SUPPLEMENTAL RCRA FACILITY INVESTIGATION/ MCP PHASE II COMPREHENSIVE SITE ASSESSMENT WORK PLAN INDIAN ORCHARD PLANT

VOLUME III OF III

Monsanto Company

Springfield, Massachusetts

March 1994

BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS

RDMS DocID 107257

APPENDIX D

Compilation of Boring Logs, Well Logs, Cross-Sections, Grain Size Analyses, Permeability Tests, Analytical Data, Water Level Data, and Boring/Well Location Maps

D-1 Boring Logs
D-2 Monitoring Well Logs
D-3 Cross-Sections
D-4 Grain Size Analysis Summary Tables
D-5 Permeability Test Results
D-6 Analytical Data Summary Tests
D-7 Ground-Water Elevation Summary Tables
D-8 Supplemental Soil Boring, Monitoring Well, Surface Water, and Sediment Sampling Location Maps

Appendix D-1, Soil Boring Logs and D-2, Monitoring Well Logs:

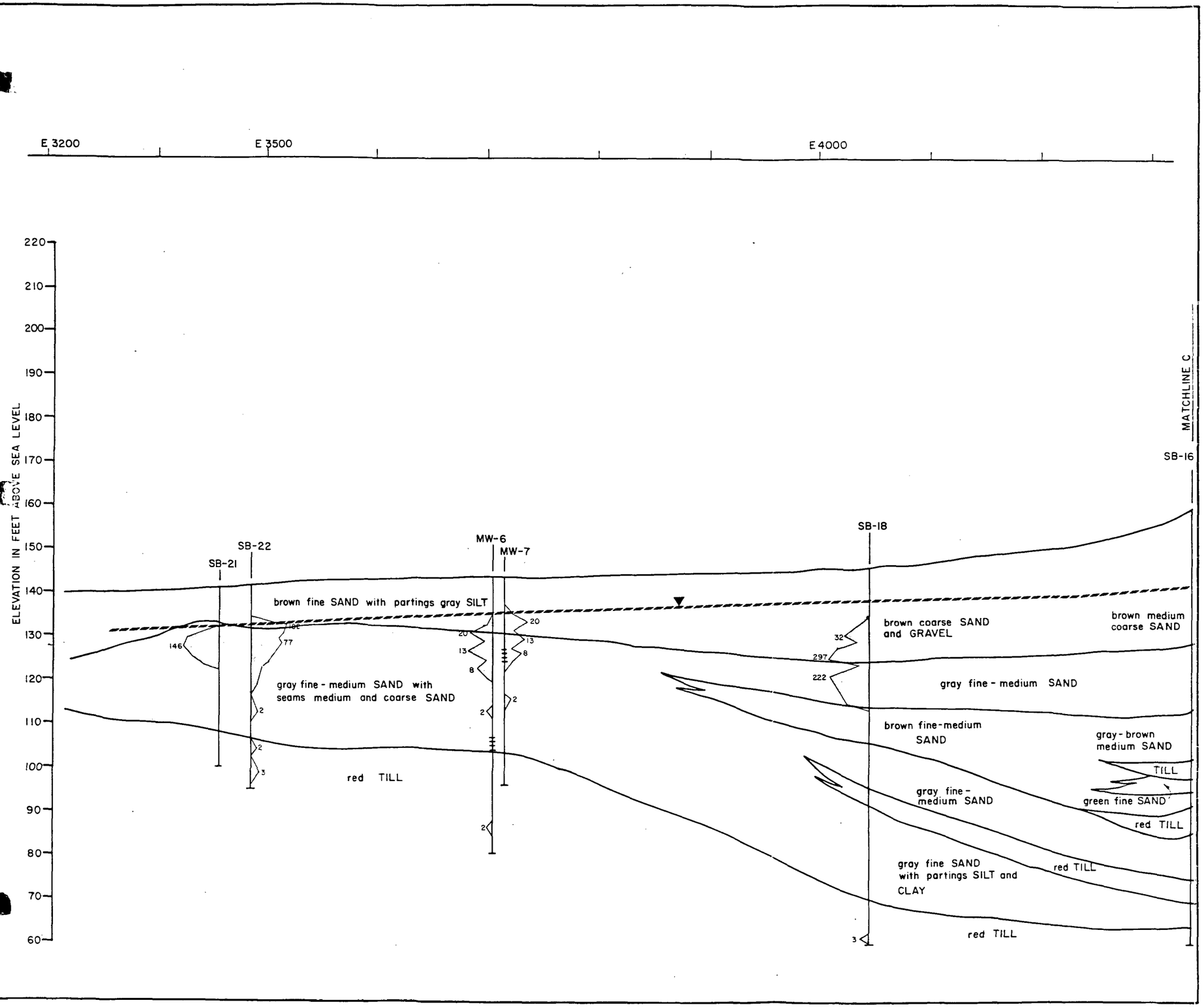
For Appendix D-1, Soil Boring Logs and D-2, Monitoring Well Logs presented in the Supplemental RCRA Facility Investigation /MCP Comprehensive Site Assessment Work Plan, Indian Orchard Plant Volume III of III prepared for Monsanto Company in Springfield, Massachusetts, March 1994, see Updated Soil Boring Monitoring Well Log Compendium dated June 2007

APPENDIX D-3

Cross-Sections

1. Phase II Report, Remedial Investigation Plan (BB&L, December 1984).

FIGURE 6A



LEGEND

GROUNDWATER ELEV.

7 BORING

2 (ORGANIC VAPORS IN P.P.M.)

MONSANTO POLYMER PRODUCTS CO.
INDIAN ORCHARD PLANT
SPRINGFIELD, MASS.

CROSS SECTION I
(WITH OVA)

VERTICAL SCALE
10' 0' 10'

HORIZONTAL SCALE
40' 0' 40'

BLASLAND & BOUCK ENGINEERS, P.C.

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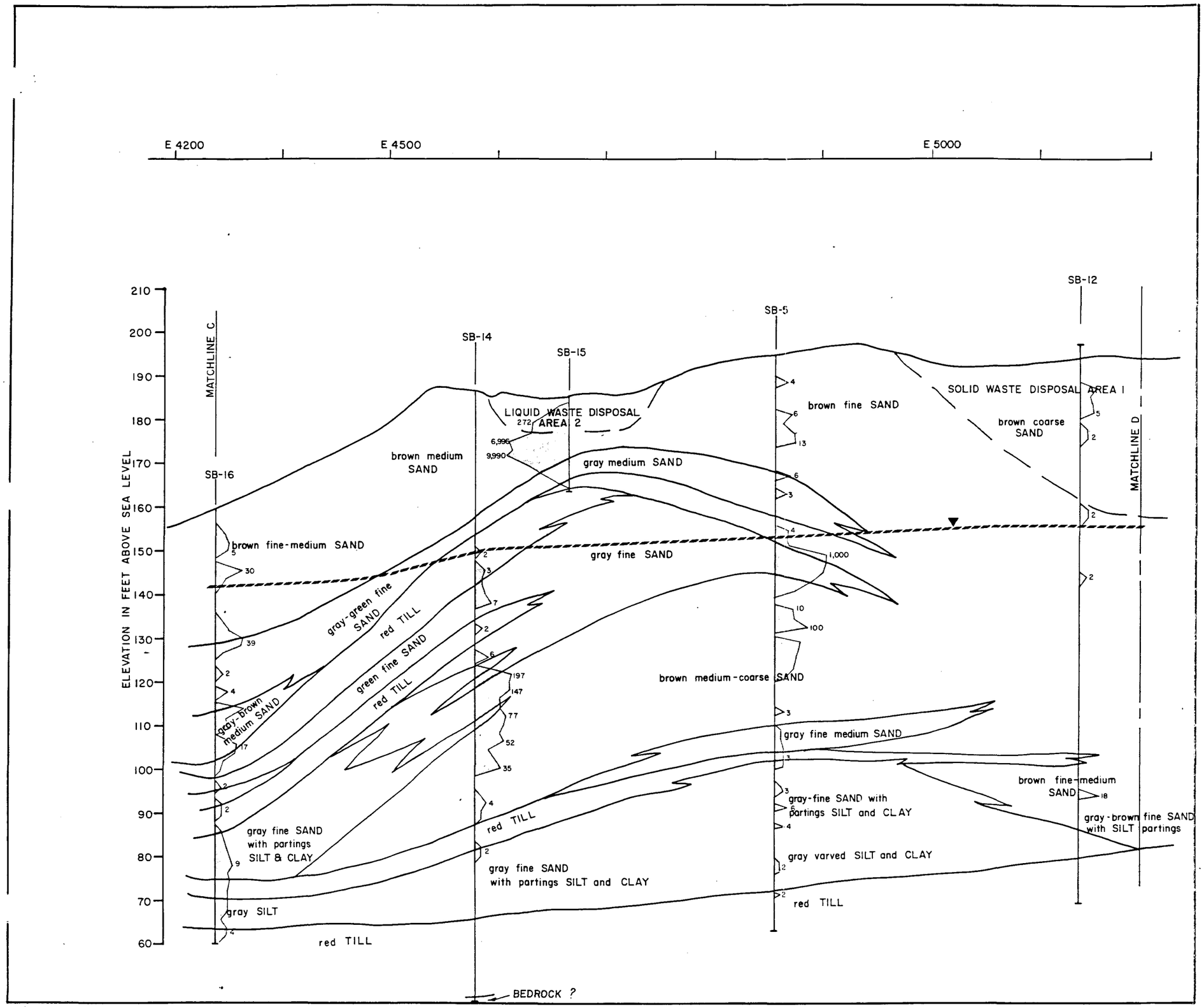
G102-03-2.1/

FIGURE 6B



LEGEND

GROUNDWATER ELEV.

7 BORING

2 (ORGANIC VAPORS IN PPM.)

MONSANTO POLYMER PRODUCTS CO.
INDIAN ORCHARD PLANT
SPRINGFIELD, MASS.

CROSS SECTION I
(WITH OVA)

VERTICAL SCALE
10' 0' 10'

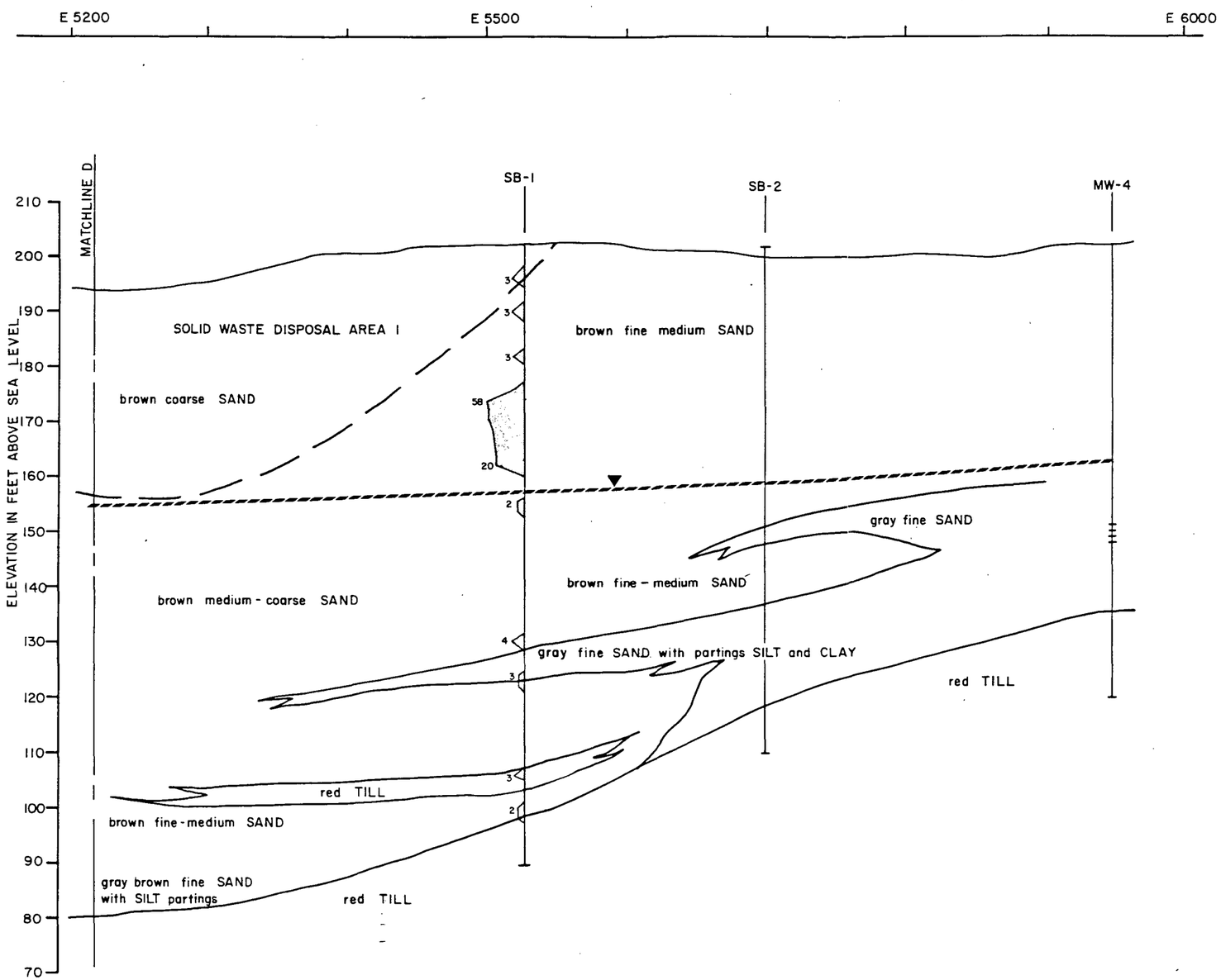
HORIZONTAL SCALE
40' 0' 40'

BLASLAND & BOUCK ENGINEERS, P.C.

REVISED NOVEMBER 1984

G102-03-2.1/

FIGURE 6C



LEGEND

GROUNDWATER ELEV.

7 BORING

2 (ORGANIC VAPORS IN P.P.M.)

MONSANTO POLYMER PRODUCTS CO.
INDIAN ORCHARD PLANT
SPRINGFIELD, MASS.

CROSS SECTION I
(WITH OVA)

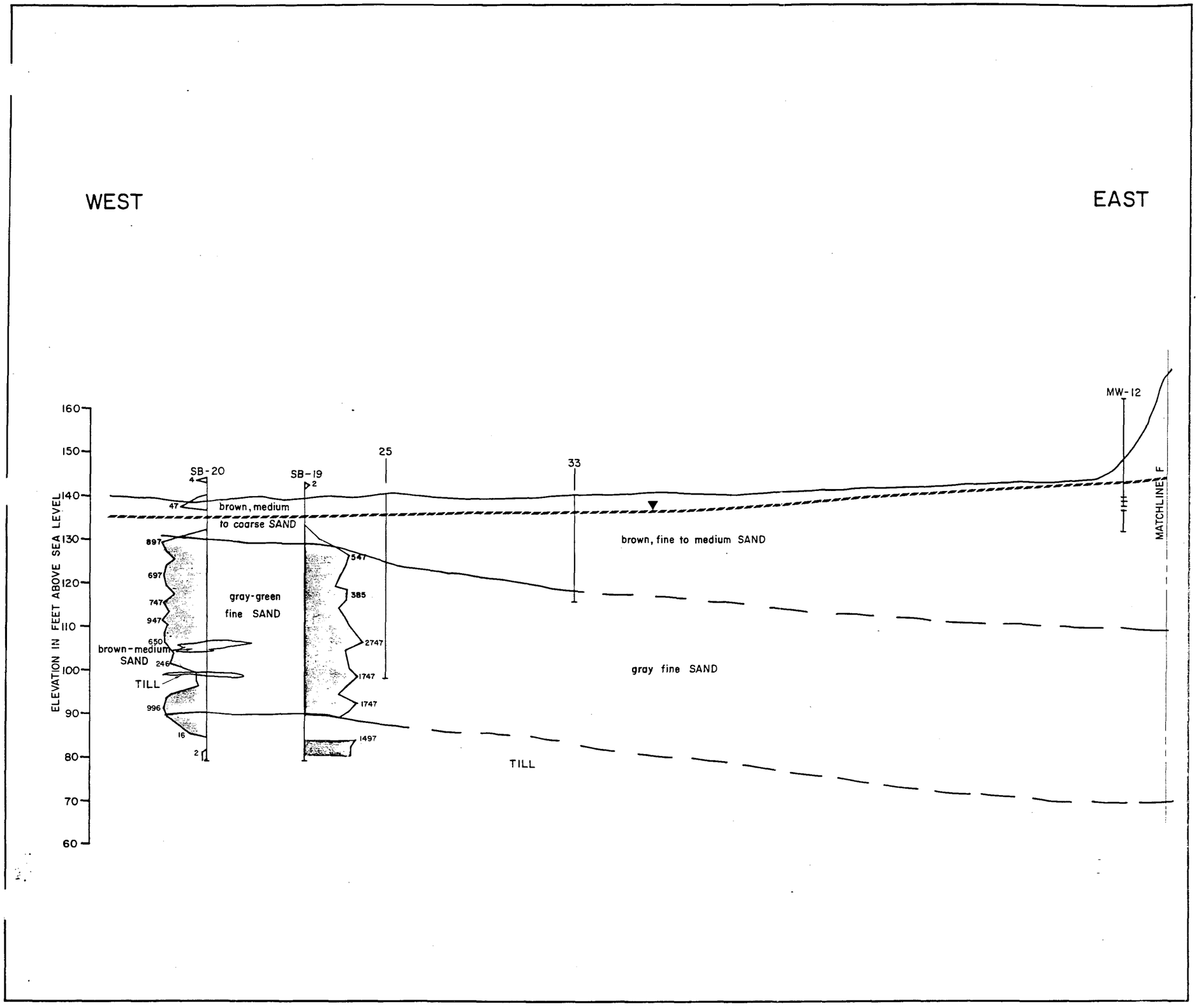
VERTICAL SCALE
10' 0' 10'

HORIZONTAL SCALE
40' 0' 40'

BLASLAND & BOUCK ENGINEERS, P.C.

REVISED NOVEMBER 1984

G102-03-2.1/



LEGEND

GROUNDWATER ELEV.

7 BORING
2 (ORGANIC VAPORS IN P.P.M.)

MW-2 MONITORING WELL

WELL SCREEN

MONSANTO POLYMER PRODUCTS CO.
INDIAN ORCHARD PLANT
SPRINGFIELD, MASS.

CROSS SECTION 2A
(WITH OVA)

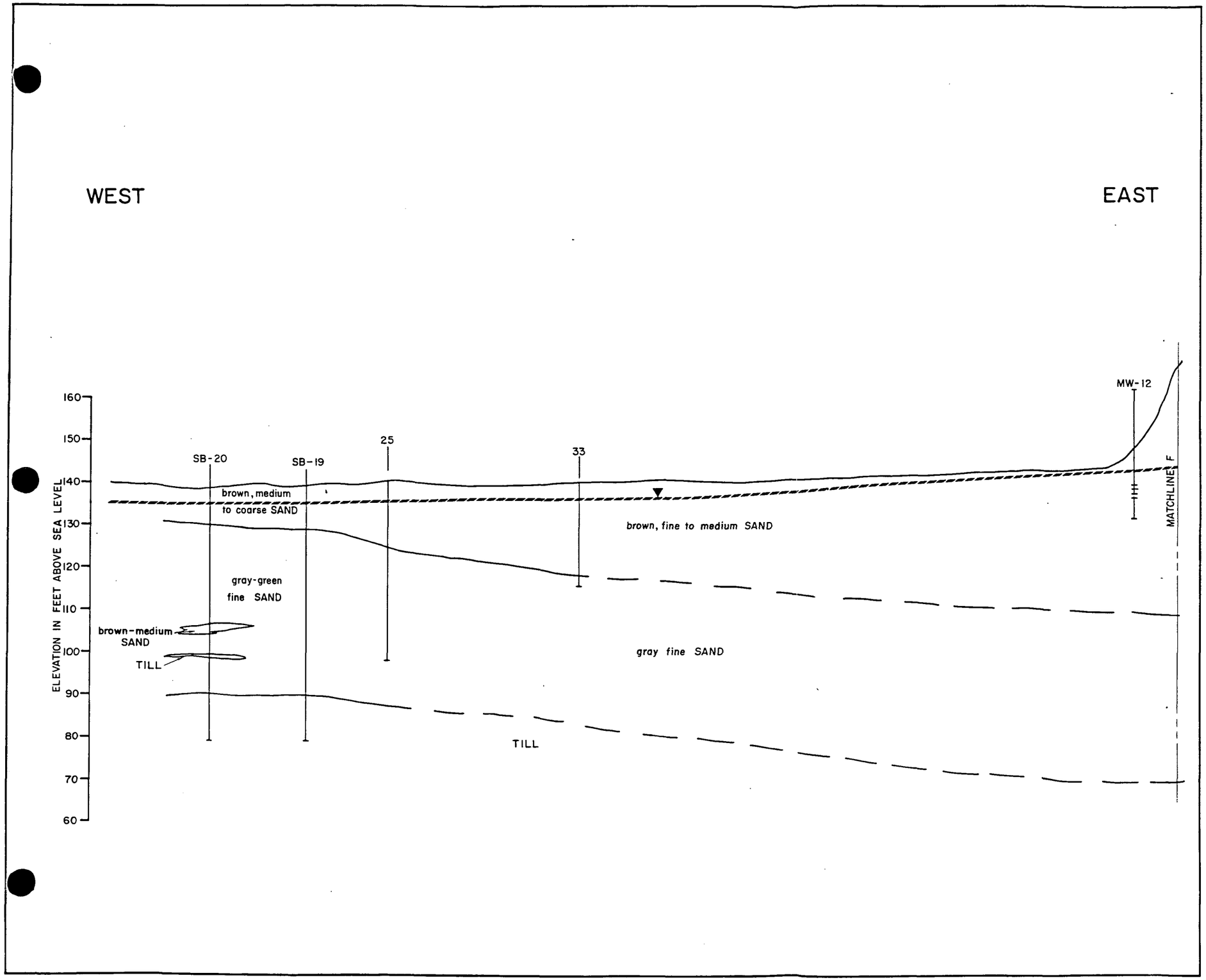
VERTICAL SCALE
10' 0' 10'

HORIZONTAL SCALE
40' 0' 40'

BLASLAND & BOUCK ENGINEERS, P.C.

REVISED DECEMBER 1984

5AD



LEGEND

GROUNDWATER ELEV.

7 BORING

MW-2 MONITORING WELL

WELL SCREEN

MONSANTO POLYMER PRODUCTS CO.
INDIAN ORCHARD PLANT
SPRINGFIELD, MASS.

CROSS SECTION 2A

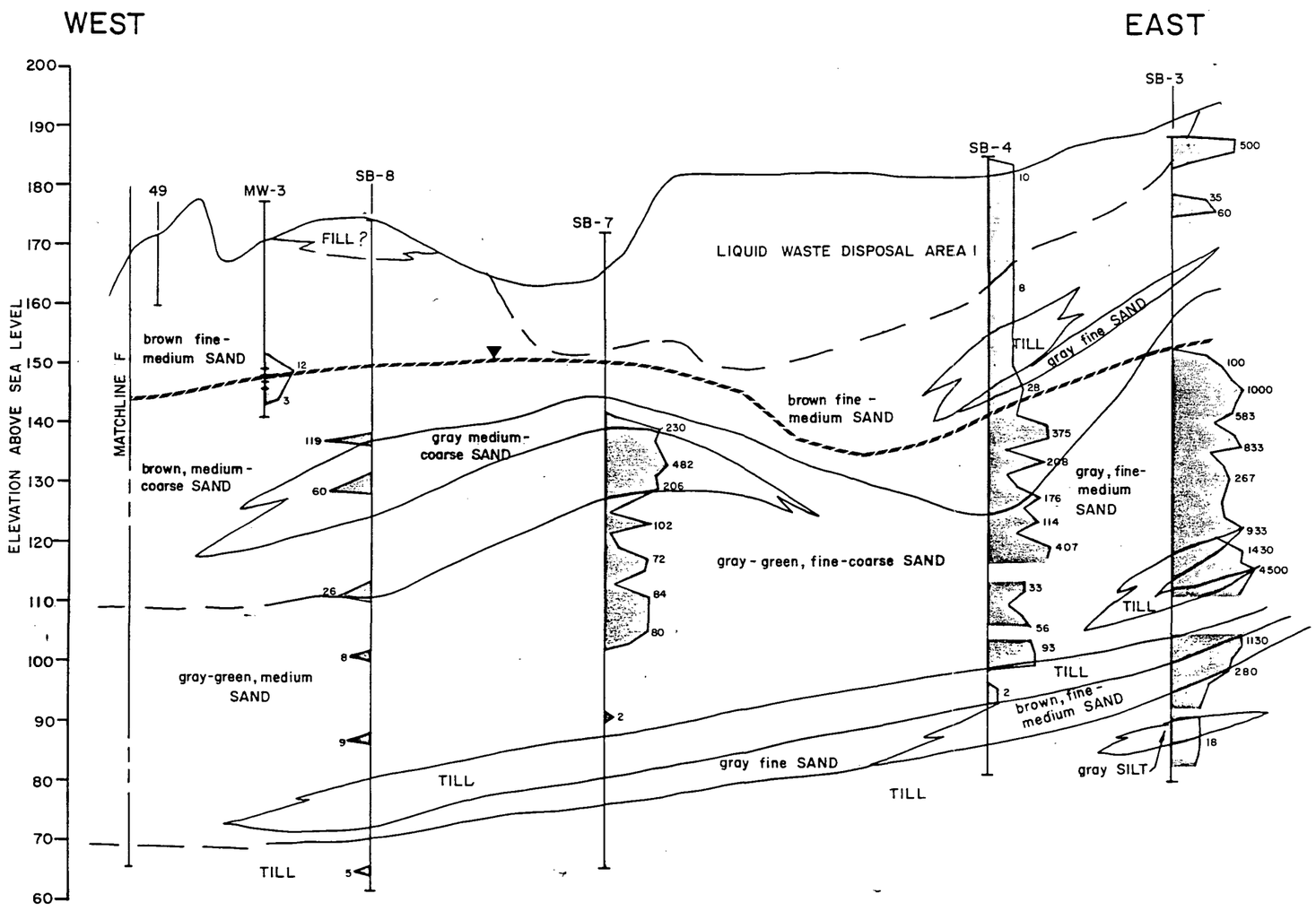
VERTICAL SCALE
10' 0' 10'

HORIZONTAL SCALE
40' 0' 40'

BLASLAND & BOUCK ENGINEERS, P.C.

REVISED NOVEMBER 1984

G102-03-2.1/ 7AD



LEGEND

GROUNDWATER ELEV.

7 BORING
2 (ORGANIC VAPORS IN P.P.M.)

MW-2 MONITORING WELL

WELL SCREEN

MONSANTO POLYMER PRODUCTS CO.
INDIAN ORCHARD PLANT
SPRINGFIELD, MASS.

CROSS SECTION 2B (WITH OVA)

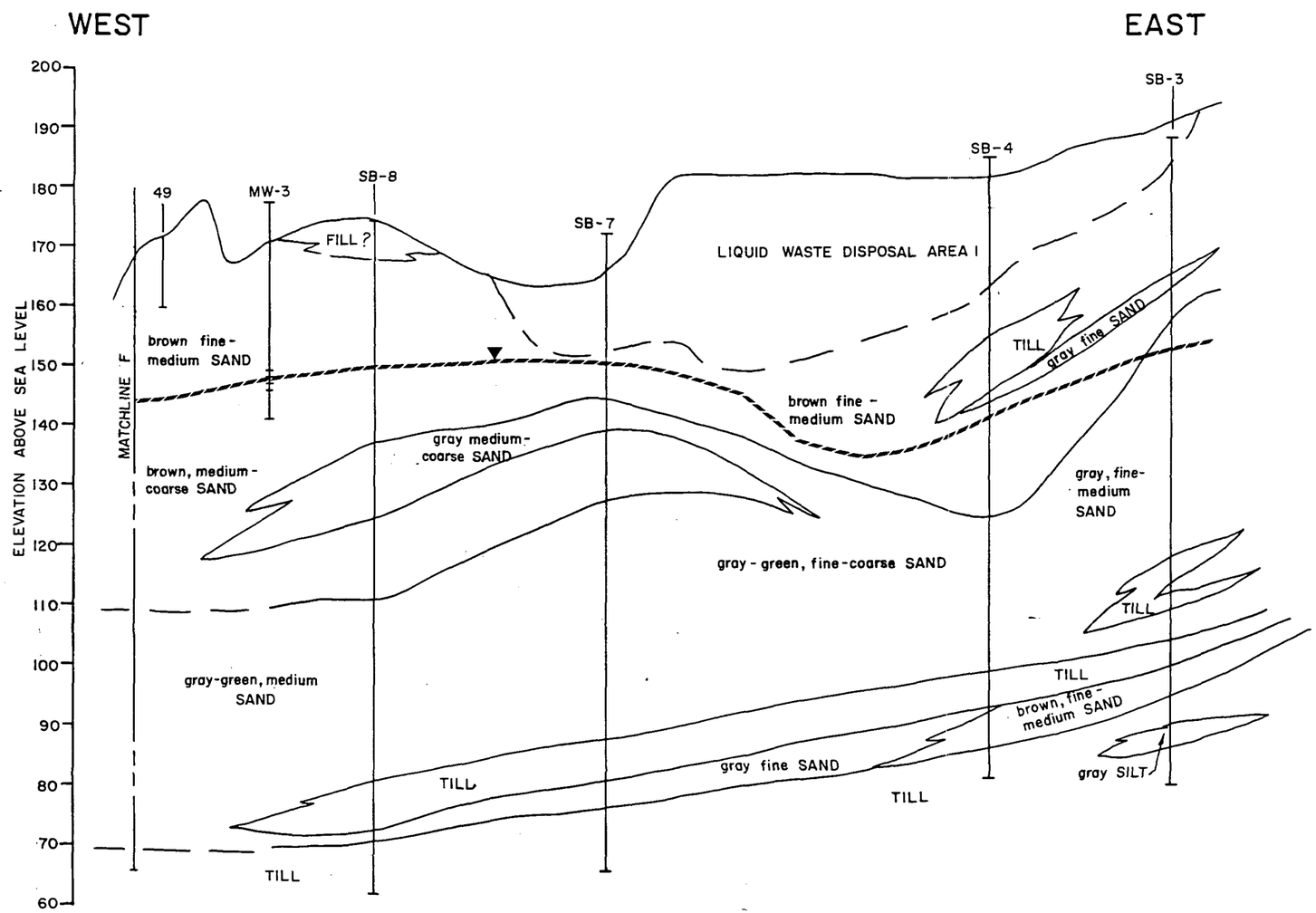
VERTICAL SCALE
10' 0' 10'

HORIZONTAL SCALE
40' 0' 40'

BLASLAND & BOUCK ENGINEERS, P.C.

REVISED DECEMBER 1984

G102-03-2.1/ 6AD



LEGEND

GROUNDWATER ELEV.

7 BORING

MW-2 MONITORING WELL

WELL SCREEN

MONSANTO POLYMER PRODUCTS CO.
INDIAN ORCHARD PLANT
SPRINGFIELD, MASS.

CROSS SECTION 2B

VERTICAL SCALE
10' 0' 10'

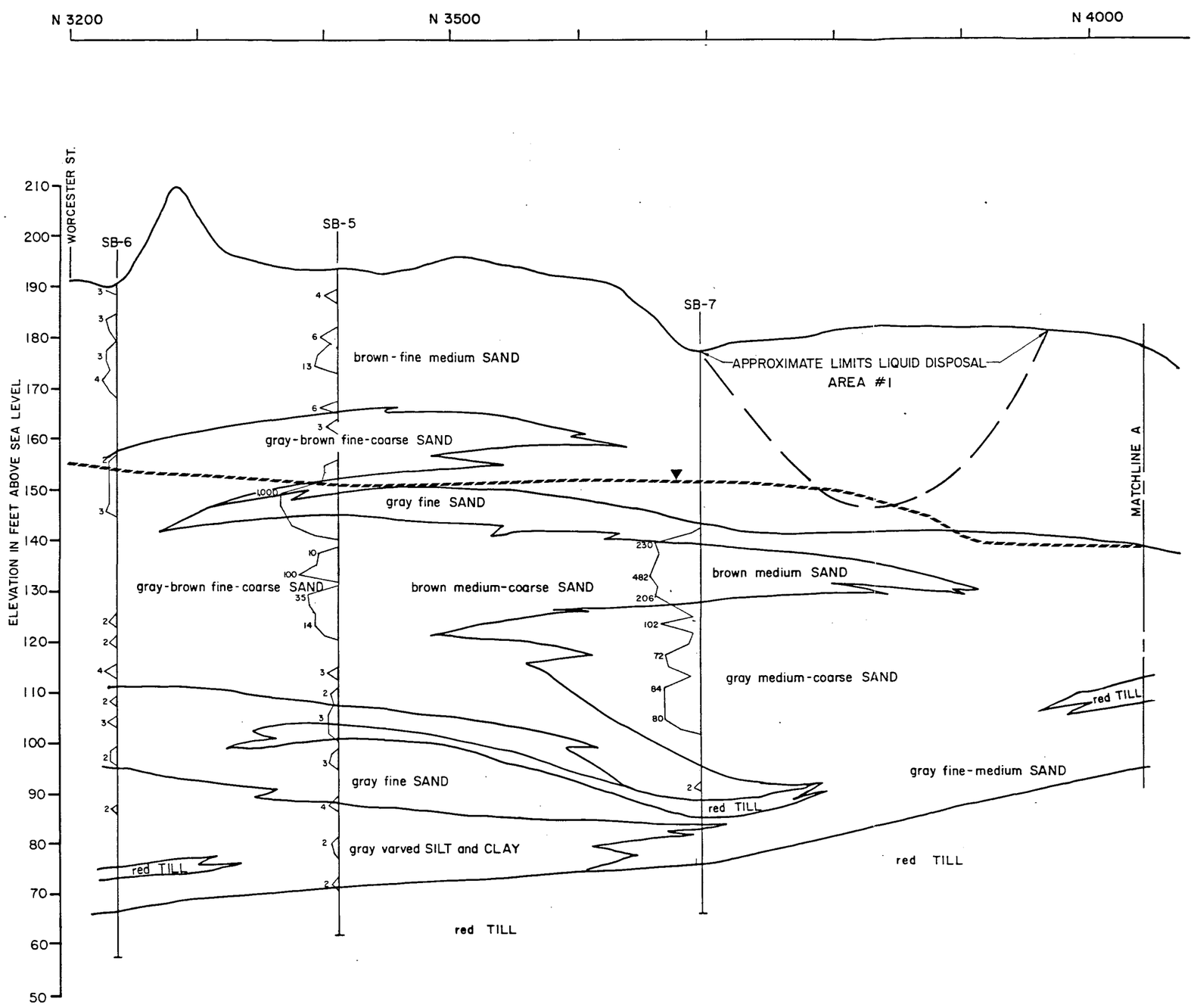
HORIZONTAL SCALE
40' 0' 40'

BLASLAND & BOUCK ENGINEERS, P.C.

REVISED NOVEMBER 1984

G102-03-2.1/ 8AD

FIGURE 7A



LEGEND

GROUNDWATER ELEV.

7 BORING

2 (ORGANIC VAPORS IN P.P.M.)

MONSANTO POLYMER PRODUCTS CO.
INDIAN ORCHARD PLANT
SPRINGFIELD, MASS.

CROSS SECTION 3
(WITH OVA)

VERTICAL SCALE
10' 0' 10'

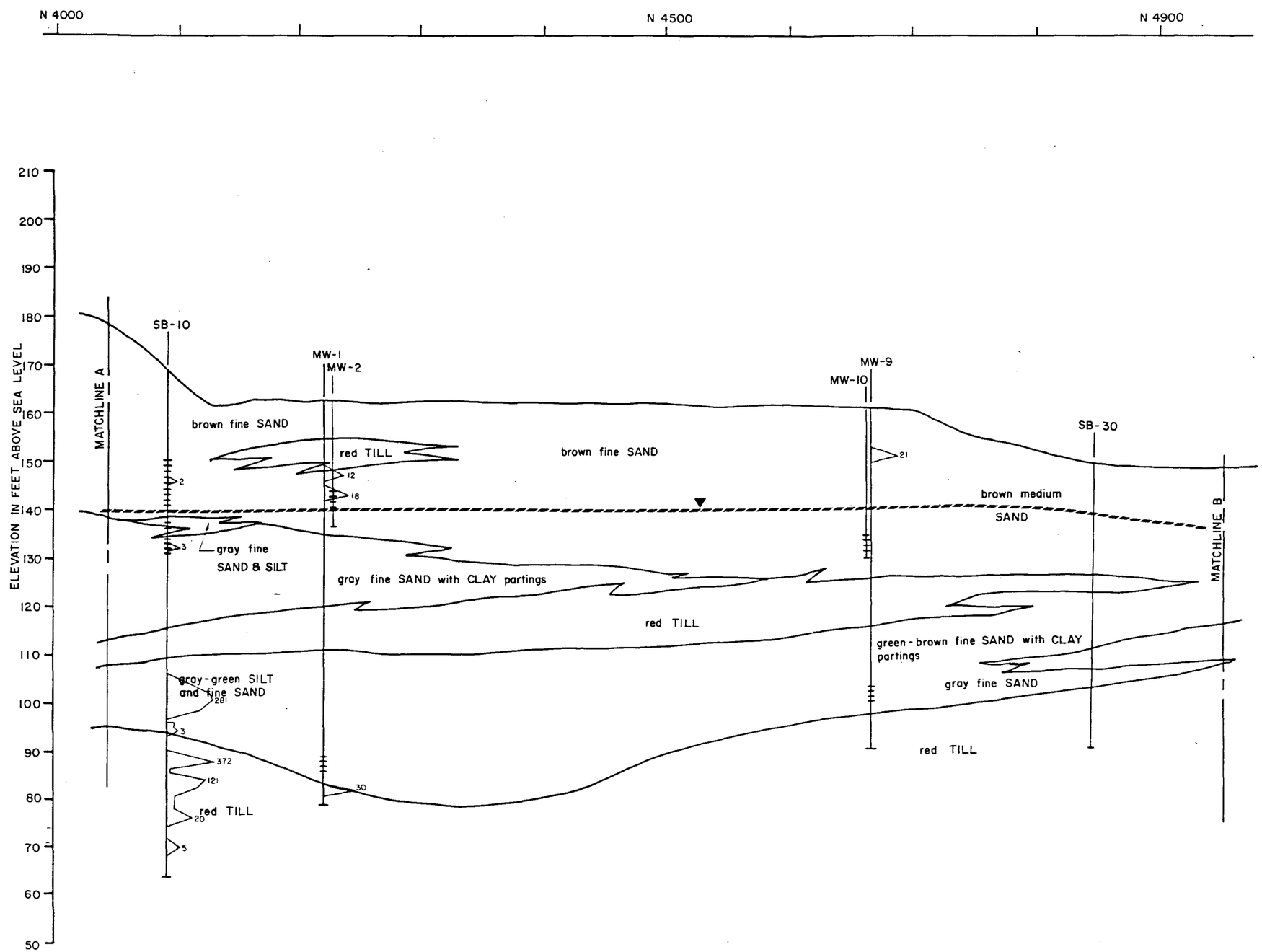
HORIZONTAL SCALE
40' 0' 40'

BLASLAND & BOUCK ENGINEERS, P.C.

REVISED NOVEMBER 1984

G102-03-2.1/

FIGURE 7B



LEGEND

GROUNDWATER ELEV.

7 BORING

2 (ORGANIC VAPORS IN P.P.M.)

MONSANTO POLYMER PRODUCTS CO.
INDIAN ORCHARD PLANT
SPRINGFIELD, MASS.

CROSS SECTION 3
(WITH OVA)

VERTICAL SCALE
10' 0' 10'

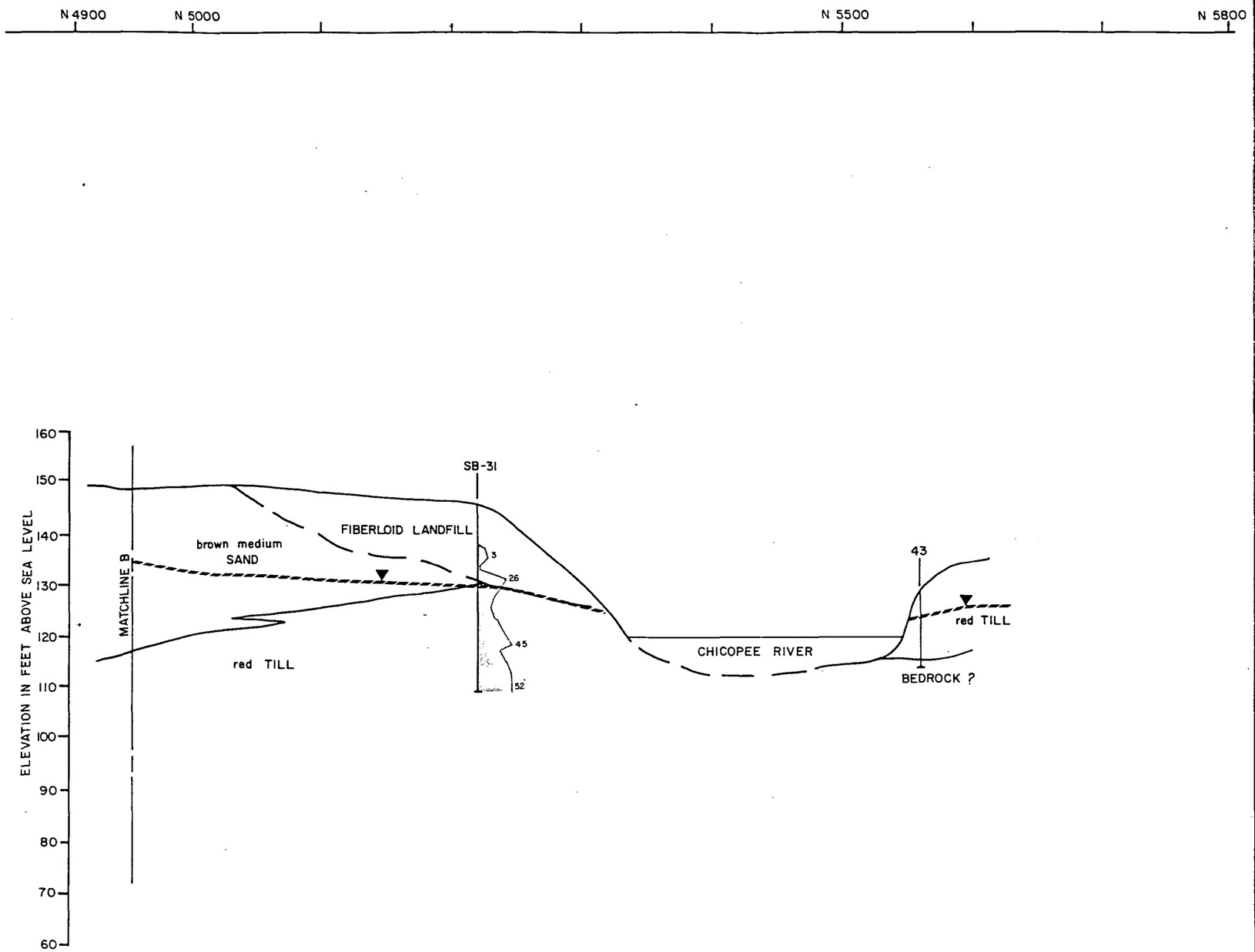
HORIZONTAL SCALE
40' 0' 40'

BLASLAND & BOUCK ENGINEERS, P.C.

REVISED NOVEMBER 1984

G102-03-2.1/

FIGURE 7C



LEGEND

GROUNDWATER ELEV.

7 BORING

2 (ORGANIC VAPORS IN P.P.M.)

MONSANTO POLYMER PRODUCTS CO.
INDIAN ORCHARD PLANT
SPRINGFIELD, MASS.

CROSS SECTION 3
(WITH OVA)

VERTICAL SCALE
10' 0' 10'

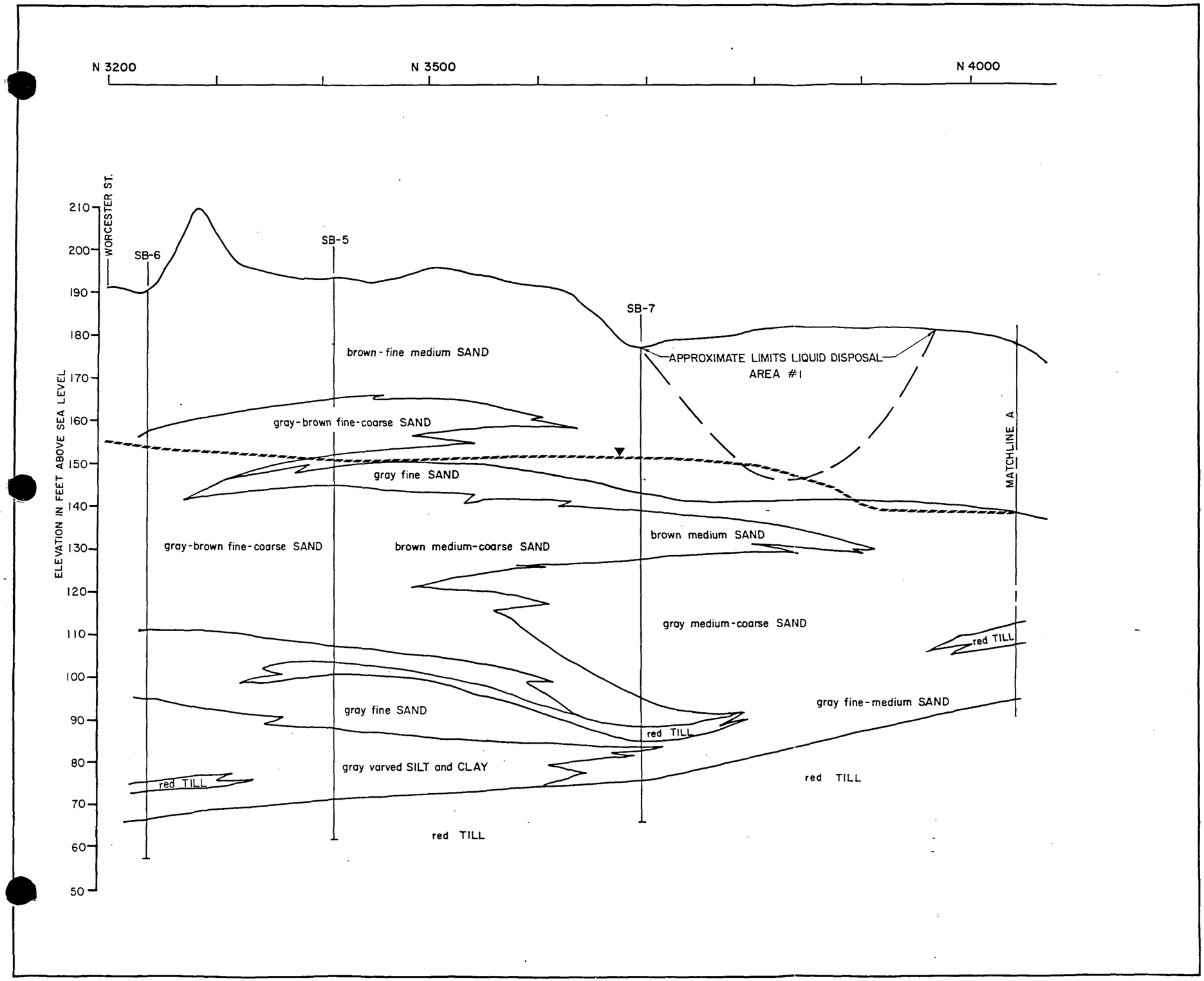
HORIZONTAL SCALE
40' 0' 40'

BLASLAND & BOUCK ENGINEERS, P.C.

REVISED NOVEMBER 1984

G102-03-2.1/

FIGURE 4A



LEGEND

GROUNDWATER ELEV.

BORING

MONSANTO POLYMER PRODUCTS CO.
INDIAN ORCHARD PLANT
SPRINGFIELD, MASS.

CROSS SECTION 3

VERTICAL SCALE
10' 0' 10'

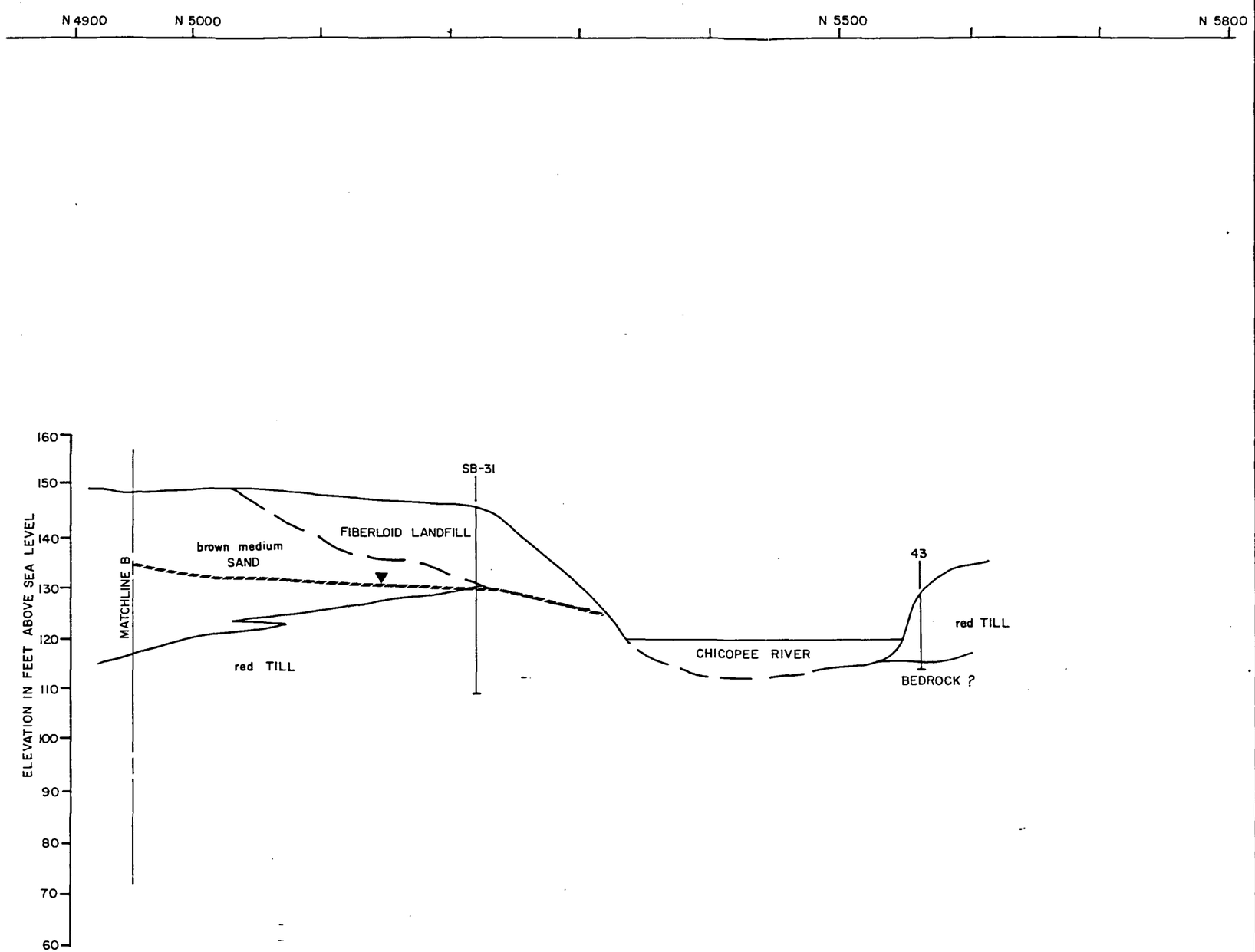
HORIZONTAL SCALE
40' 0' 40'

BLASLAND & BOUCK ENGINEERS, P.C.

REVISED NOVEMBER 1984

G102-03-2.1/

FIGURE 4C



LEGEND

GROUNDWATER ELEV.

7 BORING

MONSANTO POLYMER PRODUCTS CO.
INDIAN ORCHARD PLANT
SPRINGFIELD, MASS.

