Volume I – Text, Tables, Figures

Reclamation Plan
License No. SUA-1475

Canonie Environmental

APPENDIX A

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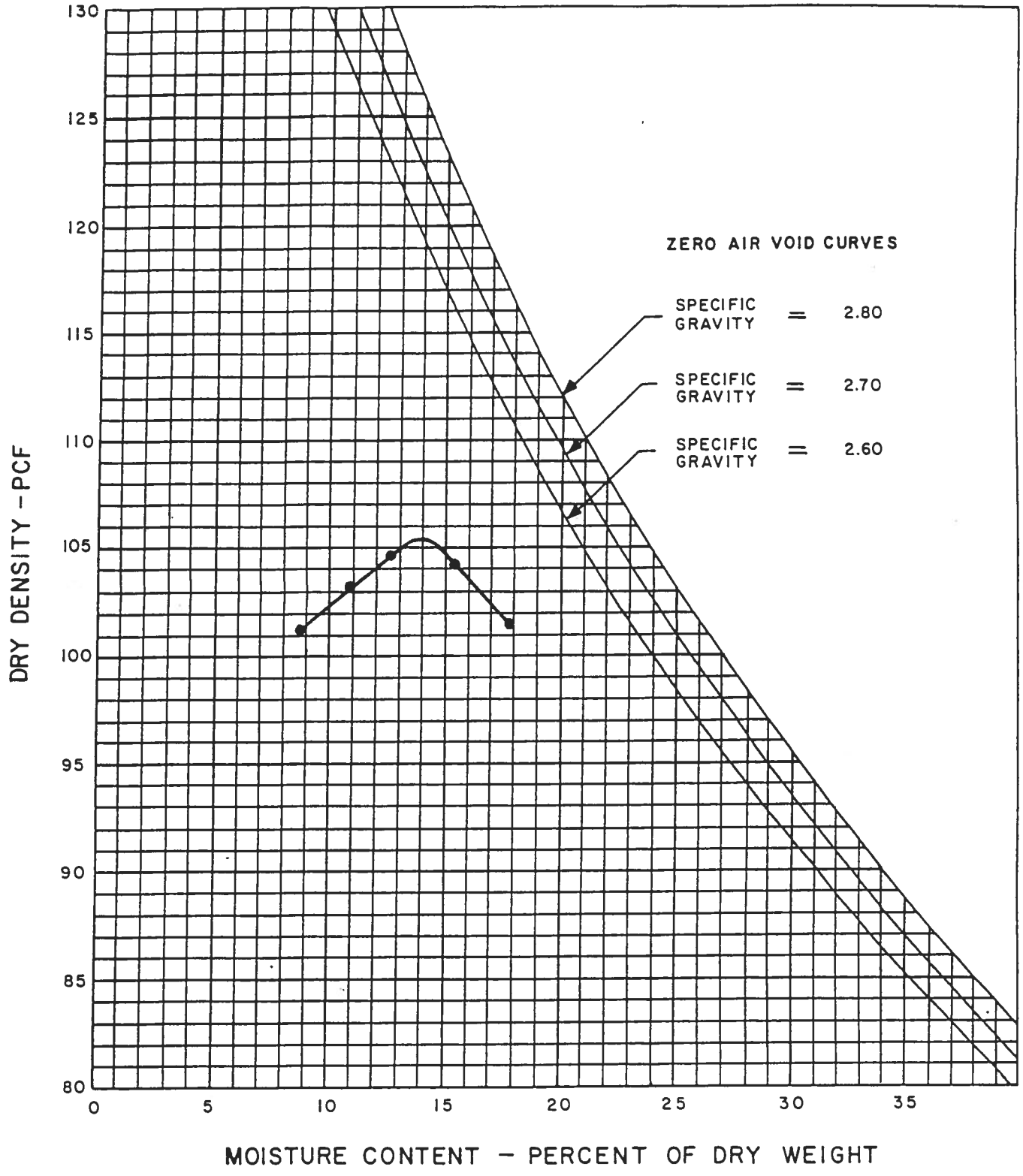
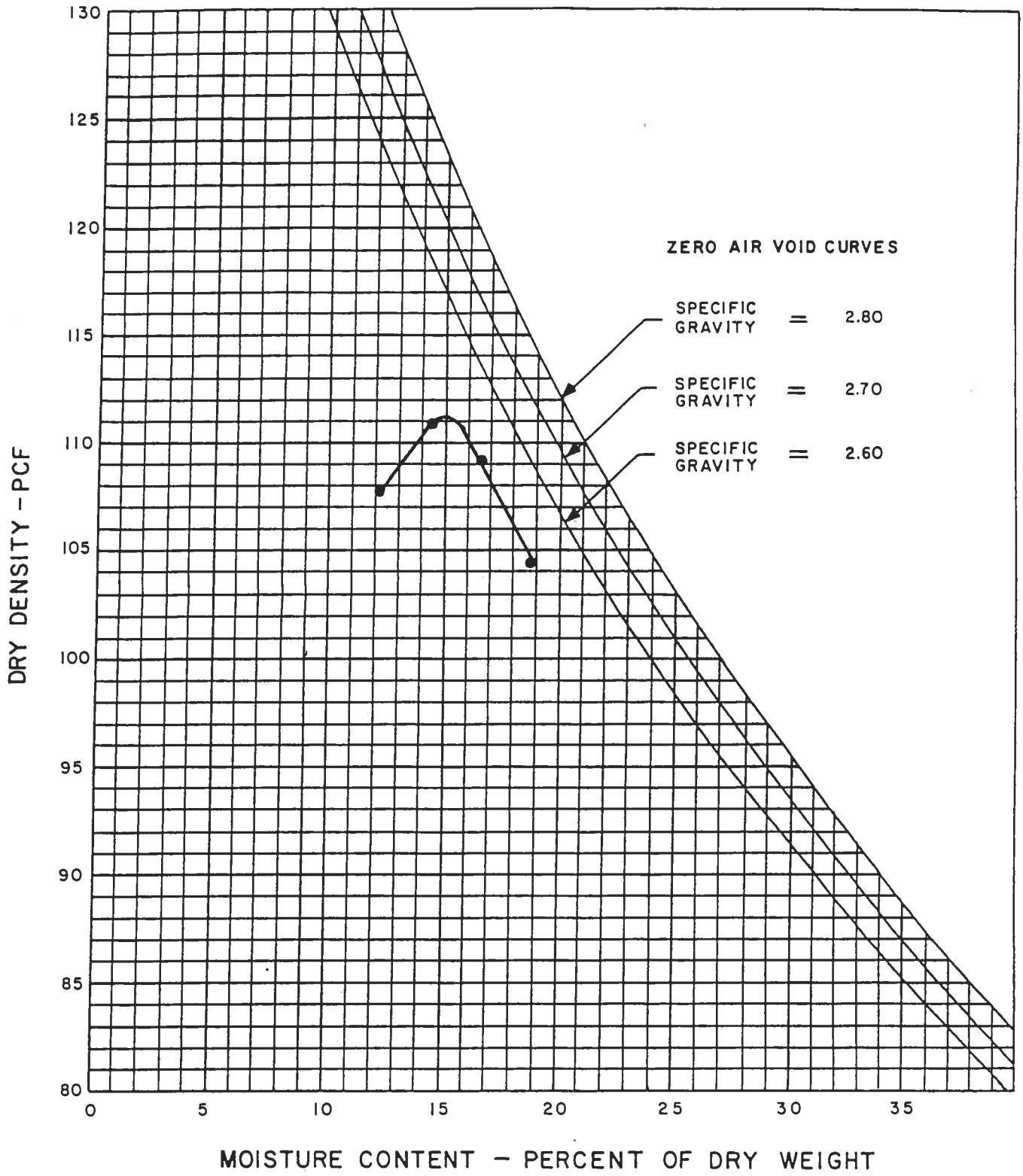
APPENDIX A-1

