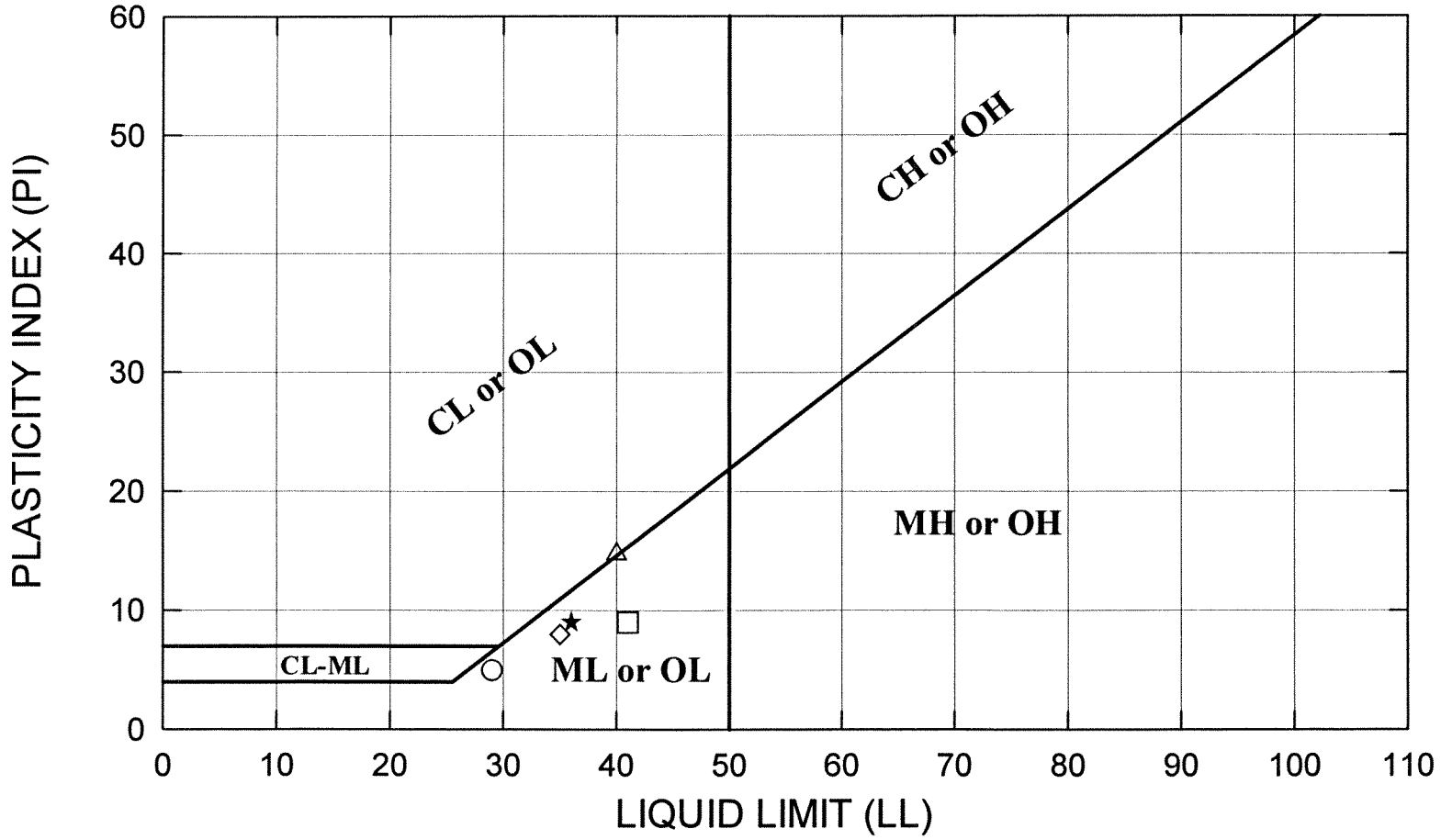


Exploration No.	Sample No.	Depth (m)	SYMBOL	Wn (%)	LL	PI	% Clay	Description and Classification	D_{60}	D_{30}	D_{10}	C_u	C_c
5-4d-P-2	2	0.91	●	9.5				Dark grayish brown silty Sand (SM)	0.21	0.09			
5-4d-P-3	3	1.07	◆	4.2				Grayish brown silty Sand (SM)	0.2	0.11			
5-4d-P-4	5	1.98	■	2.0				Light grayish brown poorly graded Sand with silt (SP-SM)	0.27	0.18	0.1	2.7	1.2
5-4d-P-4	6	2.44	○	2.8				Light grayish brown poorly graded Sand with silt (SP-SM)	0.31	0.19	0.07	4.4	1.7

PROJECT NAME: **Caltrans IFB Site Selection Study**

PARTICLE-SIZE DISTRIBUTION CURVES

Figure: 5-4d-18



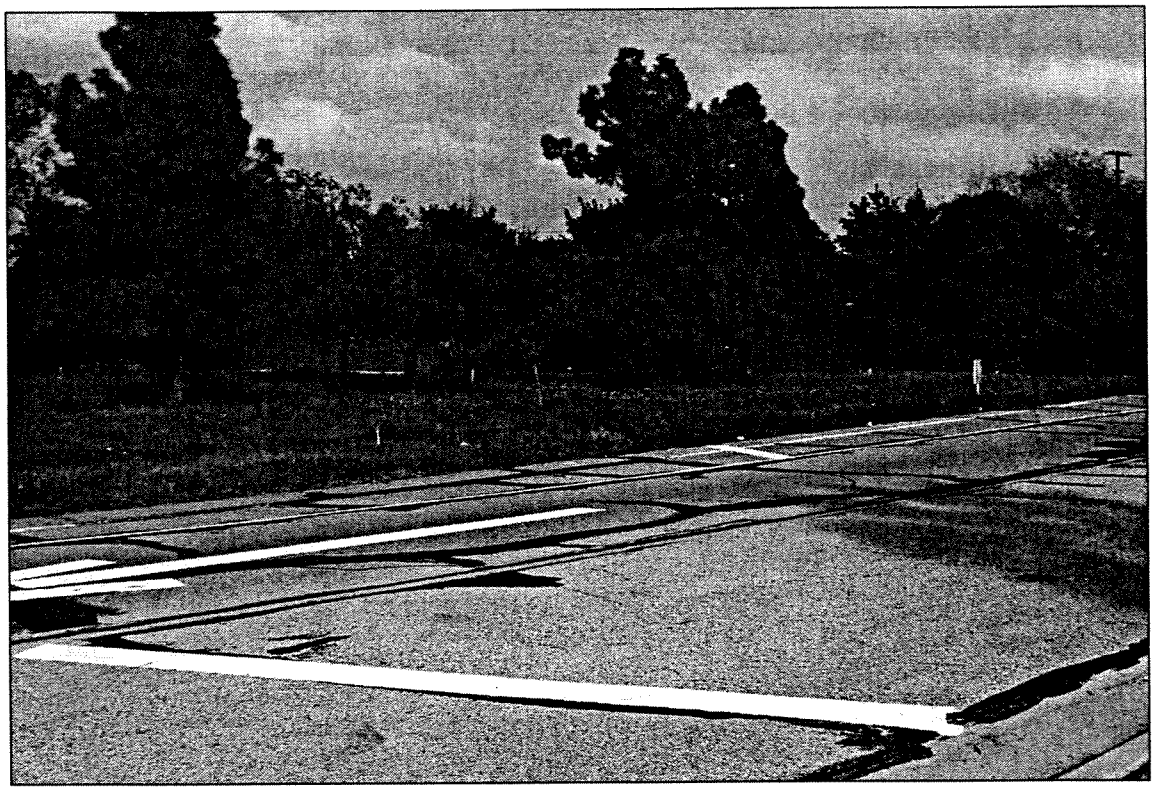
LEGEND: ○ 5-4d-MW-1@7.62m ◇ 5-4d-B-1@7.62m ★ 5-4d-P-4@1.52m ● _____

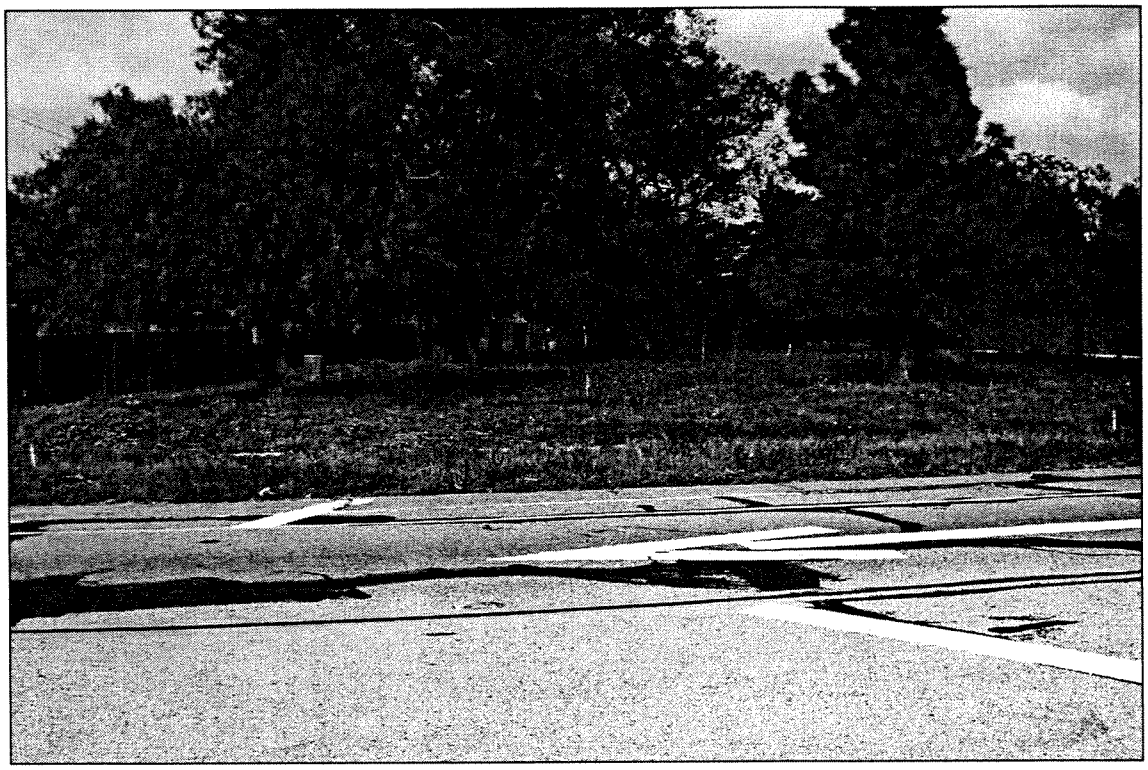
□ 5-4d-MW-1@9.15m △ 5-4d-B-2@9.76m ▲ _____ × _____

PLASTICITY CHART

	Date: April 2003	Project: Caltrans Infiltration Basin Project	Figure 5-4d-19

s.mikesmith.PiChart.PiMaster.GRF





Priority 6-5-4d (Firestone Blvd.) Site Photographs

Date: April 2003	**Project: Caltrans IFB Site Selection Study**	Figure: 5-4d-20

APPENDIX G

5-5b (San Antonio Blvd.)

Table 1	Geotechnical Laboratory Test Data
Figure 5-5b-1	Site Plan
Figure 5-5b-2	Geologic Cross Section A-A'
Figure 5-5b-3	Log of Boring 5-5b-MW-1
Figure 5-5b-4	Groundwater Monitoring Well 5-5b-MW-1 Diagram
Figure 5-5b-5	Groundwater Monitoring Well 5-5b-MW-1 Photographs
Figure 5-5b-6	Log of Boring 5-5b-B-1
Figure 5-5b-7	Log of Boring 5-5b-B-2
Figure 5-5b-8	Log of Boring 5-5b-P-1
Figure 5-5b-9	Infiltration Data for 5-4d-P-1
Figure 5-5b-10	Log of Boring 5-5b-P-2
Figure 5-5b-11	Infiltration Data for 5-4d-P-2
Figure 5-5b-12	Log of Boring 5-5b-P-3
Figure 5-5b-13	Infiltration Data for 5-4d-P-3
Figure 5-5b-14	Log of Boring 5-5b-P-4
Figure 5-5b-15	Infiltration Data for 5-4d-P-4
Figure 5-5b-16	Particle-Size Distribution Curves
Figure 5-5b-17	Particle-Size Distribution Curves
Figure 5-5b-18	Particle-Size Distribution Curves
Figure 5-5b-19	Particle-Size Distribution Curves
Figure 5-5b-20	Plasticity Chart
Figure 5-5b-21	Site Photographs

TABLE 1

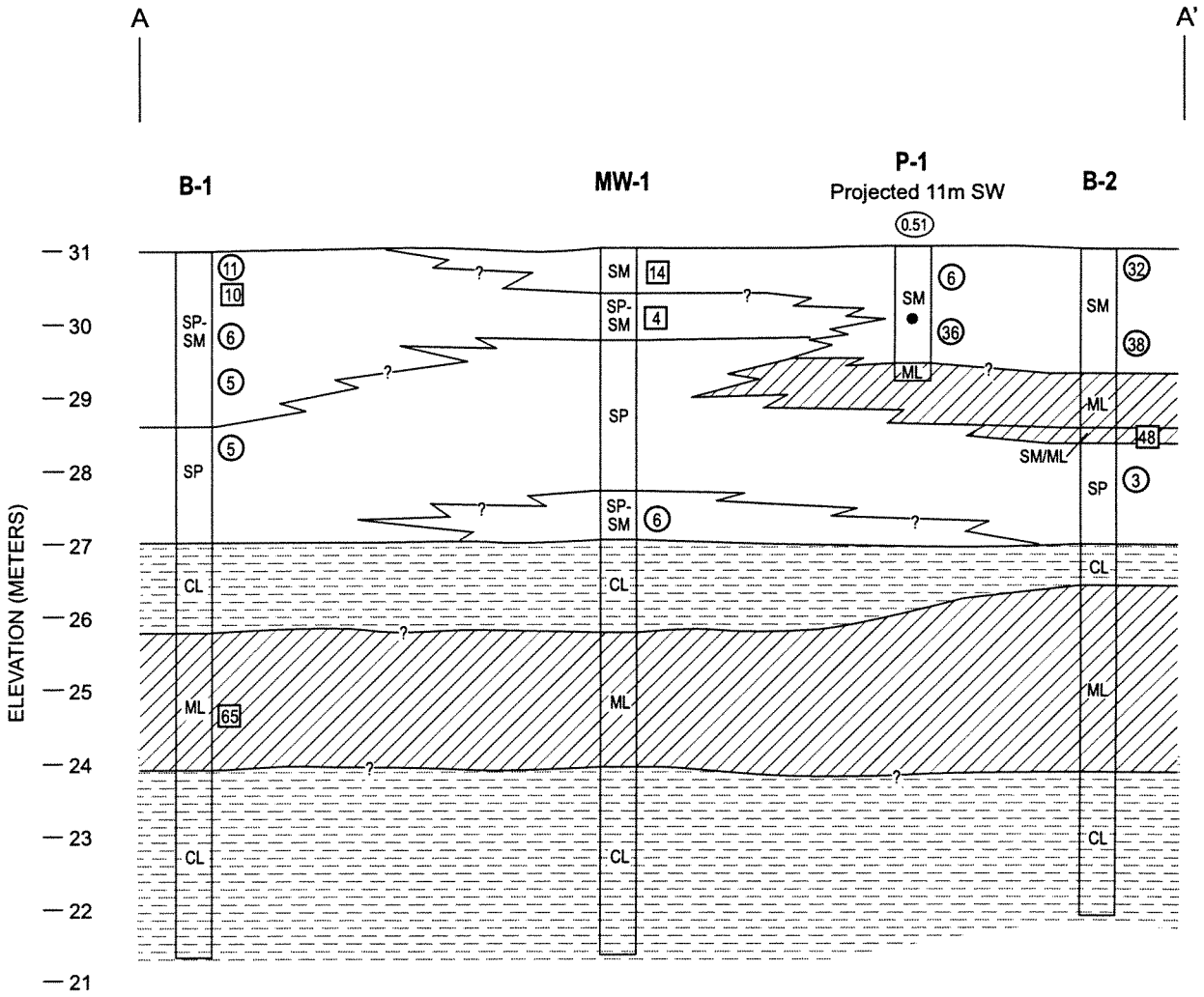
5-5b GEOTECHNICAL LABORATORY TEST DATA

Location							Atterberg Limits		Sieve				Chemical Test Data			
Exploration Number	Sample/ Specimen Number	Depth (m)	Caltrans Soil Classification	Water Content (%)	Total Unit Weight (pcf)	Dry Unit Weight (pcf)	Liquid Limit (%)	Plasticity Index (%)	Gravel (%)	Sand (%)	<#200 Fines (%)	5 microns (%)	pH	O.M.% (% organic matter)	CEC (me/g)[1]	Hydraulic Conductivity (cm/sec)
5-5b-B-1	1	0.15	SP-SM	7.7	-	-	-	-	3	85	11	-	-	-	-	-
5-5b-B-1	2	0.61	SP-SM	8.0	-	-	-	-	-	-	10	-	-	-	-	-
5-5b-B-1	3	1.07	SP-SM	-	-	-	-	-	0	94	6	-	-	-	-	-
5-5b-B-1	4	1.52	SP-SM	3.9	-	-	-	-	0	95	5	-	-	-	-	-
5-5b-B-1	6	2.44	SP	3.1	-	-	-	-	-	-	5	-	-	-	-	-
5-5b-B-1	10	4.27	CL	-	-	-	48	21	-	-	-	-	-	-	-	2.3E-06
5-5b-B-1	11	6.10	ML	22.2	-	-	-	-	-	-	65	-	-	-	-	-
5-5b-B-2	1	0.15	SM	12.6	-	-	-	-	0	68	32	-	-	-	-	-
5-5b-B-2	3	1.07	SM	14.2	-	-	-	-	0	62	38	-	-	-	-	-
5-5b-B-2	4	1.52	ML	-	-	-	31	1	-	-	-	-	-	-	-	-
5-5b-B-2	6	2.44	SM/ML	26.0	-	-	-	-	-	-	48	-	-	-	-	-
5-5b-B-2	7	2.90	SP	9.2	-	-	-	-	0	98	3	-	-	-	-	-
5-5b-B-2	10	4.27	CL	-	-	-	45	20	-	-	-	-	-	-	-	4.6E-06
5-5b-B-2	11	6.10	ML	-	-	-	32	4	-	-	-	-	-	-	-	-
5-5b-MW-1	2	0.61	SP-SM	-	-	-	-	-	-	-	14	-	-	-	-	-
5-5b-MW-1	3	1.07	SP	5.5	-	-	-	-	-	-	5	-	-	-	-	-
5-5b-MW-1	5	1.98	SP	8.8	-	-	-	-	0	96	4	-	-	-	-	-
5-5b-MW-1	8	3.35	SP-SM	3.9	-	-	-	-	0	94	6	-	-	-	-	-
5-5b-MW-1	11	6.10	ML	-	-	-	32	4	-	-	-	-	-	-	-	-
5-5b-P-1	1	0.00	SM	15.2	-	-	-	-	1	65	35	-	-	-	-	-
5-5b-P-1	2	0.46	SM	-	-	-	-	-	-	-	-	-	7.8	1.1	0.095	-
5-5b-P-1	3	0.91	SM	13.6	-	-	-	-	0	64	36	-	-	-	-	-
5-5b-P-2	2	0.46	SM	9.2	-	-	-	-	4	80	16	-	-	-	-	-
5-5b-P-2	5	1.83	SP	6.9	-	-	-	-	0	97	3	-	-	-	-	-
5-5b-P-3	1	0.00	SP-SM	10.1	-	-	-	-	5	82	13	-	-	-	-	-
5-5b-P-3	3	0.91	SP-SM	7.5	-	-	-	-	2	91	7	-	-	-	-	-
5-5b-P-3	4	1.37	SP	5.4	-	-	-	-	0	99	1	-	-	-	-	-
5-5b-P-4	1	0.00	SM	10.5	-	-	-	-	7	65	28	-	-	-	-	-
5-5b-P-4	2	0.46	SM	10.2	-	-	-	-	1	72	28	-	-	-	-	-

Notes: [1] Cation excange capacity, millequivalents per gram

Priority 6-5-5b (San Antonio Blvd.) Site Plan

April 2003	Infiltration Basin Site Selection Study	Figure 5-5b-1



Water Level Observed During Drilling

Groundwater Elevation Feb. 2003

Float Valve Location
Top of Hydraulic Conductivity Test Section

(0.52) In-hole Hydraulic Conductivity Test Value (inches/hour)

(46) Hydrometer Test, % Passing #200 Sieve

(72) Sieve Analysis, % Passing #200 Sieve

[32] Wash Analysis, % Passing #200 Sieve

Clays and Clays w/Silt

Silt

Note: Groundwater Not Observed

HORIZONTAL SCALE:
1 cm = 5 meters

VERTICAL SCALE:
1 cm = 1 meter

PRIORITY 6 - SITE 5-5b GEOLOGIC CROSS SECTION A-A'

Date: APRIL 2003	Project: INFILTRATION BASIN SITE SELECTION STUDY	Figure 5-5b-2

L:/CALTRANS/C GOETZ/xsect 5-5B.FH10

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, San Antonio Drive

Log of Boring 5-5b-MW-1

Sheet 1 of 2

Date(s) Drilled	2/19/03	Logged By	C. Goetz	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	9.6 meters
Drill Rig Type	CME 75	Drilling Contractor	Prosonic	Approximate Surface Elevation	31.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT, Modified California	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	See Well Construction	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	Number	Sampling Resistance, blows/0.30m	Core Recovery, %	Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	PID, ppm	REMARKS AND OTHER TESTS
	0							Silty sand (SM) loose, brown, moist, fine grained sand			
			1	6							
			2	6				Poorly graded sand with silt (SP-SM) loose, light brown, moist, fine grained sand			WA: 14%<#200
30	1		3	7					5		WA: 4%<#200
			4	7				Poorly graded sand (SP) loose, light brown, moist, fine grained sand			
	2		5	10					9		SA: 4%<#200
			6	12				▼ Becomes medium dense			
28	3		7	13							
			8	16				Poorly graded sand with silt (SP-SM) medium dense, light brown, moist, fine grained sand	4		SA: 6%<#200
	4		9	8				Lean clay (CL) stiff, medium gray, moist			
			10	9							
26	5							Sandy silt (ML) medium dense, light brown, moist, fine grained sand			
	6		11	14							LL=32; PI=4
24	7							Lean clay (CL) stiff, greenish gray, moist			
	8		12	12							
22	9							▼ Becomes greenish gray to light gray, with fine grained sand			

Figure 5-5b-3

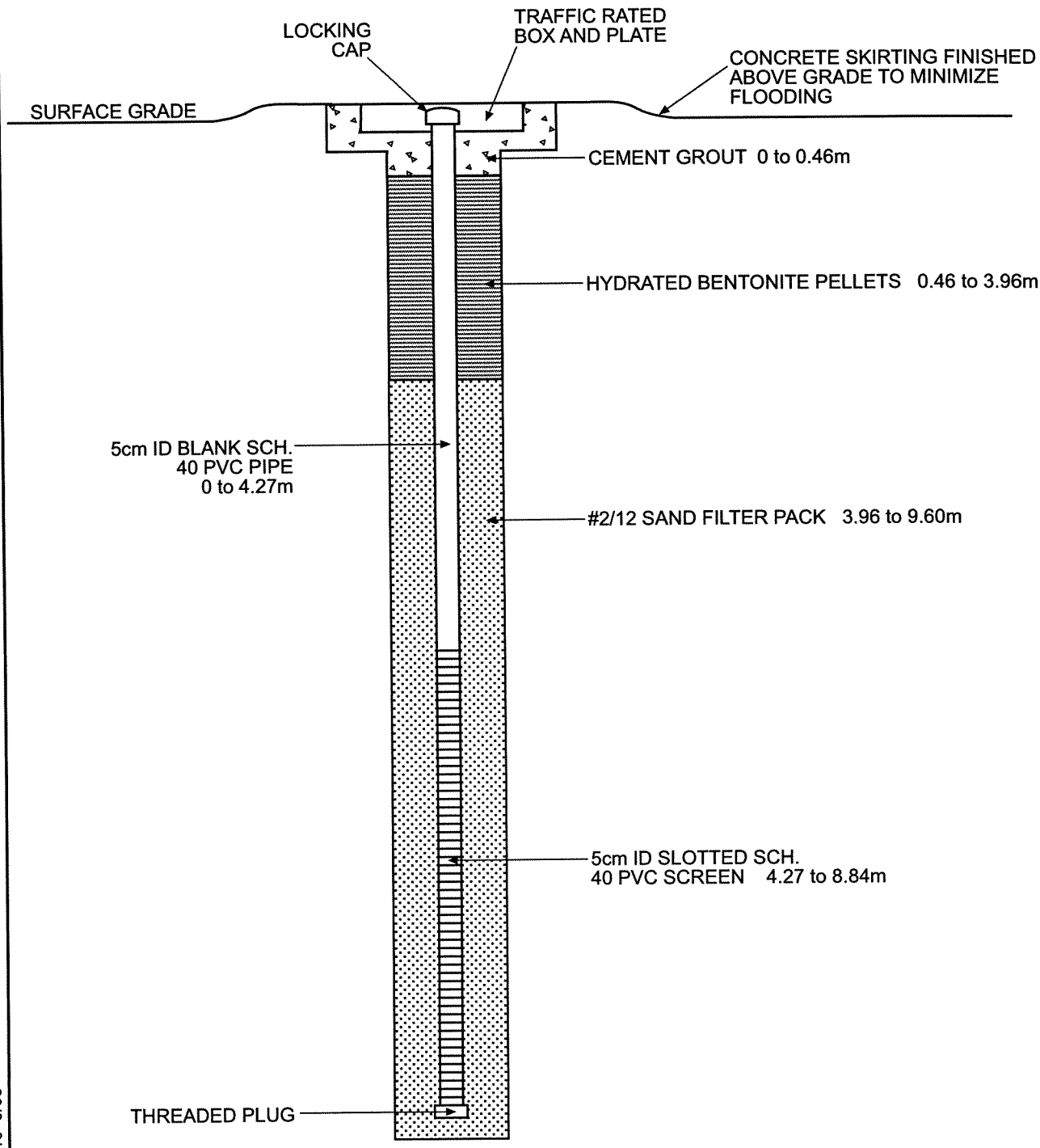
Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, San Antonio Drive

Log of Boring 5-5b-MW-1

Sheet 2 of 2

Elevation, meters	Depth, meters	SAMPLES: Type	SAMPLES: Number	SAMPLES: Sampling Resistance, blows/0.30m	SAMPLES: Core Recovery, %	SAMPLES: Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	PID, ppm	REMARKS AND OTHER TESTS
			13	16				Lean clay with sand (CL) stiff, greenish gray to light brown, moist, fine grained sand			
								Bottom of boring at 9.6 meters			
	10										
20	11										
	12										
18	13										
	14										
16	15										
	16										
14	17										
	18										
12	19										

Figure 5-5b-3



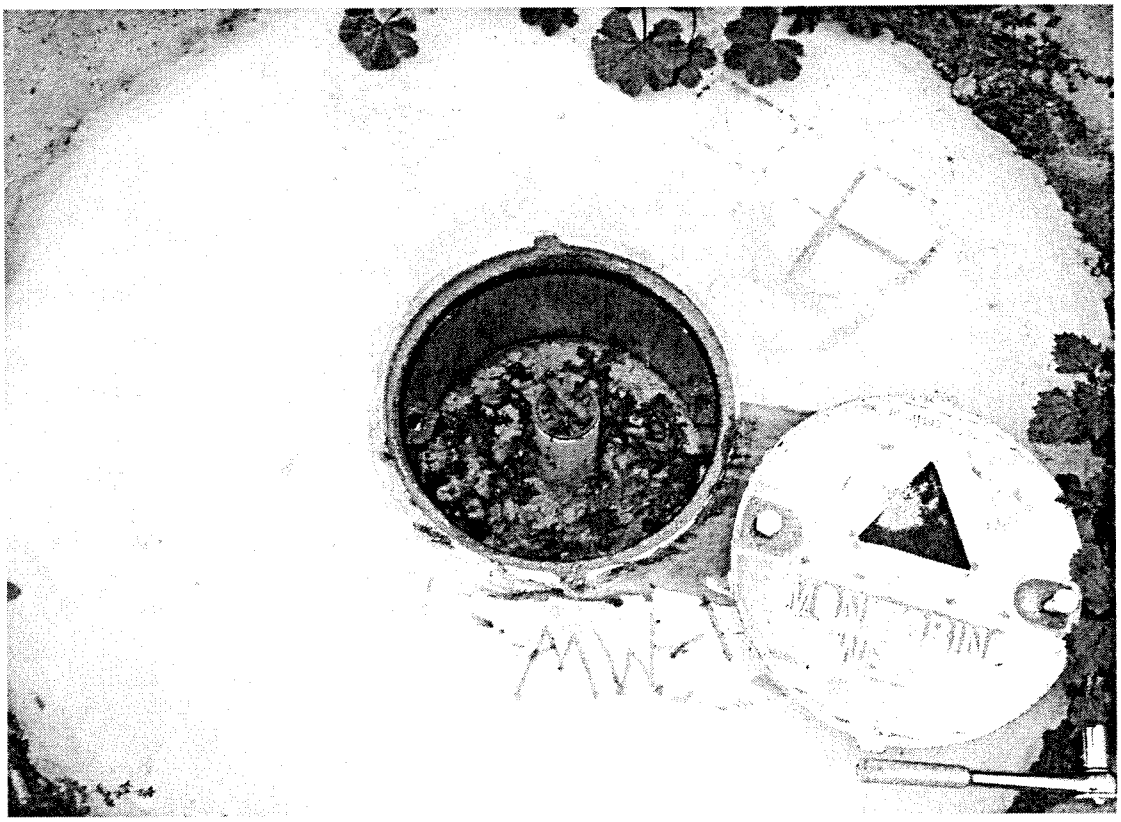
5-5b-MW-1

Not to Scale

GROUNDWATER MONITORING WELL DIAGRAM

Date: APRIL 2003	Project: INFILTRATION BASIN SITE SELECTION STUDY	Figure 5-5b-4

L:/Caltrans/GW monitoring well diag.fh10 5/03



5-5b-MW-1

Date: April 2003	**Project: Caltrans IFB Site Selection Study**	Figure: 5-5b-5

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, San Antonio Drive

Log of Boring 5-5b-B-1

Sheet 1 of 2

Date(s) Drilled	2/19/03	Logged By	C. Goetz	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	9.6 meters
Drill Rig Type	CME 75	Drilling Contractor	Prosonic	Approximate Surface Elevation	31.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT, ModifiedCalifornia	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	Soil Cuttings	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	Number	Sampling Resistance, blows/0.30m	Core Recovery, %	Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	PID, ppm	REMARKS AND OTHER TESTS
	0							Poorly graded sand with silt (SP-SM) loose, brown, moist, fine grained sand, with wood chips to 0.15m depth			
			1	8					8		SA: 11%<#200
			2	7				Becomes light brown	8		WA: 10%<#200
30	1		3	8							SA: 6%<#200
			4	9					4		SA: 5%<#200
	2							Becomes medium dense			
			5	11							
			6	13				Poorly graded sand (SP) medium dense, light brown, moist, fine grained sand	3		WA: 5%<#200
28	3							Becomes loose			
			7	10							
			8	7							
	4		9	5				Lean clay (CL) firm, grayish brown, moist			
			10	8							LL=48; PI=21 HC 2.3x10^{-6} cm/sec
26	5							Sandy silt (ML) medium dense, light brown, moist, fine grained sand			
	6		11	18					22		WA: 65%<#200
24	7							Lean clay (CL) stiff, medium gray, moist			
	8		12	13							
22	9										

Figure 5-5b-6

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, San Antonio Drive

Log of Boring 5-5b-B-1

Sheet 2 of 2

Elevation, meters	Depth, meters	SAMPLES: Type	SAMPLES: Number	SAMPLES: Sampling Resistance, blows/0.30m	SAMPLES: Core Recovery, %	SAMPLES: Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	PID, ppm	REMARKS AND OTHER TESTS
			13	13				Becomes light brown, sandy clay			
								Bottom of boring at 9.6 meters			
	10										
-20	11										
	12										
-18	13										
	14										
-16	15										
	16										
-14	17										
	18										
-12	19										

Figure 5-5b-6

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, San Antonio Drive

Log of Boring 5-5b-B-2

Sheet 1 of 1

Date(s) Drilled	2/19/03	Logged By	C. Goetz	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	9.1 meters
Drill Rig Type	CME 75	Drilling Contractor	Prosonic	Approximate Surface Elevation	31.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT, Modified California	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	Soil Cuttings	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	Number	Sampling Resistance, blows/0.30m	Core Recovery, %	Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	PID, ppm	REMARKS AND OTHER TESTS
	0							Silty sand (SM) very loose, brown, moist, fine grained sand			
			1	3					13		SA: 32%<#200
			2	2							
30	1		3	3				Becomes light brown	14		SA: 38%<#200
								Becomes loose			
			4	6				Silt (ML) loose, light reddish brown, moist			LL=31; PI=1
	2		5	4							
			6	10				Silty sand to sandy silt (SM/ML) loose, brown, moist, fine grained sand	26		WA: 48%<#200
28	3		7	13				Poorly graded sand (SP) medium dense, light brown, moist, fine grained sand	9		SA: 3%<#200
			8	15				Becomes loose			
	4		9	9							
			10	11				Lean clay (CL) stiff, brownish gray, moist			LL=45; PI=20 HC: 4.6×10^{-6} cm/sec
26	5							Sandy silt (ML) medium dense, light brownish gray, moist, fine grained sand			
	6		11	14							LL=32; PI=4
24	7							Fat clay (CH) stiff, greenish gray, moist			
	8		12	13							
								Lean clay (CL) stiff, light reddish brown, moist			
22	9		13	11							
								Bottom of boring at 9.1 meters			

Figure 5-5b-7

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, San Antonio Drive

Log of Boring 5-5b-P-1

Sheet 1 of 1

Date(s) Drilled	2/19/03	Logged By	C. Goetz	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	1.8 meters
Drill Rig Type	CME 75	Drilling Contractor	Prosonic	Approximate Surface Elevation	31.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	See well construction on log	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	Number	Sampling Resistance, blows/0.30m	Core Recovery, %	Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Infiltration Test Well	REMARKS AND OTHER TESTS
	0										BENTONITE CHIPS
			1	2				Silty sand (SM) very loose, brown, moist, fine grained sand	15		SA: 35%<#200
			2	2							NATIVE
											CASING
											pH=7.8, OM=1.1% CEC=0.095 me/g
30	1		3	2					14		SA: 36%<#200
			4	5				Sandy silt (ML) loose, light brown, moist, fine grained sand			(COARSE AQUARIUM SAND)
	2							Bottom of boring at 1.8 meters			
28	3										
	4										
26	5										
	6										
24	7										
	8										
22	9										

Figure 5-5b-8

5-5b-P-1-1

Clock	Accumulated Time	Tank Reading (gallons)	Difference (gallons)	Accumulated Flow (gallons)	Flow Rate (gpm)	Well Temp (°F)	Reservoir Temp (°F)
8:29:00	0:00:00	59.5	0	0	0.000		
8:29:30	0:00:30	55.0	4.5	4.5	9.000		
8:30:00	0:01:00	53.3	1.75	6.25	6.250		
8:31:00	0:02:00	52.0	1.25	7.5	3.750		
8:31:30	0:02:30	51.8	0.25	7.75	3.100		64
8:32:00	0:03:00	51.8	0	7.75	2.583		
8:34:00	0:05:00	51.5	0.25	8	1.600		
8:36:00	0:07:00	51.0	0.5	8.5	1.214		
8:40:00	0:11:00	50.3	0.75	9.25	0.841		
8:45:00	0:16:00	49.5	0.75	10	0.625		
8:52:00	0:23:00	48.3	1.25	11.25	0.489		
8:58:00	0:29:00	47.0	1.25	12.5	0.431		
9:05:00	0:36:00	46.0	1	13.5	0.375		
9:12:00	0:43:00	45.0	1	14.5	0.337		64
9:20:00	0:51:00	44.0	1	15.5	0.304		
9:31:00	1:02:00	42.0	2	17.5	0.282		
9:50:00	1:21:00	39.0	3	20.5	0.253		62
10:08:00	1:39:00	35.5	3.5	24	0.242		
10:29:00	2:00:00	33.5	2	26	0.217		62
10:53:00	2:24:00	30.0	3.5	29.5	0.205		
11:25:00	2:56:00	25.0	5	34.5	0.196		
11:58:00	3:29:00	20.5	4.5	39	0.187		65
12:32:30	4:03:30	15.8	4.75	43.75	0.180		
12:33:30	4:04:30	59.0		43.75	0.179		64
13:03:30	4:34:30	52.3	6.75	50.5	0.184		
13:33:00	5:04:00	47.5	4.75	55.25	0.182		
14:05:00	5:36:00	43.0	4.5	59.75	0.178		60
14:33:00	6:04:00	38.8	4.25	64	0.176		62

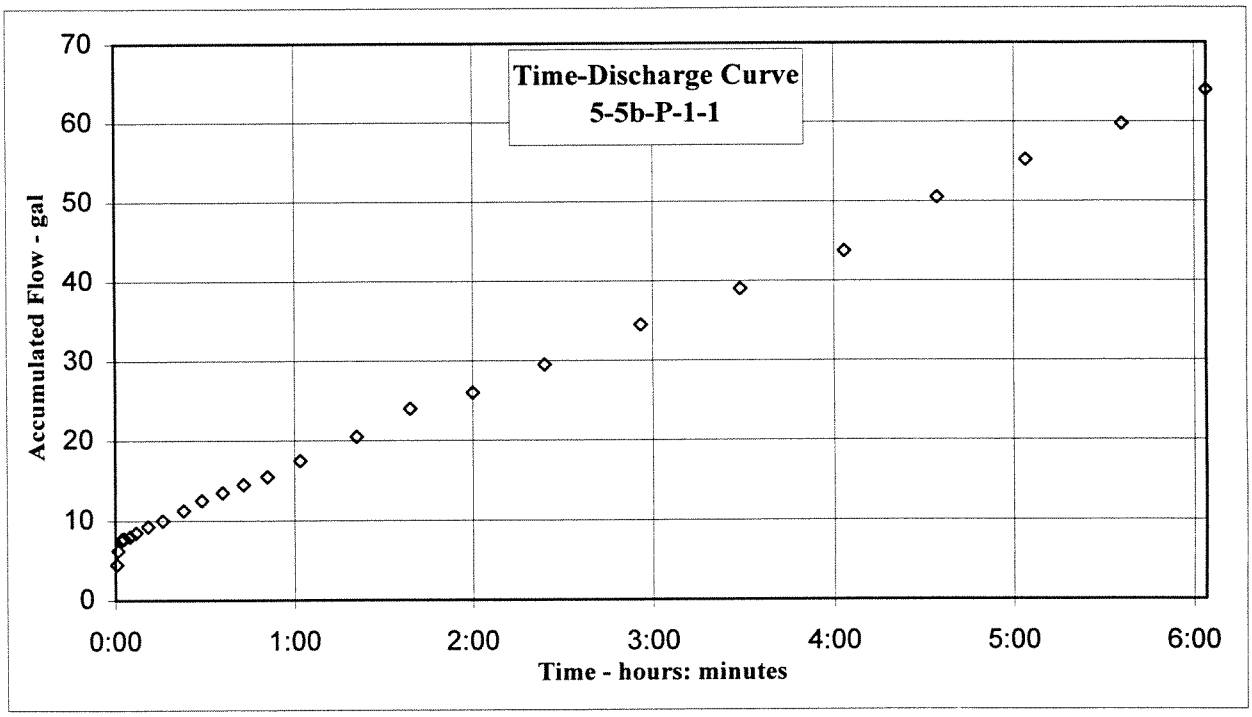


Figure 5-5b-9A

Calculation of Test Condition

Float depth =	2.75 ft	0.84 meters
Borehole depth =	6 ft	1.83 meters
Height of water in test well, h =	3.25 ft	0.99 meters
Depth of water table =	29 ft	8.84 meters
Depth to impervious layer =	13.6 ft	4.15 meters
Unsaturated distance between water table or impervious layer and surface of well water, Tu=	10.85 ft	3.31 meters