CROSS SECTION 3

VERTICAL SCALE
10' 0' 10'

HORIZONTAL SCALE
40' 0' 40'

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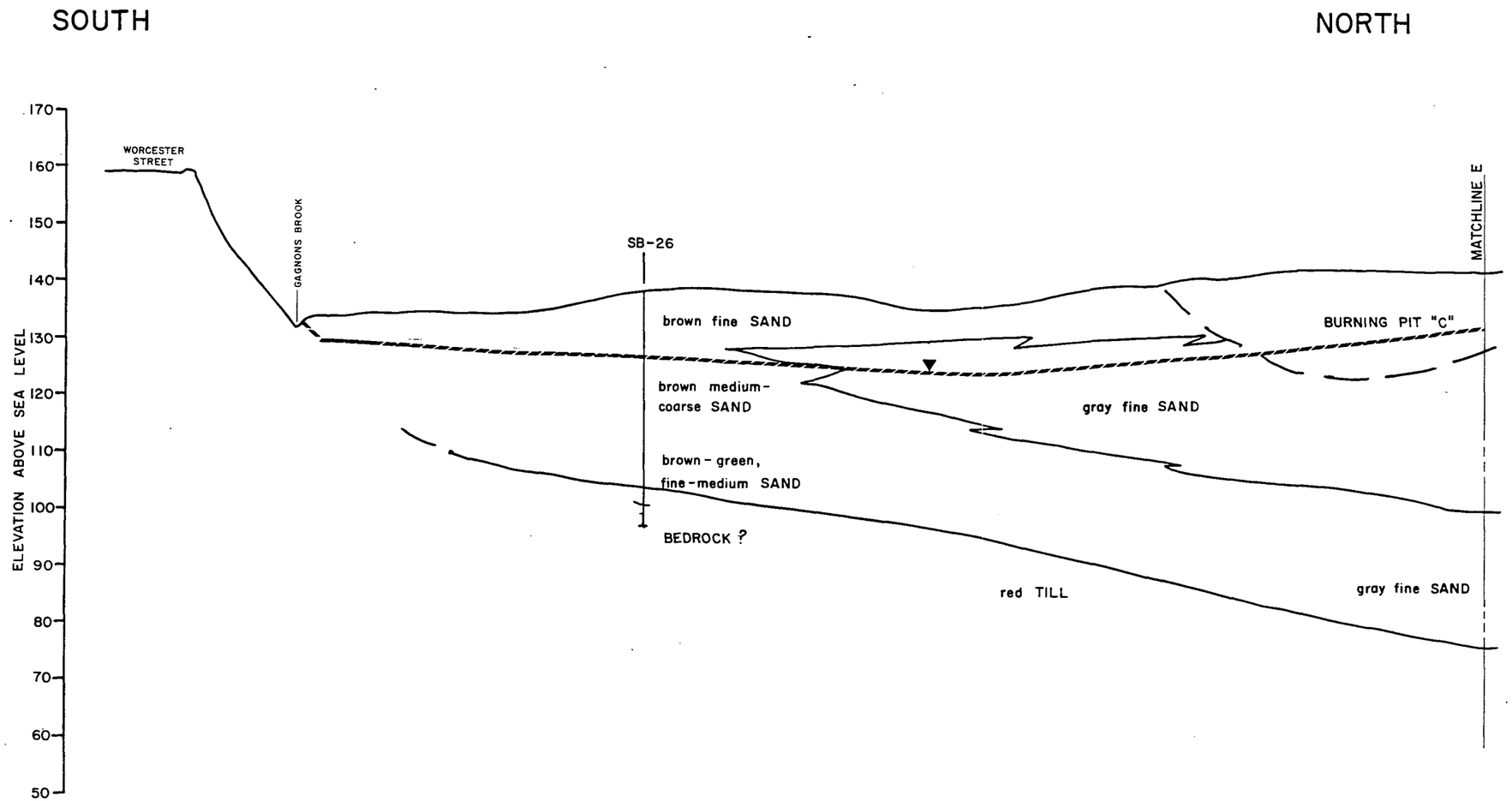
REVISED NOVEMBER 1984

102-03-2.1/



LEGEND

GROUNDWATER ELEV.

7 BORING

MONSANTO POLYMER PRODUCTS CO.
INDIAN ORCHARD PLANT
SPRINGFIELD, MASS.

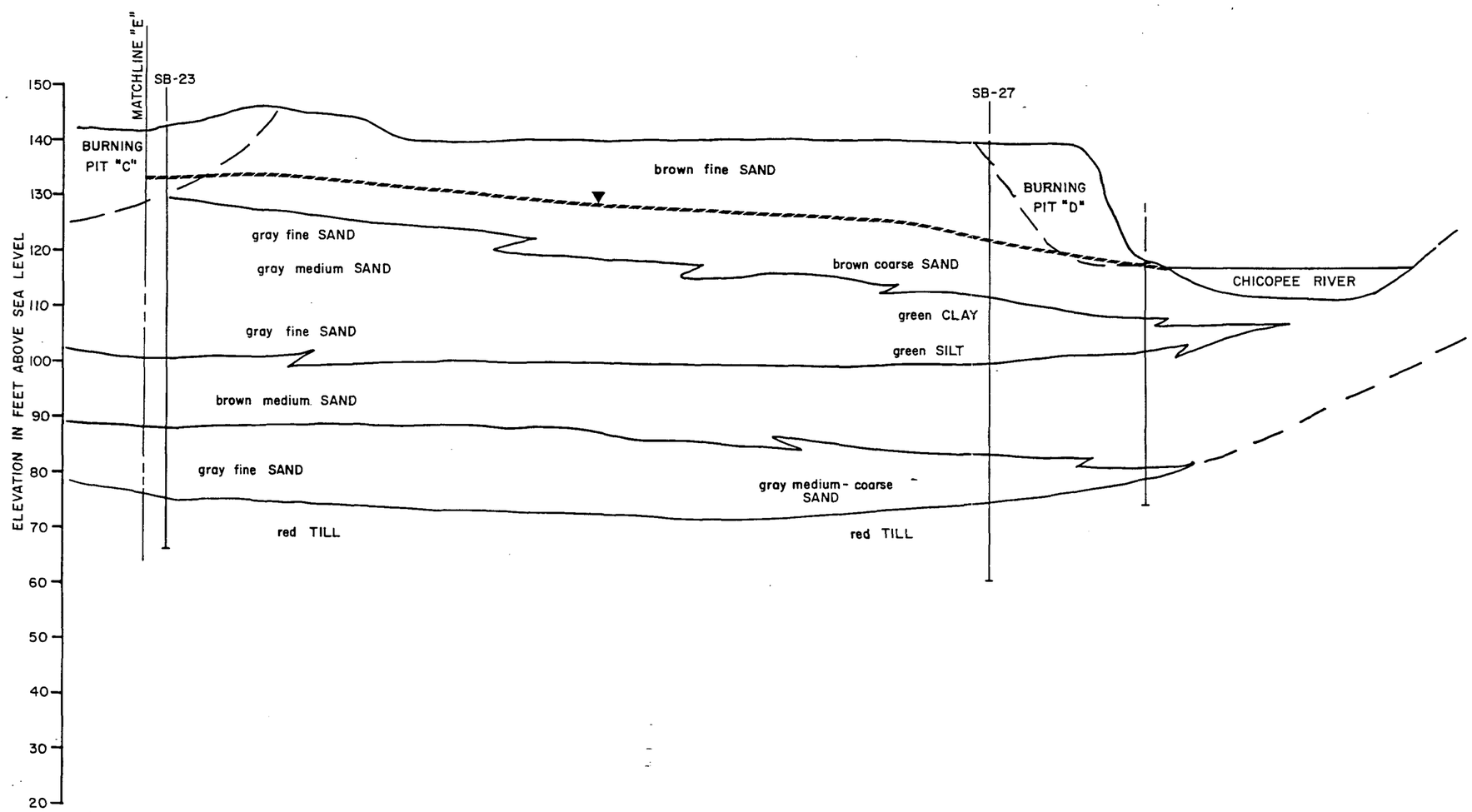
CROSS SECTION 4/5 A

VERTICAL SCALE
10' 0' 10'

HORIZONTAL SCALE
40' 0' 40'

BLASLAND & BOUCK ENGINEERS, P.C.

REVISED NOVEMBER 1984 G102-03-2.1/ 9AD



LEGEND

GROUNDWATER ELEV.

BORING

MONSANTO POLYMER PRODUCTS CO.
INDIAN ORCHARD PLANT
SPRINGFIELD, MASS.

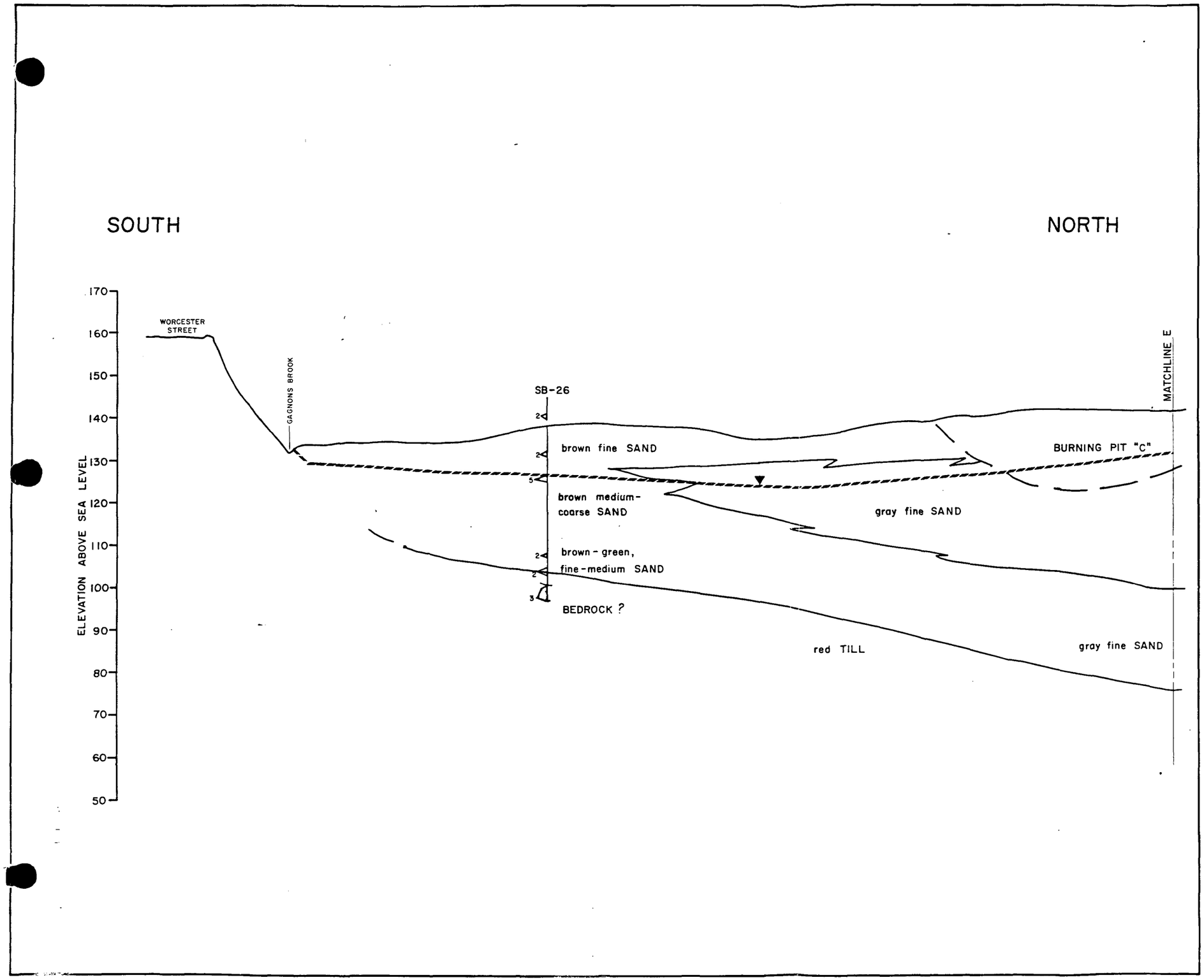
CROSS SECTION 4/5B

VERTICAL SCALE
10' 0' 10'

HORIZONTAL SCALE
40' 0' 40'

BLASLAND & BOUCK ENGINEERS, P.C.

REVISED NOVEMBER 1984 G102-03-2.1/ 10AD



LEGEND

GROUNDWATER ELEV.

7 BORING

2 (ORGANIC VAPORS IN P.P.M.)

MONSANTO POLYMER PRODUCTS CO.
INDIAN ORCHARD PLANT
SPRINGFIELD, MASS.

CROSS SECTION 4/5 A
(WITH OVA)

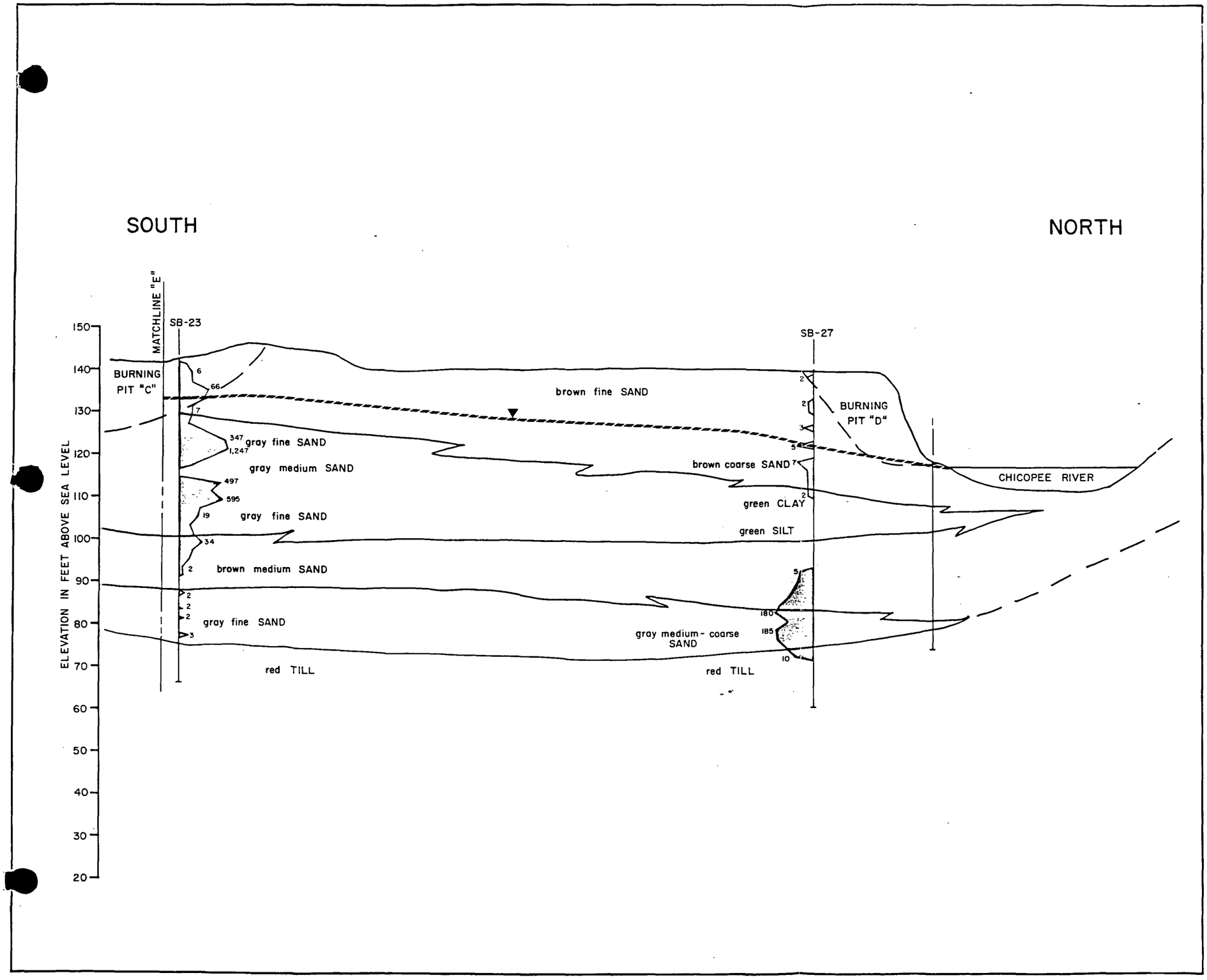
VERTICAL SCALE
10' 0' 10'

HORIZONTAL SCALE
40' 0' 40'

BLASLAND & BOUCK ENGINEERS, P.C.

REVISED DECEMBER 1984

G102-03-2.1/2AD



LEGEND

GROUNDWATER ELEV.

7 BORING
2 (ORGANIC VAPORS IN P.P.M.)

MONSANTO POLYMER PRODUCTS CO.
INDIAN ORCHARD PLANT
SPRINGFIELD, MASS.

CROSS SECTION 4/5B
(WITH OVA)

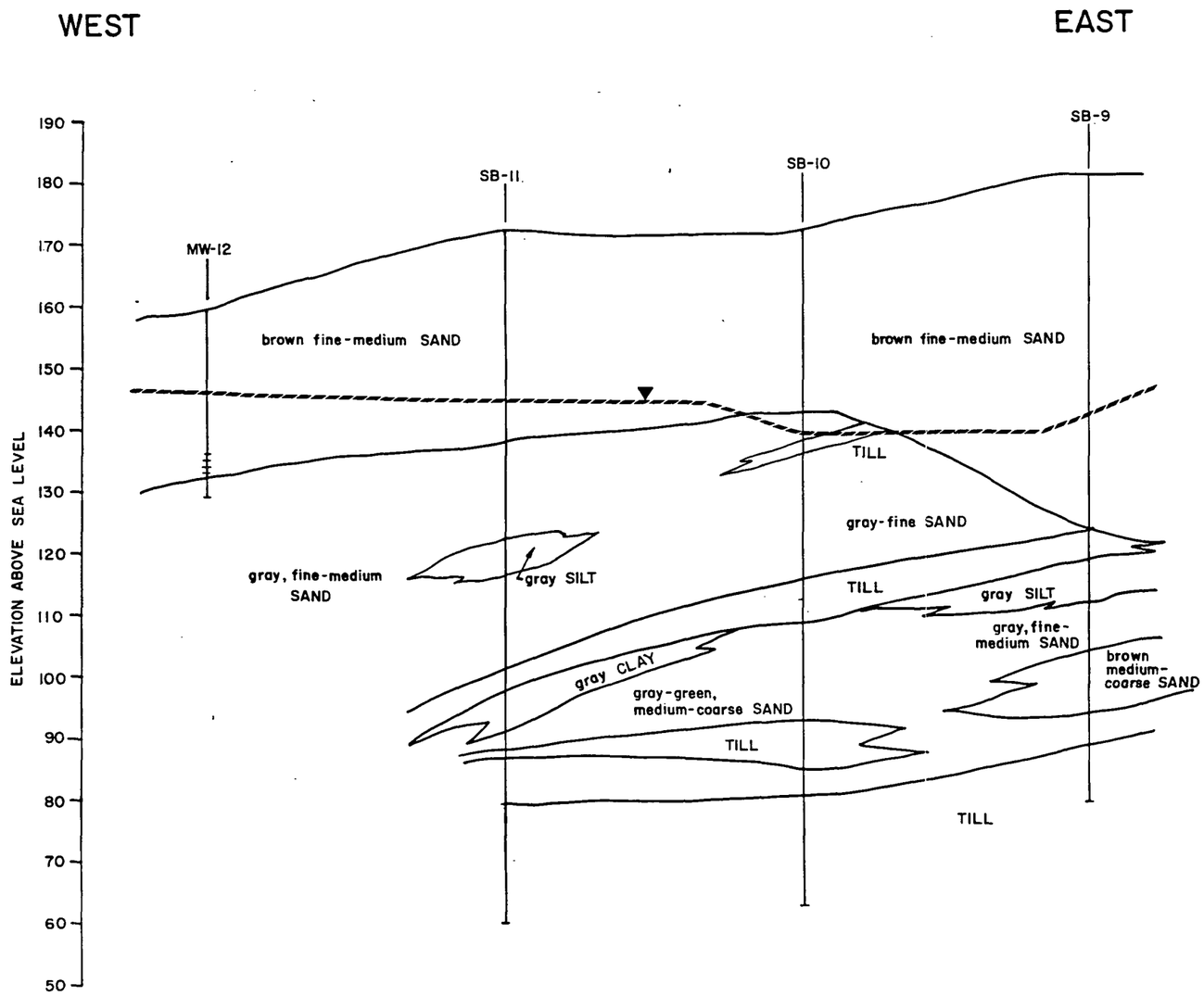
VERTICAL SCALE
10' 0' 10'

HORIZONTAL SCALE
40' 0' 40'

BLASLAND & BOUCK ENGINEERS, P.C.

REVISED DECEMBER 1984

G102-03-2.1/ 3AD



LEGEND

GROUNDWATER ELEV.

7 BORING

MW-2 MONITORING WELL

WELL SCREEN

MONSANTO POLYMER PRODUCTS CO.
INDIAN ORCHARD PLANT
SPRINGFIELD, MASS.

CROSS SECTION 7

VERTICAL SCALE
10' 0' 10'

HORIZONTAL SCALE
40' 0' 40'

BLASLAND & BOUCK ENGINEERS, P.C.

REVISED NOVEMBER 1984

G102-03-2.1/ 11AD

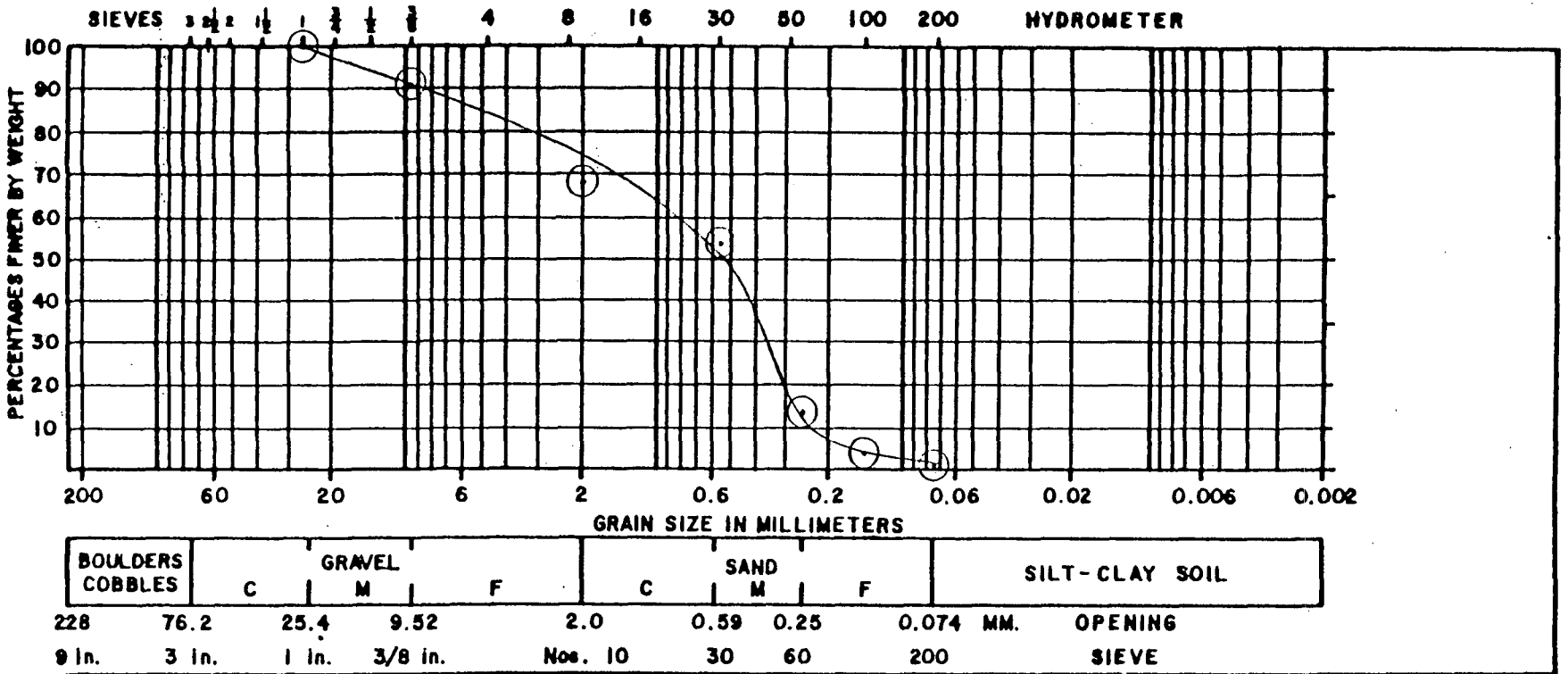
APPENDIX D-4

Grain Size Analysis Summary Tables

1. Field Investigation Report (O'Brien & Gere, February 1983).

2. Phase II Report, Remedial Investigation Plan (BB&L, December 1984).

GRAIN SIZE ANALYSIS
CLASSIFICATION OF BORROW MATERIAL



L-8259

Sieve Sizes	Percent Passing Sieve	
1"	100	
3/8"	90.9	Gravel
#10	68.3	
#30	53.9	Sand
#60	13.5	
#100	4.0	
#200	0.9	Silt

CONTRACT NO.

CLIENT O'Brien & Gere Engineers

~~BORROW~~ MATERIAL FOR Monsanto

INSPECTOR

TESTED BY F.C.

DATE 8-6-82

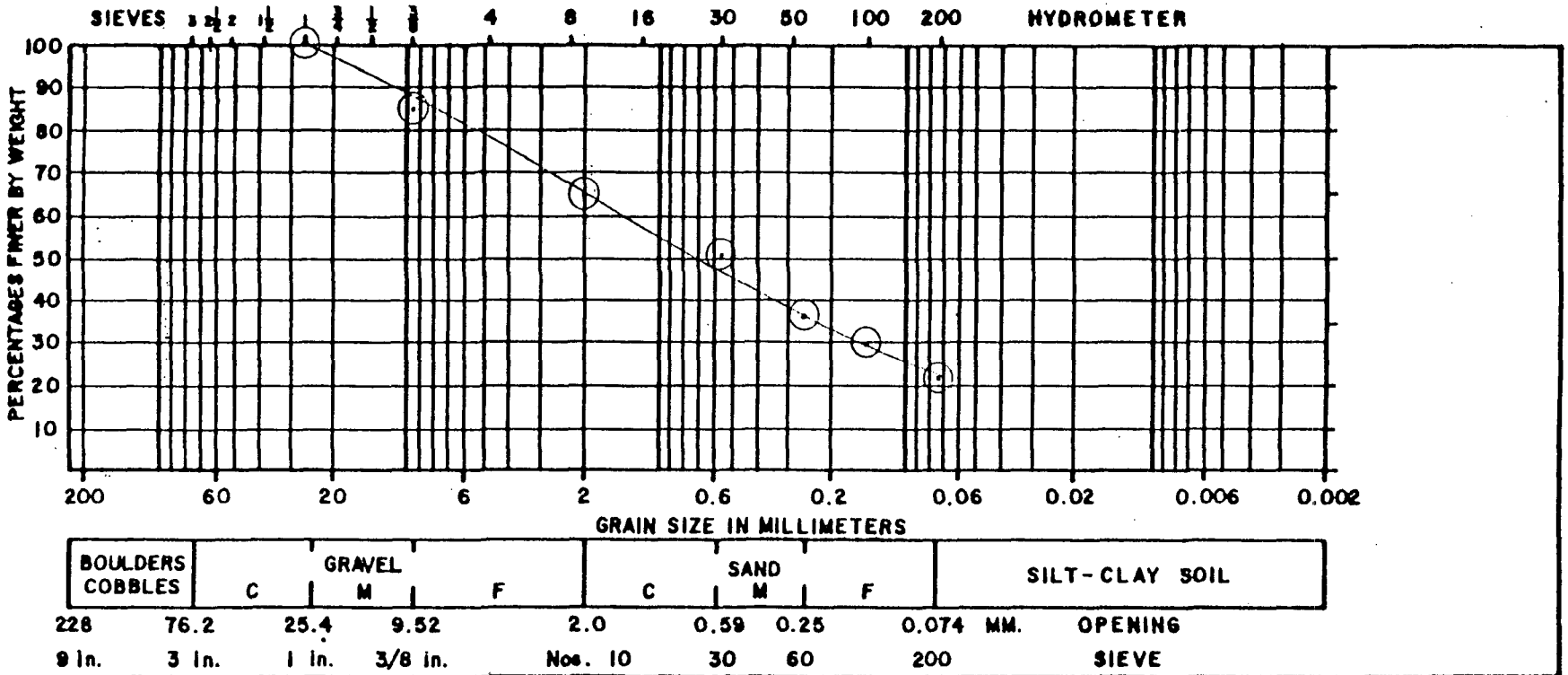
CLASSIFICATION

REMARKS B-1 S-16
Depth 77.0'-79.0'

parratt wolff inc
FISHER RD., EAST SYRACUSE, N.Y. 13057
TELEPHONE AREA CODE 315/437-1429

JOB NO. L-8259
REPORT NO. 1

GRAIN SIZE ANALYSIS
CLASSIFICATION OF BORROW MATERIAL



L-8259

Sieve Sizes	Percent Passing Sieve
1"	100
3/8"	84.8
#10	65.1
#30	51.1
#60	36.7
#100	29.6
#200	22.3

CONTRACT NO.

CLIENT O'Brien & Gere Engineers

~~BORROW~~ MATERIAL FOR Monsanto

INSPECTOR

TESTED BY F.C.

DATE 8-6-82

CLASSIFICATION

REMARKS B-1 S-18

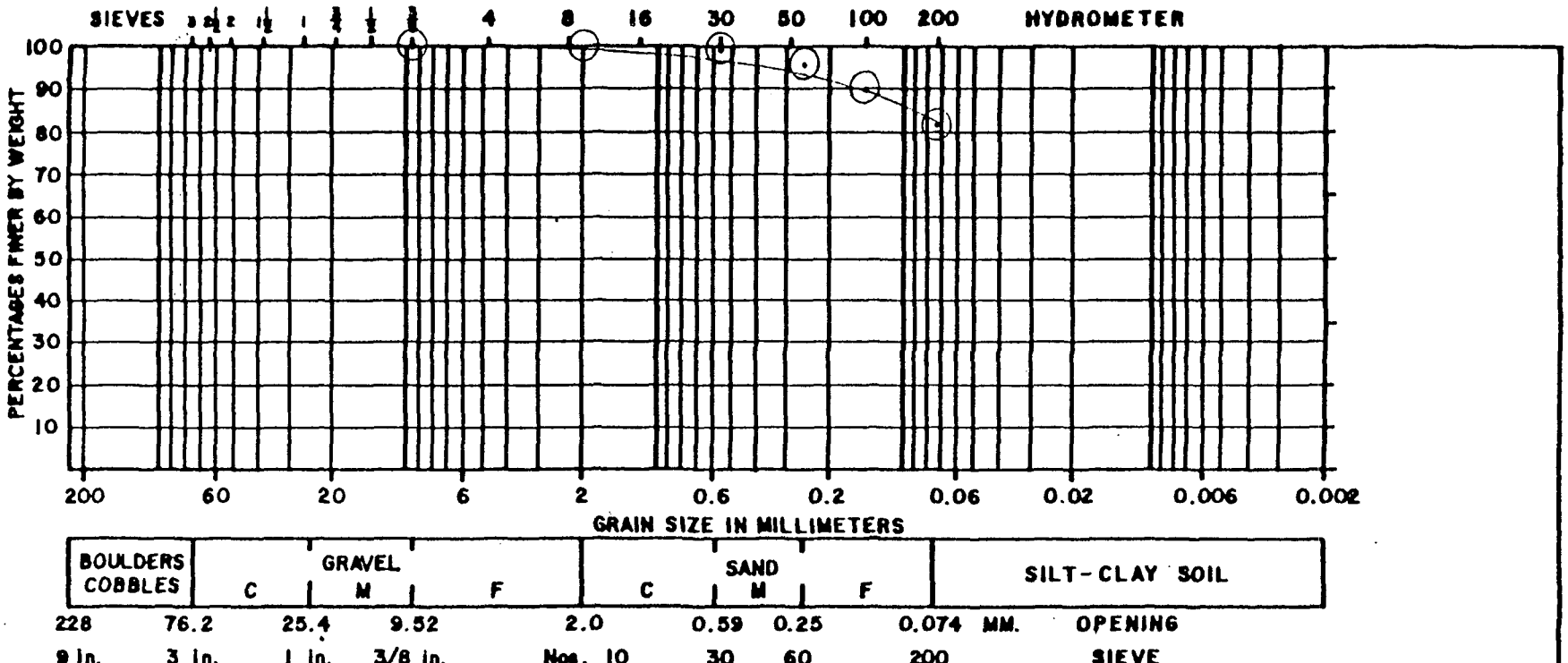
Depth 83.5'-84.0'

JOB NO. L-8259

REPORT NO. 2

parratt wolff inc
FISHER RD., EAST SYRACUSE, N.Y. 13057
TELEPHONE AREA CODE 315/437-1429

GRAIN SIZE ANALYSIS
CLASSIFICATION OF BORROW MATERIAL

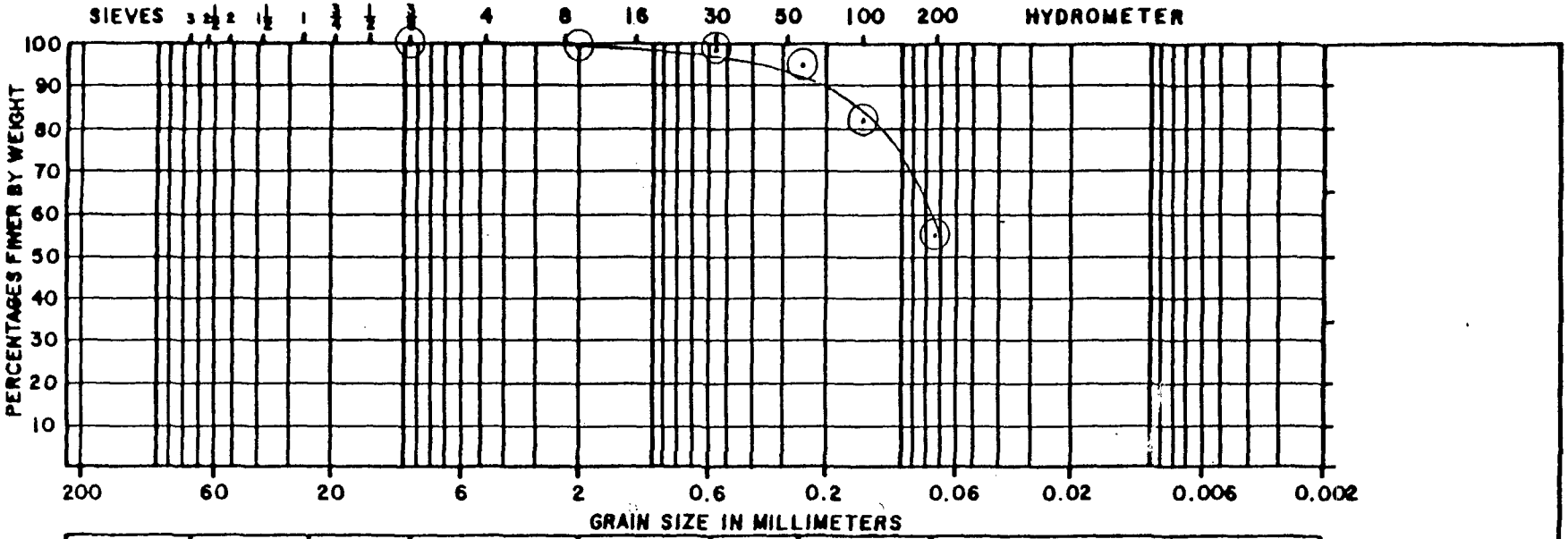


L-8259	CONTRACT NO.
	CLIENT O'Brien & Gere Engineers
Sieve Sizes Percent Passing Sieve	BORROW MATERIAL FOR Monsanto
	INSPECTOR
3/8" 100	TESTED BY F.C.
#10 99.8	DATE 8-6-82
#30 99.4	CLASSIFICATION
#60 96.4 SAND	REMARKS B-2 S-3
#100 89.7	Depth 18.5'-19.0'
#200 81.9 SILT	

parratt wolff inc
FISHER RD., EAST SYRACUSE, N.Y. 13057
TELEPHONE AREA CODE 315/437-1429

JOB NO. L-8259
REPORT NO. 3

GRAIN SIZE ANALYSIS
CLASSIFICATION OF BORROW MATERIAL



BOULDERS COBBLES	GRAVEL C	GRAVEL M	GRAVEL F	SAND C	SAND M	SAND F	SILT-CLAY SOIL

228 76.2 25.4 9.52 2.0 0.59 0.25 0.074 MM. OPENING
9 in. 3 in. 1 in. 3/8 in. Nos. 10 30 60 200 SIEVE

L-8259

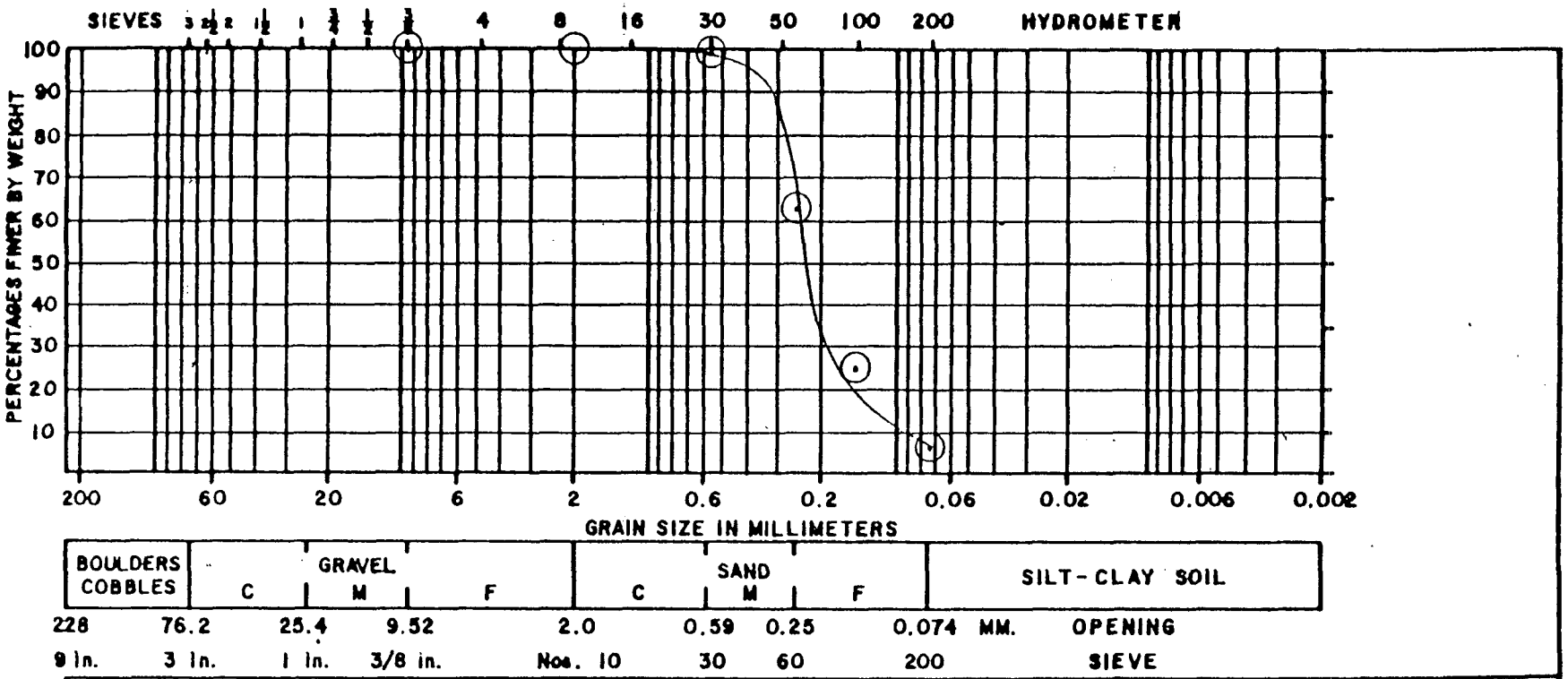
Sieve Sizes	Percent Passing Sieve
3/8"	100
#10	99.5
#30	98.7 SAND
#60	95.5
#100	82.4
#200	55.5 SILT

CONTRACT NO.
CLIENT O'Brien & Gere Engineers
~~BORROW~~ MATERIAL FOR Monsanto
INSPECTOR
TESTED BY F.C.
DATE 8-6-82
CLASSIFICATION
REMARKS B-2 S-4
Depth 24.5'-25.0'

JOB NO. L-8259
REPORT NO. 7

parratt wolff inc
FISHER RD., EAST SYRACUSE, N.Y. 13057
TELEPHONE AREA CODE 315/437-1429

GRAIN SIZE ANALYSIS
CLASSIFICATION OF BORROW MATERIAL



Sieve Sizes	Percent Passing Sieve
3/8"	100
#10	99.9
#30	99.1
#60	62.7
#100	25.6
#200	6.9

CONTRACT NO. L-8259

CLIENT O'Brien & Gere Engineers

BORROW MATERIAL FOR Monsanto

INSPECTOR

TESTED BY F.C.

DATE 8-6-82

CLASSIFICATION

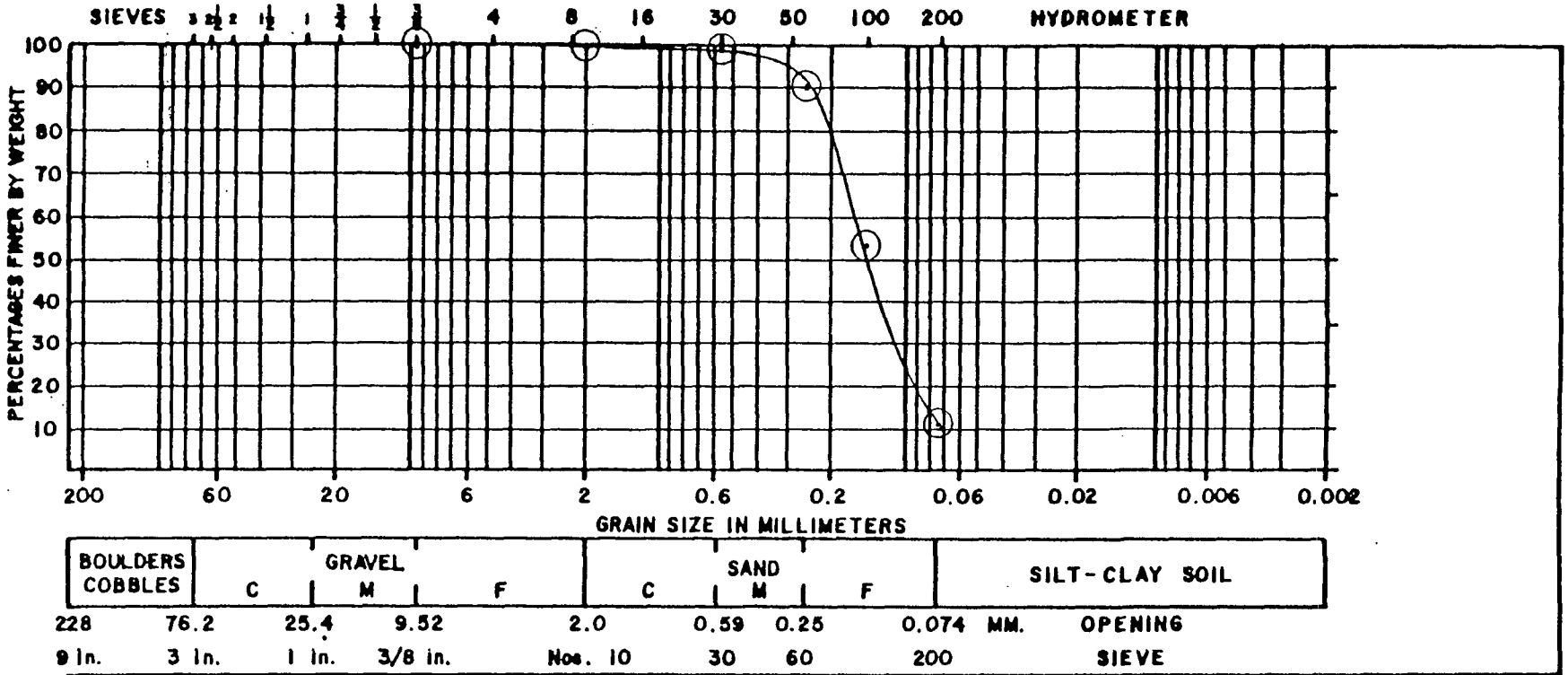
REMARKS B-3 S-7

Depth 28.5'-29.0'

parratt wolff inc
FISHER RD., EAST SYRACUSE, N.Y. 13057
TELEPHONE AREA CODE 315/437-1429

JOB NO. L-8259
REPORT NO. 5

GRAIN SIZE ANALYSIS
CLASSIFICATION OF BORROW MATERIAL

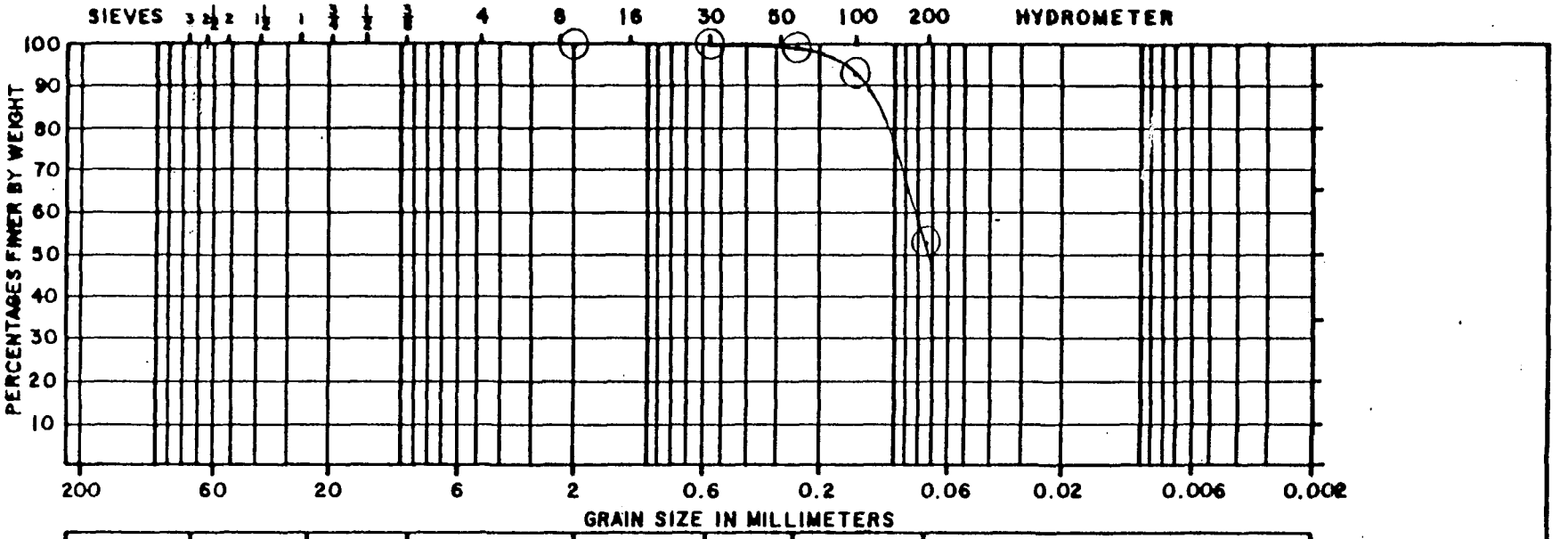


L-8259	CONTRACT NO.
	CLIENT O'Brien & Gere Engineers
Sieve Sizes / Percent Passing Sieve	BORROW MATERIAL FOR Monsanto
	INSPECTOR
3/8" 100	TESTED BY F.C.
#10 99.8	DATE 8-6-82
#30 99.3 SAND	CLASSIFICATION
#60 90.1	REMARKS B-3 S-8
#100 53.6	Depth 30.5'-31.0'
#200 11.4	

parratt wolff inc
FISHER RD., EAST SYRACUSE, N.Y. 13057
TELEPHONE AREA CODE 315/437-1429

JOB NO. L-8259
REPORT NO. 6

GRAIN SIZE ANALYSIS
CLASSIFICATION OF BORROW MATERIAL



BOULDERS COBBLES	GRAVEL C	GRAVEL M	GRAVEL F	SAND C	SAND M	SAND F	SILT-CLAY SOIL

228 76.2 25.4 9.52 2.0 0.59 0.25 0.074 MM. OPENING
9 in. 3 in. 1 in. 3/8 in. Nos. 10 30 60 200 SIEVE

L-8259

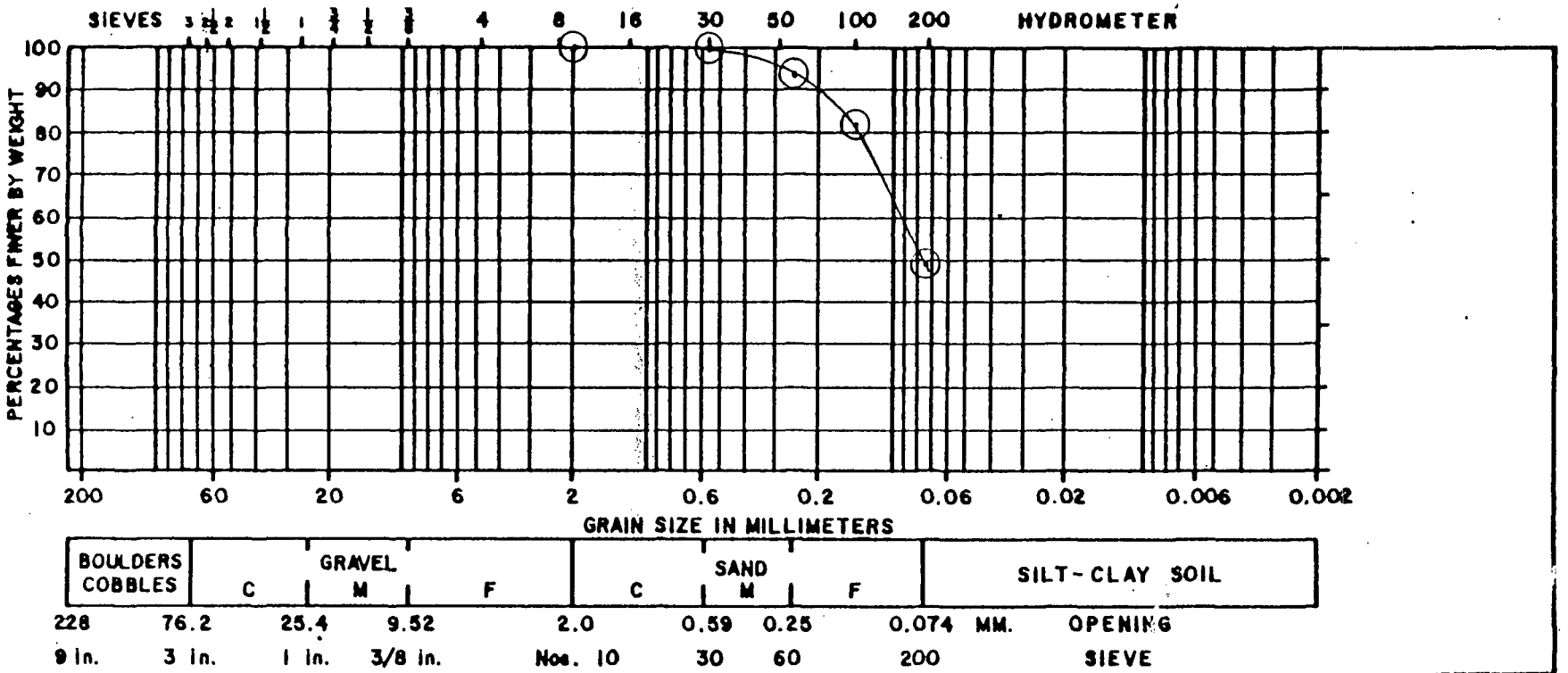
Sieve Sizes	Percent Passing Sieve
#10	100
#30	99.9
#60	99.1
#100	92.6
#200	52.5

CONTRACT NO.
CLIENT O'Brien & Gere Engineers
~~BORROW~~ MATERIAL FOR Monsanto
INSPECTOR
TESTED BY F.C.
DATE 8-6-82
CLASSIFICATION
REMARKS B-4 S-10
Depth 51.5'-52.0'

parratt wolff inc
FISHER RD., EAST SYRACUSE, N.Y. 13057
TELEPHONE AREA CODE 315/437-1429

JOB NO. L-8259
REPORT NO. 7

GRAIN SIZE ANALYSIS
CLASSIFICATION OF BORROW MATERIAL

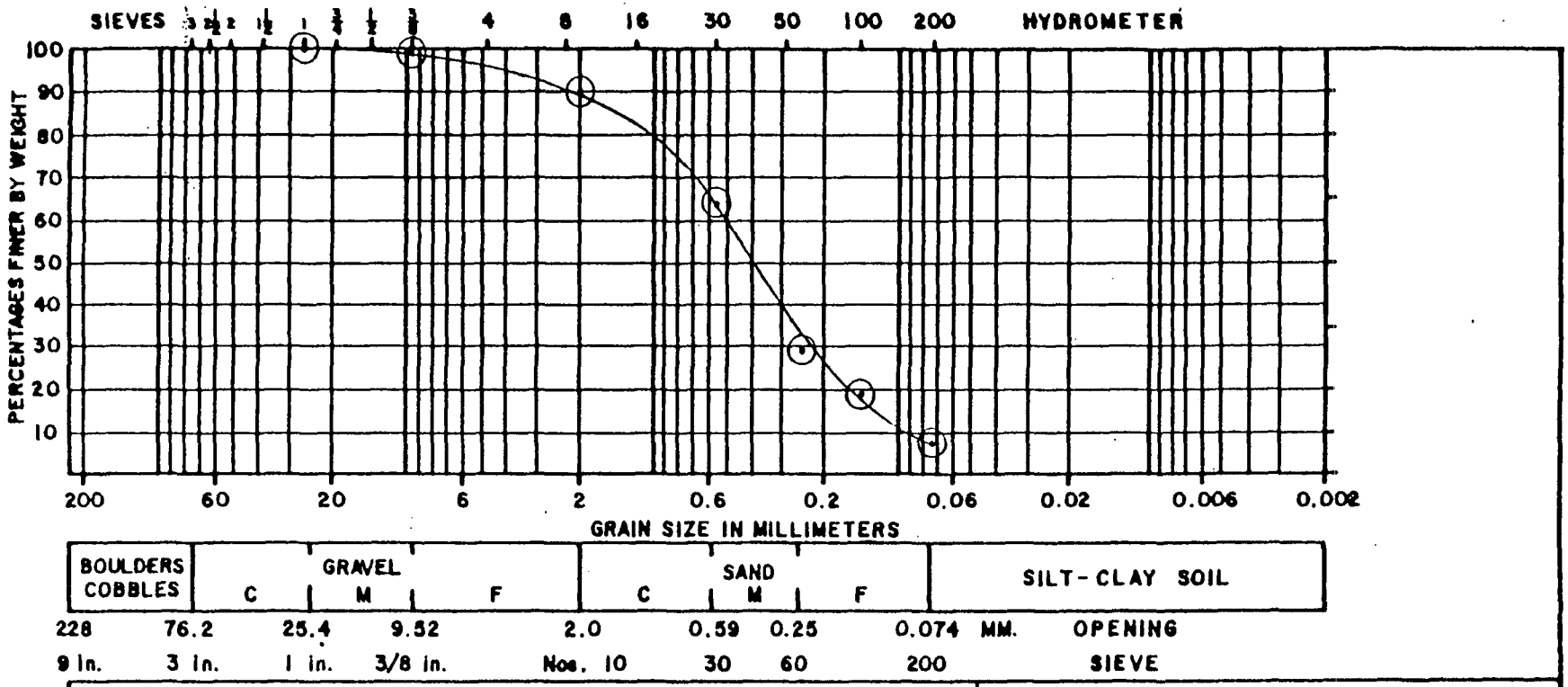


L-8259	CONTRACT NO.
	CLIENT O'Brien & Gere Engineers
Sieve Sizes Percent Passing Sieve	~~BORROW~~ MATERIAL FOR Monsanto
	INSPECTOR
#10 100	TESTED BY F.C.
#30 99.7 SAND	DATE 8-6-82
#60 93.8	CLASSIFICATION
#100 81.9	REMARKS B-4 S-11
#200 48.9 SILT	Depth 53.5' - 54.0'

parratt wolff inc
FISHER RD., EAST SYRACUSE, N.Y. 13057
TELEPHONE AREA CODE 315/437-1429