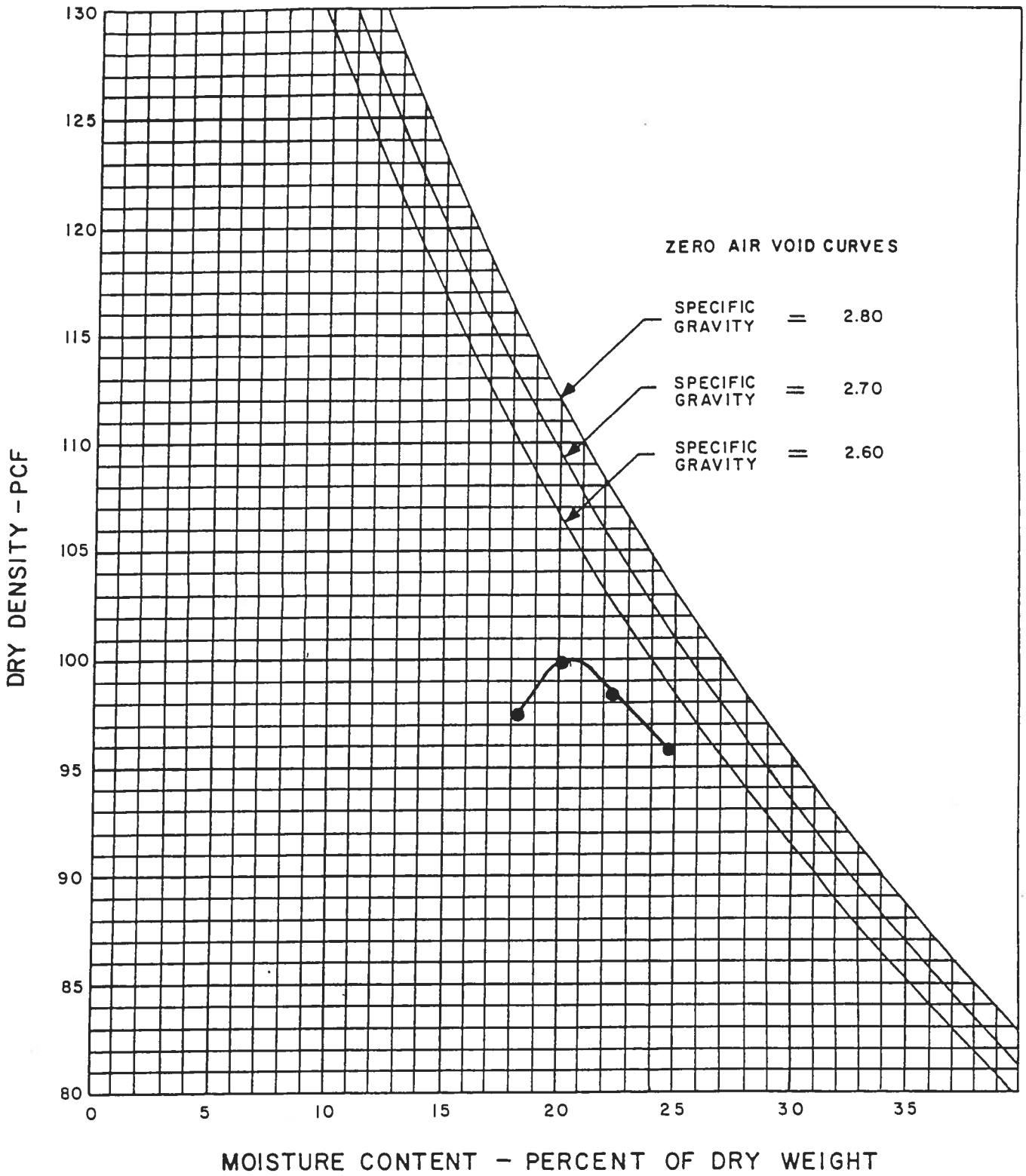
Moisture Density Relationships



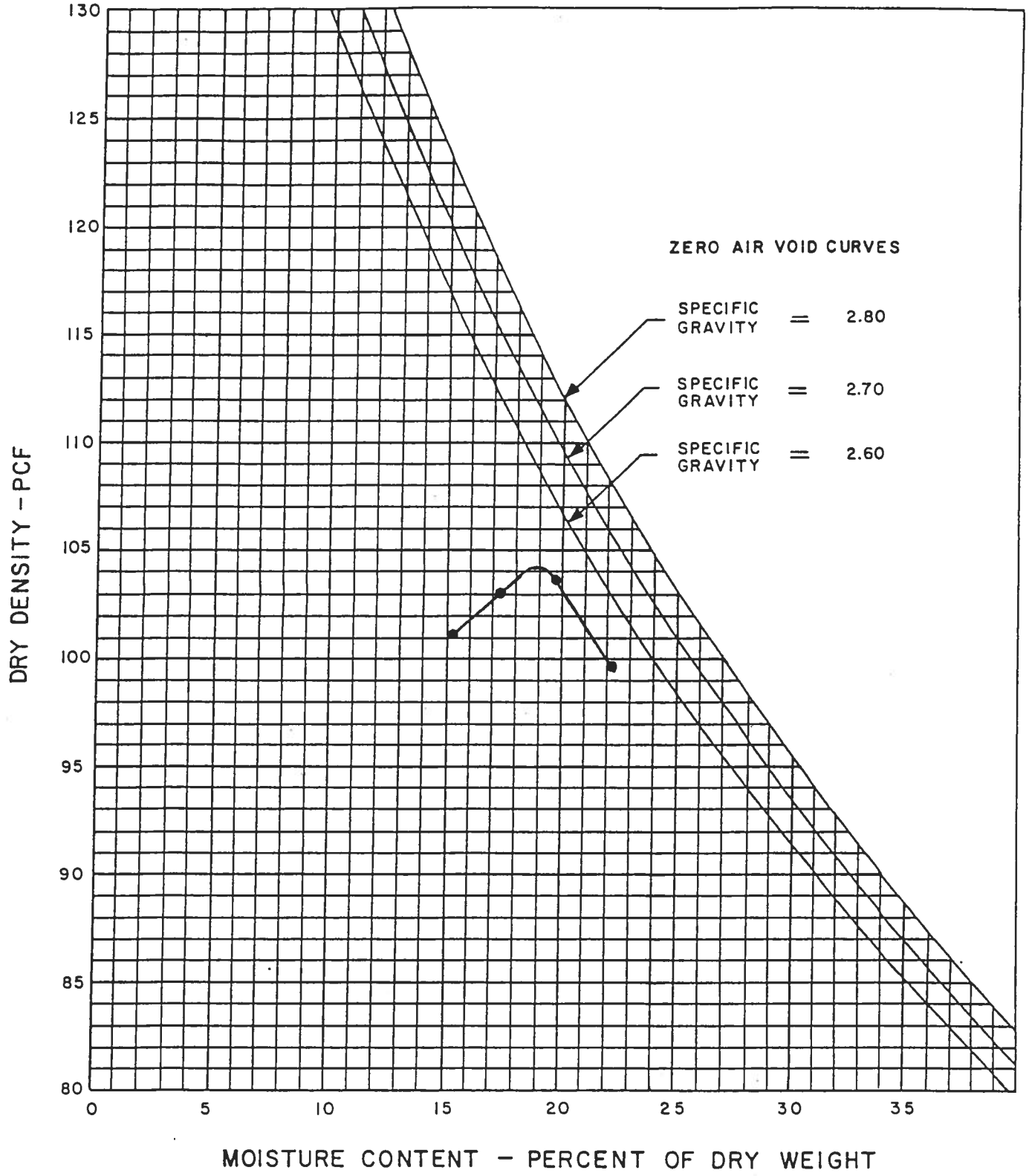
LOCATION: Canonie Environmental	MOISTURE-DENSITY RELATIONSHIPS
HOLE NO.: TP-1 DEPTH: 5-6' SAMPLE NO.:	
SOIL DESCRIPTION: Brown sand, little silt	GOODSON & ASSOC. INC.
MAX. DRY DENSITY: 105.4 PCF OPT. MOIST. CONTENT: 14.0 %	PROCEDURE: ASTM D-698 A
LIQUID LIMIT: PLASTICITY INDEX:	JOB NO.: 6583.01 FIG. NO.
GRAVEL: 2 % SAND: 80 % SILT AND CLAY (-200): 18 %	DATE: 12-23-86



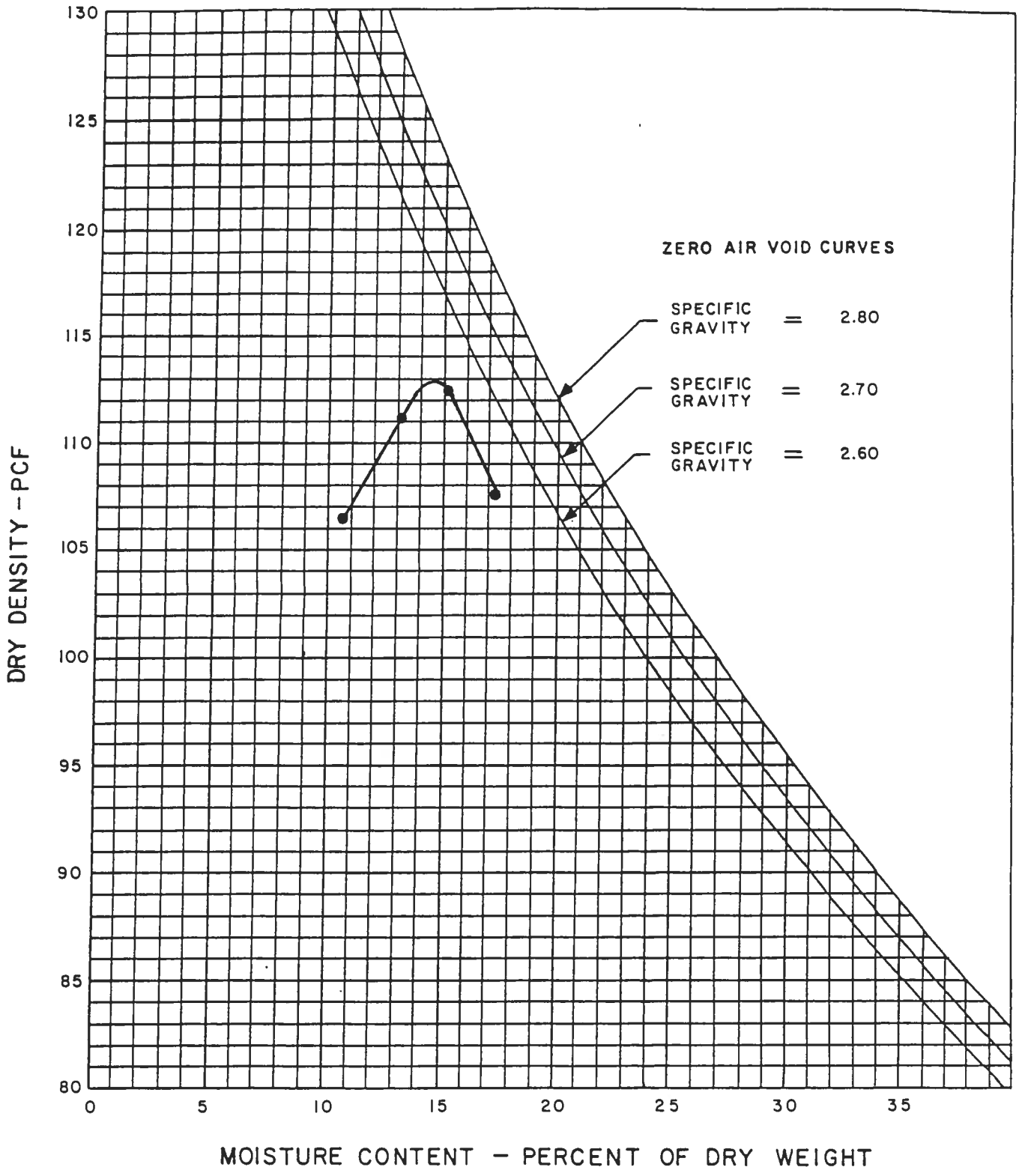
LOCATION: Canonie Environmental		MOISTURE-DENSITY RELATIONSHIPS
HOLE NO.: TP-2 DEPTH: 6-7' SAMPLE NO.:		
SOIL DESCRIPTION: Brown silty sand		GOODSON & ASSOC. INC.
MAX. DRY DENSITY: 111.2 PCF OPT. MOIST. CONTENT: 15.0 %	PROCEDURE: ASTM D-698 A	
LIQUID LIMIT: PLASTICITY INDEX:	JOB NO.: 6583.01	FIG. NO.
GRAVEL: 2 % SAND: 58 % SILT AND CLAY(-200): 40 %	DATE: 12-23-86	



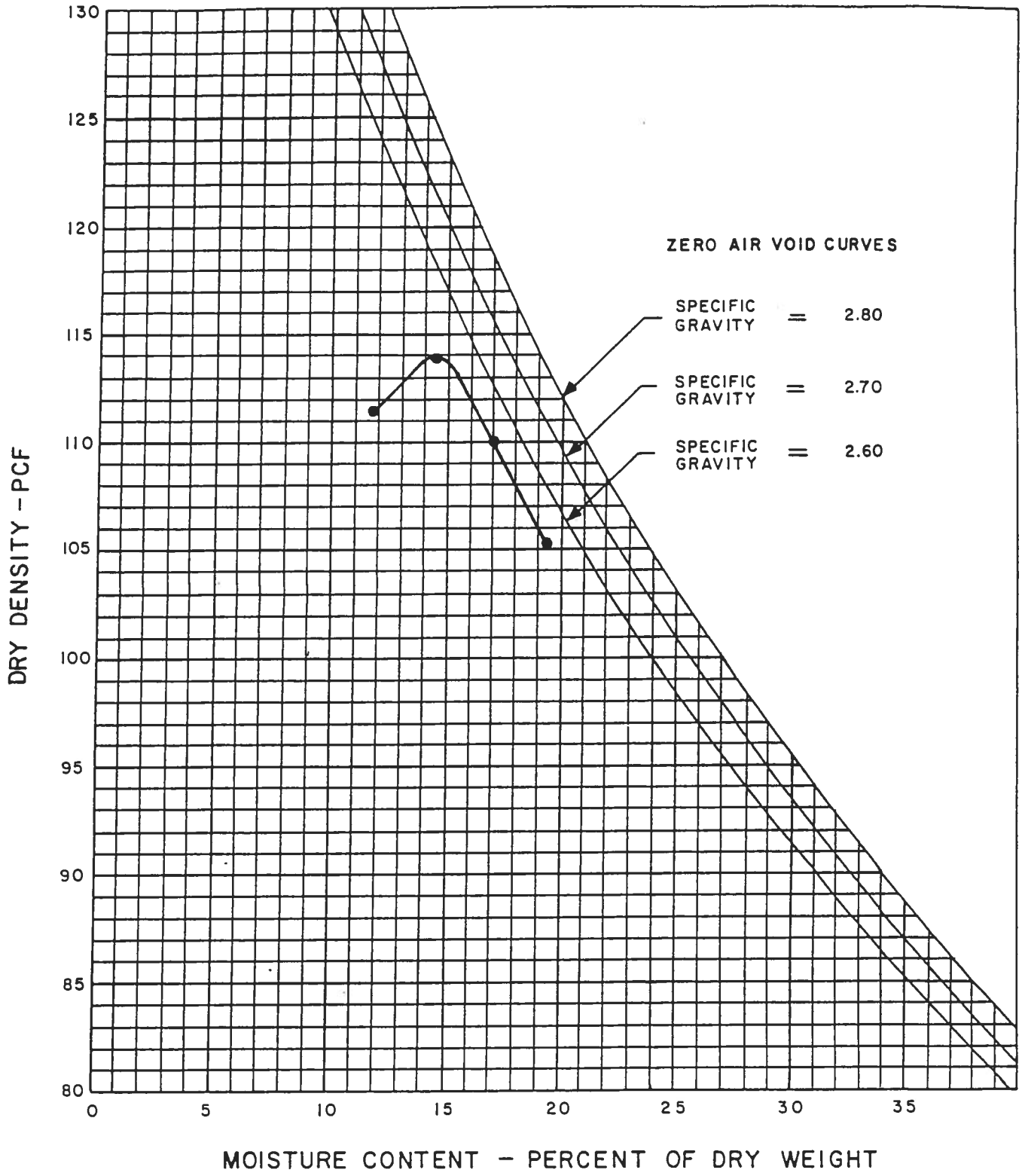
LOCATION: Canonie Environmental		MOISTURE-DENSITY RELATIONSHIPS
HOLE NO.: TP4 DEPTH: 2-3' SAMPLE NO.:		
SOIL DESCRIPTION: Brown silt, some clay, trace sand		GOODSON & ASSOC. INC.
MAX. DRY DENSITY: 100.0 PCF OPT. MOIST. CONTENT: 20.5 %		PROCEDURE: ASTM D-698 A
LIQUID LIMIT: _____ PLASTICITY INDEX: _____	JOB NO.: 6583.01	FIG. NO.
GRAVEL: 0 % SAND: 15 % SILT AND CLAY (-200): 50 %	DATE: 12-23-86	