Based on the Test Data, Condition I is the most applicable

Calculation of equivalent radius of the well, r_w

mass of sand in borehole, m_s =	110 lbs	
density of sand in borehole, ρ_s =	102.11 lbs/cu ft	
r_w =	0.325 ft	3.90 inches

Calculations for k_{20}

h =	3.25 ft	39 inches
Steady-state discharge rate, q =	0.150 gpm	34.59 cu.in./min
Average well water temperature, T =	61.47 °F	16.37 °C
Kinematic viscosity ratio, V =	1.0927 no units	
Condition I - k20=	8.28E-03 in/min	0.4968 in/hr

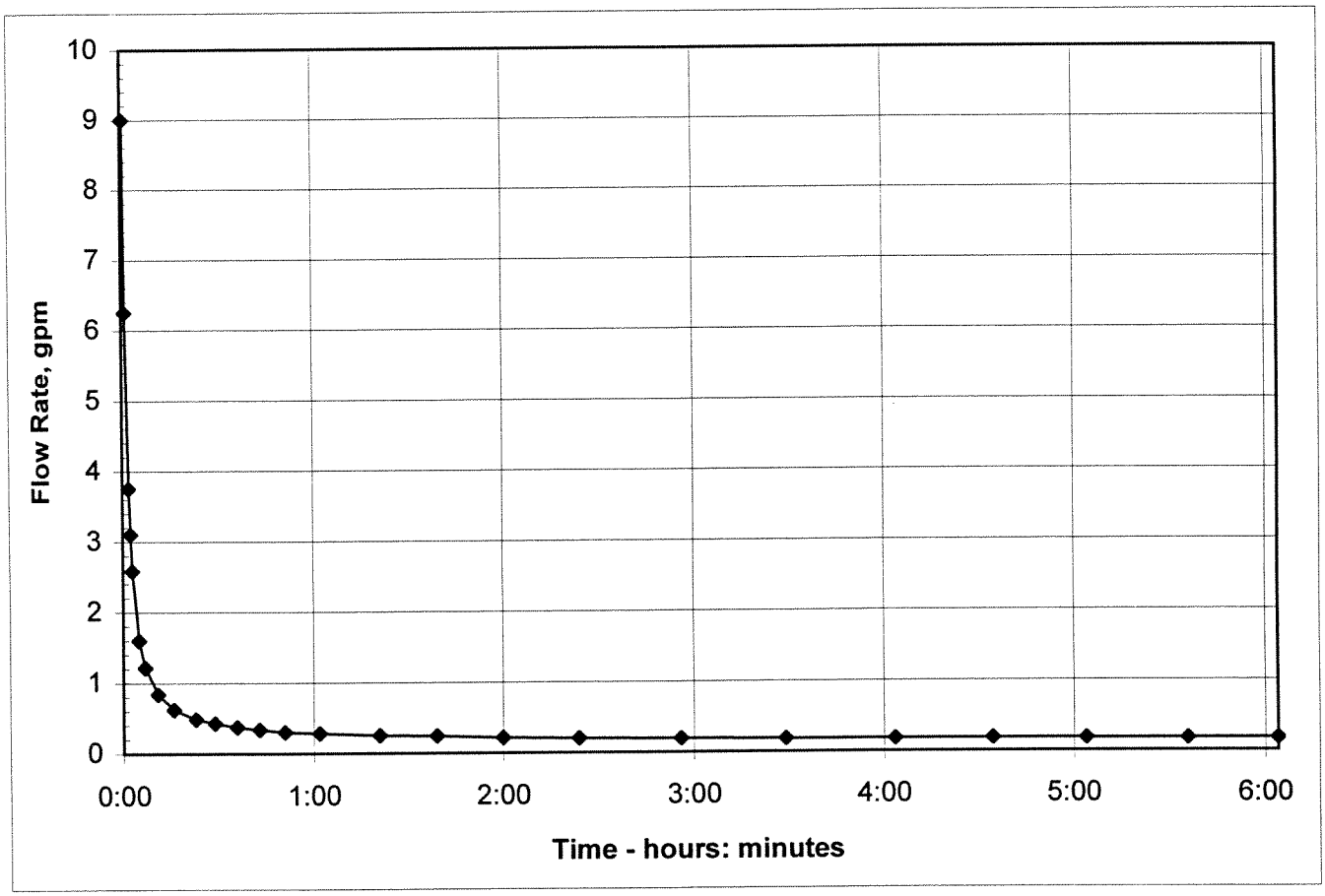


Figure 5-5b-9B

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, San Antonio Drive

Log of Boring 5-5b-P-2

Sheet 1 of 1

Date(s) Drilled	2/19/03	Logged By	C. Goetz	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	3.2 meters
Drill Rig Type	CME 75	Drilling Contractor	Prosonic	Approximate Surface Elevation	31.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	See well construction on log	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	SAMPLES: Number	SAMPLES: Sampling Resistance, blows/0.30m	SAMPLES: Core Recovery, %	SAMPLES: Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Infiltration Test Well	REMARKS AND OTHER TESTS
	0							Silty sand (SM) very loose, brown, moist, fine grained sand			BENTONITE CHIPS
			1	4							
			2	6				Becomes loose, with glass fragments, and rusty nail in shoe [FILL]	9		SA: 16%<#200
30	1		3	6							NATIVE
								Poorly graded sand with silt (SP-SM) loose, brown, moist, fine grained sand			CASING
			4	5				Poorly graded sand (SP) loose, light brown, moist, fine grained sand			
	2		5	9				Becomes medium dense	7		SA: 3%<#200
			6	13							(COARSE AQUARIUM SAND)
28	3		7	14							
								Bottom of boring at 3.2 meters			
	4										
26	5										
	6										
24	7										
	8										
22	9										

Figure 5-5b-10

5-5b-P-2-1

Clock	Accumulated Time	Tank Reading (gallons)	Difference (gallons)	Accumulated Flow (gallons)	Flow Rate (gpm)	Well Temp (°F)	Reservoir Temp (°F)
8:11:30	0:00:00	60.0	0	0	0.000		
8:13:00	0:01:30	58.0	2	2	1.333	60.4	
8:14:30	0:03:00	56.0	2	4	1.333	60.4	
8:16:30	0:05:00	54.0	2	6	1.200	60.3	
8:18:00	0:06:30	53.0	1	7	1.077	60.3	
8:19:30	0:08:00	52.0	1	8	1.000	60.4	
8:20:45	0:09:15	51.0	1	9	0.973	60.3	
8:28:45	0:17:15	45.5	5.5	14.5	0.841	60.4	
8:35:00	0:23:30	41.0	4.5	19	0.809	60.4	
8:44:00	0:32:30	34.5	6.5	25.5	0.785	60.6	
8:53:30	0:42:00	28.0	6.5	32	0.762	60.8	
9:02:30	0:51:00	22.0	6	38	0.745	61.2	
9:10:15	0:58:45	17.0	5	43	0.732	61.3	
9:20:30	1:09:00	11.0	6	49	0.710	60.6	
9:22:30	1:11:00	58.0		49	0.690	61.2	
9:32:30	1:21:00	49.0	9	58	0.716	61	
9:50:30	1:39:00	37.0	12	70	0.707	61.3	
10:06:30	1:55:00	27.5	9.5	79.5	0.691	61.3	
10:28:30	2:17:00	13.5	14	93.5	0.682	61.5	
10:30:00	2:18:30	55.0		93.5	0.675	61.3	
11:00:00	2:48:30	30.0	25	118.5	0.703	62.2	
11:22:00	3:10:30	6.5	23.5	142	0.745	64.8	
11:23:15	3:11:45	60.0		142	0.741	65.3	
11:45:15	3:33:45	32.0	28	170	0.795	65.1	
12:08:00	3:56:30	10.0	22	192	0.812	65.7	
12:10:00	3:58:30	58.0		192	0.805		
12:52:30	4:41:00	37.0	21	213	0.758	64.2	
13:29:30	5:18:00	11.0	26	239	0.752	63.7	
13:31:15	5:19:45	55.0		239	0.747	61	
13:43:30	5:32:00	51.0	4	243	0.732	60.4	
13:47:30	5:36:00	49.5	1.5	244.5	0.728	60.4	
13:48:30	5:37:00	48.5	1	245.5	0.728	60.4	
13:49:30	5:38:00	48.0	0.5	246	0.728	60.4	
13:50:30	5:39:00	47.0	1	247	0.729		
13:51:30	5:40:00	46.0	1	248	0.729		
13:55:30	5:44:00	43.0	3	251	0.730	60.4	
14:06:00	5:54:30	35.0	8	259	0.731	60.4	
14:20:04	6:08:34	25.0	10	269	0.730	61	

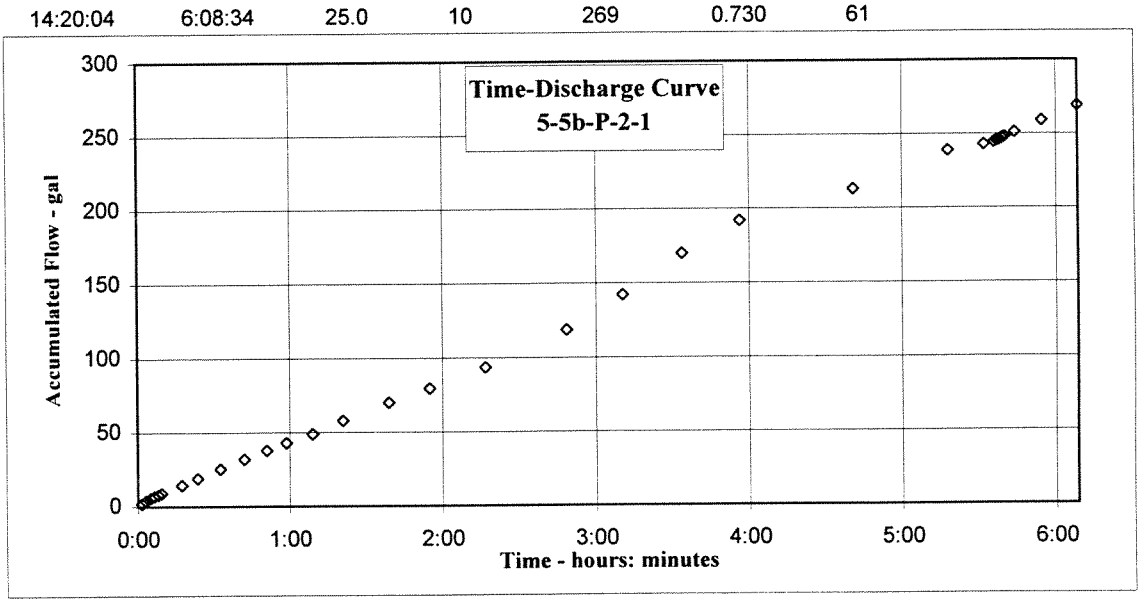


Figure 5-5b-11A

Calculation of Test Condition

Float depth =	5.9 ft	1.80 meters
Borehole depth =	10.5 ft	3.20 meters
Height of water in test well, h =	4.6 ft	1.40 meters
Depth of water table =	29 ft	8.84 meters
Depth to impervious layer =	13.5 ft	4.11 meters
Unsaturated distance between water table or impervious layer and surface of well water, Tu=	7.6 ft	2.32 meters

Based on the Test Data, Condition II is the most applicable

Calculation of equivalent radius of the well, r_w

mass of sand in borehole, m_s =	125 lbs	
density of sand in borehole, ρ_s =	104.74 lbs/cu ft	
r_w =	0.287 ft	3.45 inches

Calculations for k_{20}

h =	4.6 ft	55.2 inches
Steady-state discharge rate, q =	0.631 gpm	145.69 cu.in./min
Average well water temperature, T =	61.28 °F	16.26 °C
Kinematic viscosity ratio, V =	1.0960 no units	
Condition II - k20 =	0.0322 in/min	1.9343 in/hr
Condition I - k20 =	0.0211 in/min	1.2649 in/hr

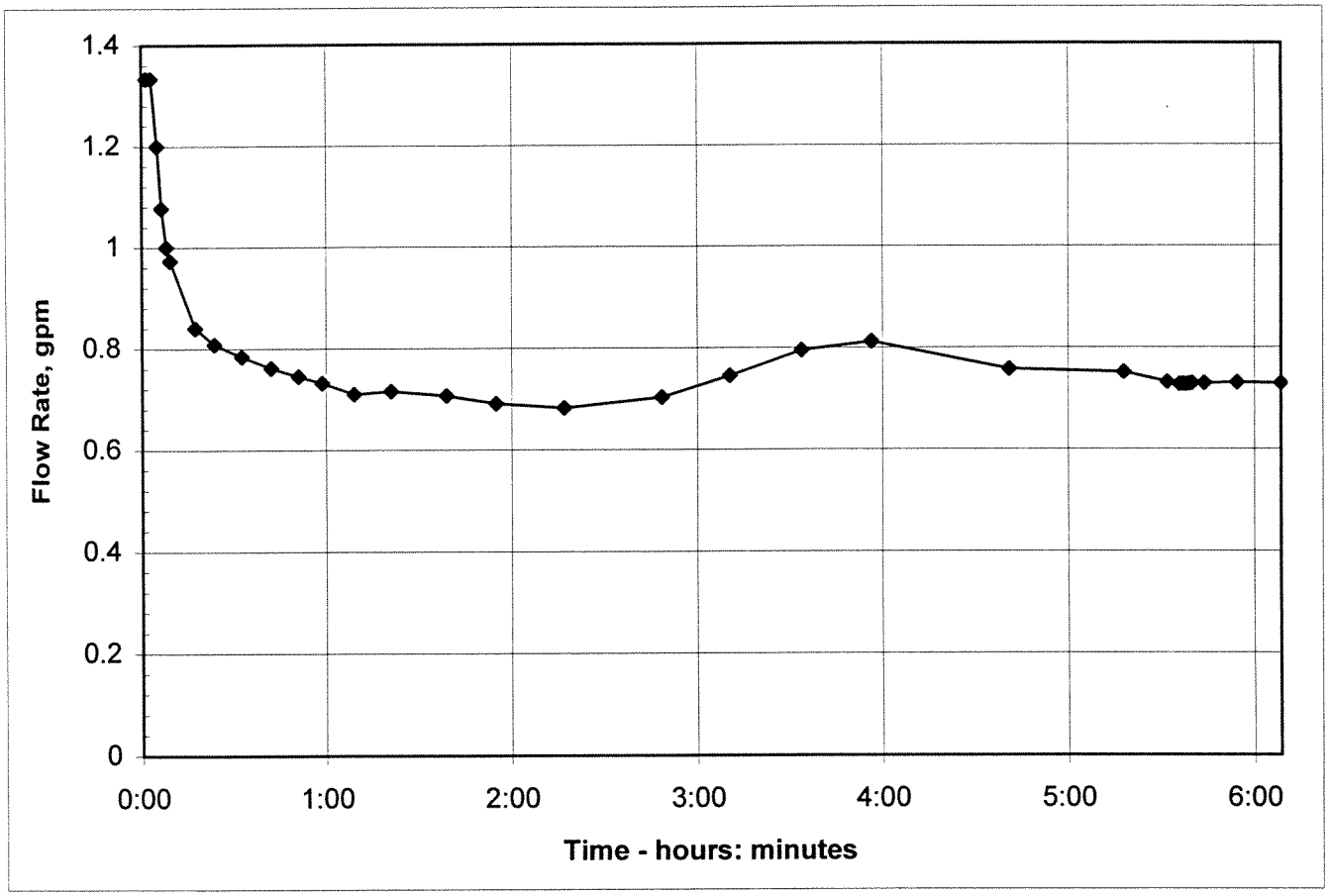


Figure 5-5b-11B

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, San Antonio Drive

Log of Boring 5-5b-P-3

Sheet 1 of 1

Date(s) Drilled	2/19/03	Logged By	C. Goetz	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	2.3 meters
Drill Rig Type	CME 75	Drilling Contractor	Prosonic	Approximate Surface Elevation	31.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	See well construction on log	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	SAMPLES: Number	SAMPLES: Sampling Resistance, blows/0.30m	SAMPLES: Core Recovery, %	SAMPLES: Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Infiltration Test Well	REMARKS AND OTHER TESTS
30	0										
			1	6				Poorly graded sand with silt (SP-SM) loose, brown to light brown, moist, fine grained sand	10		BENTONITE CHIPS SA: 13%<#200 NATIVE
			2	5							CASING
	1		3	7					8		SA: 7%<#200
			4	8				Poorly graded sand (SP) loose, light brown, moist, fine grained sand	5		SA: 1%<#200 (COARSE AQUARIUM SAND)
	2		5	10							
								Bottom of boring at 2.3 meters			
28	3										
	4										
26	5										
	6										
24	7										
	8										
22	9										

Figure 5-5b-12

5-5b-P-3-1

Clock	Accumulated Time	Tank Reading	Difference	Accumulated Flow	Flow Rate	Well Temp	Reservoir Temp
		(gallons)	(gallons)	(gallons)	(gpm)	(°F)	(°F)
8:11:00	0:00:00	54.0	0	0	0.000		
8:12:20	0:01:20	53.0	1	1	0.750	62.1	
8:14:00	0:03:00	52.5	0.5	1.5	0.500	62.1	
8:15:30	0:04:30	52.0	0.5	2	0.444	62.1	
8:17:15	0:06:15	51.0	1	3	0.480	61.7	
8:18:45	0:07:45	50.5	0.5	3.5	0.452	61.7	
8:20:15	0:09:15	50.0	0.5	4	0.432	61.7	
8:28:00	0:17:00	46.5	3.5	7.5	0.441	61.5	
8:34:00	0:23:00	44.0	2.5	10	0.435	61.7	
8:43:30	0:32:30	40.5	3.5	13.5	0.415	61.2	
8:53:00	0:42:00	36.5	4	17.5	0.417	61.2	
9:02:00	0:51:00	33.5	3	20.5	0.402	61.2	
9:09:30	0:58:30	30.0	3.5	24	0.410		
9:18:15	1:07:15	25.5	4.5	28.5	0.424		
9:31:45	1:20:45	19.5	6	34.5	0.427		
9:50:00	1:39:00	13.0	6.5	41	0.414		
10:03:30	1:52:30	8.0	5	46	0.409		
10:05:30	1:54:30	59.0		46	0.402		
10:26:00	2:15:00	46.0	13	59	0.437		
10:34:00	2:23:00	42.0	4	63	0.441		
11:02:00	2:51:00	10.5	31.5	94.5	0.553	62.8	
11:03:30	2:52:30	58.0		94.5	0.548	62.6	
11:42:00	3:31:00	12.0	46	140.5	0.666		
11:44:30	3:33:30	60.0		140.5	0.658	63.3	
12:10:45	3:59:45	22.0	38	178.5	0.745	63.3	
12:22:00	4:11:00	8.5	13.5	192	0.765	63.1	
12:23:15	4:12:15	55.0		192	0.761	63	
12:53:15	4:42:15	23.0	32	224	0.794		
13:09:00	4:58:00	8.0	15	239	0.802	62.3	
13:11:15	5:00:15	60.0		239	0.796	62.4	
13:32:30	5:21:30	34.0	26	265	0.824	62.2	
13:44:15	5:33:15	22.5	11.5	276.5	0.830	62.2	
13:57:00	5:46:00	10.0	12.5	289	0.835		
13:58:45	5:47:45	58.5		289	0.831	61.5	
14:22:00	6:11:00	35.5	23	312	0.841		

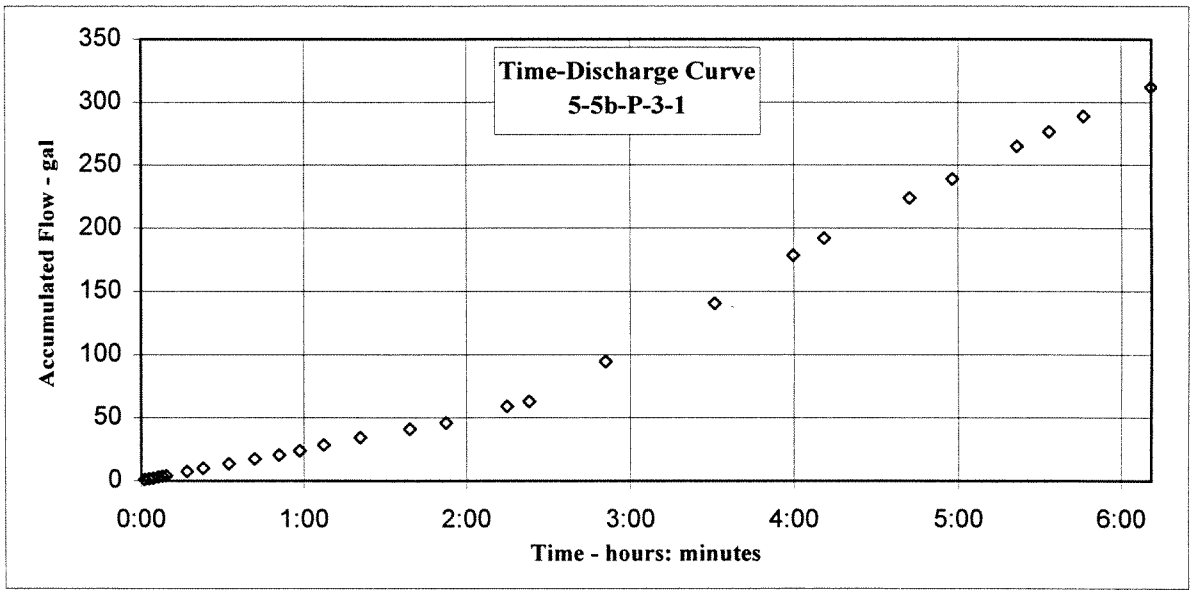


Figure 5-5b-13A

Calculation of Test Condition

Float depth =	3.4 ft	1.04 meters
Borehole depth =	7.5 ft	2.29 meters
Height of water in test well, h =	4.1 ft	1.25 meters
Depth of water table =	29 ft	8.84 meters
Depth to impervious layer =	13.5 ft	4.11 meters
Unsaturated distance between water table or impervious layer and surface of well water, Tu=	10.1 ft	3.08 meters

Based on the Test Data, Condition II is the most applicable

Calculation of equivalent radius of the well, r_w

mass of sand in borehole, m_s =	140 lbs	
density of sand in borehole, ρ_s =	102.93 lbs/cu ft	
r_w =	0.325 ft	3.90 inches

Calculations for k_{20}

h =	4.1 ft	49.2 inches
Steady-state discharge rate, q =	1.016 gpm	234.7 cu.in./min
Average well water temperature, T =	62.39 °F	16.88 °C
Kinematic viscosity ratio, V =	1.0776 no units	
Condition II - k20 =	0.0427 in/min	2.5600 in/hr
Condition I - k20 =	0.0383 in/min	2.3002 in/hr

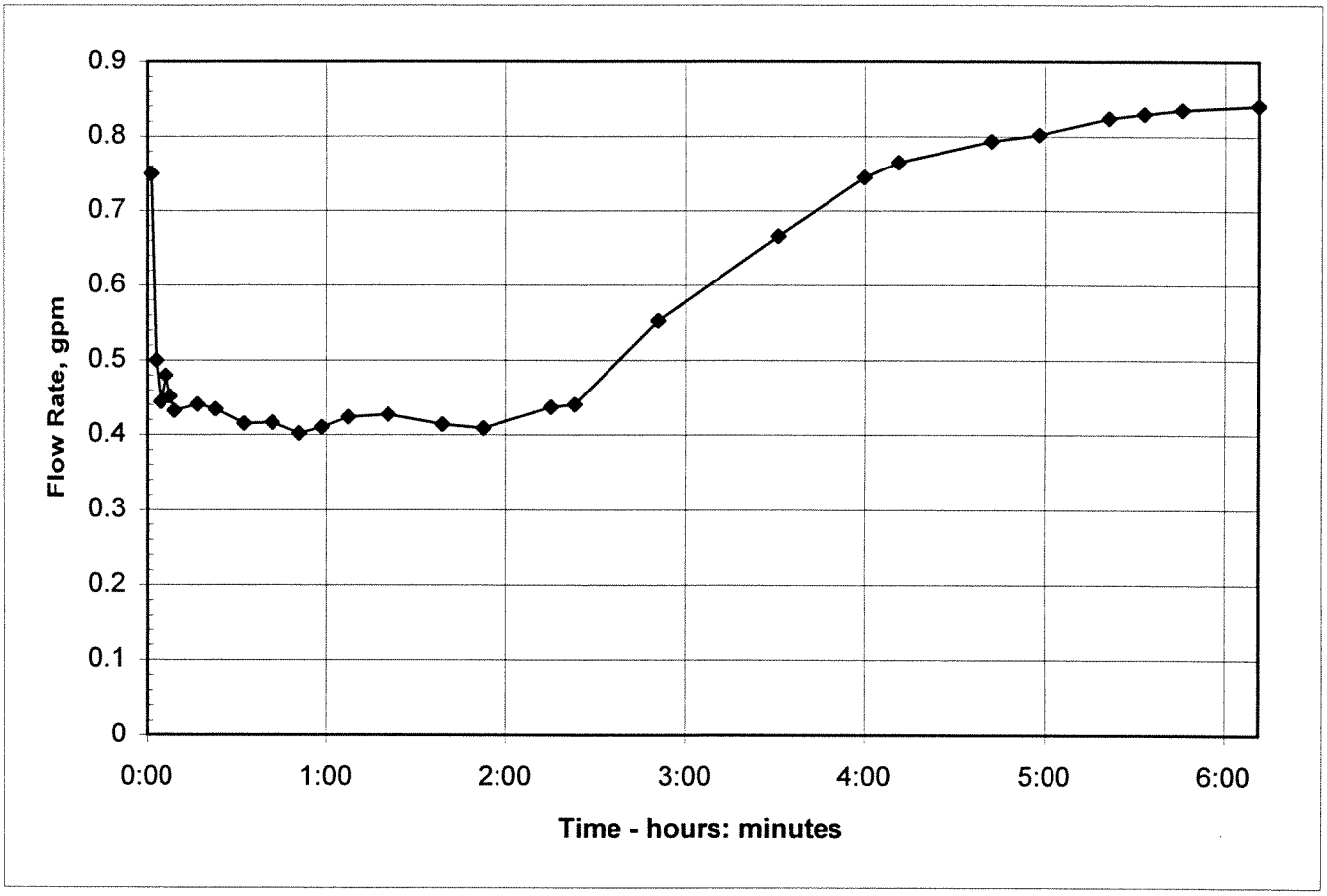


Figure 5-5b-13B

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, San Antonio Drive

Log of Boring 5-5b-P-4

Sheet 1 of 1

Date(s) Drilled	2/19/03	Logged By	C. Goetz	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	1.4 meters
Drill Rig Type	CME 75	Drilling Contractor	Prosonic	Approximate Surface Elevation	31.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	See well construction on log	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	Number	Sampling Resistance, blows/0.30m	Core Recovery, %	Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Infiltration Test Well	REMARKS AND OTHER TESTS
	0										
			1	7				Silty sand (SM) loose, brown, moist, fine grained sand, with some woody and rocky fragments in upper 0.3m	11		BENTONITE CHIPS SA: 28%<#200 CASING
			2	4				Becomes very loose	10		SA: 28%<#200
30	1		3	2							(COARSE AQUARIUM SAND)
								Bottom of boring at 1.37 meters			
	2										
28	3										
	4										
26	5										
	6										
24	7										
	8										
22	9										

Figure 5-5b-14

5-5b-P-4-1

Clock	Accumulated Time	Tank Reading (gallons)	Difference (gallons)	Accumulated Flow (gallons)	Flow Rate (gpm)	Well Temp (°F)	Reservoir Temp (°F)
8:25:00	0:00:00	59.0	0	0	0.000		
8:25:30	0:00:30	58.5	0.5	0.5	1.000		
8:26:00	0:01:00	58.0	0.5	1	1.000		
8:26:30	0:01:30	58.0	0	1	0.667		
8:27:00	0:02:00	57.5	0.5	1.5	0.750		
8:27:30	0:02:30	57.0	0.5	2	0.800		
8:28:00	0:03:00	57.0	0	2	0.667		
8:30:30	0:05:30	56.0	1	3	0.545		
8:33:00	0:08:00	54.5	1.5	4.5	0.562	61.7	62.2
8:35:00	0:10:00	53.8	0.75	5.25	0.525		
8:37:00	0:12:00	53.0	0.75	6	0.500		
8:41:00	0:16:00	52.0	1	7	0.437	61.2	62.1
8:46:00	0:21:00	51.0	1	8	0.381		
8:53:00	0:28:00	49.0	2	10	0.357		
8:59:00	0:34:00	47.8	1.25	11.25	0.331		
9:06:00	0:41:00	46.0	1.75	13	0.317	60.8	61.3
9:13:00	0:48:00	44.0	2	15	0.313		
9:21:00	0:56:00	40.0	4	19	0.339		
9:32:00	1:07:00	35.8	4.25	23.25	0.347		
9:51:00	1:26:00	29.0	6.75	30	0.349		
10:09:00	1:44:00	26.0	3	33	0.317		
10:30:00	2:05:00	21.8	4.25	37.25	0.298		
10:54:00	2:29:00	18.0	3.75	41	0.275		
11:29:30	3:04:30	14.0	4	45	0.244	63.1	64
11:31:00	3:06:00	59.0		45	0.242		
11:57:00	3:32:00	51.5	7.5	52.5	0.248		
12:29:00	4:04:00	46.0	5.5	58	0.238	63	70.9
13:03:00	4:38:00	40.5	5.5	63.5	0.228		
13:32:00	5:07:00	36.0	4.5	68	0.221	62.4	68.2
14:04:00	5:39:00	32.0	4	72	0.212	62.4	68.4
14:32:00	6:07:00	28.0	4	76	0.207	63.3	72

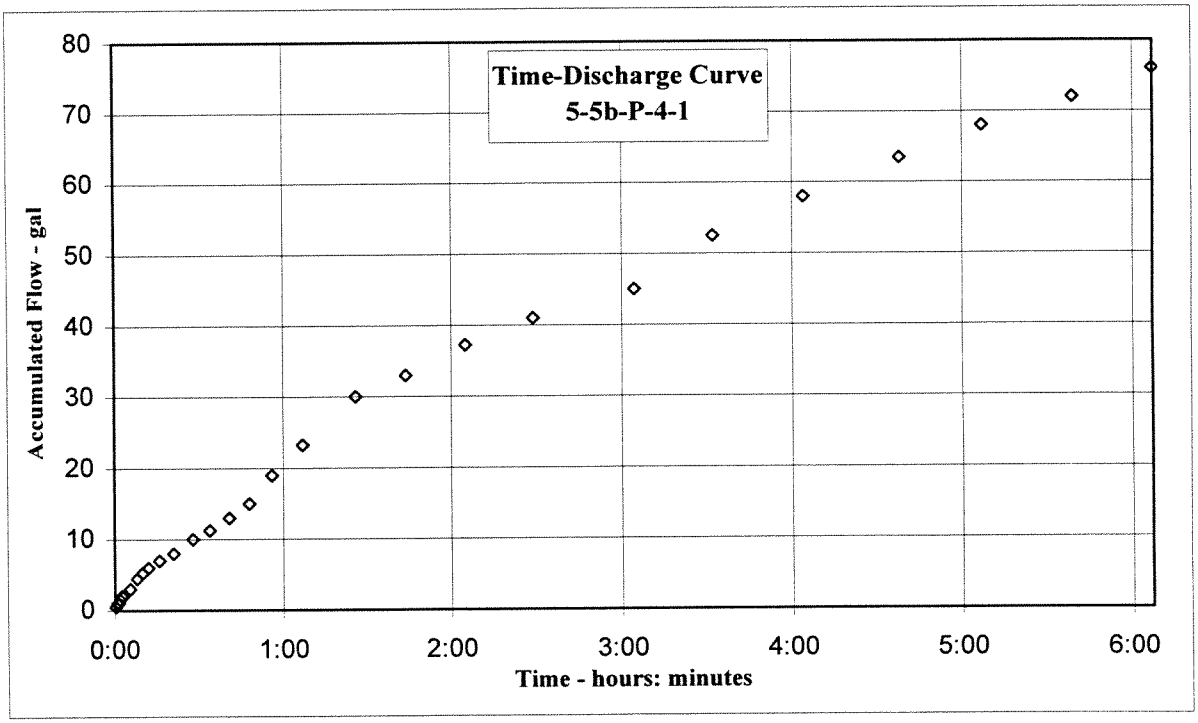


Figure 5-5b-15A

Calculation of Test Condition

Float depth =	0.5 ft	0.15 meters
Borehole depth =	4.5 ft	1.37 meters
Height of water in test well, h =	4 ft	1.22 meters
Depth of water table =	29 ft	8.84 meters
Depth to impervious layer =	13.5 ft	4.11 meters
Unsaturated distance between water table or impervious layer and surface of well water, Tu=	13 ft	3.96 meters

Based on the Test Data, Condition I is the most applicable

Calculation of equivalent radius of the well, r_w

mass of sand in borehole, m_s =	160 lbs	
density of sand in borehole, ρ_s =	100.37 lbs/cu ft	
r_w =	0.356 ft	4.27 inches

Calculations for k_{20}

h =	4 ft	48 inches
Steady-state discharge rate, q =	0.145 gpm	33.51 cu.in./min
Average well water temperature, T =	62.78 °F	17.10 °C
Kinematic viscosity ratio, V =	1.0712 no units	
Condition I - k20=	5.45E-03 in/min	0.3272 in/hr

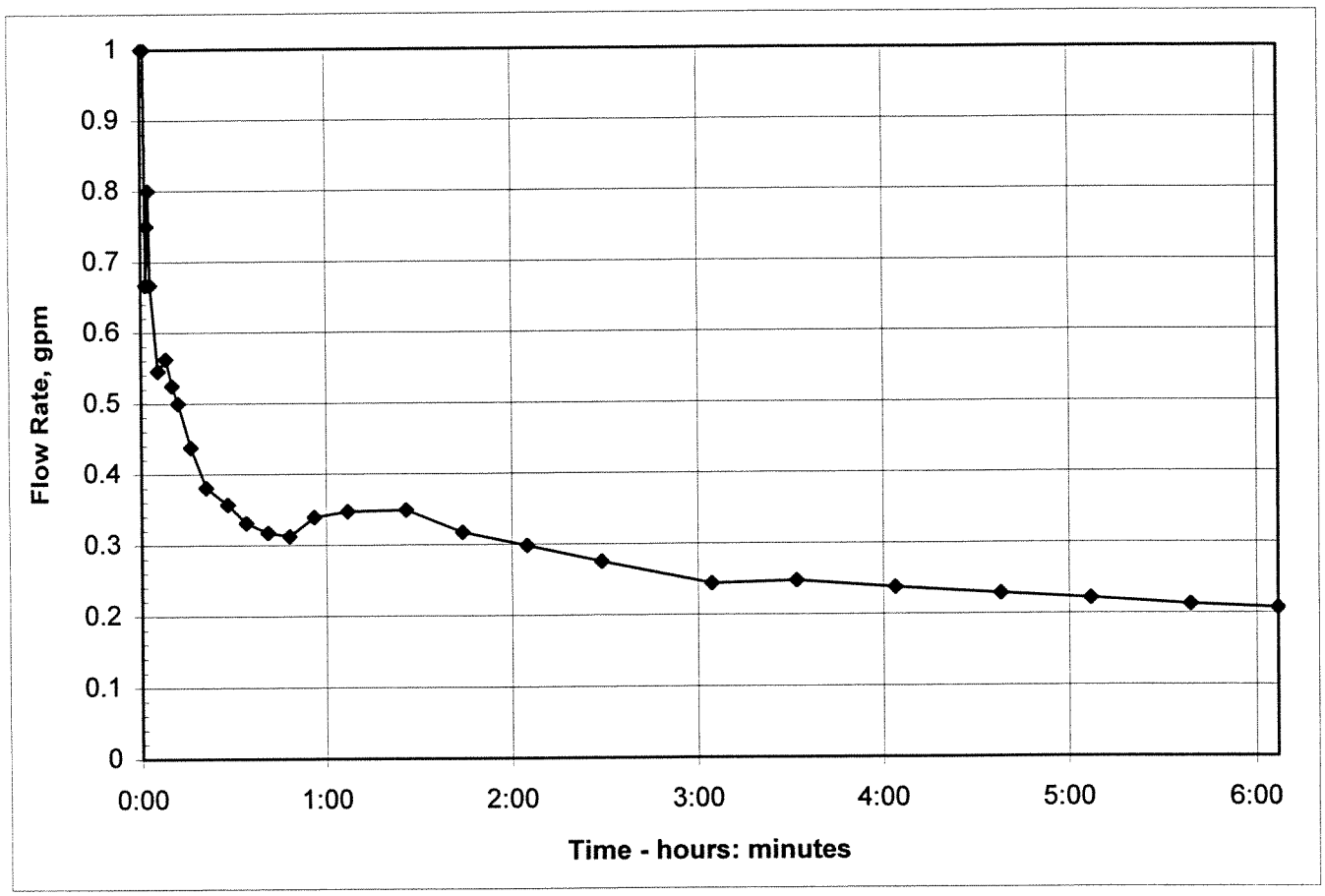
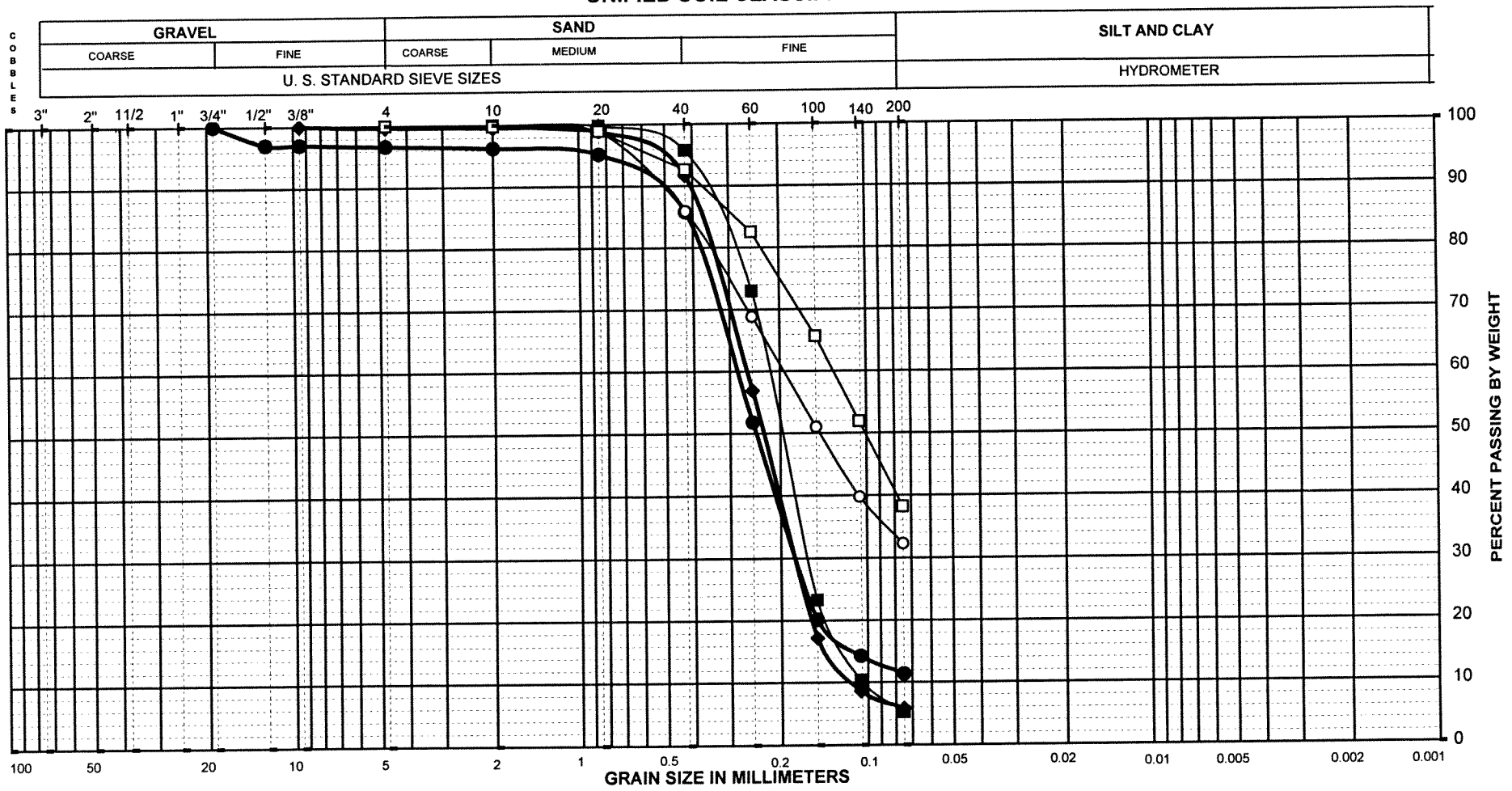