JOB NO. L-8259
REPORT NO. 8

GRAIN SIZE ANALYSIS
CLASSIFICATION OF BORROW MATERIAL

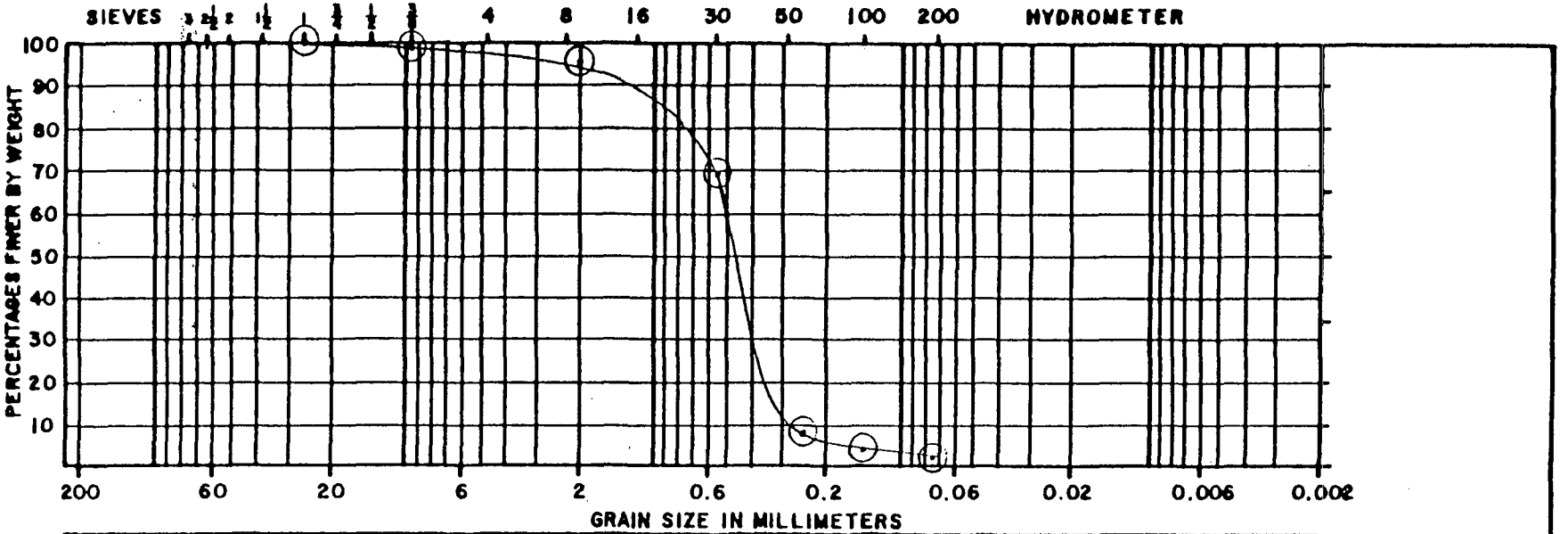


L-8259	CONTRACT NO.
	CLIENT O'Brien & Gere Engineers
Sieve Sizes — Percent Passing Sieve	~~BORROW~~ MATERIAL FOR Monsanto
	INSPECTOR
1" — 100	TESTED BY F.C.
3/8" — 98.9	DATE 8-6-82
#10 — 90.3	CLASSIFICATION
#30 — 63.7	REMARKS B-5 S-13
#60 — 28.8	Depth 42.5'-43.0'
#100 — 18.8	
#200 — 7.8	

parratt wolff inc
FISHER RD., EAST SYRACUSE, N.Y. 13057
TELEPHONE AREA CODE 315/437-1429

JOB NO. L-8259
REPORT NO. 9

GRAIN SIZE ANALYSIS
CLASSIFICATION OF BORROW MATERIAL

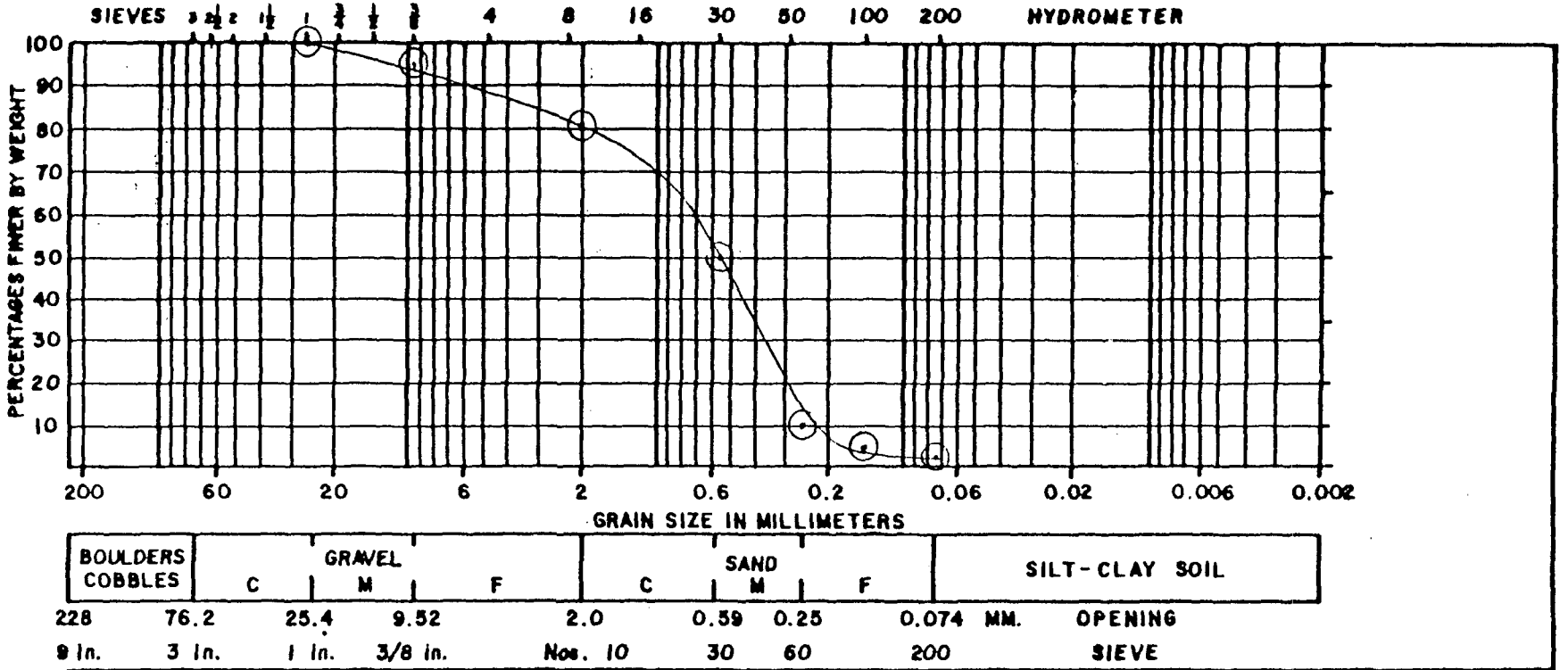


L-8259	CONTRACT NO.
	CLIENT O'Brien & Gere Engineers
Siere Sizes Percent Passing Sieve	BORROW MATERIAL FOR Monsanto
	INSPECTOR
1" 100	TESTED BY F.C.
3/8" 98.4 1%	DATE 8-6-82
#10 95.9	CLASSIFICATION
#30 69.3	REMARKS B-5 S-14
#60 8.4	Depth 46.5' - 47.0'
#100 4.2	
#200 2.3	

parratt wolff inc
FISHER RD., EAST SYRACUSE, N.Y. 13057
TELEPHONE AREA CODE 315/437-1429

JOB NO. L-8259
REPORT NO. 10

GRAIN SIZE ANALYSIS
CLASSIFICATION OF BORROW MATERIAL

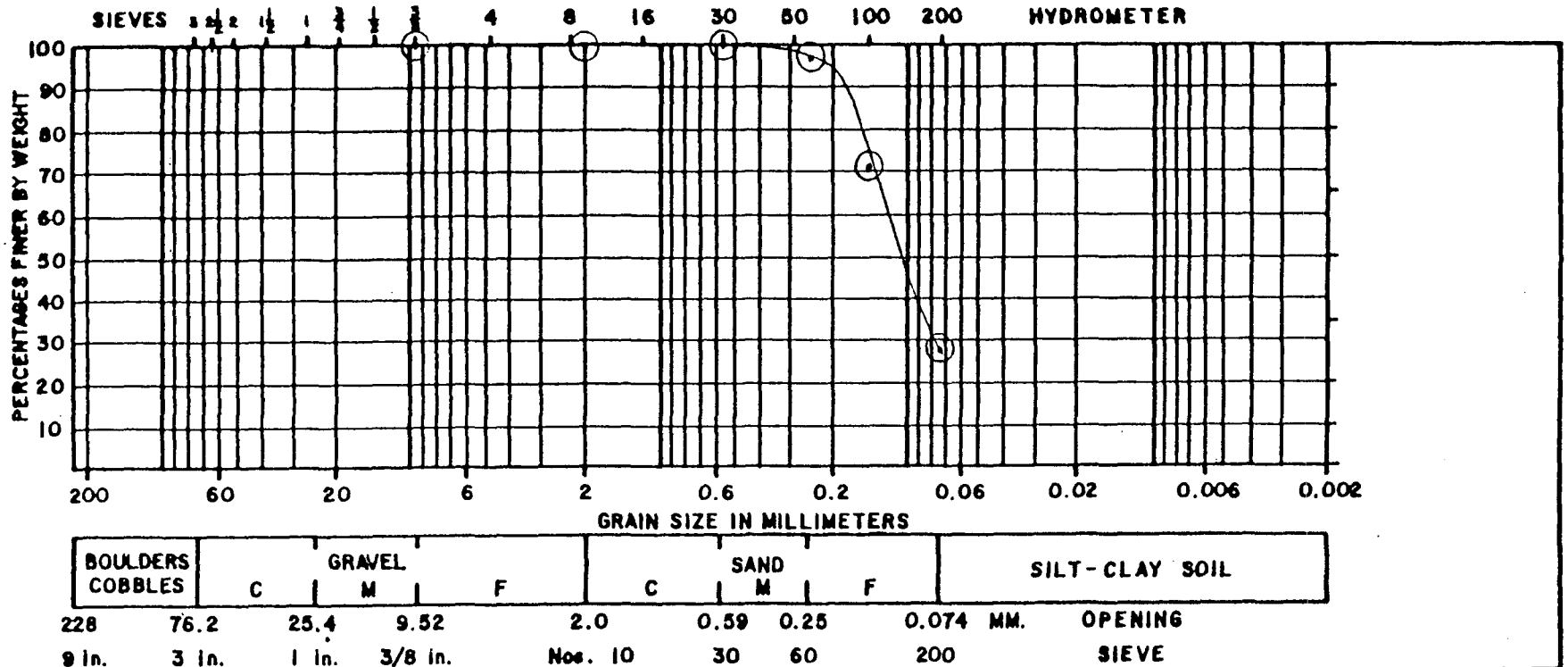


L-8259	CONTRACT NO.
	CLIENT O'Brien & Gere Engineers
Sieve Sizes Percent Passing Sieve	~~BORROW~~ MATERIAL FOR Monsanto
	INSPECTOR
1" 100	TESTED BY F.C.
3/8" 95.4	DATE 8-6-82
#10 81.0	CLASSIFICATION
#30 50.3	REMARKS B-5 S-15
#60 10.3	Depth 48.5'-49.0'
#100 5.0	
#200 2.4	

parratt wolff inc
FISHER RD., EAST SYRACUSE, N.Y. 13057
TELEPHONE AREA CODE 315/437-1429

JOB NO. L-8259
REPORT NO. 11

GRAIN SIZE ANALYSIS
CLASSIFICATION OF BORROW MATERIAL

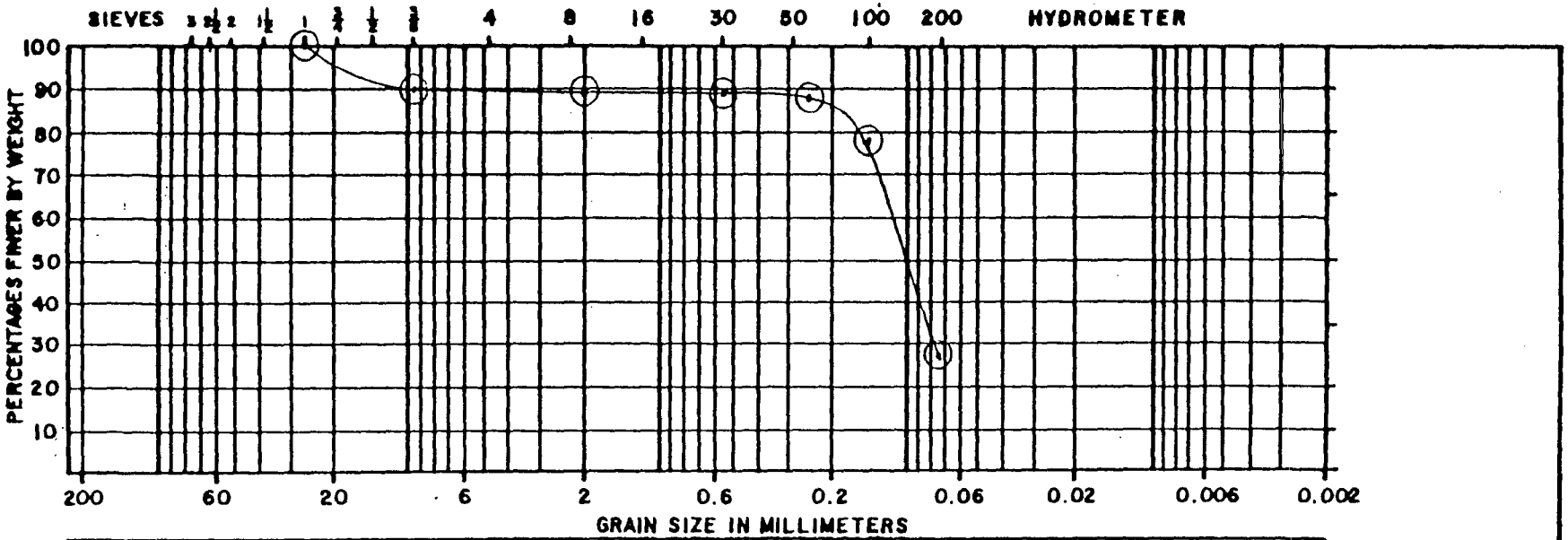


L-8259	CONTRACT NO.
	CLIENT O'Brien & Gere Engineers
Sieve Sizes Percent Passing Sieve	~~BORROW~~ MATERIAL FOR Monsanto
	INSPECTOR
3/8" 100	TESTED BY F.C.
#10 99.9	DATE 8-6-82
#30 99.7	CLASSIFICATION
#60 97.6	REMARKS B-6 & 7 S-6
#100 71.4	Depth 17.5'-18.0'
#200 28.3	

parratt wolff inc
FISHER RD., EAST SYRACUSE, N.Y. 13057
TELEPHONE AREA CODE 315/437-1429

JOB NO. L-8259
REPORT NO. 12

GRAIN SIZE ANALYSIS
CLASSIFICATION OF BORROW MATERIAL



BOULDERS COBBLES	GRAVEL C	GRAVEL M	GRAVEL F	SAND C	SAND M	SAND F	SILT-CLAY SOIL

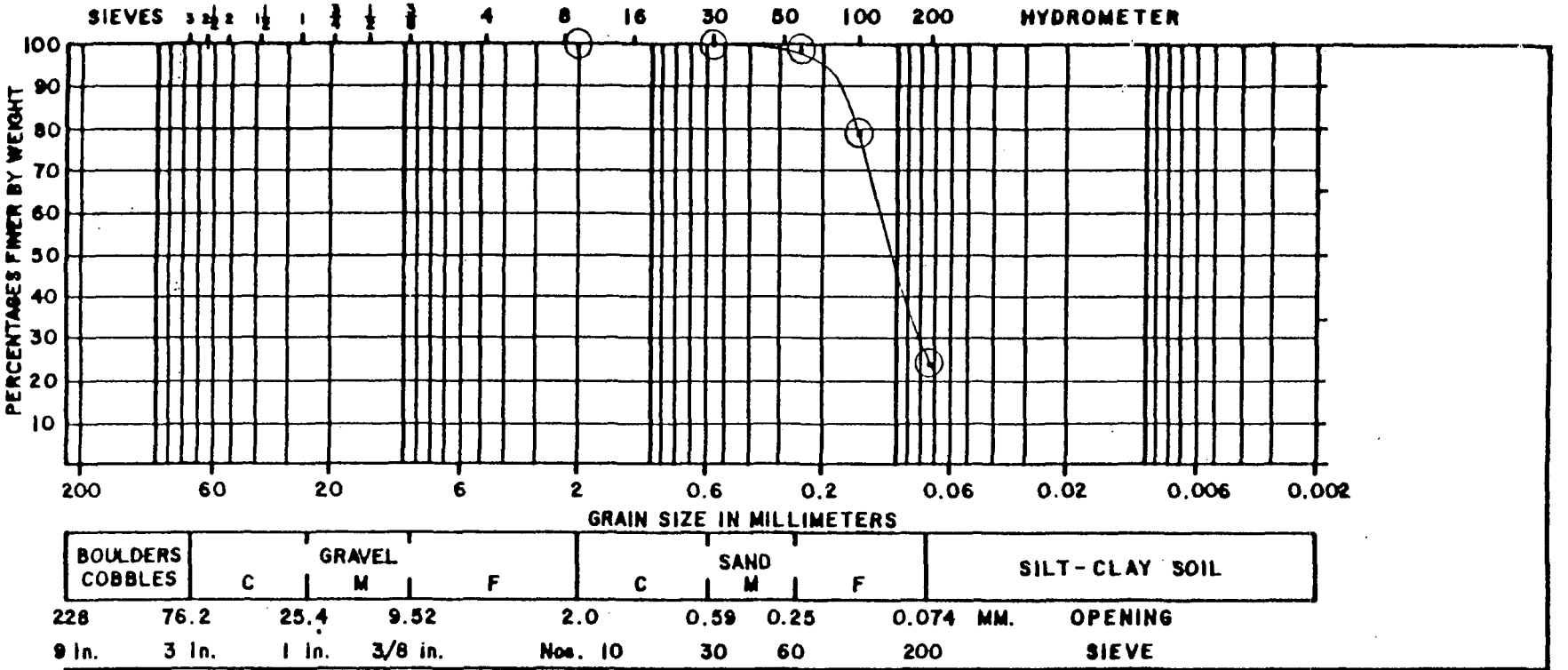
228 76.2 25.4 9.52 2.0 0.59 0.25 0.074 MM. OPENING
9 in. 3 in. 1 in. 3/8 in. Nos. 10 30 60 200 SIEVE

L-8259	CONTRACT NO.
	CLIENT O'Brien & Gere Engineers
Sieve Sizes / Percent Passing Sieve	~~BORROW~~ MATERIAL FOR Monsanto
	INSPECTOR
1" 100	TESTED BY F.C.
3/8" 89.4	DATE 8-6-82
#10 89.1	CLASSIFICATION
#30 88.9	REMARKS B-6 & 7 S-7
#60 88.2	Depth 19.5'-20.0'
#100 78.2	
#200 27.3	

parratt wolff inc
FISHER RD., EAST SYRACUSE, N.Y. 13057
TELEPHONE AREA CODE 315/437-1429

JOB NO. L-8259
REPORT NO. 13

GRAIN SIZE ANALYSIS
CLASSIFICATION OF BORROW MATERIAL

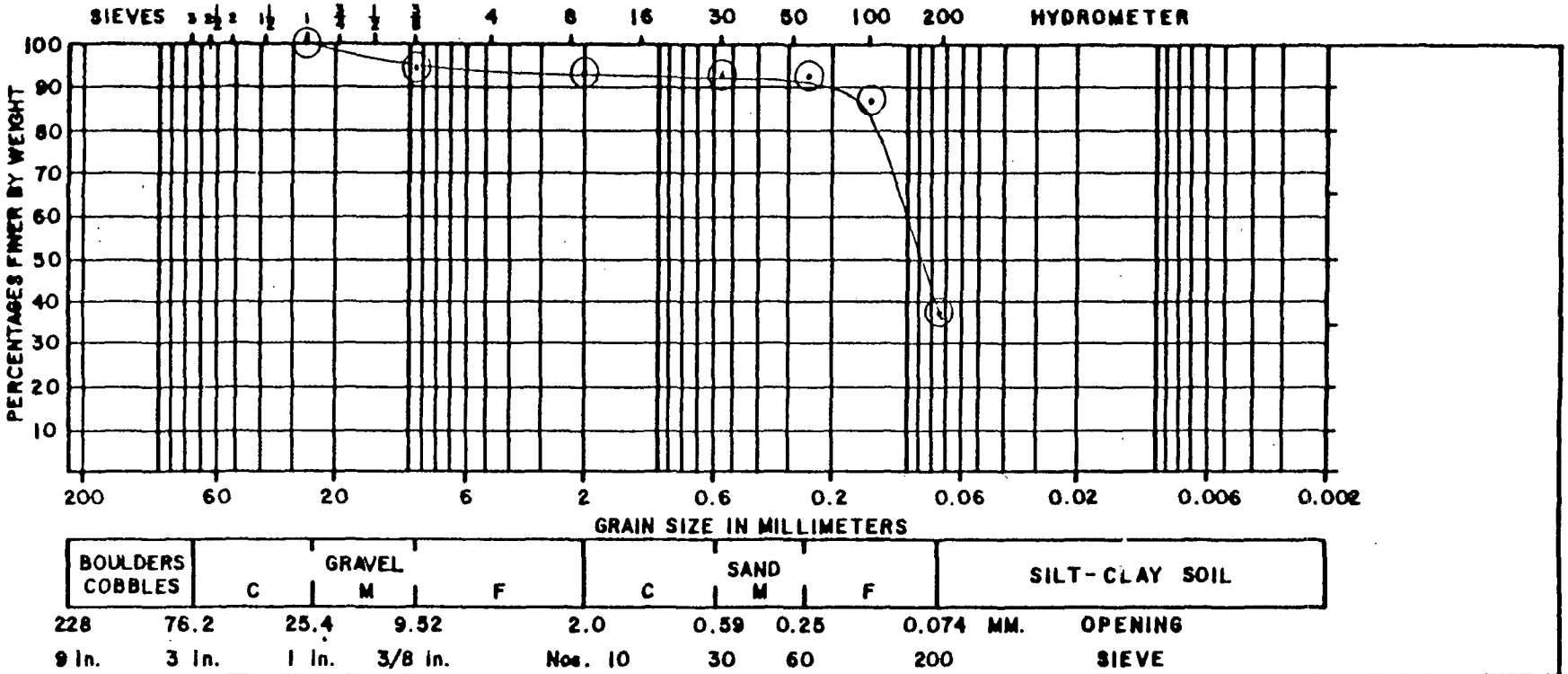


L-8259	CONTRACT NO.
	CLIENT O'Brien & Gere Engineers
Sieve Sizes Percent Passing Sieve	~~BORROW~~ MATERIAL FOR Monsanto
	INSPECTOR
# 10 100	TESTED BY F.C.
# 30 99.9	DATE 8-6-82
# 60 98.6	CLASSIFICATION
# 100 79.1	REMARKS B-6&7 S-14
# 200 24.3	Depth 36.5'-37.0'

parratt wolff inc
FISHER RD., EAST SYRACUSE, N.Y. 13057
TELEPHONE AREA CODE 315/437-1429

JOB NO. L-8259
REPORT NO. 14

GRAIN SIZE ANALYSIS
CLASSIFICATION OF BORROW MATERIAL

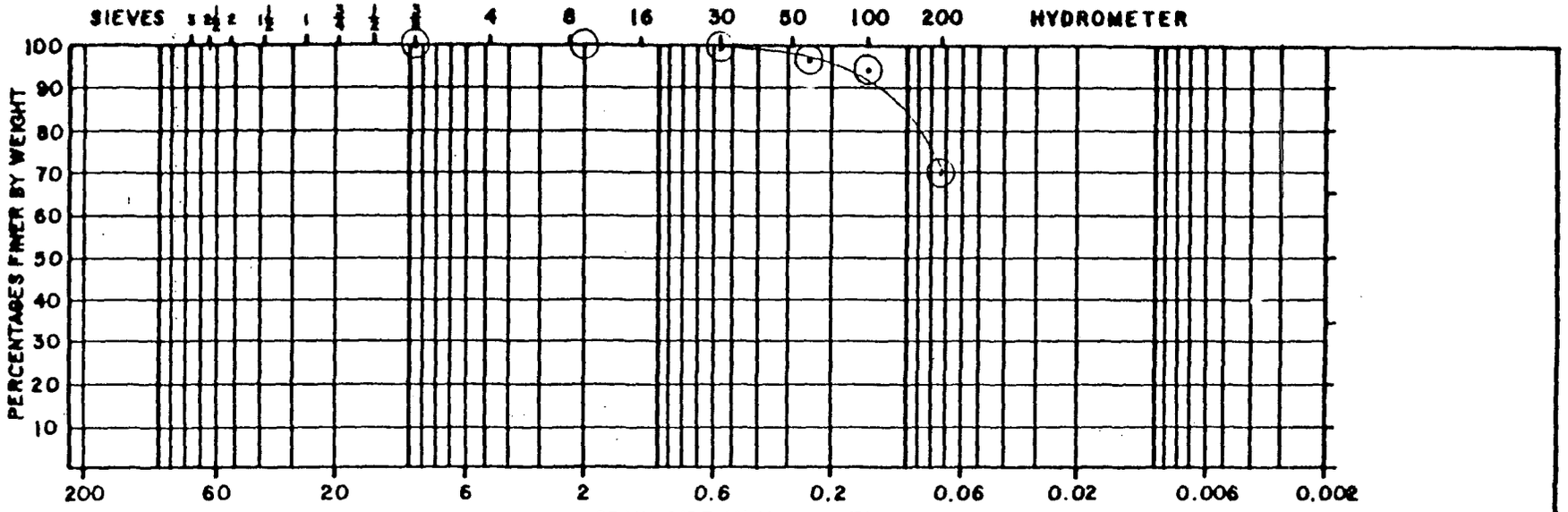


L-8259	CONTRACT NO.
	CLIENT O'Brien & Gere Engineers
Sieve Sizes Percent Passing Sieve	BORROW MATERIAL FOR Monsanto
	INSPECTOR
1" 100	TESTED BY F.C.
3/8" 94.4	DATE 8-6-82
#10 93.4	CLASSIFICATION
#30 93.3	REMARKS B-6 & 7 S-15
#60 93.1	Depth 38.5' - 39.0'
#100 87.2	
#200 37.3	

parratt wolff inc
FISHER RD., EAST SYRACUSE, N.Y. 13057
TELEPHONE AREA CODE 315/437-1429

JOB NO. L-8259
REPORT NO. 15

GRAIN SIZE ANALYSIS
CLASSIFICATION OF BORROW MATERIAL



BOULDERS COBBLES	GRAVEL C	GRAVEL M	GRAVEL F	SAND C	SAND M	SAND F	SILT-CLAY SOIL

228 76.2 25.4 9.52 2.0 0.59 0.25 0.074 MM. OPENING
9 in. 3 in. 1 in. 3/8 in. Nos. 10 30 60 200 SIEVE

L-8259

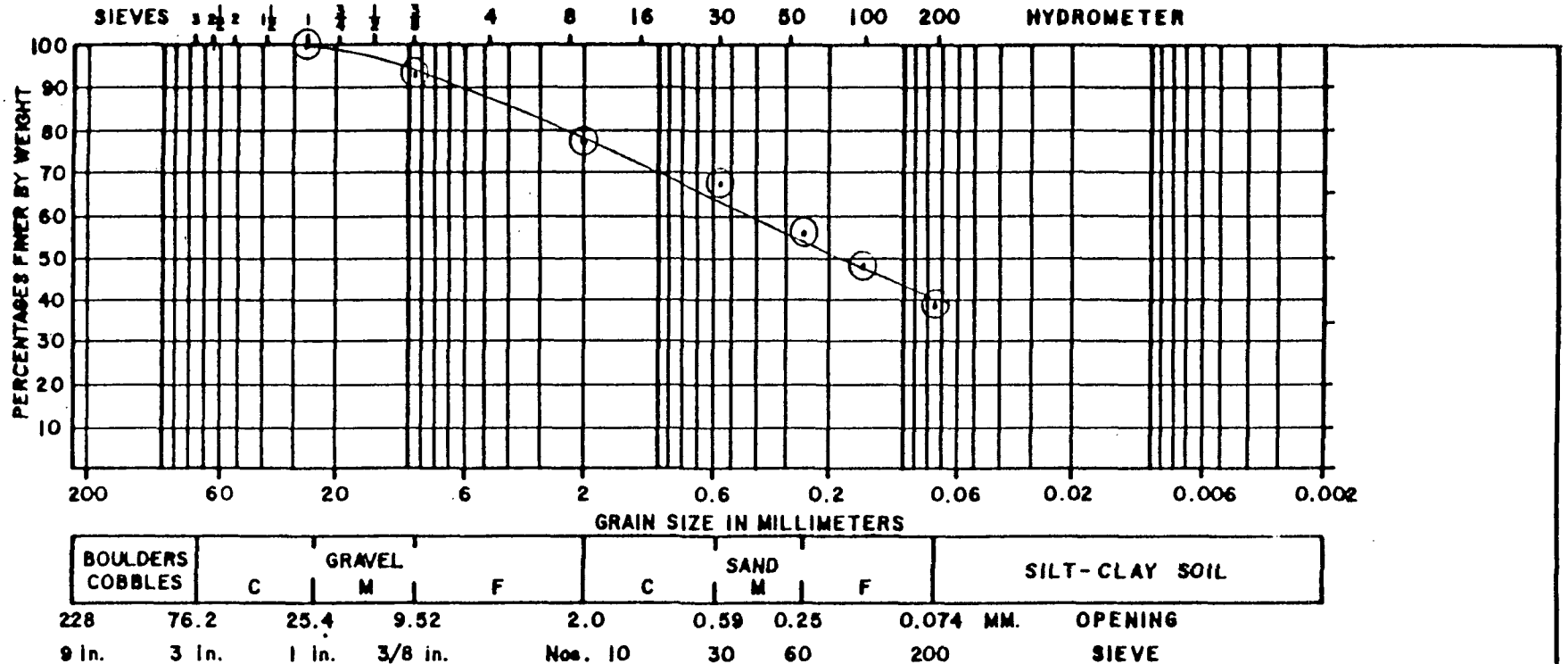
Sieve Sizes	Percent Passing Sieve
3/8"	100
#10	99.9
#30	99.3
#60	97.5
#100	94.7
#200	70.2

CONTRACT NO.
CLIENT O'Brien & Gere Engineers
~~BORROW~~ MATERIAL FOR Monsanto
INSPECTOR
TESTED BY F.C.
DATE 8-6-82
CLASSIFICATION
REMARKS B-6&7 S-17
Depth 43.5'-44.0'

JOB NO. L-8259
REPORT NO. 16

parratt wolff inc
FISHER RD., EAST SYRACUSE, N.Y. 13057
TELEPHONE AREA CODE 315/437-1429

GRAIN SIZE ANALYSIS
CLASSIFICATION OF BORROW MATERIAL



L-8259

Sieve Sizes	Percent Passing Sieve
1"	100
3/8"	92.4
#10	77.7
#30	67.5
#60	56.1
#100	48.5
#200	38.5

CONTRACT NO.

CLIENT O'Brien & Gere Engineers

~~BORROW~~ MATERIAL FOR Monsanto

INSPECTOR

TESTED BY F.C.

DATE 8-6-82

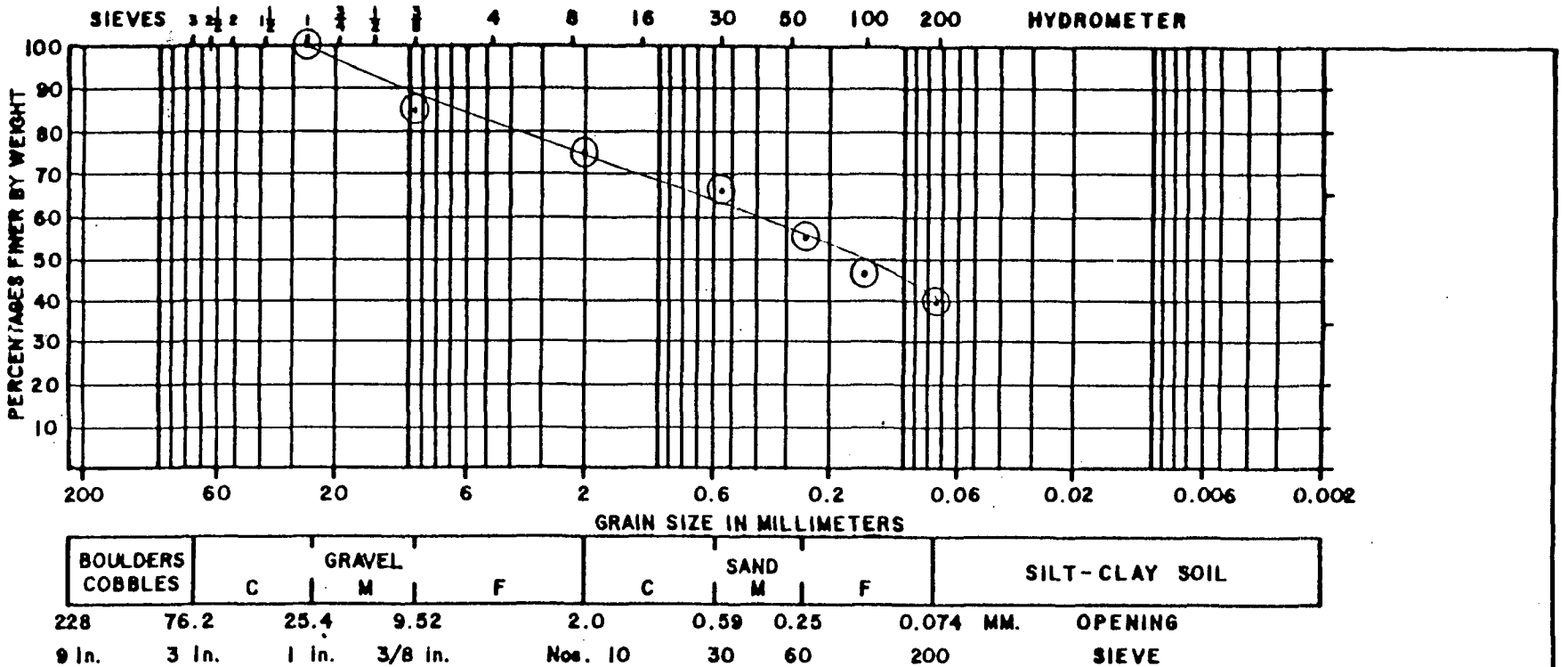
CLASSIFICATION

REMARKS B-6&7 S-18
Depth 46.5'-47.0'

parratt wolff inc
FISHER RD., EAST SYRACUSE, N.Y. 13057
TELEPHONE AREA CODE 315/437-1429

JOB NO. L-8259
REPORT NO. 17

GRAIN SIZE ANALYSIS
CLASSIFICATION OF BORROW MATERIAL

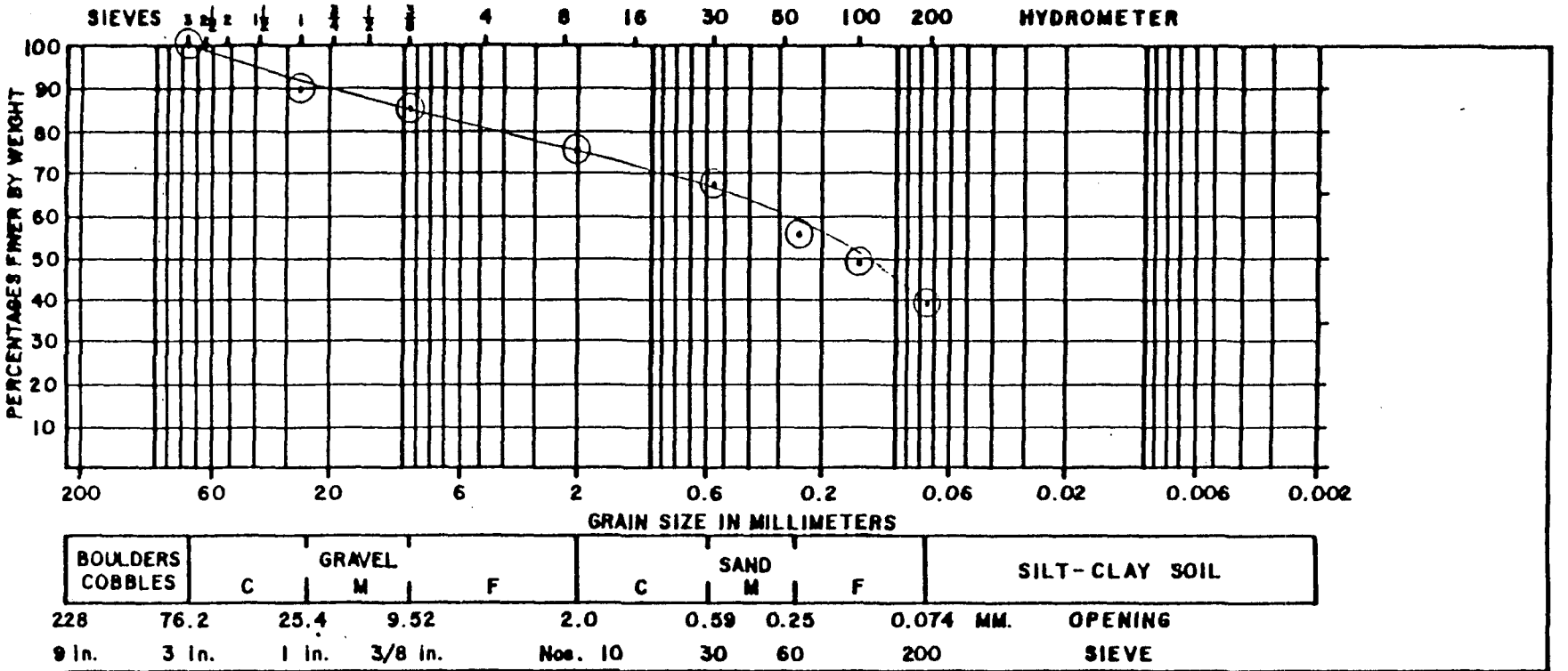


L-8259	CONTRACT NO.
	CLIENT O'Brien & Gere Engineers
Sieve Sizes Percent Passing Sieve	~~BORROW~~ MATERIAL FOR Monsanto
	INSPECTOR
1" 100	TESTED BY F.C.
3/8" 85.1	DATE 8-6-82
#10 75.0	CLASSIFICATION
#30 66.5	REMARKS B-6 & 7 S-19
#60 55.7	Depth 48.5'-49.0'
#100 47.7	
#200 39.8	

parratt wolff inc
FISHER RD., EAST SYRACUSE, N.Y. 13057
TELEPHONE AREA CODE 315/437-1429

JOB NO. L-8259
REPORT NO. 18

GRAIN SIZE ANALYSIS
CLASSIFICATION OF BORROW MATERIAL



Sieve Sizes	Percent Passing Sieve
3"	100
1"	89.6
3/8"	86.0
#10	76.3
#30	67.3
#60	56.3
#100	48.9
#200	39.2

L-8259

CONTRACT NO.

CLIENT O'Brien & Gere Engineers

~~BORROW~~ MATERIAL FOR Monsanto

INSPECTOR

TESTED BY F.C.

DATE 8-6-82

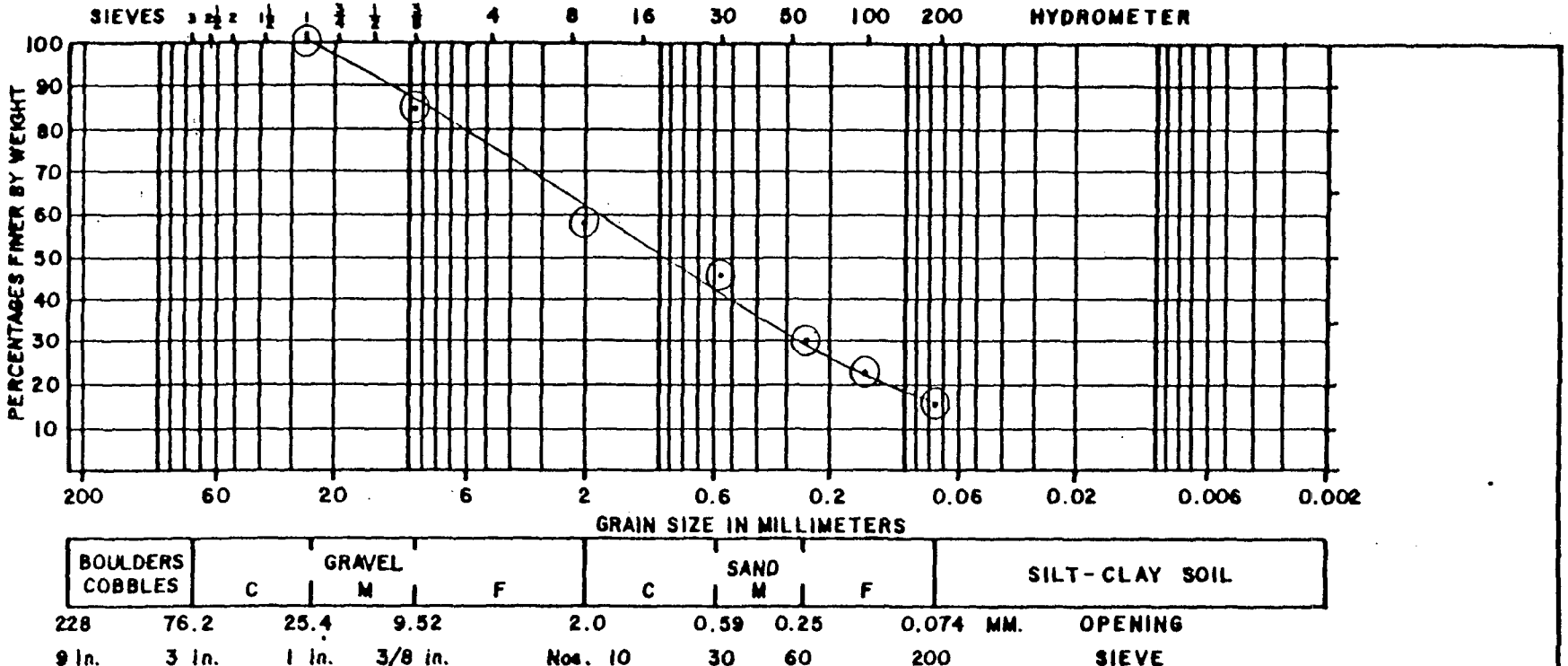
CLASSIFICATION

REMARKS B-6 & 7 S-21
Depth 53.5'-54.0'

JOB NO. L-8259
REPORT NO. 19

parratt wolff inc
FISHER RD., EAST SYRACUSE, N.Y. 13057
TELEPHONE AREA CODE 315/437-1429

GRAIN SIZE ANALYSIS
CLASSIFICATION OF BORROW MATERIAL

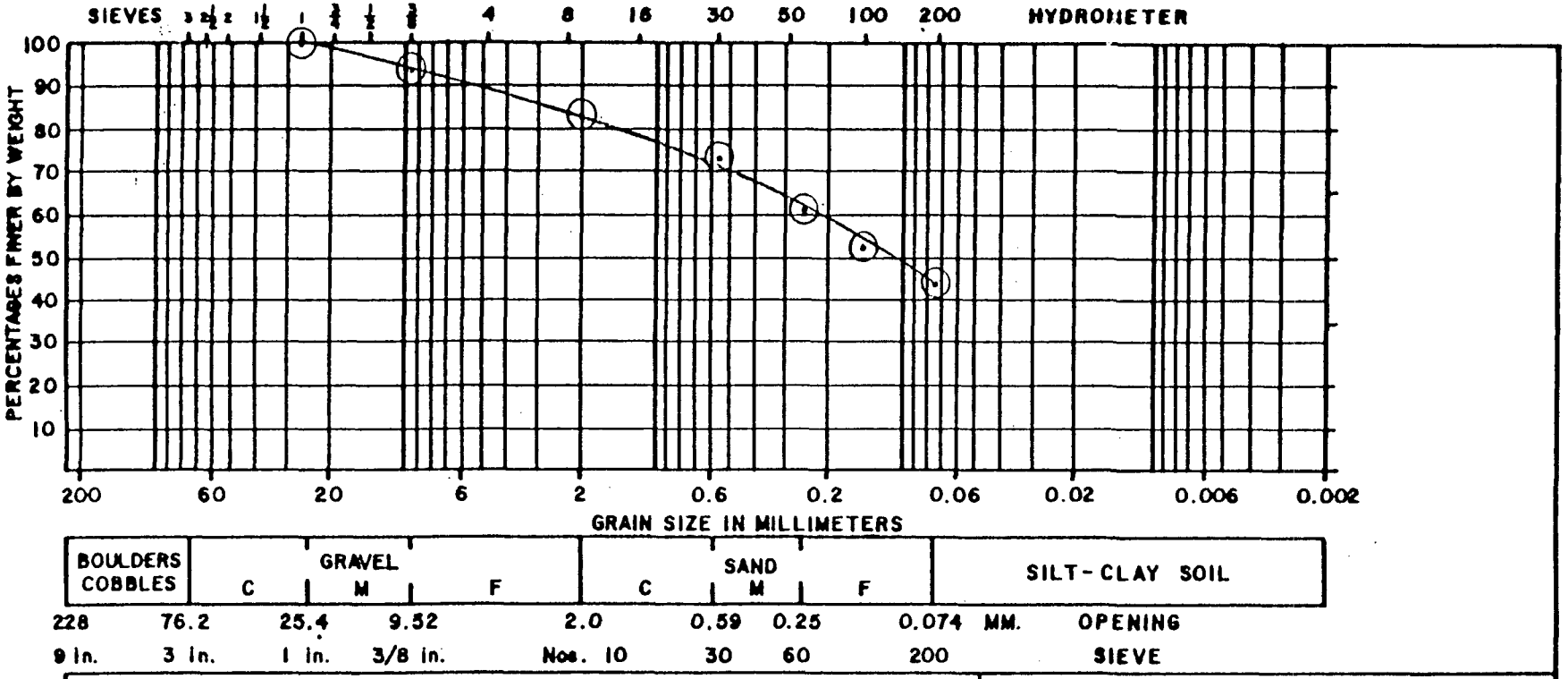


L-8259	CONTRACT NO.
	CLIENT O'Brien & Gere Engineers
Sieve Sizes Percent Passing Sieve	~~BORROW~~ MATERIAL FOR Monsanto
	INSPECTOR
1" 100	TESTED BY F.C.
3/8" 85.2	DATE 8-6-82
#10 58.3	CLASSIFICATION
#30 46.4	REMARKS B-6 & 7 S-23
#60 30.1	Depth 57.5'-58.0'
#100 22.5	
#200 15.8	

parratt wolff inc
FISHER RD., EAST SYRACUSE, N.Y. 13057
TELEPHONE AREA CODE 315/437-1429

JOB NO. L-8259
REPORT NO. 20

GRAIN SIZE ANALYSIS
CLASSIFICATION OF BORROW MATERIAL

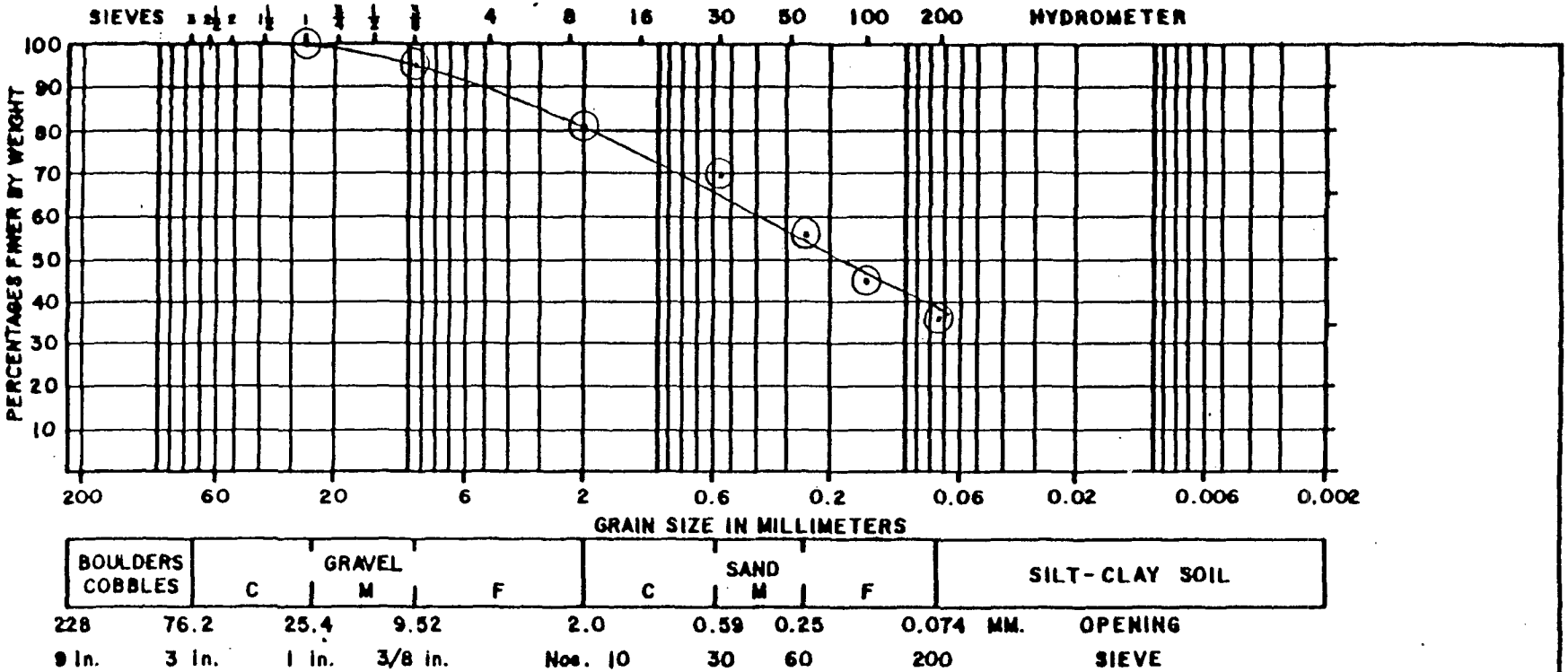


L-8259	CONTRACT NO.
	CLIENT O'Brien & Gere Engineers
Sieve Sizes — Percent Passing Sieve	~~BORROW~~ MATERIAL FOR Monsanto
	INSPECTOR
1" — 100	TESTED BY F.C.
3/8" — 93.0	DATE 8-6-82
#10 — 83.1	CLASSIFICATION
#30 — 72.8	REMARKS B-6&7 S-24
#60 — 61.4	Depth 60.5'-61.0'
#100 — 52.7	
#200 — 44.0	

parratt wolff inc
FISHER RD., EAST SYRACUSE, N.Y. 13057
TELEPHONE AREA CODE 315/437-1429