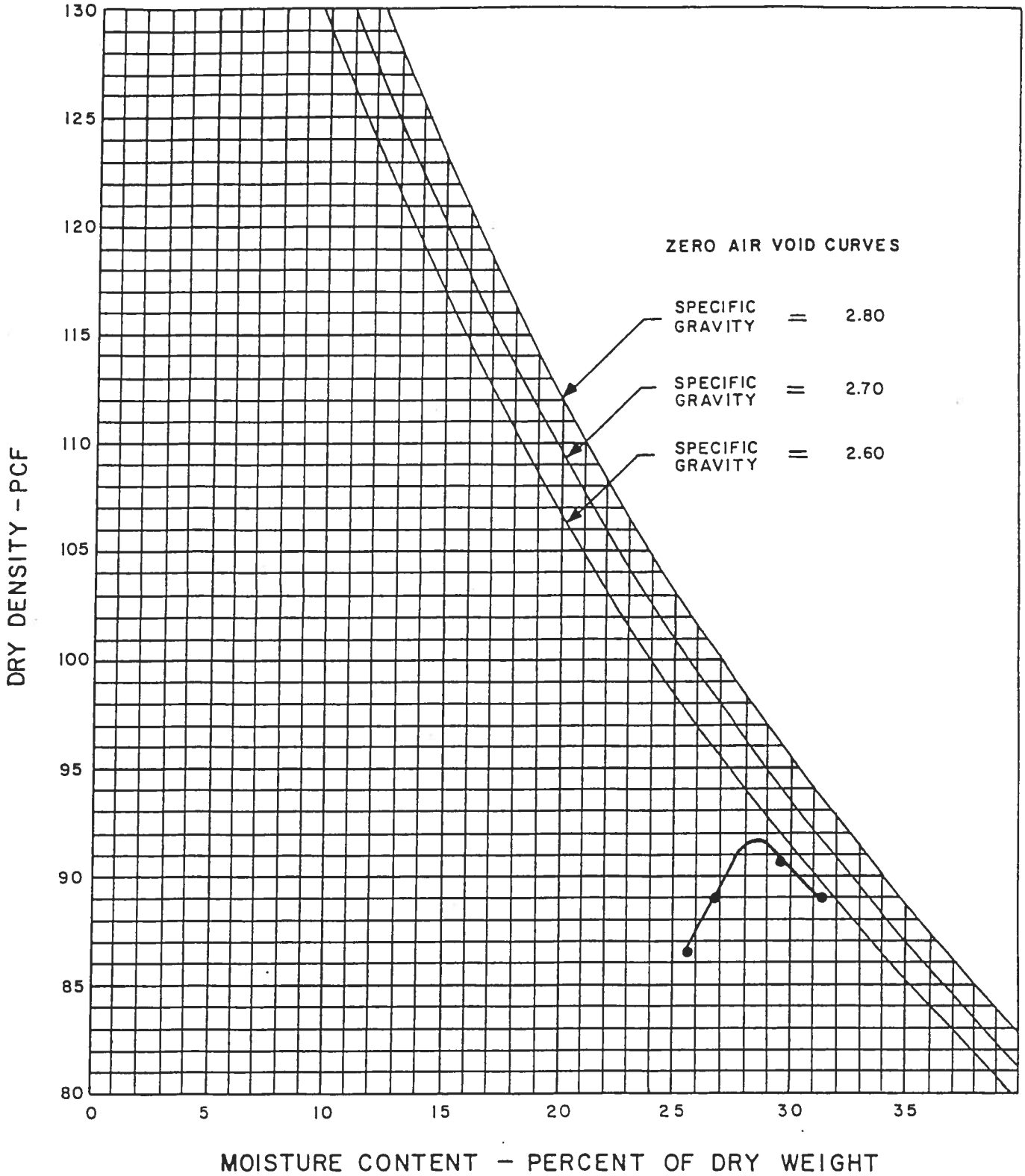
LOCATION: Canonie Environmental	MOISTURE-DENSITY RELATIONSHIPS	
HOLE NO.: TP-7 DEPTH: 4-5' SAMPLE NO.:		
SOIL DESCRIPTION: Brown sandy silt, some clay	GOODSON & ASSOC. INC.	
MAX. DRY DENSITY: 104.2 PCF OPT. MOIST. CONTENT: 18.9 %	PROCEDURE: ASTM D-698 A	
LIQUID LIMIT: ____ PLASTICITY INDEX: ____	JOB NO.: 6583.01	FIG. NO.
GRAVEL: 1 % SAND: 21 % SILT AND CLAY (-200): 78 %	DATE: 12-23-86	



LOCATION: Canonie Environmental	MOISTURE-DENSITY RELATIONSHIPS	
HOLE NO.: TP-8 DEPTH: 3-5' SAMPLE NO.:		
SOIL DESCRIPTION: Brown silty sand	GOODSON & ASSOC. INC.	
MAX. DRY DENSITY: 112.9 PCF OPT. MOIST. CONTENT: 14.6 %	PROCEDURE: ASTM D-698 A	
LIQUID LIMIT: _____ PLASTICITY INDEX: _____	JOB NO.: 6583.01	FIG. NO.
GRAVEL: 0 % SAND: 65 % SILT AND CLAY(-200): 35 %	DATE: 12-23-86	



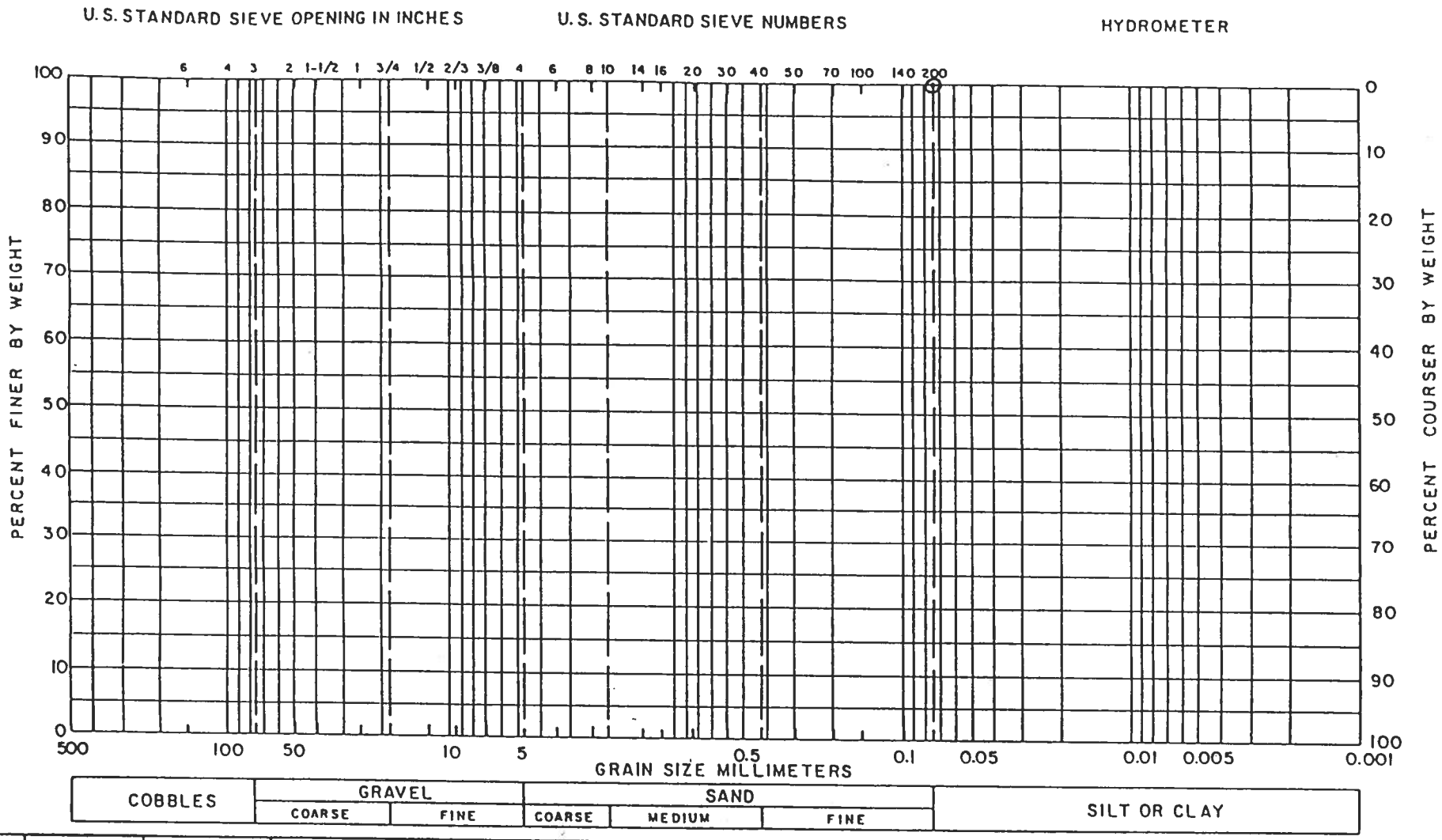
LOCATION: Canonie Environmental	MOISTURE-DENSITY RELATIONSHIPS
HOLE NO.: TP-10 DEPTH: 2-3' SAMPLE NO.:	
SOIL DESCRIPTION: Brown silty sand, little clay	GOODSON & ASSOC. INC.
MAX. DRY DENSITY: 113.9 PCF OPT. MOIST. CONTENT: 14.4 %	PROCEDURE: ASTM D-698 A
LIQUID LIMIT: ____ PLASTICITY INDEX: ____	JOB NO.: 6583.01 FIG. NO.
GRAVEL: 3 % SAND: 50 % SILT AND CLAY (-200): 47 %	DATE: 12-23-86



LOCATION: Canonie Environmental	MOISTURE-DENSITY RELATIONSHIPS
HOLE NO.: B-4 DEPTH: 6-10' SAMPLE NO.:	
SOIL DESCRIPTION: Brown siltstone, some clay, trace sand	GOODSON & ASSOC. INC.
MAX. DRY DENSITY: 91.7 PCF OPT. MOIST. CONTENT: 28.6 %	PROCEDURE: ASTM D-698 A
LIQUID LIMIT: _____ PLASTICITY INDEX: _____	JOB NO.: 6583.01 FIG. NO.
GRAVEL: 0 % SAND: 10 % SILT AND CLAY (-200): 90 %	DATE: 12-23-86

APPENDIX A-2

Particle Size Gradation Curves



BORING NO.	LEGEND	EL. or DEPTH	CLASSIFICATION	w_n	w_L	w_p	PI
P-2		10.5-11'	Grey - Brown Clay	20.3%			

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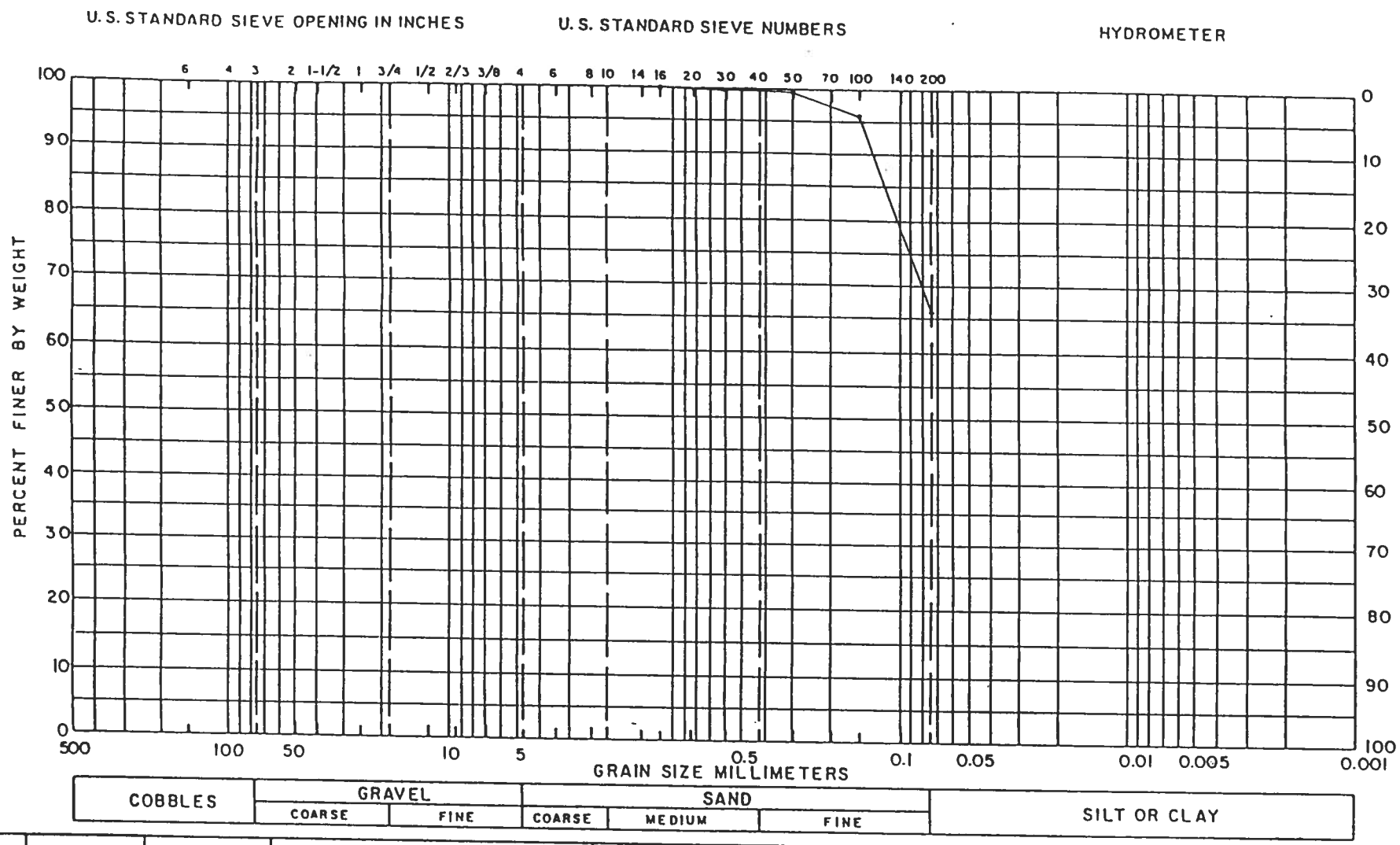
Drawn by:	DAC		Note: 100% passing the No. 200 sieve.
Engr.	DWE		PROJECT NO. 6583.01 — DWG. NO. RM 86-060-01
Revised:			GRADATION CURVES