Figure 5-5b-15B

UNIFIED SOIL CLASSIFICATION

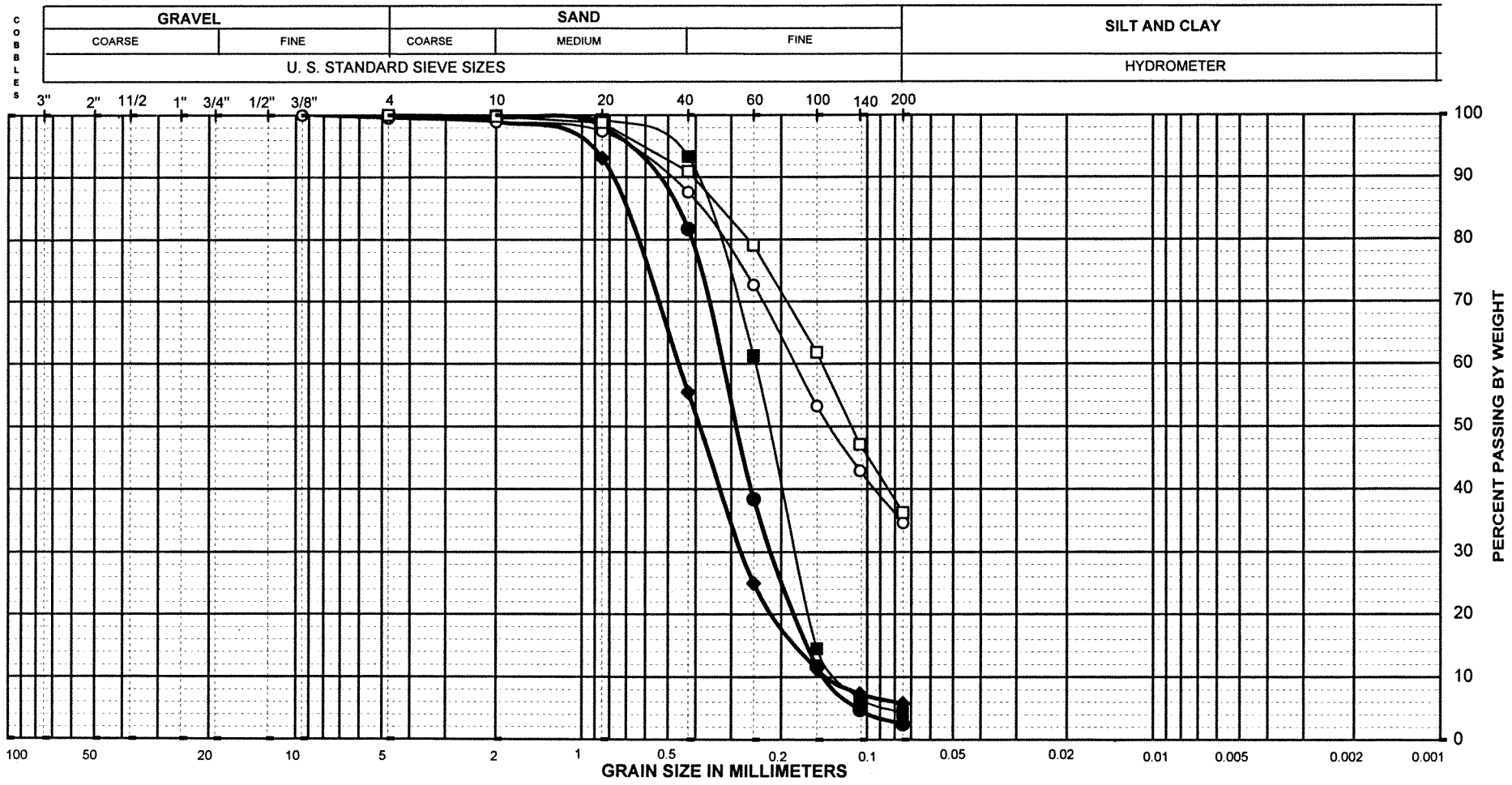


Exploration No.	Sample No.	Depth (m)	SYMBOL	Wn (%)	LL	PI	% Clay	Description and Classification	D_{60}	D_{30}	D_{10}	C_u	C_c
5-5b-B-1	1	0.15	●	7.7				Brown poorly graded Sand with silt (SP-SM)	0.29	0.19	0.06	4.8	2.1
5-5b-B-1	3	1.07	◆					Brownish gray poorly graded Sand with silt (SP-SM)	0.28	0.19	0.12	2.3	1.1
5-5b-B-1	4	1.52	■	3.9				Gray poorly graded Sand with silt (SP-SM)	0.22	0.17	0.11	2.0	1.2
5-5b-B-2	1	0.15	○	12.6				Dark olive brown silty Sand (SM)					
5-5b-B-2	3	1.07	□	14.2				Olive brown silty Sand (SM)					

PARTICLE-SIZE DISTRIBUTION CURVES

Figure: 5-5b-16

UNIFIED SOIL CLASSIFICATION



Exploration No.	Sample No.	Depth (m)	SYMBOL	Wn (%)	LL	PI	% Clay	Description and Classification	D_{60}	D_{30}	D_{10}	C_u	C_c
5-5b-B-2	7	2.90	●	9.2				**Brownish gray poorly graded Sand (SP)**	0.32	0.22	0.16	2.0	0.9
5-5b-MW-1	8	3.35	◆	3.9				**Gray poorly graded Sand with silt (SP-SM)**	0.48	0.39	0.15	3.2	2.1
5-5b-MW-1	5	1.98	■	8.8				**Gray poorly graded Sand (SP)**	0.26	0.19	0.14	1.9	1.0
5-5b-P-1	1	0.00	○	15.2				**Dark brown silty Sand (SM)**					
5-5b-P-1	3	0.91	□	13.7				**Dark olive brown silty Sand (SM)**					

PROJECT NAME: Caltrans IFB Site Selection Study

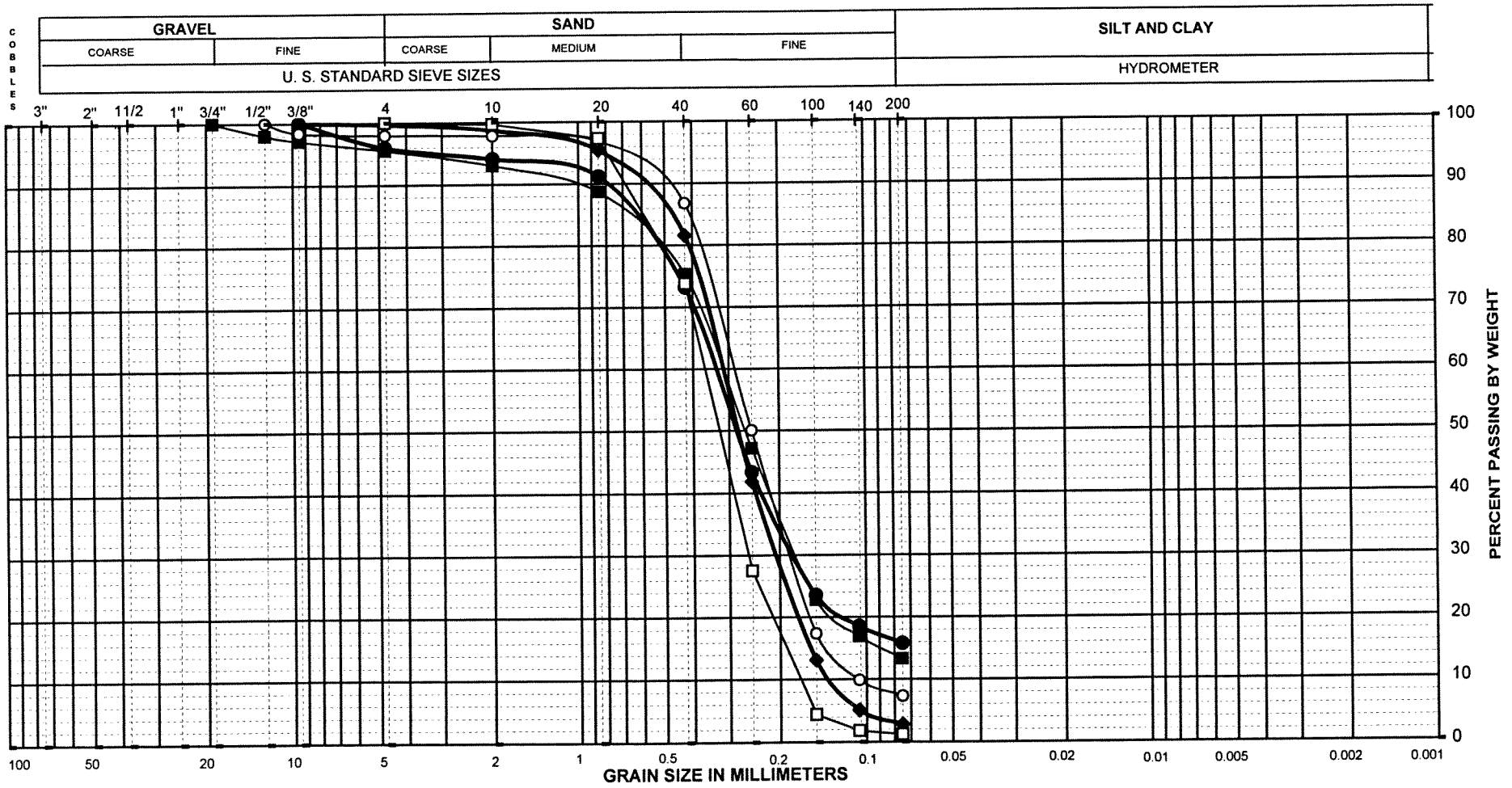
PARTICLE-SIZE DISTRIBUTION CURVES

Figure: 5-5b-17

(SNA) sieve only (01/2000)

Sieve 5-5b.xls

UNIFIED SOIL CLASSIFICATION



Exploration No.	Sample No.	Depth (m)	SYMBOL	Wn (%)	LL	PI	% Clay	Description and Classification	D_{60}	D_{30}	D_{10}	C_u	C_c
5-5b-P-2	2	0.46	●	9.2				Dark brown silty Sand with broken glass (SM), topsoil					
5-5b-P-2	5	1.83	◆	6.9				Brownish gray poorly graded Sand (SP)	0.31	0.21	0.15	2.1	0.9
5-5b-P-3	1	0.00	■	10.1				Dark olive brown silty Sand (SM)					
5-5b-P-3	3	0.91	○	7.5				Brownish gray poorly graded Sand with silt (SP-SM)	0.29	0.19	0.11	2.6	1.1
5-5b-P-3	4	1.37	□	5.4				Gray poorly graded Sand (SP)	0.37	0.27	0.18	2.1	1.1

PROJECT NAME: **Caltrans IFB Site Selection Study**

PARTICLE-SIZE DISTRIBUTION CURVES

Figure: 5-5b-18

UNIFIED SOIL CLASSIFICATION

Exploration No.	Sample No.	Depth (m)	SYMBOL	Wn (%)	LL	PI	% Clay	Description and Classification	D_{60}	D_{30}	D_{10}	C_u	C_c
5-5b-P-4	1	0.00	●	10.5				**Dark brown silty Sand (SM) topsoil**	0.37	0.27	0.18	2.1	1.1
5-5b-P-4	2	0.46	◆	10.2				**Dark olive brown silty Sand (SM)**					

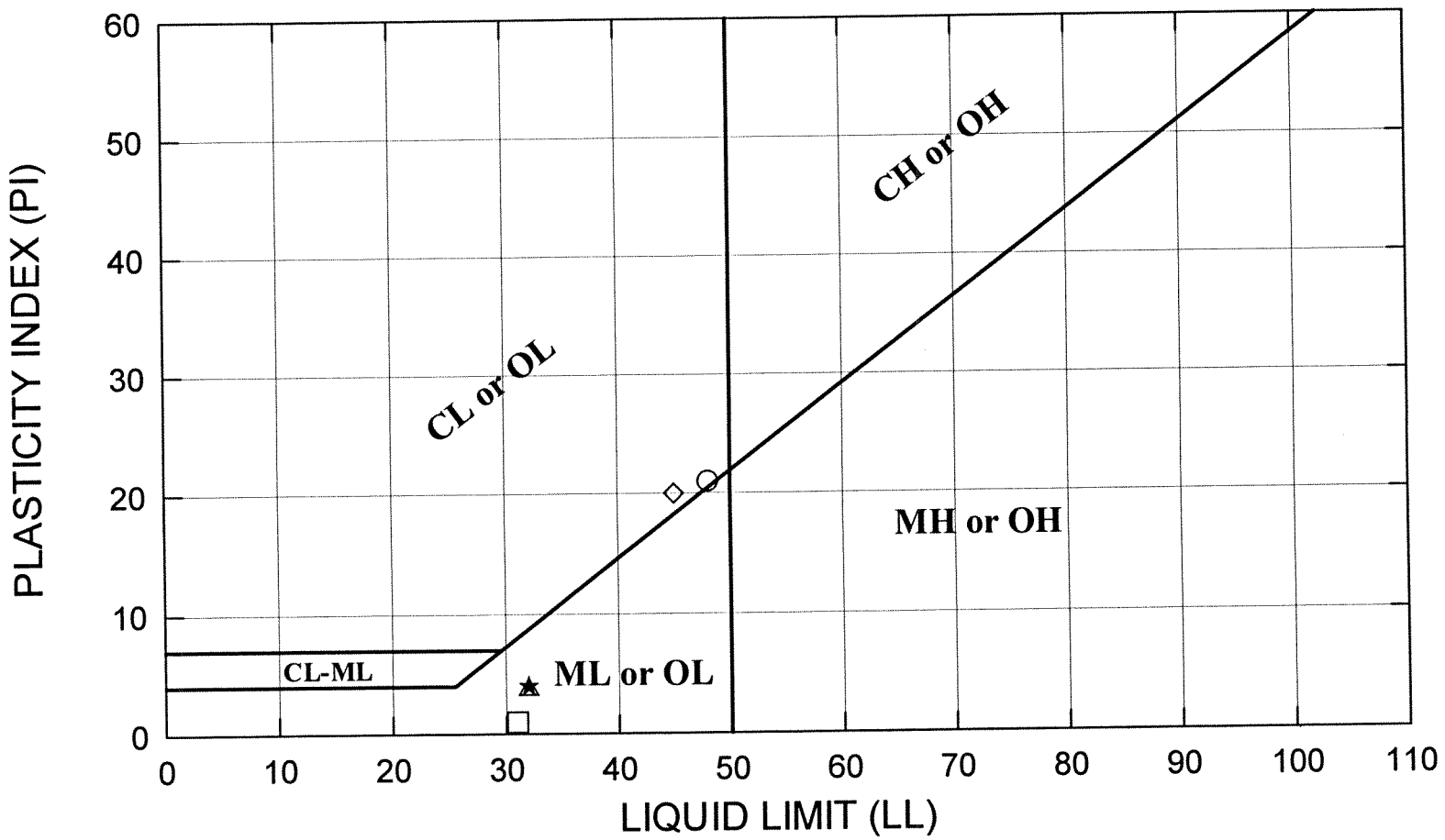
PROJECT NAME: Caltrans IFB Site Selection Study

PARTICLE-SIZE DISTRIBUTION CURVES

Figure: 5-5b-19

(SNA) sieve only (01/2000)

Sieve 5-5b.xls



LEGEND:

○ 5-5b-B-1@4.27m	◇ 5-5b-B-2@4.27m	★ 5-5b-MW-1@6.10m	● _____
□ 5-5b-B-2@1.52m	△ 5-5b-B-2@6.10m	▲ _____	× _____

PLASTICITY CHART

Date: April 2003	Project: Caltrans Infiltration Basin Project	Figure 5-5b-20

s.mikesmith.PiChart.PiMaster.GRF

Priority 6-5-5b (San Antonio Blvd.) Site Photograph

Date: April 2003	**Project: Caltrans IFB Site Selection Study**	Figure: 5-5b-21

APPENDIX G

5-7a (Florence Ave.)

Table 1	Geotechnical Laboratory Test Data
Figure 5-7a-1	Site Plan
Figure 5-7a-2	Geologic Cross Section A-A'
Figure 5-7a-3	Log of Boring 5-7a-MW-1
Figure 5-7a-4	Groundwater Monitoring Well 5-7a-MW-1 Diagram
Figure 5-7a-5	Groundwater Monitoring Well 5-7a-MW-1 Photographs
Figure 5-7a-6	Log of Boring 5-7a-B-1
Figure 5-7a-7	Log of Boring 5-7a-GP-1
Figure 5-7a-8	Log of Boring 5-7a-GP-2
Figure 5-7a-9	Log of Boring 5-7a-GP-3
Figure 5-7a-10	Log of Boring 5-7a-P-1
Figure 5-7a-11	Infiltration Data for 5-7a-P-1
Figure 5-7a-12	Log of Boring 5-7a-P-2
Figure 5-7a-13	Infiltration Data for 5-7a-P-2
Figure 5-7a-14	Log of Boring 5-7a-P-3
Figure 5-7a-15	Infiltration Data for 5-7a-P-3
Figure 5-7a-16	Log of Boring 5-7a-P-4
Figure 5-7a-17	Infiltration Data for 5-7a-P-4
Figure 5-7a-18	Particle-Size Distribution Curves
Figure 5-7a-19	Particle-Size Distribution Curves
Figure 5-7a-20	Plasticity Chart
Figure 5-7a-21	Site Photographs

TABLE 1

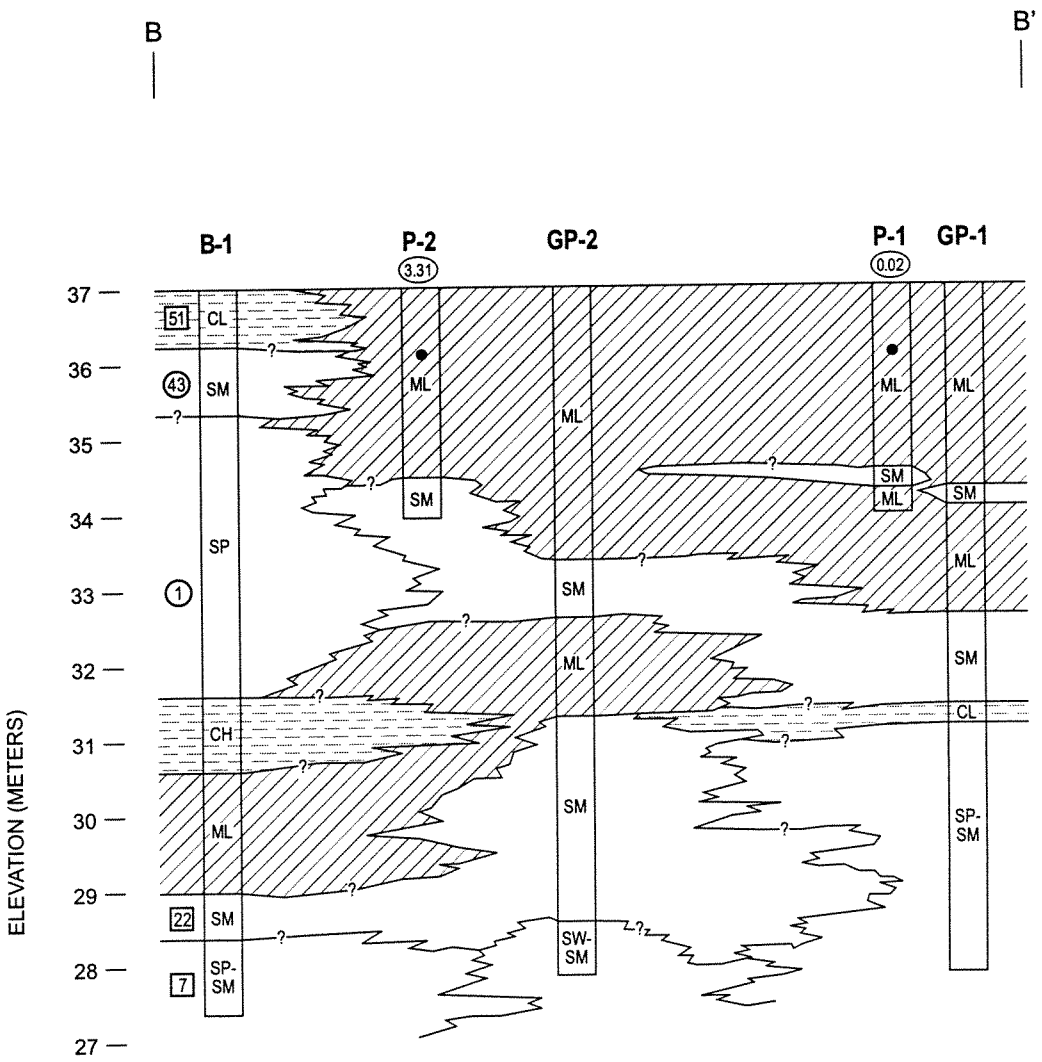
5-7a GEOTECHNICAL LABORATORY TEST DATA

Location		Depth (m)	Caltrans Soil Classification	Water Content (%)	Total Unit Weight (pcf)	Dry Unit Weight (pcf)	Atterberg Limits		Sieve				Chemical Test Data		
Exploration Number	Sample/ Specimen Number						Liquid Limit (%)	Plasticity Index (%)	Gravel (%)	Sand (%)	<#200 Fines (%)	5 microns (%)	pH	O.M.% (% organic matter)	CEC (me/g)[1]
5-7a-MW-1	1	0.30	CL	17.5	-	-	26	10	-	-	51	-	-	-	-
5-7a-MW-1	2	0.76	CL	-	-	-	-	-	-	-	-	-	7.9	2.7	0.138
5-7a-MW-1	4	1.68	SM	11.4	-	-	-	-	-	-	16	-	-	-	-
5-7a-MW-1	5	2.13	SP	6.0	-	-	-	-	0	98	2	-	-	-	-
5-7a-MW-1	10	4.42	SP	8.6	-	-	-	-	0	96	4	-	-	-	-
5-7a-MW-1	11	6.10	CH	-	-	-	85	39	-	-	-	-	-	-	-
5-7a-MW-1	12	7.62	SW-SM	4.0	-	-	-	-	3	92	5	-	-	-	-
5-7a-MW-1	13	9.15	SP-SM	2.7	-	-	-	-	-	-	6	-	-	-	-
5-7a-B-1	1	0.30	SM-CL	16.5	-	-	25	9	-	-	51	-	-	-	-
5-7a-B-1	3	1.22	SM	18.3	-	-	-	-	0	57	43	-	-	-	-
5-7a-B-1	4	1.68	SP	2.5	-	-	-	-	0	98	2	-	-	-	-
5-7a-B-1	9	3.96	SP	4.3	-	-	-	-	0	99	1	-	-	-	-
5-7a-B-1	10b	5.34	CH	-	-	-	64	33	-	-	-	-	-	-	-
5-7a-B-1	12b	7.93	SM	12.8	-	-	-	-	-	-	22	-	-	-	-
5-7a-B-1	13	9.15	SP-SM	5.9	-	-	-	-	-	-	7	-	-	-	-

Notes: [1] Cation excange capacity, millequivalents per gram

Priority 6-5-7a (Florence Ave.) Site Plan

April 2003	Infiltration Basin Site Selection Study	Figure 5-7a-1



Note: Groundwater Not Observed

HORIZONTAL SCALE:
1 cm = 5 meters

VERTICAL SCALE:
1 cm = 1 meter

- Water Level Observed During Drilling
- Groundwater Elevation Feb. 2003
- Float Valve Location
  Top of Hydraulic Conductivity Test Section
- (0.52) In-hole Hydraulic Conductivity Test Value (inches/hour)
- (46) Hydrometer Test, % Passing #200 Sieve
- (72) Sieve Analysis, % Passing #200 Sieve
- [32] Wash Analysis, % Passing #200 Sieve
- Clays and Clays w/Silt
- Silt

PRIORITY 6 – SITE 5-7a GEOLOGIC CROSS SECTION B-B'

Date: APRIL 2003	Project: INFILTRATION BASIN SITE SELECTION STUDY	Figure 5-7a-2

L:/CALTRANS/C GOETZ/xsect 5-7a.FH10

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Florence Avenue

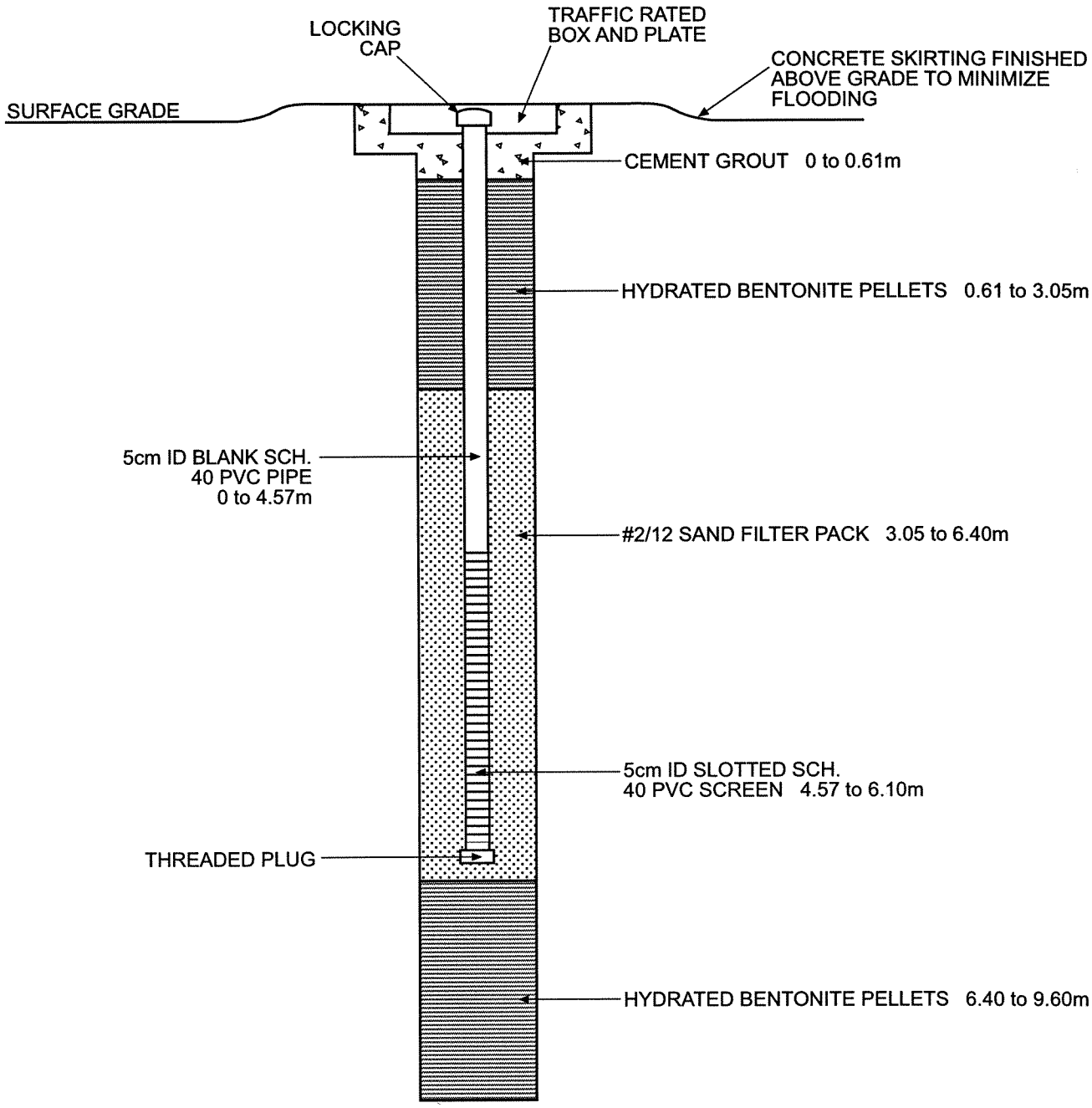
Log of Boring 5-7a-MW-1

Sheet 1 of 1

Date(s) Drilled	2/21/03	Logged By	P. Salter	Checked By	C. Goetz
Drilling Method	Hollow-stem Auger	Drill Bit Size/Type	63.5mm O.D.	Total Depth of Borehole	9.6 meters
Drill Rig Type	CME 75	Drilling Contractor	Prosonic	Approximate Surface Elevation	37.0 m MSL
Groundwater Level(s)	Dry on completion of drilling. 18 feet bgs on 2/21/03	Sampling Method(s)	SPT/ModifiedCalifornia	Hammer Data	63.5 lb. / 762mm drop
Borehole Backfill	See Well Construction on log	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES Type	Number	Sampling Resistance, blows/0.30m	Core Recovery, %	Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Infiltration Test Well	REMARKS AND OTHER TESTS
	0							Lean Sandy clay (CL) soft, dark brown, moist	18		CEMENT WA:51%<#200 LL=26; PI=10 CASING pH=7.9, OM=2.7% CEC=0.138 me/g BENTONITE CHIPS
36	1		1 2 3	2 4 3							
	2		4 5	8 12				Silty sand (SM) medium dense, brown, moist, poorly graded, fine to medium grained sand (SP) medium dense, light grayish brown, moist, poorly graded, fine to medium grained,	11 6		WA:16%<#200 SA:2%<#200
34	3		6 7	16 11				Becomes medium sand, coarsening downward			#2/12 FILTER SAND
	4		8 9	14 14				Becomes medium to coarse sand Becomes loose, some iron staining			
32	5		10	9					9		SA:4%<#200 SLOTTED SCREEN
	6		11	5				Sandy fat clay (CH) medium stiff, dark gray, moist, fine grained			LL=85; PI=39
30	7							sand with silt (SW-SM) dense, light grayish brown, moist,well graded, fine to coarse grained			BENTONITE CHIPS
	8		12	28					4		SA:5%<#200
28	9		13	32				sand with silt (SP-SM) dense, light grayish brown, moist, poorly graded, fine to medium grained,	3		1316 End drilling 1317 Hole dry WA:6%<#200
	10							Bottom of boring at 9.6 meters			

Figure 5-7a-3



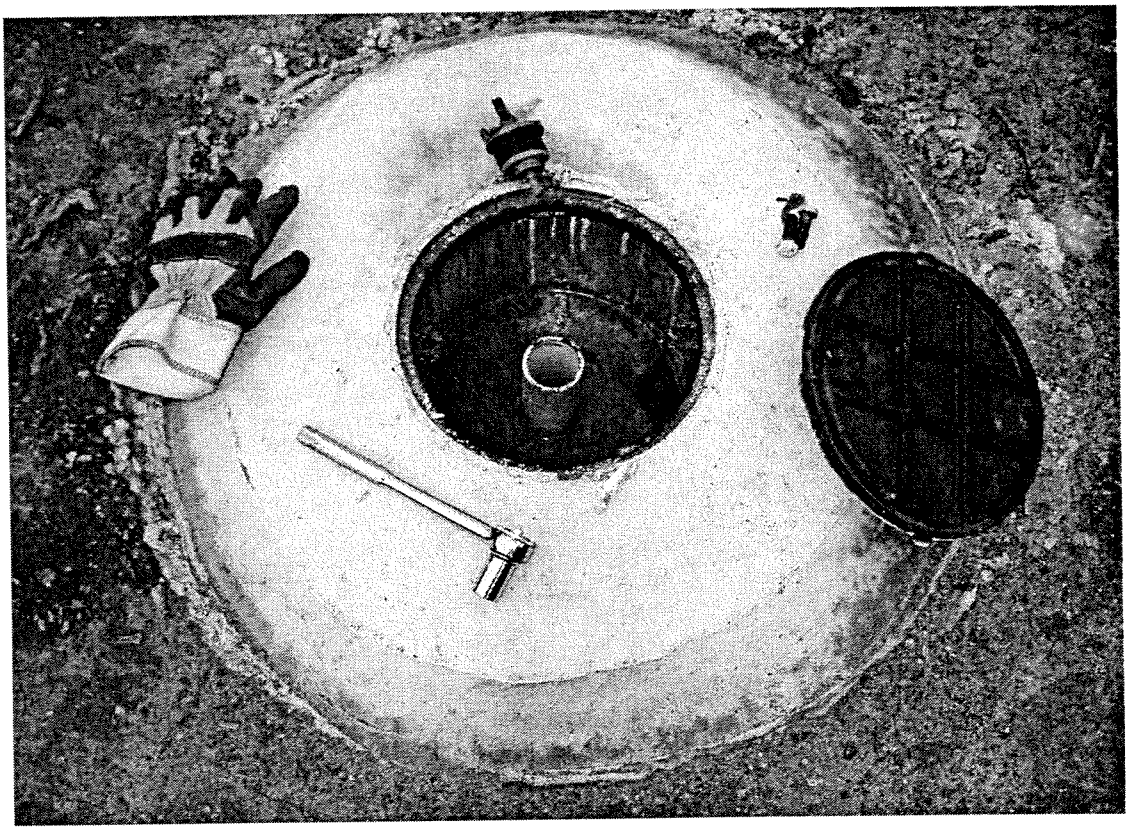
5-7a-MW-1

Not to Scale

GROUNDWATER MONITORING WELL DIAGRAM

Date: APRIL 2003	Project: INFILTRATION BASIN SITE SELECTION STUDY	Figure 5-7a-4

L:/caltrans/GW monitoring well diag. fh10 5/03



5-7a-MW-1

Date: April 2003	**Project: Caltrans IFB Site Selection Study**	Figure: 5-7a-5

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Florence Avenue

Log of Boring 5-7a-B-1

Sheet 1 of 1

Date(s) Drilled	2/21/03	Logged By	P. Salter	Checked By	C. Goetz
Drilling Method	Hollow-stem Auger	Drill Bit Size/Type	63.5mm O.D.	Total Depth of Borehole	9.6 meters
Drill Rig Type	CME 75	Drilling Contractor	Prosonic	Approximate Surface Elevation	37.0 m MSL
Groundwater Level(s)	Perched groundwater 17 feet bgs	Sampling Method(s)	SPT/ModifiedCalifornia	Hammer Data	63.5 lb. / 762mm drop
Borehole Backfill	See Well Construction on log	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	Number	Sampling Resistance, blows/0.30m	Core Recovery, %	Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	PID, ppm	REMARKS AND OTHER TESTS
	0							Topsoil			
			1	5				Silty sand to Sandy clay (SM-CL) Loose, dark brown, moist, fine to medium sand, organics	17		WA:51%<#200 LL=25; PI=9
36	1		2	3				Silty sand (SM) very loose, brown, moist, fine to medium sand			
			3	4					18		SA:43%<#200
	2		4	12				sand (SP) medium dense, light grayish brown, moist, poorly graded, fine to medium sand	3		SA:2%<#200
			5	20							
			6	17							
34	3		7	16				Becomes medium to coarse sand			
			8	13							
	4		9	13					4		SA:1%<#200
32	5							Becomes wet, iron staining			
			10b 10a	4				Fat clay (CH) soft, dark gray, organic			LL=64; PI=33
	6		11	8				Clayey, sandy silt (ML) medium stiff, dark gray, moist			
30	7										
			12b 12a	31				Silty sand (SM) dense, gray, moist, fine to medium sand	13		WA:22%<#200
	8							sand with silt (SP-SM) dense, gray, moist, poorly graded, medium to coarse sand			
28	9		13	42					6		WA:7%<#200
	10							Bottom of Boring at 9.6 meters			

Figure 5-7a-6

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Florence Avenue

Log of Boring 5-7a-GP-1

Sheet 1 of 1

Date(s) Drilled	2/26/03	Logged By	M. Siem	Checked By	C. Goetz
Drilling Method	Geoprobe	Drill Bit Size/Type	63.5mm O.D.	Total Depth of Borehole	9.1 meters
Drill Rig Type	Geoprobe 6600	Drilling Contractor	Prosonic	Approximate Surface Elevation	37.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	Direct push	Hammer Data	N/A
Borehole Backfill	Soil Cuttings	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	SAMPLES: Number	SAMPLES: Sampling Resistance, blows/0.30m	SAMPLES: Core Recovery, %	SAMPLES: Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	PID, ppm	REMARKS AND OTHER TESTS
	0							Topsoil/Silt with sand (ML) dark brown to black, wet to moist, with wood chips and pine needles			Hand Auger to 1.5 meter
			1		88			Silt with sand (ML) greenish gray, moist, fine grained sand			
36	1							Silty sand (SM) greenish gray, moist, fine grained sand			
								Silt (ML) greenish gray, moist			
	2		2		80			Increasing sand (silt with sand) silt lense			
34	3							Silty sand (SM) greenish gray, moist, fine grained sand			Mixed/slough at top of tube
			3		100			Silt (ML) greenish brown, moist Increasing sand (borderline silty sand)			
	4							Clay lense (CL) dark greenish-gray, moist			
32	5		4		74			Silty sand (SM) greenish brown, moist, fine grained sand Becomes orange-stained (oxidized)			
	6							Lean clay (CL) dark greenish-gray with brown mottling at base, moist Silty sand to poorly graded sand with silt (SM/SP-SM) light gray with orange mottling, moist, fine grained sand Poorly graded sand with silt (SP-SM) light gray with orange mottling, moist, fine grained sand			
30	7		5		90			Decreasing percentage of orange staining Becomes fine to medium grained sand			
	8		6		80						
28	9							Fine to coarse grained gravel in shoe Bottom of boring at 9.1 meters			
	10										

Figure 5-7a-7

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Florence Avenue

Log of Boring 5-7a-GP-2

Sheet 1 of 1

Date(s) Drilled	2/26/03	Logged By	M. Siem	Checked By	C. Goetz
Drilling Method	Geoprobe	Drill Bit Size/Type	63.5mm O.D.	Total Depth of Borehole	9.1 meters
Drill Rig Type	Geoprobe 6600	Drilling Contractor	Prosonic	Approximate Surface Elevation	37.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	Direct Push	Hammer Data	N/A
Borehole Backfill	Soil Cuttings	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	Number	Sampling Resistance, blows/0.30m	Core Recovery, %	Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	PID, ppm	REMARKS AND OTHER TESTS
	0							Topsoil			
			1		90			Silt with sand (ML) dark greenish gray, moist, fine grained sand			
36	1							← Becomes light greenish gray			
								← Black organic layer			Wet slough at top of run
	2		2		82			Gradational contact			
34	3							Silty sand (SM) light greenish gray with minor yellow staining, moist, fine grained sand ← Possible silt layer - most likely slough			
			3		82			← Strong iron-oxide staining, rust- orange/yellow			
	4							Silt with sand (ML) dark gray to black, moist, fine grained sand, organic-rich, with roots			
32	5		4		100			← Black organic-rich layer			
	6							Silty sand (SM) light greenish brown/gray, mottled with orange iron-oxide staining, moist, fine to medium grained sand			
					82			Poorly graded sand with silt (SP-SM) light gray with orange iron-oxide staining, moist, fine to medium grained sand, with trace coarse grained sand to fine grained gravel			
30	7		5								
	8				80						
			6					Well-graded sand with silt (SW-SM) gray, moist, fine to coarse grained sand			
28	9							← Silt lense			
								Bottom of boring at 9.1 meters			

Figure 5-7a-8

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Florence Avenue

Log of Boring 5-7a-GP-3

Sheet 1 of 1

Date(s) Drilled	2/26/03	Logged By	M. Siem	Checked By	C. Goetz
Drilling Method	Geoprobe	Drill Bit Size/Type	63.5mm O.D.	Total Depth of Borehole	4.6 meters
Drill Rig Type	Geoprobe 6600	Drilling Contractor	Prosonic	Approximate Surface Elevation	37.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	Direct Push	Hammer Data	N/A
Borehole Backfill	Soil Cuttings	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	SAMPLES: Number	SAMPLES: Sampling Resistance, blows/0.30m	SAMPLES: Core Recovery, %	SAMPLES: Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	PID, ppm	REMARKS AND OTHER TESTS
	0							Topsoil - Silt (ML) black			
			1		80			Silt (ML) greenish gray, moist			
36	1										
	2		2		100			Silt with sand			
34	3							Silt			
			3		94						
	4							Silty sand (SM) light gray with orange iron-oxide staining, moist, fine grained sand			
								Silt (ML) greenish gray, moist			
								Bottom of boring at 4.6 meters			
32	5										
	6										
30	7										
	8										
28	9										