JOB NO. L-8259
REPORT NO. 21

GRAIN SIZE ANALYSIS
CLASSIFICATION OF BORROW MATERIAL

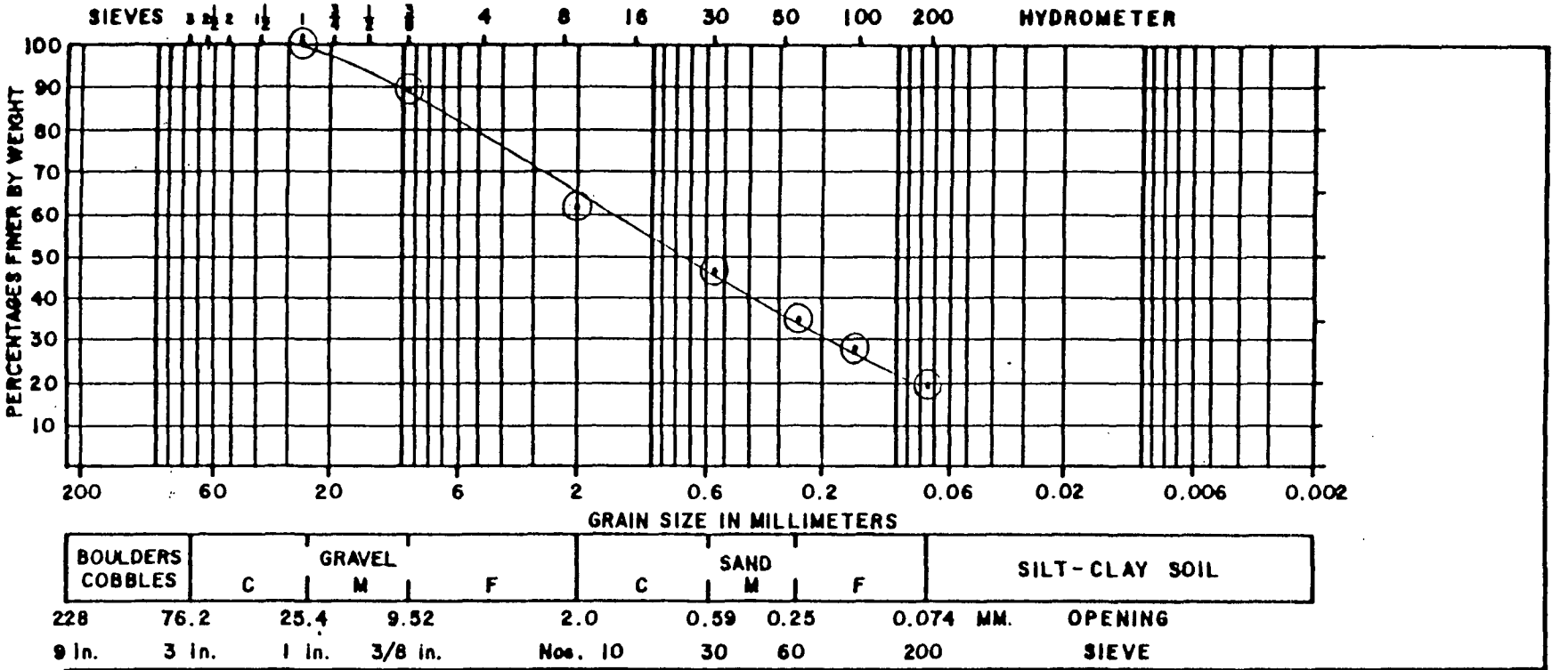


L-8259	CONTRACT NO.
	CLIENT O'Brien & Gere Engineers
Sieve Sizes Percent Passing Sieve	~~BORROW~~ MATERIAL FOR Monsanto
	INSPECTOR
1" 100	TESTED BY F.C.
3/8" 95.5	DATE 8-6-82
#10 81.0	CLASSIFICATION
#30 69.6	REMARKS B-8 S-3
#60 55.7	Depth 71.0'-71.5'
#100 45.5	
#200 36.1	

parratt wolff inc
FISHER RD., EAST SYRACUSE, N.Y. 13057
TELEPHONE AREA CODE 315/437-1429

JOB NO. L-8259
REPORT NO. 22

GRAIN SIZE ANALYSIS
CLASSIFICATION OF BORROW MATERIAL

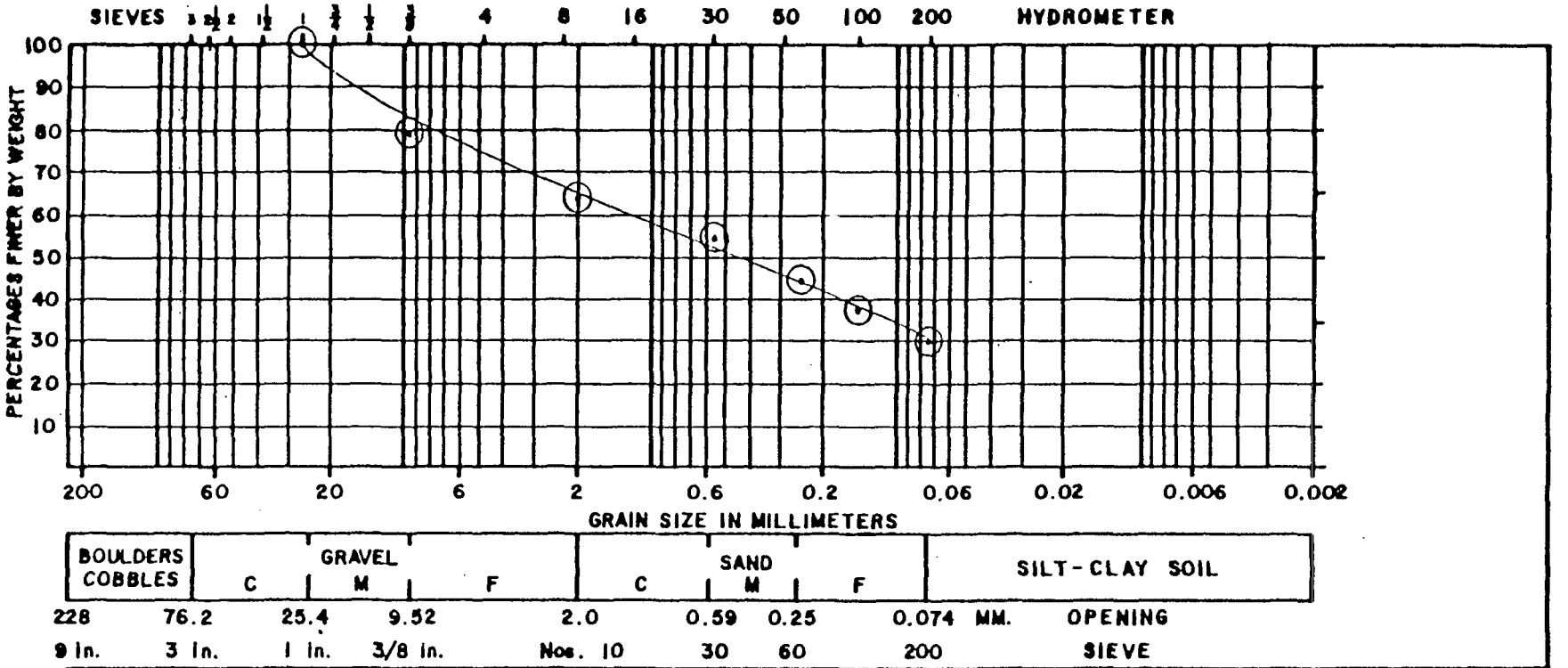


L-8259	CONTRACT NO.
	CLIENT O'Brien & Gere Engineers
Sieve Sizes Percent Passing Sieve	~~BORROW~~ MATERIAL FOR Monsanto
	INSPECTOR
1" 100	TESTED BY F.C.
3/8" 89.0	DATE 8-6-82
#10 61.8	CLASSIFICATION
#30 46.8	REMARKS B-8 S-4
#60 35.0	Depth 76.0'-76.5'
#100 28.4	
#200 20.2	

parratt wolff inc
FISHER RD., EAST SYRACUSE, N.Y. 13057
TELEPHONE AREA CODE 315/437-1429

JOB NO. L-8259
REPORT NO. 23

GRAIN SIZE ANALYSIS
CLASSIFICATION OF BORROW MATERIAL



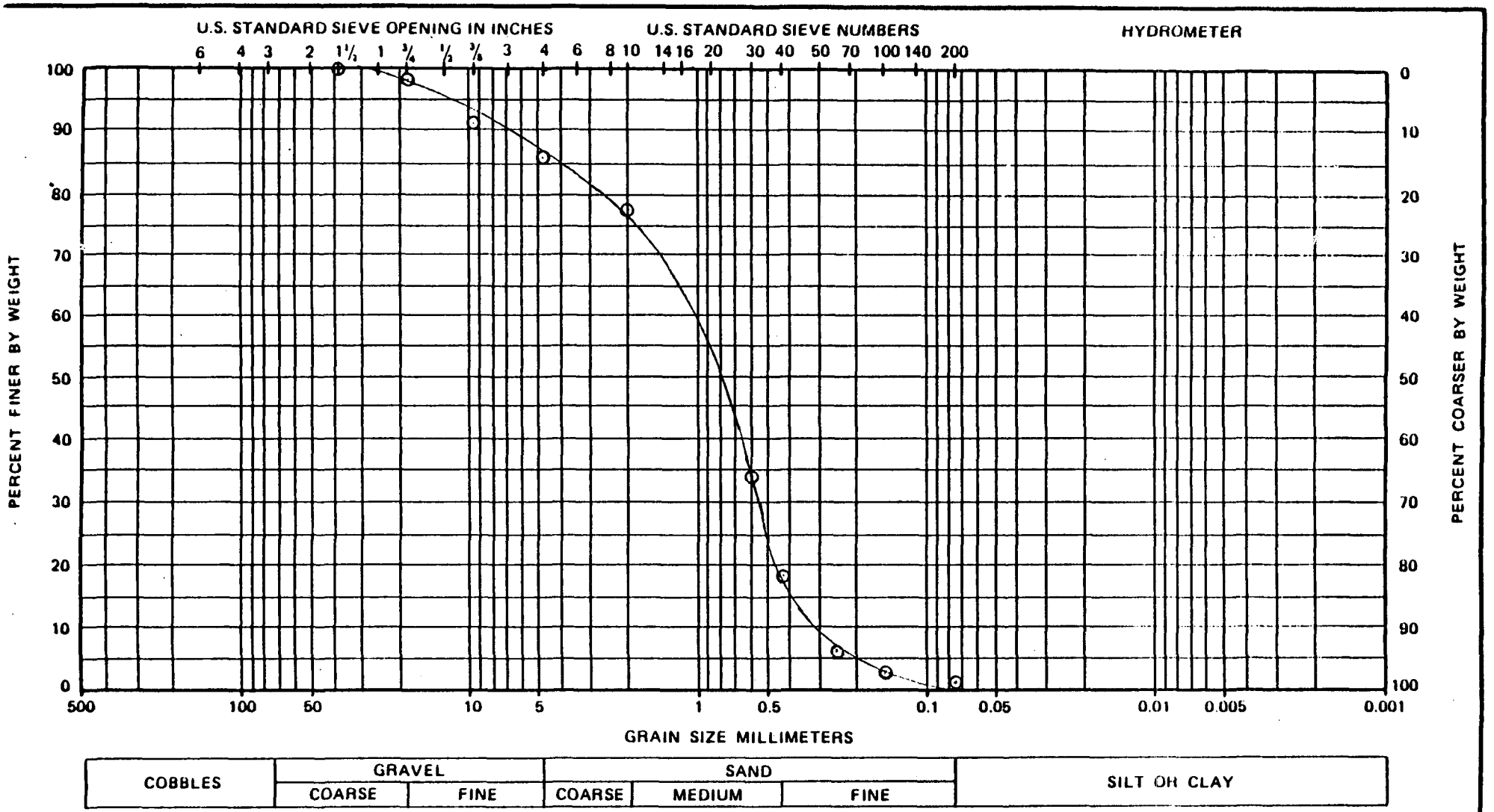
Sieve Sizes	Percent Passing Sieve
1"	100
3/8"	79.0
#10	63.6
#30	54.5
#60	44.6
#100	38.2
#200	30.1

CONTRACT NO.	L-8259
CLIENT	O'Brien & Gere Engineers
~~BORROW~~ MATERIAL FOR	Monsanto
INSPECTOR	
TESTED BY	F.C.
DATE	8-6-82
CLASSIFICATION	
REMARKS	B-8 S-5 Depth 80.5'-81.0'

parratt wolff inc
FISHER RD., EAST SYRACUSE, N.Y. 13057
TELEPHONE AREA CODE 315/437-1429

JOB NO. L-8259
REPORT NO. 24

GRADATION CURVES



SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-19	20'-22'	Brown medium, SAND with little fine gravel, trace coarse sand, trace fine sand.	.31	1.05	3.3

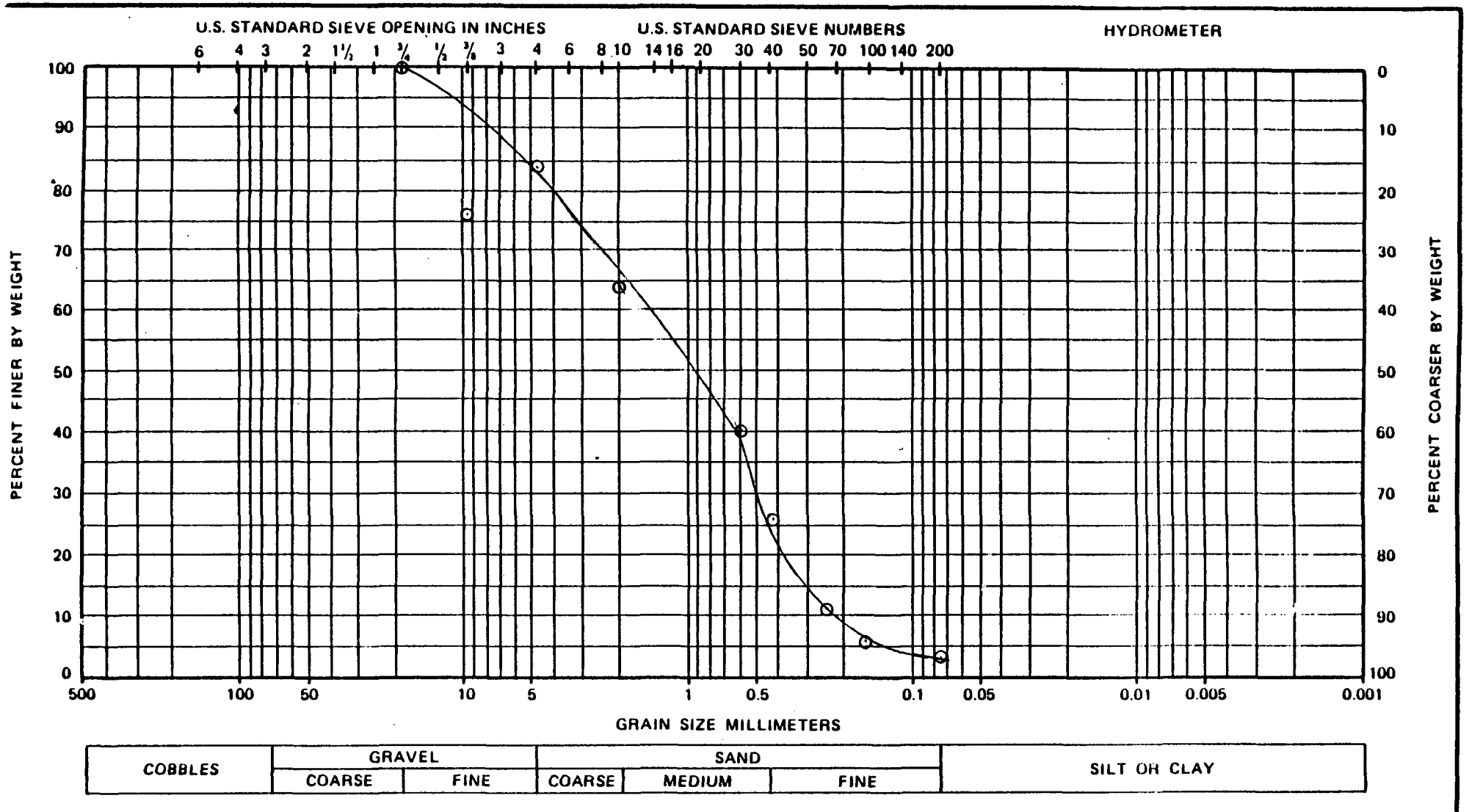
MONSANTO RIP - PHASE II

Project No. 102.03

BLASLAND & BOUCK ENGINEERS, P.C.

Viley-Fisk Form 16-7

GRADATION CURVES



SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-20	12'-14' 16'-18'	Brown fine-medium SAND with some coarse sand, little fine gravel, trace silt.	.22	1.3	5.9

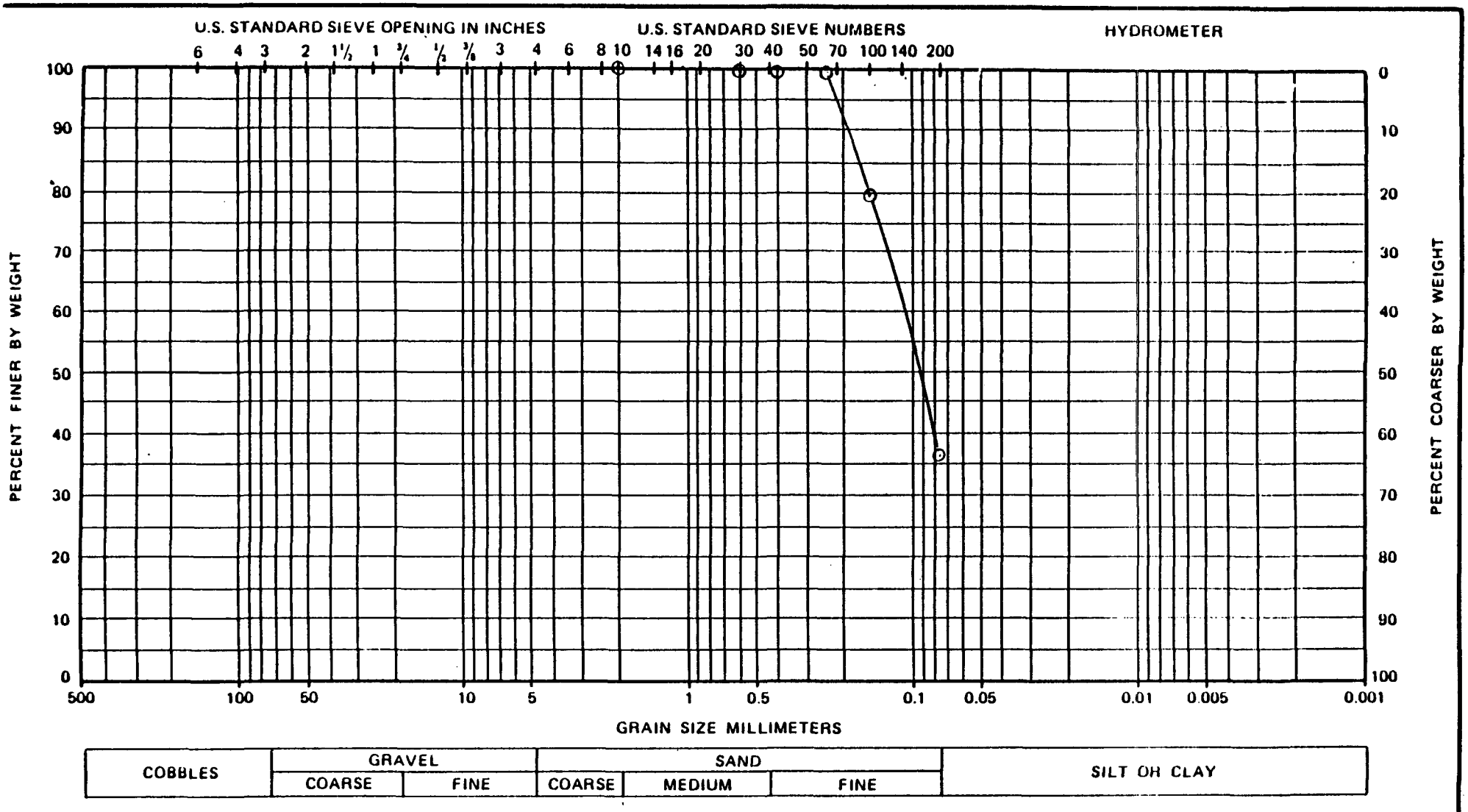
MONSANTO RIP - PHASE II

Project No. 102.03

BLASLAND & BOUCK ENGINEERS, P.C.

Riley-Fisk Form 16-7

GRADATION CURVES



SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-21	20'-22' 24'-26'	Gray fine SAND and SILT.	N/A	.11	N/A

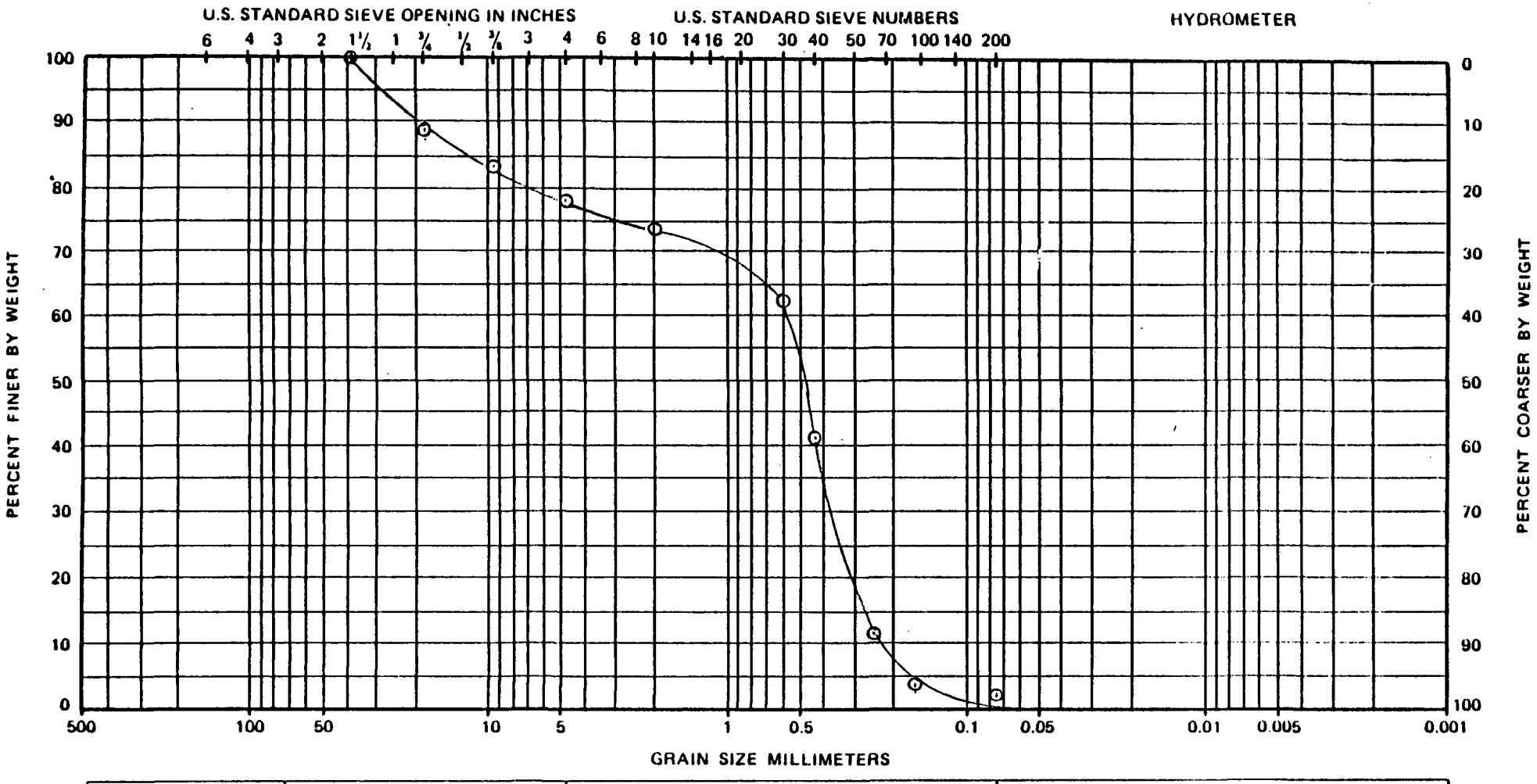
MONSANTO RIP - PHASE II

Project No. 102.03

BLASLAND & BOUCK ENGINEERS, P.C.

Wiley-Fisk Form 16-7

GRADATION CURVES



SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-22	10'-14'	Gray fine SAND with some medium sand, some fine-coarse gravel, trace coarse sand.	.23	.59	2.6

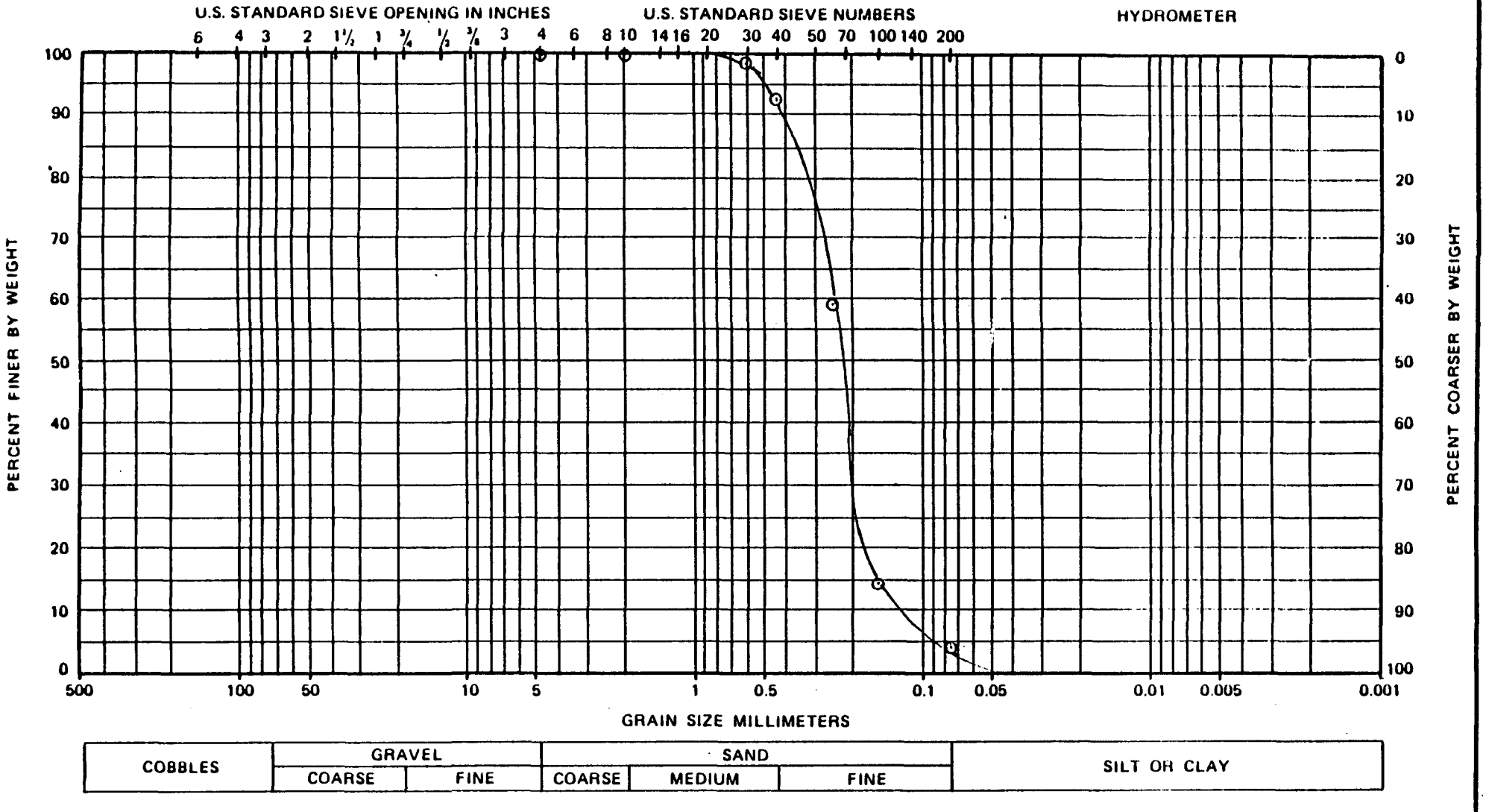
MONSANTO RIP - PHASE II

Project No. 102.03

BLASLAND & BOUCK ENGINEERS, P.C.

Niley-Fisk Form 16-7

GRADATION CURVES



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-25	34'-36'	Brown fine SAND with trace medium sand, trace silt.	.13	.26	2.0

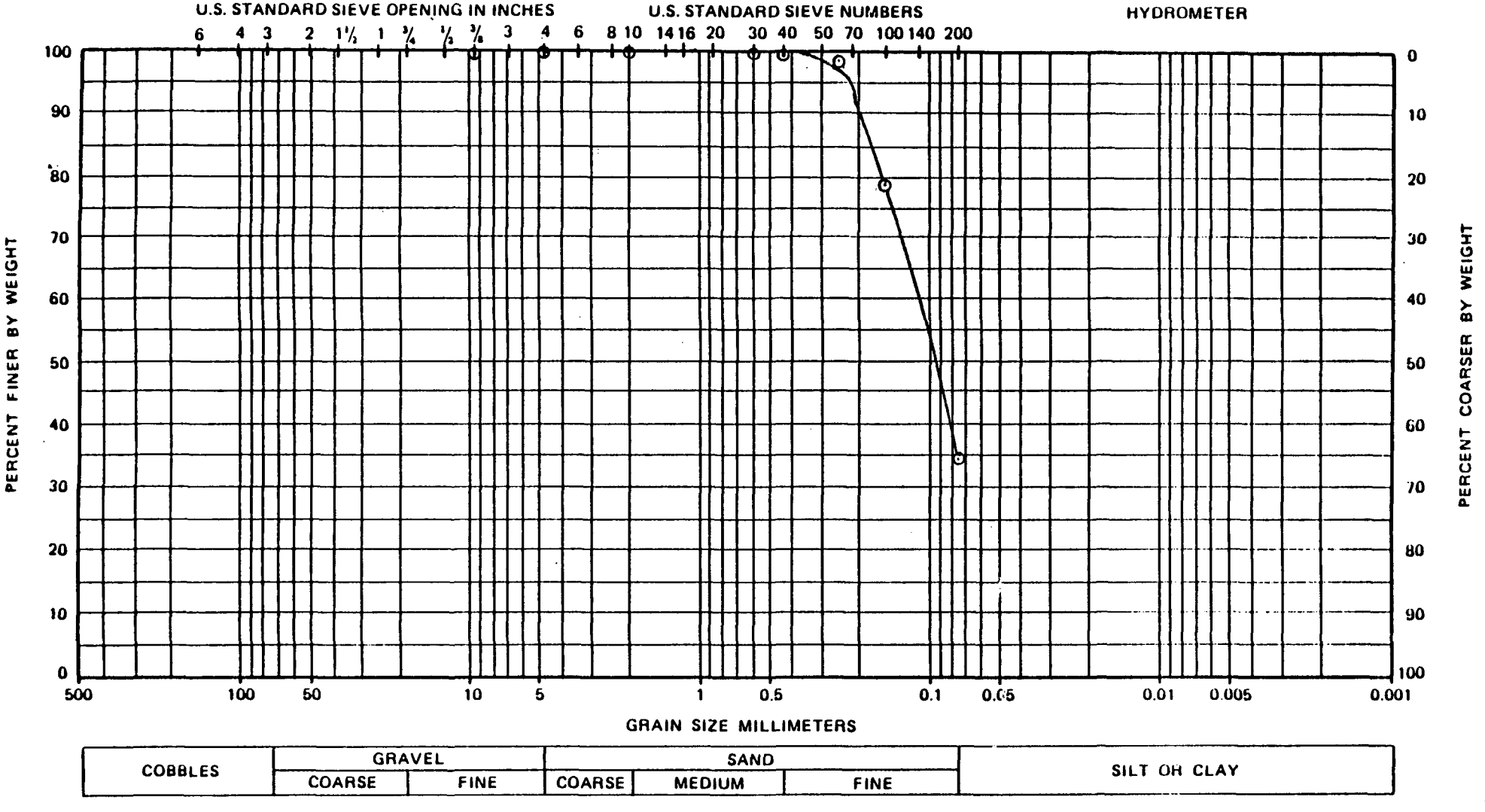
MONSANTO RIP - PHASE II

Project No. 102.03

BLASLAND & BOUCK ENGINEERS, P.C.

Wiley-Fisk Form 16-7

GRADATION CURVES



SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-29	20'-24'	Brown fine SAND with some silt.	N/A	.12	N/A

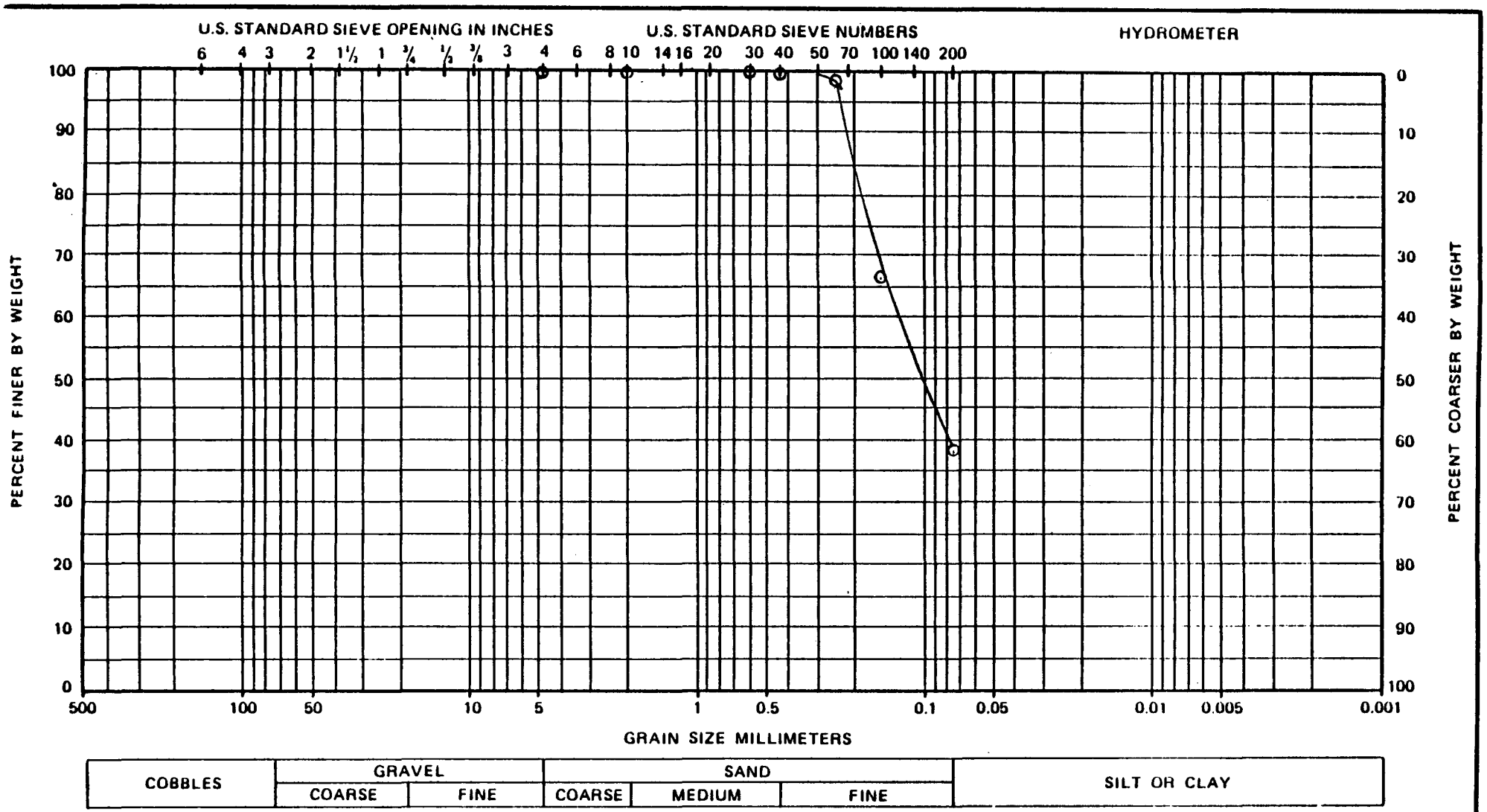
MONSANTO RIP - PHASE II

Project No. 102.03

BLASLAND & BOUCK ENGINEERS, P.C.

Wiley-Fisk Form 16-7

GRADATION CURVES



SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-30	80'-85.7'	Brown fine SAND and SILT	N/A	.14	N/A

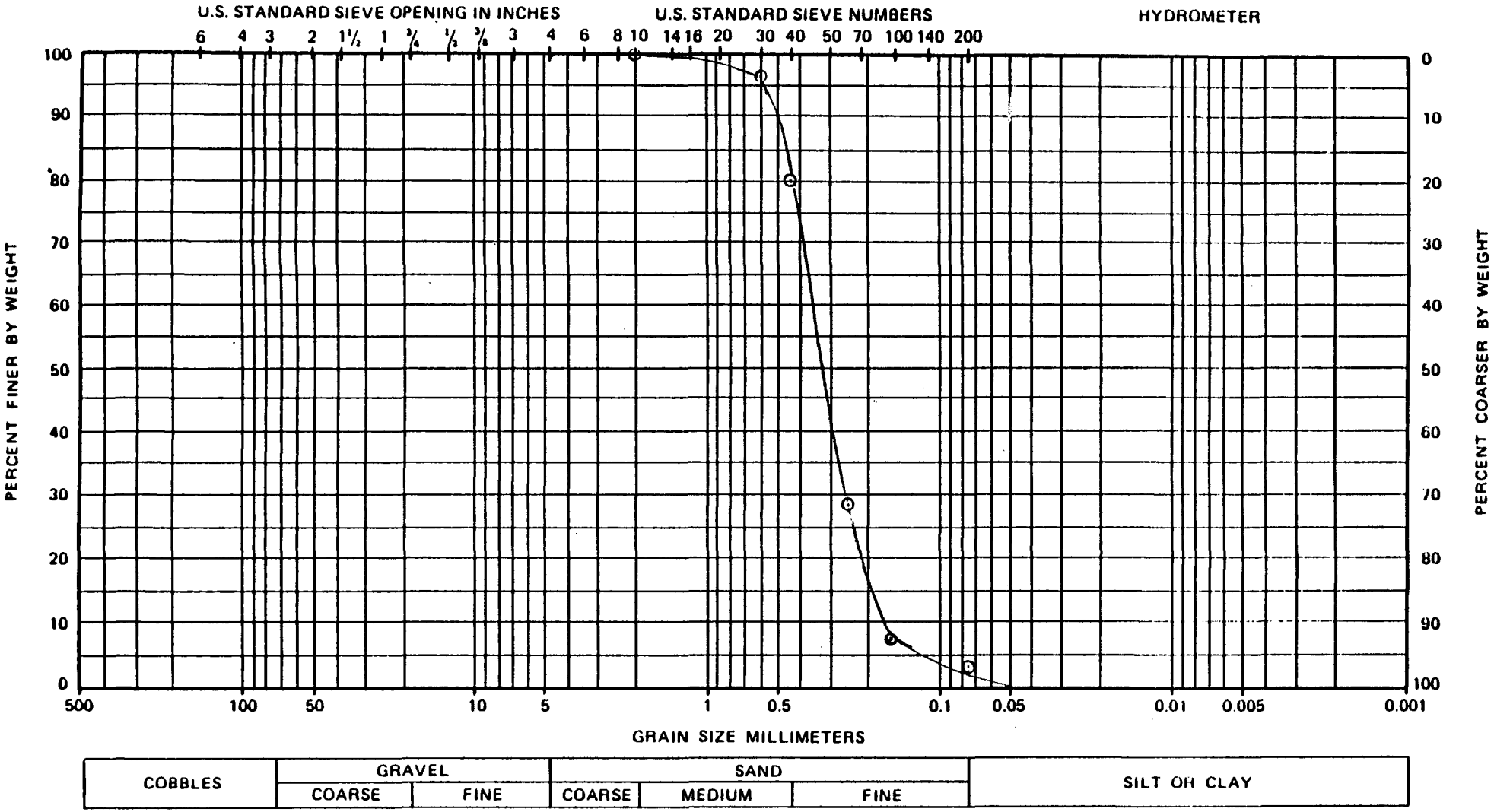
MONSANTO RIP - PHASE II

Project No. 102.03

BLASLAND & BOUCK ENGINEERS, P.C.

Niley-Fisk Form 16-7

GRADATION CURVES



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-31	20'-24-	Brown fine SAND with little medium sand.	.18	.38	2.1

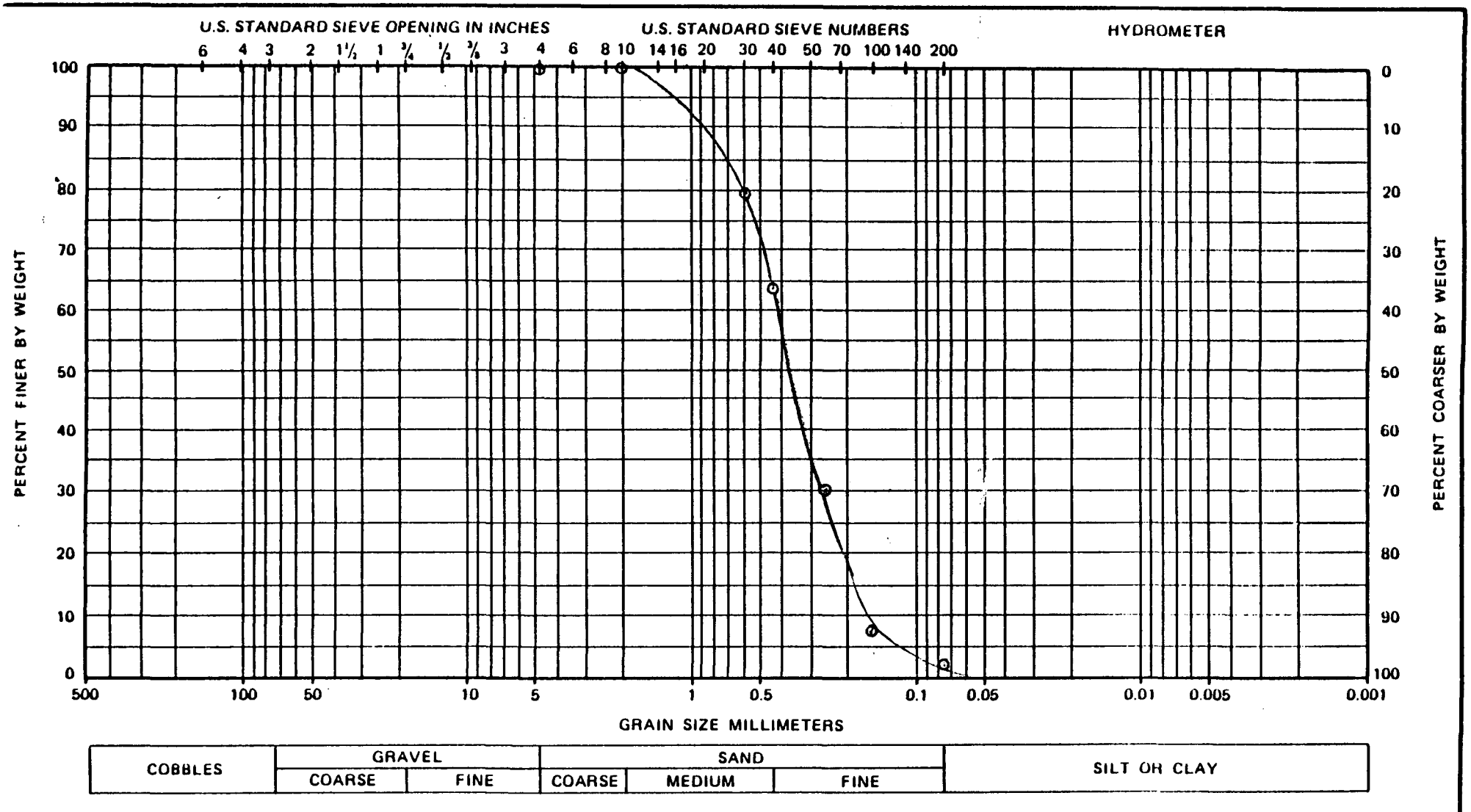
MONSANTO RIP - PHASE II

Project No. 102.03

BLASLAND & BOUCK ENGINEERS, P.C.

Wiley-Fisk Form 16-7

GRADATION CURVES



SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-33	90'-92'	Brown fine and medium SAND.	.18	.42	2.3

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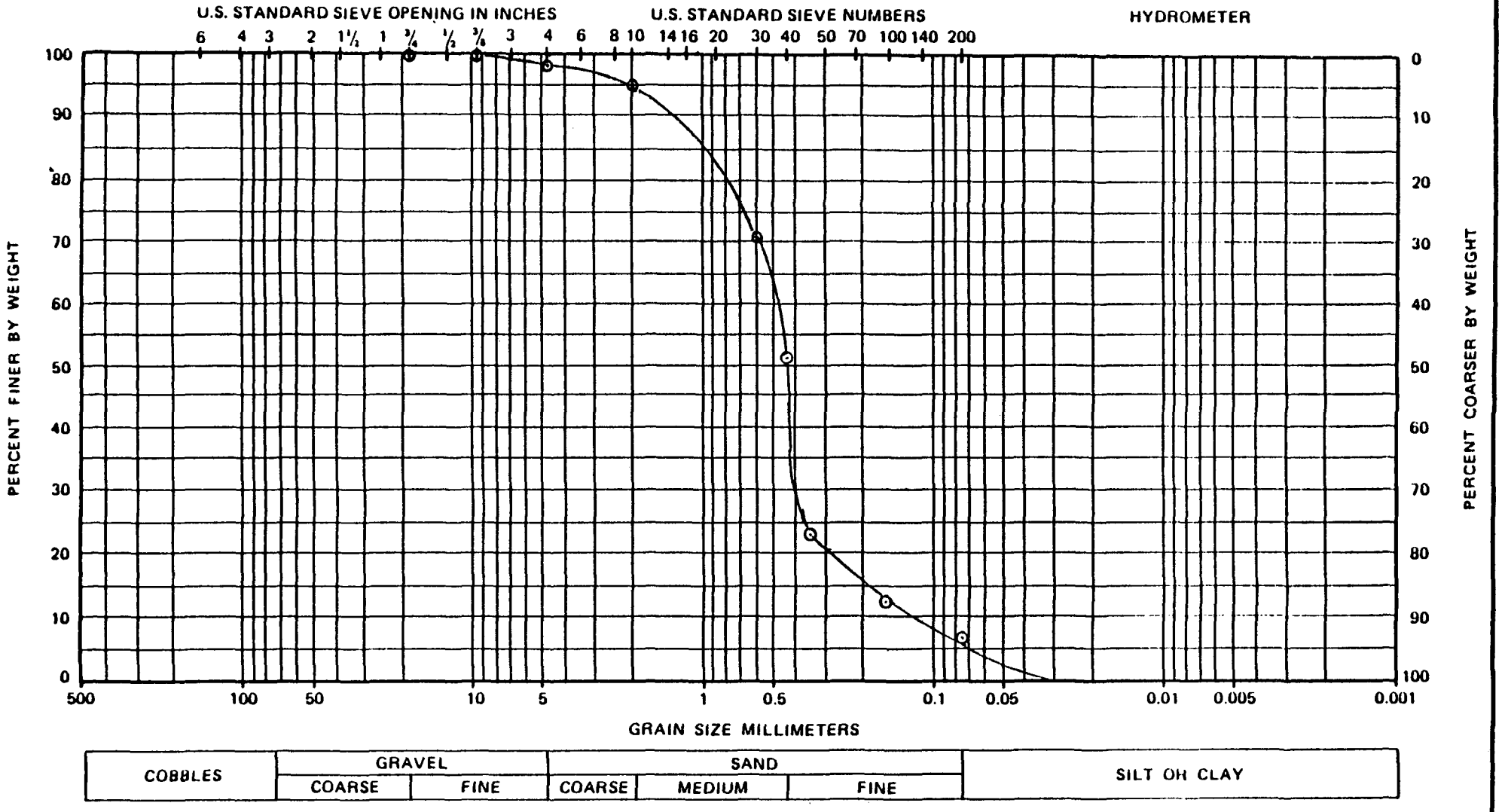
GRADATION CURVES



SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-34	70'-76'	Brown medium SAND with little fine sand, little coarse sand, trace silt.	.14	.48	3.4

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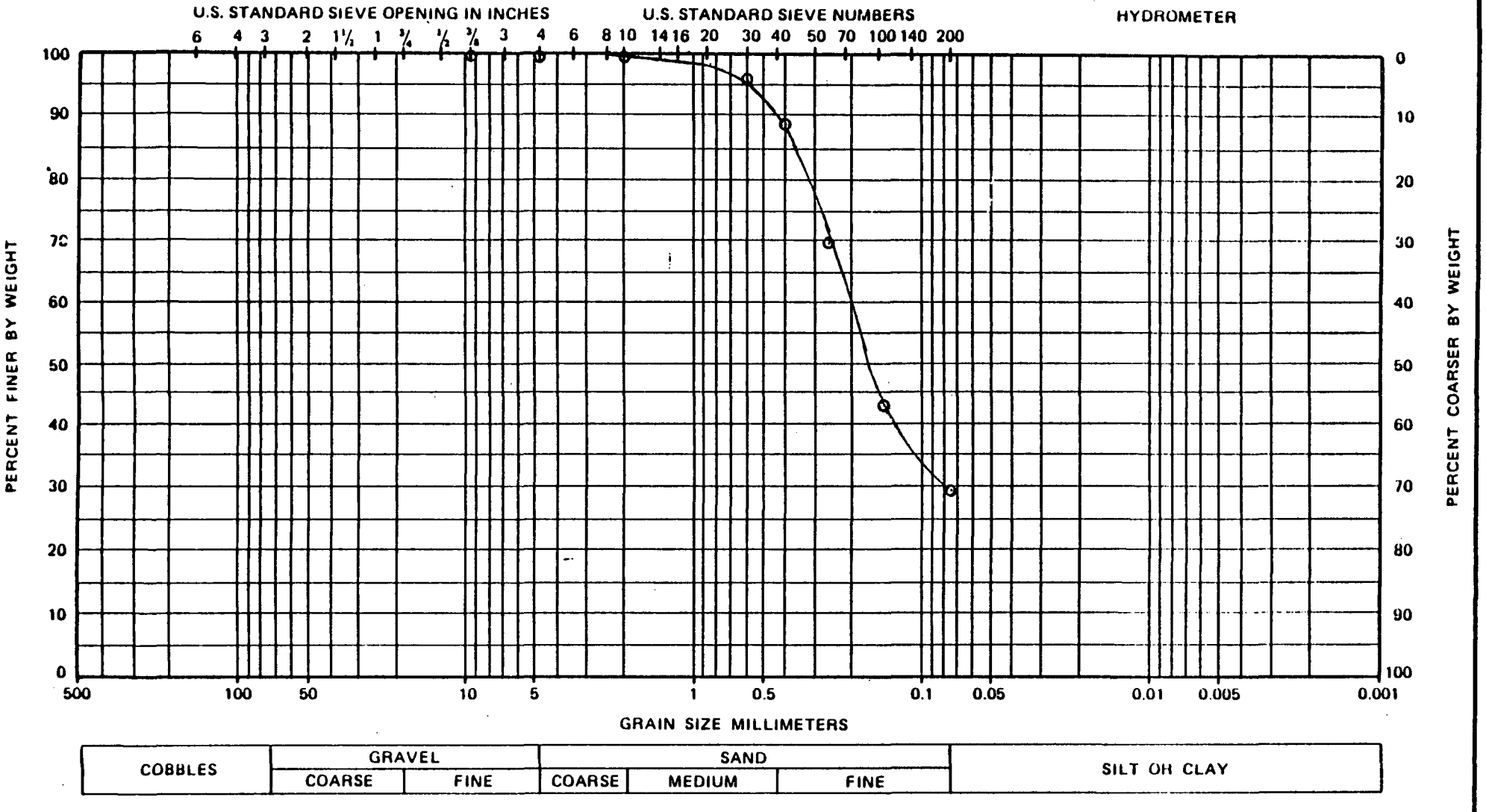

SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-35	100'-106'	Brown fine SAND with some silt, little medium sand.	N/A	.2	N/A

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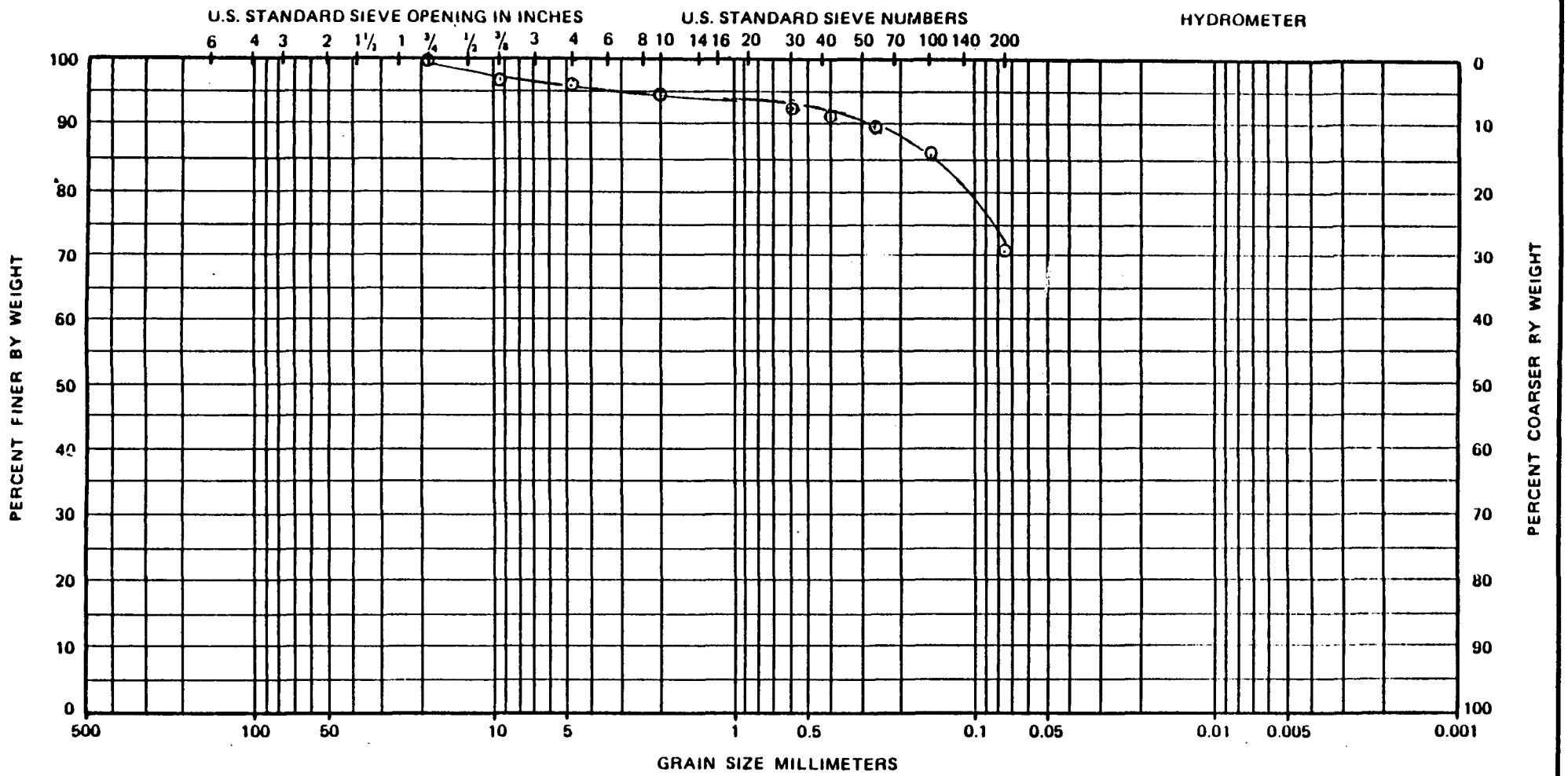

SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-36	96.5'-100.5'	Gray SILT with little fine-coarse sand , trace fine gravel.	N/A	N/A	N/A

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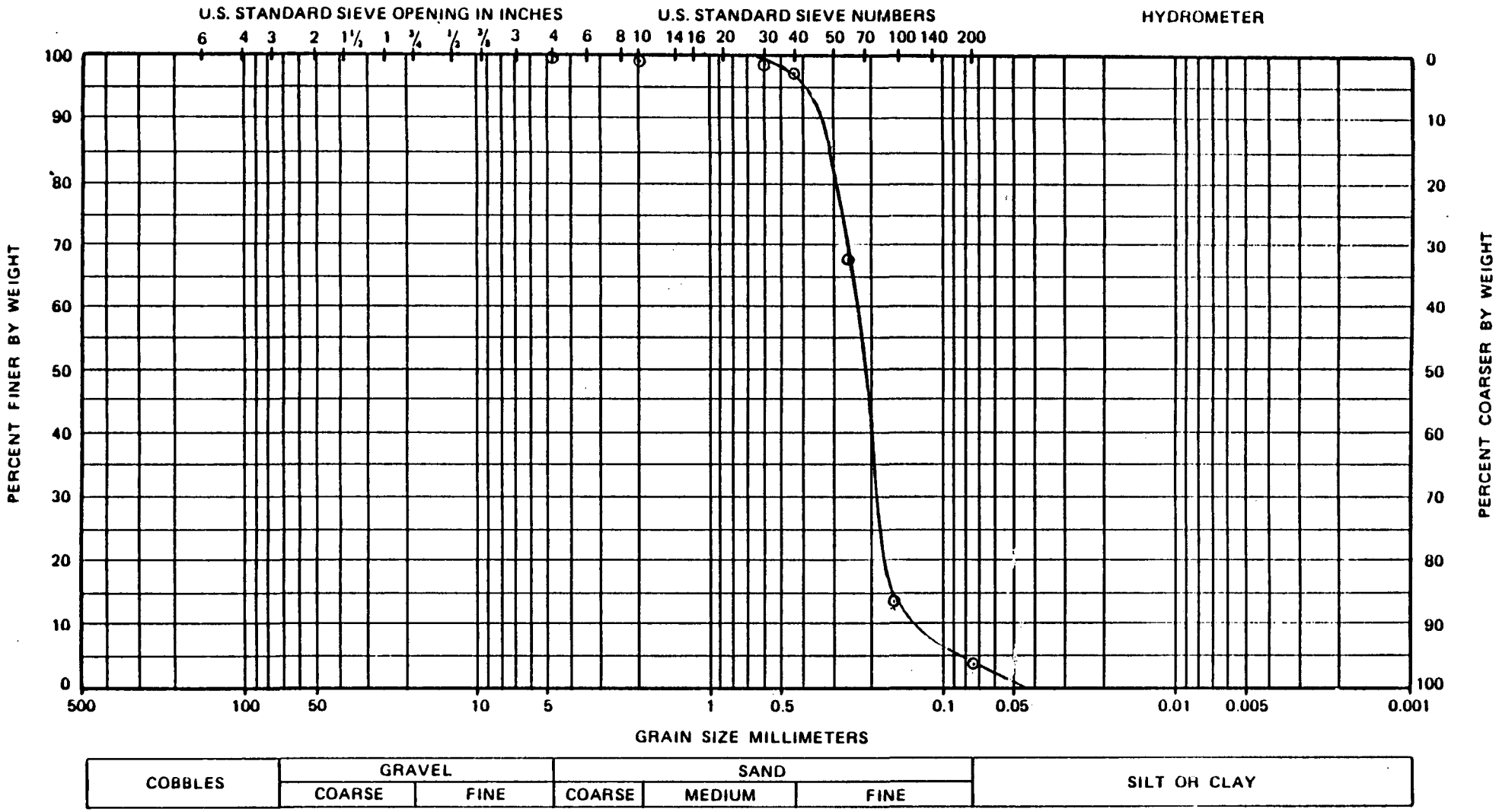
GRADATION CURVES



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-37	44'-48'	Brown fine sand with some medium sand, trace silt.	.14	.26	1.9

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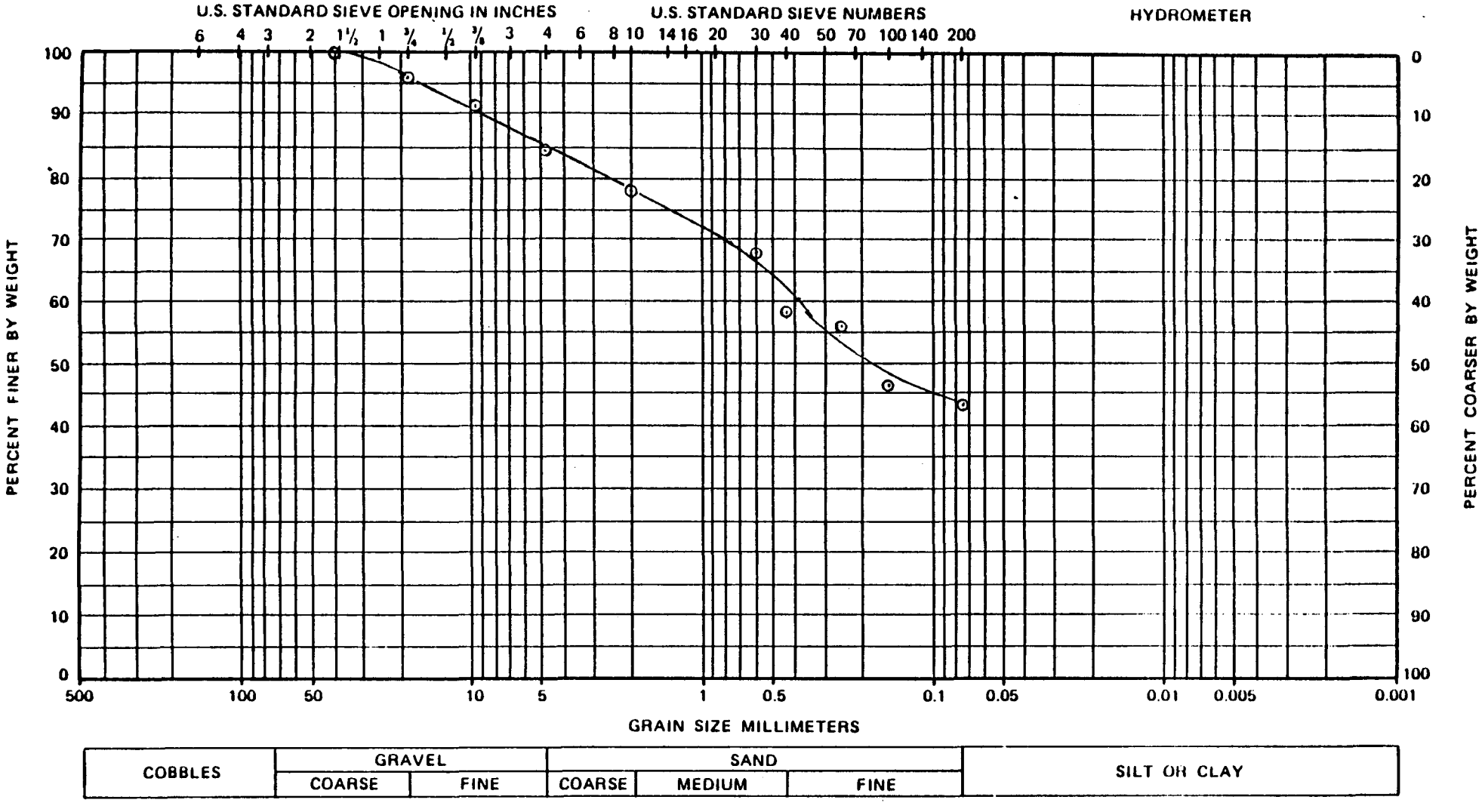
GRADATION CURVES



SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-38	130'-130.5' 132'-132.5'	Red SILT and fine-coarse SAND with little fine-coarse gravel.	N/A	.39	N/A

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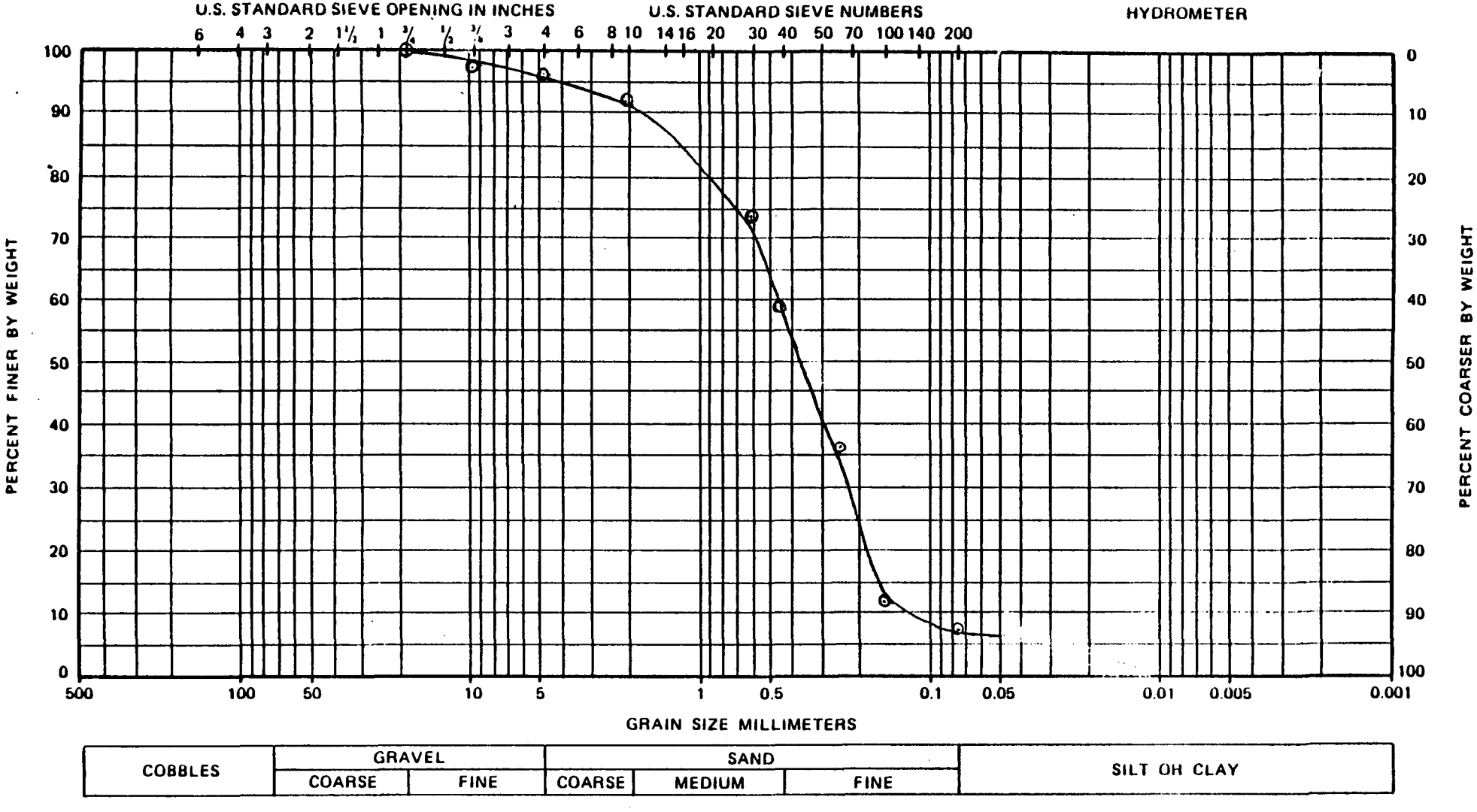
GRADATION CURVES



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-39	64'-68'	Brown fine SAND with some medium sand, trace coarse sand, trace fine grave, trace silt.	0.15	.45	3

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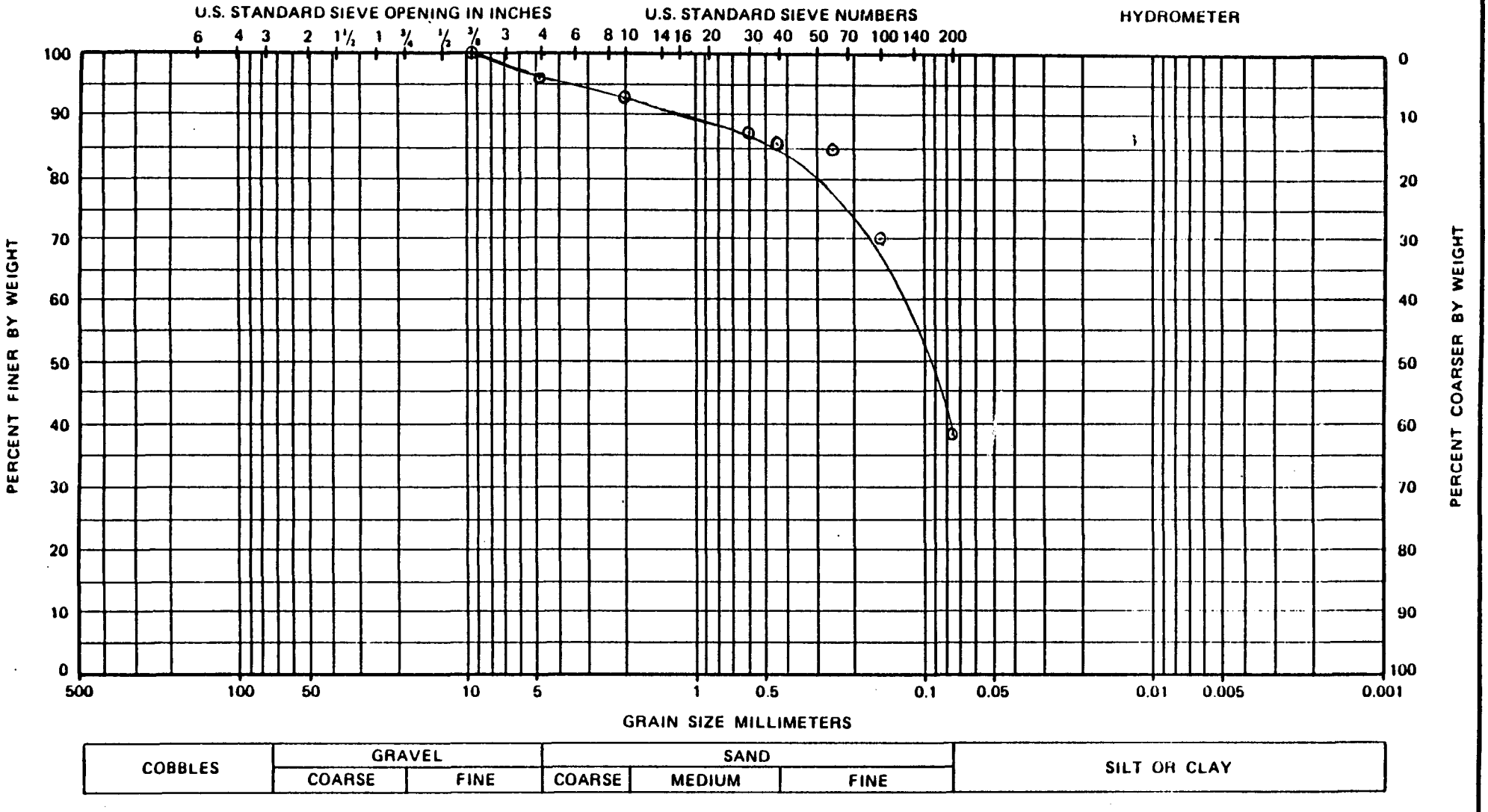
GRADATION CURVES



SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-40	42'-46'	Brown fine SAND and SILT, trace fine gravel.	N/A	.13	N/A

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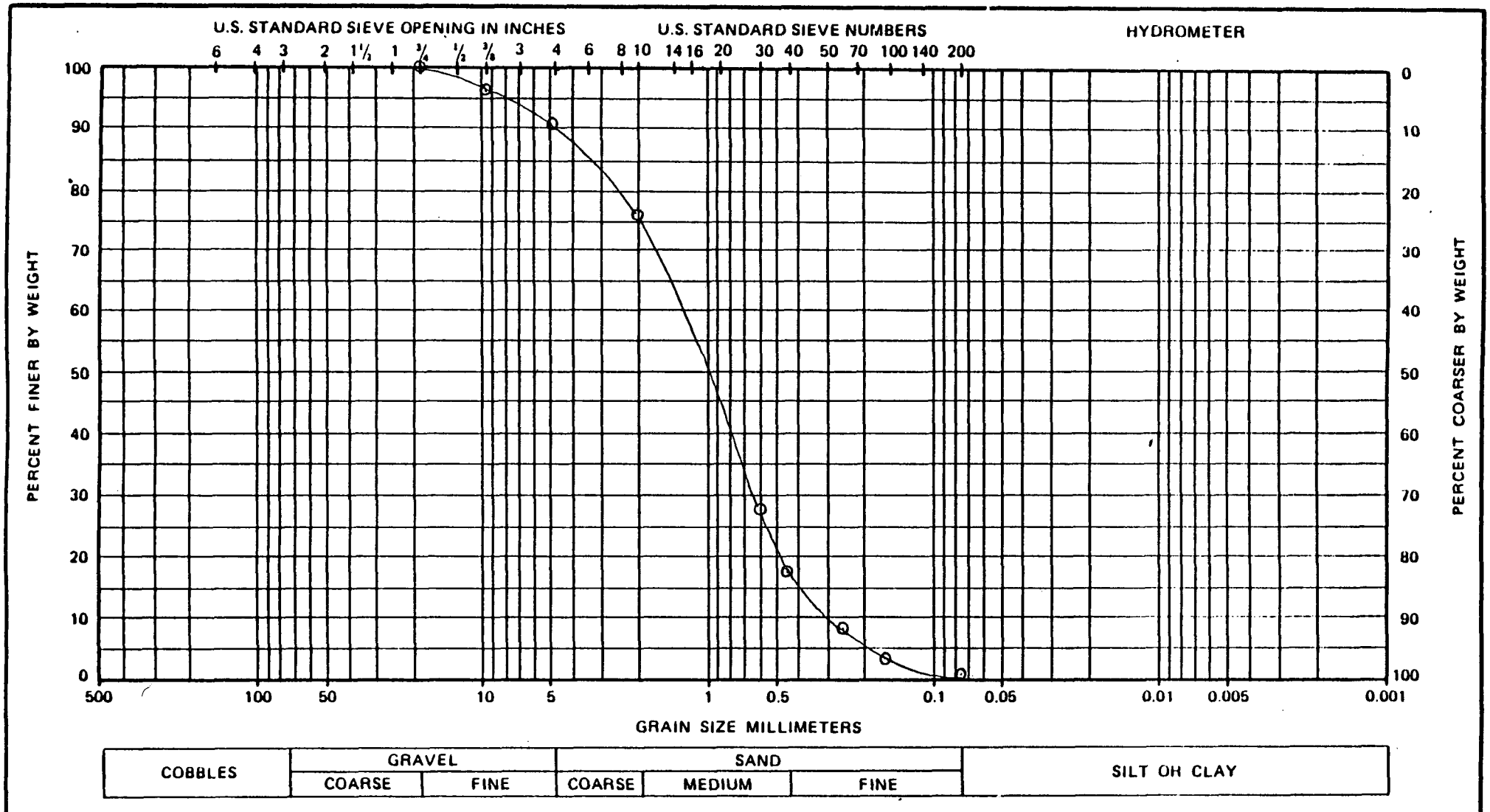
GRADATION CURVES



SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-41	70'-74'	Brown medium SAND with little fine sand, trace coarse sand.	.30	1.4	4.6

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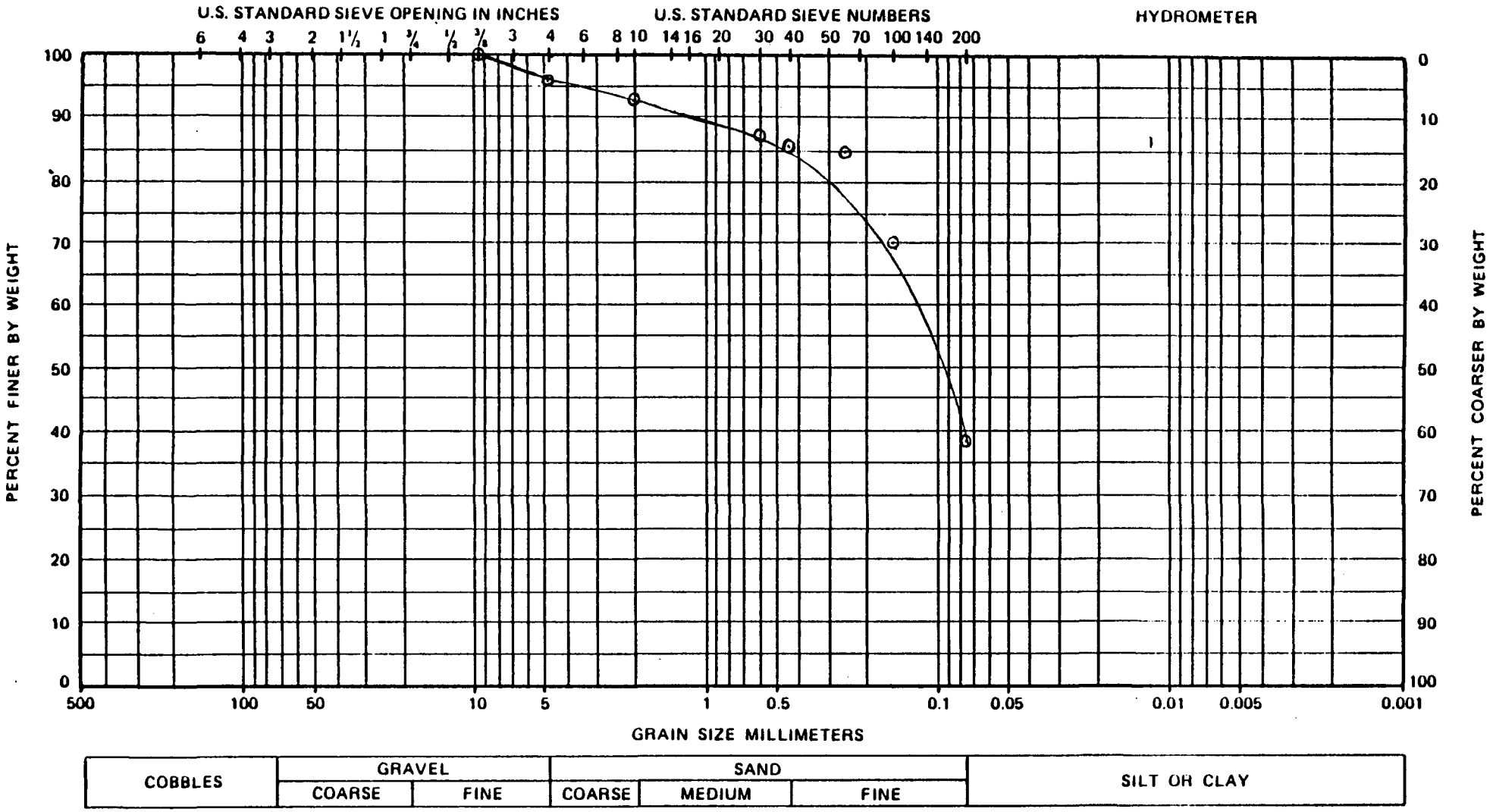
GRADATION CURVES



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-40	42'-46'	Brown fine SAND and SILT, trace fine gravel.	N/A	.13	N/A

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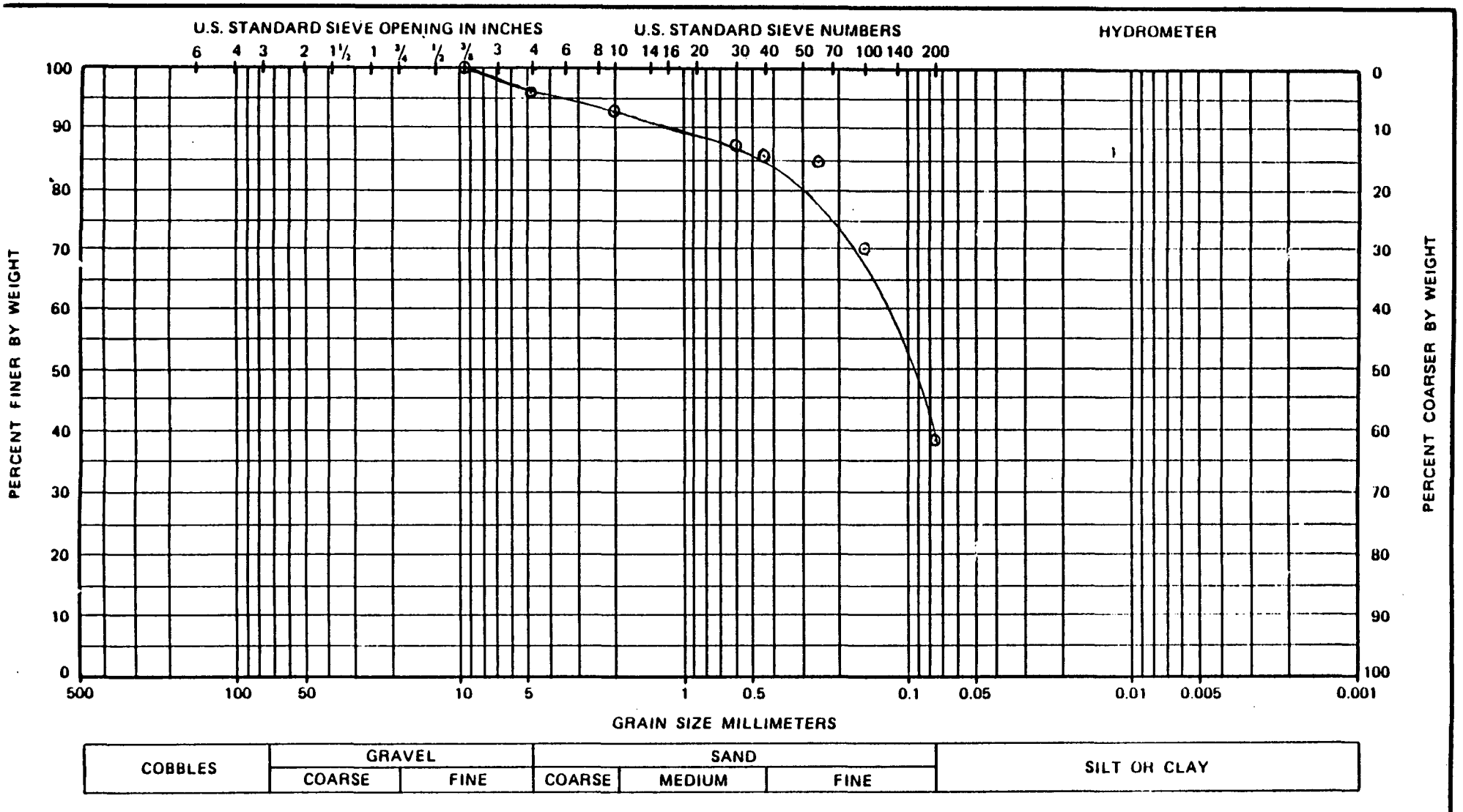
GRADATION CURVES



SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-40	42'-46'	Brown fine SAND and SILT, trace fine gravel.	N/A	.13	N/A

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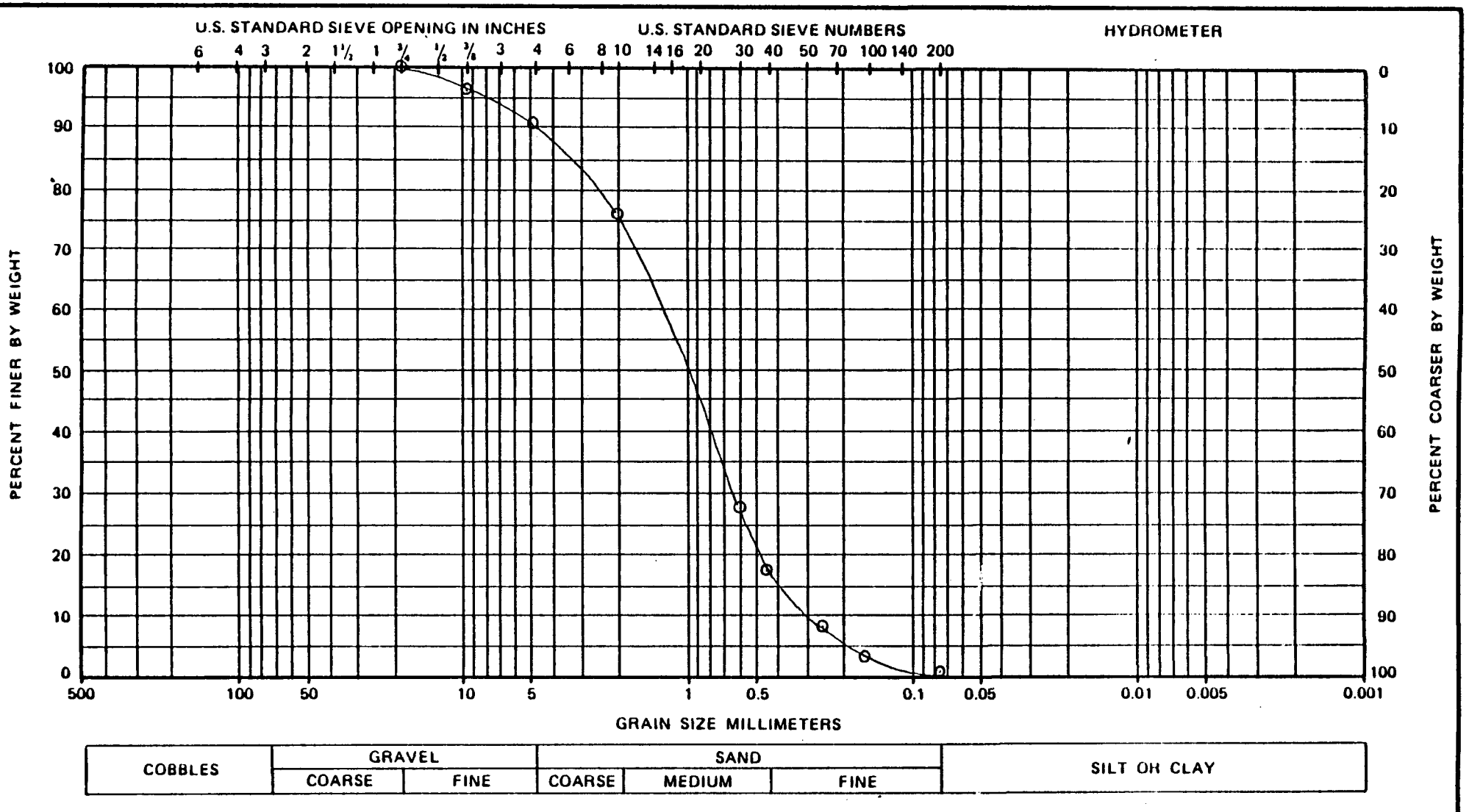
GRADATION CURVES



SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-41	70'-74'	Brown medium SAND with little fine sand, trace coarse sand.	.30	1.4	4.6

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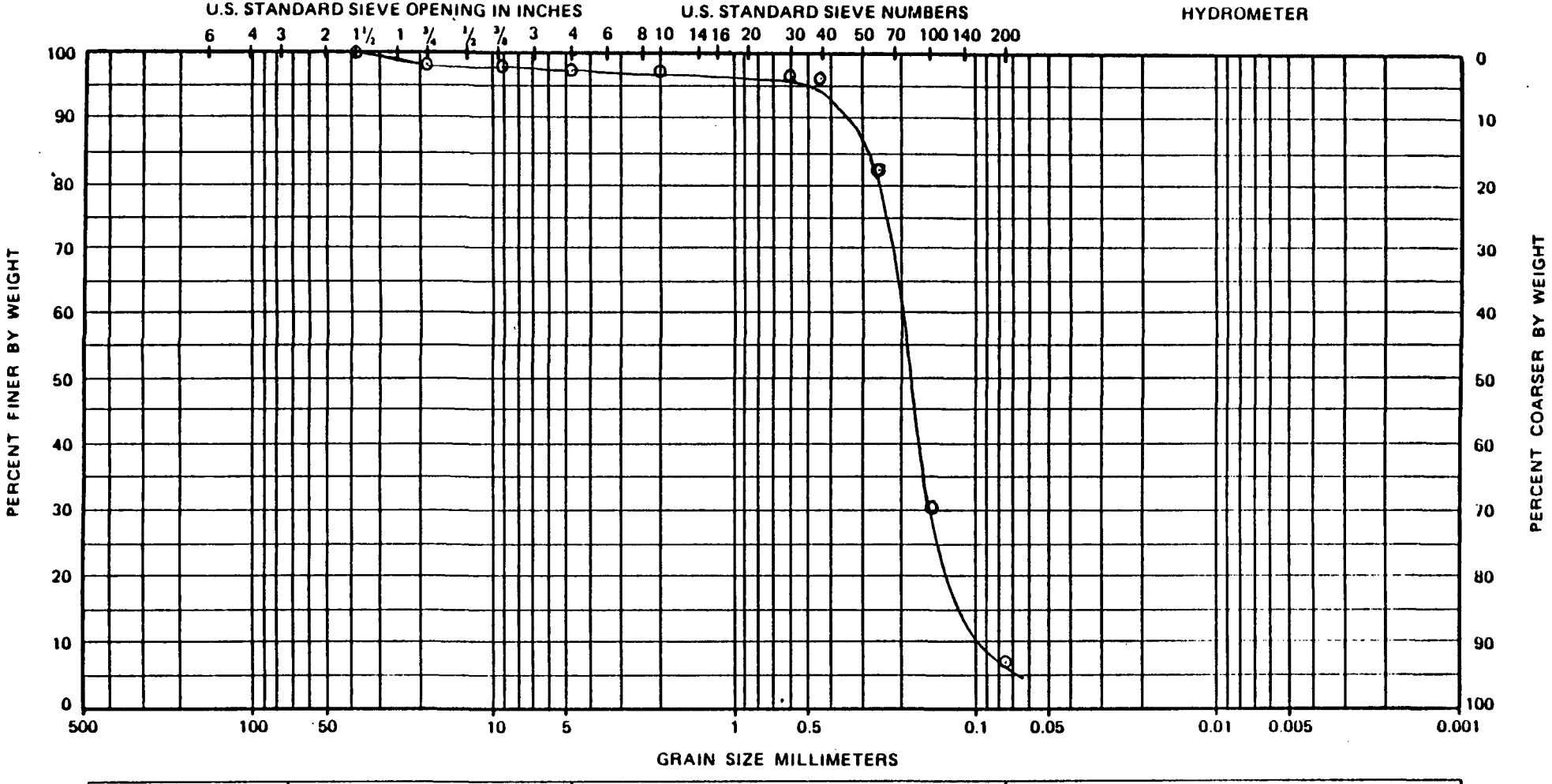

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-42	60'-64'	Gray fine SAND with trace medium sand, trace silt.	0.1	0.2	2

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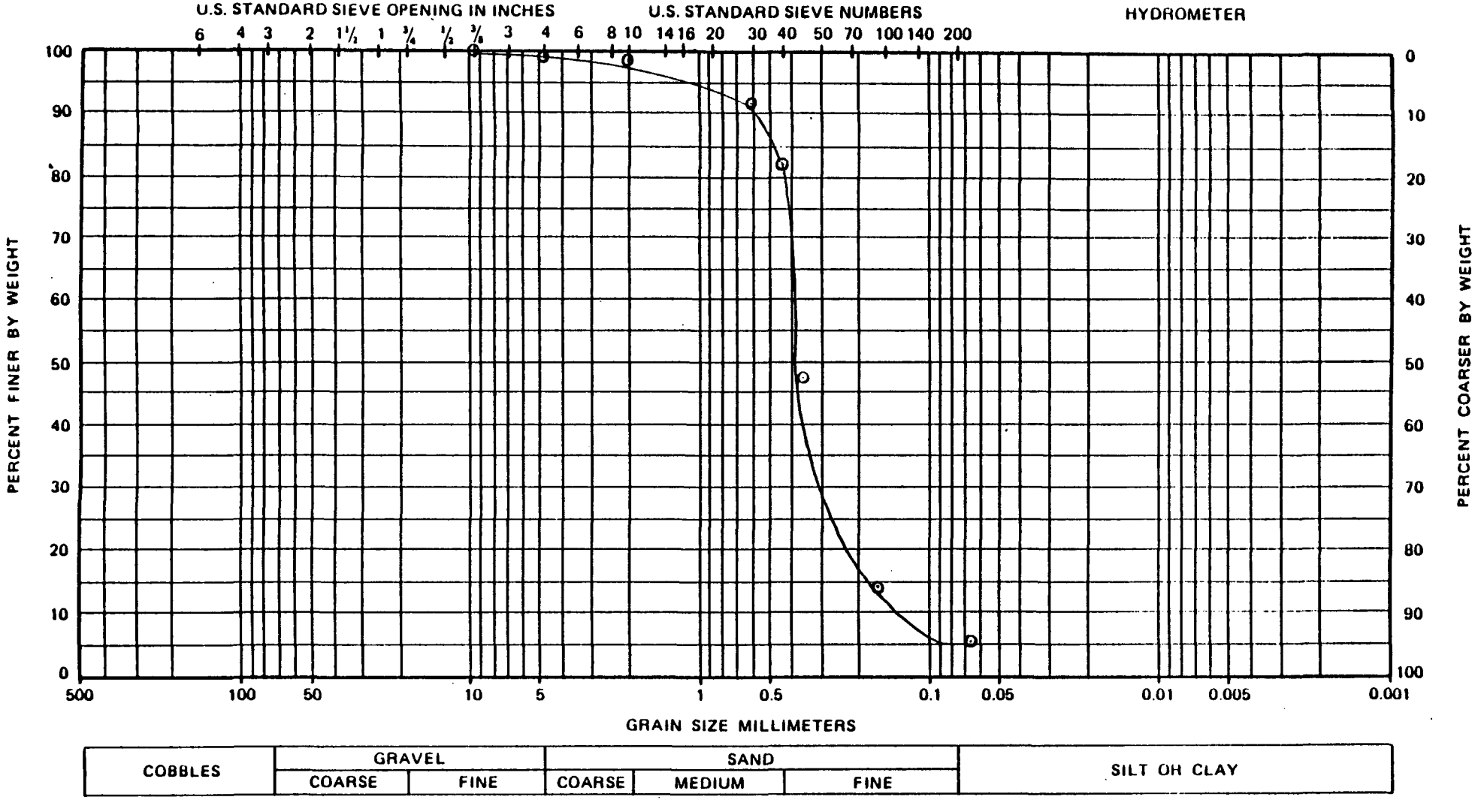
GRADATION CURVES



SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-43	58'-62'	Gray fine SAND with little medium sand, trace silt.	.15	.39	2.6

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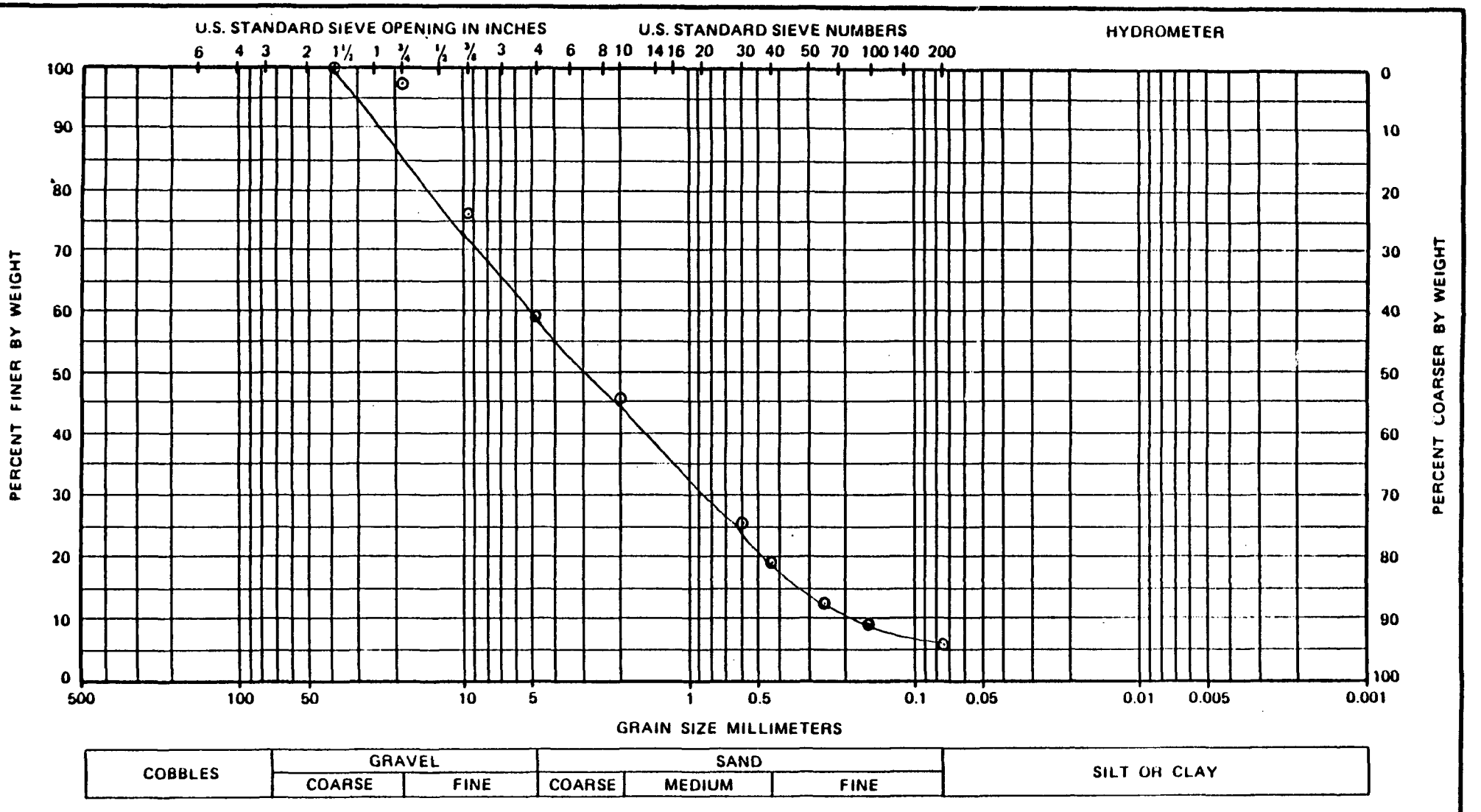
GRADATION CURVES



SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-44	24'-26'	Brown fine GRAVEL and medium-coarse SAND, with little fine sand, trace silt.	0.2	5.2	26

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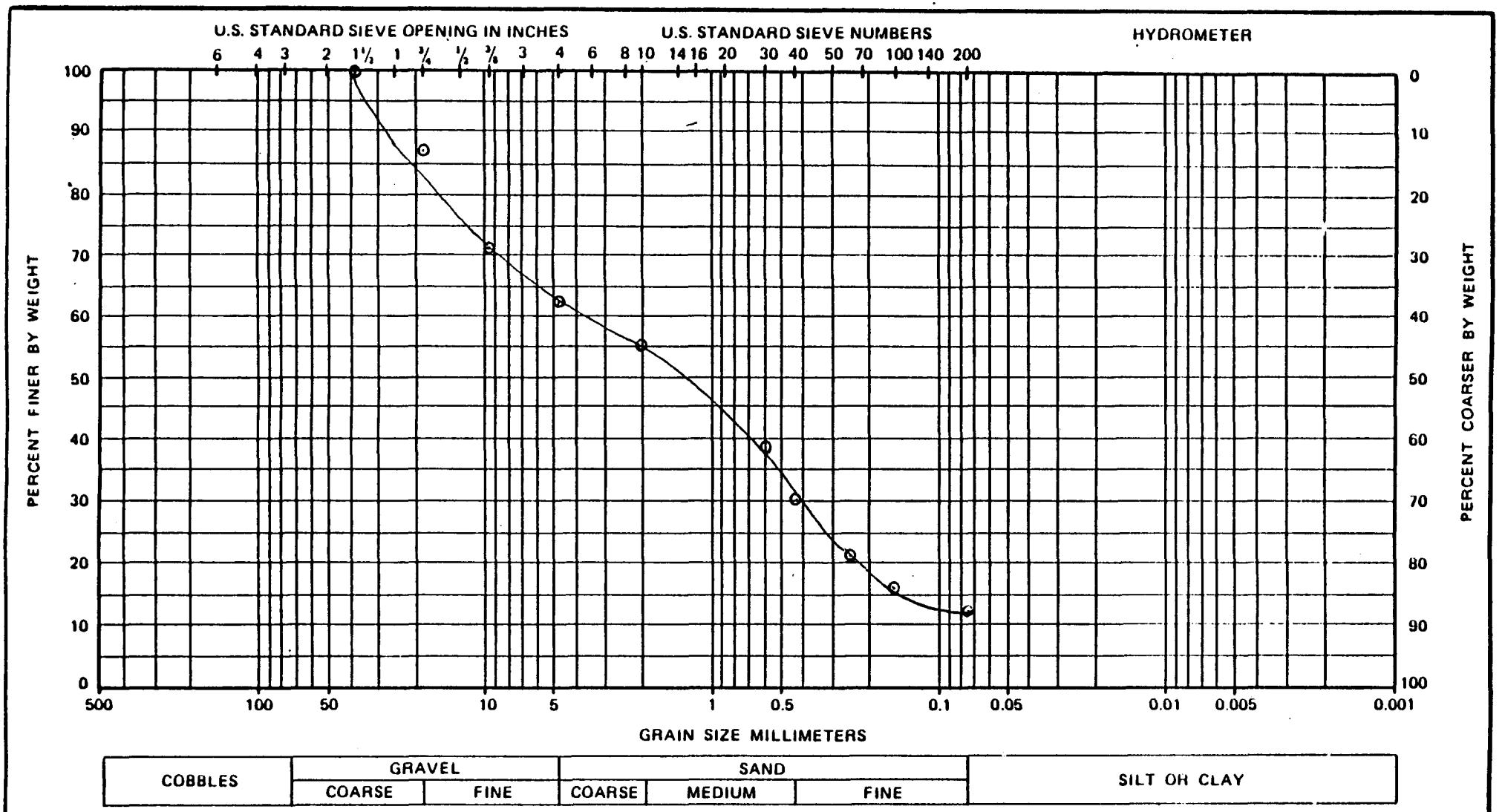
GRADATION CURVES



SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-45	30'-34'	Red fine-coarse GRAVEL and fine-medium SAND with little silt, trace coarse sand.	N/A	3.8	N/A

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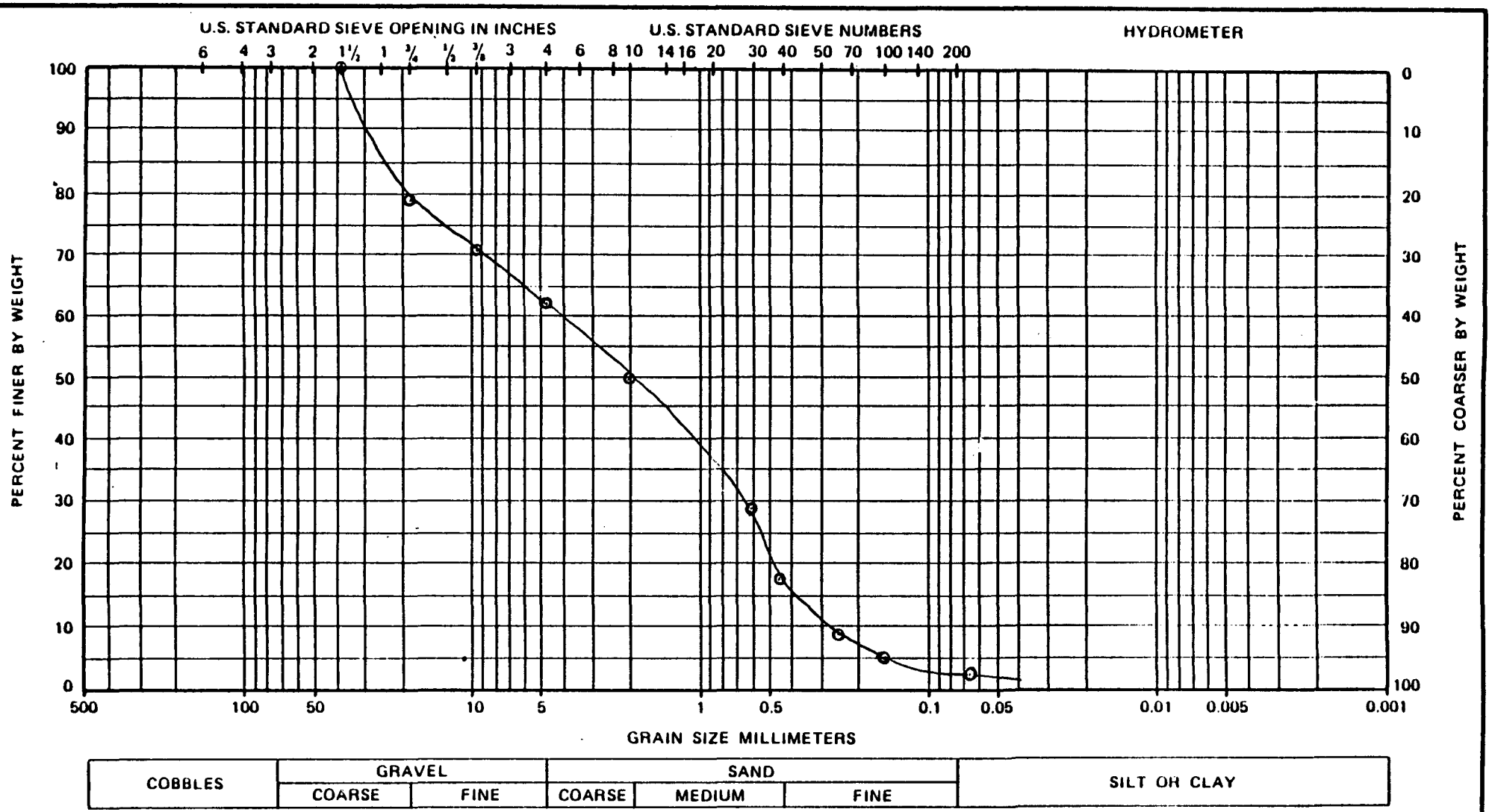
GRADATION CURVES



SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-48	12'-16'	Brown fine-coarse GRAVEL and medium-coarse SAND with little fine sand, trace silt.	.29	4.0	13.7

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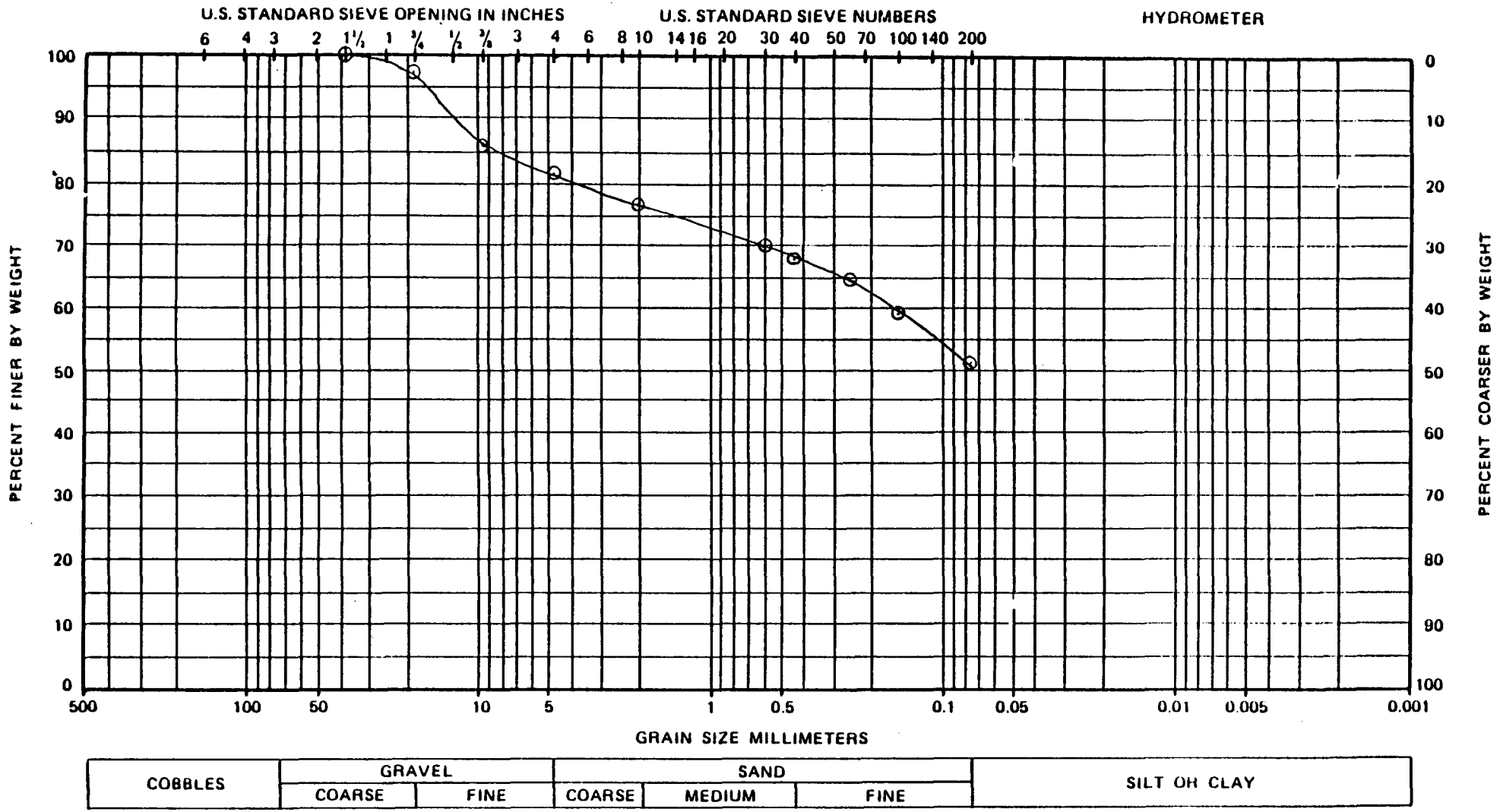
GRADATION CURVES