GOODSON & ASSOCIATES, INC.
CONSULTING ENGINEERS



BORING NO.	LEGEND	EL. or DEPTH	CLASSIFICATION	w_n	w_L	w_p	PI
P-3		10.5-11'	Brown sandy silt	16.2%			

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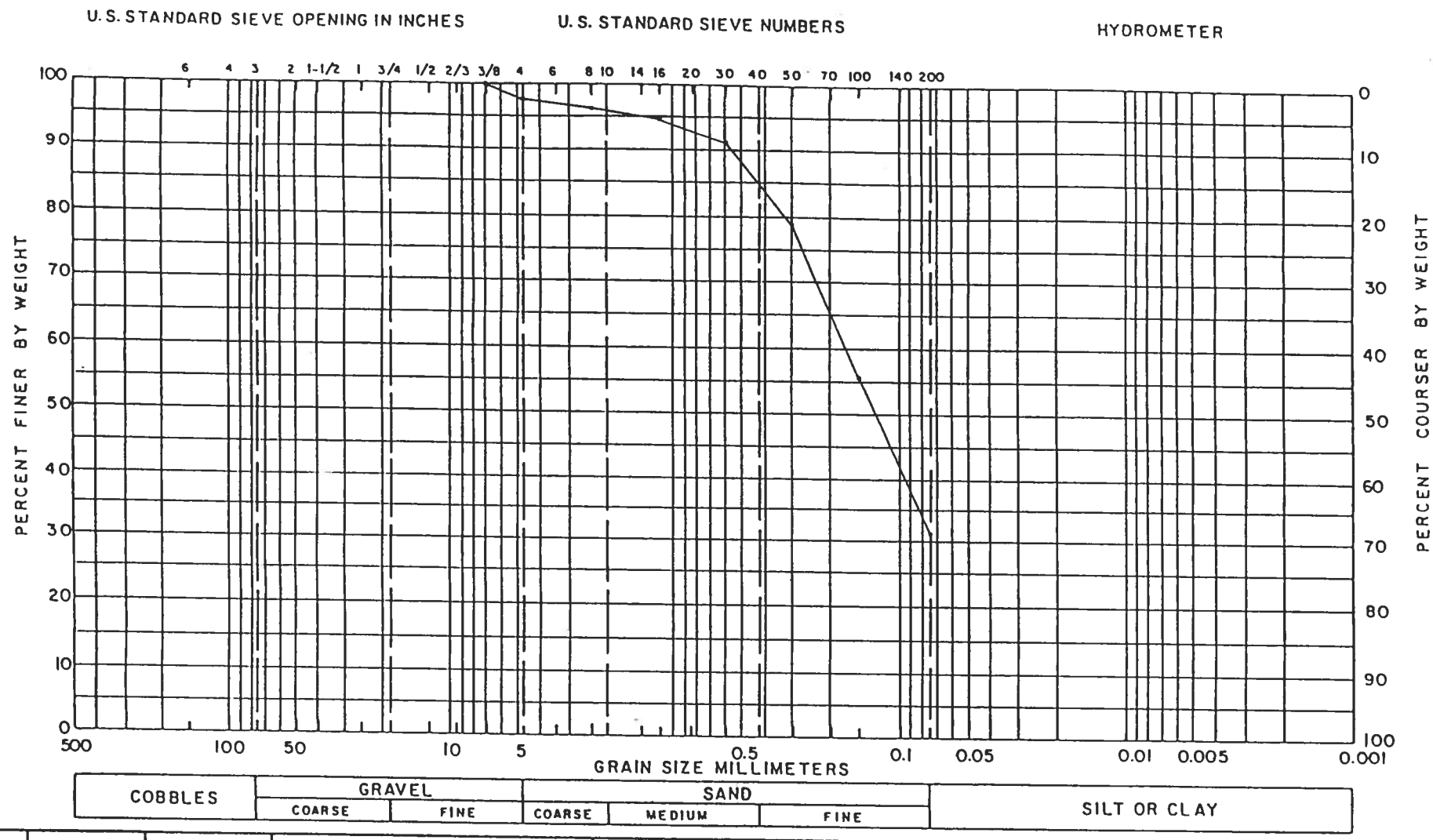
Drawn by:	DAC		
Engr.	DWE	PROJECT NO. 6583.01	DWG. NO. RM 86-060-01
Revised:		GRADATION CURVES	

GOODSON & ASSOCIATES, INC.
CONSULTING ENGINEERS

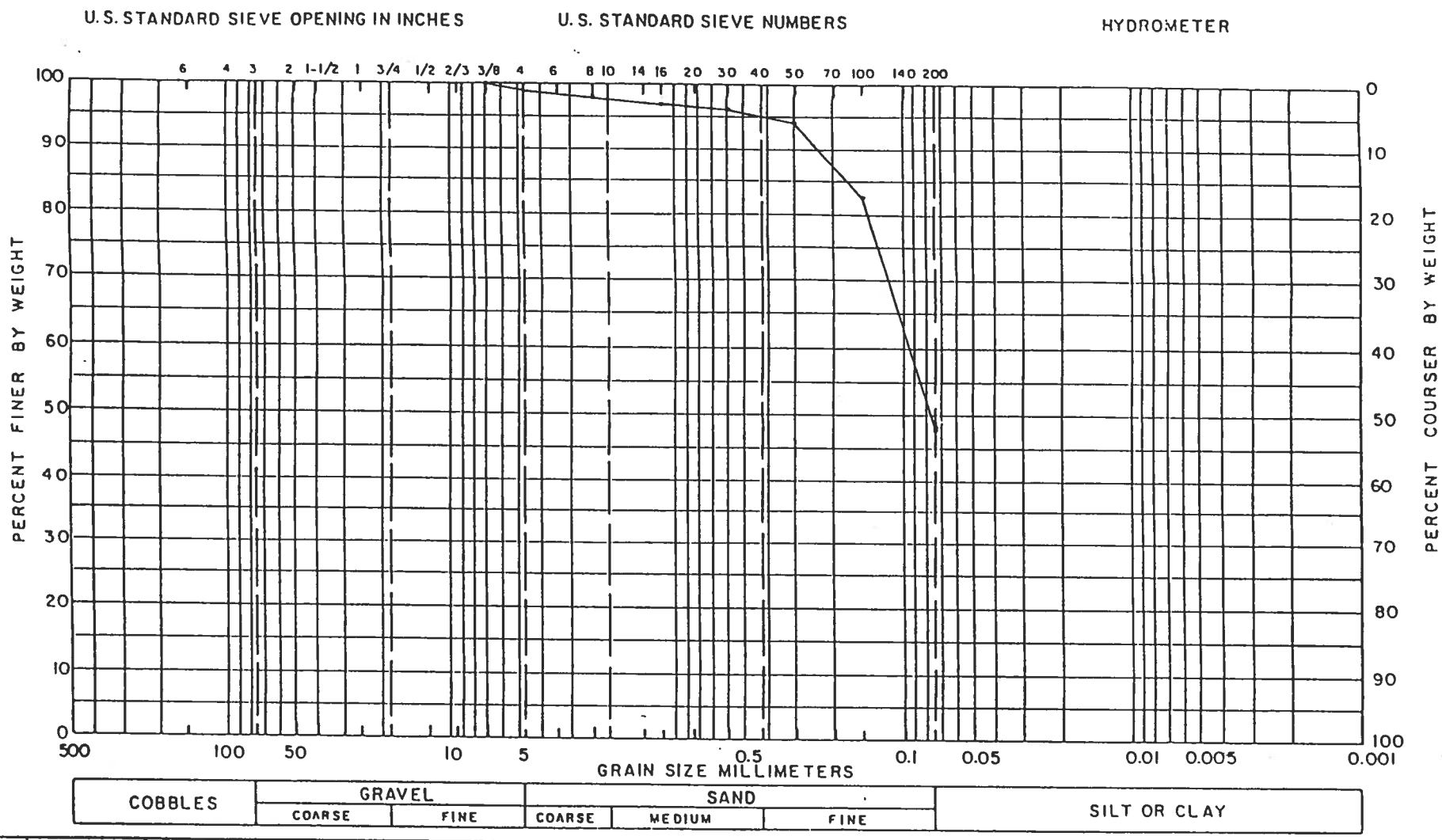


BORING NO.	LEGEND	EL. or DEPTH	CLASSIFICATION	w_n	w_L	w_P	PI
P-4		5.5-6'	Brown sand, some silt	10.6%			

Canonie Environmental

Drawn by:	DAC		
Engr.	DWE	PROJECT NO. 6583.01	DWG. NO. RM 86-060-01
Revised:		GRADATION CURVES	

GOODSON & ASSOCIATES, INC.
CONSULTING ENGINEERS



BORING NO.	LEGEND	EL. or DEPTH	CLASSIFICATION	w_n	w_L	w_p	PI
P-5		6-6.5'	Brown silty sand	6.6 %			

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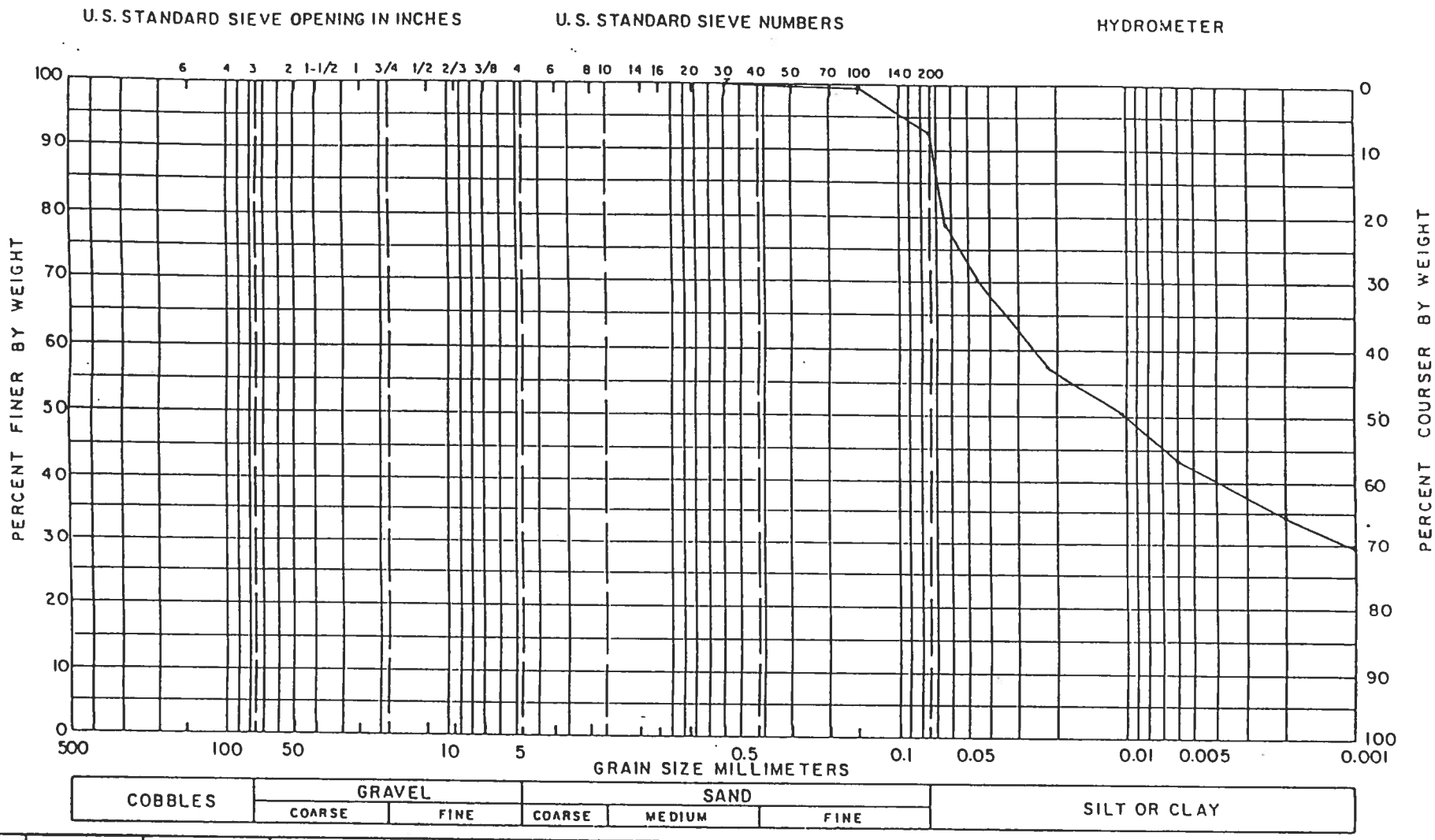
Drawn by:	DAC		
Engr.	DWE	PROJECT NO. 6583.01	DWG. NO. RM 86-060-01
Revised:		GRADATION CURVES	