Figure 5-7a-9

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Florence Avenue

Log of Boring 5-7a-P-1

Sheet 1 of 1

Date(s) Drilled	2/26/03	Logged By	M. Siem	Checked By	C. Goetz
Drilling Method	Geoprobe	Drill Bit Size/Type	63.5mm O.D.	Total Depth of Borehole	3.0 meters
Drill Rig Type	Geoprobe 6600	Drilling Contractor	Prosonic	Approximate Surface Elevation	37.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	Direct Push	Hammer Data	N/A
Borehole Backfill	See Well Construction on log	Location	See Site Plan		

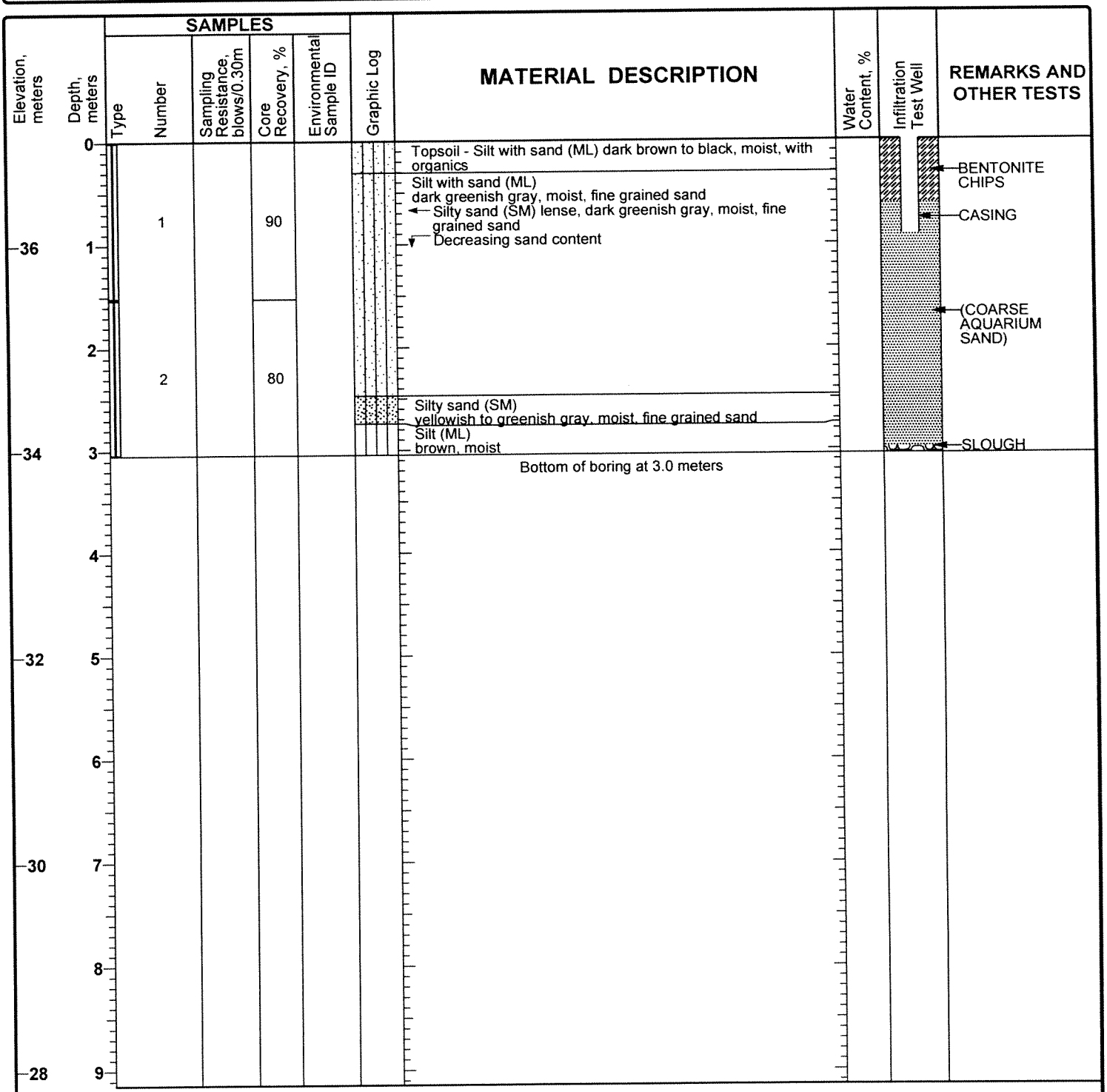


Figure 5-7a-10

5-7a-P-1-1

Clock	Accumulated Time	Tank Reading (gallons)	Difference (gallons)	Accumulated Flow (gallons)	Flow Rate (gpm)	Well Temp (°F)	Reservoir Temp (°F)
8:20:00	0:00:00	66.0	0	0	0.000		
8:21:00	0:01:00	56.0	10	10	10.000	63.5	
8:22:00	0:02:00	53.0	3	13	6.500	63.1	
8:23:00	0:03:00	51.0	2	15	5.000	63.1	
8:24:00	0:04:00	51.0	0	15	3.750	63.5	
8:25:00	0:05:00	51.0	0	15	3.000	63.3	
8:26:00	0:06:00	51.0	0	15	2.500	63.3	
8:27:00	0:07:00	51.0	0	15	2.143	63.1	
8:28:00	0:08:00	51.0	0	15	1.875	63.1	
8:29:00	0:09:00	51.0	0	15	1.667	63.1	
8:30:20	0:10:20	51.0	0	15	1.452	63.1	
8:35:20	0:15:20	50.5	0.5	15.5	1.011	63	
8:40:20	0:20:20	50.0	0.5	16	0.787	62.8	
8:45:20	0:25:20	50.0	0	16	0.632	62.8	
8:50:20	0:30:20	49.5	0.5	16.5	0.544	63	
8:55:20	0:35:20	49.0	0.5	17	0.481	63	
9:00:20	0:40:20	49.0	0	17	0.421	63	
9:15:00	0:55:00	48.0	1	18	0.327	63	
9:30:00	1:10:00	47.5	0.5	18.5	0.264	62.6	
9:45:00	1:25:00	47.0	0.5	19	0.224	62.6	
10:00:00	1:40:00	46.5	0.5	19.5	0.195	62.2	
10:30:00	2:10:00	46.0	0.5	20	0.154	61.2	
11:00:00	2:40:00	45.0	1	21	0.131	61.1	
11:30:00	3:10:00	44.0	1	22	0.116	62.1	
12:00:00	3:40:00	43.5	0.5	22.5	0.102	62.6	
12:30:00	4:10:00	43.0	0.5	23	0.092	62.6	
13:00:00	4:40:00	42.0	1	24	0.086	64.2	
13:30:00	5:10:00	41.5	0.5	24.5	0.079	64.2	
14:00:00	5:40:00	41.0	0.5	25	0.074	64.2	
14:30:00	6:10:00	40.0	1	26	0.070	64.2	

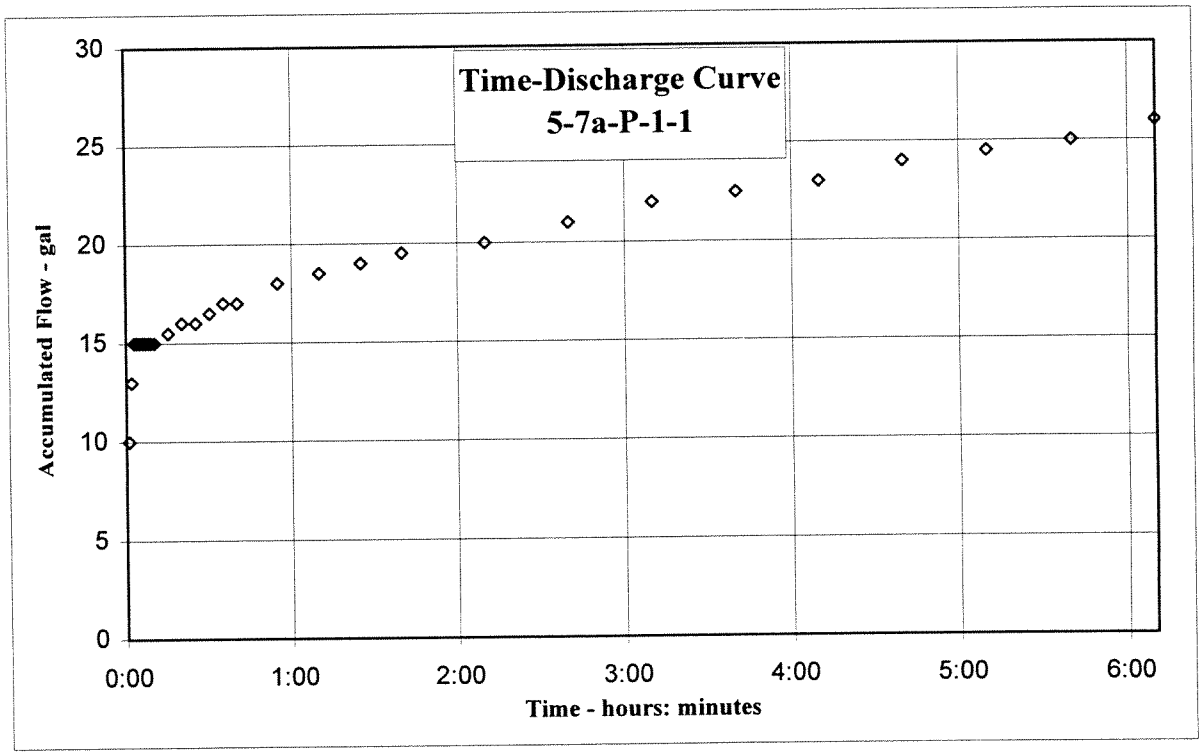


Figure 5-7a-11A

Calculation of Test Condition

Float depth =	3 ft	0.91 meters
Borehole depth =	9.8 ft	2.99 meters
Height of water in test well, h =	6.8 ft	2.07 meters
Depth of water table =	30 ft	9.14 meters
Depth to impervious layer =	9 ft	2.74 meters
Unsaturated distance between water table or impervious layer and surface of well water, Tu=	6 ft	1.83 meters

Based on the Test Data, Condition III is the most applicable

Calculation of equivalent radius of the well, r_w

mass of sand in borehole, m_s =	250 lbs	
density of sand in borehole, ρ_s =	103.53 lbs/cu ft	
r_w =	0.336 ft	4.03 inches

Calculations for k_{20}

h =	6.8 ft	81.6 inches
Steady-state discharge rate, q =	0.0226 gpm	5.23 cu.in./min
Average well water temperature, T =	63.15 °F	17.31 °C
Kinematic viscosity ratio, V =	1.0652 no units	
Condition III - k20	3.15E-04 in/min	0.0189 in/hr

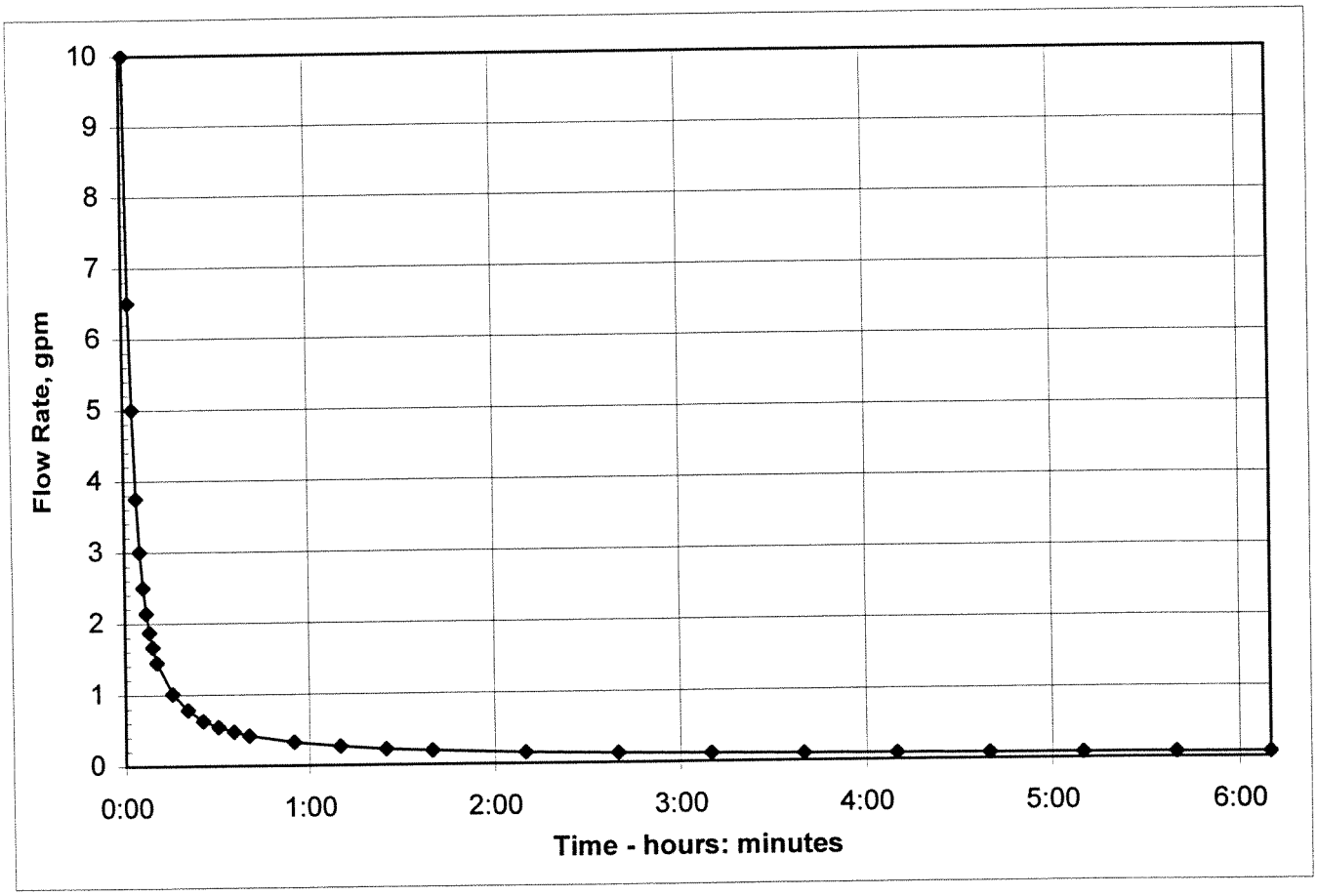


Figure 5-7a-11B

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Florence Avenue

Log of Boring 5-7a-P-2

Sheet 1 of 1

Date(s) Drilled	2/26/03	Logged By	M. Siem	Checked By	C. Goetz
Drilling Method	Geoprobe	Drill Bit Size/Type	63.5mm O.D.	Total Depth of Borehole	3.0 meters
Drill Rig Type	Geoprobe 6600	Drilling Contractor	Prosonic	Approximate Surface Elevation	37.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	Direct Push	Hammer Data	N/A
Borehole Backfill	See Well Construction on log	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	SAMPLES: Number	SAMPLES: Sampling Resistance, blows/0.30m	SAMPLES: Core Recovery, %	SAMPLES: Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Infiltration Test Well	REMARKS AND OTHER TESTS
	0							Topsoil - Sandy silt (ML) black, moist to wet, with organics			BENTONITE CHIPS
			1		100			Silt with sand (ML) greenish gray, moist, fine grained sand			CASING
36	1							Silt (ML) greenish gray, moist			
								Increasing sand content			(COARSE AQUARIUM SAND)
	2		2		82			Gradational contact			
34	3							Silty sand (SM) greenish gray with slight orange mottling, moist, fine grained sand			SLOUGH
								Bottom of boring at 3.0 meters Hole reamed to 2.99 meters with 203mm auger			
	4										
32	5										
	6										
30	7										
	8										
28	9										

Figure 5-7a-12

5-7a-P-2-1

Clock	Accumulated Time	Tank Reading (gallons)	Difference (gallons)	Accumulated Flow (gallons)	Flow Rate (gpm)	Well Temp (°F)	Reservoir Temp (°F)
8:11:00	0:00:00	55.0	0	0	0.000		
8:12:00	0:01:00	51.0	4	4	4.000		
8:13:00	0:02:00	48.0	3	7	3.500		
8:14:00	0:03:00	46.0	2	9	3.000		
8:15:00	0:04:00	45.0	1	10	2.500		
8:16:00	0:05:00	44.0	1	11	2.200		
8:17:00	0:06:00	43.0	1	12	2.000		
8:18:00	0:07:00	43.0	0	12	1.714		
8:19:00	0:08:00	42.5	0.5	12.5	1.563		
8:20:00	0:09:00	42.0	0.5	13	1.444		
8:25:45	0:14:45	38.5	3.5	16.5	1.119		
8:32:00	0:21:00	35.5	3	19.5	0.929		
8:41:45	0:30:45	30.0	5.5	25	0.813		
8:49:15	0:38:15	26.5	3.5	28.5	0.745		
8:54:45	0:43:45	23.5	3	31.5	0.720		
9:00:45	0:49:45	20.5	3	34.5	0.693		
9:07:45	0:56:45	17.0	3.5	38	0.670		
9:12:30	1:01:30	14.5	2.5	40.5	0.659		
9:13:45	1:02:45	61.0		40.5	0.645		
9:39:30	1:28:30	43.0	18	58.5	0.661		
10:07:15	1:56:15	28.0	15	73.5	0.632		
10:40:00	2:29:00	10.5	17.5	91	0.611	65	
10:41:30	2:30:30	59.0		91	0.605	65	
11:15:45	3:04:45	36.0	23	114	0.617	65	
11:50:30	3:39:30	15.0	21	135	0.615	70	
11:59:15	3:48:15	10.0	5	140	0.613		
12:00:30	3:49:30	58.0		140	0.610	69	
12:42:15	4:31:15	29.5	28.5	168.5	0.621	69	
13:13:30	5:02:30	9.5	20	188.5	0.623		
13:14:45	5:03:45	56.0		188.5	0.621	68	
13:37:15	5:26:15	40.0	16	204.5	0.627	68	
13:54:45	5:43:45	28.0	12	216.5	0.630	70	
14:13:00	6:02:00	15.5	12.5	229	0.633	70	

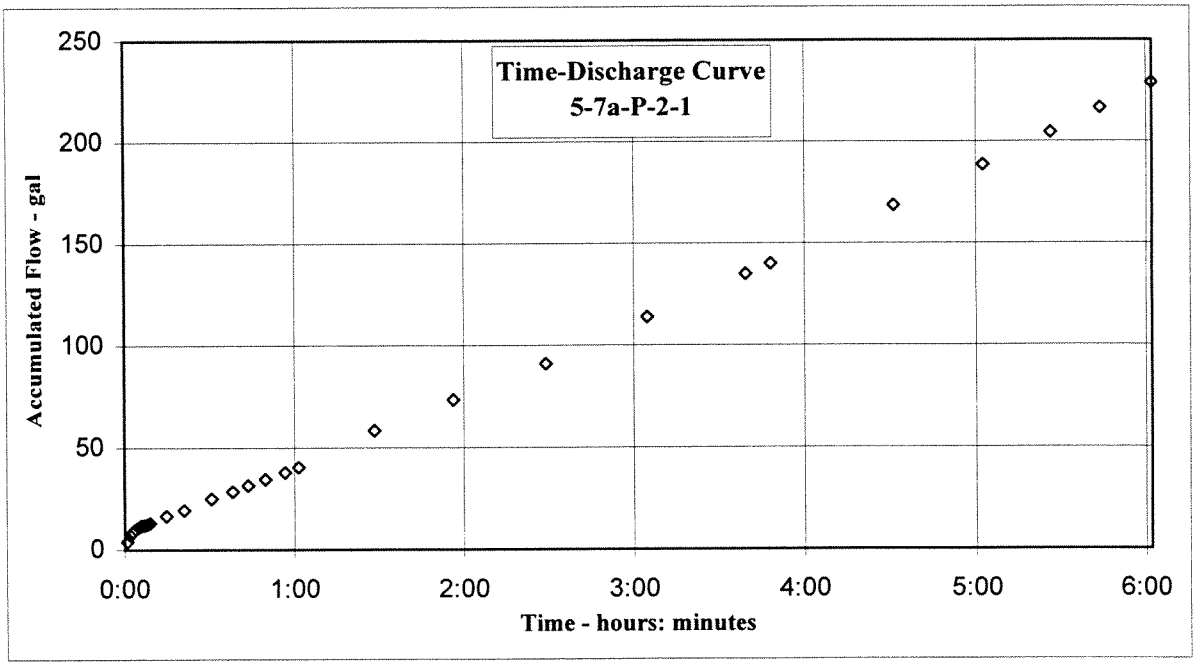


Figure 5-7a-13A

Calculation of Test Condition

Float depth =	2.3 ft	0.70 meters
Borehole depth =	9.8 ft	2.99 meters
Height of water in test well, h =	7.5 ft	2.29 meters
Depth of water table =	30 ft	9.14 meters
Depth to impervious layer =	14.4 ft	4.39 meters
Unsaturated distance between water table or impervious layer and surface of well water, Tu=	12.1 ft	3.69 meters

Based on the Test Data, Condition II is the most applicable

Calculation of equivalent radius of the well, r_w

mass of sand in borehole, m_s =	200 lbs	
density of sand in borehole, ρ_s =	103.26 lbs/cu ft	
r_w =	0.287 ft	3.44 inches

Calculations for k_{20}

h =	7.5 ft	90 inches
Steady-state discharge rate, q =	0.661 gpm	152.8 cu.in./min
Average well water temperature, T =	69.14 °F	20.63 °C
Kinematic viscosity ratio, V =	0.9746 no units	
Condition II - k20 =	0.0136 in/min	0.8133 in/hr
Condition I - k20 =	8.76E-03 in/min	0.5257 in/hr

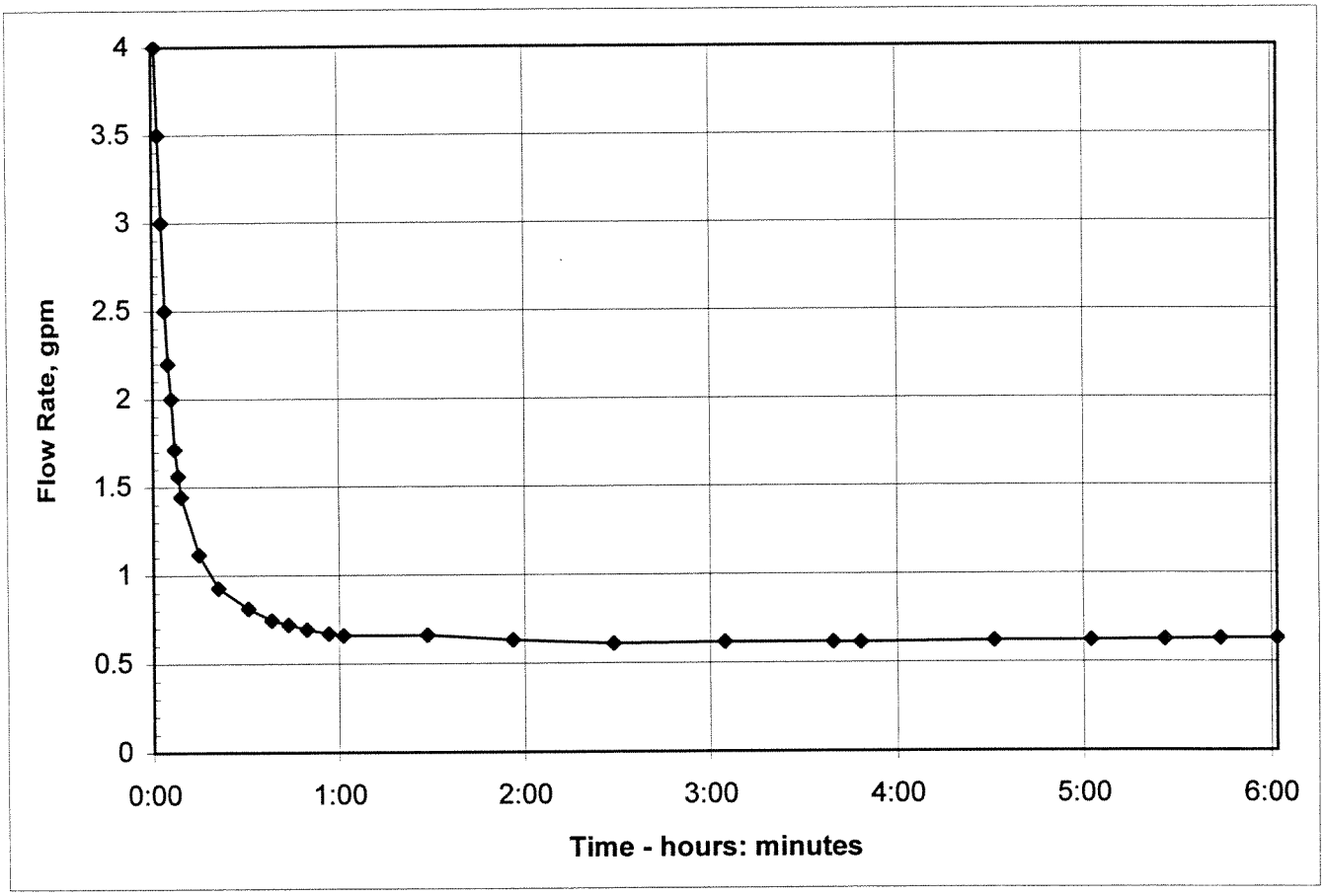


Figure 5-7a-13B

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Florence Avenue

Log of Boring 5-7a-P-3

Sheet 1 of 1

Date(s) Drilled	2/26/03	Logged By	M. Siem	Checked By	C. Goetz
Drilling Method	Geoprobe	Drill Bit Size/Type	63.5mm O.D.	Total Depth of Borehole	3.0 meters
Drill Rig Type	Geoprobe 6600	Drilling Contractor	Prosonic	Approximate Surface Elevation	37.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	Direct Push	Hammer Data	N/A
Borehole Backfill	See Well Construction on log	Location	See Site Plan		

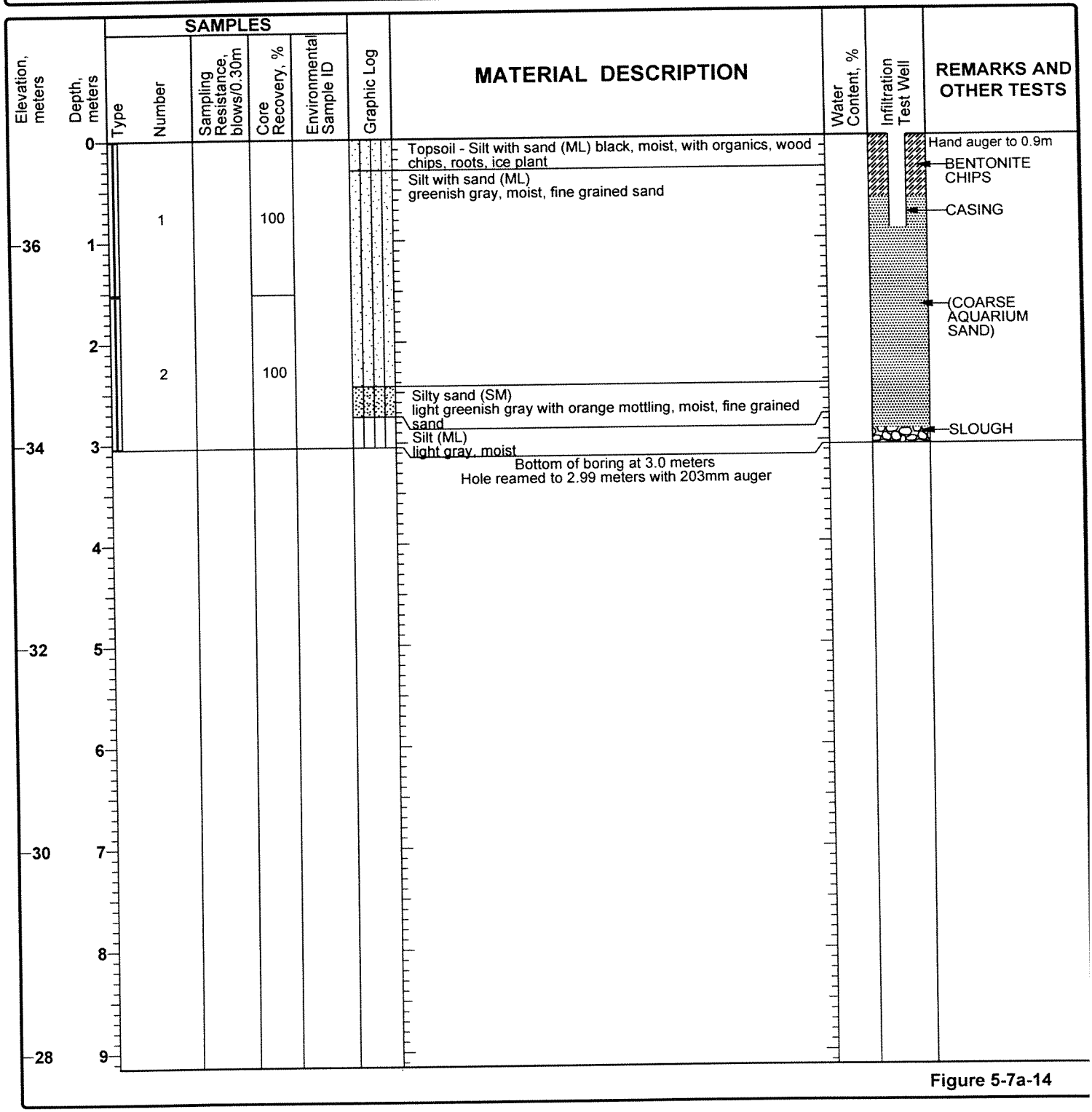


Figure 5-7a-14

5-7a-P-3-1

Clock	Accumulated Time	Tank Reading (gallons)	Difference (gallons)	Accumulated Flow (gallons)	Flow Rate (gpm)	Well Temp (°F)	Reservoir Temp (°F)
8:30:00	0:00:00	58.0	0	0	0.000		
8:31:00	0:01:00	52.0	6	6	6.000	62.7	
8:32:00	0:02:00	48.5	3.5	9.5	4.750	62.7	
8:33:00	0:03:00	47.5	1	10.5	3.500	62.8	
8:34:00	0:04:00	47.0	0.5	11	2.750	62.8	
8:35:00	0:05:00	46.5	0.5	11.5	2.300	62.8	
8:36:00	0:06:00	46.0	0.5	12	2.000	62.8	
8:37:00	0:07:00	46.0	0	12	1.714	62.8	
8:38:00	0:08:00	45.5	0.5	12.5	1.563	62.8	
8:39:00	0:09:00	45.5	0	12.5	1.389	62.8	
8:40:00	0:10:00	45.0	0.5	13	1.300	62.8	
8:45:00	0:15:00	43.0	2	15	1.000	62.4	
8:50:00	0:20:00	42.0	1	16	0.800	62.4	
8:55:00	0:25:00	40.5	1.5	17.5	0.700	62.4	
9:00:00	0:30:00	39.0	1.5	19	0.633	62.4	
9:05:00	0:35:00	37.0	2	21	0.600	62.4	
9:10:00	0:40:00	35.5	1.5	22.5	0.563	62.2	
9:25:00	0:55:00	31.5	4	26.5	0.482	62.2	
9:40:00	1:10:00	27.0	4.5	31	0.443	62.2	
9:55:00	1:25:00	23.0	4	35	0.412	62.8	
10:10:00	1:40:00	19.0	4	39	0.390	63.1	
10:40:00	2:10:00	12.0	7	46	0.354	64.1	
10:43:00	2:13:00	11.0	1	47	0.353	64.1	
10:45:00	2:15:00	54.0		47	0.348	64.9	
11:10:00	2:40:00	46.0	8	55	0.344	66	
11:40:00	3:10:00	37.5	8.5	63.5	0.334	66.2	
12:10:00	3:40:00	28.5	9	72.5	0.330	66.8	
12:40:00	4:10:00	20.0	8.5	81	0.324	66.8	
13:03:00	4:33:00	13.5	6.5	87.5	0.321	68.4	
13:05:00	4:35:00	38.0		87.5	0.318	68.4	
13:10:00	4:40:00	36.0	2	89.5	0.320	68.4	
13:40:00	5:10:00	27.0	9	98.5	0.318	68.2	
14:10:00	5:40:00	18.0	9	107.5	0.316	67.8	
14:40:00	6:10:00	9.5	8.5	116	0.314		

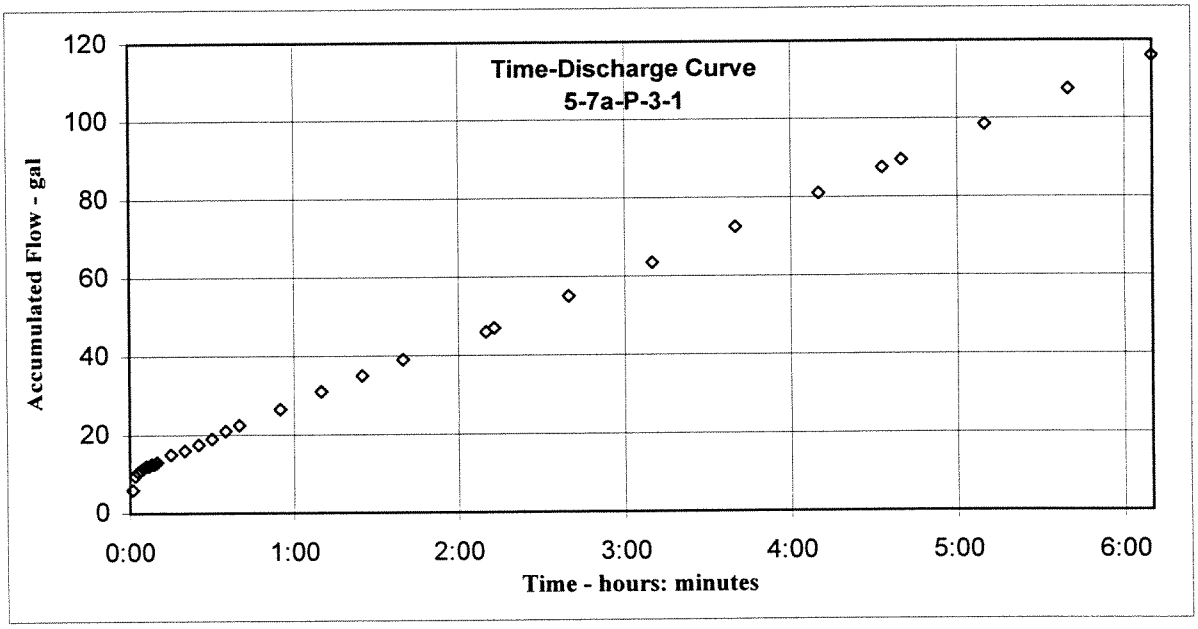


Figure 5-7a-15A

Calculation of Test Condition

Float depth =	2.5 ft	0.76 meters
Borehole depth =	9.8 ft	2.99 meters
Height of water in test well, h =	7.3 ft	2.23 meters
Depth of water table =	30 ft	9.14 meters
Depth to impervious layer =	9 ft	2.74 meters
Unsaturated distance between water table or impervious layer and surface of well water, Tu=	6.5 ft	1.98 meters

Based on the Test Data, Condition III is the most applicable

Calculation of equivalent radius of the well, r_w

mass of sand in borehole, m_s =	200 lbs	
density of sand in borehole, ρ_s =	103.34 lbs/cu ft	
r_w =	0.290 ft	3.49 inches

Calculations for k_{20}

h =	7.3 ft	87.6 inches
Steady-state discharge rate, q =	0.291 gpm	67.19 cu.in./min
Average well water temperature, T =	67.44 °F	19.69 °C
Kinematic viscosity ratio, V =	0.9991 no units	
Condition III - k20	3.49E-03 in/min	0.2093 in/hr

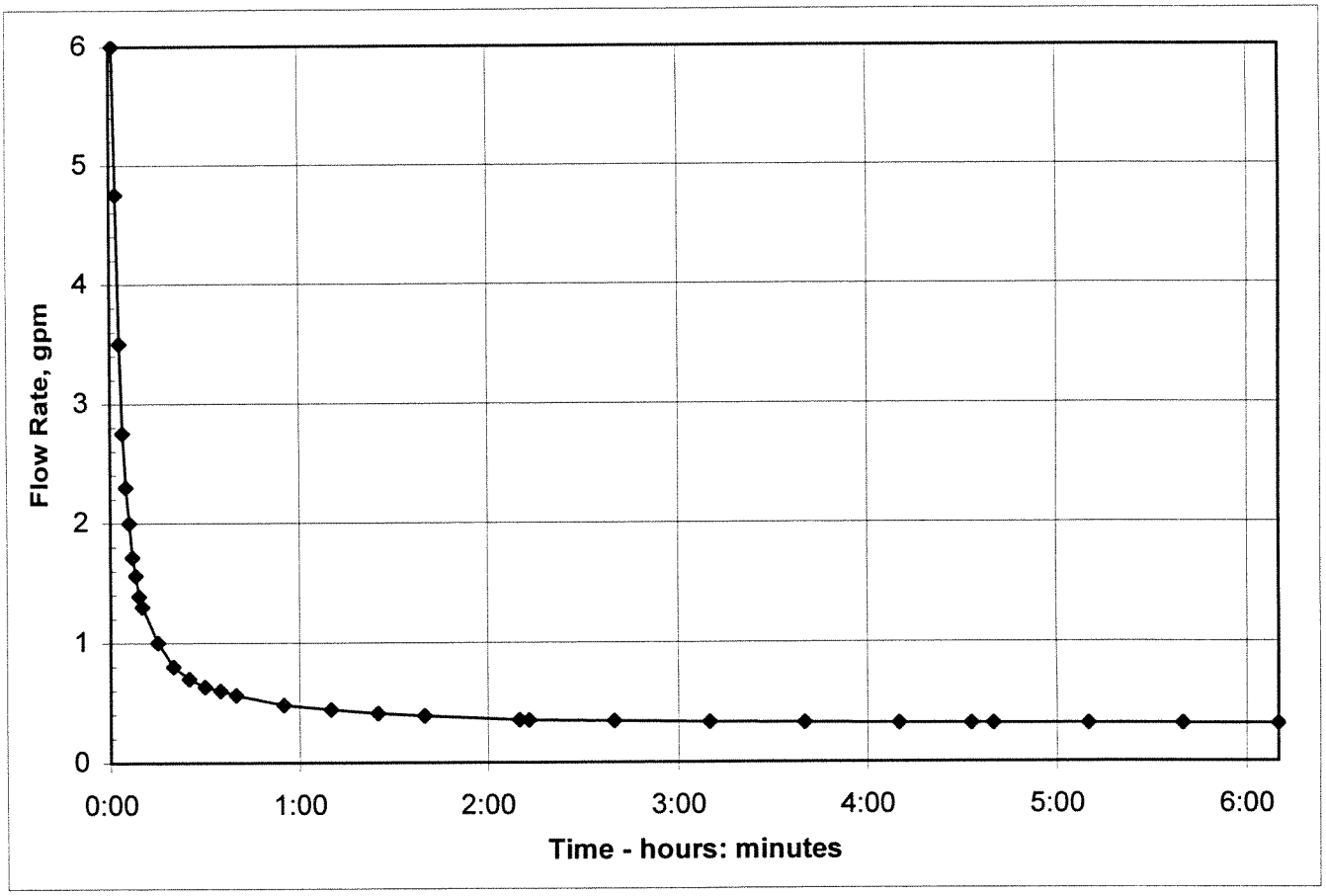


Figure 5-7a-15B

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, Florence Avenue

Log of Boring 5-7a-P-4

Sheet 1 of 1

Date(s) Drilled	2/26/03	Logged By	M. Siem	Checked By	C. Goetz
Drilling Method	Geoprobe	Drill Bit Size/Type	63.5mm O.D.	Total Depth of Borehole	3.0 meters
Drill Rig Type	Geoprobe 6600	Drilling Contractor	Prosonic	Approximate Surface Elevation	37.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	Direct Push	Hammer Data	N/A
Borehole Backfill	See Well Construction on log	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	SAMPLES: Number	SAMPLES: Sampling Resistance, blows/0.30m	SAMPLES: Core Recovery, %	SAMPLES: Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Infiltration Test Well	REMARKS AND OTHER TESTS
	0							Topsoil - Silt (ML) gray to black, moist, with some organics			BENTONITE CHIPS
			1		96			Silt with sand (ML) greenish gray, moist, fine grained sand			CASING
36	1										
	2		2					Silty sand (SM) greenish gray, moist, fine grained sand			
								Poorly graded sand (SP) light gray, moist, fine grained sand			(COARSE AQUARIUM SAND)
34	3							Bottom of boring at 3.0 meters Hole reamed to 2.99 meters with 203mm auger			
	4										
32	5										
	6										
30	7										
	8										
28	9										