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-49	68'-72'	Gray SILT with some fine-coarse sand, little fine gravel.	N/A	.17	N/A

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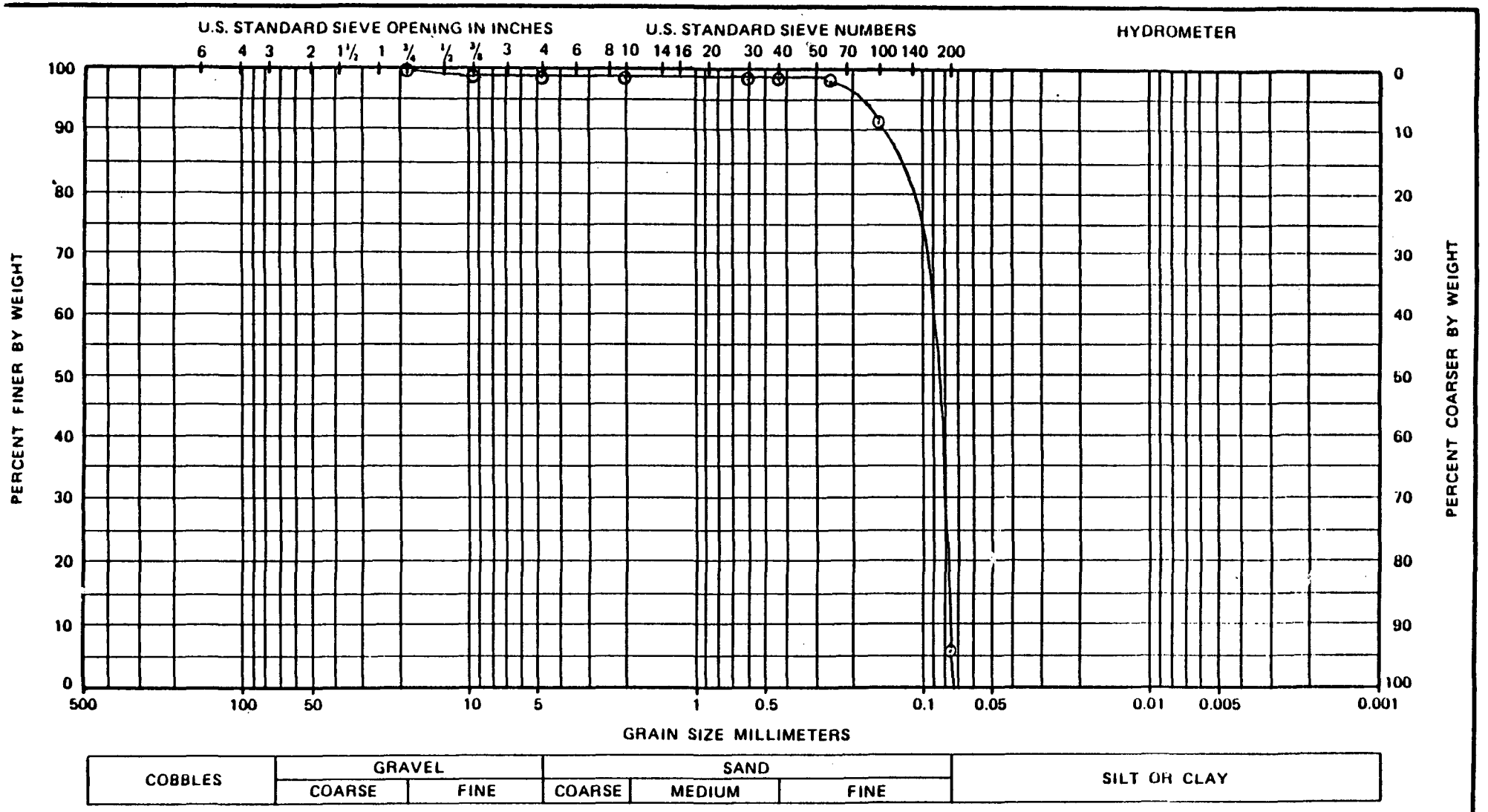
GRADATION CURVES



SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-50	26'-30'	Gray fine SAND with trace silt.	.075	.09	1.2

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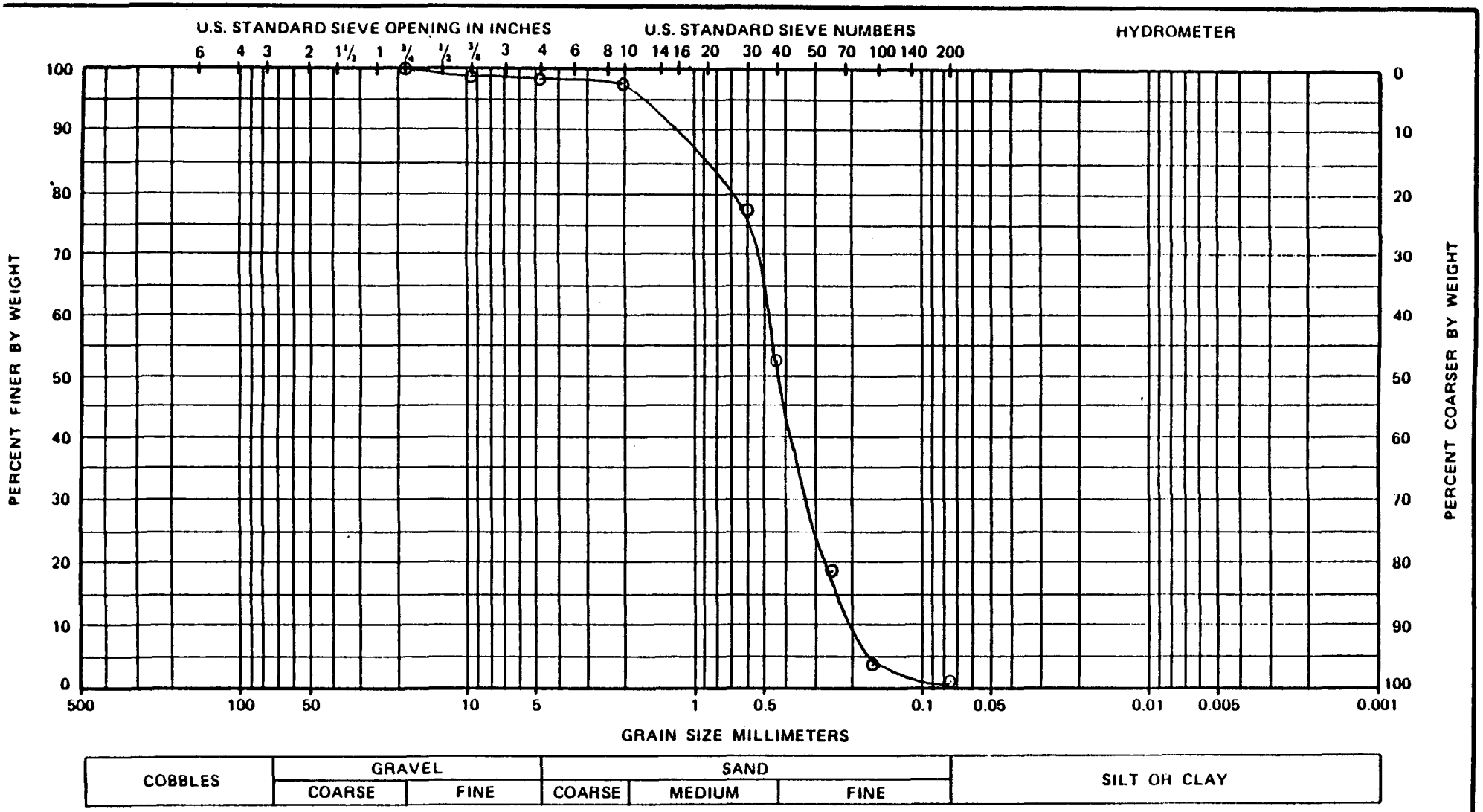

SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-51	66'-70'	Brown fine-medium SAND with trace coarse sand, trace silt.	.21	.48	2.2

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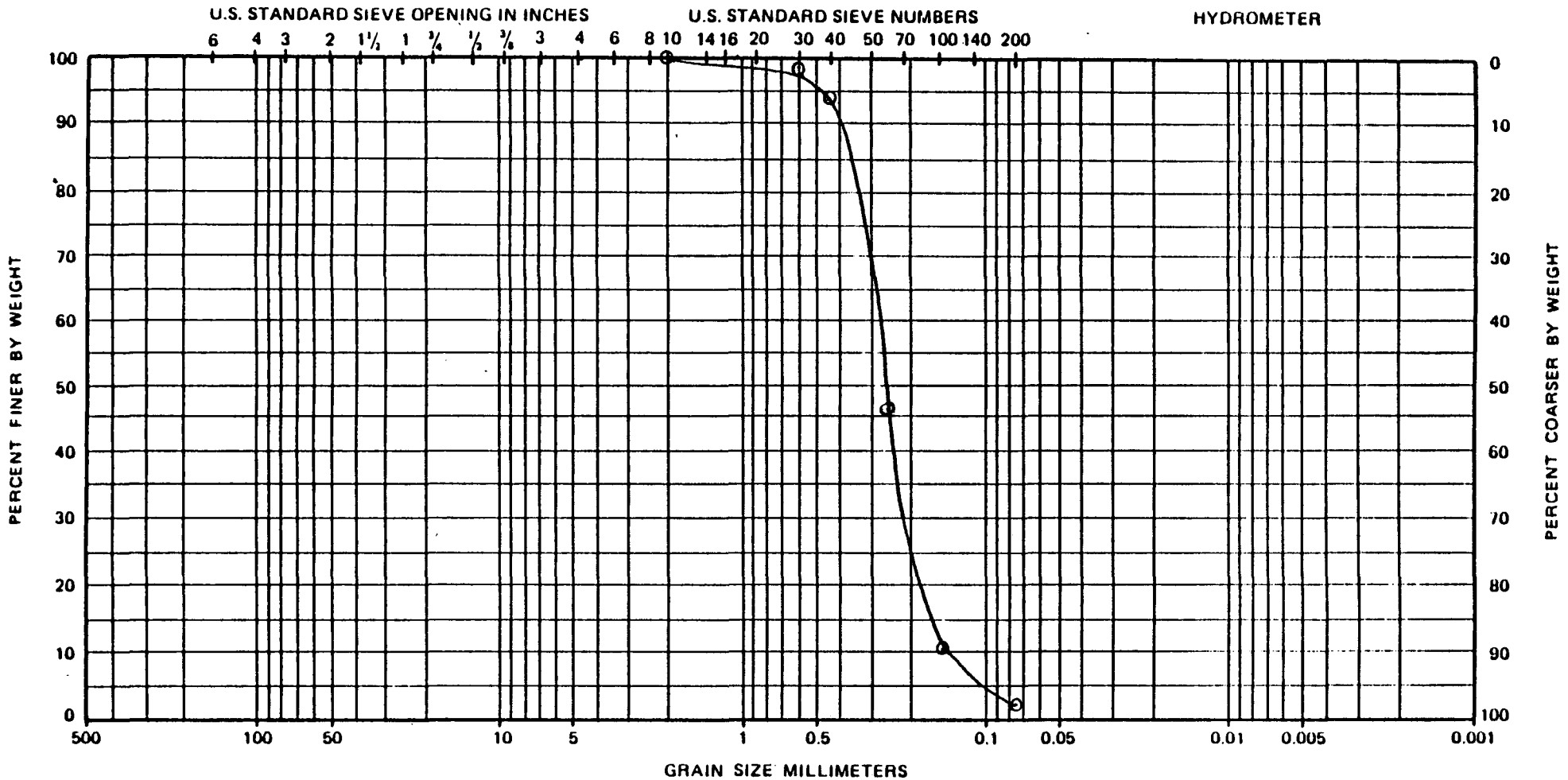
GRADATION CURVES



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-51	30'-34'	Brown fine SAND with some medium sand, trace silt.	.16	.28	1.75

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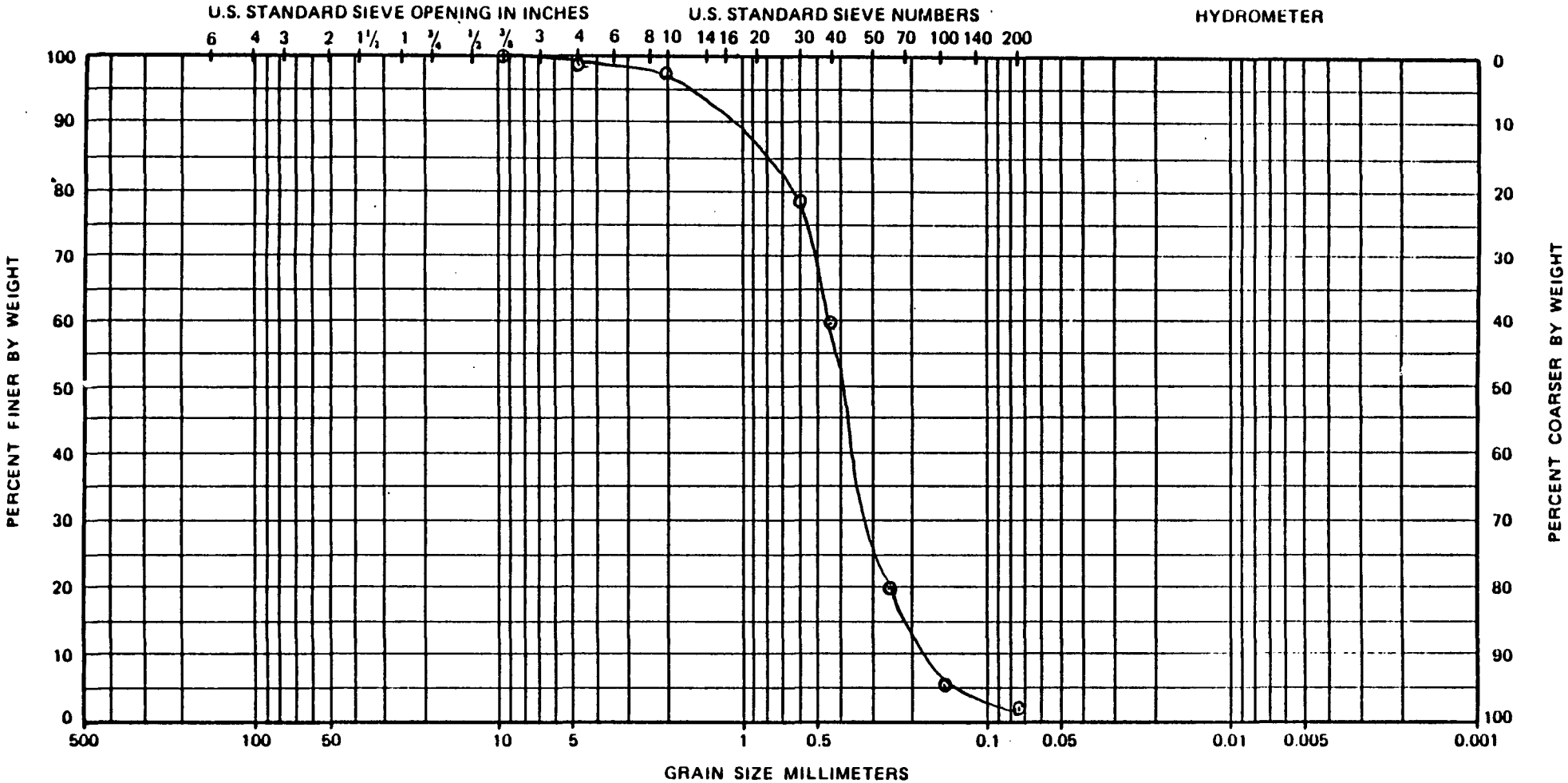

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-53	72'-74'	Gray medium SAND with little fine sand, trace coarse sand, trace silt.	.18	.45	2.5

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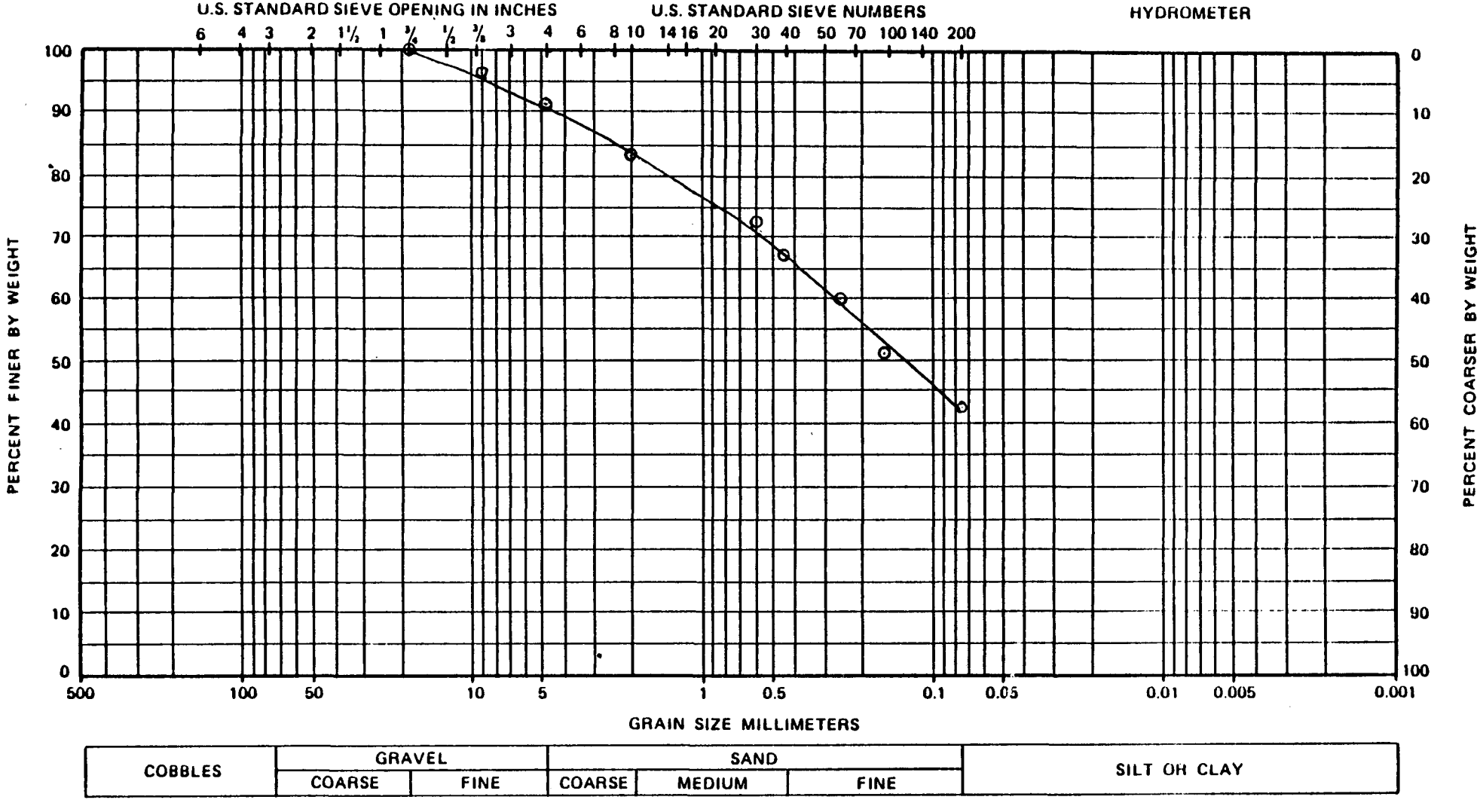
Riley-Fisk Form 16-7

GRADATION CURVES



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-54	44'-46'	Red SILT and fine-medium SAND, little coarse sand, trace fine gravel.	N/A	.26	N/A

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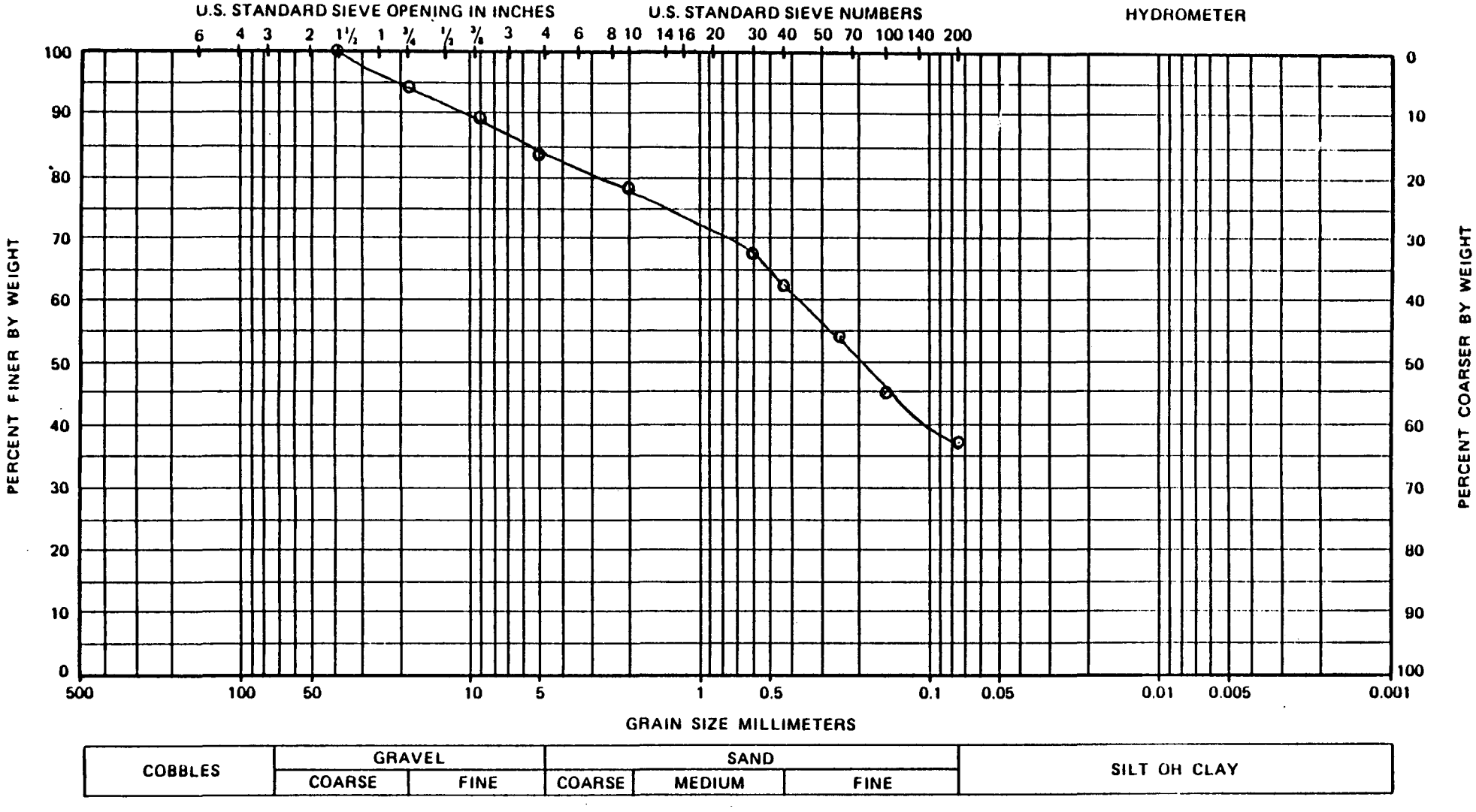
GRADATION CURVES



COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	

SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-55	30'-30.5' 32'-32.4'	Red fine SAND and SILT with some medium sand, little fine-coarse gravel.	N/A	.38	N/A

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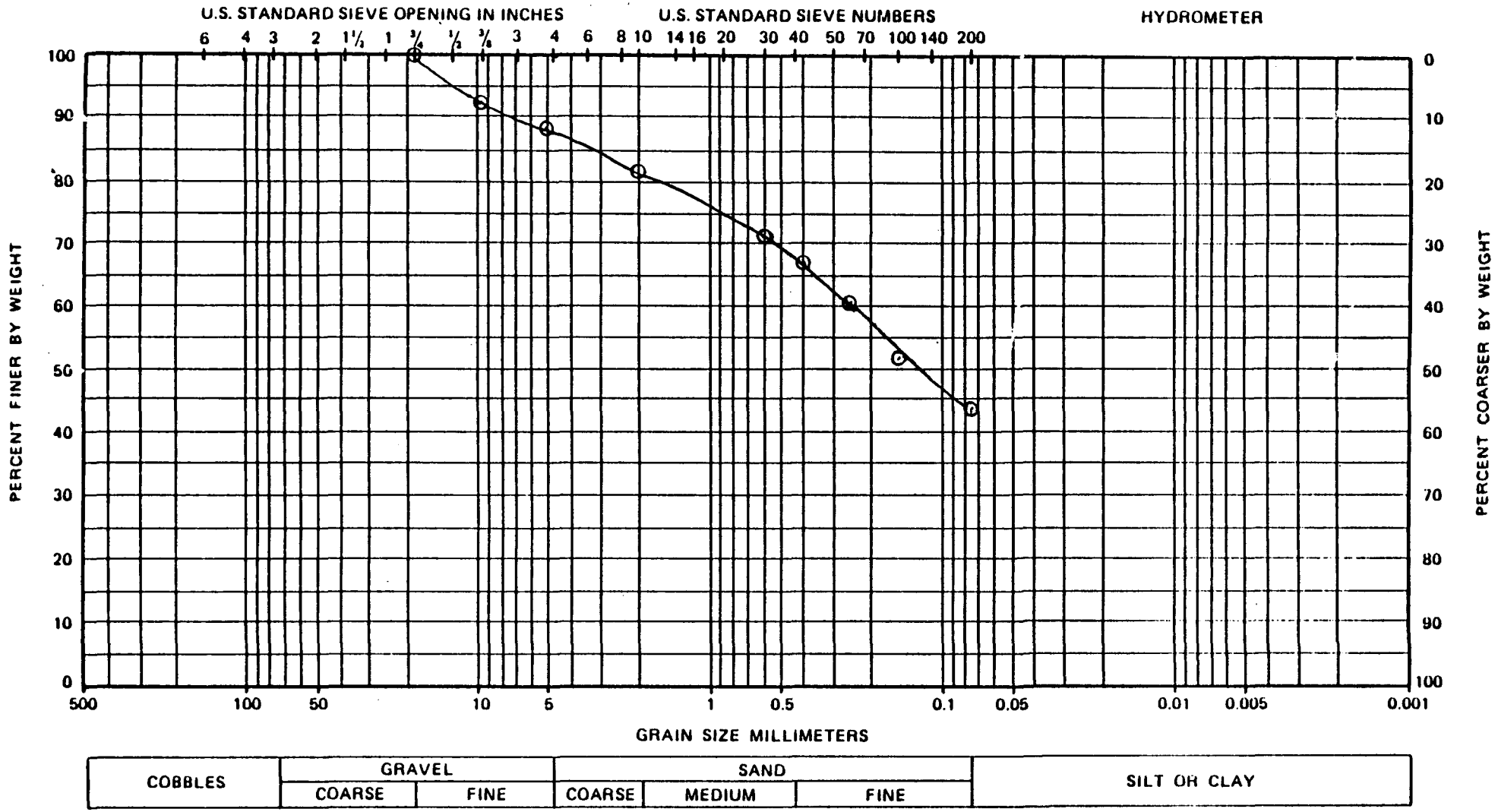
GRADATION CURVES



SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
MW-56	16'-20'	Red SILT and fine-coarse SAND, little fine gravel.	N/A	.25	N/A

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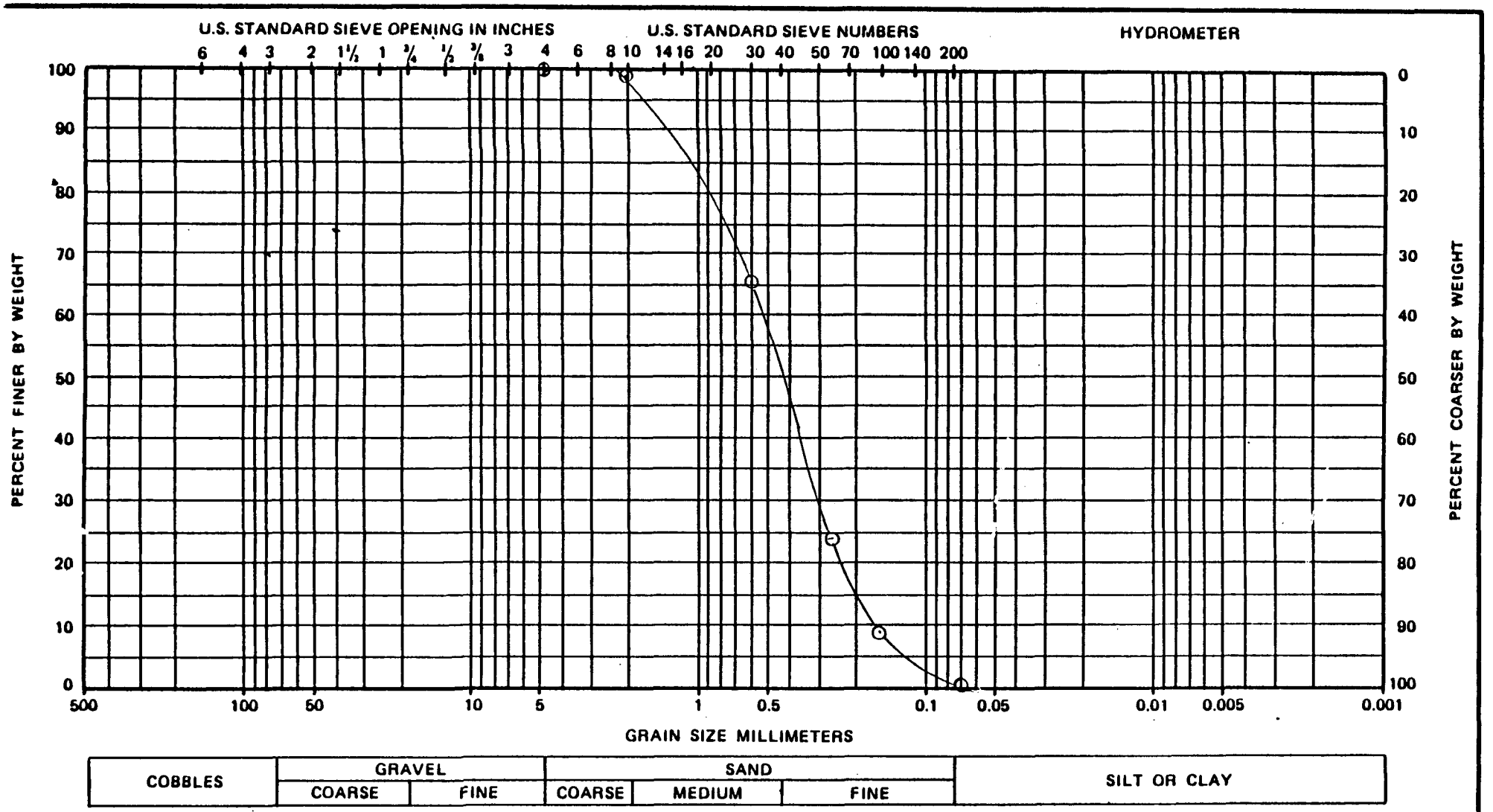
GRADATION CURVES



SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
Masonry Sand	Filter Sand	Brown fine and medium SAND.	0.17	0.53	3.1

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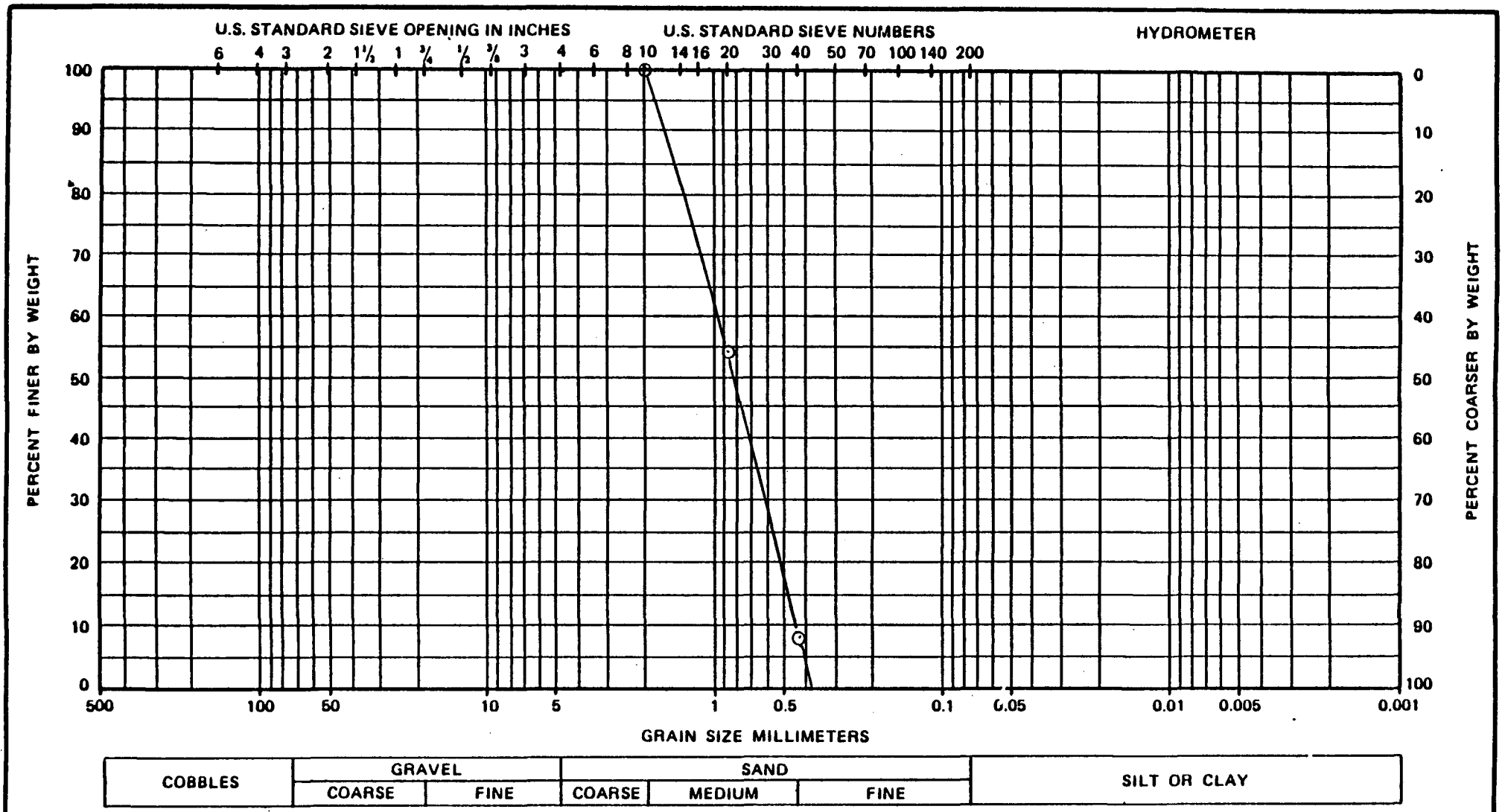
GRADATION CURVES



SAMPLE NO.	ELEV. OR DEPTH	CLASSIFICATION	D_{10}	D_{60}	U.C.
4Q ROC	Filter Sand	White medium SAND.	.45	.97	2.2

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APPENDIX D-5

Permeability Test Results

1. Field Investigation Report (O'Brien & Gere, February 1983).

   a. Table II

2. Comprehensive Site Assessment (CSA), (BB&L, March 1987).

   a. Table B-3

3. Former Building 44 Hydrogeologic Investigation (BB&L, October 1989).

   a. Table 3

TABLE II

IN-SITU PERMEABILITY TEST RESULTS

Well No.	Permeability cm/sec	GPD/FT^2
1	1.02×10^{-2}	216
3	3.59×10^{-3}	76
4	2.66×10^{-4}	5.6
5	3.49×10^{-3}	74
7	3.90×10^{-3}	82
8	4.61×10^{-4}	9.7
9	7.49×10^{-4}	15.8
10	2.74×10^{-4}	5.8

TABLE B-3
IN-SITU PERMEABILITY TEST RESULTS
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

ell o.	Well Diam. (in.)	Well Depth (ft.)	Screen Length (ft.)	Screen Slot (in.)	Formation Tested	K in cm/sec (below casing)	K in cm/sec (through screen)	Notes
W-1	2	76.50	3	0.02	Med.-coarse SAND w/some GRAVEL		$1.0x10^{-2}$R[1]	
W-3	2	31.00	3	0.02	Fine-medium SAND		$3.6x10^{-3}$R	
W-4	2	34.00	3	0.02	Fine SAND and SILT		$2.7x10^{-4}$R	
W-5	2	47.50	3	0.02	Medium SAND		$3.5x10^{-3}$R	
W-7	2	19.50	3	0.02	Fine SAND		$3.9x10^{-3}$R	
W-8	2	25.00	3	0.02	Fine-medium SAND and SILT		$4.6x10^{-4}$R	
W-9	2	61.00	3	0.02	Fine-medium SAND		$7.5x10^{-4}$R	
W-10	2	30.00	3	0.02	Fine-medium SAND		$2.7x10^{-4}$R	
W-19	2	24.00	5	0.01	Brown med-coarse SAND, little gravel		NV[2] R	
W-20	2	17.00	5	0.01	Brown med-coarse SAND, little gravel		NV R	
W-21	2	26.50	5	0.006	Gray fine SAND		$2.5x10^{-3}$R	Trial 1.
W-21	.	.	.	.	. . . . .		$2.7x10^{-3}$R	Trial 2.
W-22	2	15.10	5	0.006	Gray fine-very coarse SAND		NV R	
W-23	2	225.50	20	0.02	Red Arkose BEDROCK			No test.
W-24	2	70.00	5	0.006	Red fn-c SAND		No test.	
W	2	39.00	5	0.006	Gray-brown fn-med SAND		NV R	
W	2	24.00	5	0.01	Gray fine-medium SAND		NV R	
W-28	2	46.00	5	0.006	Gray fine SAND and SILT		$5.9x10^{-3}$F	Trial 1.
MW-28	.	.	.	.	. . . . .		$9.2x10^{-3}$F	Trial 2.
MW-29	2	23.00	5	0.010	Brown fine SAND	$8.4x10^{-3}$F	$5.6x10^{-3}$R	Trial 1.
MW-29	.	.	.	.	. . . . .	$8.4x10^{-3}$F	$7.9x10^{-3}$R	Trial 2.
MW-30	2	85.50	5	0.006	Brown fine SAND		$1.5x10^{-3}$R	Trial 1.
MW-30	.	.	.	.	. . . . .		$1.4x10^{-3}$R	Trial 2.
MW-31	2	24.85	5	0.010	Brown-gray fine-medium SAND	$4.1x10^{-3}$F		Trial 1.
MW-31	.	.	.	.	. . . . .	$4.2x10^{-3}$F		Trial 2.
MW-32	2	61.00	5	0.006	Brown fine SAND		$9.1x10^{-4}$R	
MW-33	2	94.00	5	0.006	Brown fine-medium SAND		NV R	
MW-34	2	75.80	5	0.006	Brown medium SAND		NV R	
MW-35	2	106.25	5	0.010	Brown fine-medium SAND	$1.1x10^{-3}$F	$1.4x10^{-3}$R	
MW-36	2	101.20	5	0.006	Gray SAND	$5.2x10^{-4}$F		Trial 1.
MW-36	.	.	.	.	. . . . .	$1.1x10^{3}$F		Trial 2.
MW-37	2	48.00	5	0.006	Brown fine medium SAND	$6.9x10^{-3}$F	NV R	Trial 1.
MW-37	.	.	.	.	. . . . .	$7.6x10^{-3}$F		Trial 2.
MW-38	2	135.30	5	0.006	Red SILT		$4.9x10^{-6}$R	
MW-39	2	68.00	5	0.006	Brown fine-coarse SAND	$4.3x10^{-3}$F	$4.5x10^{-3}$R	
MW-40	2	47.5	5	0.006	Brown fine SAND		$9.5x10^{-4}$R	
MW-41	2	75.30	5	0.20	Mottled coarse SAND and GRAVEL	$9.7x10^{-3}$F		
MW-42	2	64.00	5	0.020	Gray-green fine-medium SAND		$3.0x10^{-3}$R	

See Notes on Page 2.

TABLE B-3 (Continued)
IN-SITU PERMEABILITY TEST RESULTS
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Well No.	Well Diam. (in.)	Well Depth (ft.)	Screen Length (ft.)	Screen Slot (in.)	Formation Tested	K in cm/sec (below casing)	K in cm/sec (through screen)	Notes
IW-43	2	62.10	5	0.006	Gray-brown fine-medium SAND	4.6×10^{-3} F	NV F	
IW-44	2	28.00	5	0.006	Brown medium-coarse SAND		NV R	
IW-47	2	34.00	5	0.006	Gray fine-medium SAND		2.3×10^{-4} R	
IW-48	2	17.00	5	0.006	Brown medium-coarse SAND		NV R	
IW-49	2	72.20	5	0.006	Gray fine SAND and SILT		1.3×10^{-3} R	
IW-50	2	30.20	5	0.006	Gray fine-medium SAND		1.8×10^{-3} R	
IW-51	2	70.30	5	0.010	Brown m-c SAND		4.5×10^{-3} R	
IW-52	2	34.00	5	0.006	Brown-gray fine-medium SAND		NV R	
IW-53	2	77.90	5	0.006	Gray-green fine-coarse SAND		NV R	
IW-54	2	50.00	5	0.006	Red SILT		NV R	
IW-55	2	35.00	5	0.006	Red SILT			No test.
IW-56	2	20.30	5	0.006	Red SILT			No test.

Notes: [1] F = Falling Head Test, R = Rising Head Test.
[2] NV = Test results not valid, change in head too fast, too slow or test geometry not correct for methodology.

TABLE 3
FORMER BUILDING 44 - HYDROGEOLGIC INVESTIGATION
IN-SITU PERMEABILITY TEST RESULTS
JUNE 15, 1989

MONSANTO CHEMICAL CORPORATION
SPRINGFIELD, MASSACHUSETTS

Well Number	Hvorslev Variable Head	Saturated Unit Screened
MW-64	1.8×10^{-4} cm/sec	13' fine SAND and SILT
MW-65	5.9×10^{-4} cm/sec	3' FILL, 2' fine SAND, 4' TILL
MW-66	1.6×10^{-4} cm/sec	2' FILL, 5' medium SAND, 1' TILL
MW-67	3.3×10^{-4} cm/sec	2' FILL, 4' medium SAND, 4' TILL

APPENDIX D-6

Analytical Data Summary Tables

1. Ground-Water

   a. Comprehensive Site Assessment (CSA), (BB&L, March 1987).
      1. Tables C-5A, C-5B, C-5C, C-5D, C-5E, 6
   b. Hazardous Waste Storage Area Investigation Plan, Letter Report (BB&L, January, 1987).
      1. Table 11
   c. Polysar UST Area Hydrogeologic Investigation Report (BB&L, October 1988).
      1. Table 2
   d. Former Building 44 Hydrogeologic Investigation (BB&L, October 1989).
      1. Table 4
   e. Annual Site-wide Ground-water Monitoring (BB&L, 1985 to 1992).
      1. Table 1
   f. May 12,13 Ground-water Sampling Results, Indian Orchard Plant, Letter Report (BB&L, August 3, 1992).
      1. Table 1

2. Subsurface Soils

   a. Comprehensive Site Assessment (CSA), (BB&L, March 1987).
      1. Table C-4A, C-4B

3. Surface Water

   a. Comprehensive Site Assessment (CSA), (BB&L, March 1987).
      1. Table C-1A, C-1B, C-2A, C-2B, C-2C

4. Sediment

   a. Comprehensive Site Assessment (CSA), (BB&L, March 1987).
      1. Table C-3

APPENDIX C

ANALYTICAL RESULTS OF SUBSURFACE SOIL SAMPLES, STREAM SEDIMENT SAMPLES, SURFACE WATER SAMPLES AND GROUND-WATER SAMPLES FROM THE MONSANTO INDIAN ORCHARD PLANT

TABLE C-5A
GROUND-WATER INDICATOR PARAMETER ANALYSES FOR
AUGUST 1982, APRIL 1983, MAY 1984 AND SEPTEMBER 1985

Monsanto Corporation
Indian Orchard Plant Remedial Investigation

Monitoring Well No.	Sample Date	pH	Temp. (c)	SP (umho/cm)	TDS (mg/l)	TOC (mg/l)	TOX (ug/l)
1	8/82	6.7	NA	450	NA	2	70
	4/83	6.7	8	445	NA	5	44
	5/84	6.3	12	350	270	8	10
	9/85	NA	NA	NA	NA	NA	NA
2	8/82	6.9	NA	165	NA	4	78
	4/83	6.9	8	150	NA	18	11
	5/84	6.1	11	90	120	8	10
	9/85	NA	NA	NA	NA	NA	NA
3	8/82	7.0	NA	330	NA	5	8
	4/83	NA	7.5	120	NA	8	31
	5/84	6.4	14	70	100	5	10
	9/85	7.5	18	60	100	1	LTD
4	8/82	6.2a	NA	434a	NA	2	15
	4/83	6.8	8	270	NA	6	10
	5/84	5.6	12	187	210a	5a	10a
	9/85	6.7	15	180	216	5	28
5	8/82	6.5	NA	580	NA	8	104
	4/83	NA	8	660	NA	9	125
	5/84	6.3	18.5	600	355a	33a	45a
	9/85	6.5	17	490	276	15	100
6	8/82	6.8	NA	250	NA	1	10
	4/83	7.5	11	255	NA	5	12
	5/84	6.7	12	250	240	9	10
	9/85	7.4	20	250	160	4	LTD
7	8/82	6.5	NA	625	NA	6	22
	4/83	NA	7	300	NA	5	25
	5/84	6.2	16	320	250	16	10
	9/85	6.6	17	600	332	12	24
8	8/82	7.0	NA	67	NA	LTD	11
	4/83	6.8	8	55	NA	4	21
	5/84	6.5	11	50	110	4	10
	9/85	7.0	15	50	60	1	LTD

See notes and key on Page 2.

TABLE C-5A (Continued)
GROUND-WATER INDICATOR PARAMETER ANALYSES FOR
AUGUST 1982, APRIL 1983, MAY 1984 AND SEPTEMBER 1985

Monsanto Corporation
Indian Orchard Plant Remedial Investigation

Monitoring Well No.	Sample Date	pH	Temp. (c)	SP (umho/cm)	TDS (mg/l)	TOC (mg/l)	TOX (ug/l)
9	8/82	7.3	NA	130	NA	LTD	2
	4/83	11.5	10	240	NA	5	24
	5/84	8.7	12	100	150	10	10
	9/85	7.3	18	185	168	3	LTD
10	8/82	6.8	NA	154	NA	LTD	11
	4/83	7.5	12	90	NA	7	4
	5/84	6.2	12	80	140	10	10
	9/85	7.0	18	50	172	4	LTD
11	8/82	6.1	NA	108	NA	291	59
	4/83	NA	9	655	NA	21	21
	5/84	5.9	16	750	500	90	10
	9/85	6.2	19	365	140	25	LTD
12	8/82	NA	NA	NA	NA	NA	NA
	4/83	7.4	10	290	NA	6	32
	5/84	6.2	13	270	240	5	14
	9/85	7.1	18	290	248	8	LTD

Notes: [1] Actual sample dates were August 12, 1982, April 25, 1983, May 8 & 9, 1984 and August 28 - September 6, 1985.

Key: SP - Specific Conductivity
TDS - Total dissolved solids
TOC - Total organic carbon
TOX - Total Organic Halogen
C - Degrees Celsius
umhos/cm - Micromhos per centimeter
mg/l - milligrams per liter (ppm)
ug/l - micrograms per liter (ppb)
NA - No analysis result reported
- Less than
LTD - Less than detection limit
a - average of duplicate samples

TABLE C-5B
GROUND-WATER PRIORITY POLLUTANT ANALYSES FOR JUNE 1984

Monsanto Corporation
Indian Orchard Plant Remedial Investigation

Monitoring Well No.	PPB (ug/l)	PPCB (ug/l)	Metals (ug/l)	TOC (mg/l)
4	LTD	LTD	LTD	NA
5	Xylenes 370 Ethylbenzene 38 Tolune 1	LTD	LTD	27
11	LTD	LTD	Nickel 0.02	140

Notes: Actual sampling date was June 4 & 5, 1984. Wells were sampled with a teflon bladder pump.

Key: PPP - Purgable priority pollutants
PPCB - Pesticides and polychlorinated biphenols
Metals - Priority pollutant metals
TOC - Total organic carbon
mg/l - milligrams per liter (ppm)
ug/l - micrograms per liter (ppb)
NA - No analyses reported
LTD - Less than detection limits

TABLE C-5C
GROUND WATER PRIORITY POLLUTANT ANALYSES FOR JUNE 1985
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Well	Sampling Method	Temperature C	pH	Specific Conductance (umhos)	TDS (mg/l)	TOX (ug/l)	TOC (mg/l)	TVO (ug/l)	Acrylonitrile Allyl Alcohol (mg/l)	AE - BN (ug/l)	P/PCB (ug/l)	Metals (ug/l)
3	---	---	---	---	---	---	---	---	---	---	---	---
4	B	19	6.3	170	---	---	---	Methylene-chloride 61	---	LTD	LTD	Zn 0.01*
5	A	17	6.4	480	---	---	---	Methylene-chloride 21 Xylenes 1000	---	Bis(2-ethyl-hexyl) phthalate 48	LTD	Zn 0.10*
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	C	15	6.2	50	---	---	---	Chloro-benzene 2	---	LTD	LTD	Zn 0.02*
9	C	15	6.4	170		---	---	LTD	---	---	---	---
10	A	15	6.6	90	---	---	---	LTD	---	---	---	---
11	A	16	6.2	600	---	---	---	1,2-Dichloro-propane 1	---	LTD	LTD	As 0.02* Hg 0.0008* Zn 0.02*
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---

See Notes and Key on Page 5.

TABLE C-5C (Continued)
GROUND WATER PRIORITY POLLUTANT ANALYSES FOR JUNE 1985
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVETIGATION

Well	Sampling Method	Temperature C	pH	Specific Conductance (umhos)	TDS (mg/l)	TOX (ug/l)	TOC (mg/l)	TVO (ug/l)	Acrylonitrile Allyl Alcohol (mg/l)	AE - BN (ug/l)	P/PCB (ug/l)	Metals (ug/l)
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	C	18	6.3	250	---	---	---	LTD	---	---	---	---
24	C	14	7.6	167	---	---	---	LTD	---	LTD	LTD	LTD
25	C	15	6.8	1200	---	---	---	Benzene 90 Chlorobenzene 1400	---	---	---	---
26	A	14	6.6	800	---	---	---	Benzene 58 Chlorobenzene 520 Xylenes 65	---	LTD	LTD	As 0.01*
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---
30	---	---	---	---	---	---	---	---	---	---	---	---

See Notes and Key on Page 5.

TABLE C-5C (Continued)
GROUND WATER PRIORITY POLLUTANT ANALYSES FOR JUNE 1985
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Well	Sampling Method	Temperature C	pH	Specific Conductance (umhos)	TDS (mg/l)	TOX (ug/l)	TOC (mg/l)	TVO (ug/l)	Acrylonitrile Allyl Alcohol (mg/l)	AE - BN (ug/l)	P/PCB (ug/l)	Metals (ug/l)
31	A	15	6.9	1250	---	---	---	Benzene 2 Chlorobenzene 44 Ethylbenzene 10 Xylenes 410	---	Phenol 0.002	LTD	As 0.002 Hg 0.0007*
32	C	14	Not Measured	120	---	---	---	Tetrachloroethene 4	---	---	---	---
33	---	---	---	---	---	---	---	---	---	---	---	---
34	---	---	---	---	---	---	---	---	---	---	---	---
35	---	---	---	---	---	---	---	---	---	---	---	---
36	C	15	6.7	1190	---	---	---	1,2-Dichloroethane 3 Benzene 16 Chlorobenzene 660 Xylene 2	---	Bis(2-chlorothyl)ether 343 Phenol .002	LTD	LTD
37	---	---	---	---	---	---	---	---	---	---	---	---
38	---	---	---	---	---	---	---	---	---	---	---	---
39	---	---	---	---	---	---	---	---	---	---	---	---
40	A	19	6.8	325	---	---	---	LTD	---	LTD	LTD	Zn 0.04*

See Notes and Key on Page 5.