GOODSON & ASSOCIATES, INC.
CONSULTING ENGINEERS



BORING NO.	LEGEND	EL. or DEPTH	CLASSIFICATION	w_n	w_L	w_p	PI
P-8		11-11.5'	Brown silt, some clay trace sand	17.5 %			

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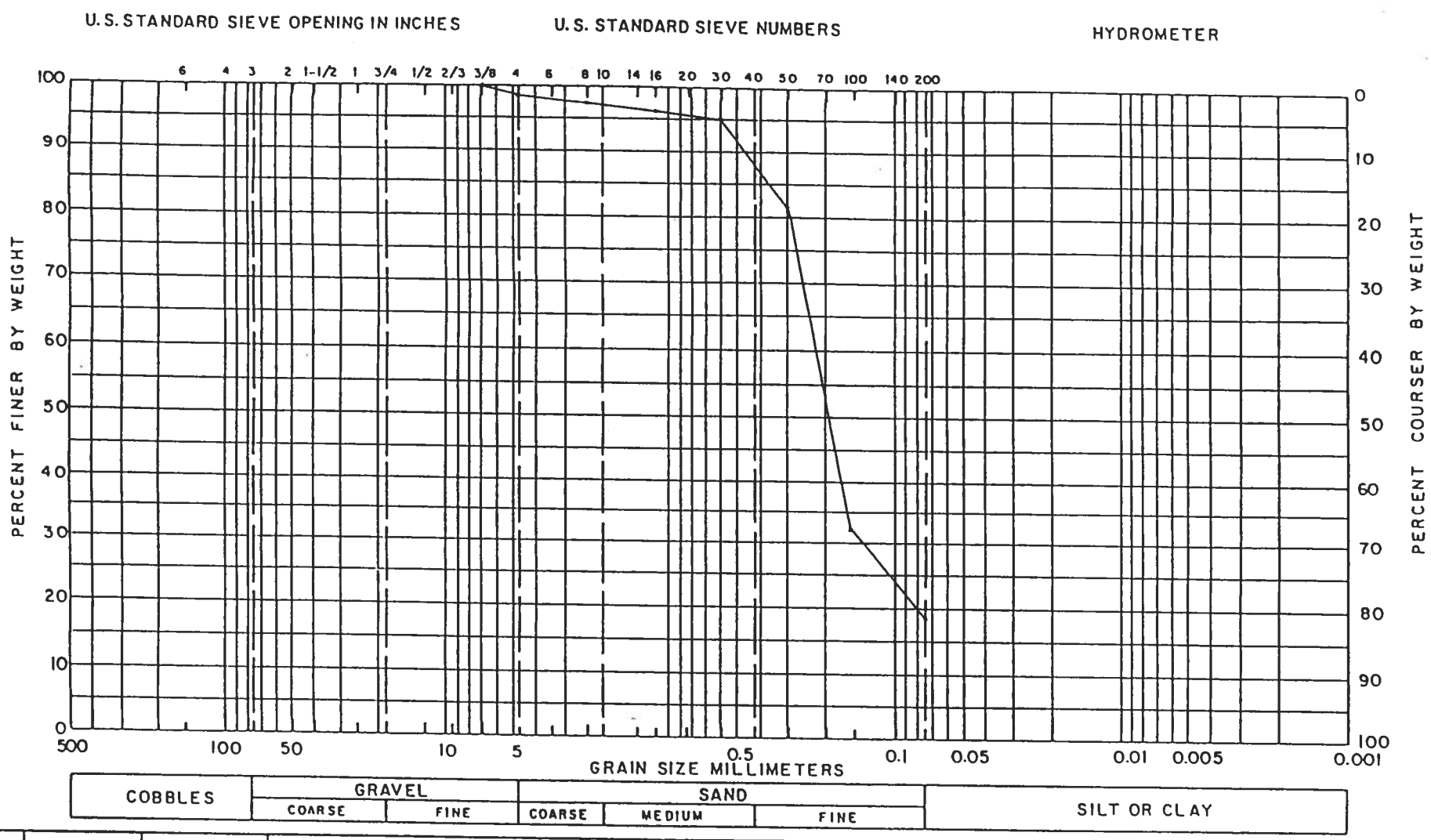
Drawn by:	DAC		
Engr.	DWE	PROJECT NO. 6583.01	DWG. NO. RM 86-060-01
Revised:		GRADATION CURVES	

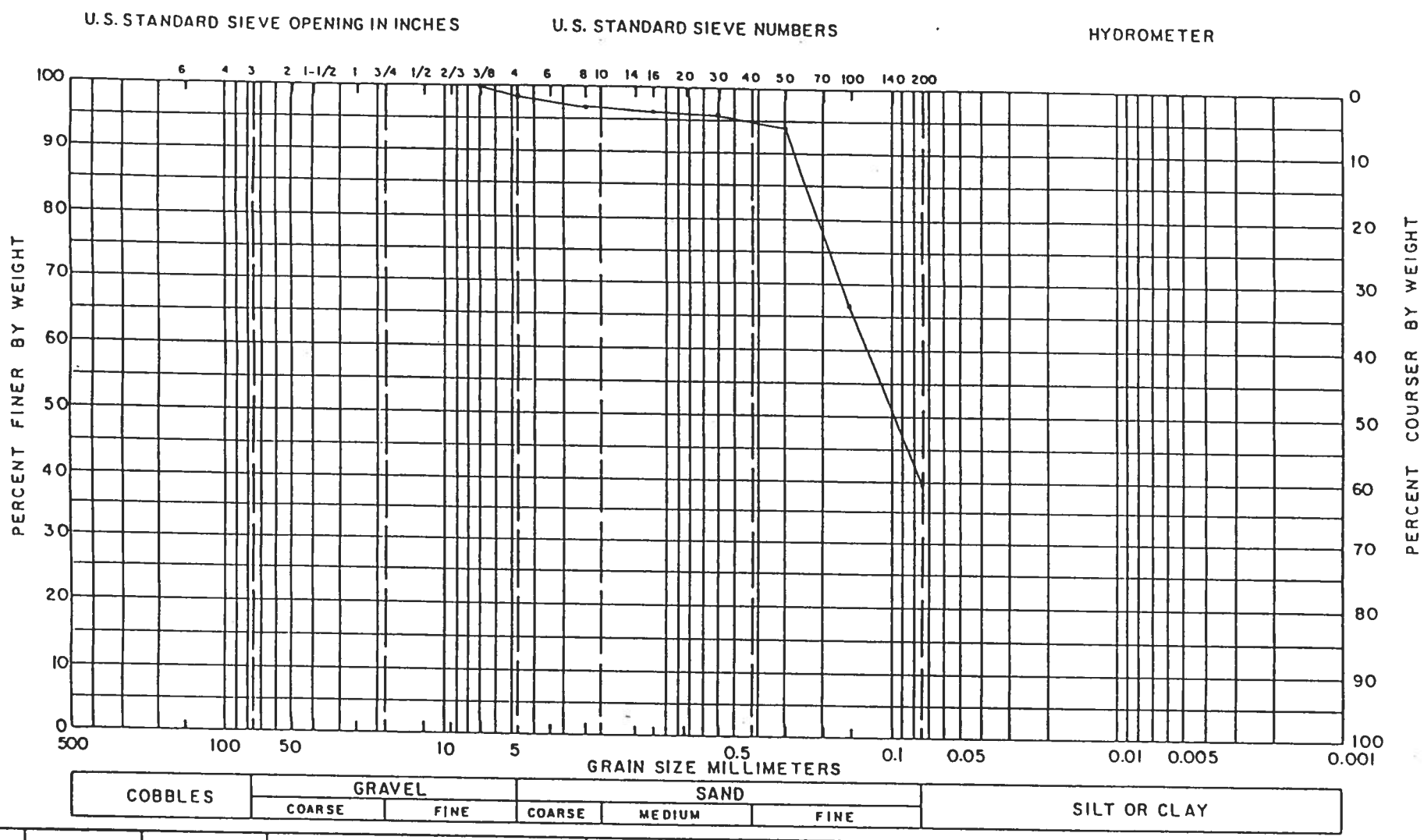
GOODSON & ASSOCIATES, INC.
CONSULTING ENGINEERS



BORING NO.	LEGEND	EL. or DEPTH	CLASSIFICATION	w_n	w_L	w_p	PI
TP-1		5-6'	Brown sand, little silt	7.8 %			
Drawn by:	DAC						
Engr.	DWF		PROJECT NO. 6583.01	DWG. NO. RM 86-060-01			
Revised:			GRADATION CURVES				

Canonie Environmental

GOODSON & ASSOCIATES, INC.
CONSULTING ENGINEERS



BORING NO.	LEGEND	EL. or DEPTH	CLASSIFICATION	w_n	w_L	w_p	PI
TP-2		6-7'	Brown silty sand	11.9%			

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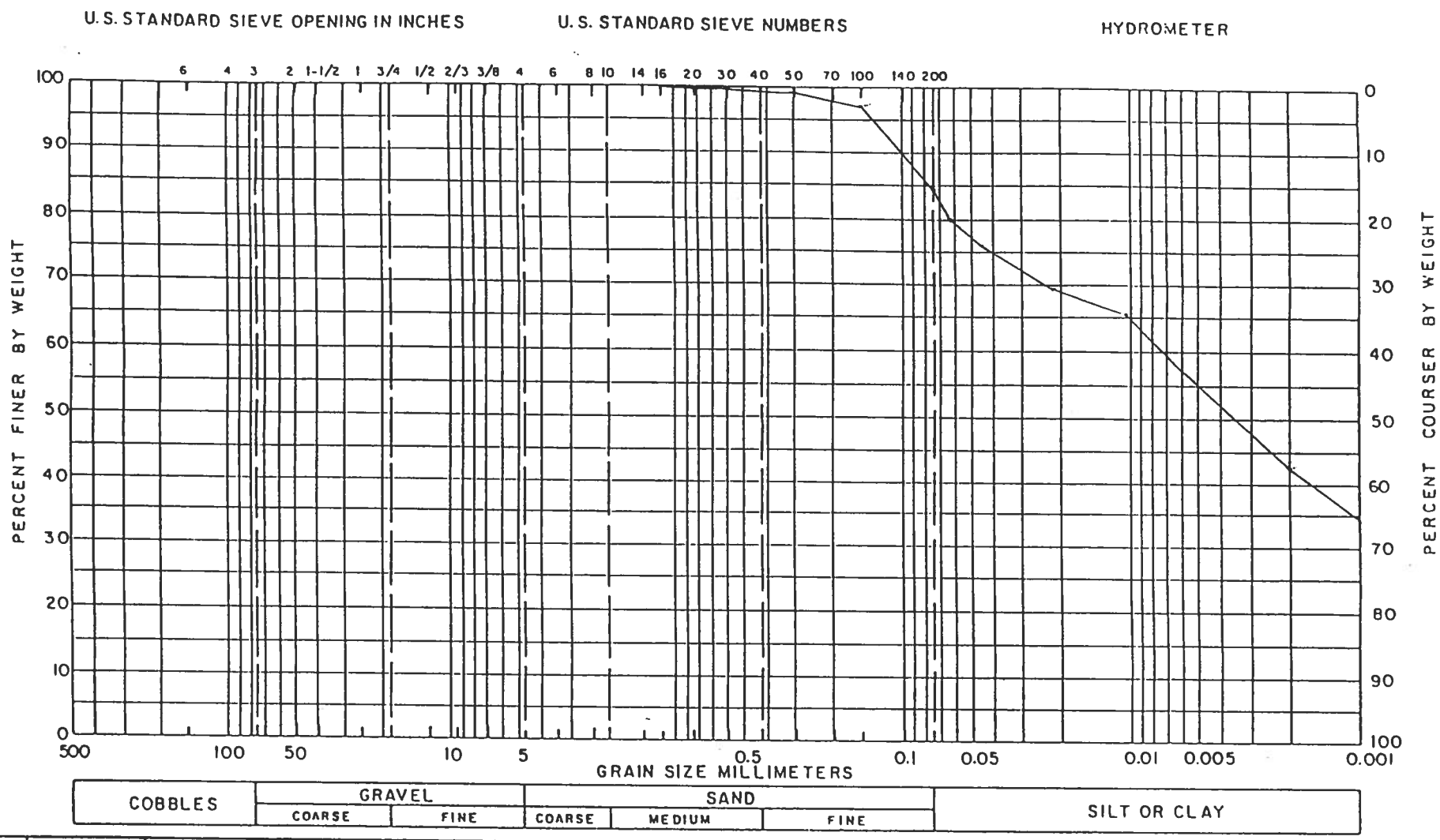
Drawn by:	DAC		
Engr.	DWE	PROJECT NO. 6583.01	DWG. NO. RM 86-060-01
Revised:		GRADATION CURVES	