Figure 5-7a-16

5-7a-P-4-1

Clock	Accumulated Time	Tank Reading (gallons)	Difference (gallons)	Accumulated Flow (gallons)	Flow Rate (gpm)	Well Temp (°F)	Reservoir Temp (°F)
8:11:30	0:00:00	59.0	0	0	0.000		
8:12:30	0:01:00	53.5	5.5	5.5	5.500	64.2	
8:13:30	0:02:00	51.0	2.5	8	4.000	64.4	
8:14:30	0:03:00	49.0	2	10	3.333	64.6	
8:15:30	0:04:00	47.0	2	12	3.000	64.6	
8:16:30	0:05:00	45.0	2	14	2.800	64.6	
8:17:30	0:06:00	43.0	2	16	2.667	64.6	
8:18:30	0:07:00	41.0	2	18	2.571	64.6	
8:19:30	0:08:00	38.5	2.5	20.5	2.563	64.6	
8:20:30	0:09:00	36.5	2	22.5	2.500	64.6	
8:26:30	0:15:00	24.0	12.5	35	2.333	64.6	
8:31:45	0:20:15	13.0	11	46	2.272		
8:34:00	0:22:30	8.0	5	51	2.267		
8:35:30	0:24:00	53.5		51	2.125		
8:41:15	0:29:45	41.0	12.5	63.5	2.134	65.3	
8:48:45	0:37:15	25.0	16	79.5	2.134	65.3	
8:54:15	0:42:45	13.5	11.5	91	2.129	65.5	
8:58:45	0:47:15	5.5	8	99	2.095	66	
8:59:45	0:48:15	56.0		99	2.052		
9:07:15	0:55:45	40.0	16	115	2.063		
9:14:30	1:03:00	24.5	15.5	130.5	2.071	66.2	
9:21:30	1:10:00	11.0	13.5	144	2.057	66.6	
9:23:15	1:11:45	56.0		144	2.007	66.2	
9:39:00	1:27:30	22.5	33.5	177.5	2.029	66.6	
9:49:30	1:38:00	4.0	18.5	196	2.000		
9:50:30	1:39:00	53.0		196	1.980		
10:06:45	1:55:15	22.0	31	227	1.970	67.6	
10:16:30	2:05:00	5.5	16.5	243.5	1.948		
10:17:15	2:05:45	56.0		243.5	1.936		
10:36:00	2:24:30	22.0	34	277.5	1.920	68.4	
10:44:30	2:33:00	9.0	13	290.5	1.899		
10:45:30	2:34:00	56.0		290.5	1.886	66.9	
11:16:45	3:05:15	6.5	49.5	340	1.835		
11:18:00	3:06:30	60.0		340	1.823	69.4	
11:49:00	3:37:30	11.0	49	389	1.789		
11:49:45	3:38:15	55.0		389	1.782	71.2	
12:15:30	4:04:00	17.0	38	427	1.750	72	
12:25:00	4:13:30	4.0	13	440	1.736		
12:26:15	4:14:45	57.0		440	1.727	70	
12:43:00	4:31:30	32.0	25	465	1.713	70.3	
12:57:30	4:46:00	12.0	20	485	1.696		
12:58:45	4:47:15	58.0		485	1.688	72	
13:17:00	5:05:30	30.0	28	513	1.679	72	
13:33:15	5:21:45	9.0	21	534	1.660		
13:34:15	5:22:45	54.0		534	1.655	71.2	
13:52:00	5:40:30	30.0	24	558	1.639		
13:53:15	5:41:45	54.0		558	1.633	72.1	
14:13:30	6:02:00	26.5	27.5	585.5	1.617	72.3	

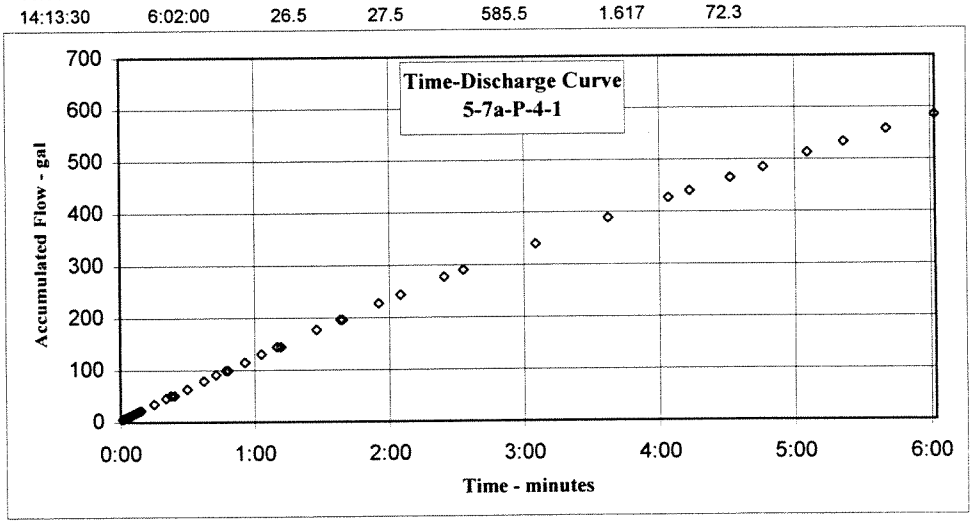


Figure 5-7a-17A

Calculation of Test Condition

Float depth =	5.2 ft	1.58 meters
Borehole depth =	9.8 ft	2.99 meters
Height of water in test well, h =	4.6 ft	1.40 meters
Depth of water table =	30 ft	9.14 meters
Depth to impervious layer =	17.5 ft	5.33 meters
Unsaturated distance between water table or impervious layer and surface of well water, Tu=	12.3 ft	3.75 meters

Based on the Test Data, Condition II is the most applicable

Calculation of equivalent radius of the well, r_w

mass of sand in borehole, m_s =	130 lbs	
density of sand in borehole, ρ_s =	104.30 lbs/cu ft	
r_w =	0.294 ft	3.52 inches

Calculations for k_{20}

h =	4.6 ft	55.2 inches
Steady-state discharge rate, q =	1.281 gpm	296.0 cu.in./min
Average well water temperature, T =	71.90 °F	22.17 °C
Kinematic viscosity ratio, V =	0.9367 no units	
Condition II - k20 =	0.0377 in/min	2.2595 in/hr
Condition I - k20 =	0.0363 in/min	2.1785 in/hr

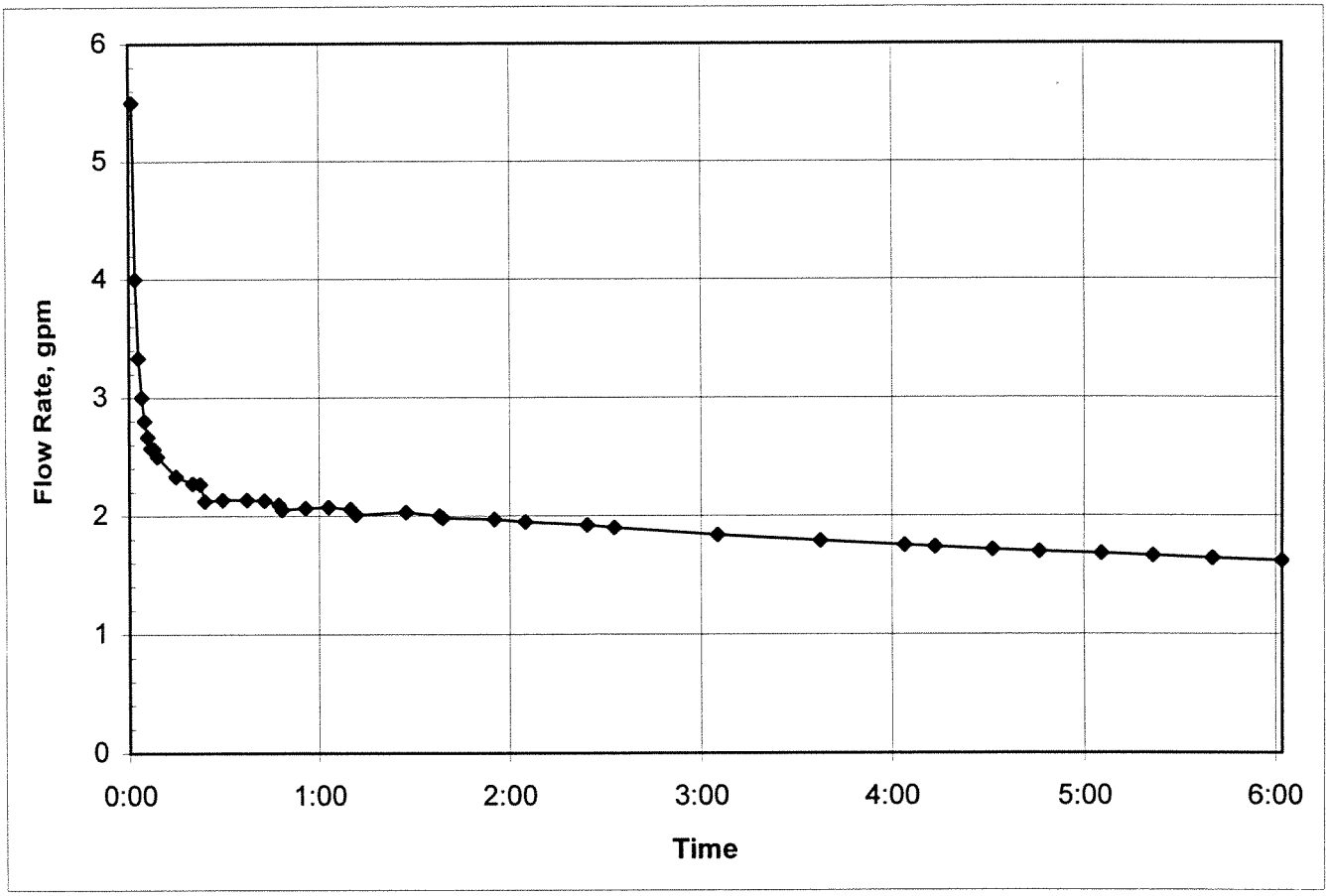
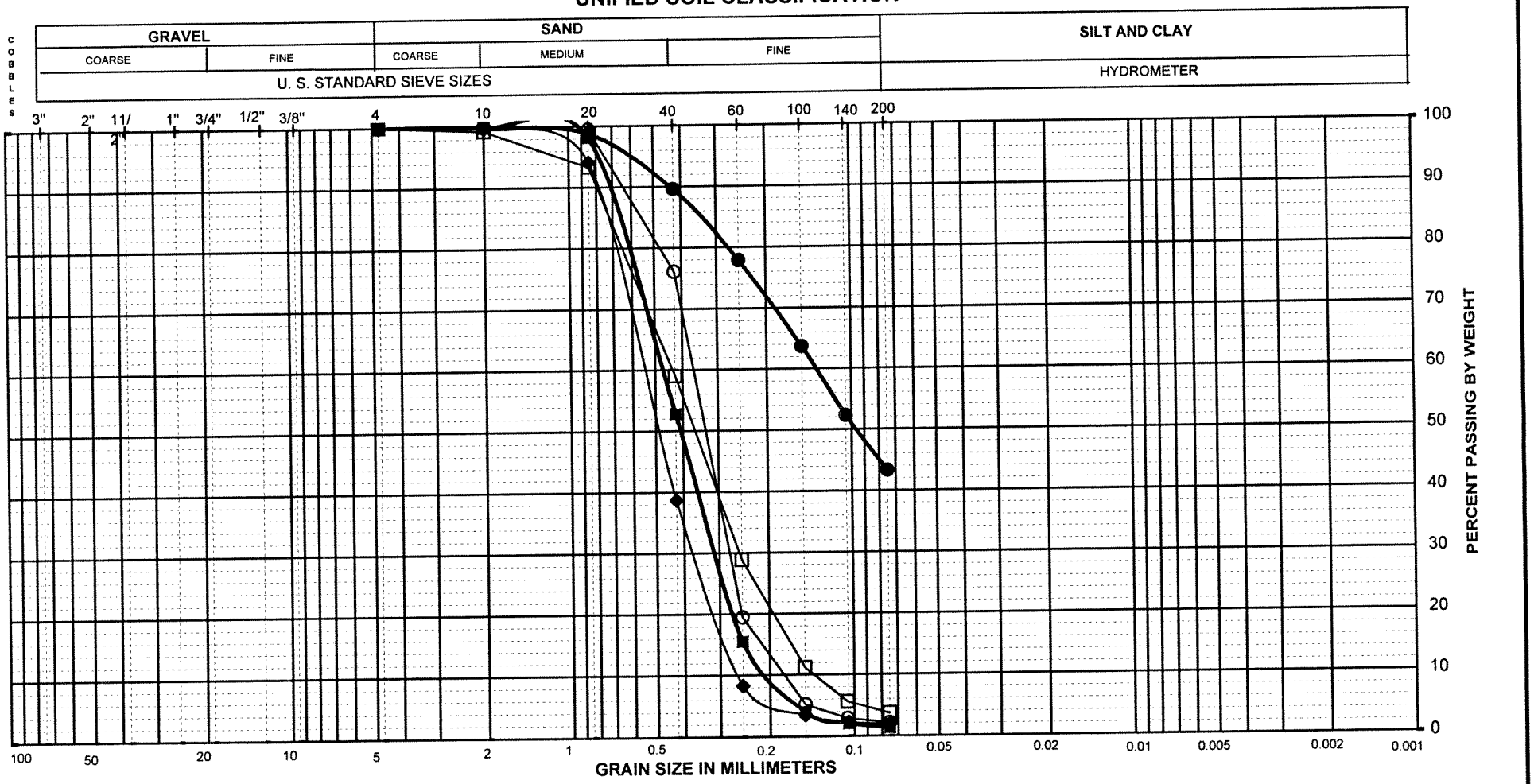


Figure 5-7a-17B

UNIFIED SOIL CLASSIFICATION



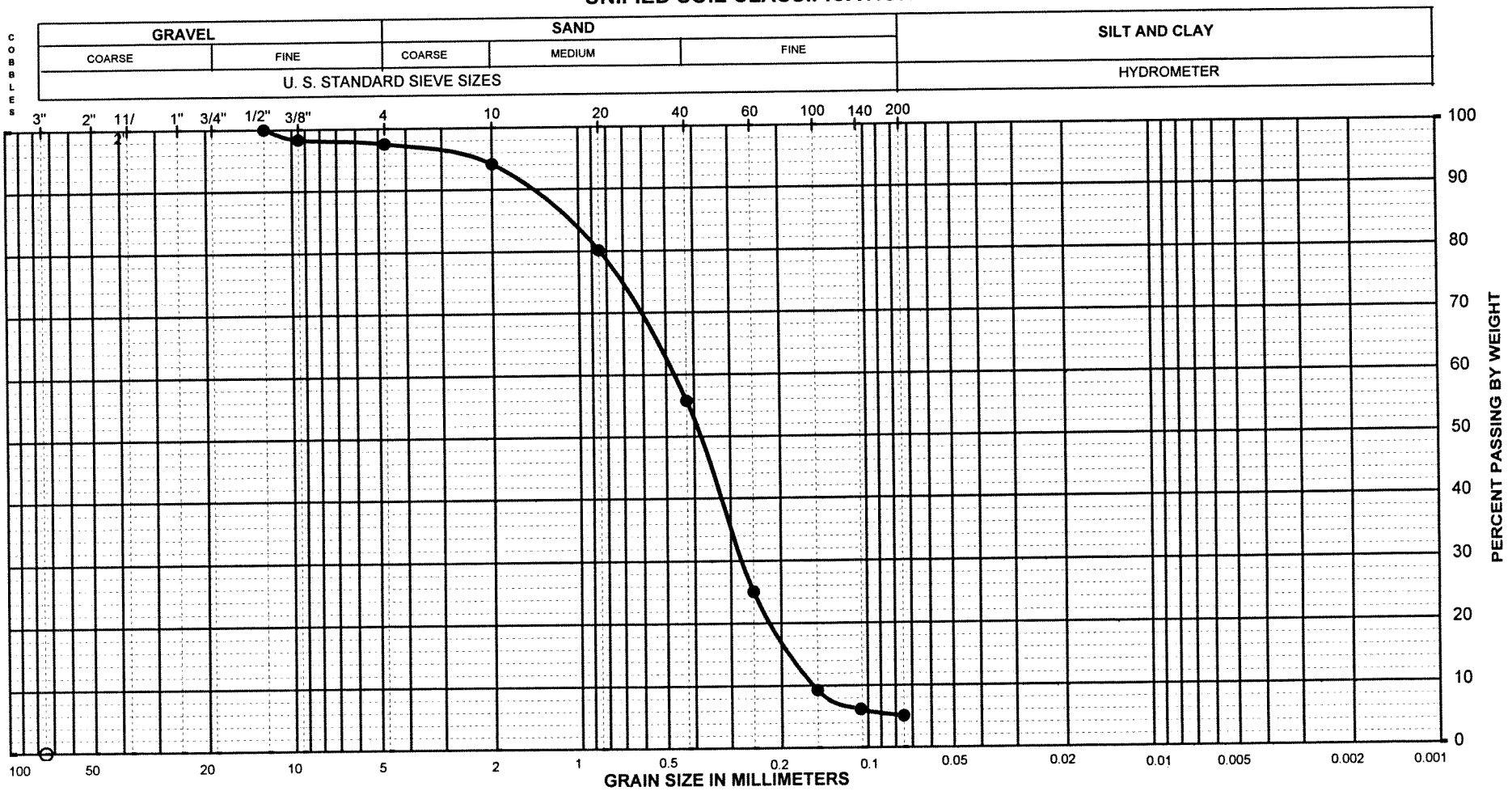
Exploration No.	Sample No.	Depth (m)	SYMBOL	Wn (%)	LL	PI	% Clay	Description and Classification	D_{60}	D_{30}	D_{10}	C_u	C_c
5-7a-B-1	3	1.22	●	18.3				Dark gray clayey Sand (SC)	0.13				
5-7a-B-1	4	1.68	◆	2.5				Brown poorly graded Sand (SP)	0.55	0.39	0.27	2.0	1.0
5-7a-B-1	9	3.96	■	4.3				Brown poorly graded Sand (SP)	0.49	0.31	0.2	2.5	1.0
5-7a-MW-1	5	2.13	○	6.0				Brown poorly graded Sand (SP)	0.38	0.280	0.19	2.0	1.1
5-7a-MW-1	10	4.42	□	8.6				Gray poorly graded Sand (SP)	0.45	0.27	0.15	3.0	1.1

PROJECT NAME: Caltrans IFB Site Selection Study

PARTICLE-SIZE DISTRIBUTION CURVES

Figure: 5-7a-18

UNIFIED SOIL CLASSIFICATION

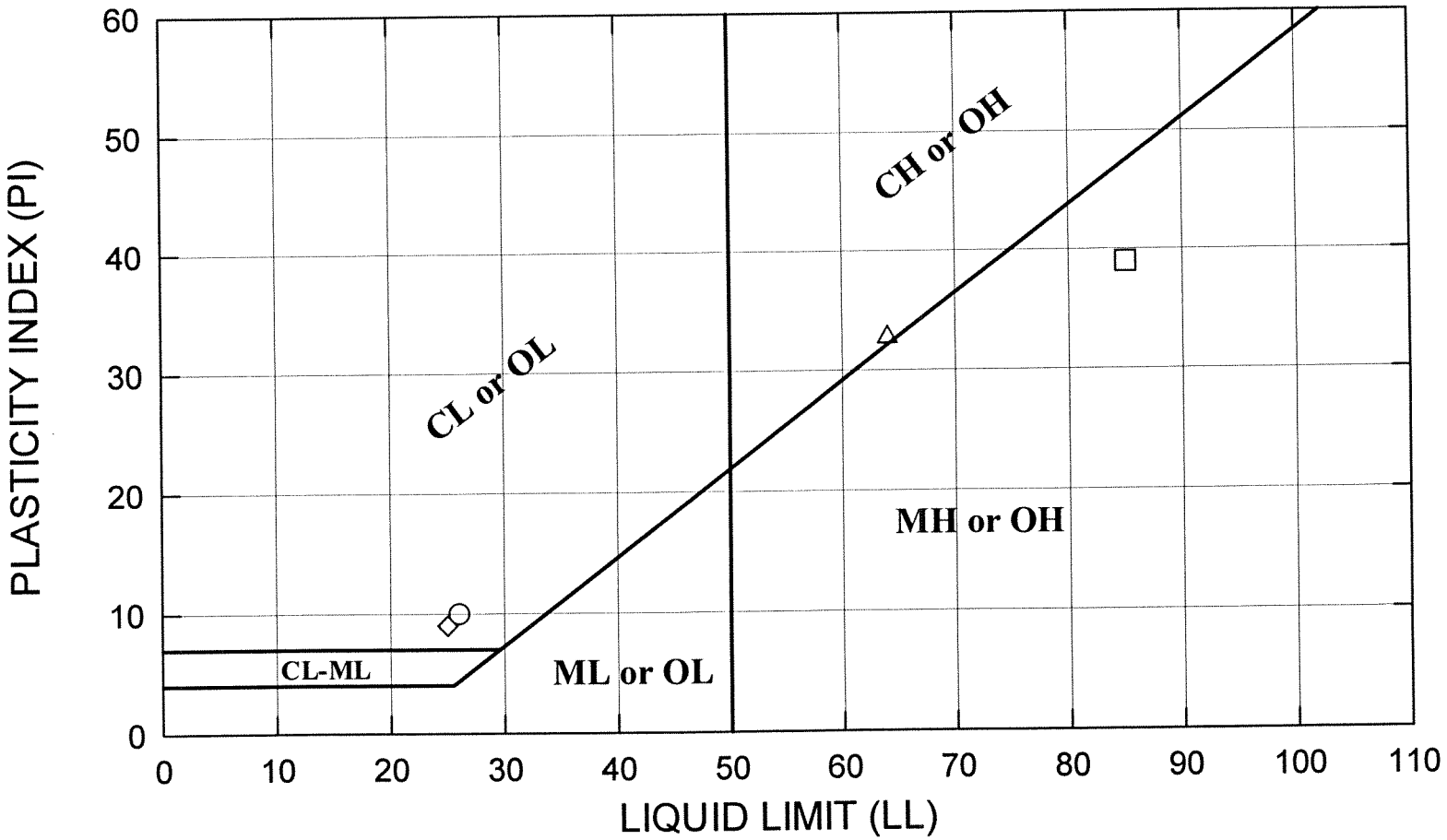


Exploration No.	Sample No.	Depth (m)	SYMBOL	Wn (%)	LL	PI	% Clay	Description and Classification	D_{60}	D_{30}	D_{10}	C_u	C_c
5-7a-MW-1	12	7.62	●	4.0				**Light gray poorly graded Sand with silt (SP-SM)**	0.49	0.29	0.17	2.9	1.0

PROJECT NAME: Caltrans IFB Site Selection Study

PARTICLE-SIZE DISTRIBUTION CURVES

Figure: 5-7a-19



LEGEND: ○ 5-7a-MW-1@0.30m ◇ 5-7a-B-1@0.30m ★ _____ ● _____

□ 5-7a-MW-1@6.10m △ 5-7a-B-1@5.34m ▲ _____ × _____

PLASTICITY CHART

	Date: April 2003	Project: Caltrans Infiltration Basin Project	Figure 5-7a-20

s.mikesmith.PiChart.PiMaster.GRF

Priority 6-5-7a (Florence Ave.) Site Photograph

Date: April 2003	**Project: Caltrans IFB Site Selection Study**	Figure: 5-7a-21

APPENDIX G

5-8b (I-605 Interchange)

Table 1	Geotechnical Laboratory Test Data
Figure 5-8b-1	Site Plan
Figure 5-8b-2	Geologic Cross Section A-A'
Figure 5-8b-3	Log of Boring 5-8b-MW-1
Figure 5-8b-4	Groundwater Monitoring Well 5-8b-MW-1 Diagram
Figure 5-8b-5	Groundwater Monitoring Well 5-8b-MW-1 Photographs
Figure 5-8b-6	Log of Boring 5-8b-B-1
Figure 5-8b-7	Log of Boring 5-8b-B-2
Figure 5-8b-8	Log of Boring 5-8b-P-1
Figure 5-8b-9	Infiltration Data for 5-8b-P-1
Figure 5-8b-10	Log of Boring 5-8b-P-2
Figure 5-8b-11	Infiltration Data for 5-8b-P-2
Figure 5-8b-12	Log of Boring 5-8b-P-3
Figure 5-8b-13	Infiltration Data for 5-8b-P-3
Figure 5-8b-14	Log of Boring 5-8b-P-4
Figure 5-8b-15	Infiltration Data for 5-8b-P-4
Figure 5-8b-16	Particle-Size Distribution Curves
Figure 5-8b-17	Particle-Size Distribution Curves
Figure 5-8b-18	Particle-Size Distribution Curves
Figure 5-8b-19	Particle-Size Distribution Curves
Figure 5-8b-20	Plasticity Chart
Figure 5-8b-21	Site Photographs

TABLE 1

5-8b GEOTECHNICAL LABORATORY TEST DATA

Location							Atterberg Limits		Sieve				Chemical Test Data		
Exploration Number	Sample/ Specimen Number	Depth (m)	Caltrans Soil Classification	Water Content (%)	Total Unit Weight (pcf)	Dry Unit Weight (pcf)	Liquid Limit (%)	Plasticity Index (%)	Gravel (%)	Sand (%)	<#200 Fines (%)	5 microns (%)	pH	O.M.% (% organic matter)	CEC (me/g)[1]
5-8b-MW-1	1	0.46	CL	-	-	-	29	10	-	-	-	-	-	-	-
5-8b-MW-1	2b	1.07	SC	-	-	-	-	-	-	-	40	-	-	-	-
5-8b-MW-1	3	1.37	SP-SM	0.6	-	-	-	-	5	89	6	-	-	-	-
5-8b-MW-1	5	2.29	SP-SM	-	-	-	-	-	-	-	9	-	-	-	-
5-8b-MW-1	6	2.74	SM	-	-	-	-	-	-	-	17	-	-	-	-
5-8b-MW-1	8	3.66	SP-SM	2.4	-	-	-	-	-	-	14	-	-	-	-
5-8b-MW-1	9	4.12	SP-SM	-	-	-	-	-	3	83	14	-	-	-	-
5-8b-B-1	1b	0.46	SP	4.2	-	-	-	-	-	-	3	-	-	-	-
5-8b-B-1	2	0.76	SP-SM	-	-	-	-	-	0	92	8	-	-	-	-
5-8b-B-1	5	2.13	SM	7.3	-	-	-	-	0	83	17	-	-	-	-
5-8b-B-1	6a	2.74	SM	-	-	-	-	-	-	-	46	-	-	-	-
5-8b-B-1	8	3.51	SP	-	-	-	-	-	0	97	3	-	-	-	-
5-8b-B-1	10	4.42	SP-SM	3.3	-	-	-	-	-	-	8	-	-	-	-
B-8b-B-1	11	6.10	SW-SM	-	-	-	-	-	14	82	5	-	-	-	-
5-8b-B-2	2	0.76	SC	13.4	-	-	-	-	-	-	45	-	-	-	-
5-8b-B-2	3	1.22	SM	-	-	-	-	-	-	-	23	-	-	-	-
5-8b-B-2	4	1.68	SP-SM	0.5	-	-	-	-	0	96	4	-	-	-	-
5-8b-B-2	6	2.59	SP-SM	0.4	-	-	-	-	0	94	6	-	-	-	-
5-8b-B-2	7	3.05	SP-SM	1.1	-	-	-	-	-	-	9	-	-	-	-
5-8b-B-2	8	3.51	SM	-	-	-	-	-	-	-	17	-	-	-	-
5-8b-B-2	9	3.96	SP-SM	1.3	-	-	-	-	1	92	7	-	-	-	-
5-8b-B-2	10	4.42	SP-SM	-	-	-	-	-	-	-	10	-	-	-	-
5-8b-B-2	12	7.62	CL	-	-	-	30	14	-	-	-	-	-	-	-
5-8b-P-1	1b	0.53	SP-SM	6.3	-	-	-	-	-	-	7	-	-	-	-
5-8b-P-1	2	0.76	SP-SM	-	-	-	-	-	-	-	-	-	8	0.88	0.028
5-8b-P-1	3	1.37	SP-SM	1.3	-	-	-	-	1	89	10	-	-	-	-
5-8b-P-1	5	2.29	SP-SM	0.8	-	-	-	-	2	89	8	-	-	-	-
5-8b-P-1	6	2.74	SP-SM	1.7	-	-	-	-	-	-	9	-	-	-	-
5-8b-P-2	1a	0.30	CL	-	-	-	29	11	-	-	-	-	-	-	-
5-8b-P-2	1b	0.46	SM	2.6	-	-	-	-	-	-	31	-	-	-	-
5-8b-P-2	2	0.76	SC	3.6	-	-	-	-	-	-	46	-	-	-	-
5-8b-P-2	3	1.22	SP-SM	-	-	-	-	-	1	91	9	-	-	-	-
5-8b-P-2	4	1.68	SP-SM	1.6	-	-	-	-	-	-	9	-	-	-	-
5-8b-P-3	1	0.30	SP	2.8	-	-	-	-	0	98	2	-	-	-	-

TABLE 1

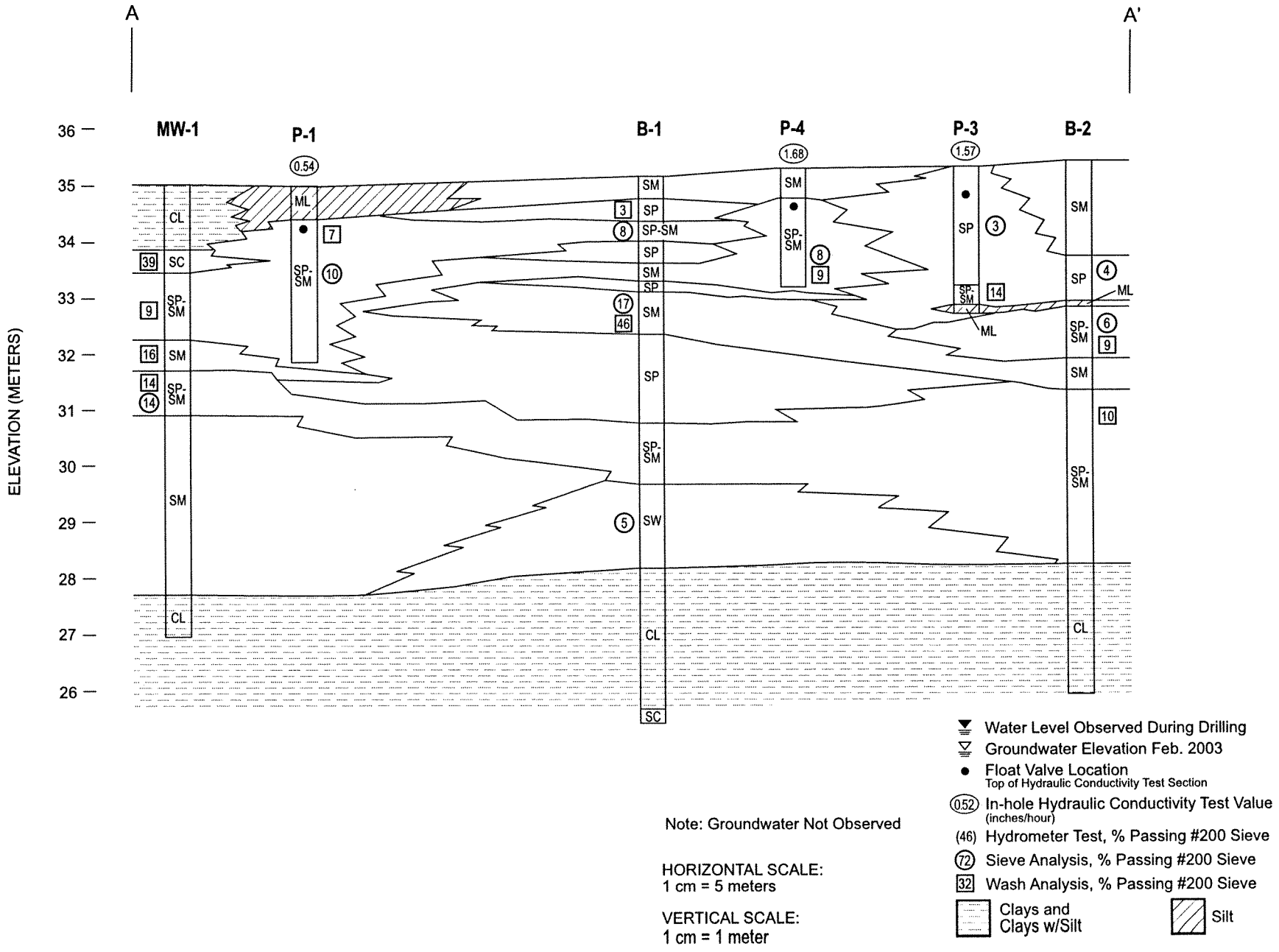
5-8b GEOTECHNICAL LABORATORY TEST DATA

Location							Atterberg Limits		Sieve				Chemical Test Data		
Exploration Number	Sample/ Specimen Number	Depth (m)	Caltrans Soil Classification	Water Content (%)	Total Unit Weight (pcf)	Dry Unit Weight (pcf)	Liquid Limit (%)	Plasticity Index (%)	Gravel (%)	Sand (%)	<#200 Fines (%)	5 microns (%)	pH	O.M.% (% organic matter)	CEC (me/g)[1]
5-8b-P-3	3	1.22	SP	0.5	-	-	-	-	2	95	3	-	-	-	-
5-8b-P-3	5a	2.13	SP-SM	1.4	-	-	-	-	-	-	15	-	-	-	-
5-8b-P-4	1a	0.30	SC	-	-	-	-	-	-	-	44	-	-	-	-
5-8b-P-4	1b	0.53	SP	-	-	-	-	-	-	-	3	-	-	-	-
5-8b-P-4	2	0.76	SP	0.5	-	-	-	-	1	96	2	-	-	-	-
5-8b-P-4	3	1.22	SP-SM	-	-	-	-	-	0	92	8	-	-	-	-
5-8b-P-4	4	1.68	SP-SM	-	-	-	-	-	-	-	7	-	-	-	-

Notes: [1] Cation excange capacity, millequivalents per gram

Priority 6-5-8b (I-605 Interchange) Site Plan

April 2003	Infiltration Basin Site Selection Study	Figure 5-8b-1



PRIORITY 6 – SITE 605 5-8b GEOLOGIC CROSS SECTION A-A'

Date: APRIL 2003	Project: INFILTRATION BASIN SITE SELECTION STUDY	Figure 5-8b-2

L:/CALTRANS/C GOETZ/xsect 605 5-8b.FH10

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, I-605

Log of Boring 5-8b-MW1

Sheet 1 of 1

Date(s) Drilled	2/26/03	Logged By	P. Salter	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	8.1 meters
Drill Rig Type	Limited Acess	Drilling Contractor	Prosonic	Approximate Surface Elevation	35.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	See Well Construction Figure	Location	See Site Plan		

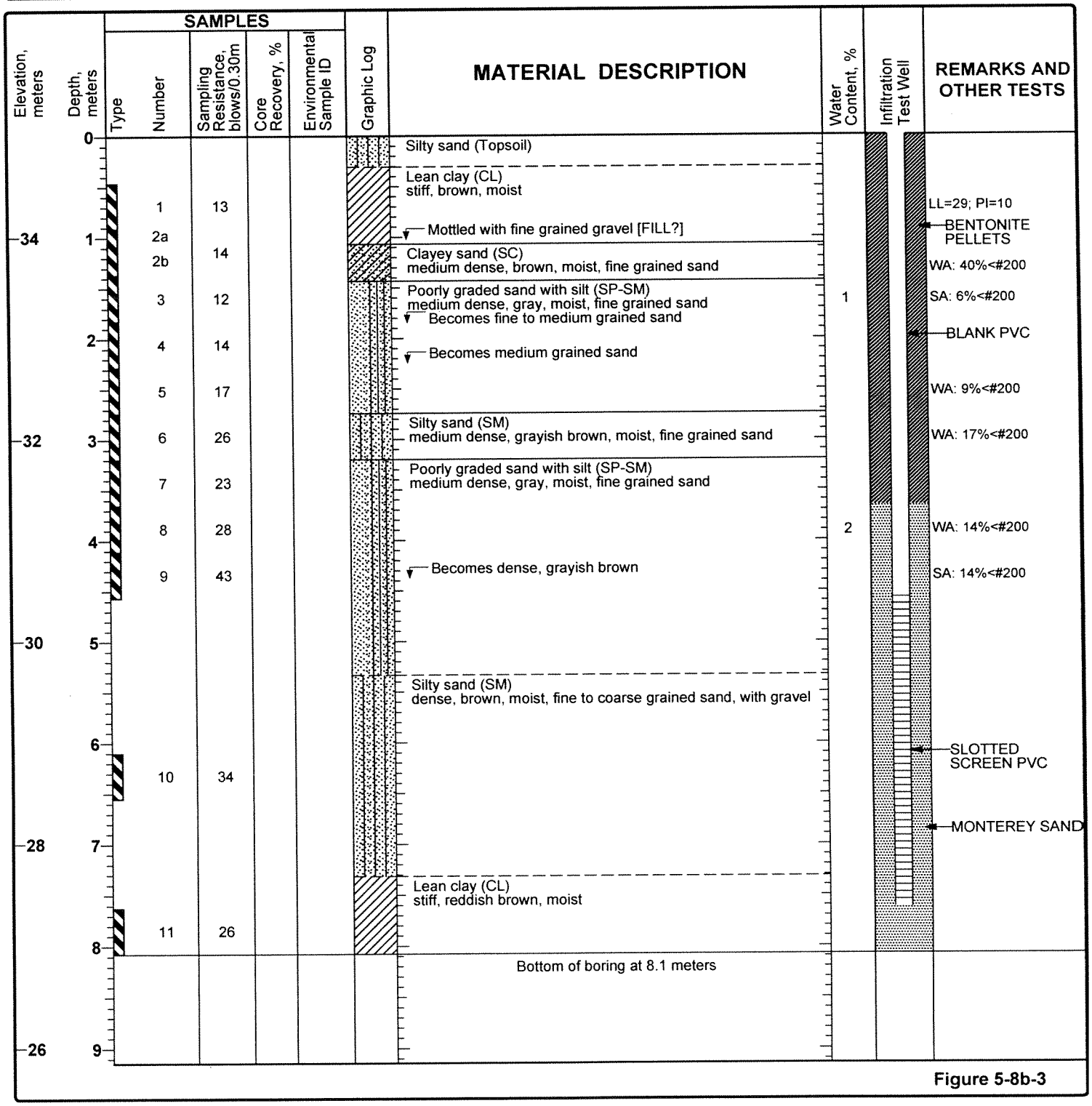
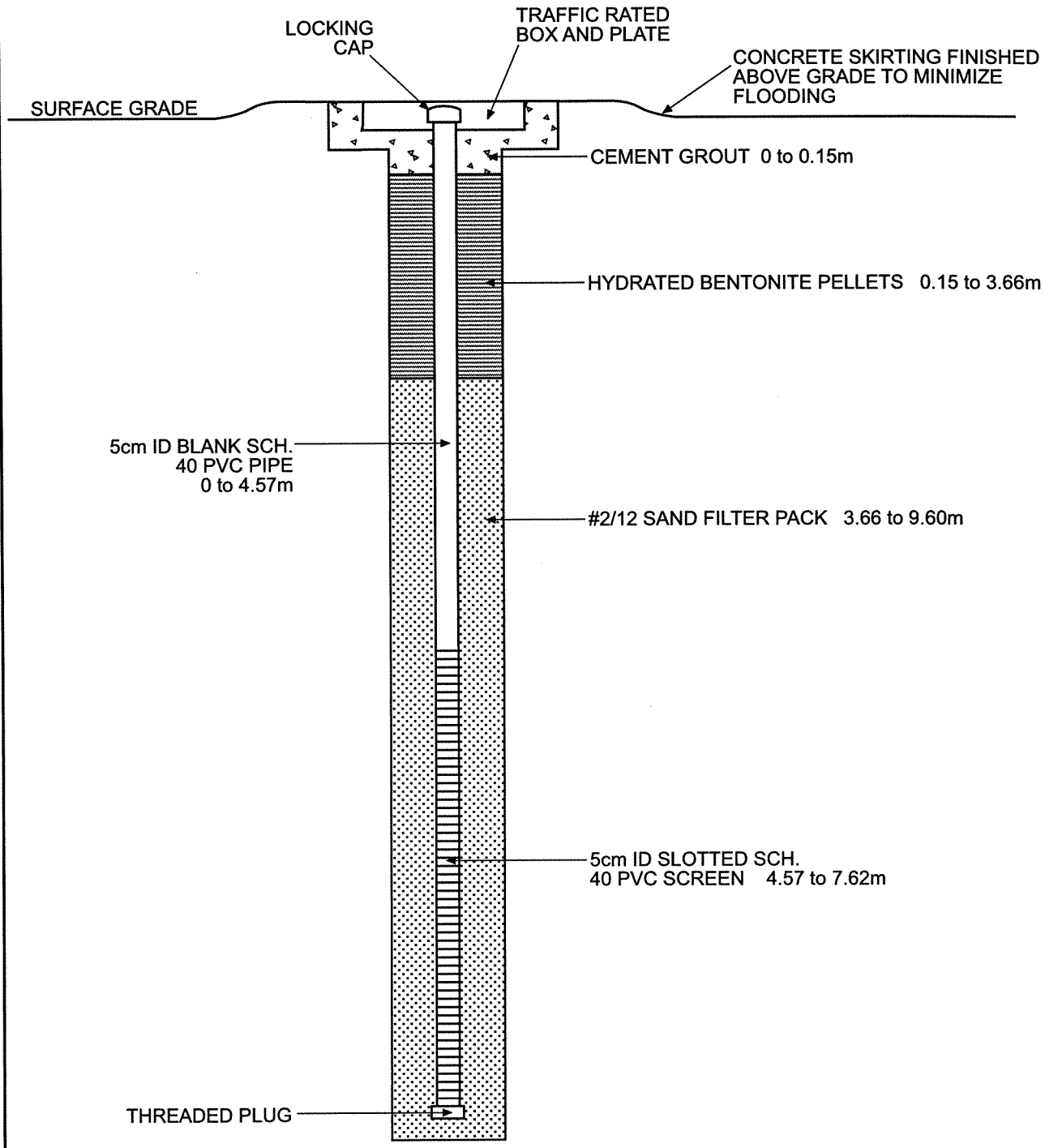