TABLE C-5C (Continued)
GROUND WATER PRIORITY POLLUTANT ANALYSES FOR JUNE 1985
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Well	Sampling Method	Temperature C	pH	Specific Conductance (umhos)	TDS (mg/l)	TOX (ug/l)	TOC (mg/l)	TVO (ug/l)	Acrylonitrile Allyl Alcohol (mg/l)	AE - BN (ug/l)	P/PCB (ug/l)	Metals (ug/l)
41	C	14	7.0	1050	---	---	---	Benzene 67 Chlorobenzene 4400 Xylenes 12	---	---	---	---
42	---	---	---	---	---	---	---	---	---	---	---	---
43	C	14.5	6.65	1010	---	---	---	Benzene 47 Chlorobenzene 1100	---	LTD	LTD	As 0.01* Cu 0.03* Zn 0.19*
44	A	15	5.8	700	---	---	---	LTD	---	LTD	LTD	As 0.01 Cr 0.02* Cu 0.06* Hg 0.0008 Ni 0.19* Zn 0.39*
45	---	---	---	---	---	---	---	---	---	---	---	---
46	C	15	6.3	1500	---	---	---	LTD	---	LTD	LTD	LTD
47	C	16	7.5	185	---	---	---	LTD	---	LTD	LTD	LTD
48	---	---	---	---	---	---	---	---	---	---	---	---
49	C	15	7.3	345	---	---	---	LTD	---	LTD	LTD	LTD
50	---	---	---	---	---	---	---	---	---	---	---	---
51	---	---	---	---	---	---	---	---	---	---	---	---
52	---	---	---	---	---	---	---	---	---	---	---	---

See Notes and Key on Page 5.

TABLE C-5C (Continued)
GROUND WATER PRIORITY POLLUTANT ANALYSES FOR JUNE 1985
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Well	Sampling Method	Temperature C	pH	Specific Conductance (umhos)	TDS (mg/l)	TOX (ug/l)	TOC (mg/l)	TVO (ug/l)	Acrylonitrile Allyl Alcohol (mg/l)	AE - BN (ug/l)	P/PCB (ug/l)	Metals (ug/l)
53	C	15	7.0	1500	---	---	---	27 Benezene 2500 Chloro-benzene 50 Ethylbenzene	---	NR	NR	NR
54	---	---	---	---	---	---	---	---	---	---	---	---
55	---	---	---	---	---	---	---	---	---	---	---	---
56	A	16	6.8	900	---	---	---	1 Tetrachloro-benzene	---	---	---	---

Notes: Actual sampling dates were June 19 through June 27, 1985.

Key: Sampling Method
A = Bailer
B = Bladder pump
C = Keck pump
D = Keck pump with packer
E = Bladder and bailer

Sampling Results: (Only results greater than detection limit are reported. Parameter followed by concentration is listed.)

--- No analysis performed.
NR No result from laboratory to date.
LTD All results reported as less than detection limit.
NC Parameter detected, no concentration reported.
* Results less than drinking water standards.

TABLE C-5D
GROUND-WATER PRIORITY POLLUTANT ANALYSES FOR JULY 1985
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Well	Sampling Method	Temperature C	pH	Specific Conductance (umhos)	TDS (mg/l)	TOX (ug/l)	TOC (mg/l)	TVO (ug/l)	Acrylonitrile Allyl Alcohol (mg/l)	AE - BN (ug/l)	P/PCB (ug/l)	Metals (ug/l)
3	---	---	---	---	---	---	---	---	---	---	---	---
4	B	21	6.8	240	---	---	---	Methylene Chloride 49	---	LTD	LTD	Hg .0007*
5	B	21.5	6.4	610	---	---	---	Methylene Chloride 14 Xylenes 320	---	LTD	LTD	Hg .0019*
6	---	---	---	---	---	---	---	---	---	---	---	---
7	---	---	---	---	---	---	---	---	---	---	---	---
8	E	20	6.5	55	---	---	---	LTD	---	LTD	LTD	Zn .05* Cu .03*
9	A	18	6.9	190	---	---	---	LTD	---	---	---	---
10	A	20	6.4	90	---	---	---	LTD	---	---	---	---
11	A	18	6.1	600	---	---	---	1, 2-Dichloro-propane 1	---	BN - NC	LTD	As - 0.02* Zn - 0.03*
12	---	---	---	---	---	---	---	---	---	---	---	---
13	---	---	---	---	---	---	---	---	---	---	---	---
14	---	---	---	---	---	---	---	---	---	---	---	---
15	---	---	---	---	---	---	---	---	---	---	---	---
16	---	---	---	---	---	---	---	---	---	---	---	---

See Notes and Key on Page 5.

TABLE C-5D (Continued)
GROUND-WATER PRIORITY POLLUTANT ANALYSES FOR JULY 1985
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Well	Sampling Method	Temperature C	pH	Specific Conductance (umhos)	TDS (mg/l)	TOX (ug/l)	TOC (mg/l)	TVO (ug/l)	Acrylonitrile Allyl Alcohol (mg/l)	AE - BN (ug/l)	P/PCB (ug/l)	Metals (ug/l)
17	---	---	---	---	---	---	---	---	---	---	---	---
18	---	---	---	---	---	---	---	---	---	---	---	---
19	---	---	---	---	---	---	---	---	---	---	---	---
20	---	---	---	---	---	---	---	---	---	---	---	---
21	---	---	---	---	---	---	---	---	---	---	---	---
22	---	---	---	---	---	---	---	---	---	---	---	---
23	E	20	7.1	250	---	---	---	LTD	---	---	---	---
24	E	23.5	7.1	190	---	---	---	LTD	---	LTD	LTD	LTD
25	E	20	6.9	1380	---	---	---	Benzene 110 Chloro-benzene 1200 Xylenes 46	---	---	---	---
26	E	19	6.55	850	---	---	---	Benzene 52 Chloro-benzene 490 Xylenes 57	---	Phenol 0.007	LTD	As - 0.02* Zn - 0.02*
27	---	---	---	---	---	---	---	---	---	---	---	---
28	---	---	---	---	---	---	---	---	---	---	---	---
29	---	---	---	---	---	---	---	---	---	---	---	---

See Notes and Key on Page 5.

TABLE C-5D (Continued)
GROUND-WATER PRIORITY POLLUTANT ANALYSES FOR JULY 1985
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Well	Sampling Method	Temperature C	pH	Specific Conductance (umhos)	TDS (mg/l)	TOX (ug/l)	TOC (mg/l)	TVO (ug/l)	Acrylonitrile Allyl Alcohol (mg/l)	AE - BN (ug/l)	P/PCB P/PCB (ug/l)	Metals (ug/l)
30	---	---	---	---	---	---	---	---	---	---	---	---
31	E	6.7	21	1450	---	---	---	LTD	---	BN - NC Phenol 0.015	LTD	As - 0.02*
32	E	18	6.8	110	---	---	---	Tetrachloro-ethene 2	---	---	---	---
33	---	---	---	---	---	---	---	---	---	---	---	---
34	---	---	---	---	---	---	---	---	---	---	---	---
35	---	---	---	---	---	---	---	---	---	---	---	---
36	E	18	7.25	1300	---	---	---	1, 2-Dichloro-propane 2 Benzene 14 Chloro-benzene 660	---	LTD	LTD	LTD
37	---	---	---	---	---	---	---	---	---	---	---	---
38	---	---	---	---	---	---	---	---	---	---	---	---
39	E	19	6.6	300	---	---	---	LTD	---	---	---	---
40	A	15	6.0	270	---	---	---	LTD	---	LTD	LTD	Cn 0.5
41	E	17	6.9	1450	---	---	---	Benzene 47 Chloro-benzene 3000	---	---	---	---

See Notes and Key on Page 5.

TABLE C-5D (Continued)
GROUND-WATER PRIORITY POLLUTANT ANALYSES FOR JULY 1985
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Well	Sampling Method	Temperature C	pH	Specific Conductance (umhos)	TDS (mg/l)	TOX (ug/l)	TOC (mg/l)	TVO (ug/l)	Acrylonitrile Allyl Alcohol (mg/l)	AE - BN (ug/l)	P/PCB (ug/l)	Metals (ug/l)
42	---	---	---	---	---	---	---	---	---	---	---	---
43	E	23.5	6.5	1300	---	---	---	Benzene 43 Chloro-benzene 1300	---	LTD	LTD	---
44	E	23	5.35	700	---	---	---	LTD	---	LTD	LTD	As .01* Cr .02* Cu .06* Hg .0008* Ni .19* Zn .39*
45	---	---	---	---	---	---	---	---	---	---	---	---
46	E	21.5	6.1	1800	---	---	---	LTD	---	BN - NC	LTD	As .01* Cu .02* Zn .02*
47	E	22	7.3	220	---	---	---	LTD	---	LTD	LTD	LTD
48	---	---	---	---	---	---	---	---	---	---	---	---
49	E	23	7.2	390	---	---	---	LTD	---	LTD	LTD	LTD
50	---	---	---	---	---	---	---	---	---	---	---	---
51	---	---	---	---	---	---	---	---	---		---	---
52	---	---	---	---	---	---	---	---	---	---	---	---

See Notes and Key on Page 5.

TABLE C-5D (Continued)
GROUND-WATER PRIORITY POLLUTANT ANALYSES FOR JULY 1985
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Well	Sampling Method	Temperature C	pH	Specific Conductance (umhos)	TDS (mg/l)	TOX (ug/l)	TOC (mg/l)	TVO (ug/l)	Acrylonitrile Allyl Alcohol (mg/l)	AE - BN (ug/l)	P/PCB (ug/l)	Metals (ug/l)
53	E	23	7.1	1750	---	---	---	Benzene 19 Chloro-benzene 1700 Ethylbenzene 33	---	---	---	---
54	---	---	---	---	---	---	---	---	---	---	---	---
55	---	---	---	---	---	---	---	---	---	---	---	---
56	A	21	6.6	1050	---	---	---	LTD	---	---	---	---

Notes: Actual sampling dates were July 15 through July 22, 1985.

Key: Sampling Method
A = Bailer
B = Bladder pump
C = Keck pump
D = Keck pump with packer
E = Bladder and bailer

Sampling Results: (Only results greater than detection limit are reported. Parameter followed by concentration is listed.)

--- No analysis performed.
NR No result from laboratory to date.
LTD All results reported as less than detection limit.
NC Parameter detected, no concentration reported.
* Results less than drinking water standards.

TABLE C-5E
GROUND-WATER INDICATOR AND SITE SPECIFIC COMPOUND ANALYSES FOR AUGUST/SEPTEMBER 1985
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Well	Sampling Method	Temperature C	pH	Specific Conductance (umhos)	TDS (mg/l)	TOX (ug/l)	TOC (mg/l)	TVO (ug/l)	Acrylonitrile Allyl Alcohol (mg/l)	AE - BN (ug/l)	P/PCB (ug/l)	Metals (ug/l)
3	D	18	7.5	60	100	LTD	1	Chlorobenzene 2	LTD	---	---	---
4	D	15	6.7	180	216	29	5	---	LTD	---	---	---
5	D	17	6.5	490	276	100	15	---	LTD	---	---	---
6	D	20	7.4	250	160	LTD	4	LTD	LTD	---	---	---
7	D	17	6.6	600	332	24	12	Chlorobenzene 3 Xylene 2	LTD	---	---	---
8	D	15	7.0	50	60	LTD	1	---	NR	---	---	---
9	C	18	7.3	185	168	LTD	3	LTD	LTD	---	---	---
10	C/A	18	7.0	50	172	LTD	4	---	LTD	---	---	---
11	A	19	6.2	365	140	LTD	25	---	LTD	---	---	---
12	C	18	7.1	290	248	LTD	8	LTD	LTD	---	---	---
13	A	18	6.9	400	320	12	13	LTD	LTD	---	---	---
14	C	17	5.5	275	212	LTD	1320	Chloro-benzene 5 Toluene 4 Xylene 1	LTD	---	---	---
15	C	23	4.6	235	300	14	430	Toluene 1 Chloro-benzene 13	LTD	---	---	---
16	WELL DAMAGED											

See Notes and Key on Page 5.

TABLE C-5E (Continued)
GROUND-WATER INDICATOR AND SITE SPECIFIC COMPOUND ANALYSES FOR AUGUST/SEPTEMBER 1985
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Well	Sampling Method	Temperature C	pH	Specific Conductance (umhos)	TDS (mg/l)	TOX (ug/l)	TOC (mg/l)	TVO (ug/l)	Acrylonitrile Allyl Alcohol (mg/l)	AE - BN (ug/l)	P/PCB (ug/l)	Metals (ug/l)
17	C	18	6.3	1,000	716	LTD	390	Chlorobenzene 17 Toluene 1	LTD	---	---	---
18	D	20	5.9	900	2048	LTD	1860	Toluene 1	Alcohol 1.5	---	---	---
19	D	14	6.75	108	144	LTD	3	1,1,1-Trichloro-ethane 3	LTD	---	---	---
20	C	12.5	6.35	263	268	LTD	2	Toluene 1	LTD	---	---	---
21	D	15	7.1	125	200	LTD	4	Toluene 1	LTD	---	---	---
22	C	14	6.5	130	188	LTD	3	LTD	LTD	---	---	---
23	D	15	7.2	180	244	LTD	1	LTD	LTD	---	---	---
24	D	17	6.9	160	84	LTD	5	---	LTD	---	---	---
25	D	18	6.7	1100	712	1200	40	---	LTD	---	---	---
26	D	19	6.4	850	548	710	20	---	LTD	---	---	---
28	D	17	6.9	1100	532	LTD	38	Benzene 34 Chloro-benzene 700 Xylene 14	LTD	---	---	---
29	D	18	6.5	135	104	490	5	LTD	LTD	---	---	---
30	D	16	6.5	340	340	LTD	3	Tetrachloro-ethene 1	LTD	---	---	---
31	A	15.5	6.7	1100	508	70	22	---	LTD	---	---	---

See Notes and Key on Page 5.

TABLE C-5E (Continued)
GROUND-WATER INDICATOR AND SITE SPECIFIC COMPOUND ANALYSES FOR AUGUST/SEPTEMBER 1985
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Well	Sampling Method	Temperature C	pH	Specific Conductance (umhos)	TDS (mg/l)	TOX (ug/l)	TOC (mg/l)	TVO (ug/l)	Acrylonitrile Allyl Alcohol (mg/l)	AE - BN (ug/l)	P/PCB (ug/l)	Metals (ug/l)
32	D	15	6.7	110	196	LTD	2	---	LTD	---	---	---
33	D	16	7.0	1300	640	420	30	Benzene 13 Chloro-benzene 1100	LTD	---	---	---
34	D	17	6.0	300	208	12	6	LTD	LTD	---	---	---
35	D	17	6.5	190	176	LTD	2	1,1,1-Trich-loroethane 2 Toluene 1	LTD	---	---	---
36	D	15	7.0	390	616	170	16	---	LTD	---	---	---
37	D	17	5.5	80	96	240	9	Tetrachloro-~~ethane~~ ethene 310 1,2-Dichloro-propane 9	LTD	---	---	---
38	D	20	6.8	120	188	25	3	LTD	LTD	---	---	---
39	D	12	6.7	240	212	LTD	2	LTD	NR	---	---	---
40	A	16	6.7	290	232	LTD	3	---	LTD	---	---	---
41	D	17	7.2	1350	764	1300	60	---	LTD	---	---	---
42	D	17	6.3	600	504	19	13	LTD	LTD	---	---	---
43	D	17	6.7	1100	836	1100	50	---	LTD	---	---	---
44	D	17	6.5	290	300	LTD	8	---	LTD	---	---	---

See Notes and Key on Page 5.

(REVISED 3/16/94)

TABLE C-5E (Continued)
GROUND-WATER INDICATOR AND SITE SPECIFIC COMPOUND ANALYSES FOR AUGUST/SEPTEMBER 1985
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Well	Sampling Method	Temperature C	pH	Specific Conductance (umhos)	TDS (mg/l)	TOX (ug/l)	TOC (mg/l)	TVO (ug/l)	Acrylonitrile (Allyl Alcohol) (mg/l)	AE - BN (ug/l)	P/PCB (ug/l)	Metals (ug/l)
45	D	18	7.0	600	400	LTD	13	LTD	LTD	---	---	---
46	C	16	6.4	1600	1192	LTD	8	---	LTD	---	---	---
47	D	15	6.8	190	212	LTD	3	---	LTD	---	---	---
48	C	18	6.8	265	204	34	1	Xylene 2	LTD	---	---	---
49	D	17	7.2	315	296	24	7	---	LTD	---	---	---
50	D	16	6.5	805	592	28	20	t-1,2-Dichloro-ethene 3 1,2 Dichloro-ethane 2 1,1,1-Trichloro-ethane 8 Benzene 4 Toluene 1 Chlorobenzene 1	LTD	---	---	---
51	D	13.5	6.2	350	584	32	15	LTD	LTD	---	---	---
52	D	13	6.4	330	288	11	6	LTD	LTD	---	---	---
53	D	16	7.1	1400	808	730	40	Benzene 25 Chloro-benzene 2500	LTD	---	---	---
54	C	22	6.7	360	312	19	7	Chloroform 8 Tetrachloro-ethene 3	LTD	---	---	---

See Notes and Key on Page 5.

TABLE C-5E (Continued)
GROUND-WATER INDICATOR AND SITE SPECIFIC COMPOUND ANALYSES FOR AUGUST/SEPTEMBER 1985
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Well	Sampling Method	Temperature C	pH	Specific Conductance (umhos)	TDS (mg/l)	TOX (ug/l)	TOC (mg/l)	TVO (ug/l)	Acrylonitrile (Allyl Alcohol) (mg/l)	AE - BN (ug/l)	P/PCB (ug/l)	Metals (ug/l)
55	C	21	7.0	600	364	16	27	Chloroform 1 Toluene 25	LTD	---	---	---
56	A	25	6.4	1000	104	LTD	9	---	LTD	---	---	---

Notes: Actual sampling dates were August 28 through September 6, 1985.

Key: Sampling Method

A = Bailer
B = Bladder pump
C = Keck pump
D = Keck pump with packer
E = Bladder and bailer

Sampling Results: (Only results greater than detection limit are reported. Parameter followed by concentration is listed.)

--- No analysis performed.
NR No result from laboratory to date.
LTD All results reported as less than detection limit.
NC Parameter detected, no concentration reported.
* Results less than drinking water standards.

TABLE 6
GROUND WATER ANALYTICAL RESULTS AT WASTE DISPOSAL AREAS
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Waste Disposal Area	Monitoring Well No.	Parameter	Analytical Results in ppb June	July	August
Solid Waste Disposal Area No. 1	31 S	Benzene	2	ltd	---
		Chlorbenzene	44	ltd	---
		Ethylbenzene	10	ltd	---
		Xylenes	410	ltd	---
		Phenol	0.002	0.015	---
		Arsenic	0.02	0.02	---
		Mercury	0.0007	ltd	---
	30 D	Tetrachloroethene	---	---	1
	32 S	Tetrachloroethane	2	2	---
	35 D	1,1,1, Trichloroethane	---	---	2
		Toluene	---	---	1
Solid Waste Disposal Area No. 2	7 S	Chlorobenzene	---	---	3
		Xylene	---	---	2
	6 D	VOA's	---	---	ltd
	48 S	Xylene	---	---	2
	47 D	All compounds	ltd	ltd	---
Liquid Waste Disposal Area No. 1	40 S	Zinc	0.04	ltd	---
		Cyanide	ltd	0.5	---
	41 D	Benzene	67	47	---
		Chlorobenzene	4400	3000	---
		Xylenes	12	ltd	---
	3 S	Chlorobenzene	---	---	2
	33 D	Benzene	---	---	13
		Chlorobenzene	---	---	1100
	12 S	VOA's	---	---	ltd
	53 D	Benzene	27	19	25
		Chlorobenzene	2500	1700	2500
		Ethylbenzene	50	ltd	33

TABLE 6 (Continued)
GROUND WATER ANALYTICAL RESULTS AT WASTE DISPOSAL AREAS
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Waste Disposal Area	Monitoring Well No.	Parameter	Analytical Results in ppb June	July	August
	37 S	Tetrachloroethane	310	---	---
		1,2-Dichloropropane	9	---	---
	36 D	1,2-Dichloroethane	3	ltd	---
		1,2-Dichloropropane	ltd	2	---
		Benzene	16	14	---
		Chlorobenzene	660	660	---
		Xylene	2	ltd	---
	38 T	VOA's	---	---	ltd
Liquid Waste Disposal Area No. 2	5 S	Methylene-Chloride	21	14	---
		Xylenes	1000	320	---
		Bis(2-ehtylhexyl)	48	ltd	---
		Zinc	0.001	ltd	---
		Mercury	ltd	0.0019	---
	34 D	All compounds	---		ltd
Fiberloid Landfill	55 S	Chloroform	---	---	1
		Toluene	---	---	25
	54 D	Chloroform	---	---	8
	56 S	Tetrachlorobenzene	1	ltd	---
Burning Cage A	See Solid Waste Disposal Area No. 1.				
Burning Cage B	See Building 99 Leach Field.				
Burning Cage C	50 S	t-1,2 Dichloro-ethane	---	---	1
		1,2-Dichlooethane	---	---	2
		1,1,1-Trichloro-ethane	---	---	8
		Benzene	---	---	4
		Toluene	---	---	1
		Chlorobenzene	---	---	1
	49 D	All compounds	ltd	ltd	---

TABLE 6 (Continued)
GROUND WATER ANALYTICAL RESULTS AT WASTE DISPOSAL AREAS
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Waste Disposal Area	Monitoring Well No.	Parameter	Analytical Results in ppb June	July	August
Buring Pits D	44 S	Arsenic	---	0.01	---
		Chromium	---	0.02	---
		Copper	---	0.06	---
		Mercury	---	0.0008	---
		Nickel	---	0.19	---
		Zinc	---	0.39	---
Building 99 Leach Field	26 S	Benzene	58	52	---
		Chlorobenzene	520	490	---
		Xylenes	65	57	---
		Phenol	ltd	0.007	---
		Arsenic	0.01	0.02	---
		Zinc	ltd	0.02	---
	25 D	Benzene	90	110	---
		Chlorobenzene	1400	1200	---
		Xylenes	ltd	46	---
	24 T	All compounds	ltd	ltd	---

NOTES: Compounds are shown only when found at greater than detection levels.

KEY: June = Samples collected June 19 to June 27, 1985.
July = Samples collected July 15 to July 22, 1985.
August = Samples collected August 28 to September 6, 1985.

S = Shallow well of cluster.
D = Deep well of cluster.
T = Till well of cluster.

--- = No analysis performed.
ltd = Less than detection.

TABLE II

GROUND-WATER PRIORITY POLLUTANT ANALYTICAL RESULTS
MONSANTO CORPORATION
HAZARDOUS WASTE DISPOSAL AREA
INDIAN ORCHARD PLANT

Well	Temperature Celsius	pH	Specific Conductance (mg/l)[5]	PPP[1] (ug/l)[4]	AE/BN[2] (ug/l)[4]	P/PCB[3] (ug/l)[4]	Metals (mg/l)[5]
MW-58	19°	7.0	420.	Vinyl chloride 20.	Acenaphthene 0.5J[6] Fluorene 0.5J Phenanthene 3.0J Di-n-butylphthalate 2.4J Butylbenzlphthalate 0.6J Bis(2-ethylhexyl)phthalate 3.7J Di-n-octylphthalate 0.4J	---	---
MW-59	17°	4.5	170.	Chloroform 2.J	Phenanthrene 1.J Di-n-butylphthalate 2.J Bis(2-ethylhexyl)phthalate 3.5J Di-n-octylphthalate 1.1J	---	Chromium 0.02
MW-60	20°	7.5	260.	---	Di-n-butylphthalate 2.8J Bis(2-ethylhexyl)phthalate 3.3J Di-n-octylphthalate 5.9J	---	---

Notes:

1 Purgeable Priority Pollutants

2 Acid Extract/Base Neutral

3 Pesticide/PCB Priority Pollutants

4 Micrograms per liter (ppb)

5 Milligrams per liter (ppm)

6 Analysis indicated presence of compound, but was less than accurate detection limits.

TABLE 2

MONSANTO CHEMICAL COMPANY
INDIAN ORCHARD PLANT
SPRINGFIELD, MASSACHUSETTS

SUMMARY OF NOVACORP UST AREA
GROUND-WATER ANALYTICAL RESULTS[1]

		Analytical Results in ug/L				
Monitoring Well No.	Parameter	July 1988	March 1989	Dec. 1990	Oct. 1991	May 1992
MW-61[2]	ethylbenzene	0[4]	0	---[5]	0	0
	styrene	0	0	---	0	0
	toluene	0	0	---	0	0
	chloroform	0	0	---	0	0
	methylene chloride	0	0	---	0	0
MW-62[2]	ethylbenzene	0	0	---	49,000	50,000 (38,000)[7]
	styrene	0	0	---	26,000	95,000 (76,000)
	toluene	0	0	---	0	0 (0)
	chloroform	0	0	---	0	0 (0)
	methylene chloride	0	0	---	0	2,700 B[6] (0)
MW-63[3]	ethylbenzene	360	2,700	0	1,500	840
	styrene	4	290	0	0	0
	toluene	18	62	0	0	0
	chloroform	6	36	0	0	0
	methylene chloride	0	0	0	0	0

Notes:

(1) All ground-water samples analyzed for volatile organic compounds using EPA method 601/602.
(2) Well located on NovaCorp property.
(3) Well located on Monsanto Chemical Property.
(4) 0 = Not detected above detection limits.
(5) --- = No analysis performed.
(6) B = Parameter detected in blank.
(7) (39,000) - Blind duplicate analytical results from sample identified as MW-75.

TABLE 4
FORMER BUILDING 44 - HYDROGEOLOGIC INVESTIGATION
GROUND-WATER ANALYTICAL RESULTS
VOLATILE ORGANICS - JUNE 29, 1989 / ACID EXTRACTABLES - AUGUST 1, 1989

MONSANTO CHEMICAL COMPANY
SPRINGFIELD, MASSACHUSETTS

	Volatile Organics Compounds June 29, 1989					Phenolic Compounds August 1, 1989		Field Parameters June 20, 1989 [August 1, 1989]		
Well Sample	1,2 Dichloroethane (ug/l)	Total Xylenes (ug/l)	Toluene (ug/l)	Chlorobenzene (ug/l)	Ethylbenzene (ug/l)	Phenol (ug/l)	2,4-Dimethylphenol (ug/l)	pH	Conductivity (uhmos)	Temperature (°celsius)
MW-64	LT-3	LT-3	LT-3	LT-3	LT-3	LT-5	LT-5	5.6 [6.4]	2,100 [1,100]	18 [16]
MW-65	4	38	6	13	65	200	17	6.5 [7.8]	1,350 [N]	24.5 [23]
MW-66	LT-3	LT-3	LT-3	LT-3	LT-3	90	LT-5	8.9 [9.4]	900 [N]	20.5 [N]
MW-67	LT-500	LT-500	LT-500	6,300	LT-500	2,100	LT-50	8.6 [8.5]	950 [1,000]	21 [20]
Equipment Blank	LT-3	LT-3	LT-3	LT-3	LT-3	LT-5	LT-5	N	N	N
Trip Blank	LT-3	LT-3	LT-3	LT-3	LT-3	N	N	N	N	N
Duplicate MW-64(MW-X0)	N	N	N	N	N	LT-5	LT-5	N	N	N
Duplicate MW-65(MW-X01)	N	N	N	N	N	180	16	N	N	N

Notes:

LT - Less Than
N - Not Obtained
ug/l - miligrams per liter
Samples collected on June 29, 1989 were analyzed for volatile organics.
Samples collected on August 1, 1989 were analyzed for acid extractables.

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TABLE 1

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GROUND-WATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS
MONSANTO CHEMICAL COMPANY
INDIAN ORCHARD PLANT

			Analytical Results In ug/L								
Area	Monitoring Well No.	Parameter	June 1985	July 1985	Aug. 1985	Aug. 1987	Feb. 1988	Mar. 1989	Dec. 1990	Oct. 1991	May 1992
Solid Waste Disposal Area No. 1	31 S	Benzene	2	o	---	8	6	5	6 (8)	o	---
		Chlorobenzene	44	o	---	86	130	100	65 (77)	180	---
		Ethylbenzene	10	o	---	170	o	o	o (o)	o	---
		Vinyl Chloride	o	o	---	o	o	o	2 (2)	o	---
		Xylenes	410	o	---	3	220	400	120 (140)	o	---
	30 D	Tetrachloroethene	---	---	1	o	o	o	---	---	---
	32 S	Tetrachloroethene	4	2	---	2	---	2	o	o	---
	35 D	1,1,1-Trichloroethane	---	---	2	1	---	2	1	1	---
		Toluene	---	---	1	o	---	o	o	o	---
	23 R	2-Butanone	o	o	o	o	---	o	o	o	[48]
		Tetrahydrofuran	o	o	o	o	---	o	o	o	[160]
		Toluene	o	o	o	o	---	1	3	2 (2)	o
	52 S	Chlorobenzene	---	---	---	o	---	3	o	7	---
		Methylene Chloride	---	---	o	3	---	o	o	o	---
Solid Waste Disposal Area No. 2	7 S	Chlorobenzene	---	---	3	o	---	o	3	3	---
		Xylenes	---	---	2	o	---	o	o	o	---
	48 S	Chlorobenzene	---	---	o	o	---	o	1	o	---
		Xylenes	---	---	2	o	---	3	o	o	---
	6 D	Methylene Chloride	---	---	o	o	---	o	1	o	---
		Toluene	---	---	o	o	---	1 (o)	o	o	---

See Notes Page 7

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TABLE 1
(Cont'd)

GROUND-WATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS
MONSANTO CHEMICAL COMPANY
INDIAN ORCHARD PLANT

			Analytical Results In ug/L								
Area	Monitoring Well No.	Parameter	June 1985	July 1985	Aug. 1985	Aug. 1987	Feb. 1988	Mar. 1989	Dec. 1990	Oct. 1991	May 1992
Liquid Waste Disposal Area No. 1	41 D	Benzene	67	47	---	26	43	35	o	11 (10)	o
		Chlorobenzene	4400	3000	---	2200	3800	3200	1700	2300 (2000)	1300
		Ethylbenzene	o	o	---	o	o	o	o	o	o
		Xylenes	12	o	---	o	o	o	o	o	o
	3 S	Benzene	---	---	o	o	---	o	o	3	---
		Chlorobenzene	---	---	2	o	---	6	o	97	---
	33 D	Benzene	---	---	13	2 (3)	---	---	4	---	---
		Chlorobenzene	---	---	1100	140 (310)	---	---	330	---	---
		Chloroform	---	---	o	2 (1)	---	---	o	---	---
	12 S	Chlorobenzene	---	---	o	11	---	o	40	45	---
	53 D	Benzene	27	19	25	30	18	14	o (o)	o	---
		Chlorobenzene	2500	1700	2500	3000	4400	4500	2700 (2300)	2600	---
	38 T	Chlorobenzene	---	---	o	o	o	o	4	o	---
	37 S	1,2-Dichloropropane	---	---	9	16 (28)	---	2	2	1	---
		Tetrachloroethene	---	---	310	230 (260)	---	270	100	120	---
	36 D	Benzene	16	14	---	7 (6)	6	5	3	9	---
		Chlorobenzene	660	660	---	630 (550)	590	520	430	690	---
		1,2-Dichloroethane	3	o	---	o	o	o	o	o	---
		1,2-Dichloropropane	o	2	---	o	o	o	o	o	---
		Xylene	2	o	---	2(2)	o	o	o	o	---
	8 S	Chlorobenzene	2	o	---	3	---	1	o	o	---

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TABLE 1
(Cont'd)

GROUND-WATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS
MONSANTO CHEMICAL COMPANY
INDIAN ORCHARD PLANT

			Analytical Results In ug/L								
Area	Monitoring Well No.	Parameter	June 1985	July 1985	Aug. 1985	Aug. 1987	Feb. 1988	Mar. 1989	Dec. 1990	Oct. 1991	May 1992
Liquid Waste Area	5 S	Benzene	o	o	---	o	o	o	1	o	---
Area No. 2		Chlorobenzene	o	o	---	o	o	o	1	8	---
		Methylene Chloride	21	14	---	o	o	o	o	o	9
		Xylenes	1000	320	---	620	660	230	o	o	---
Fiberloid Landfill	55 S	Chloroform	---	---	1	o	---	o	o	o	---
		Dichloroethane	---	---	o	2	---	o	2	1	---
		Toluene	---	---	25	o	---	o	o	o	---
		1,1,1-Trichloroethane	---	---	o	o	---	o	2	o	---
	54 D	Chloroform	---	---	8	o	---	o	o	o	---
		1,1-Dichloroethane	---	---	o	o	---	o	o	1	---
	56 S	Benzene	o	o	---	o	---	1	o	o	---
		Chlorobenzene	o	o	---	4	---	o	o	o	---
		Tetrachloroethene	1	o	---	o	---	o	o	o	---
Burning Cage A	See Solid Waste Disposal Area No. 2.										
Burning Cage B	See Building 99 Leach Field.										

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TABLE 1
(Cont'd)

GROUND-WATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS
MONSANTO CHEMICAL COMPANY
INDIAN ORCHARD PLANT

			Analytical Results In ug/L								
Area	Monitoring Well No.	Parameter	June 1985	July 1985	Aug. 1985	Aug. 1987	Feb. 1988	Mar. 1989	Dec. 1990	Oct. 1991	May 1992
Burning Cage C	50 S	Benzene	---	---	4	o	13	10	13	6	---
		Chlorobenzene	---	---	1	o	o	o	o	o	---
		1,2-Dichloroethane	---	---	2	2	1	o	o	o	---
		t-1,2 Dichloroethene	---	---	3	3	3	2	o	o	---
		Toluene	---	---	1	o	o	o	o	o	---
		1,1,1-Trichloroethane	---	---	8	o	o	o	o	o	---
		Trichloroethene	---	---	o	3	5	3	2	o	---
	49 D	Chlorobenzene	---	---	o	o	o	o	1	o	---
Burning Pits D	44 S	Chlorobenzene	o	o	---	2	o	o	o	o	---
		1,1-Dichloroethane	o	o	---	o	o	o	o	1	---
		1,1,1-Trichloroethane	o	o	---	o	o	o	o	6	---
	43 D	Benzene	47	43	---	12	---	o	16 (16)	21 (21)	---
		Chlorobenzene	1100	1300	---	720	---	500 (530)	1100 (1100)	1600 (1700)	---
Building 99 Leach Field	26 S	Benzene	58	52	---	o(2)	3	3	o	o	o
		Chlorobenzene	520	490	---	o(330)	360	450	380	510	830
		Xylenes	65	57	---	4(10)	4	5	o	o	o
	25 D	Benzene	90	110	---	40	98	3	o	o	o
		Chlorobenzene	1400	1200	---	1700	2900	140	2000	2600 (2400)	1400
		Xylenes	o	46	---	31	95	o	o	o	o

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TABLE 1
(Cont'd)

GROUND-WATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS
MONSANTO CHEMICAL COMPANY
INDIAN ORCHARD PLANT

			Analytical Results In ug/L								
Area	Monitoring Well No.	Parameter	June 1985	July 1985	Aug. 1985	Aug. 1987	Feb. 1988	Mar. 1989	Dec. 1990	Oct. 1991	May 1992
Building 99 Leach Field	28 D	Benzene	---	---	34	°(3)	---	2	14 (13)	10 (9@)	---
		Chlorobenzene	---	---	700	17(150)	---	87	720 (660)	600 (550)	---
		Xylene	---	---	14	2(3)	---	°	° (°)	°	---
	19 D	Carbon Tetrachloride	---	---	°	°	°	°	1	°	---
		Methylene Chloride	---	---	°	5	°	°	°	°	---
		1,1,1-Trichloroethane	---	---	3	3	°	2	2	3	---
Drum Storage Area	58 S	Vinyl Chloride	---	---	---	16(17)	12	11	10	5	---
	59 S	Methylene Chloride	---	---	---	2	°	°	°	°	---
Formaldehyde Area	14 S	Chlorobenzene	---	---	5	3	---	°	°	°	---
		Xylene	---	---	1	1	---	°	°	°	---
		Toluene	---	---	4	°	---	2	1	°	---
	15 S	Chloroform	---	---	°	1	---	°	°	°	---
		Chlorobenzene	---	---	13	3	---	°	°	°	---
		Toluene	---	---	1	°	---	7	2	°	---
	18 D	Benzene	---	---	°	210	---	°	°	°	---
		Chlorobenzene	---	---	°	31	---	°	°	°	---
		t-1,2 Dichloroethene	---	---	°	°	---	1	°	°	---
		1,2 Dichloropropane	---	---	°	°	---	4	°	°	---
		Ethylbenzene	---	---	°	230	---	°	°	°	---
		Toluene	---	---	1	°	---	°	°	°	---
		Trichloroethene	---	---	°	°	---	3	°	°	---

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TABLE 1
(Cont'd)

GROUND-WATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS
MONSANTO CHEMICAL COMPANY
INDIAN ORCHARD PLANT

			Analytical Results In ug/L								
Area	Monitoring Well No.	Parameter	June 1985	July 1985	Aug. 1985	Aug. 1987	Feb. 1988	Mar. 1989	Dec. 1990	Oct. 1991	May 1992
Formaldehyde Area	17 D	Chlorobenzene	---	---	17	o	---	o	o	o	---
		1,2 Dichloropropane	---	---	o	4	---	o	o	o	---
		Toluene	---	---	1	3	---	o	o	o	---
		Xylene	---	---	o	2	---	o	o	o	---
	16 S	Methylene Chloride	---	---	---	1	---	---	o (o)	o	---
		Chloroform	---	---	---	12	---	---	o (o)	o	---
Novacorp (formerly Polysar UST Area)	63 S						(July 1988)*	(Mar. 1989)*			
		Chloroform	***	***	***	***	6	36	o	o	---
		Ethylbenzene	***	***	***	***	360	2,700	o	1500	840
		Styrene	***	***	***	***	4	290	o	o	o
		Toluene	***	***	***	***	18	62	o	o	o
	62 S						(July 1988)*	(Mar. 1989)*			
		Ethylbenzene	***	***	***	***	o	o	---	49,000	50,000 (38,000)
		Styrene	***	***	***	***	o	o	---	26,000	95,000 (76,000)
Former Building 44 Area	65 S							(June 1989)*			
		Benzene	***	***	***	***	***	o	27	o	o
		Chlorobenzene	***	***	***	***	***	13	2000	2300 (2100)	2600 (2200)

See Notes Page 7

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TABLE 1
(Cont'd)

GROUND-WATER ANALYTICAL RESULTS - VOLATILE ORGANIC COMPOUNDS
MONSANTO CHEMICAL COMPANY
INDIAN ORCHARD PLANT

			Analytical Results In ug/L								
Area	Monitoring Well No.	Parameter	June 1985	July 1985	Aug. 1985	Aug. 1987	Feb. 1988	Mar. 1989	Dec. 1990	Oct. 1991	May 1992
Former Building 44 Area	65 S	1,2-Dichloroethane	***	***	***	***	***	4	o	o	o
		Ethylbenzene	***	***	***	***	***	65	31	100 (100)	230 (420)
		Toluene	***	***	***	***	***	6	o	o	o
		Xylene	***	***	***	***	***	38	47	o	o
								(June 1989)*			
	67 S	Chlorobenzene	***	***	***	***	***	6,300	---	---	---

NOTES: Compounds are shown only when found at greater than detection levels.
All ground-water samples analyzed using EPA Method 601/602 for volatiles, organics, and styrene, except May 1992 TCL/TAL analysis.

KEY:

June 85 = Samples collected June 19 to June 27, 1985, analyzed by O'Brien & Gere Laboratories.
July 85 = Samples collected July 15 to July 22, 1985, analyzed by O'Brien & Gere Laboratories.
August 85 = Samples collected August 28 to September 6, 1985, analyzed by O'Brien & Gere Laboratories.
August 87 = Samples collected August 18 to August 27, 1987, analyzed by O'Brien & Gere Laboratories.
February 88 = Samples collected February 8 to February 10, 1988, analyzed by O'Brien & Gere Laboratories.
(July 88) = Samples collected July 27, 1988, analyzed by Upstate Laboratories, Inc.
March 89 = Samples collected March 12 to March 29, 1989, analyzed by O'Brien & Gere Laboratories.
(March 89) = Samples collected March 20, 1989, analyzed by Upstate Laboratories.
(June 89) = Samples collected June 29, 1989, at Former Building 44 Area only, analyzed by Upstate Laboratories.
December 90 = Samples collected November 27 through December 4, 1990, analyzed by O'Brien & Gere Laboratories.
October 91 = Samples collected October 15 through October 17, 1991, analyzed by O'Brien & Gere Laboratories.
May 92 = Samples collected May 12 and 13, 1992, analyzed by O'Brien & Gere Laboartories.
S = Shallow well of cluster.
D = Deep well of cluster.
T = Till well of cluster.
R = Bedrock well of cluster.

--- = No analysis performed.
"o" = Below detection limit.
( ) = Value found in duplicate sample vial.
*** = No analysis performed, monitoring well not installed yet.
* = Date sampled not part of site-wide annual monitoring program but included in this table to monitor trends.
@ = Concentration less than detection limits - reported as an approximate concentration.
[ ] = Compound and value suspect - may be due to repair of well.

TABLE 1

MONSANTO CHEMICAL COMPANY
INDIAN ORCHARD PLANT
SPRINGFIELD, MASSACHUSETTS

SUMMARY OF TAL/TCL AND APPENDIX IX LIST
GROUND-WATER ANALYTICAL RESULTS

AUGUST 27, 1987(1) APPENDIX IX		MAY 12, 1992(2) TAL/TCL	
MW-4(3)		MW-23	
Volatile Organics (ug/L) Method 8240			
	BDL	2-butanone	48
Volatile Organic TICs (ug/L)			
	BDL	tetrahydrofuran	160J
Semivolatile Organics (ug/L) Method 8270			
	BDL	bis(2-ethylexyl)-phthalate	11
Semivolatile Organic TICs (ug/L)			
	BDL	8 Unknowns	164J*
Pesticides/PCBs (ug/L) Method 8080			
	BDL		BDL
Herbicides/Pesticides (ug/L) Method 8140, 8150			
	BDL	NA	
Metals (mg/L)			
Method SW-846, 6000 Series		Method SW-846, 7000 Series	
aluminum, totals	<0.057	aluminum, totals	3.6
barium, totals	0.031	barium, totals	<0.1
cadmium, totals	0.0047	cadmium, totals	<0.01
calcium, totals	24.5	calcium, totals	9
copper, totals	<0.003	copper, totals	0.02
iron, totals	0.132	iron, totals	5.1
magnesium, totals	6.05	magnesium, totals	1
manganese, totals	0.093	manganese, totals	.1
nickel, totals	0.143	nickel, totals	<0.05
sodium, totals	24.0	sodium, totals	26
zinc, totals	0.040	zinc, totals	0.07
Cyanide (mg/L) Method 9010			
	0.010		<0.01

Include MW-65 data May 1992 Sampling Event

(Notes: See Page 5)

TABLE 1 (Cont.)

MONSANTO CHEMICAL COMPANY
INDIAN ORCHARD PLANT
SPRINGFIELD, MASSACHUSETTS

SUMMARY OF TAL/TCL AND APPENDIX IX LIST
GROUND-WATER ANALYTICAL RESULTS

AUGUST 27, 1987(1) APPENDIX IX		MAY 13, 1992(2) TAL/TCL	
MW-5		MW-5	
Volatile Organics (ug/L) Method 8240			
acetone	20B	acetone	<20
carbon disulfide	17	carbon disulfide	<10
methylene chloride	8	methylene chloride	<10
xylene (total)	300	xylene (total)	<10
chlorobenzene	<17	chlorobenzene	9
Volatile Organic TICs (ug/L)			
2 unknowns	79J		ND
Propane, 2-methyl-	19J	Propane, 2-methyl-	ND
Propane, 1,1-oxybis,(2-methyl-)	58J	Propane, 1,1-oxybis,(2-methyl-)	ND
		N-butyl ether	48J
Semivolatile Organics (ug/L) Method 8270			
bis(2-ethylhexyl)-phthalate	45	bis(2-ethylhexyl)-phthalate	12
Semivolatile Organic TICs (ug/L)			
butane,1,1'-(methylenebisoxy) bis-	440J	butane,1,1'-(methylenebisoxy) bis-	42J
9 isomers/unknowns	534J	14 isomers/unknowns	450J*
Pesticides/PCBs (ug/L) Method 8080			
	BDL		BDL
Herbicides/Pesticides (ug/L) Method 8140, 8151			
	BDL	NA	
Metals (mg/L)			
Method SW-846, 6000 Series		Method SW-846, 7000 Series	
barium, totals	0.158	barium, totals	0.2
calcium, totals	32.6	calcium, totals	17
chromium, totals	0.012	chromium, totals	<0.01
iron, totals	31.3	iron, totals	18
lead, totals	0.0032	lead, totals	<0.05
magnesium, totals	3.82	magnesium, totals	3
manganese, totals	12.1	manganese, totals	4.8
silver, totals	0.010	silver, totals	<0.01
sodium, totals	26.2	sodium, totals	61
zinc, totals	0.18	zinc, totals	0.11
Cyanide (mg/L) Method 9010			
	0.010		<0.01

(Notes: See Page 5)

TABLE 1 (Cont.)

MONSANTO CHEMICAL COMPANY
INDIAN ORCHARD PLANT
SPRINGFIELD, MASSACHUSETTS

SUMMARY OF TAL/TCL AND APPENDIX IX LIST
GROUND-WATER ANALYTICAL RESULTS

AUGUST 27, 1987(1) APPENDIX IX		MAY 13, 1992(2) TAL/TCL	
MW-25		MW-25	
Volatile Organics (ug/L) Method 8240			
acetone	50J	acetone	<200
benzene	43J	benzene	<100
chlorobenzene	1,300	chlorobenzene	1,400
Volatile Organic TICs (ug/L)			
	BDL		BDL
Semivolatile Organics (ug/L) Method 8270			
bis(2-chloroethyl)-ether	820	bis(2-chloroethyl)-ether	330
2-chlorophenol	<100	2-chlorophenol	16
Semivolatile Organic TICs (ug/L)			
butane,1,1'-(methylenebisoxy) bis-	150J	butane,1,1'-(methylenebisoxy) bis-	ND
chlorobenzene (isomer)	920J	chlorobenzene (isomer)	680J
benzene (isomer)	ND	benzene (isomer)	42J
1 isomer/unknown	44J	18 isomers/unknowns	444J*
Pesticides/PCBs (ug/L) Method 8080			
	BDL		BDL
Herbicides/Pesticides (ug/L) Method 8140, 8150			
	BDL	NA	
Metals (mg/L)			
Method SW-846, 6000 Series		Method SW-846, 7000 Series	
aluminum, totals	BDL	aluminum, totals	0.1
arsenic, totals	0.079	arsenic, totals	0.060
barium, totals	0.585	barium, totals	0.6
calcium, totals	29.6	calcium, totals	42
chromium, totals	0.046	chromium, totals	<0.01
copper, totals	0.013	copper, totals	<0.01
iron, totals	8.1	iron, totals	12
lead, totals	0.0078	lead, totals	<0.05
magnesium, totals	8.91	magnesium, totals	14
manganese, totals	0.145	manganese, totals	0.15
sodium, totals	133	sodium, totals	140
zinc, totals	0.039	zinc, totals	<0.01
Cyanide (mg/L) Method 9010			
	0.010		<0.01

(Notes: See Page 5)

TABLE 1 (Cont.)

MONSANTO CHEMICAL COMPANY
INDIAN ORCHARD PLANT
SPRINGFIELD, MASSACHUSETTS

SUMMARY OF TAL/TCL AND APPENDIX IX LIST
GROUND-WATER ANALYTICAL RESULTS

AUGUST 27, 1987(1) APPENDIX IX		MAY 13, 1992(2) TAL/TCL	
MW-41		MW-41	
Volatile Organics (ug/L) Method 8240			
acetone	8J	acetone	<100
chlorobenzene	1,200	chlorobenzene	1,300
Volatile Organic TICs (ug/L)			
	BDL		BDL
Semivolatile Organics (ug/L) Method 8270			
bis(2-chloroethyl)-ether	98	bis(2-chloroethyl)-ether	89
2-chlorophenol	13J	2-chlorophenol	<10
bis(2-ethylexyl)-phthalate	ND	bis(2-ethylexyl)-phthalate	19
Semivolatile Organic TICs (ug/L)			
butane,1,1'-(methylenebisoxy) bis-	15J	butane,1,1'-(methylenebisoxy) bis-	ND
chlorobenzene (isomer)	1,700J	chlorobenzene (isomer)	ND
3 isomers/unknowns	61J	15 isomers/unknowns	776J*
Pesticides/PCBs (ug/L) Method 8080			
	BDL		BDL
Herbicides/Pesticides (ug/L) Method 8140, 8150			
	BDL	NA	
Metals (mg/L)			
Method SW-846, 6000 Series		Method SW-846, 7000 Series	
arsenic, totals	0.0052	arsenic, totals	0.010
barium, totals	0.297	barium, totals	0.3
calcium, totals	170	calcium, totals	28
iron, totals	8.56	iron, totals	28
magnesium, totals	3.64	magnesium, totals	8
manganese, totals	0.33	manganese, totals	1.7
sodium, totals	113	sodium, totals	79
zinc, totals	0.031	zinc, totals	<0.01
Cyanide (mg/L) Method 9010			
	BDL		<0.01

(Notes: See Page 5)

TABLE 1 (Cont.)

MONSANTO CHEMICAL COMPANY
INDIAN ORCHARD PLANT
SPRINGFIELD, MASSACHUSETTS

SUMMARY OF TAL/TCL AND APPENDIX IX LIST
GROUND-WATER ANALYTICAL RESULTS

AUGUST 27, 1987(1) APPENDIX IX		MAY 13, 1992(2) TAL/TCL	
MW-43		MW-43	
Volatile Organics (ug/L) Method 8240			
chlorobenzene	640	chlorobenzene	830
Volatile Organic TICs (ug/L)			
	BDL		BDL
Semivolatile Organics (ug/L) Method 8270			
bis(2-chloroethyl)-ether	570	bis(2-chloroethyl)-ether	360
Semivolatile Organic TICs (ug/L)			
1,4-oxathiane	18J	1,4-oxathiane	28J
chlorobenzene (isomer)	210J	chlorobenzene (isomer)	ND
7 unknowns/isomers	107J	19 unknowns/isomers	844J*
Pesticides/PCBs (ug/L) Method 8080			
	BDL		BDL
Herbicides/Pesticides (ug/L) Method 8140, 8150			
	BDL	NA	
Metals (mg/L)			
Method SW-846, 6000 Series		Method SW-846, 7000 Series	
arsenic, totals	0.027	arsenic, totals	0.037
barium, totals	0.22	barium, totals	0.4
calcium, totals	49.6	calcium, totals	41
iron, totals	4.84	iron, totals	32
magnesium, totals	7.54	magnesium, totals	9
manganese, totals	5.83	manganese, totals	3.3
silver, totals	17	silver, totals	<0.01
sodium, totals	168	sodium, totals	100
zinc, totals	0.037	zinc, totals	<0.01
Cyanide (mg/L) Method 9010			
	0.010		<0.01

Notes:
NA - Analysis not performed.
<10 - Not detected above the 10 ug/L detection limit.
TIC - Tentatively identified compounds.
TAL/TCL - Target analyte list and compound list.
J - Estimated concentration below detection limit.
B - Compound was also detected in blank.
ND - Tentatively identified compound not detected.
(1) - August 27, 1987 Appendix IX analysis performed by Compu Chem Laboratories.
(2) - May 14, 1992 TCL/TAL analysis performed by O'Brien & Gere Laboratories.
(3) - MW-4 and MW-23 are upgradient wells located within ten feet of each other. MW-4 (missing since March 1989) was 54 feet deep and MW-23 is 225 feet deep.
* - Represents sum total of semivolatile organic TICs.

TABLE C-4A
SUBSURFACE SOIL SCREENING ANALYSES
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Boring No.	Depth (ft)	TOC[1] (ppm)	SP[2] (umhos/cm)	HNU[3] (ppm)	OVA[4] (ppm)
1	26-28[5]	31.0	29.0	1	.3
1	46-48	8.0	45.0	3	2.0
1	92-94	7.0	40.0	0	0
1	98-100	5.0	27.0	0	0
2	36-38	2.0	15.0	5	0
2	38-40	3.0	19.0	10	0
2	79-81	4.0	25.0	0	0
3	20-22[5]	6.0	32.0	68	0
3	40-42	7.0	77.0	2	300
3	73-75	6.0	133.0	12	4,500
3	91-93	10.0	113.0	0	42
4	45-47	5.0	65.0	1	390
4	63-65	8.0	52.0	1	407
4	83-85	14.0	62.0	1	96
5	45-47	14.0	169.0	0	100
5	60-62	6.0	24.0	0	100
5	105-107	7.0	45.0	-	3.5
5	124-126	8.0	55.0	-	0
6	17-19[5]	5.0	22.0	0	4
6	43-45	5.0	25.0	0	3
6	93-95	5.0	46.0	0	2
7	36-38	11.0	108.0	3	242
7	54-56	6.0	58.0	20	72
7	64-66	8.0	129.0	3	82
7	88-90	12.0	110.0	0	1
8	36-38	12.0	69.0	5	119
8	44-46	13.0	83.0	1	60
8	86-88	6.0	57.0	1	9
8	108-110	3.0	330.0	0	5

See notes on Page 4.

TABLE C-4A (Continued)
SUBSURFACE SOIL SCREENING ANALYSES
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Boring No.	Depth (ft)	TOC[1] (ppm)	SP[2] (umhos/cm)	HNU[3] (ppm)	OVA[4] (ppm)
9	14-16[5]	4.0	32.0	0	2
9	89-91	7.0	43.0	0	920
9	100-102	8.0	114.0	0	7
10	72-74	5.0	48.0	1	281
10	84-86	6.0	57.0	-	2
10	88-90	6.0	53.0	-	121
10	102-104	4.0	47.0	2	5
11	28-30	5.0	36.0	0	443
11	42-44	5.0	18.0	0	978
11	102-104	8.0	107.0	0	919
	108-110	-	--	1	2
12	14-16[5]	6.0	59.0	1	5
12	36-38[5]	6.0	29.0	0	2
12	102-104	7.0	45.0	0	18
13	22-24	2.0	71.0	60	996
13	48-50	4.0	57.0	1.2	197
13	92-94	4.0	53.0	64	0
14	18-20[5]	1.0	67.0	1.7	6
14	64-66	6.0	30.0	0	197
14	86-88	1	41.0	60	35
14	116-118	8.0	120.0	0	0
15	12-14[5]	4.0	47.0	120	6,996
15	20-22[5]	3.0	32.0	ND	50
16	14-16	1.0	22.0	6.0	30
16	30-32	1.0	23.0	2.2	39
16	46-48	1.0	28.0	0	52
16	96-98	2.0	52.0	-	4
17	2-4[5]	4.0	48.0	0	12
17	26-28[5]	1	20.0	8	52
17	62-64	1.0	27.0	5	43
17	80-82	1.0	21.0	4.2	1

See notes on Page 4.