GOODSON & ASSOCIATES, INC.
CONSULTING ENGINEERS



BORING NO.	LEGEND	EL. or DEPTH	CLASSIFICATION	w_n	w_L	w_p	PI
TP-4		2-3'	Brown silt, some clay trace sand	13.6%			

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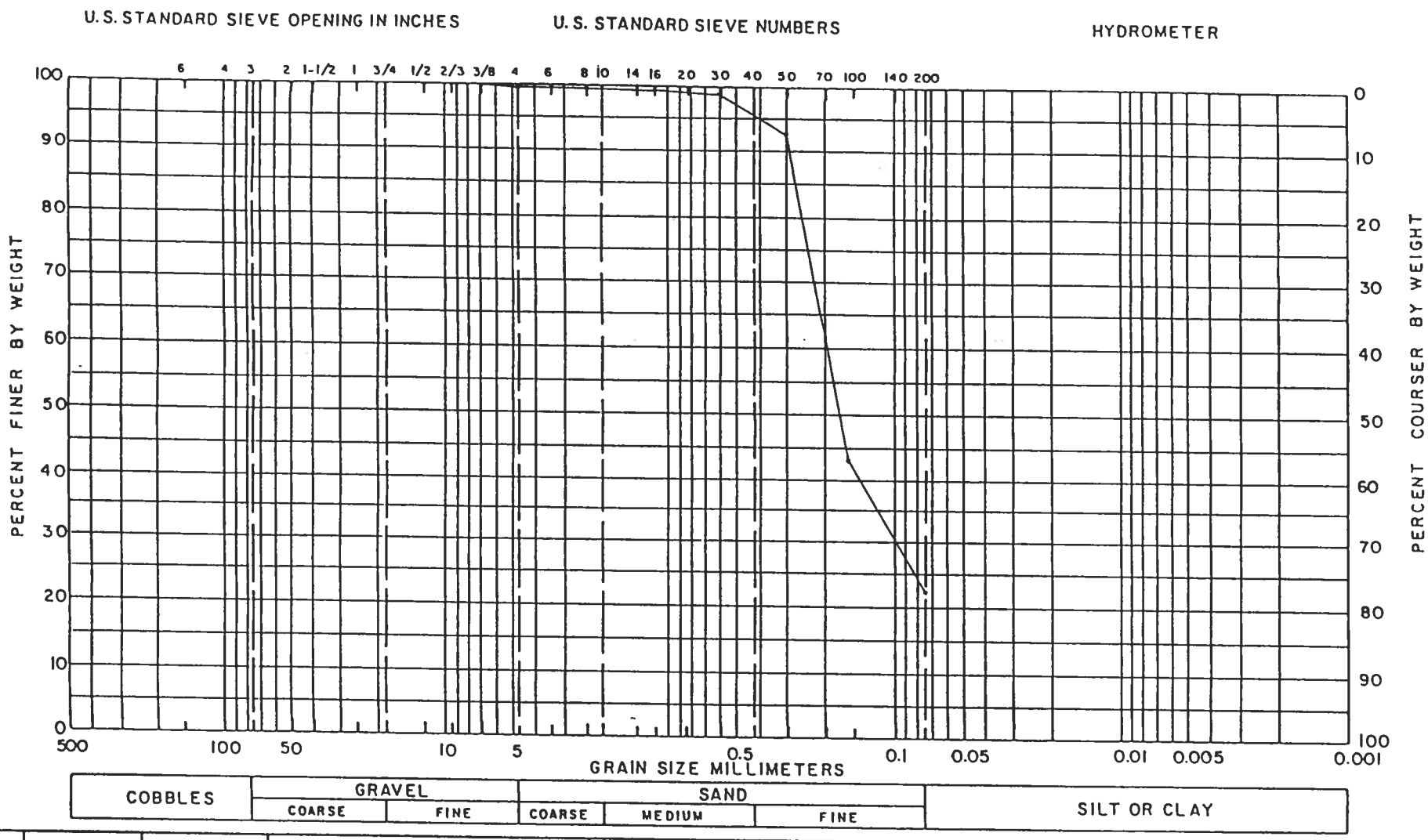
Drawn by:	DAC		
Engr.	DWF	PROJECT NO. 6583.01	DWG. NO. RM 86-060-01
Revised:		GRADATION CURVES	

GOODSON & ASSOCIATES, INC.
CONSULTING ENGINEERS



BORING NO.	LEGEND	EL. or DEPTH	CLASSIFICATION	w_n	w_L	w_p	PI
TP-4		8-9'	Brown sand, some silt	6.5%			
Drawn by:	DAC						
Engr.	DWE		PROJECT NO. 6583.01	DWG. NO. RM 86-060-01			
Revised:			GRADATION CURVES				

Canonie Environmental

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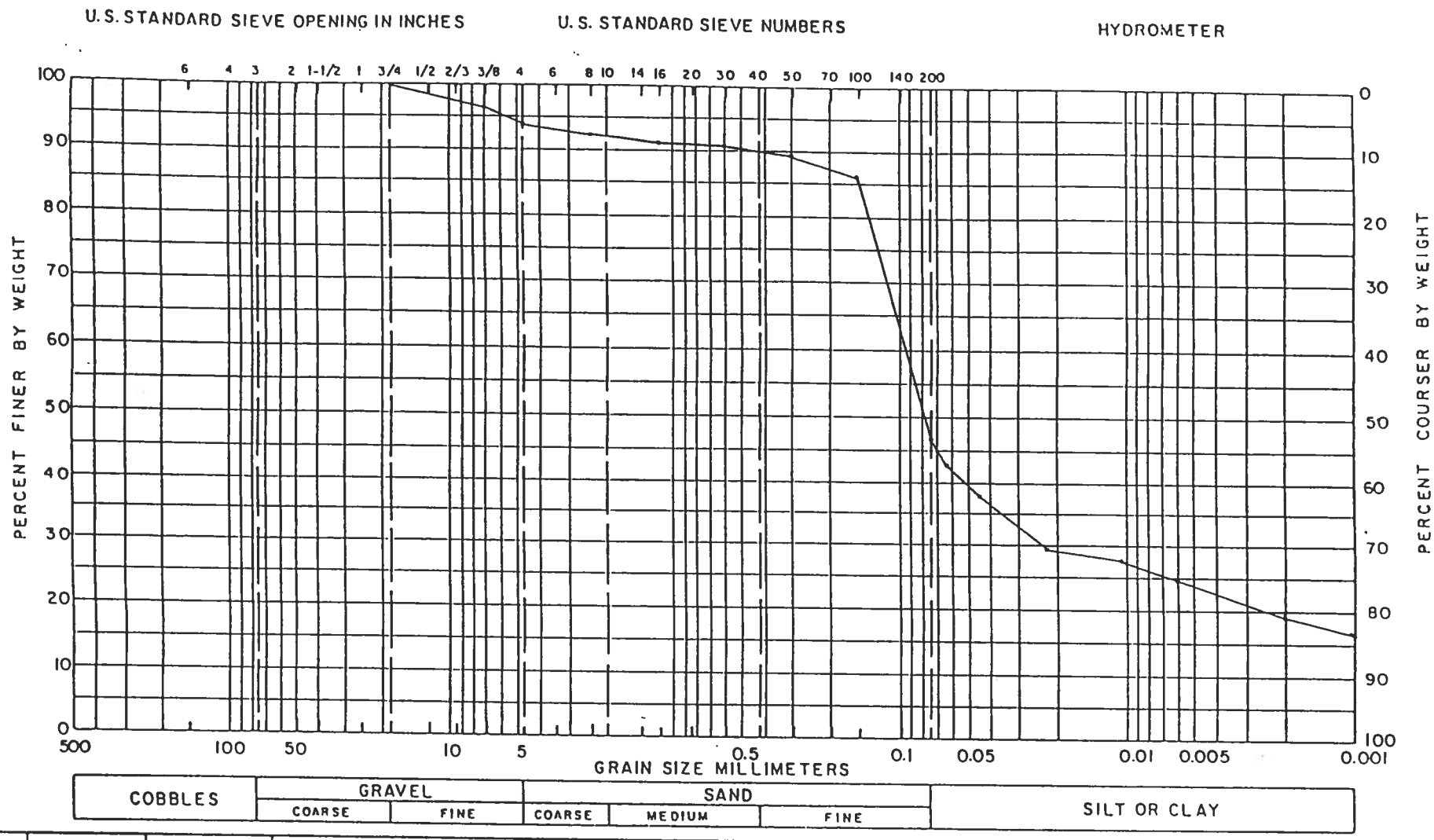

BORING NO.	LEGEND	EL. or DEPTH	CLASSIFICATION	w_n	w_L	w_p	PI
TP-6		9-10'	Brown silty sand	8.5%			

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Drawn by:	DAC		
Engr.	DWE	PROJECT NO. 6583.01	DWG. NO. RM 86-060-01
Revised:		GRADATION CURVES	

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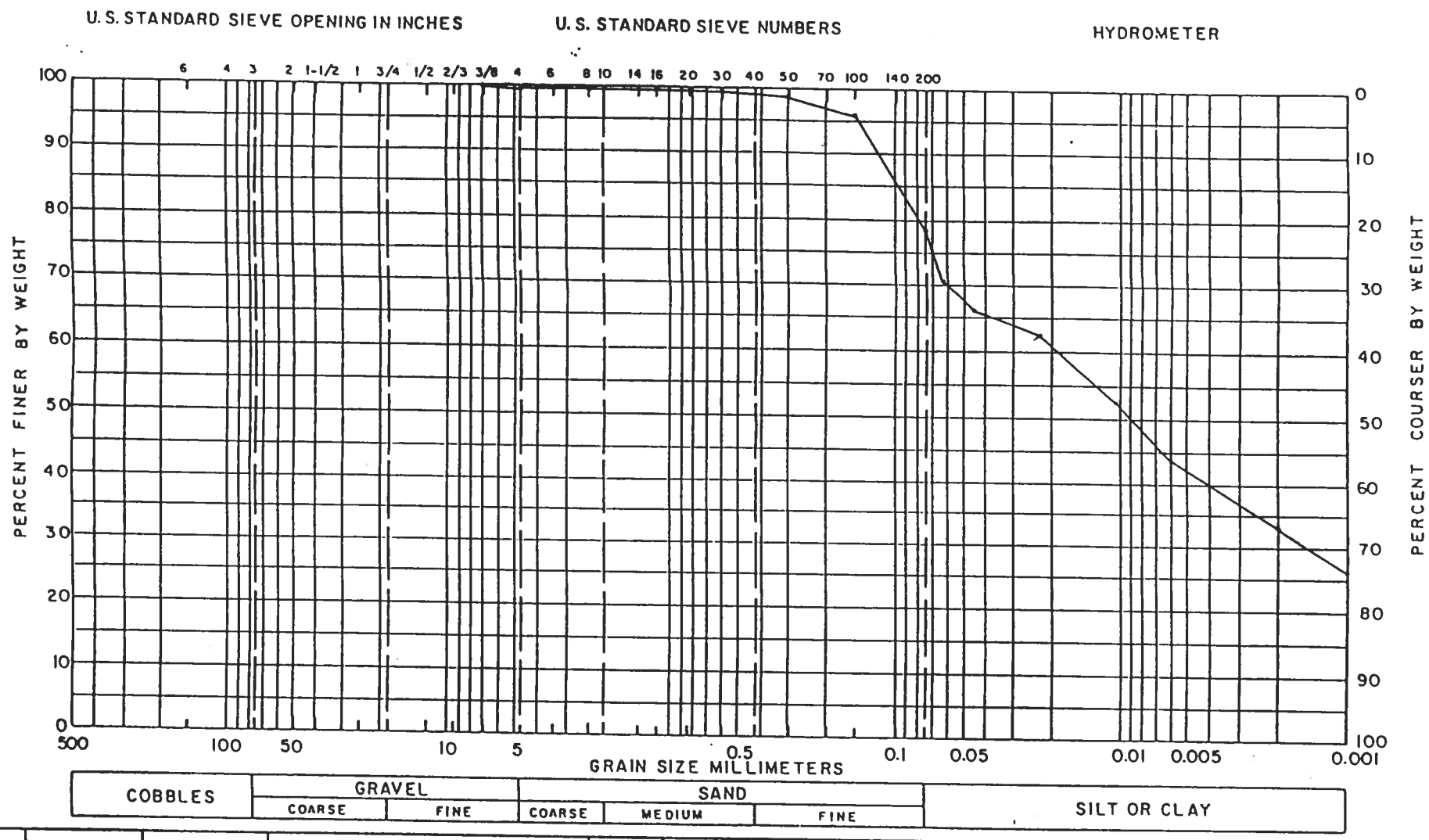
CONSULTING ENGINEERS