Figure 5-8b-3



5-8b-MW-1

Not to Scale

GROUNDWATER MONITORING WELL DIAGRAM

Date: APRIL 2003	Project: INFILTRATION BASIN SITE SELECTION STUDY	Figure 5-8b-4

L:/Caltrans/GW monitoring well diag.fh10 5/03

5-8b-MW-1

Date: April 2003	**Project: Caltrans IFB Site Selection Study**	Figure: 5-8b-5

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, I-605

Log of Boring 5-8b-B1

Sheet 1 of 2

Date(s) Drilled	2/26/03	Logged By	P. Salter	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	9.6 meters
Drill Rig Type	Limited Acess	Drilling Contractor	Prosonic	Approximate Surface Elevation	35.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	0-7.6m cuttings, 7.6-9.6m Bentonite chips	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES Type	Number	Sampling Resistance, blows/0.30m	Core Recovery, %	Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	PID, ppm	REMARKS AND OTHER TESTS
	0							Silty sand (SM) medium dense, dark brown, moist, with organics [Topsoil]			
			1a 1b	13				Poorly graded sand (SP) medium dense, grayish brown, moist, fine grained sand	4		WA: 3%<#200
34	1		2	7				Poorly graded sand with silt (SP-SM) loose, gray, moist, fine grained sand			SA: 8%<#200
			3a 3b	18				Poorly graded sand (SP) medium dense, grayish brown, moist, fine grained sand			
			4a					Silty sand (SM) medium dense, brown, moist, fine grained sand			
	2		4b	22				Poorly graded sand (SP) medium dense, brown, moist, fine to medium grained sand			Sample 5, poor recovery
			5	22				Silty sand (SM) medium dense, grayish brown, moist, fine grained sand	7		SA: 17%<#200
			6a	12							WA: 46%<#200
32	3		6b					Poorly graded sand (SP) medium dense, brown, moist, fine grained sand			Sample 7, no recovery
			7	17							
			8	14				Becomes grayish-brown to gray			SA: 3%<#200
	4		9	14							
			10	40				Poorly graded sand with silt (SP-SM) dense, brown, moist, fine grained sand	3		WA: 8%<#200
30	5										
	6		11	>50				Well-graded sand with gravel (SW) very dense, grayish brown, moist, fine to coarse grained sand			SA: 5%<#200
28	7							Lean clay (CL) very stiff, reddish brown with gray mottling, moist			
	8		12	26							
26	9										

Figure 5-8b-6

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, I-605

Log of Boring 5-8b-B1

Sheet 2 of 2

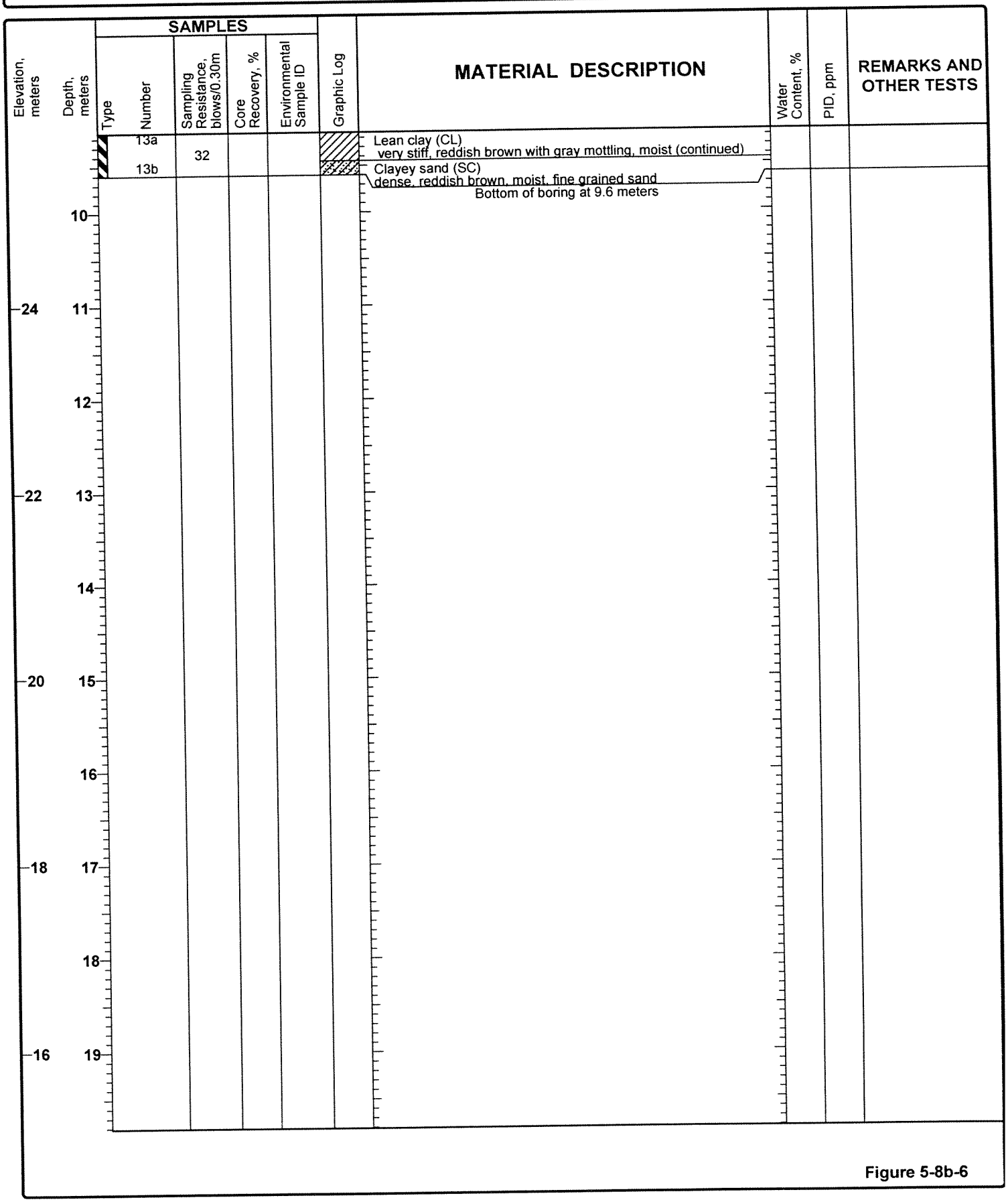


Figure 5-8b-6

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, I-605

Log of Boring 5-8b-B2

Sheet 1 of 2

Date(s) Drilled	2/28/03	Logged By	P. Salter	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	9.6 meters
Drill Rig Type	Limited Acess	Drilling Contractor	Prosonic	Approximate Surface Elevation	35.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	0-8.0m cuttings, 8.0-9.6m Bentonite chips	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES Type	Number	Sampling Resistance, blows/0.30m	Core Recovery, %	Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	PID, ppm	REMARKS AND OTHER TESTS
	0							Silty sand (Topsoil)			
			1a	14				Silty sand (SM) medium dense, dark brown, moist, fine grained sand			
			1b					Becomes loose			
34	1		2	10				Becomes grayish-brown	13		WA: 45%<#200 Sample 3, poor recovery
			3	8							WA: 23%<#200
			4	12				Poorly graded sand (SP) medium dense, gray, moist, fine to medium grained sand	1		SA: 4%<#200
	2		5a	15							
			5b					Silt (ML) stiff, light brown, moist			
			6	12				Poorly graded sand with silt (SP-SM), medium dense, grayish brown, moist, fine to medium grained sand	0		SA: 5%<#200
32	3		7	32				Weak iron-oxide stained laminations	1		WA: 9%<#200
			8	20				Silty sand (SM) medium dense, grayish brown, moist, fine grained sand			WA: 17%<#200
	4		9	16				Poorly graded sand with silt (SP-SM) medium dense, grayish brown, moist, fine grained sand	1		SA: 7%<#200
			10	16							WA: 10%<#200
30	5							With some fine grained gravel			
	6		11	25							
28	7							Lean clay (CL) stiff, reddish brown, moist			
	8		12	15							LL=30; PI=14
26	9										

Figure 5-8b-7

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, I-605

Log of Boring 5-8b-B2

Sheet 2 of 2

Elevation, meters	Depth, meters	SAMPLES: Type	SAMPLES: Number	SAMPLES: Sampling Resistance, blows/0.30m	SAMPLES: Core Recovery, %	SAMPLES: Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	PID, ppm	REMARKS AND OTHER TESTS
			13	22				Lean clay (CL), stiff, reddish brown, moist (continued)			
								Well-graded sand (SW) medium dense, yellowish brown, moist, fine to coarse grained sand			
								Poorly graded sand with silt (SP-SM) medium dense, brown, moist, fine to medium grained sand			
								Bottom of boring at 9.6 meters			
	10										
-24	11										
	12										
-22	13										
	14										
-20	15										
	16										
-18	17										
	18										
-16	19										

Figure 5-8b-7

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, I-605

Log of Boring 5-8b-P1

Sheet 1 of 1

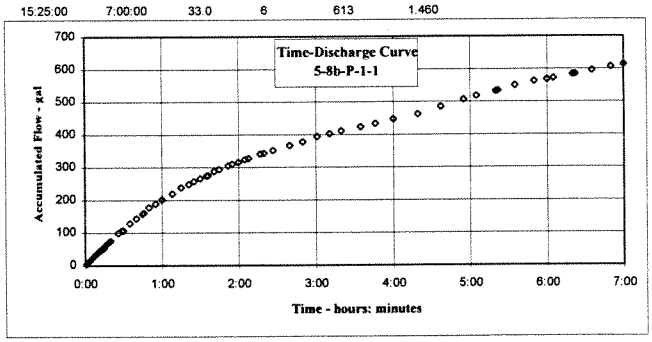
Date(s) Drilled	2/26/03	Logged By	P. Salter	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	3.2 meters
Drill Rig Type	Limited Acess	Drilling Contractor	Prosonic	Approximate Surface Elevation	35.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	See Well Construction on log	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES Type	Number	Sampling Resistance, blows/0.30m	Core Recovery, %	Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Infiltration Test Well	REMARKS AND OTHER TESTS
	0							Silty sand (Topsoil)			BENTONITE CHIPS
								Sandy lean clay (CL) stiff, brown, moist, fine grained sand, with plastic [FILL]			CASING
			1	10				Poorly graded sand with silt (SP-SM) medium dense, grayish brown, moist, fine grained sand	6		WA: 7%<#200
34	1		2	4				Becomes gray			pH=8.0, OM=0.88% CEC=0.028 me/g
			3	11					1		SA: 10%<#200
	2							With some fine grained gravel			(COARSE AQUARIUM SAND)
			4	13							
			5	12					1		SA: 8%<#200
								With no fine grained gravel			
32	3		6	19					2		WA: 9%<#200
								Bottom of boring at 3.2 meters			
	4										
30	5										
	6										
28	7										
	8										
26	9										

Figure 5-8b-8

5-8b-P-1-1

Clock	Accumulated Time	Tank Reading (gallons)	Difference (gallons)	Accumulated Flow (gallons)	Flow Rate (gpm)	Well Temp (°F)	Reservoir Temp (°F)
8:25:00	0:00:00	59.0	0	0	0.000		
8:26:00	0:01:00	54.0	5	5	5.000		
8:27:00	0:02:00	50.0	4	9	4.500		
8:28:00	0:03:00	46.0	4	13	4.333		
8:29:00	0:04:00	42.0	4	17	4.250		
8:30:00	0:05:00	38.0	4	21	4.200		
8:31:00	0:06:00	34.0	4	25	4.167		
8:32:00	0:07:00	30.0	4	29	4.143		
8:33:00	0:08:00	26.0	4	33	4.125		
8:34:00	0:09:00	22.0	4	37	4.111		
8:35:00	0:10:00	18.5	3.5	40.5	4.050		
8:36:00	0:11:00	14.5	4	44.5	4.045		
8:37:00	0:12:00	13.0	1.5	46	3.833		
8:38:00	0:13:00	8.0	5	51	3.923		
8:39:00	0:14:00	5.0	3	54	3.857		
8:40:00	0:15:00	63.0		54	3.600		
8:41:00	0:16:00	55.0	8	62	3.875		
8:43:00	0:18:00	48.0	7	69	3.833		
8:44:00	0:19:00	44.0	4	73	3.842		
8:45:00	0:20:00	41.0	3	76	3.800		
8:51:00	0:26:00	18.0	23	99	3.808		
8:54:00	0:29:00	10.0	8	107	3.690		
8:55:00	0:30:00	62.0		107	3.567		
9:00:00	0:35:00	40.0	22	129	3.686		
9:05:00	0:40:00	25.0	15	144	3.600		
9:10:00	0:45:00	11.0	14	158	3.511		
9:11:00	0:46:00	8.0	3	161	3.500		
9:12:00	0:47:00	64.0		161	3.426		
9:15:00	0:50:00	47.0	17	178	3.560		
9:20:00	0:55:00	36.0	11	189	3.436		
9:25:00	1:00:00	23.0	13	202	3.367		
9:33:00	1:08:00	5.0	18	220	3.235		
9:34:00	1:09:00	64.0		220	3.188		
9:40:00	1:15:00	45.0	19	239	3.187		
9:46:00	1:21:00	35.0	10	249	3.074		
9:50:00	1:25:00	26.0	9	258	3.035		
9:55:00	1:30:00	18.0	8	266	2.956		
10:00:00	1:35:00	10.0	8	274	2.884		
10:01:00	1:36:00	9.0	1	275	2.865		
10:02:00	1:37:00	63.0		275	2.835		
10:06:00	1:41:00	50.0	13	288	2.851		
10:10:00	1:45:00	44.0	6	294	2.800		
10:17:00	1:52:00	33.0	11	305	2.723		
10:20:00	1:55:00	28.0	5	310	2.696		
10:25:00	2:00:00	22.0	6	316	2.633		
10:30:00	2:05:00	14.0	8	324	2.592		
10:33:00	2:08:00	11.0	3	327	2.555		
10:35:00	2:10:00	60.0		327	2.515		
10:42:00	2:17:00	46.0	14	341	2.489		
10:45:00	2:20:00	44.0	2	343	2.450		
10:52:00	2:27:00	35.0	9	352	2.395		
11:05:00	2:40:00	20.0	15	367	2.294		
11:15:00	2:50:00	9.0	11	378	2.224		
11:16:00	2:51:00	65.0		378	2.211		
11:26:00	3:01:00	49.0	16	394	2.177		
11:36:00	3:11:00	40.0	9	403	2.110		
11:45:00	3:20:00	31.0	9	412	2.060		
12:00:00	3:35:00	19.0	12	424	1.972		
12:11:00	3:46:00	9.0	10	434	1.920		
12:12:00	3:47:00	60.0		434	1.912		
12:25:00	4:00:00	47.0	13	447	1.863		
12:44:00	4:19:00	32.0	15	462	1.784		
13:02:00	4:37:00	9.0	23	485	1.751		
13:03:00	4:38:00	61.0		485	1.745		
13:20:00	4:55:00	39.0	22	507	1.719		
13:30:00	5:05:00	28.0	11	518	1.698		
13:45:00	5:20:00	14.0	14	532	1.663		
13:47:00	5:22:00	12.0	2	534	1.658		
13:48:00	5:23:00	65.0		534	1.653		
14:00:00	5:35:00	49.0	16	550	1.642		
14:15:00	5:50:00	36.0	13	563	1.609		
14:25:00	6:00:00	31.0	5	568	1.578		
14:30:00	6:05:00	27.0	4	572	1.567		
14:45:00	6:20:00	15.0	12	584	1.537		
14:47:00	6:22:00	14.0	1	585	1.531		
14:48:00	6:23:00	61.0		585	1.527		
15:00:00	6:35:00	50.0	11	596	1.509		
15:15:00	6:50:00	39.0	11	607	1.480		
15:25:00	7:00:00	33.0	6	613	1.460		



Calculation of Test Condition

Float depth =	2.4 ft	0.73 meters
Borehole depth =	10.5 ft	3.20 meters
Height of water in test well, h =	8.1 ft	2.47 meters
Depth of water table =	30 ft	9.14 meters
Depth to impervious layer =	23.5 ft	7.16 meters
Unsaturated distance between water table or impervious layer and surface of well water, Tu=	21.1 ft	6.43 meters

Based on the Test Data, Condition II is the most applicable

Calculation of equivalent radius of the well, r_w

mass of sand in borehole, m_s =	200 lbs	
density of sand in borehole, ρ_s =	103.53 lbs/cu ft	
r_w =	0.276 ft	3.31 inches

Calculations for k_{20}

h =	8.1 ft	97.2 inches
Steady-state discharge rate, q =	0.684 gpm	158.1 cu.in./min
Average well water temperature, T =	67.00 °F	19.44 °C
Kinematic viscosity ratio, V =	1.0057 no units	
Condition II - k20 =	8.75E-03 in/min	0.5249 in/hr
Condition I - k20 =	8.32E-03 in/min	0.4994 in/hr

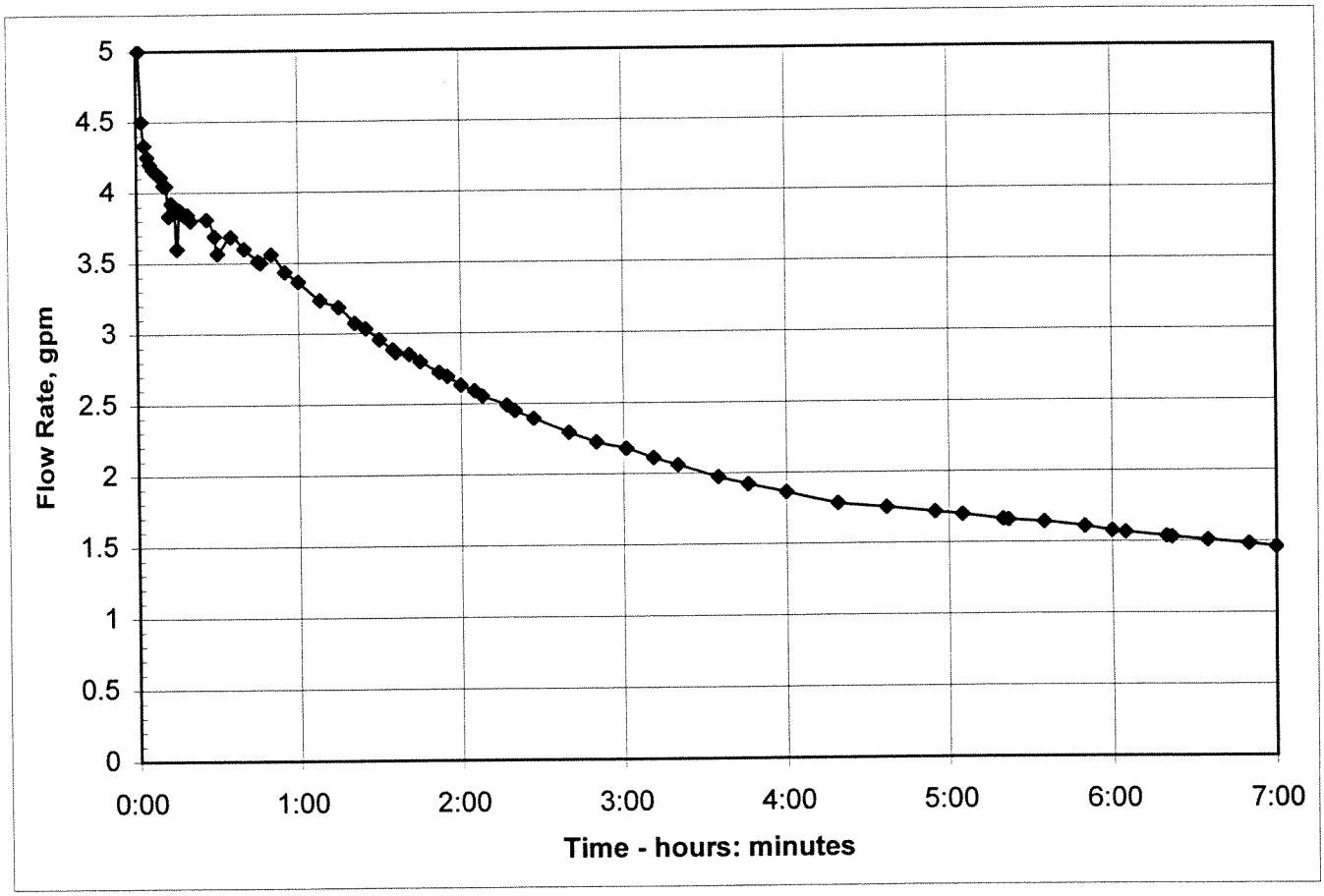


Figure 5-8b-9B

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, I-605

Log of Boring 5-8b-P2

Sheet 1 of 1

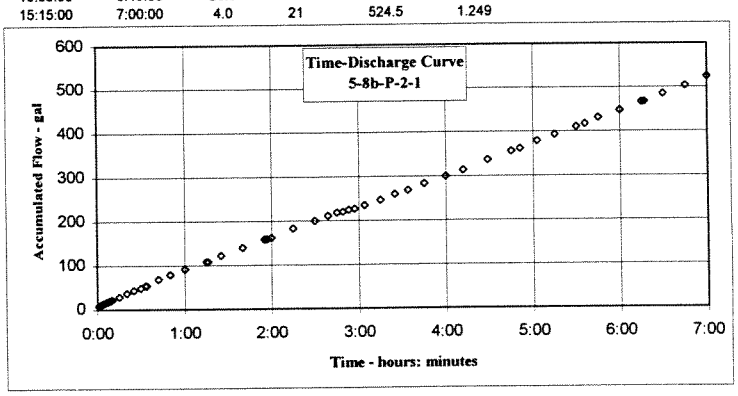
Date(s) Drilled	2/26/03	Logged By	P. Salter	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	2.6 meters
Drill Rig Type	Limited Acess	Drilling Contractor	Prosonic	Approximate Surface Elevation	35.1 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	See Well Construction on log	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	SAMPLES: Number	SAMPLES: Sampling Resistance, blows/0.30m	SAMPLES: Core Recovery, %	SAMPLES: Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Infiltration Test Well	REMARKS AND OTHER TESTS
	0							Sandy silt (Topsoil)			BENTONITE CHIPS
			1a					Sandy lean clay (CL) stiff, brown, moist, fine grained sand, with plastic [FILL]			LL=29; PI=11
			1b	16				Silty sand (SM) medium dense, grayish brown, moist, fine grained sand	3		CASING; WA: 31%<#200
34	1		2	12					4		WA: 45%<#200
			3	14				Poorly graded sand with silt (SP-SM) medium dense, grayish brown, moist, fine grained sand			SA: 9%<#200
								Becomes loose, with trace fine grained gravel			
			4	8					2		WA: 9%<#200
	2							Becomes medium dense			(COARSE AQUARIUM SAND)
			5	15							
								Bottom of boring at 2.6 meters			
32	3										
	4										
30	5										
	6										
28	7										
	8										
26	9										

Figure 5-8b-10

5-8b-P-2-1

Clock	Accumulated Time	Tank Reading (gallons)	Difference (gallons)	Accumulated Flow (gallons)	Flow Rate (gpm)	Well Temp (°F)	Reservoir Temp (°F)
8:15:00	0:00:00	59.0	0	0	0.000		
8:16:00	0:01:00	51.0	8	8	8.000	62.4	
8:17:00	0:02:00	49.0	2	10	5.000		
8:18:00	0:03:00	47.5	1.5	11.5	3.833		
8:19:00	0:04:00	46.0	1.5	13	3.250		
8:20:00	0:05:00	44.5	1.5	14.5	2.900		
8:21:00	0:06:00	43.0	1.5	16	2.667	62.8	
8:22:00	0:07:00	41.5	1.5	17.5	2.500		
8:23:00	0:08:00	40.0	1.5	19	2.375		
8:24:00	0:09:00	38.5	1.5	20.5	2.278		
8:25:00	0:10:00	37.0	1.5	22	2.200		
8:30:00	0:15:00	30.0	7	29	1.933		
8:35:00	0:20:00	22.0	8	37	1.850		
8:40:00	0:25:00	15.0	7	44	1.760		
8:45:00	0:30:00	10.0	5	49	1.633		
8:48:00	0:33:00	5.0	5	54	1.636		
8:49:00	0:34:00	62.0		54	1.588		
8:57:00	0:42:00	47.0	15	69	1.643		
9:05:00	0:50:00	37.0	10	79	1.580		
9:15:00	1:00:00	24.0	13	92	1.533		
9:30:00	1:15:00	8.0	16	108	1.440		
9:31:00	1:16:00	60.0		108	1.421		
9:40:00	1:25:00	46.0	14	122	1.435		
9:55:00	1:40:00	28.0	18	140	1.400		
10:10:00	1:55:00	10.0	18	158	1.374		
10:11:00	1:56:00	9.0	1	159	1.371		
10:12:00	1:57:00	61.0		159	1.359		
10:15:00	2:00:00	58.0	3	162	1.350		
10:30:00	2:15:00	37.0	21	183	1.356		
10:45:00	2:30:00	20.0	17	200	1.333		
10:54:00	2:39:00	9.0	11	211	1.327		
10:55:00	2:40:00	14.0		211	1.319		
11:00:00	2:45:00	7.0	7	218	1.321		
11:03:00	2:48:00	14.0		218	1.298		
11:04:00	2:49:00	12.0	2	220	1.302		
11:05:00	2:50:00	16.0		220	1.294		
11:08:00	2:53:00	11.5	4.5	224.5	1.298		
11:11:00	2:56:00	21.0		224.5	1.276		
11:12:00	2:57:00	19.0	2	226.5	1.280		
11:13:00	2:58:00	55.0		226.5	1.272		
11:19:00	3:04:00	47.0	8	234.5	1.274		
11:30:00	3:15:00	35.0	12	246.5	1.264		
11:40:00	3:25:00	22.0	13	259.5	1.266		
11:49:00	3:34:00	13.0	9	268.5	1.255		
11:50:00	3:35:00	60.0		268.5	1.249	67.3	
12:00:00	3:45:00	45.0	15	283.5	1.260		
12:15:00	4:00:00	29.0	16	299.5	1.248		
12:27:00	4:12:00	15.0	14	313.5	1.244		
12:28:00	4:13:00	60.0		313.5	1.239		
12:44:00	4:29:00	37.0	23	336.5	1.251	67.1	
13:00:00	4:45:00	18.0	19	355.5	1.247		
13:06:00	4:51:00	12.0	6	361.5	1.242		
13:07:00	4:52:00	62.0		361.5	1.238		
13:18:00	5:03:00	45.0	17	378.5	1.249		
13:30:00	5:15:00	31.0	14	392.5	1.246		
13:45:00	5:30:00	13.0	18	410.5	1.244		
13:51:00	5:36:00	6.0	7	417.5	1.243		
13:52:00	5:37:00	61.0		417.5	1.239		
14:00:00	5:45:00	47.0	14	431.5	1.251		
14:15:00	6:00:00	31.0	16	447.5	1.243		
14:30:00	6:15:00	12.0	19	466.5	1.244		
14:32:00	6:17:00	11.0	1	467.5	1.240		
14:33:00	6:18:00	61.0		467.5	1.237	66.9	
14:45:00	6:30:00	43.0	18	485.5	1.245		
15:00:00	6:45:00	25.0	18	503.5	1.243		
15:15:00	7:00:00	4.0	21	524.5	1.249		



Calculation of Test Condition

Float depth =	1.5 ft	0.46 meters
Borehole depth =	8.5 ft	2.59 meters
Height of water in test well, h =	7 ft	2.13 meters
Depth of water table =	30 ft	9.14 meters
Depth to impervious layer =	23.5 ft	7.16 meters
Unsaturated distance between water table or impervious layer and surface of well water, Tu=	22 ft	6.71 meters

Based on the Test Data, Condition I is the most applicable

Calculation of equivalent radius of the well, r_w

mass of sand in borehole, m_s =	150 lbs	
density of sand in borehole, ρ_s =	102.49 lbs/cu ft	
r_w =	0.258 ft	3.10 inches

Calculations for k_{20}

h =	7 ft	84 inches
Steady-state discharge rate, q =	1.247 gpm	288.1 cu.in./min
Average well water temperature, T =	66.90 °F	19.39 °C
Kinematic viscosity ratio, V =	1.0071 no units	
Condition I - k20=	0.0198 in/min	1.1900 in/hr

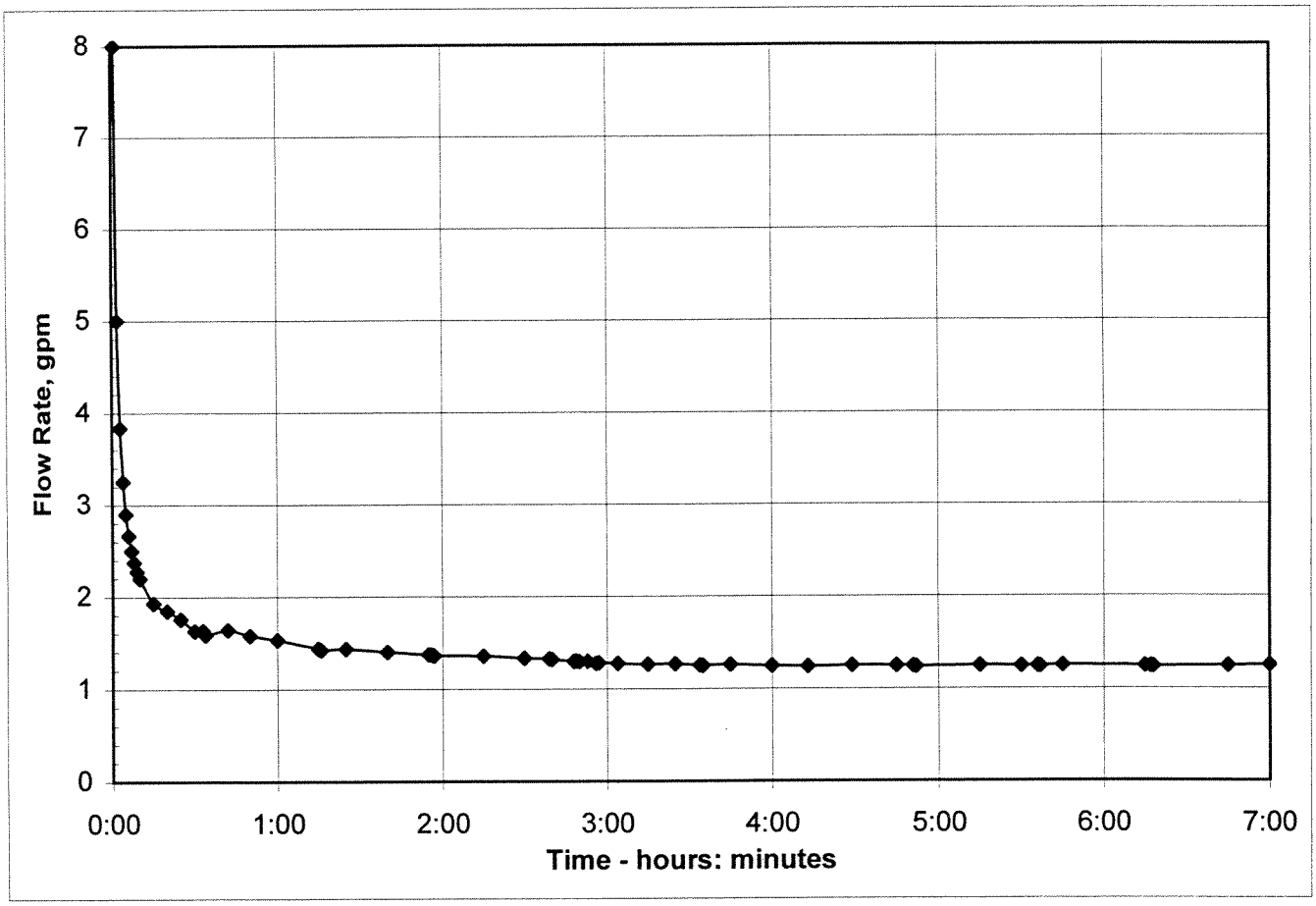


Figure 5-8b-11B

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, I-605

Log of Boring 5-8b-P3

Sheet 1 of 1

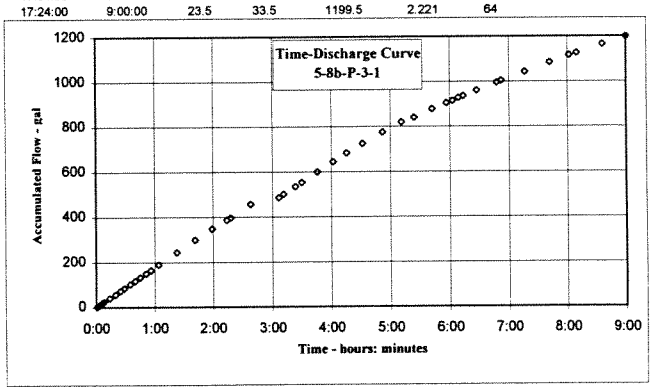
Date(s) Drilled	2/28/03	Logged By	P. Salter	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	2.6 meters
Drill Rig Type	Limited Acess	Drilling Contractor	Prosonic	Approximate Surface Elevation	35.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	See Well Construction on log	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES Type	Number	Sampling Resistance, blows/0.30m	Core Recovery, %	Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Infiltration Test Well	REMARKS AND OTHER TESTS
	0							Silty sand (Topsoil)			BENTONITE CHIPS
			1	9				Poorly graded sand (SP) loose, grayish brown, moist, fine grained sand	3		CASING SA: 2%<#200
34	1		2	7							
			3	9					1		SA: 3%<#200
								Becomes fine to medium grained sand			(COARSE AQUARIUM SAND)
	2		4	14							
			5a					Poorly graded sand with silt (SP-SM) medium dense, grayish brown, moist, fine grained sand	1		WA: 15%<#200
			5b	16				Silt (ML) stiff, light brown, moist			
32	3							Bottom of boring at 2.6 meters			
	4										
30	5										
	6										
28	7										
	8										
26	9										

Figure 5-8b-12

5-8b-P-3-1

Clock	Accumulated Time	Tank Reading (gallons)	Difference (gallons)	Accumulated Flow (gallons)	Flow Rate (gpm)	Well Temp (°F)	Reservoir Temp (°F)
8:24:00	0:00:00	53.0	0	0	0.000		
8:25:00	0:01:00	50.0	3	3	3.000	62.8	
8:26:00	0:02:00	47.0	3	6	3.000	63	
8:27:00	0:03:00	44.0	3	9	3.000	63	
8:28:00	0:04:00	41.5	2.5	11.5	2.875	63	
8:29:00	0:05:00	38.0	3.5	15	3.000	63	
8:30:00	0:06:00	35.0	3	18	3.000	63	
8:31:00	0:07:00	32.0	3	21	3.000	63	
8:32:00	0:08:00	29.0	3	24	3.000		
8:37:45	0:13:45	12.5	16.5	40.5	2.945		
8:38:45	0:14:45	55.0				62.4	
8:43:45	0:19:45	38.5	16.5	57	2.886	62.4	
8:48:45	0:24:45	23.0	15.5	72.5	2.929	62.4	
8:52:30	0:28:30	12.0	11	83.5	2.930	62.4	
8:53:00	0:29:00	10.0	2	85.5	2.948		
8:54:00	0:30:00	59.0				62.1	
8:59:00	0:35:00	42.0	17	102.5	2.929	62.1	
9:04:00	0:40:00	27.0	15	117.5	2.938	62.2	
9:09:00	0:45:00	12.0	15	132.5	2.944		
9:10:00	0:46:00	60.0				62.8	
9:15:00	0:51:00	43.0	17	149.5	2.931	62.8	
9:20:00	0:56:00	28.0	15	164.5	2.938	62.8	
9:28:00	1:04:00	4.0	24	188.5	2.945		
9:29:00	1:05:00	60.0				63.3	
9:46:30	1:22:30	5.0	55	243.5	2.952		
9:47:15	1:23:15	60.0				63.7	
10:05:15	1:41:15	4.0	56	299.5	2.958		
10:06:00	1:42:00	59.0				63.7	
10:23:00	1:59:00	11.0	48	347.5	2.920		
10:24:15	2:00:15	58.0				65.1	
10:38:00	2:14:00	19.0	39	386.5	2.884	65.3	
10:42:00	2:18:00	8.0	11	397.5	2.880		
10:43:15	2:19:15	59.0					
11:02:00	2:38:00	0.0	59	456.5	2.889		
11:22:15	2:58:15	62.0					
11:30:45	3:06:45	33.0	29	485.5	2.600	66.7	
11:35:45	3:11:45	17.0	16	501.5	2.615	67.1	
11:36:30	3:12:30	58.0				66.9	
11:47:30	3:23:30	24.5	33.5	535	2.629	67.1	
11:54:00	3:30:00	6.0	18.5	553.5	2.636		
11:55:10	3:31:10	63.0				67.3	
12:10:00	3:46:00	17.0	46	599.5	2.653		
12:11:00	3:47:00	58.0				67.1	
12:26:00	4:02:00	13.0	45	644.5	2.663		
12:27:30	4:03:30	60.0				68.4	
12:40:00	4:16:00	22.0	38	682.5	2.666		
12:41:00	4:17:00	61.0				68	
12:56:00	4:32:00	18.0	43	725.5	2.667		
12:57:00	4:33:00	62.0				68.5	
13:16:00	4:52:00	12.0	50	775.5	2.656		
13:16:45	4:52:45	61.0				68.2	
13:35:00	5:11:00	16.0	45	820.5	2.638	68.2	
13:39:15	5:15:15	40.0				68.9	
13:48:00	5:24:00	20.0	20	840.5	2.594		
13:48:45	5:24:45	56.0					
14:06:15	5:42:15	18.0	38	878.5	2.567		
14:07:50	5:43:50	54.0				69.3	
14:20:45	5:56:45	28.0	26	904.5	2.535	69.3	
14:26:45	6:02:45	18.0	10	914.5	2.521		
14:27:45	6:03:45	60.0				68.4	
14:32:45	6:08:45	47.5	12.5	927	2.514	68.4	
14:37:45	6:13:45	38.5	9	936	2.504	68.4	
14:51:30	6:27:30	14.5	24	960	2.477		
14:52:30	6:28:30	59.0					
15:12:00	6:48:00	23.5	35.5	995.5	2.440		
15:16:30	6:52:30	16.0	7.5	1003	2.432		
15:17:30	6:53:30	59.0					
15:40:45	7:16:45	19.0	40	1043	2.388		
15:41:30	7:17:30	59.0					
16:06:00	7:42:00	17.5	41.5	1084.5	2.347		
16:07:00	7:43:00	59.0				66	
16:26:00	8:02:00	27.5	31.5	1116	2.315	66	
16:33:30	8:09:30	17.0	10.5	1126.5	2.301		
16:34:30	8:10:30	57.0				65.3	
17:00:00	8:36:00	17.5	39.5	1166	2.260		
17:01:00	8:37:00	57.0				64	
17:24:00	9:00:00	23.5	33.5	1199.5	2.221	64	



Calculation of Test Condition

Float depth =	1.75 ft	0.53 meters
Borehole depth =	8.5 ft	2.59 meters
Height of water in test well, h =	6.75 ft	2.06 meters
Depth of water table =	30 ft	9.14 meters
Depth to impervious layer =	23.5 ft	7.16 meters
Unsaturated distance between water table or impervious layer and surface of well water, Tu=	21.75 ft	6.63 meters

Based on the Test Data, Condition I is the most applicable

Calculation of equivalent radius of the well, r_w

mass of sand in borehole, m_s =	150 lbs	
density of sand in borehole, ρ_s =	102.58 lbs/cu ft	
r_w =	0.263 ft	3.15 inches

Calculations for k_{20}

h =	6.75 ft	81 inches
Steady-state discharge rate, q =	1.447 gpm	334.2 cu.in./min
Average well water temperature, T =	64.83 °F	18.24 °C
Kinematic viscosity ratio, V =	1.0386 no units	
Condition I - k20=	0.0251 in/min	1.505 in/hr

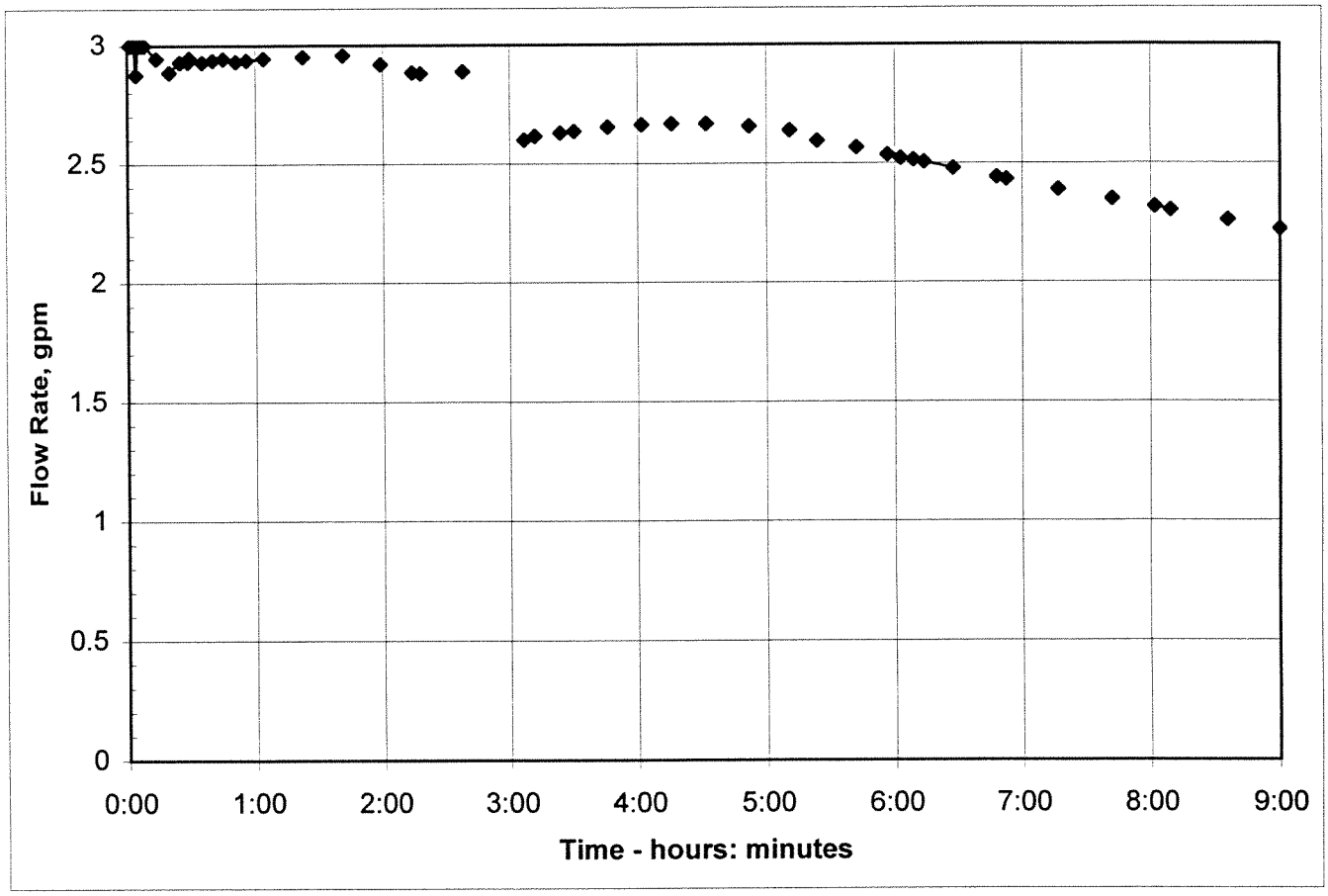


Figure 5-8b-13B

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5, I-605

Log of Boring 5-8b-P4

Sheet 1 of 1

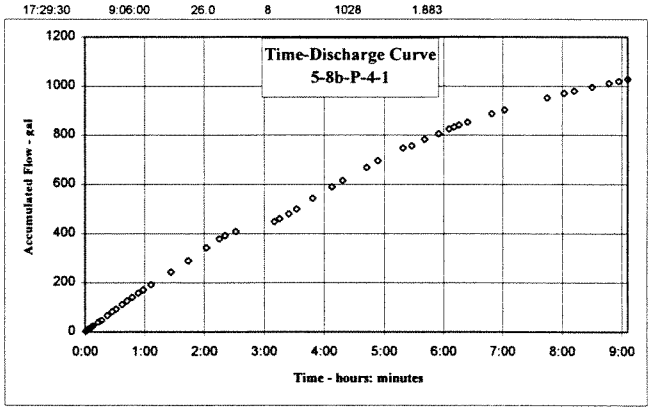
Date(s) Drilled	2/28/03	Logged By	P. Salter	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	2.1 meters
Drill Rig Type	Limited Acess	Drilling Contractor	Prosonic	Approximate Surface Elevation	35.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	See Well Construction on log	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES Type	Number	Sampling Resistance, blows/0.30m	Core Recovery, %	Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	Infiltration Test Well	REMARKS AND OTHER TESTS
	0							Silty sand (Topsoil)			BENTONITE CHIPS
			1	16				Silty sand (SM) medium dense, dark brown, moist, fine grained sand			WA: 44%<#200
											CASING
								Poorly graded sand (SP) medium dense, grayish brown, moist, fine grained sand			WA: 3%<#200
34	1		2	11					1		SA: 2%<#200
			3	16				Poorly graded sand with silt (SP-SM) medium dense, grayish brown, moist, fine grained sand			SA: 8%<#200
								With some roots			(COARSE AQUARIUM SAND)
	2		4	14							WA: 7%<#200
								Bottom of boring at 2.1 meters			
32	3										
	4										
30	5										
	6										
28	7										
	8										
26	9										

Figure 5-8b-14

5-8b-P-4-1

Clock	Accumulated Time	Tank Reading (gallons)	Difference (gallons)	Accumulated Flow (gallons)	Flow Rate (gpm)	Well Temp (°F)	Reservoir Temp (°F)
8:23:30	0:00:00	59.0	0	0	0.000		
8:24:30	0:01:00	54.5	4.5	4.5	4.500		
8:25:30	0:02:00	51.5	3	7.5	3.750	63.1	
8:26:30	0:03:00	49.0	2.5	10	3.333	63.1	
8:27:30	0:04:00	46.0	3	13	3.250	63.1	
8:28:30	0:05:00	43.0	3	16	3.200	63.1	
8:29:30	0:06:00	40.0	3	19	3.167	63.1	
8:30:30	0:07:00	37.0	3	22	3.143	63.1	
8:31:30	0:08:00	34.0	3	25	3.125	63.1	
8:37:00	0:13:30	17.5	16.5	41.5	3.074	63	
8:40:00	0:16:30	11.0	6.5	48	2.909		
8:41:00	0:17:30	60.0				63	
8:46:00	0:22:30	41.0	19	67	2.978	63	
8:51:00	0:27:30	25.5	15.5	82.5	3.000	63.1	
8:55:00	0:31:30	15.0	10.5	93	2.952		
8:56:00	0:32:30	61.0				63.7	
9:01:00	0:37:30	42.5	18.5	111.5	2.973	63.7	
9:06:00	0:42:30	28.0	14.5	126	2.965	63.7	
9:11:15	0:47:45	13.0	15	141	2.953		
9:12:15	0:48:45	58.0				63.5	
9:17:15	0:53:45	41.0	17	158	2.940	63.5	
9:22:15	0:58:45	27.0	14	172	2.928	63.5	
9:30:00	1:06:30	7.0	20	192	2.887		
9:31:30	1:08:00	60.0				63.7	
9:50:00	1:26:30	7.5	52.5	244.5	2.827		
9:51:00	1:27:30	56.0				64.0	
10:07:15	1:43:45	10.0	46	290.5	2.800		
10:08:15	1:44:45	62.0				64.4	
10:25:45	2:02:15	10.0	52	342.5	2.802		
10:26:45	2:03:15	59.0				64.6	
10:38:30	2:15:00	23.5	35.5	378	2.800	64.4	
10:44:15	2:20:45	10.0	13.5	391.5	2.782	64.4	
10:48:00	2:24:30	17.5				64.4	
10:55:00	2:31:30	0.0	17.5	409	2.700		
11:20:15	2:56:45	60.0					
11:34:00	3:10:30	21.0	39	448	2.352	66.4	
11:39:00	3:15:30	9.0	12	460	2.353		
11:40:30	3:17:00	55.0				67.3	
11:48:15	3:24:45	34.5	20.5	480.5	2.347	67.3	
11:56:15	3:32:45	15.0	19.5	500	2.350		
11:57:15	3:33:45	60.0				66.7	
12:12:00	3:48:30	17.0	43	543	2.376		
12:13:00	3:49:30	56.0				68.2	
12:31:15	4:07:45	10.0	46	589	2.377		
12:32:30	4:09:00	60.0				68.4	
12:42:00	4:18:30	33.0	27	616	2.383		
12:43:00	4:19:30	59.0				68.4	
13:06:15	4:42:45	6.0	53	669	2.366		
13:07:15	4:43:45	60.0				69.3	
13:17:15	4:53:45	33.0	27	696	2.369		
13:17:45	4:54:15	60.0				68.5	
13:42:30	5:19:00	8.0	52	748	2.345	68.9	
13:47:00	5:23:30	32.0					
13:51:30	5:28:00	23.0	9	757	2.308		
13:52:15	5:28:45	60.0				69.6	
14:04:30	5:41:00	33.5	26.5	783.5	2.298	70	
14:18:30	5:55:00	11.0	22.5	806	2.270	69.6	
14:19:00	5:55:30	62.0					
14:29:00	6:05:30	42.0	20	826	2.260		
14:34:00	6:10:30	34.0	8	834	2.251	69.6	
14:39:00	6:15:30	27.0	7	841	2.240	69.4	
14:48:00	6:24:30	14.5	12.5	853.5	2.220		
14:49:00	6:25:30	62.0				69.6	
15:12:30	6:49:00	27.5	34.5	888	2.171	69.4	
15:25:15	7:01:45	12.5	15	903	2.141		
15:26:15	7:02:45	60.0				68.4	
16:08:30	7:45:00	11.5	48.5	951.5	2.046		
16:09:30	7:46:00	60.0				67.1	
16:25:30	8:02:00	41.0	19	970.5	2.013	66.9	
16:35:30	8:12:00	32.0	9	979.5	1.991	66.7	
16:53:30	8:30:00	16.0	16	995.5	1.952		
16:54:30	8:31:00	58.5				65.7	
17:10:30	8:47:00	42.0	16.5	1012	1.920		
17:20:30	8:57:00	34.0	8	1020	1.899	65.3	
17:29:30	9:06:00	26.0	8	1028	1.883		



Calculation of Test Condition

Float depth =	2.4 ft	0.73 meters
Borehole depth =	7 ft	2.13 meters
Height of water in test well, h =	4.6 ft	1.40 meters
Depth of water table =	30 ft	9.14 meters
Depth to impervious layer =	23.5 ft	7.16 meters
Unsaturated distance between water table or impervious layer and surface of well water, Tu=	21.1 ft	6.43 meters

Based on the Test Data, Condition I is the most applicable

Calculation of equivalent radius of the well, r_w

mass of sand in borehole, m_s =	125 lbs	
density of sand in borehole, ρ_s =	102.35 lbs/cu ft	
r_w =	0.291 ft	3.49 inches

Calculations for k_{20}

h =	4.6 ft	55.2 inches
Steady-state discharge rate, q =	0.841 gpm	194.4 cu.in./min
Average well water temperature, T =	65.30 °F	18.50 °C
Kinematic viscosity ratio, V =	1.0313 no units	
Condition I - k20=	0.0264 in/min	1.5812 in/hr

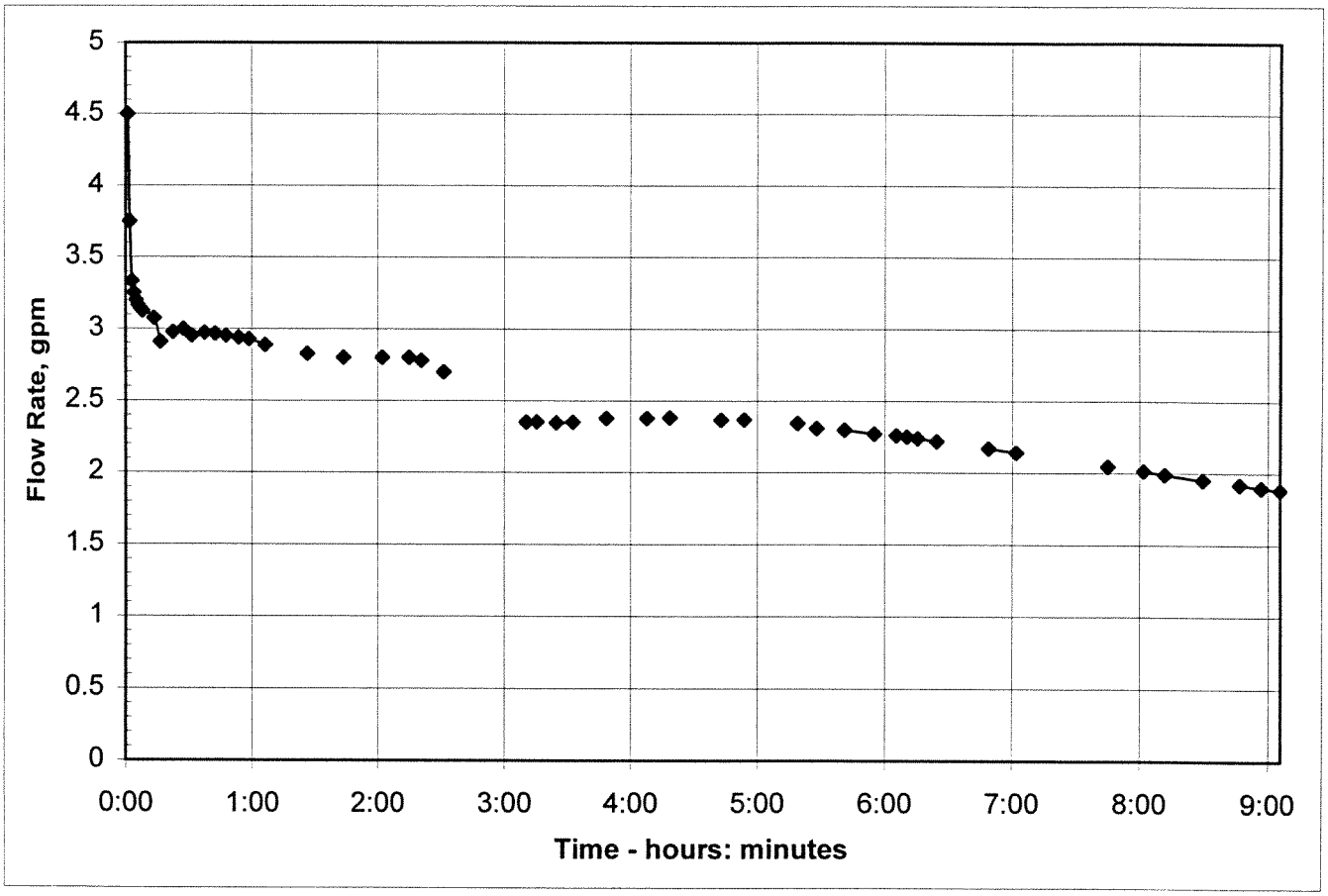
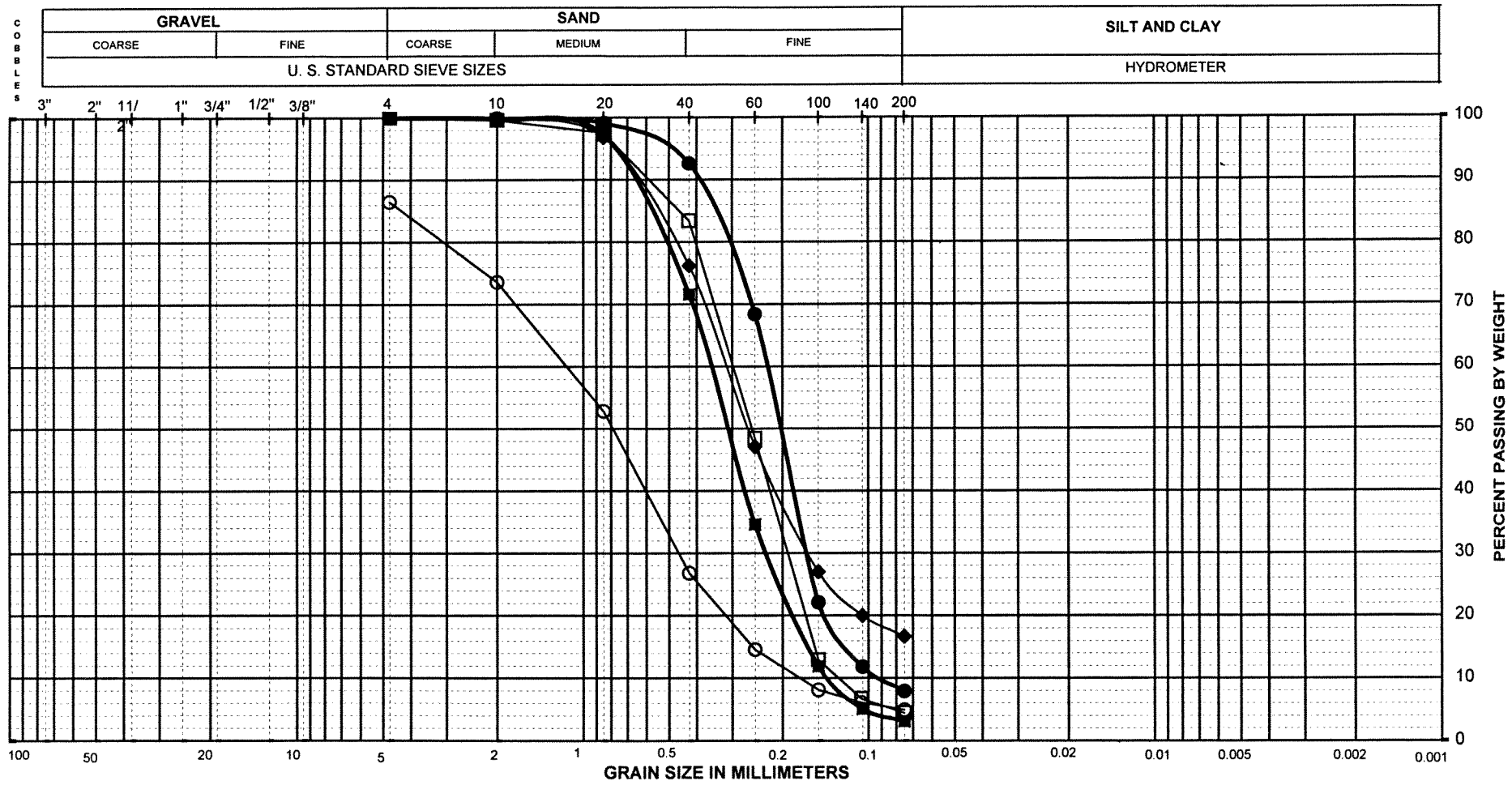


Figure 5-8b-15B

UNIFIED SOIL CLASSIFICATION



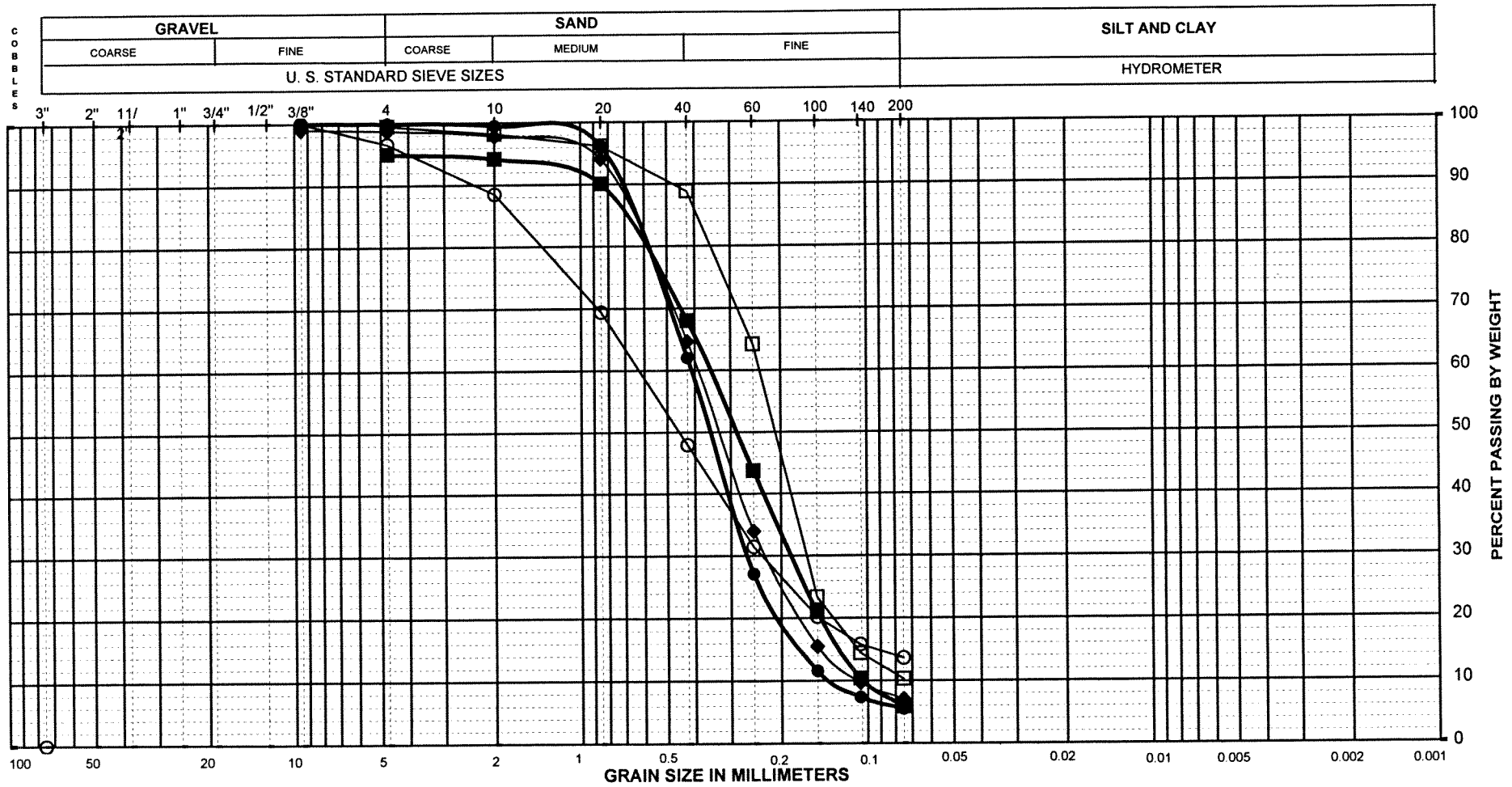
Exploration No.	Sample No.	Depth (m)	SYMBOL	Wn (%)	LL	PI	% Clay	Description and Classification	D_{60}	D_{30}	D_{10}	C_u	C_c
5-8b-B-1	2	0.76	●					**Gray poorly graded Sand with silt (SP-SM)**	0.23	0.18	0.1	2.4	1.5
5-8b-B-1	5	2.13	◆	7.3				**Grayish brown silty Sand (SM)**	0.31	0.17			
5-8b-B-1	8	3.51	■					**Gray poorly graded Sand (SP)**	0.37	0.23	0.16	2.3	0.9
5-8b-B-1	11	6.10	○					**Brown well-graded Sand (SW)**	1.2	0.490	0.19	6.3	1.1
5-8b-B-2	4	1.68	□	0.5				**Light gray poorly graded Sand (SP)**	0.3	0.2	0.15	2.0	0.9

PROJECT NAME: Caltrans IFB Site Selection Study

PARTICLE-SIZE DISTRIBUTION CURVES

Figure: 5-8b-16

UNIFIED SOIL CLASSIFICATION



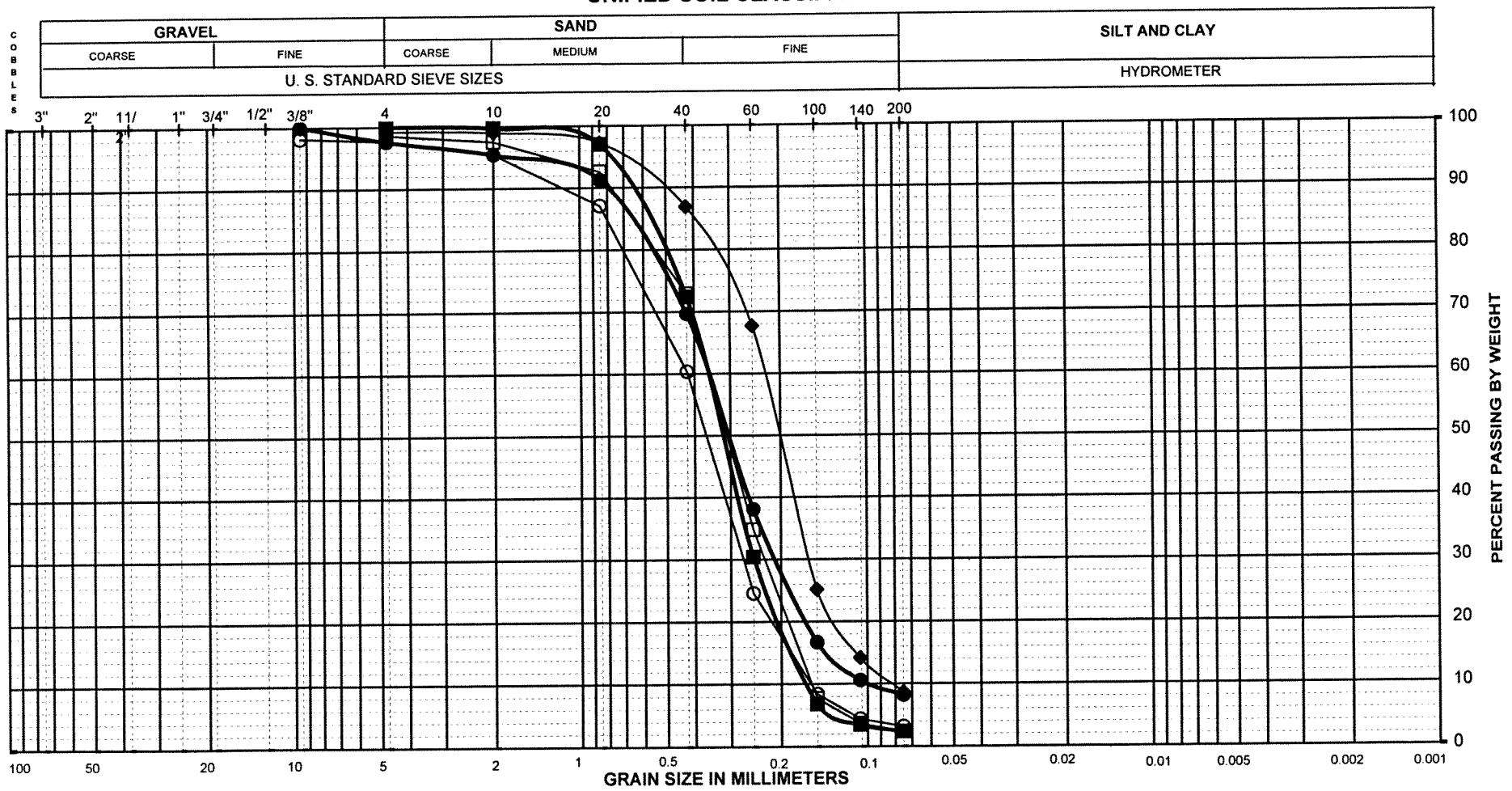
Exploration No.	Sample No.	Depth (m)	SYMBOL	Wn (%)	LL	PI	% Clay	Description and Classification	D_{60}	D_{30}	D_{10}	C_u	C_c
5-8b-B-2	6	2.59	●	0.4				Light gray poorly graded Sand with silt (SP-SM)	0.42	0.28	0.15	2.8	1.2
5-8b-B-2	9	3.96	◆	1.3				Light gray poorly graded Sand with silt (SP-SM)	0.4	0.24	0.11	3.6	1.3
5-8b-MW-1	3	1.37	■	0.6				Light gray poorly graded Sand with silt (SP-SM)	0.36	0.19	0.11	3.3	0.9
5-8b-MW-1	9	4.12	○					Gray silty Sand (SM)	0.62	0.23			
5-8b-P-1	3	1.37	□	1.3				Dark gray poorly graded Sand with silt (SP-SM)	0.24	0.18	0.07	3.4	1.9

PROJECT NAME: **Caltrans IFB Site Selection Study**

PARTICLE-SIZE DISTRIBUTION CURVES

Figure: 5-8b-17

UNIFIED SOIL CLASSIFICATION



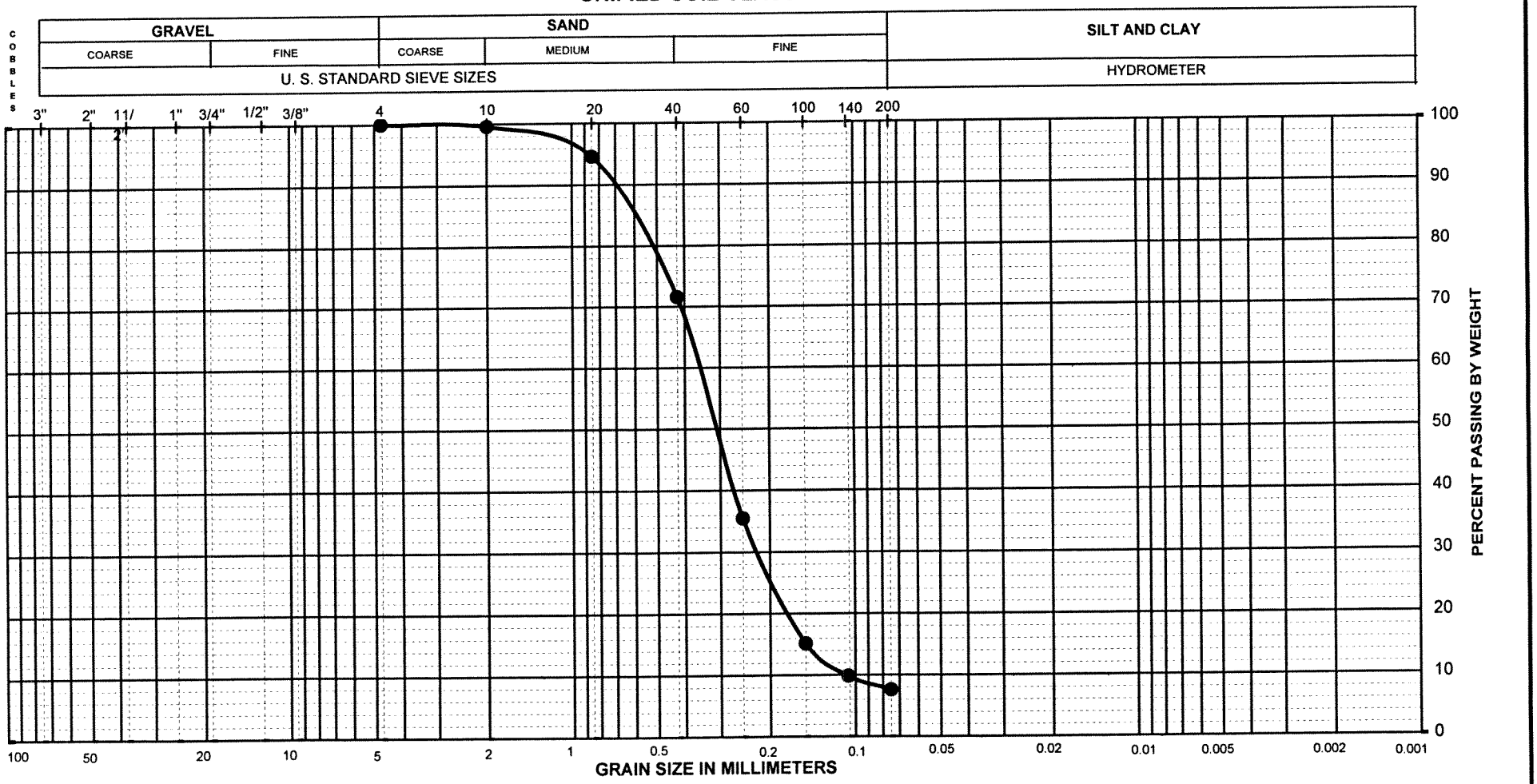
Exploration No.	Sample No.	Depth (m)	SYMBOL	Wn (%)	LL	PI	% Clay	Description and Classification	D_{60}	D_{30}	D_{10}	C_u	C_c
5-8b-P-1	5	2.29	●	0.8				**Brown poorly graded Sand with silt (SP-SM)**	0.37	0.21	0.1	3.7	1.2
5-8b-P-2	3	1.22	◆					**Light gray poorly graded Sand with silt (SP-SM)**	0.23	0.17	0.09	2.7	1.5
5-8b-P-3	1	0.30	■	2.8				**Gray poorly graded Sand (SP)**	0.37	0.26	0.18	2.1	1.0
5-8b-P-3	3	1.22	○	0.5				**Light gray poorly graded Sand (SP)**	0.43	0.29	0.17	2.5	1.2
5-8b-P-4	2	0.76	□	0.5				**Light gray poorly graded Sand (SP)**	0.36	0.23	0.18	2.0	0.8

PROJECT NAME: Caltrans IFB Site Selection Study

PARTICLE-SIZE DISTRIBUTION CURVES

Figure: 5-8b-18

UNIFIED SOIL CLASSIFICATION

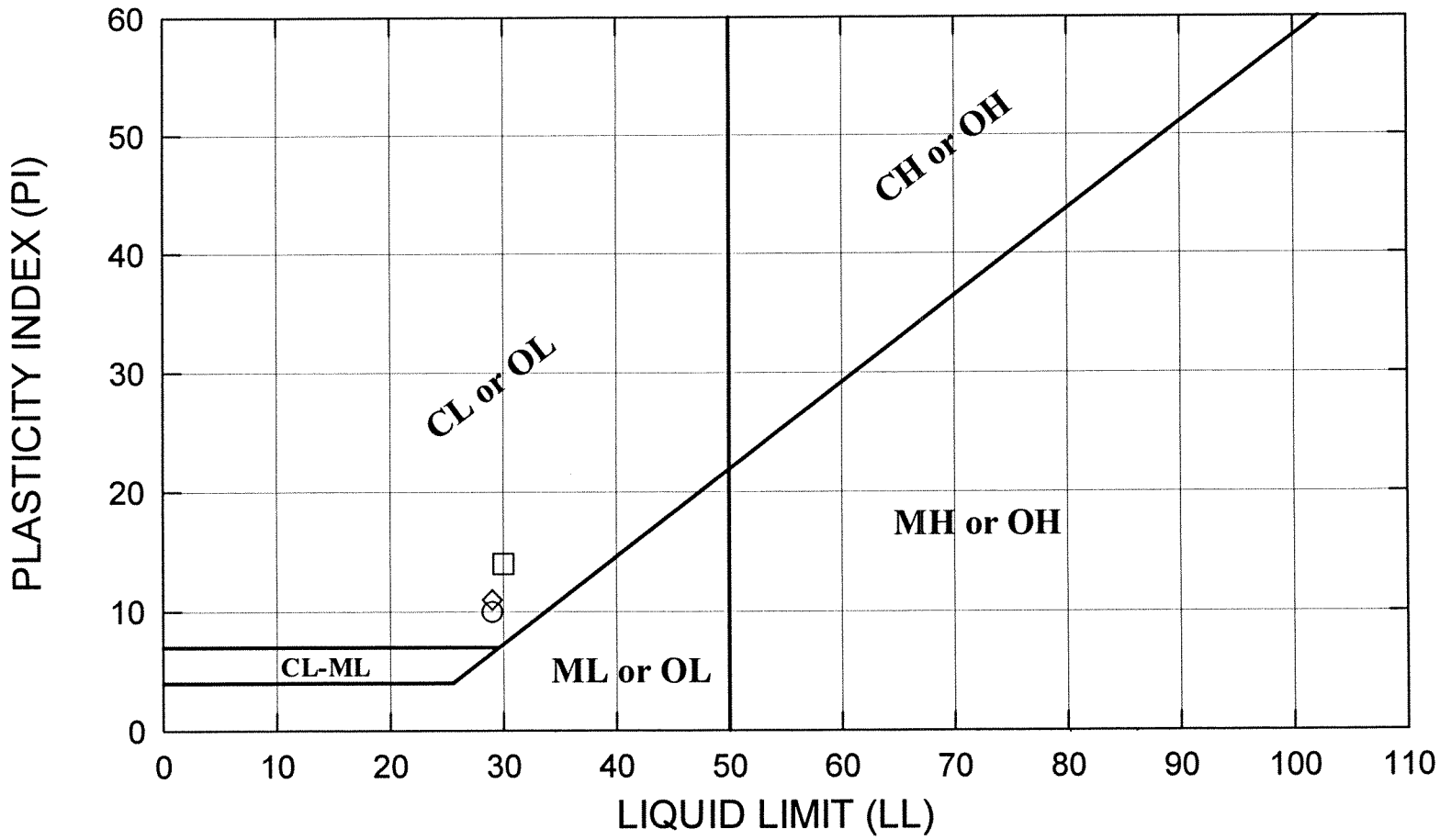


Exploration No.	Sample No.	Depth (m)	SYMBOL	Wn (%)	LL	PI	% Clay	Description and Classification	D_{60}	D_{30}	D_{10}	C_u	C_c
5-8b-P-4	3	1.22	●					**Light gray poorly graded Sand with silt (SP-SM)**	0.37	0.22	0.11	3.4	1.2