BORING NO.	LEGEND	EL. or DEPTH	CLASSIFICATION	w_n	w_L	w_p	PI
TP-7		4-5'	Brown sandy silt,	9.7 %			
			some clay				

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Drawn by:	DAC		
Engr.	DWE	PROJECT NO. 6583.01	DWG. NO. RM 86-060-01
Revised:		GRADATION CURVES	

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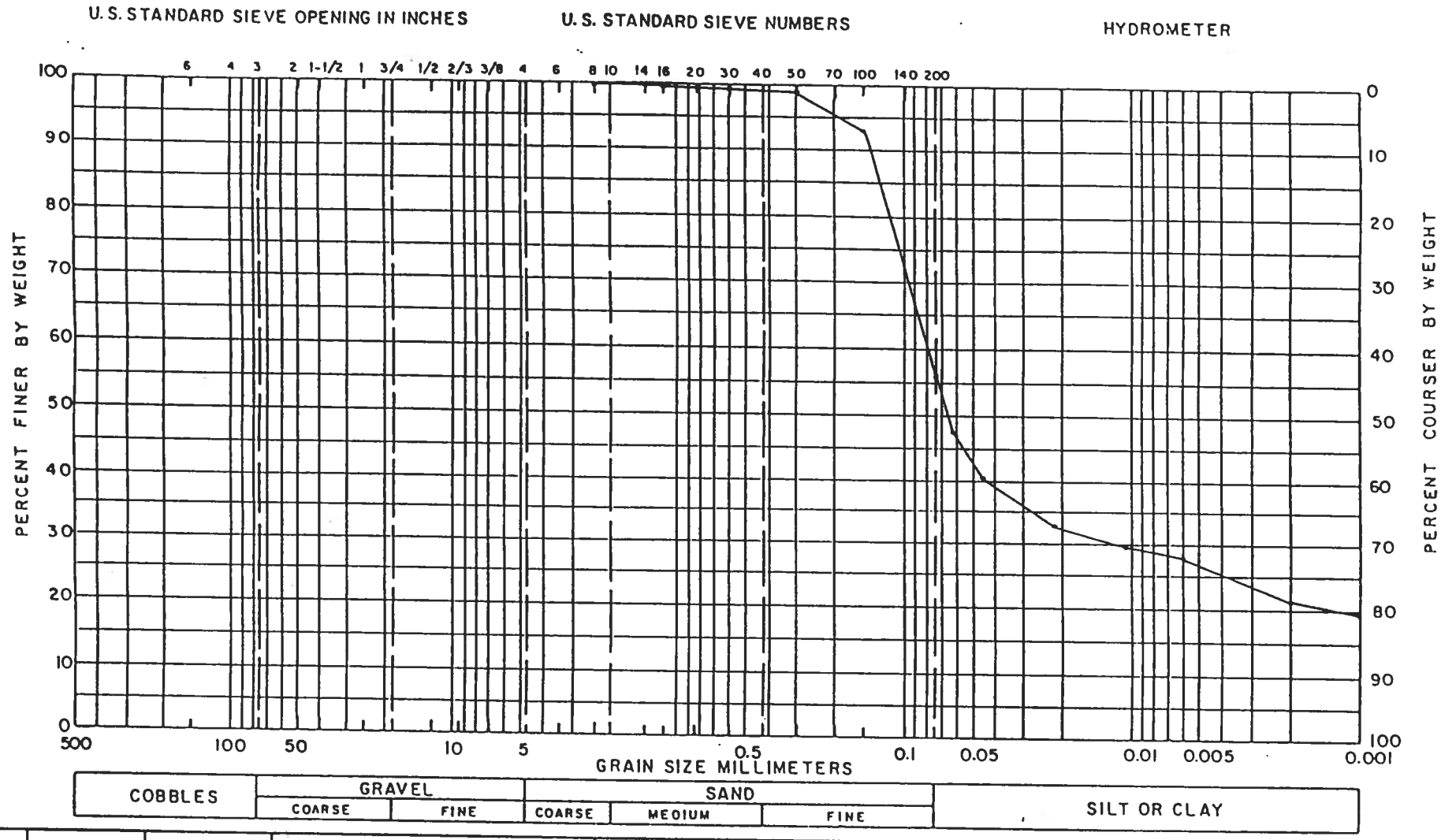
CONSULTING ENGINEERS



BORING NO.	LEGEND	EL. or DEPTH	CLASSIFICATION	w_n	w_L	w_p	PI
TP-7		9-10'	Brown silty sand	7.4%			

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Drawn by:	DAC		
Engr.	DWE	PROJECT NO. 6583.01	DWG. NO. RM 86-060-01
Revised:		GRADATION CURVES	

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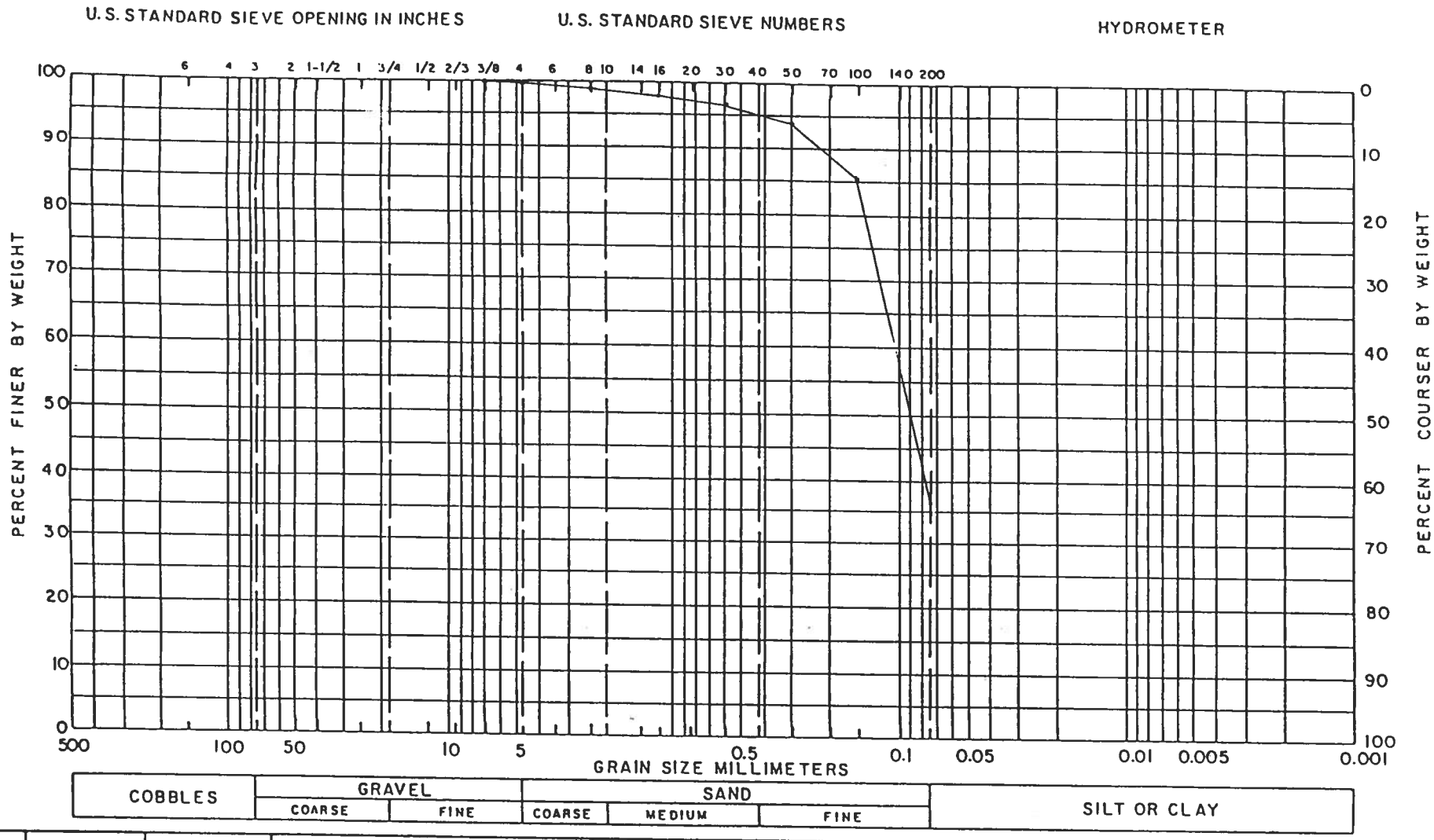
CONSULTING ENGINEERS



BORING NO.	LEGEND	EL. or DEPTH	CLASSIFICATION	w_n	w_L	w_p	PI
TP-8		3-5'	Brown silty sand	5.5%			

Canonie Environmental

Drawn by:	DAC		
Engr.	DWF	PROJECT NO. 6583.01	DWG. NO. RM 86-060-01
Revised:		GRADATION CURVES	

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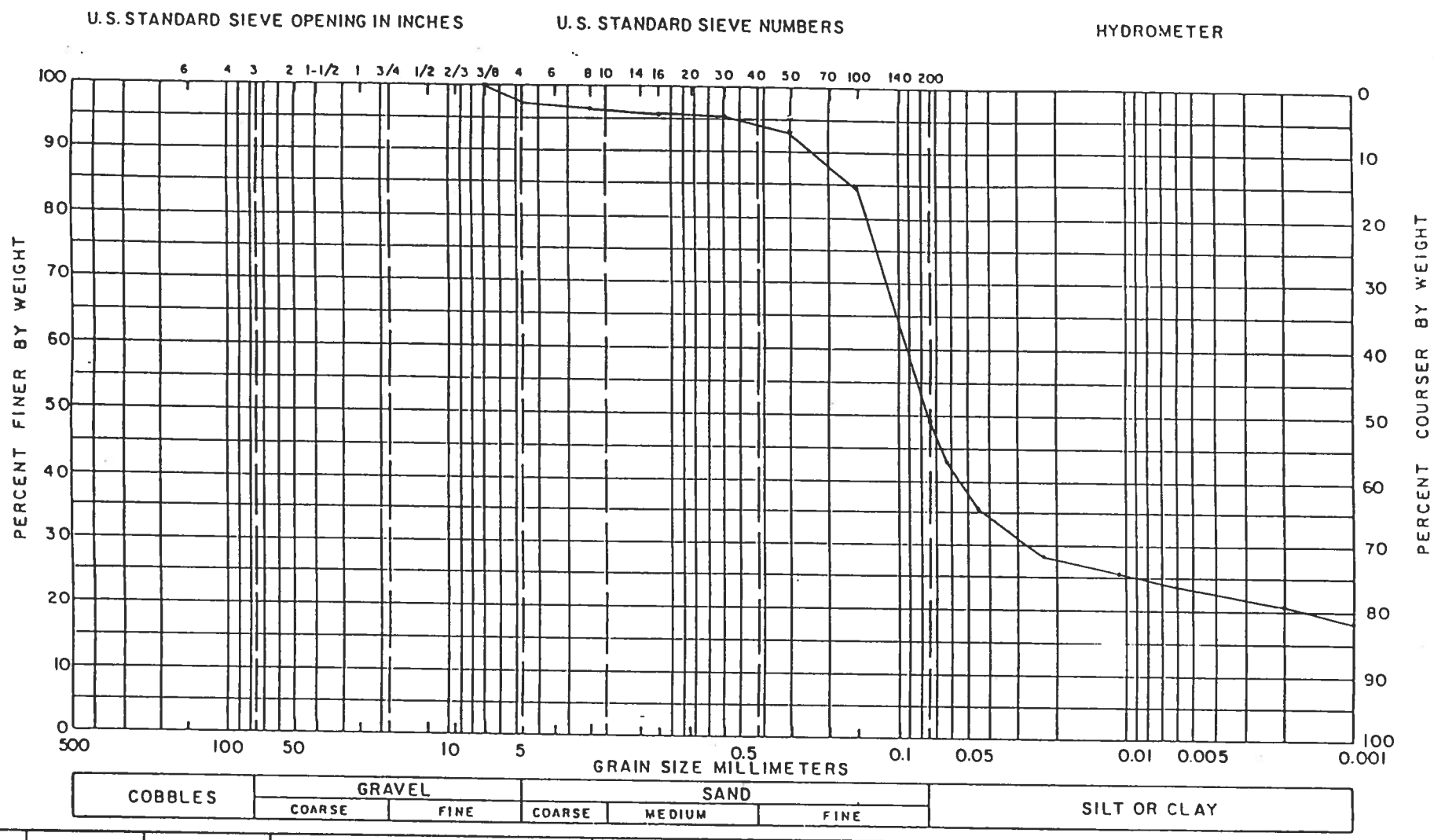
CONSULTING ENGINEERS

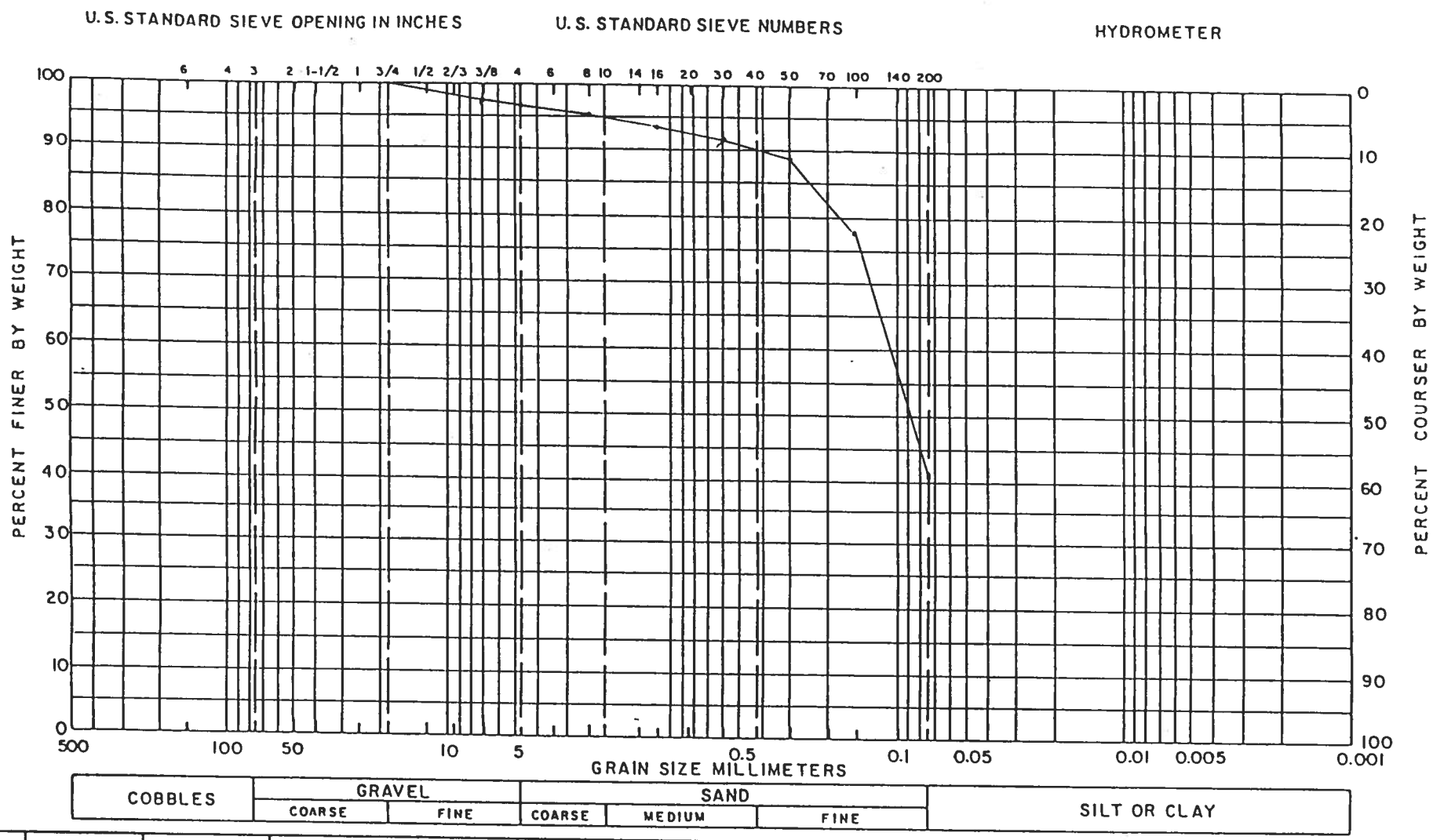


BORING NO.	LEGEND	EL. or DEPTH	CLASSIFICATION	w_n	w_L	w_p	PI
TP-10		2-3'	Brown silty sand, little clay	7.2%			

Canonie Environmental

Drawn by:	DAC		
Engr.	DWE	PROJECT NO. 6583.01	DWG. NO. Rm 86-060-01
Revised:		GRADATION CURVES	

GOODSON & ASSOCIATES, INC.
CONSULTING ENGINEERS

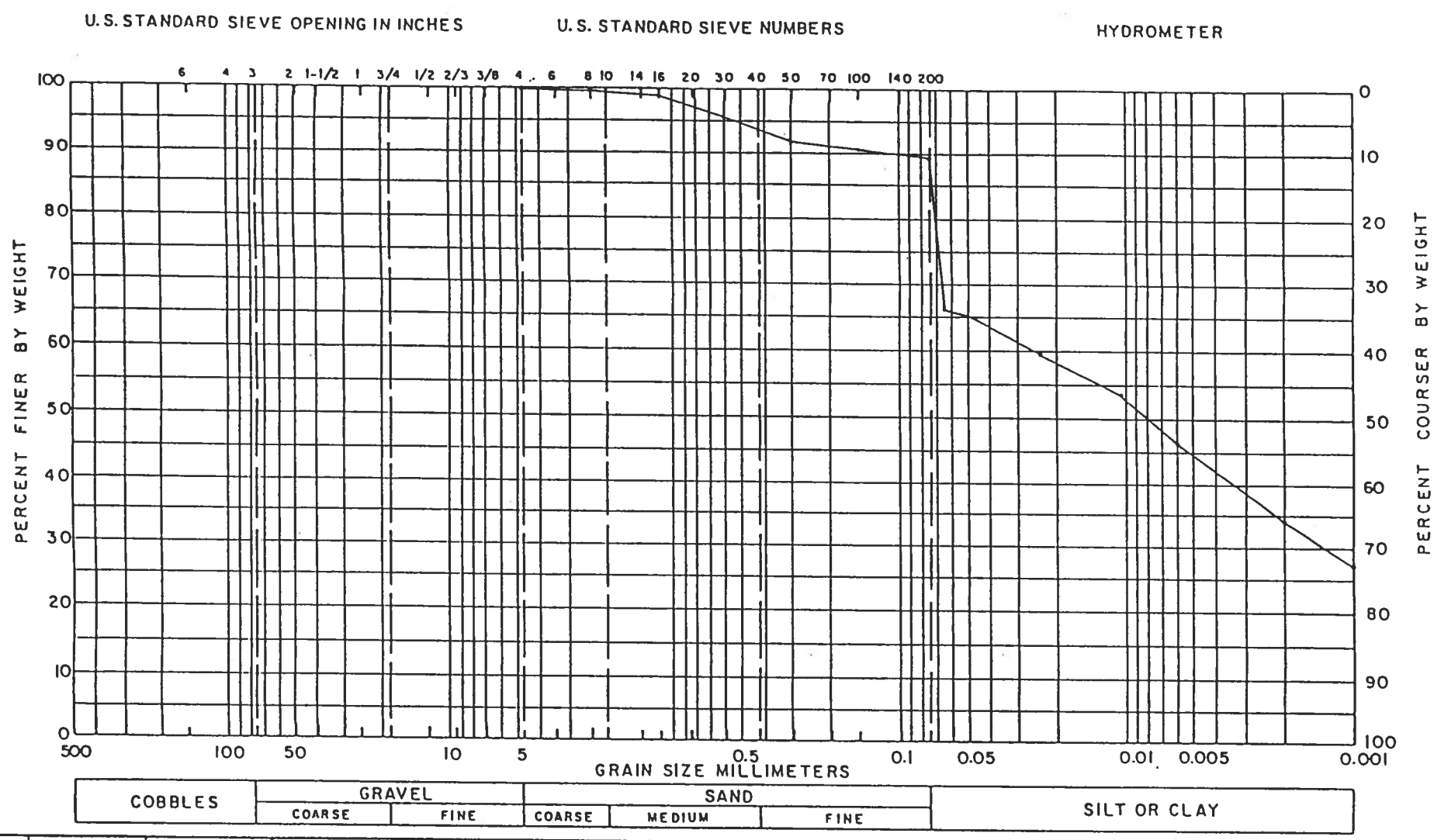


BORING NO.	LEGEND	EL. or DEPTH	CLASSIFICATION	w_n	w_L	w_p	PI
TP-15		6'	Brown silty sand, trace gravel	5.6%			

Canonie Environmental

Drawn by:	DAC		
Engr.	DWE	PROJECT NO. 6583.01	DWG. NO. RM 86-060-01
Revised:		GRADATION CURVES	

GOODSON & ASSOCIATES, INC.
CONSULTING ENGINEERS



BORING NO.	LEGEND	EL. or DEPTH	CLASSIFICATION	w_n	w_L	w_P	PI
B-4		10'	Brown siltstone, some clay, trace sand	22.9 %			
Drawn by:	DAC						
Engr.	DWE		PROJECT NO. 6583.01	DWG. NO. RM 86-060-01			
Revised:			GRADATION CURVES				

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APPENDIX A-3

Rock Core Logs

Canonie

Rock Core Log

PROJECT No. RM 86-060-01
BORING No. 86-RP-RR-1
PAGE 1 OF 1

PROJECT NAME UNC
BORING LOCATION N 71640.0 E 56744.3 SURFACE ELEV. 6969.7
DRILLER HEBER MINING & EXPLORATION DATE: START 11/20/86 FINISH 11/20/86

DEPTH	CORE NO.	CORE LEN.	BOX NO.	CORE DATA SIZE	PSI	FPM	% C.R.	LOSS	DISCONTINUITIES RQD	FPF	JOINT	BEDDING	HARDNESS	DESCRIPTION AND REMARKS	STRENGTH TESTS Qu TSF	Is PSI
														TAN WEATHERED FINE SANDSTONE 3.3		
	1	5	1	NX		1	98		84	2	H,C	TN	MH	MODERATELY HARD, TAN-LIGHT GRAY, FINE SANDSTONE, OCCASIONAL ORANGE LENSE, SOME DARK BROWN, BLACK SANDSTONE INTERNAL AT 8 FEET - 9 FEET AND AGAIN AT 12 FEET. GRAY CLAY IN FRACTURE AT 13 FEET. RETURN WATER TAN.		
5																
	2	5	1	NX		1	94		88	1.6	H,C,CL	TN	MH			
10																
	3	5	2	NX		1	84		40	3	H,C	TT	MH	ALTERNATING ORANGE AND LIGHT GRAY LENSES AT 1/8-INCH CENTERS, OCCASIONAL THICKER BED. RETURN WATER ORANGE/TAN 15 FEET TO 18 FEET. HEAVILY FRACTURED 21 TO 21.5 FEET. DARK GRAY 1/8-INCH LENSE AT 22 FEET.		
15																
	4	5	2	NX		2	66		18	4	H,V,VC	TT	MH			
20																
25																
30																

NOTES:
1) TOTAL DEPTH 23.3 FEET.
2) DRILL RETURN WATER CONSISTENT THROUGHOUT.
3) CME 55 DRILL RIG.
4) ZONE 1 OF UPPER GALLUP FORMATION.

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Canonie

Rock Core Log

PROJECT No. RM 86-060-01
BORING No. 86-RP-RR-2
PAGE 1 OF 1

PROJECT NAME UNC
BORING LOCATION N 77181.3 E 59170.4 SURFACE ELEV. 7066.7
DRILLER HEBER MINING & EXPLORATION DATE: START 11/20/86 FINISH 11/20/86

DEPTH	CORE NO.	CORE LEN.	BOX NO.	CORE DATA SIZE	PSI	FPM	% C.R.	LOSS	DISCONTINUITIES RQD	FPF	JOINT	BEDDING	HARDNESS	DESCRIPTION AND REMARKS	STRENGTH TESTS Qu TSF	Is PSI
5														6.0		
	1	5	1	NX		2	100		94	1.6	H,C		MH	MODERATELY HARD, TAN, FINE SANDSTONE, SOME RANDOM BLACK SAND AT 9 FEET TO 11 FEET. LENSE OF LOOSE SAND AT 9.5 FEET. RETURN WATER TAN.		
10																
	2	5	1	NX		2	92		18	5.4	H,VC		MH			
15														RETURN WATER LOST AT 15 FEET.		
	3	4	2	NX		2	100		0	9	HV,VC		MH			
20												TT		BEGINNING AT 19 FEET, ALTERNATING 1/8-INCH LENSES OF TAN, ORANGE, AND DARK BROWN SANDSTONE. CLAY COATING IN FRACTURES.		
25														NOTES: 1) TOTAL DEPTH 20 FEET. 2) DRILL RETURN WATER CONSISTENT THROUGHOUT. 3) CME 55 DRILL RIG. 4) LOWER DALTON FORMATION.		

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