PROJECT NAME: **Caltrans IFB Site Selection Study**

PARTICLE-SIZE DISTRIBUTION CURVES

Figure: 5-8b-19



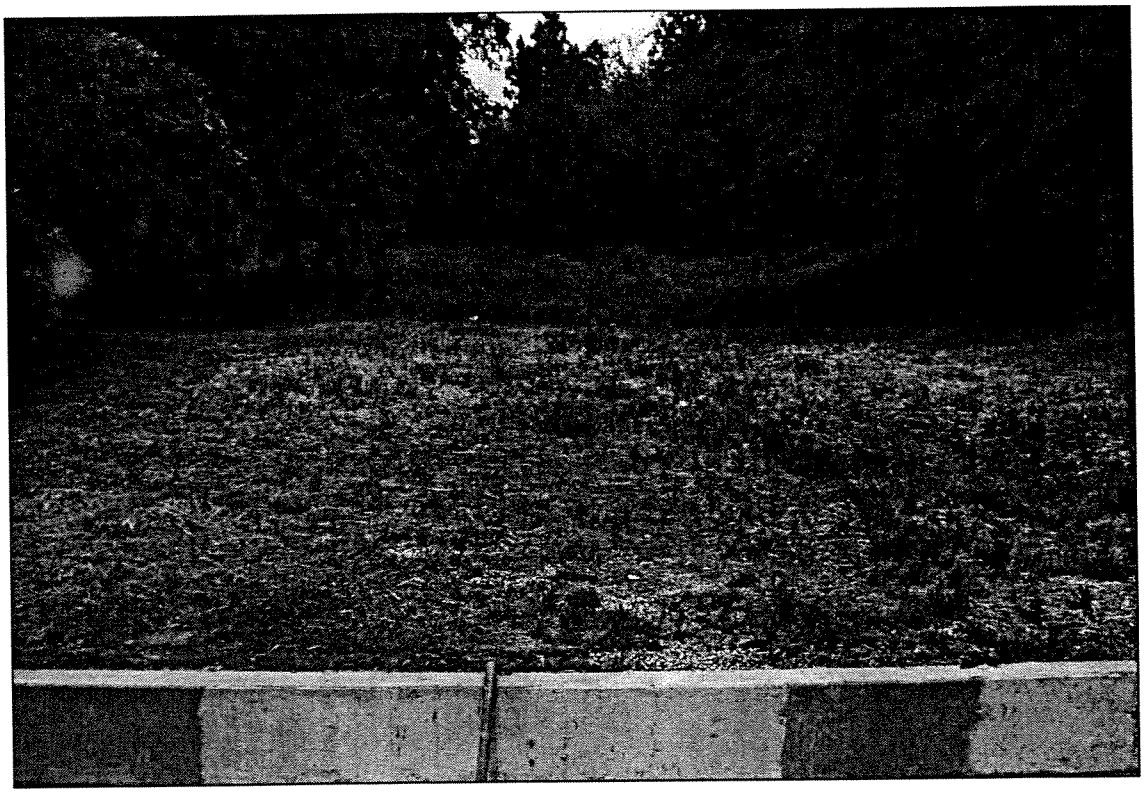
LEGEND: ○ 5-8b-MW-1@0.46m ◇ 5-8b-P-2@0.30m ★ _____ ● _____

□ 5-8b-B-2@7.62m △ _____ ▲ _____ × _____

PLASTICITY CHART

	Date: April 2003	Project: Caltrans Infiltration Basin Project	Figure 5-8b-20

s.mikesmith.PiChart.PiMaster.GRF



Priority 6-5-8b (I-605 Interchange) Site Photographs

Date: April 2003	**Project: Caltrans IFB Site Selection Study**	Figure: 5-8b-21

APPENDIX G

5-8d (I-605 Interchange)

Table 1	Geotechnical Laboratory Test Data
Figure 5-8d-1	Site Plan
Figure 5-8d-2	Geologic Cross Section A-A'
Figure 5-8d-3	Log of Boring 5-8d-MW-1
Figure 5-8d-4	Groundwater Monitoring Well 5-8d-MW-1 Diagram
Figure 5-8d-5	Groundwater Monitoring Well 5-8d-MW-1 Photographs
Figure 5-8d-6	Log of Boring 5-8d-B-1
Figure 5-8d-7	Log of Boring 5-8d-B-2
Figure 5-8d-8	Particle-Size Distribution Curves
Figure 5-8d-9	Plasticity Chart
Figure 5-8d-10	Plasticity Chart
Figure 5-8d-11	Site Photographs

TABLE 1

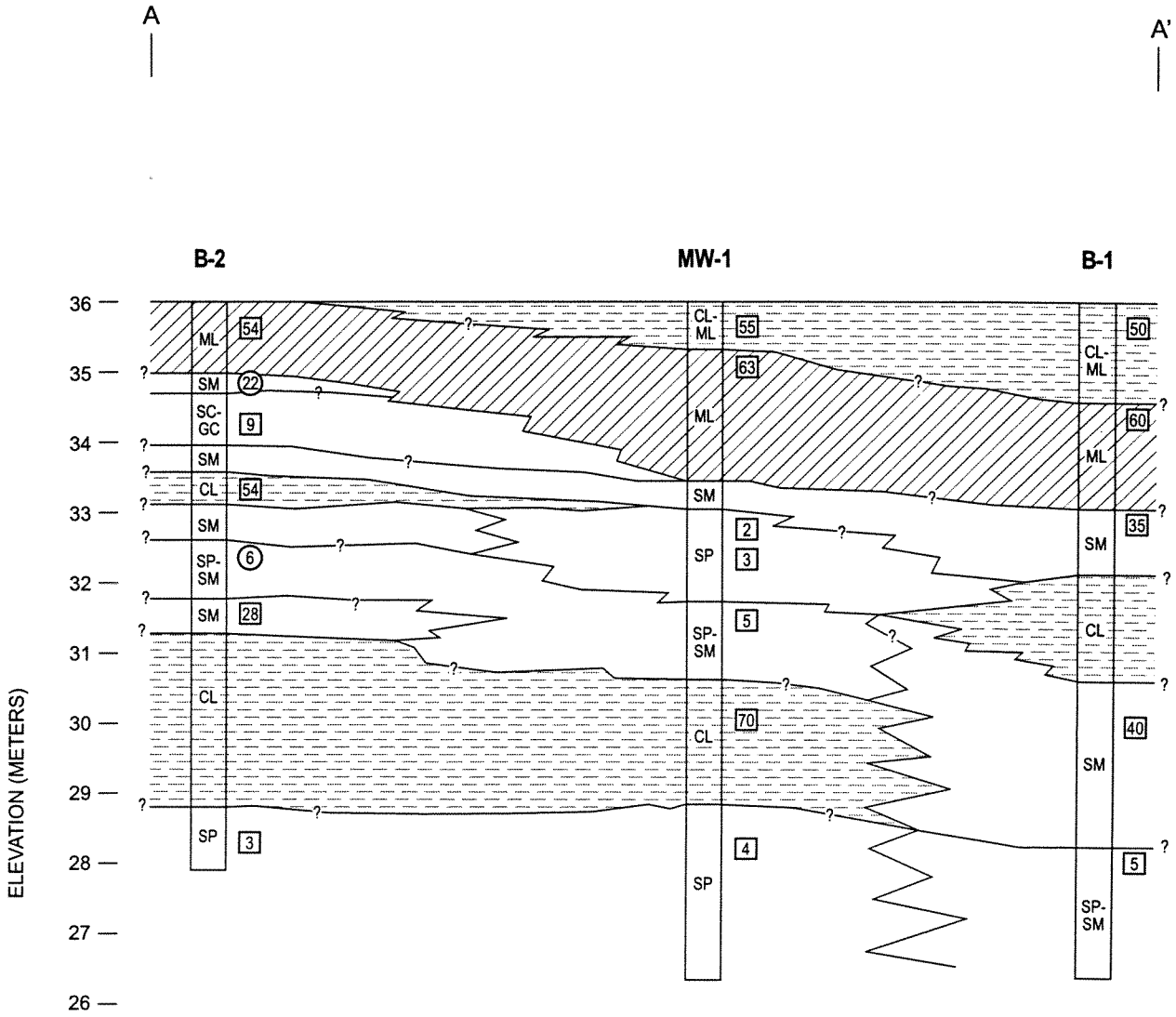
5-8d GEOTECHNICAL LABORATORY TEST DATA

Location							Atterberg Limits		Sieve				Chemical Test Data		
Exploration Number	Sample/ Specimen Number	Depth (m)	Caltrans Soil Classification	Water Content (%)	Total Unit Weight (pcf)	Dry Unit Weight (pcf)	Liquid Limit (%)	Plasticity Index (%)	Gravel (%)	Sand (%)	<#200 Fines (%)	5 microns (%)	pH	O.M.% (% organic matter)	CEC (me/g)[1]
5-8d-MW-1	1	0.15	CL-ML	14.9	-	-	24	5	-	-	55	-	-	-	-
5-8d-MW-1	2	0.61	CL	18.3	-	-	26	4	-	-	63	-	-	-	-
5-8d-MW-1	4	1.52	SM	13.3	-	-	-	-	-	-	48	-	-	-	-
5-8d-MW-1	7	2.90	SP	1.5	-	-	-	-	-	-	2	-	-	-	-
5-8d-MW-1	8	3.35	SP	0.7	-	-	-	-	0	97	3	-	-	-	-
5-8d-MW-1	10	4.27	SP	1.7	-	-	-	-	-	-	5	-	-	-	-
5-8d-MW-1	11	6.10	ML	24.5	-	-	34	10	-	-	76	-	-	-	-
5-8d-MW-1	12	7.62	SP	0.4	-	-	-	-	-	-	4	-	-	-	-
5-8d-B-1	1	0.15	SC/CL	13.5	-	-	23	4	-	-	50	-	-	-	-
5-8d-B-1	2	0.61	CL-ML	-	-	-	-	-	-	-	-	-	7.9	5.3	0.183
5-8d-B-1	4	1.52	ML	3.8	-	-	24	1	-	-	60	-	-	-	-
5-8d-B-1	7	2.90	SM	6.3	-	-	-	-	-	-	35	-	-	-	-
5-8d-B-1	10	4.27	CL	-	-	-	37	14	-	-	-	-	-	-	-
5-8d-B-1	11	6.10	SM	10.5	-	-	-	-	-	-	40	-	-	-	-
5-8d-B-1	12	7.62	SP-SM	1.4	-	-	-	-	7	88	5	-	-	-	-
5-8d-B-2	1	0.15	CL	15.4	-	-	26	7	-	-	54	-	-	-	-
5-8d-B-2	3	1.07	SM	6.1	-	-	23	2	-	-	45	-	-	-	-
5-8d-B-2	4	1.52	GC	5.7	-	-	-	-	60	18	22	-	-	-	-
5-8d-B-2	5	1.98	SC	7.3	-	-	-	-	-	-	39	-	-	-	-
5-8d-B-2	6	2.44	CL	12.0	-	-	-	-	-	-	54	-	-	-	-
5-8d-B-2	8	3.35	SP-SM	2.0	-	-	-	-	0	94	6	-	-	-	-
5-8d-B-2	10a	4.27	SM	5.9	-	-	-	-	-	-	28	-	-	-	-
5-8d-B-2	11	6.10	ML	-	-	-	32	7	-	-	-	-	-	-	-
5-8d-B-2	12	7.62	SP	2.6	-	-	-	-	-	-	3	-	-	-	-

Notes: [1] Cation excange capacity, millequivalents per gram

Priority 6-5-8d (I-605 Interchange) Site Plan

April 2003	Infiltration Basin Site Selection Study	Figure 5-8d-1



Water Level Observed During Drilling
Groundwater Elevation Feb. 2003
Float Valve Location
Top of Hydraulic Conductivity Test Section
(052) In-hole Hydraulic Conductivity Test Value (inches/hour)
(46) Hydrometer Test, % Passing #200 Sieve
(72) Sieve Analysis, % Passing #200 Sieve
[32] Wash Analysis, % Passing #200 Sieve
Clays and Clays w/Silt
Silt

Note: Groundwater Not Observed

HORIZONTAL SCALE:
1 cm = 5 meters

VERTICAL SCALE:
1 cm = 1 meter

PRIORITY 6 – SITE 5-8D GEOLOGIC CROSS SECTION A-A'

Date: APRIL 2003	Project: INFILTRATION BASIN SITE SELECTION STUDY	Figure 5-8d-2

L:/CALTRANS/C GOETZ/xsect 605 5-8d.FH10

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5 FWY, I-605

Log of Boring 5-8d-MW-1

Sheet 1 of 2

Date(s) Drilled	2/20/03	Logged By	C. Goetz	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	9.6 meters
Drill Rig Type	CME 75	Drilling Contractor	Prosonic	Approximate Surface Elevation	37.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	See Well Construction Figure	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES Type	Number	Sampling Resistance, blows/0.30m	Core Recovery, %	Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	PID, ppm	REMARKS AND OTHER TESTS
	0										
			1	7				Sandy lean clay to sandy silt (CL-ML) loose, brown, moist, fine grained sand, with trace fine grained gravel	15		WA: 55%<#200 LL=24; PI=5
			2	5				Silty lean clay with sand (CL-ML) loose, brown, moist, fine grained sand	18		WA: 63%<#200 LL=26; PI=4
36	1		3	6							
			4	7				Silty sand (SM) loose, brown, moist, fine to medium grained sand	13		WA: 48%<#200
	2		5	10							
			6	10							
34	3		7	19				Poorly graded sand (SP) medium dense, light brown, moist, fine grained sand	2		WA: 2%<#200
			8	17					1		SA: 3%<#200
	4		9	17							
			10	22				Poorly graded sand with silt (SP-SM) medium dense, light brown, dry, fine grained sand	2		WA: 5%<#200
32	5							Sandy silt (ML) loose, medium gray, moist, fine grained sand			
	6		11	8					25		LL=34; PI=10 WA: 76%<#200
30	7							Poorly graded sand (SP) dense, light grayish brown, dry, fine grained sand			
	8		12	40					0		WA: 4%<#200
								Becomes very dense, with trace fine grained gravel			
28	9										

Figure 5-8d-3

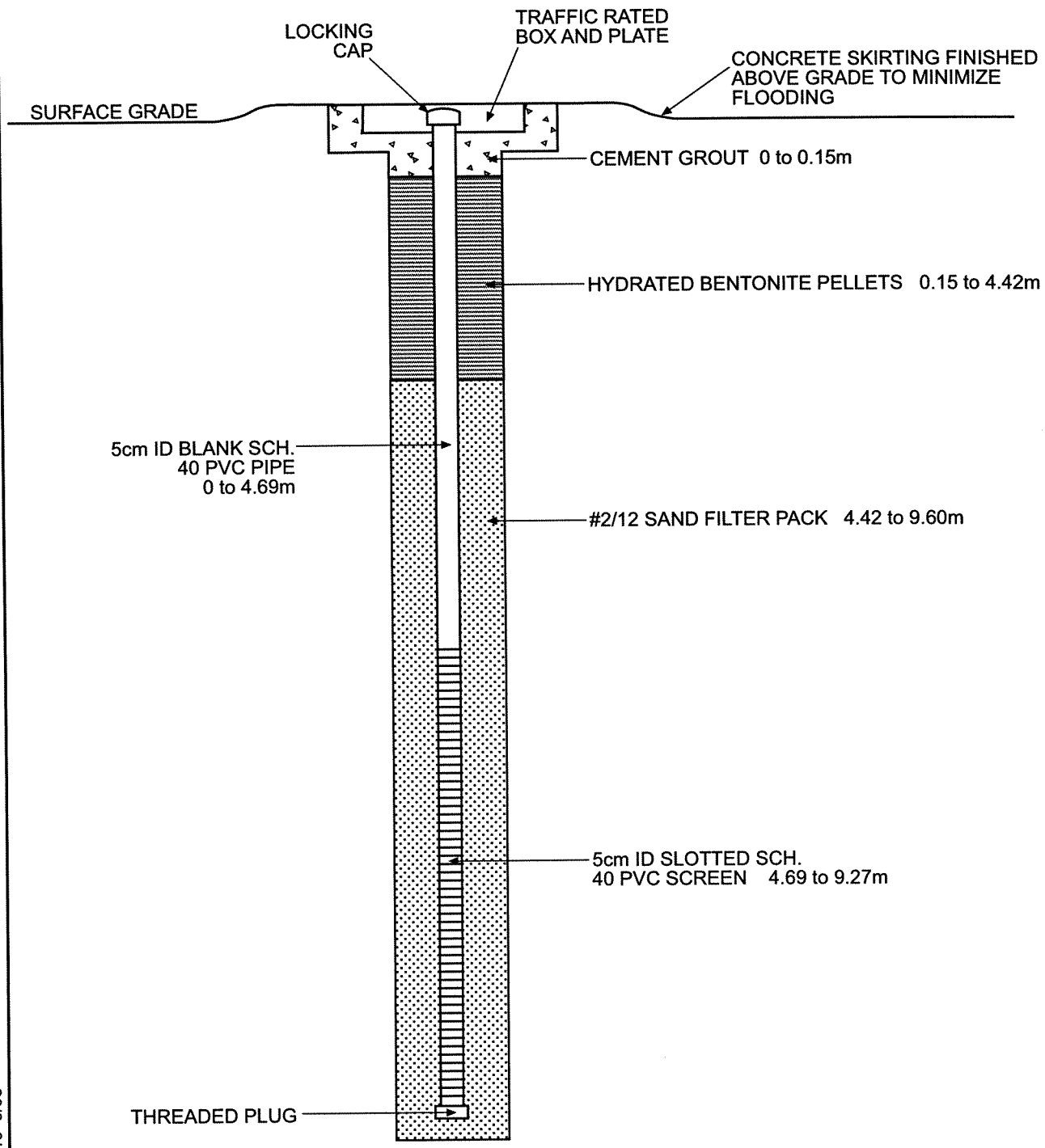
Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5 FWY, I-605

Log of Boring 5-8d-MW-1

Sheet 2 of 2

Elevation, meters	Depth, meters	SAMPLES: Type	SAMPLES: Number	SAMPLES: Sampling Resistance, blows/0.30m	SAMPLES: Core Recovery, %	SAMPLES: Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	PID, ppm	REMARKS AND OTHER TESTS
			13	51							
								Bottom of boring at 9.6 meters			
	10										
-26	11										
	12										
-24	13										
	14										
-22	15										
	16										
-20	17										
	18										
-18	19										

Figure 5-8d-3



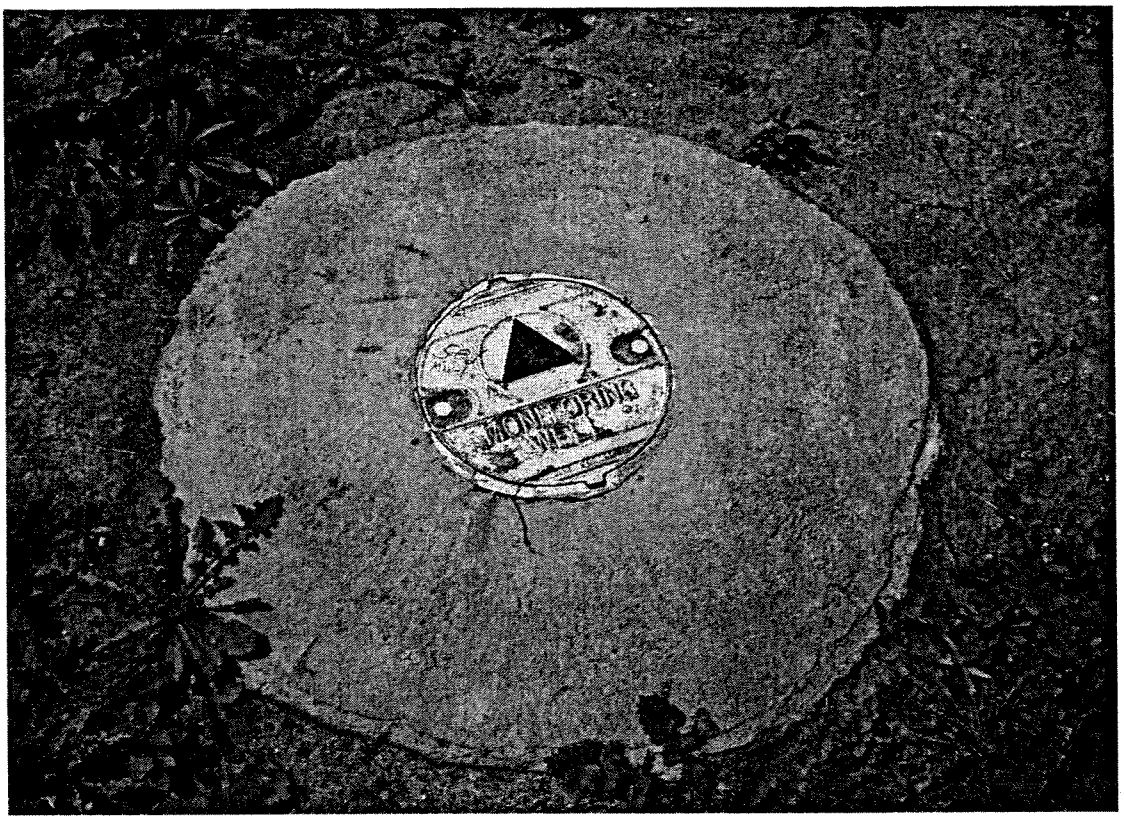
5-8d-MW-1

Not to Scale

GROUNDWATER MONITORING WELL DIAGRAM

Date: APRIL 2003	Project: INFILTRATION BASIN SITE SELECTION STUDY	Figure 5-8d-4

L:/Caltrans/GW monitoring well diag.fh10 5/03



5-8d-MW-1

Date: April 2003	**Project: Caltrans IFB Site Selection Study**	Figure: 5-8d-5

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5 FWY, I-605

Log of Boring 5-8d-B-1

Sheet 1 of 2

Date(s) Drilled	2/20/03	Logged By	C. Goetz	Checked By	V. Glisic
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	9.6 meters
Drill Rig Type	CME 75	Drilling Contractor	Prosonic	Approximate Surface Elevation	37.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	Soil Cuttings	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	Number	Sampling Resistance, blows/0.30m	Core Recovery, %	Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	PID, ppm	REMARKS AND OTHER TESTS
	0										
			1	6				Sandy silty lean clay (CL-ML) loose, brown, moist, fine grained sand	14		WA: 50%<#200 LL=23; PI=4 pH=7.9; OM=5.3% CEC=0.183 me/g
			2	7				Decreasing sand content (silt)			
36	1		3	8							
			4	13				Sandy silt (ML) medium dense, light brown, dry	4		WA: 60%<#200 LL=24; PI=1
	2		5	13				Increase in sand content			
			6	15				Decrease in sand content			
34	3		7	13				Silty sand (SM) medium dense, light brown, moist, fine grained sand	6		WA: 35%<#200
			8	14							
	4		9	11				Lean clay (CL) stiff, dark brown, moist			
			10	16							LL=37; PI=14
32	5										
	6							Silty sand (SM) medium dense, light brown, moist, fine grained sand			
			11	15					10		WA: 40%<#200
30	7										
	8		12	41				Poorly graded sand with silt (SP-SM) dense, light grayish brown, dry, fine grained sand, with trace fine grained gravel	1		WA: 5%<#200
28	9										

Figure 5-8d-6

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5 FWY, I-605

Log of Boring 5-8d-B-1

Sheet 2 of 2

Elevation, meters	Depth, meters	SAMPLES: Type	SAMPLES: Number	SAMPLES: Sampling Resistance, blows/0.30m	SAMPLES: Core Recovery, %	SAMPLES: Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	PID, ppm	REMARKS AND OTHER TESTS
			13	47				With gravel			
								Bottom of boring at 9.6 meters			
	10										
26	11										
	12										
24	13										
	14										
22	15										
	16										
20	17										
	18										
18	19										

Figure 5-8d-6

Project: INFILTRATION BASIN SITE SELECTION STUDY
Project Location: I-5 FWY, I-605

Log of Boring 5-8d-B-2

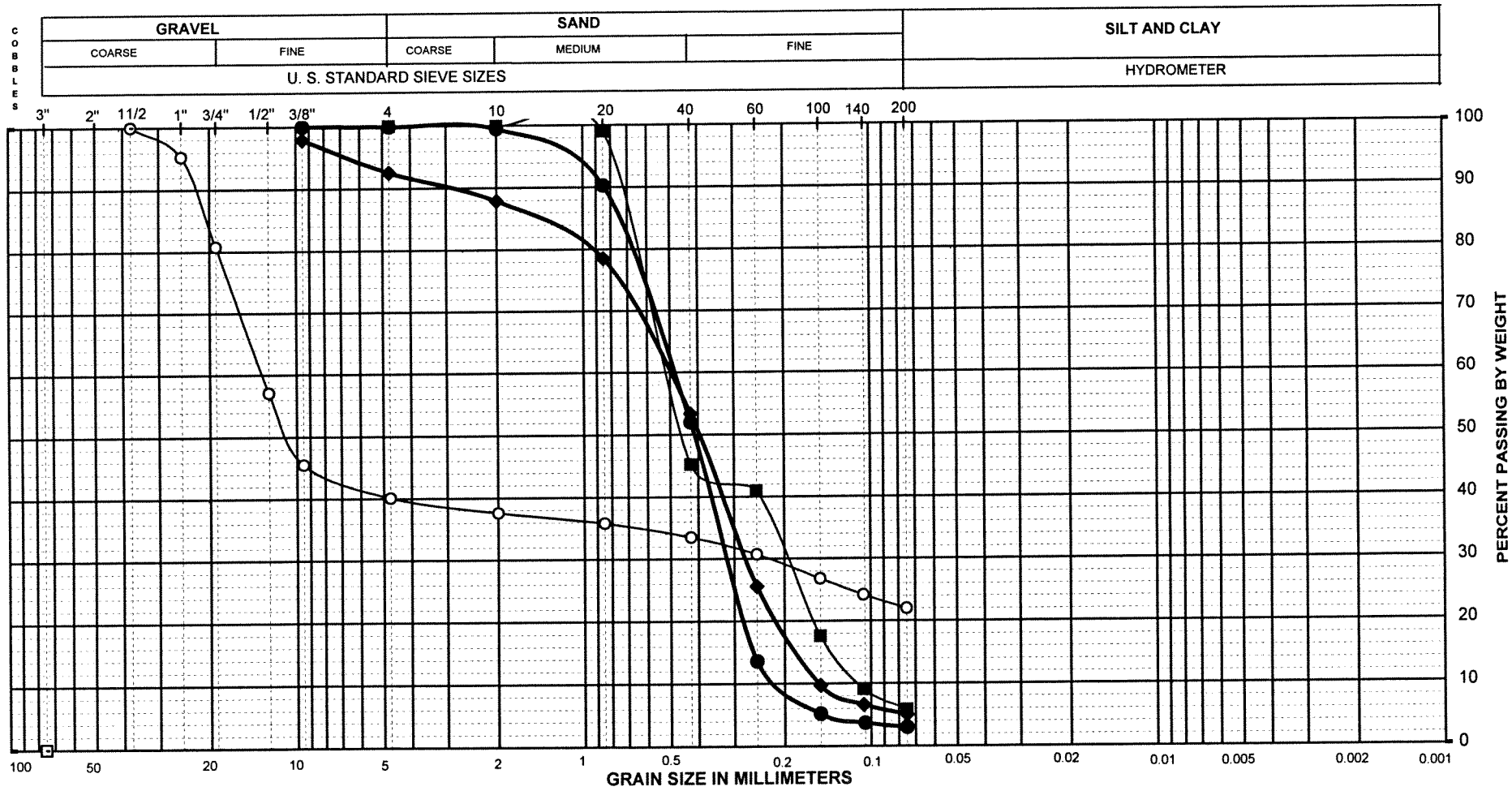
Sheet 1 of 1

Date(s) Drilled	2/20/03	Logged By	M. Siem	Checked By	C. Goetz
Drilling Method	Hollow-Stem Auger	Drill Bit Size/Type	203mm auger bit	Total Depth of Borehole	8.1 meters
Drill Rig Type	CME 75	Drilling Contractor	Prosonic	Approximate Surface Elevation	37.0 m MSL
Groundwater Level(s)	Not encountered	Sampling Method(s)	SPT, Grab	Hammer Data	63.5 kg, 762mm drop
Borehole Backfill	Soil Cuttings	Location	See Site Plan		

Elevation, meters	Depth, meters	SAMPLES: Type	Number	Sampling Resistance, blows/0.30m	Core Recovery, %	Environmental Sample ID	Graphic Log	MATERIAL DESCRIPTION	Water Content, %	PID, ppm	REMARKS AND OTHER TESTS
	0							Topsoil, wood chips, organic silty sand (SM) [FILL]			
			1	6				Lean clay (CL) firm, brown, moist, trace fine grained gravel and red brown mottling [FILL]	15		WA: 54%<#200 LL=26; PI=7
			2	5							
36	1		3	7				Silty sand (SM) loose, gray, moist, fine grained sand [FILL]	6		WA: 45%<#200 LL=23; PI=2
			4	Grab				Silt with sand (ML) firm, brown, moist, fine grained sand, with concrete pieces [FILL]	6		SA: 22%<#200
	2							Silty sand with gravel to silty gravel (SM/GM) brown, moist, fine grained sand, blue-gray gravel 10mm to 40mm [FILL]	7		SA: 39%<#200
			5	14				Silt with sand (ML) stiff, brown, moist, fine grained sand			
			6	13				Silty sand (SM) lense, dark brown, moist, organic staining	12		WA: 54%<#200
34	3		7	13				Silty sand (SM) medium dense, dark brown, moist, fine grained sand			
			8	13				Poorly graded sand with silt (SP-SM) medium dense, light brown, moist to dry, fine grained sand	2		SA: 6%<#200
	4		9	16							
			10	9				Silty sand (SM) loose, brown, moist, fine grained sand	6		WA: 28%<#200
32	5							Lean clay (CL) stiff, brown, moist			
	6		11	9				Silt (ML) stiff, blue-gray, moist			LL=32; PI=7
30	7							Poorly graded sand (SP) dense, light gray, dry, fine to medium grained sand			
	8		12	41					3		WA: 3%<#200
								Bottom of boring at 8.1 meters			
28	9										

Figure 5-8d-7

UNIFIED SOIL CLASSIFICATION

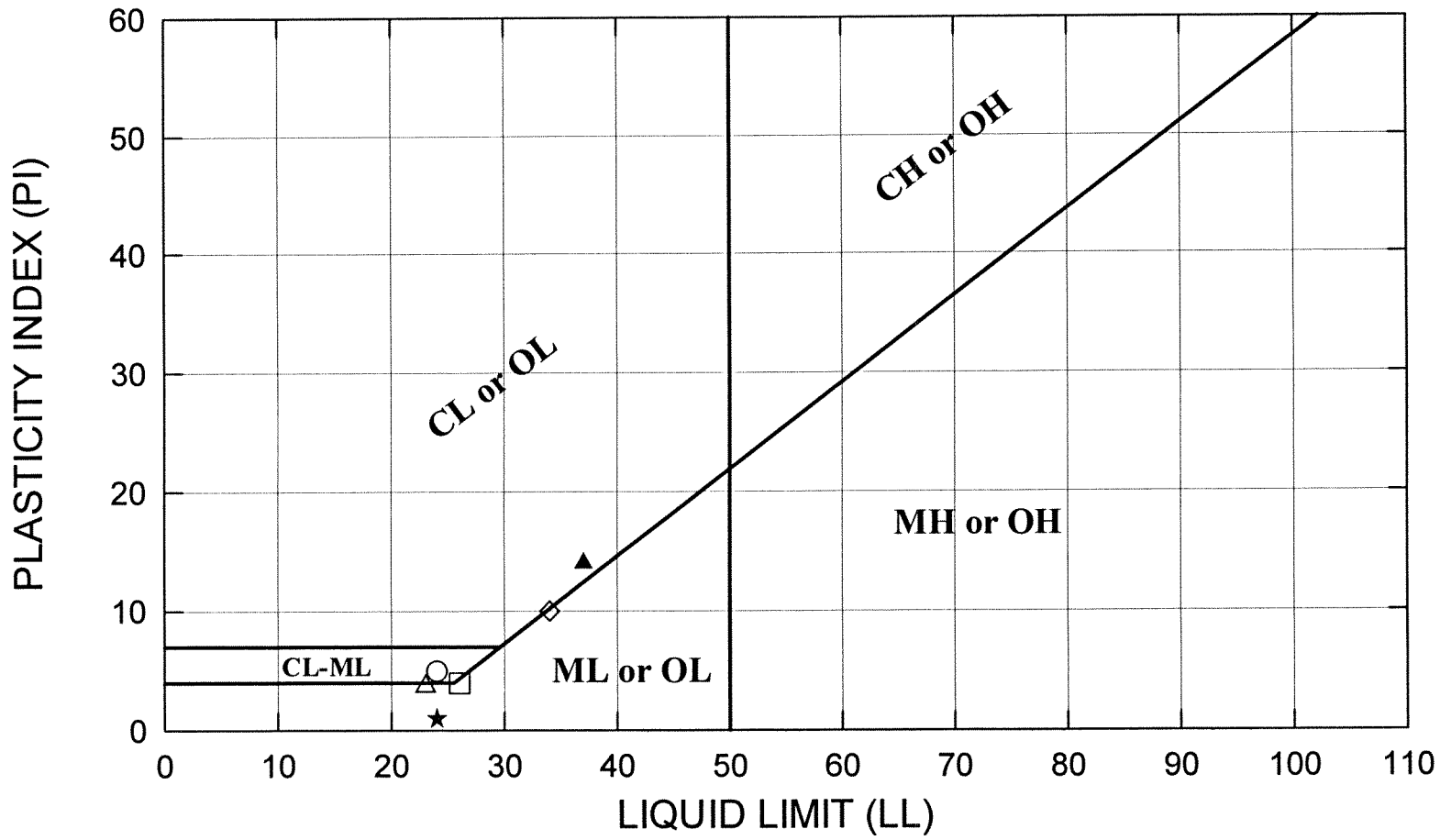


Exploration No.	Sample No.	Depth (m)	SYMBOL	Wn (%)	LL	PI	% Clay	Description and Classification	D_{60}	D_{30}	D_{10}	C_u	C_c
5-8d-MW-1	8	3.35	●	0.7				**Brown poorly graded Sand (SP)**	0.49	0.32	0.23	2.1	0.9
5-8d-B-1	12	7.62	◆	1.4				**Gray poorly graded Sand with silt (SP-SM)**	0.4	0.28	0.17	2.4	1.2
5-8d-B-2	8	3.35	■	2.0				**Brown poorly graded Sand with silt (SP-SM)**	0.51	0.2	0.11	4.6	0.7
5-8d-B-2	4	1.52	○	5.7				**Gray clayey Gravel with sand (GC)**	14	0.22			

PROJECT NAME: Caltrans IFB Site Selection Study

PARTICLE-SIZE DISTRIBUTION CURVES

Figure: 5-8d-8



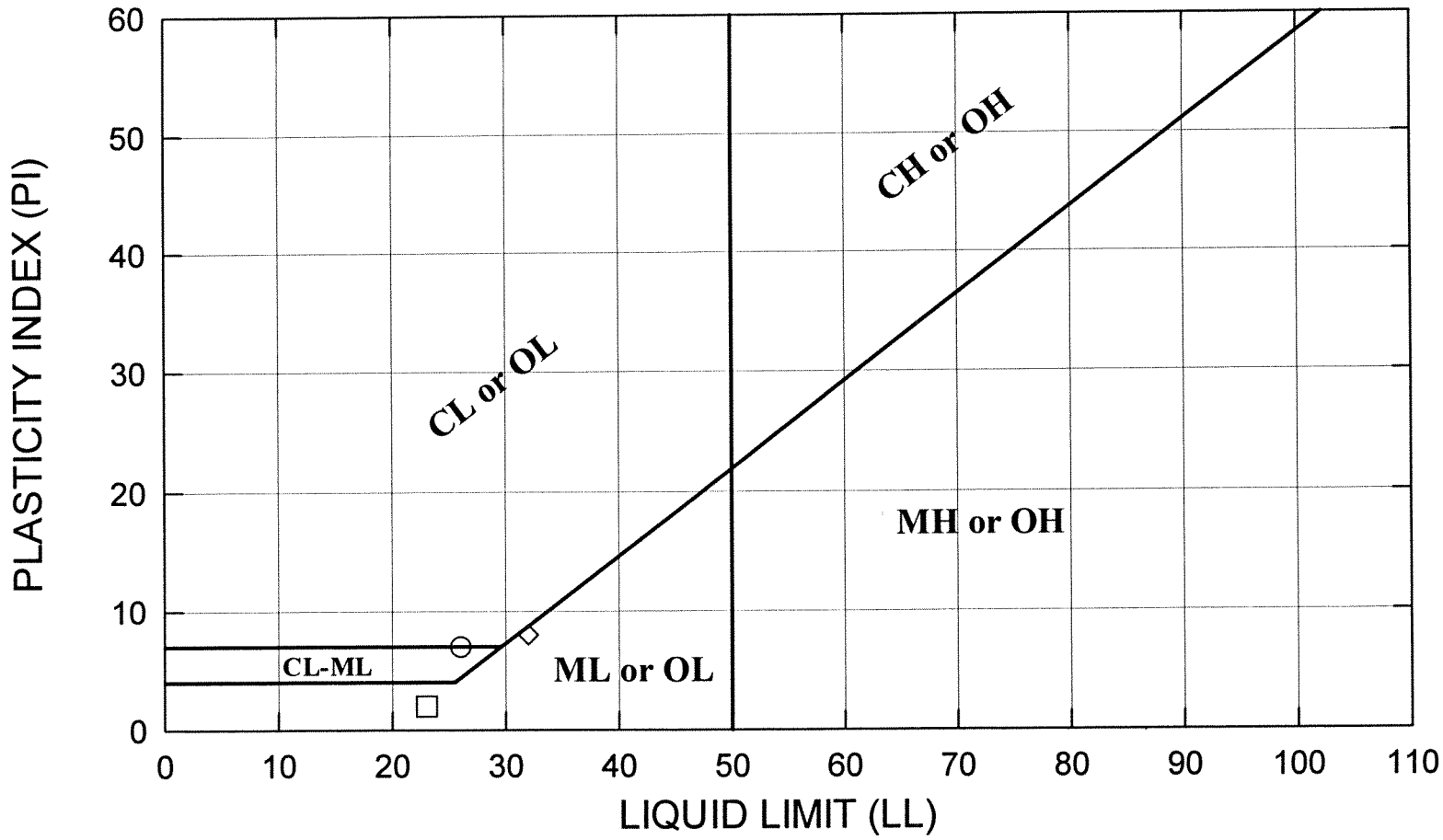
LEGEND: ○ 5-8d-MW-1@0.15m ◇ 5-8d-MW-1@6.10m ★ 5-8d-B-1@1.52m ● _____

□ 5-8d-MW-1@0.61m △ 5-8d-B-1@0.15m ▲ 5-8d-B-1@4.27m × _____

PLASTICITY CHART

	Date: April 2003	Project: Caltrans Infiltration Basin Project	Figure 5-8d-9

s.mikesmith.PiChart.PiMaster.GRF



LEGEND: ○ 5-8d-B-2@0.15m ◇ 5-8d-B-2@6.10m ★ _____ ● _____

□ 5-8d-B-2@1.07m △ _____ ▲ _____ × _____

PLASTICITY CHART

	Date: April 2003	Project: Caltrans Infiltration Basin Project	Figure 5-8d-10

s.mikesmith.PiChart.PiMaster.GRF

Priority 6-5-8d (I-605 Interchange) Site Photograph

Date: April 2003	**Project: Caltrans IFB Site Selection Study**	Figure: 5-8d-11