TABLE C-4A (Continued)
SUBSURFACE SOIL SCREENING ANALYSES
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Boring No.	Depth (ft)	TOC[1] (ppm)	SP[2] (umhos/cm)	HNU[3] (ppm)	OVA[4] (ppm)
18	4-6[5]	3.0	8.5	tr.	1
18	20-22	3.0	9.0	1	297
18	66-68	11.0	38.9	10.2	0
18	84-86	9.0	29.4	0	3
19	16-18[5]	7.0	16.8	tr.	547
19	36-38	-	-	.8	2,747
19	50-52	9.0	48.6	tr.	1,747
19	58-60	7.0	57.8	.8	1,497
20	6-8[5]	7.0	22.6	1	47
20	14-16	5.0	15.4	.4	897
20	52-54	8.0	36.3	5	996
20	58-60	9.0	26.5	1.2	16
21	4-6[5]	7.0	10.4	0	0
21	10-12	3.0	15.7	tr.	146
21	36-38	9.0	26.9	0	1
22	8-10[5]	7.0	10.8	16	182
22	10-11[5]	-	-	14	97
22	42-44	9.0	26.5	-	3
23	6-8[5]	7.0	13.4	-	66
23	20-22[5]	8.0	26.9	-	1,247
23	32-34	3.0	12.5	-	595
23	72-74	5.0	37.0	-	1
24	6-8[5]	7.0	12.0	-	4
24	18-20	9.0	20.3	-	8
24	76-78	9.0	31.1	-	3
25	4-6[5]	5.0	357.0	5[6]	16
25	20-22	3.0	210.0	1[6]	7
25	34-36	11.0	40.8	0[6]	2
26	8-10[5]	5.0	6.4	6[6]	2
26	14-16	9.0	14.8	10[6]	5
26	40-42	9.0	27.1	1[6]	2
27	16-18[5]	7.0	14.8	5[6]	8
27	60-62	5.0	19.4	150[6]	185
27	70-72	6.0	30.8	0[6]	1

See notes on Page 4.

TABLE C-4A (Continued)
SUBSURFACE SOIL SCREENING ANALYSES
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Boring No.	Depth (ft)	TOC[1] (ppm)	SP[2] (umhos/cm)	HNU[3] (ppm)	OVA[4] (ppm)
28	4-6[5]	1.0	13.0	1[6]	3
28	38-40	3.0	11.4	100[6]	448
28	60-62	3.0	12.7	0[6]	14
28	96-98	7.0	32.0	0[6]	11
29	2-4[5]	8.0	59.8	0[6]	1
29	30-32	7.0	29.3	0[6]	1
29	42-44	7.0	27.1	1[6]	0
30	8-10[5]	3.0	7.6	14[6]	0
30	38-40	8.0	33.1	22[6]	1
30	52-54	8.0	27.3	4[6]	1
31	4-6[5]	4.0	91.4	12[6]	1
31	14-16	5.0	23.5	28[6]	26
31	26-28	9.0	39.4	23[6]	22

Notes:

1 Total organic carbon (ppm). Analyses performed by O'Brien & Gere laboratories, Syracuse, NY.

2 Specific conductance (umhos/cm). Analyses performed by O'Brien & Gere Laboratories, Syracuse, NY.

3 HNU photoionization analyzer calibrated to benzene. Samples were screened at the drilling site by Blasland & Bouck.

4 Organic vapor analyzer calibrated to methane. Samples were screened in the Monsanto Indian Orchard Laboratory by Blasland & Bouck. Samples were warmed to 100° F. and a sample from the used space was obtained with a syringe.

5 Soil samples obtained from above the water table. All others were obtained from below the water table.

6 Samples were screened at the drilling site with a TLU analyzer HNU malfunctioned.

TABLE C-4B
SUBSURFACE SOIL PRIORITY POLLUTANT ANALYSES
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Monitoring Well No.	Sample Depth (ft.)	Metals		Cyanide, mg/kg	Phenols, mg/kg	Volatiles		Acids & Base Neutrals		Pesticides/PCBs	
		Parameter	mg/kg			Compound	Conc., ug/kg	Compound	Conc., ug/kg	Compound	Conc., ug/kg
MW-25	30-32	Cr	2.5	LTD[2]	LTD	Benzene	15		LTD		LTD
		Cu	4.5			Cholorobenzene	90				
		Pb	2.6								
		Ni	5.4								
		Zn	9.5								
MW-31	22-24	Cr	4.2	LTD	LTD		LTD		LTD		LTD
		Cu	2.5								
		Pb	1.9								
		Ni	4.1								
		Zn	9.1								
MW-41	72-74	As	1.7	LTD	LTD	Chlorobenzene	150		LTD		LTD
		Cr	6.5								
		Cu	4.9								
		Pb	4.7								
		Zn	12.8								
MW-43	58-60	As	1.3	LTD	LTD	Chlorobenzene	240		---		LTD
		Cr	6.2								
		Cu	4.8								
		Pb	3.5								
		Ni	4.5								
		Zn	10.4								

See notes and key on Page 2.

TABLE C-4B (Continued)
SUBSURFACE SOIL PRIORITY POLLUTANT ANALYSES
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Monitoring Well No.	Sample Depth (ft.)	Metals		Cyanide, mg/kg	Phenols, mg/kg	Volatiles		Acids & Base Neutrals		Pesticides/PCBs	
		Parameter	mg/kg			Compound	Conc., ug/kg	Compound	Conc., ug/kg	Compound	Conc., ug/kg
MW-45	32-34	As	39	LTD	LTD		LTD		LTD		LTD
		Cr	9								
		Cu	11.5								
		Pb	10.3								
		Hg	0.14								
		Ni	15								
MW-48	12-14	As	3.1	LTD	LTD		LTD		LTD		LTD
		Cr	10								
		Cu	25								
		Hg	0.30								
		Pb	62								
		Ni	7								
		Zn	20								
MW-55	25-27	As	3.4	LTD	LTD	Benzene	30		LTD		LTD
		Cr	9			Toluene	25				
		Cu	4								
		Ni	9								
		Zn	27								

Notes: Analyses were performed by O'Brien & Gere Laboratories, Syracuse, NY.

Key: mg/kg - Milligrams per kilogram, wet weight (ppm).
ug/kg - Micrograms per kilogram, wet weight (ppb).
LTD - Less than detected limit.

TABLE C-4A
SUBSURFACE SOIL SCREENING ANALYSES
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Boring No.	Depth (ft)	TOC[1] (ppm)	SP[2] (umhos/cm)	HNU[3] (ppm)	OVA[4] (ppm)
1	26-28[5]	31.0	29.0	1	.3
1	46-48	8.0	45.0	3	2.0
1	92-94	7.0	40.0	0	0
1	98-100	5.0	27.0	0	0
2	36-38	2.0	15.0	5	0
2	38-40	3.0	19.0	10	0
2	79-81	4.0	25.0	0	0
3	20-22[5]	6.0	32.0	68	0
3	40-42	7.0	77.0	2	300
3	73-75	6.0	133.0	12	4,500
3	91-93	10.0	113.0	0	42
4	45-47	5.0	65.0	1	390
4	63-65	8.0	52.0	1	407
4	83-85	14.0	62.0	1	96
5	45-47	14.0	169.0	0	100
5	60-62	6.0	24.0	0	100
5	105-107	7.0	45.0	-	3.5
5	124-126	8.0	55.0	-	0
6	17-19[5]	5.0	22.0	0	4
6	43-45	5.0	25.0	0	3
6	93-95	5.0	46.0	0	2
7	36-38	11.0	108.0	3	242
7	54-56	6.0	58.0	20	72
7	64-66	8.0	129.0	3	82
7	88-90	12.0	110.0	0	1
8	36-38	12.0	69.0	5	119
8	44-46	13.0	83.0	1	60
8	86-88	6.0	57.0	1	9
8	108-110	3.0	330.0	0	5

See notes on Page 4.

TABLE C-4A (Continued)
SUBSURFACE SOIL SCREENING ANALYSES
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Boring No.	Depth (ft)	TOC[1] (ppm)	SP[2] (umhos/cm)	HNU[3] (ppm)	OVA[4] (ppm)
9	14-16[5]	4.0	32.0	0	2
9	89-91	7.0	43.0	0	920
9	100-102	8.0	114.0	0	7
10	72-74	5.0	48.0	1	281
10	84-86	6.0	57.0	-	2
10	88-90	6.0	53.0	-	121
10	102-104	4.0	47.0	2	5
11	28-30	5.0	36.0	0	443
11	42-44	5.0	18.0	0	978
11	102-104	8.0	107.0	0	919
	108-110	-	--	1	2
12	14-16[5]	6.0	59.0	1	5
12	36-38[5]	6.0	29.0	0	2
12	102-104	7.0	45.0	0	18
13	22-24	2.0	71.0	60	996
13	48-50	4.0	57.0	1.2	197
13	92-94	4.0	53.0	64	0
14	18-20[5]	1.0	67.0	1.7	6
14	64-66	6.0	30.0	0	197
14	86-88	1	41.0	60	35
14	116-118	8.0	120.0	0	0
15	12-14[5]	4.0	47.0	120	6,996
15	20-22[5]	3.0	32.0	ND	50
16	14-16	1.0	22.0	6.0	30
16	30-32	1.0	23.0	2.2	39
16	46-48	1.0	28.0	0	52
16	96-98	2.0	52.0	-	4
17	2-4[5]	4.0	48.0	0	12
17	26-28[5]	1	20.0	8	52
17	62-64	1.0	27.0	5	43
17	80-82	1.0	21.0	4.2	1

See notes on Page 4.

TABLE C-4A (Continued)
SUBSURFACE SOIL SCREENING ANALYSES
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Boring No.	Depth (ft)	TOC[1] (ppm)	SP[2] (umhos/cm)	HNU[3] (ppm)	OVA[4] (ppm)
18	4-6[5]	3.0	8.5	tr.	1
18	20-22	3.0	9.0	1	297
18	66-68	11.0	38.9	10.2	0
18	84-86	9.0	29.4	0	3
19	16-18[5]	7.0	16.8	tr.	547
19	36-38	-	-	.8	2,747
19	50-52	9.0	48.6	tr.	1,747
19	58-60	7.0	57.8	.8	1,497
20	6-8[5]	7.0	22.6	1	47
20	14-16	5.0	15.4	.4	897
20	52-54	8.0	36.3	5	996
20	58-60	9.0	26.5	1.2	16
21	4-6[5]	7.0	10.4	0	0
21	10-12	3.0	15.7	tr.	146
21	36-38	9.0	26.9	0	1
22	8-10[5]	7.0	10.8	16	182
22	10-11[5]	-	-	14	97
22	42-44	9.0	26.5	-	3
23	6-8[5]	7.0	13.4	-	66
23	20-22[5]	8.0	26.9	-	1,247
23	32-34	3.0	12.5	-	595
23	72-74	5.0	37.0	-	1
24	6-8[5]	7.0	12.0	-	4
24	18-20	9.0	20.3	-	8
24	76-78	9.0	31.1	-	3
25	4-6[5]	5.0	357.0	5[6]	16
25	20-22	3.0	210.0	1[6]	7
25	34-36	11.0	40.8	0[6]	2
26	8-10[5]	5.0	6.4	6[6]	2
26	14-16	9.0	14.8	10[6]	5
26	40-42	9.0	27.1	1[6]	2
27	16-18[5]	7.0	14.8	5[6]	8
27	60-62	5.0	19.4	150[6]	185
27	70-72	6.0	30.8	0[6]	1

See notes on Page 4.

TABLE C-4A (Continued)
SUBSURFACE SOIL SCREENING ANALYSES
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Boring No.	Depth (ft)	TOC[1] (ppm)	SP[2] (umhos/cm)	HNU[3] (ppm)	OVA[4] (ppm)
28	4-6[5]	1.0	13.0	1[6]	3
28	38-40	3.0	11.4	100[6]	448
28	60-62	3.0	12.7	0[6]	14
28	96-98	7.0	32.0	0[6]	11
29	2-4[5]	8.0	59.8	0[6]	1
29	30-32	7.0	29.3	0[6]	1
29	42-44	7.0	27.1	1[6]	0
30	8-10[5]	3.0	7.6	14[6]	0
30	38-40	8.0	33.1	22[6]	1
30	52-54	8.0	27.3	4[6]	1
31	4-6[5]	4.0	91.4	12[6]	1
31	14-16	5.0	23.5	28[6]	26
31	26-28	9.0	39.4	23[6]	22

Notes:

1 Total organic carbon (ppm). Analyses performed by O'Brien & Gere laboratories, Syracuse, NY.

2 Specific conductance (umhos/cm). Analyses performed by O'Brien & Gere Laboratories, Syracuse, NY.

3 HNU photoionization analyzer calibrated to benzene. Samples were screened at the drilling site by Blasland & Bouck.

4 Organic vapor analyzer calibrated to methane. Samples were screened in the Monsanto Indian Orchard Laboratory by Blasland & Bouck. Samples were warmed to 100° F. and a sample from the used space was obtained with a syringe.

5 Soil samples obtained from above the water table. All others were obtained from below the water table.

6 Samples were screened at the drilling site with a TLU analyzer HNU malfunctioned.

TABLE C-4B
SUBSURFACE SOIL PRIORITY POLLUTANT ANALYSES
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Monitoring Well No.	Sample Depth (ft.)	Metals		Cyanide, mg/kg	Phenols, mg/kg	Volatiles		Acids & Base Neutrals		Pesticides/PCBs	
		Parameter	mg/kg			Compound	Conc., ug/kg	Compound	Conc., ug/kg	Compound	Conc., ug/kg
MW-25	30-32	Cr	2.5	LTD[2]	LTD	Benzene	15		LTD		LTD
		Cu	4.5			Cholorobenzene	90				
		Pb	2.6								
		Ni	5.4								
		Zn	9.5								
MW-31	22-24	Cr	4.2	LTD	LTD		LTD		LTD		LTD
		Cu	2.5								
		Pb	1.9								
		Ni	4.1								
		Zn	9.1								
MW-41	72-74	As	1.7	LTD	LTD	Chlorobenzene	150		LTD		LTD
		Cr	6.5								
		Cu	4.9								
		Pb	4.7								
		Zn	12.8								
MW-43	58-60	As	1.3	LTD	LTD	Chlorobenzene	240		---		LTD
		Cr	6.2								
		Cu	4.8								
		Pb	3.5								
		Ni	4.5								
		Zn	10.4								

See notes and key on Page 2.

TABLE C-4B (Continued)
SUBSURFACE SOIL PRIORITY POLLUTANT ANALYSES
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Monitoring Well No.	Sample Depth (ft.)	Metals		Cyanide, mg/kg	Phenols, mg/kg	Volatiles		Acids & Base Neutrals		Pesticides/PCBs	
		Parameter	mg/kg			Compound	Conc., ug/kg	Compound	Conc., ug/kg	Compound	Conc., ug/kg
MW-45	32-34	As	39	LTD	LTD		LTD		LTD		LTD
		Cr	9								
		Cu	11.5								
		Pb	10.3								
		Hg	0.14								
		Ni	15								
MW-48	12-14	As	3.1	LTD	LTD		LTD		LTD		LTD
		Cr	10								
		Cu	25								
		Hg	0.30								
		Pb	62								
		Ni	7								
		Zn	20								
MW-55	25-27	As	3.4	LTD	LTD	Benzene	30		LTD		LTD
		Cr	9			Toluene	25				
		Cu	4								
		Ni	9								
		Zn	27								

Notes: Analyses were performed by O'Brien & Gere Laboratories, Syracuse, NY.

Key: mg/kg - Milligrams per kilogram, wet weight (ppm).
ug/kg - Micrograms per kilogram, wet weight (ppb).
LTD - Less than detected limit.

TABLE C-1A
CHICOPEE RIVER SURFACE WATER ANALYSES FOR OCTOBER 14, 1980

Monsanto Corporation
Indian Orchard Plant Remedial Investigation

Compound[1]	Measurement Units	Detection Limit	Sampling Station[2] Upstream	Downstream
Oil & Grease	mg/l	NR	5	5
PCP	ug/l	25	ND	BDL
PCB	ug/l	2	ND	BDL
TCE	ug/l	NR	20*	10*

Notes: [1] Analyses were performed by Monsanto Research Corporation, Dayton, OH.
[2] Sampling locations were reported as upstream and downstream of the Indian Orchard Plant. The exact sampling locations were not identified.

Key: mg/l - Milligrams per liter (ppm
ug/l - Micrograms per liter (ppb)
ND - Not detected
BDL - Below detection limit
* - Composite samples
NR - Not reported

TABLE C-1B
CHICOPEE RIVER SURFACE WATER ANALYSES FOR SEPTEMBER 29, 1983

Monsanto Corporation
Indian Orchard Plant Remedial Investigation

Compound	Measurement Units	Detection Limit	Sampling Location[2] Upstream	Downstream
Arsenic	mg/l	0.003	L0.01	L0.01
Barium	mg/l	0.1	L0.2	L0.2
Cadmium	mg/l	0.1	L0.01	L0.01
Chromium	mg/l	0.001	L0.02	L0.02
Iron	mg/l	0.3	L0.41	L0.47
Lead	mg/l	0.001	L0.01	L0.01
Manganese	mg/l	0.01	L0.02	L0.03
Mercury	mg/l	0.001	L0.001	L0.001
Silver	mg/l	0.01	L0.01	L0.01
Selenium	mg/l	0.004	L0.005	L0.005
Sodium	mg/l	0.05	L3.7	L4.5
Chloride	mg/l	0.7	7.0	10.0
TOC	mg/l	3	5.1	5.1
Total Phenol	ug/l	0.005	L0.005	L0.005
TOH (TOX)	ug/l	5.0	15	16

NOTES: [1] Analyses were performed by Monsanto Research Corporation, Daton, OH.
[2] Sampling locations were reported as upstream and downstream of the Indian Orchard Plant. The exact sampling locations were not identified.

KEY: mg/l - Milligrams per liter (ppm)
ug/l - micrograms per liter (ppb)
L - less than
NR - Not Reported
ND - Not Detected

TABLE C-2A
GAGNON'S BROOK SURFACE WATER FOR JUNE 4, 1981

Monsanto Corporation
Indian Orchard Plant Remedial Investigation

Compound[1]	Measurement Units	Screening[2] Limit	Sampling Station[3] 1 (down stream)	2	3	4	5	6 (Upstream)
Di-n-butylphthalate	ug/l	10	L10	L10	L10	L10	L10	ND
Bis(2-ethylhexyl)phthalate	ug/l	10	L10	ND	ND	ND	ND	ND
Methylene Chloride	ug/l	10	20	20	70	50	20	40
1,2 Dichloroethante	ug/l	10	ND	L10	ND	ND	ND	ND
Trichloroethylene	ug/l	10	ND	10	ND	ND	ND	ND
Benzene	ug/l	10	ND	ND	ND	ND	L10	ND
Tetrachloroethylene	ug/l	10	ND	ND	ND	ND	L10	ND
Toluene	ug/l	10	L10	L10	L10	L10	L10	L10
Arsenic	ug/l	NR	9	L3	L3	L3	L3	L3
Mercury	ug/l	NR	L0.8	L0.8	L0.8	L0.8	L0.8	L0.8
Selenium	ug/l	NR	L4	L4	L4	L4	L4	L4
Thallium	ug/l	NR	L63	L63	L63	L63	L63	L63
Antimony	ug/l	250	L250	L250	L250	L250	L250	L250
Beryllium	ug/l	3	4.5a	L3	L3	L3	L3	L3
Cadmium	ug/l	20	13a	11	12	11	12	11
Chromium	ug/l	80	94a	L80	L80	L80	80	80
Copper	ug/l	90	191	L90	L90	L90	90	90
Lead	ug/l	240	L240a	L240	L240	L240	L240	L240
Nickel	ug/l	85	107a	L85	L85	L85	L85	L85
Silver	ug/l	170	L170a	L170	L170	L170	L170	L170
Zinc	ug/l	5	34a	23	16	47	13	118
Aluminum	ug/l	180	898a	357	315	282	278	280
Barium	ug/l	10	221a	94	95	92	88	92
Boron	ug/l	100	337a	180	100	127	101	166
Cobalt	ug/l	35	L35	L35	L35	L35	L35	L35
Iron	ug/l	215	10500a	1490	1520	1480	1100	1420
Magnesium	ug/l	165	10600a	3280	3210	3110	2960	3070
Manganese	ug/l	5	5755a	533	515	478	408	408
Molybdenum	ug/l	180	196a	L180	L180	L180	L180	L180
Tin	ug/l	250	L250	L250	L250	L250	L250	L250
Titanium	ug/l	60	L60	L60	L60	L60	L60	L60
Cyanide	ug/l	NR	4	5	L4	L4	L4	L4
Phenol	ug/l	NR	L25	L25	L25	L25	43	87
TOC	mg/l	NR	4.3	4.4a	6.4	5.8	4.6	5.5
COD	mg/l	NR	L25	L25	L25	L25	L25	L25
Acetone	ug/l	10	4	11	9	4	4	7
Xylenes	ug/l	10	ND	4	ND	ND	ND	ND
Cumene	ug/l	NR	ND	ND	ND	ND	ND	ND
Styrene	ug/l	NR	ND	ND	ND	ND	ND	ND

1186.3 1202.8 1197.8 1226.8 1193.8 1297.8

1201.9 1245.8

12/18/86

TABLE C-2B
GAGNON'S BROOK SURFACE WATER FOR SEPTEMBER 29, 1983

Monsanto Corporation
Indian Orchard Plant Remedial Investigation

ompound[1]	Measurement Units	Screening Limit	Sampling Station[2] Upstream	Downstream
rsenic	mg/l	0.003	0.01	0.01
ercury	mg/l	0.001	BDL	BDL
elenium	mg/l	0.004	0.005	0.005
admium	mg/l	0.1	0.01	0.01
hromium	mg/l	0.001	0.02	0.02
ead	mg/l	0.001	0.01	0.01
ilver	mg/l	0.01	0.01	0.01
arium	mg/l	0.1	0.2	0.2
ron	mg/l	0.3	1.33	1.34
anganese	mg/l	0.01	0.18	0.34
odium	mg/l	0.05	23.9	25.8
hloride	mg/l	0.7	50.0	53.0
henol	mg/l	0.005	BDL	BDL
OC	mg/l	3.0	4.5	4.1
OH (TOX)	ug/l	5.0	14.0	12.0
X es	ug/l	1.0	ND	ND

Notes: [1] Analyses were performed by Monsanto Research Corporation, Dayton, OH.
[2] The sampling stations were reported as upstream and downstream of the Indian Orchard Plant. The exact sampling locations were not identified.

Key: - Less than.
mg/l - Milligrams per liter (ppm).
ug/l - Micrograms per liter (ppb).
ND - Not detected.
BDL - Below detection limit.

TABLE C-2C
GAGNON'S BROOK SURFACE WATER ANALYSES FOR AUGUST 20, 1986
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Sample Station	TOX (ug/l)	TOC (mg/l)	Arsenic ~~(ug/l)~~ (mg/L)	Lead ~~(ug/l)~~ (mg/L)	TVO (ug/l)	AE-BN (ug/l)	P/PCB (ug/l)	Metals ~~(ug/l)~~ (mg/L)
1	L 10	8.0	L 0.001	L 0.05	---	---	---	---
2	11	4.0	L 0.001	L 0.05	---	---	---	---
3	L 10	6.0	L 0.001	L 0.05	---	---	---	---
4	L 10	5.0	L 0.001	L 0.05	---	---	---	---
5	10	7.0	L 0.001	L 0.05	---	---	---	---
Composite 1 (1+2+3)	---	---	---	---	LTD	LTD	LTD	LTD
Composite 2 (4+5)	---	---	---	---	LTD	LTD	LTD	LTD

Key:
Sampling Results: (Only results greater than detection limit are reported. Parameter followed by concentration is listed.)

L Less Than
--- No analysis performed.
LTD All results reported as less than detection limit.

(REVISED 3/16/94)

TABLE C-3
GAGNON'S BROOK SEDIMENT ANALYSES FOR AUGUST 20, 1986
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Sample Station	TOX ~~(ug/l)~~ (mg/kg)	TOC ~~(mg/l)~~ (mg/kg)	Arsenic ~~(ug/l)~~ (mg/kg)	Lead ~~(ug/l)~~ (mg/kg)	TVO (ug/l)	AE-BN (ug/l)	P/PCB (ug/l)	Metals ~~(ug/l)~~ (mg/kg)
1	L 10	15.0	~~L 0.1~~ 0.04	9.5	---	---	---	---
2	L 10	7.0	~~L 0.1~~ 0.04	20.0	---	---	---	---
3	L 10	33.0	~~L 0.1~~ 0.06	17.0	---	---	---	---
4	L 10	31.0	~~L 0.1~~ 0.04	10.1	---	---	---	---
5	L 10	9.0	~~L 0.1~~ 0.03	9.2	---	---	---	---
6	L 10	55.0	~~L 0.1~~ 0.04	15.0	---	---	---	---
Composite 1 (1+2+3)	---	---	---	---	LTD	LTD	LTD	As 0.04 Pb 17.0 Cu 7.0 Hg 0.16 Ni 6.0 Zn 36.0 Phenols 0.02
Composite 2 (4+5)	---	---	---	---	LTD	LTD	LTD	As 0.02 Pb 18.0 Cu 6.0 Hg 0.05 Ni 5.0 Zn 23.0 Phenols 0.02

Key:

Sampling Results: (Only results greater than detection limit are reported. Parameter followed by concentration is listed.)

L Less Than
--- No analysis performed.
LTD All results reported as less than detection limit.

(REVISED 3/16/94)

APPENDIX D-7

Ground-Water Elevation Summary Tables

1. Field Investigation Report (O'Brien & Gere, February 1983).

   a. Table 1

2. Comprehensive Site Assessment (CSA), (BB&L, March 1987).

   a. Table B-4

3. Hazardous Waste Storage Area Investigation Plan, Letter Report (BB&L, January, 1987).

   a. Table 1

4. Polysar UST Area Hydrogeologic Investigation Report (BB&L, October 1988).

   a. Table 2

5. Former Building 44 Hydrogeologic Investigation (BB&L, October 1989).

   a. Table 2

TABLE 1

GROUNDWATER ELEVATION SUMMARY TABLE

Well No.	Ground Evaluation	Casing Height	Casing Elevation	Water Table Elevations 7/30/82	8/3/82	8/24/82	9/1/82
MW-1	162.8	4.61	167.41	142.72	142.69	143.08	143.07
MW-2	162.5	1.92	164.42	142.82	142.81	143.20	143.17
MW-3	174.2	3.45	177.65	150.58	150.56	151.06	150.96
MW-4	201.5	1.45	202.95	157.47	157.42	158.21	158.14
MW-5	186.3	2.98	189.28	149.86	149.76	150.31	150.27
MW-6	144.4	4.70	149.10	---	135.78	136.12	136.03
MW-7	144.4	4.93	149.33	---	135.92	136.27	136.15
MW-8							
MW-9							
MW-10							
MW-11	158.61						
MW-12	162.91						

TABLE B-4
GROUND-WATER ELEVATIONS - MAY 24, 1985, TO SEPTEMBER 4, 1985
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Well No.	WATER ELEVATION IN FEET 05/24/85	05/30/85	06/07/85	06/27/85	07/23/85	08/15/85	09/04/85
MW-3	150.52	150.77	150.81	150.75	150.54	150.62	150.41
MW-4	157.08	157.07	157.13	157.03	156.85	156.83	156.73
MW-5	150.18	150.22	150.33	150.10	149.95	149.85	149.76
MW-6	136.25	136.04	136.07	136.02	135.78	135.97	135.86
MW-7	136.40	136.20	136.24	136.15	135.94	136.10	136.03
MW-8	150.09	149.96	149.86	149.93	149.04	148.89	148.96
MW-9	142.09	142.17	142.30	141.93	141.53	142.16	141.89
MW-10	143.90	144.26	144.55	144.63	144.62	144.98	144.87
MW-11	141.30	141.21	141.46	146.00	140.57	141.28	141.80
MW-12	141.66	141.78	142.04	141.60	141.05	141.68	141.20
MW-13	141.86	141.93	142.05	141.59	141.22	141.84	141.26
MW-14	141.53	141.59	141.74	141.19	140.66	141.69	140.72
MW-15	141.94	141.96	142.13	141.46	140.67	141.85	140.74
MW-16	141.56	141.56	141.71	141.39	140.87	141.49	*
MW-17	141.49	141.53	141.67	141.06	140.52	141.45	140.70
MW-18	141.63	141.83	141.81	141.55	140.53	141.58	140.89
MW-19	128.75	128.60	128.45	128.32	127.83	128.01	127.97
MW-20	128.74	128.60	128.33	128.29	127.82	127.97	127.94
MW-21	135.73	135.62	135.50	135.56	135.39	135.37	135.38
MW-22	135.75	135.34	135.42	135.45	135.35	135.29	135.30
MW-23	184.78	184.86	184.97	184.97	184.98	184.97	184.95
MW-24	136.66	136.96	136.92	136.76	136.47	136.85	136.48
MW-25	130.29	130.62	130.65	130.49	130.20	130.59	130.27
MW-26	130.29	130.63	130.64	130.51	130.17	130.56	130.28
MW-28	127.99	128.30	128.35	128.16	127.86	128.29	127.97
MW-29	128.13	128.40	128.46	128.19	127.88	128.32	128.01
MW-30	152.91	152.86	152.98	152.96	152.70	152.66	152.52
MW-31	151.71	151.95	151.93	151.86	151.68	151.65	151.43
MW-32	154.77	154.82	154.92	154.88	154.78	154.78	154.70
MW-33	150.54	150.76	150.77	150.69	150.49	150.53	150.32
MW-34	149.96	150.09	150.09	150.05	149.72	149.78	149.70

TABLE B-4 (Continued)
GROUND-WATER ELEVATIONS - MAY 24, 1985, TO SEPTEMBER 4, 1985
MONSANTO CORPORATION
INDIAN ORCHARD PLANT REMEDIAL INVESTIGATION

Well No.	WATER ELEVATION IN FEET 05/24/85	05/30/85	06/07/85	06/27/85	07/23/85	08/15/85	09/04/85
MW-35	144.72	144.74	144.85	144.60	144.31	144.63	144.28
MW-36	143.65	133.62	143.78	143.56	143.22	143.75	143.51
MW-37	150.15	150.37	150.52	150.57	150.51	150.58	150.36
MW-38	145.38	145.45	145.49	145.36	145.04	145.23	145.14
MW-39	142.89	142.95	143.10	142.76	142.45	142.93	142.60
MW-40	146.12	146.25	146.51	146.58	146.59	146.74	146.66
MW-41	147.45	147.59	142.68	142.31	141.95	142.46	142.18
MW-42	118.60	118.40	118.22	118.10	117.62	117.15	118.20
MW-43	118.23	118.00	117.99	117.80	117.24	117.99	118.11
MW-44	119.81	120.34	120.37	120.00	119.62	120.30	120.29
MW-45	129.05	128.89	128.92	128.98	128.97	129.33	129.01
MW-46	125.86	126.04	126.27	126.37	126.48	126.81	126.61
MW-47	132.17	132.12	132.11	132.07	131.91	132.00	131.96
MW-48	131.86	131.93	131.88	131.86	131.74	131.81	131.74
MW-49	123.63	123.73	125.76	123.59	123.22	123.63	123.43
MW-50	124.27	124.51	124.36	124.30	123.85	124.35	124.13
MW-51	149.61	149.83	149.81	149.78	149.58	149.57	149.40
MW-52	139.47	139.68	139.74	139.69	139.48	139.71	139.45
MW-53	141.65	141.78	146.88	141.45	141.09	141.68	141.20
MW-54	102.79	112.48	117.18	119.67	120.18	120.39	120.36
MW-55	118.87	115.45	121.38	121.47	121.63	121.65	121.70
MW-56	120.19	119.95	119.79	119.90	119.84	119.94	120.14
Stream Reference Points.....							
SRP-1	115.11	114.69	115.48	114.37	114.41	114.60	114.20
SRP-2	NA	NA	NA	NA	114.92	115.86	115.65
SRP-3	117.48	NA	116.82	NA	116.05	117.20	116.94
SRP-4	NA	NA	NA	115.79	115.86	116.40	116.32
SRP-5	NA	NA	NA	NA	NA	NA	NA
SRP-6	128.95	128.88	128.76	128.82	128.81	128.92	128.79
SRP-7	137.64	136.55	137.40	137.51	137.28	137.39	137.55
SRP-8	134.15	134.06	134.10	134.04	134.11	134.03	134.07

TABLE I
MONITORING WELL DATA
MONSANTO CORPORATION
INDIAN ORCHARD PLANT
HAZARDOUS WASTE DISPOSAL AREA

	COORDINATES		ELEVATIONS[1]			
Well No.	North	East	Protective Casing	Top of PVC	Ground Surface	Ground Water[2]
MW-58	4781	6516	142.72'	142.61'	140.60'	132.77
MW-59	4588	6889	145.80'	145.48'	143.40'	133.98
MW-60	4183	6193	145.42'	145.28'	143.20'	141.47

Notes:

[1] All elevations are in feet referenced to the National Geodetic Vertical Datum of 1929.

[2] Ground-water elevations measured on July 14 - 15, 1986.

TABLE 2

GROUND-WATER ELEVATIONS
POLYSAR HYDROGEOLOGIC INVESTIGATION
SPRINGFIELD, MASSACHUSETTS
July 27, 1988

Well Number	Ground Elevation	Top Outer Casing Elevation	Top Inner Casing Elevation	Ground-Water Elevation 7/26/88	Ground-Water Elevation 9/14/88
MW-56	133.60	136.20	136.09	119.79	N/A
MW-58	140.00	142.72	142.61	135.05	N/A
MW-59	143.40	145.80	145.48	141.80	N/A
MW-60	143.20	145.42	145.28	N/A	135.90
MW-61	140.60	142.66	142.59	130.33	130.22
MW-62	136.75	136.75	136.40	124.50	124.46
MW-63	135.37	135.36	134.85	124.92	124.67

Notes:

All elevations are in feet and
Based on National Geodetic Datum of 1929.
Water Levels were measured from the top of inner casing.
N/A - Not Available

TABLE 2
FORMER BUILDING 44 - HYDROGEOLOGIC INVESTIGATION
GROUND-WATER ELEVATIONS

MONSANTO CHEMICAL COMPANY
SPRINGFIELD, MASSACHUSETTS

Well Number	Ground Elevation	Protective Casing Elevation	PVC Casing Elevation	Ground-Water Elevations			
				6/15/89	6/16/89	6/29/89	8/1/89
MW-64	141.92	141.93	141.58	135.42	135.38	134.88	134.31
MW-65	144.46	144.14	144.49	132.96	133.25	132.89	132.30
MW-66	144.90	144.90	144.66	132.48	132.51	132.31	132.11
MW-67	144.40	144.41	144.15	134.40	134.25	134.15	134.15
MW-54	145.80	148.58	148.42	121.15	121.10	120.91	N
MW-55	149.90	148.40	148.26	121.76	121.81	121.58	N
MW-56	133.60	136.20	136.09	122.99	120.03	119.73	N
MW-9	160.50	163.77	163.51	142.66	142.69	143.66	N
MW-10	160.40	165.36	164.40	146.65	146.74	146.01	N

Notes:

All elevations are in feet and based on National Geodetic Vertical Datum of 1929.
N - Not Obtained.

10/3/89
2589275T

Ground Water Elevations

Monsanto Company
Indian Orchard Plant
Springfield, Massachusetts

SWMU / Disposal Area	Monitoring Well		Top of Casing Elevation	Ground-water Elevations 11/27-12/4/90	Ground-water Elevations 12/3/90	Ground-water Elevations 10/15-10/17/91
SWMU 35/SWDA No. 1						
	MW-4 T	(A)	203	NA	NA	NA
	MW-23 D		207.39	185.78	185.67	185.53
	MW-30 D	(A)	174.62	NA	NA	NA
	MW-31 S		174.94	152.99	152.89	154.2
	MW-32 S		206.21	156.93	156.92	157.93
	MW-35 D		206.11	145.54	145.44	146.16
SWMU 36/SWDA No. 2 and SWMU 38/Burning Pit A						
	MW-6 D		149.04	136.26	136.16	137
	MW-7 S		149.3	136.55	136.32	136.75
	MW-21 D		143.85	135.4	135.45	135.67
	MW-22 S	(A)	144.23	135.38	135.38	NA
	MW-47 D		144	132.35	132.31	132.43
	MW-48 S		144.27	132.16	132.1	132.25
	MW-51 D		159.26	150.76	150.66	151.69
	MW-52 S		159.33	140.13	140.01	140.41
SWMU 34/LWDA No. 1						
	MW-3 S		176.65	151.78	151.72	152.74
	MW-8 S		158.89	151.14	150.79	151.01
	MW-9 D		163.77	142.57	142.87	142.91
	MW-10 S		165.36	146.05	146.01	146.71
	MW-12 S		162.44	141.94	141.94	142.31
	MW-13 S		163.05	142.16	142.02	142.47
	MW-33 D	(A)	176.71	153.91	154.38	NA
	MW-36 D		191.46	144.43	144.38	145.01
	MW-37 S		191.67	152.25	152.22	152.85
	MW-38 T		192.07	146.98	146.15	147.08
	MW-39 D		157.25	143.48	143.31	143.85
	MW-40 S		176.07	148.25	148.22	148.37

See notes on page 3

Ground Water Elevations

Monsanto Company
Indian Orchard Plant
Springfield, Massachusetts

SWMU / Disposal Area	Monitoring Well	Top of Casing Elevation	Ground-water Elevations 11/27-12/4/90	Ground-water Elevations 12/3/90	Ground-water Elevations 10/15-10/17/91
	MW-41 D	176.56	143	142.91	143.43
	MW-53 D	161.87	142.02	141.85	142.27
SWMU 37/LWDA No. 2					
	MW-5 S	189.32	150.82	151.52	152.68
	MW-34 D	188.56	150.76	150.86	151.84
SWMU 33/Fiberloid Landfill					
	MW-56 S	136.09	119.44	119.41	119.58
	MW-54 D	148.42	122.42	119.2	121.7
	MW-55 S	148.26	121.76	119.3	122.05
SWMU 47/Building 99 Leach Field and SWMU 39/Burning Pit B	MW-19 D	139.53	128.95	128.78	129.53
	MW-20 S	139.8	128.93	128.8	126.5
	MW-24 T	146.45	137.3	137.25	137.8
	MW-25 D	146.27	131.27	131.19	131.9
	MW-26 S	146.25	131.25	131.14	131.85
	MW-28 D	145.2	129.11	128.96	129.78
	MW-29 S	145.19	129.15	128.93	129.8
SWMU 40/Burning Pit C					
	MW-49 D	144.94	124.34	124.21	124.99
	MW-50 S	145	125.04	124.9	125.75
	MW-57 D	143.44	126.04	NA	126.46
SWMU 41/Burning Pits D and SWMU 30/336 Drum Storage Area	MW-42 D	136.87	118.74	118.7	119.3
	MW-43 D	141.27	118.46	118.39	119.02
	MW-44 S	141.59	120.69	120.49	121.49
ACO 7/Former Bldg 44 and Tank Farm E					
	MW-64 S	141.58	NA	NA	135.03
	MW-65 S	144.49	132.2	132.03	132.29

See notes on page 3

Ground Water Elevations

Monsanto Company
Indian Orchard Plant
Springfield, Massachusetts

SWMU / Disposal Area	Monitoring Well		Top of Casing Elevation	Ground-water Elevations 11/27-12/4/90	Ground-water Elevations 12/3/90	Ground-water Elevations 10/15-10/17/91
	MW-66 S	(A)	144.66	NA	NA	NA
	MW-67 S	(A)	144.15	NA	NA	NA
Formaldehyde Area						
	MW-11 S		158.71	141.17	141.01	141.51
	MW-14 D		163.9	142.09	141.73	142.35
	MW-15 S		164.04	142.19	141.8	142.32
	MW-16		163.51	142.21	142.21	142.17
	MW-17 D		166.03	141.71	141.56	141.98
	MW-18 D		164.56	141.83	141.66	142.16
	MW-45 D		146.8	NA	NA	130.45
	MW-46 S		146.86	NA	NA	127.91
Former Drum Storage Area						
	MW-58 S		142.61	134.81	134.74	135.24
	MW-59 S		145.48	141.95	141.98	141.94
	MW-60 S		145.28	137.04	136.94	136.92
Novacor						
	MW-61 S		142.59	NA	NA	130.41
	MW-62 S		136.4	NA	NA	125.88
	MW-63 S		134.85	125.24	125.17	125.5

Note:
(A) - Abandoned
NA - Not Available

All elevations are in feet.

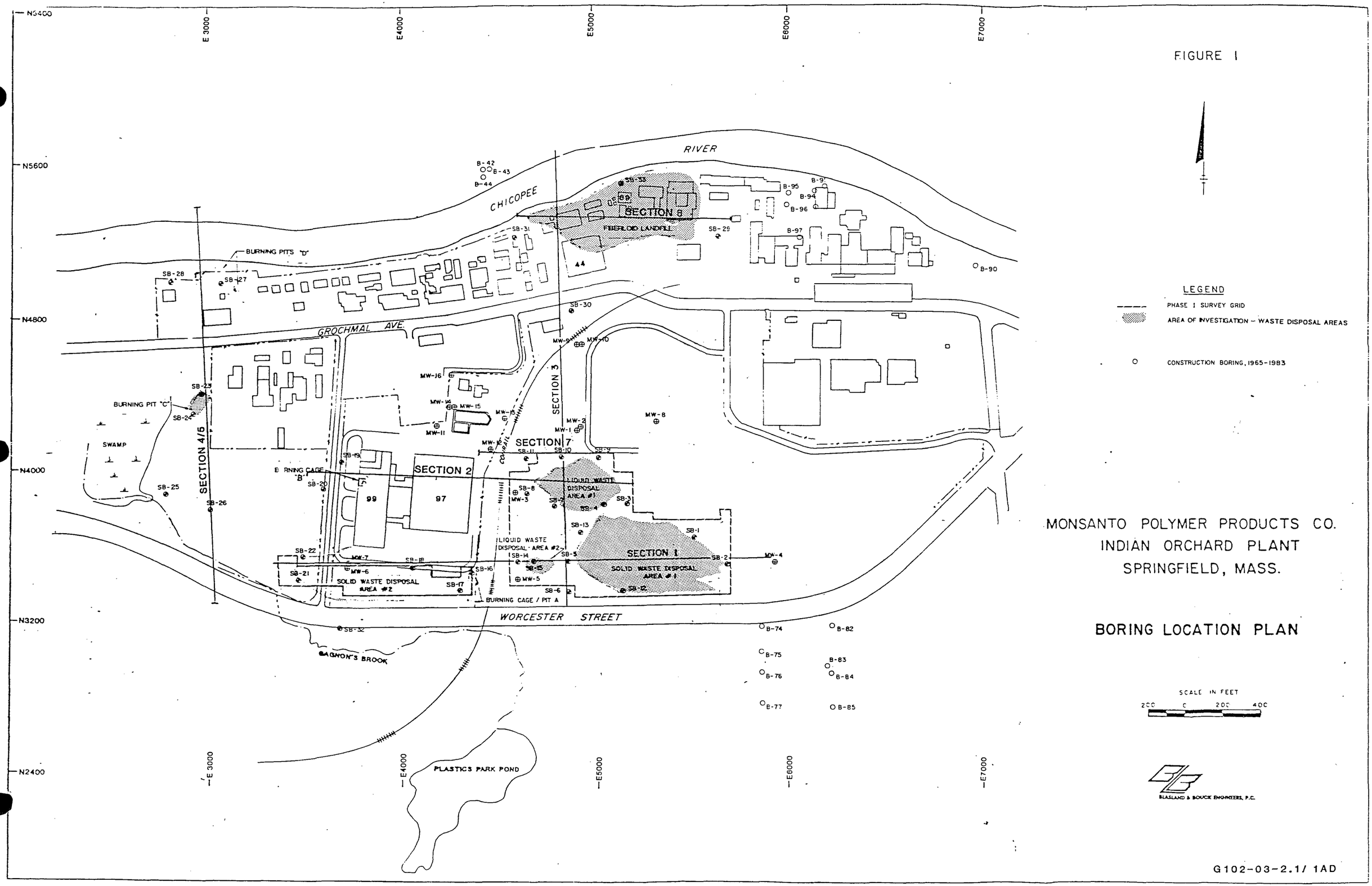
All wells are 2 inch diameter, except MW-57 is 6-inch diameter.
One inch diameter bailer required for well casings that are bent: MW-11 MW-60, MW-40, MW-56, MW-6.

APPENDIX D-8

Supplemental Soil Boring, Monitoring Well, Surface Water, and Sediment Sampling Location Maps

1.	Figure D-1 *(Figure 1)*	Phase I Construction Boring Locations. Phase I Report, Remedial Investigation Plan (BB&L, August 1984).
2.	Figure D-2	Waste Water Equalization Tank Foundation Boring Locations. Wastewater Equalization Facility Equalization Tank Foundation Assessment, Letter Report (BB&L, September 20, 1988).
3.	Figure D-3 *(Figure 1)*	Former Hazardous Waste Storage Facility 385 Boring Locations. Former Hazardous Waste Storage Facility 385, Letter Report (BB&L, October 1, 1992).
4.	Figure D-4	Tank Pit #1 Boring Locations. Report on Tank Pit #3 - West Resins Area (Monsanto, November 30, 1992).
5.	Figure D-5 *(Figure C-1)*	Gagnon's Brook Surface Water and Sediment Sampling Stations. Comprehensive Site Assessment (CSA) (BB&L, March 1987).

FIGURE 1

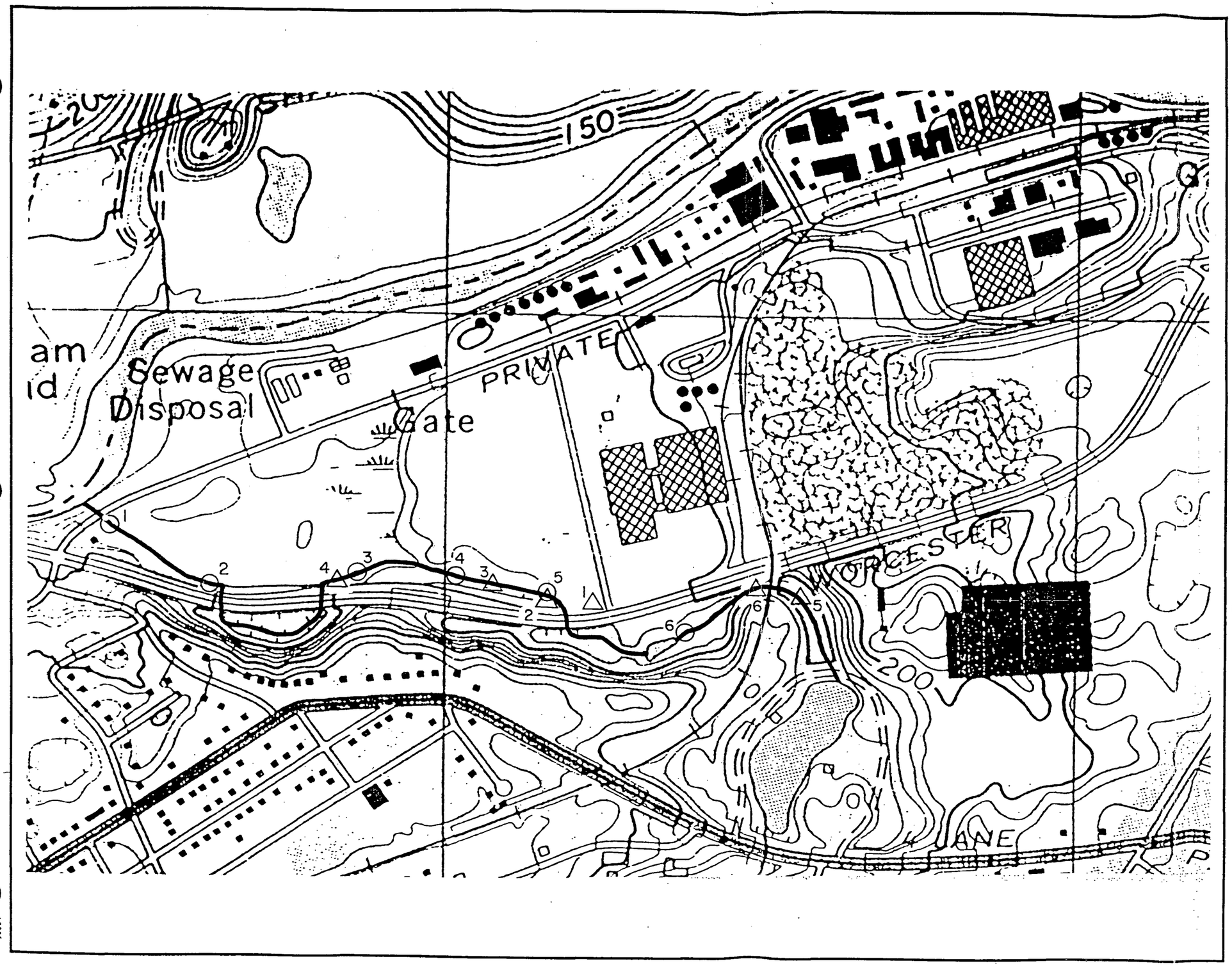


MONSANTO POLYMER PRODUCTS CO.
INDIAN ORCHARD PLANT
SPRINGFIELD, MASS.

BORING LOCATION PLAN

G102-03-2.1/ 1AD

FIGURE C-I



LEGEND

△ SURFACE WATER SAMPLING STATIONS, JUNE 4, 1981

○ SURFACE WATER AND STREAM SEDIMENT SAMPLING STATIONS AUGUST 20, 1986

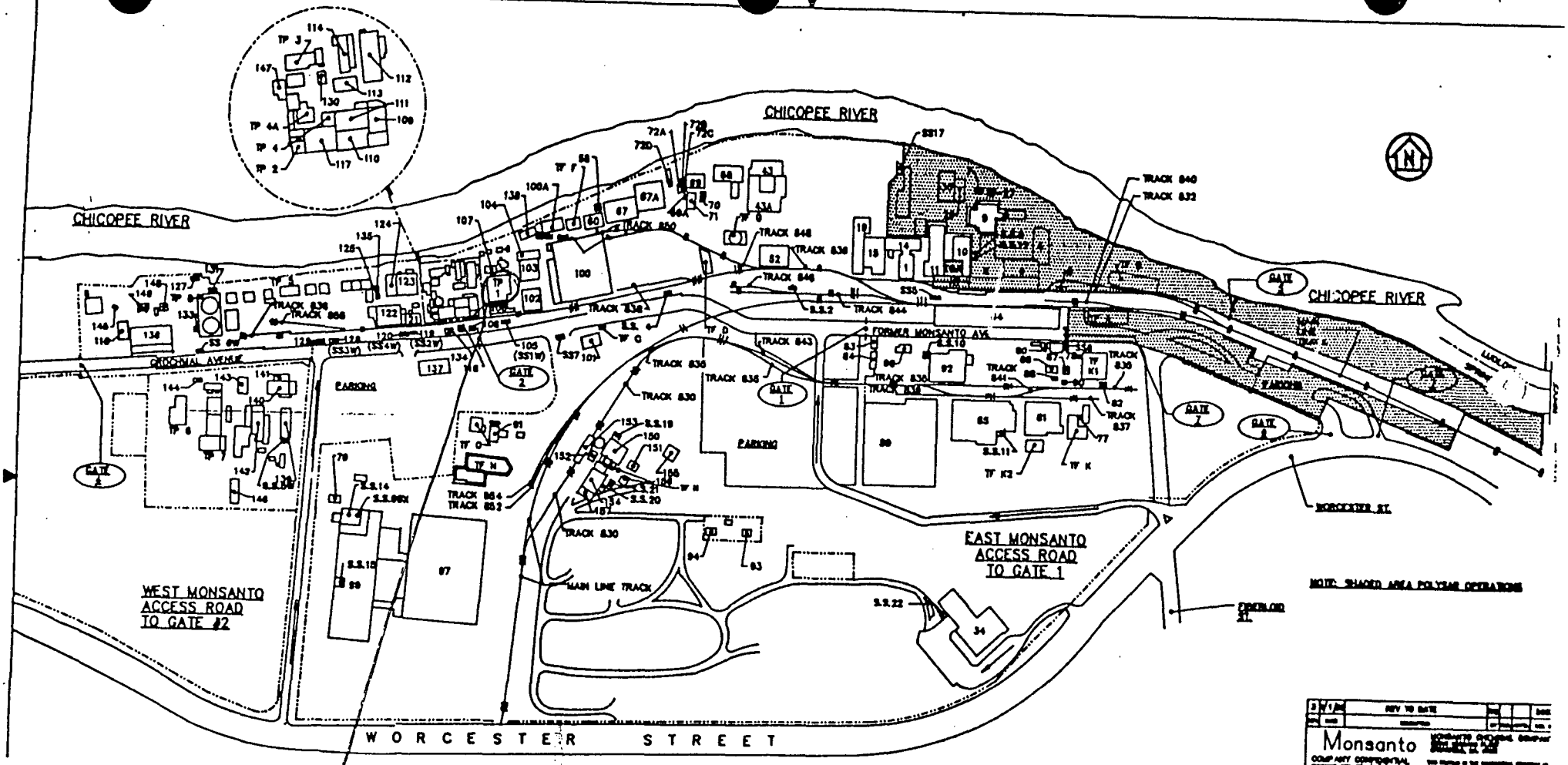
MONSANTO POLYMER PRODUCTS CO.
INDIAN ORCHARD PLANT
SPRINGFIELD, MASS.

GAGNON'S BROOK
SURFACE WATER AND
SEDIMENT SAMPLING STATIONS

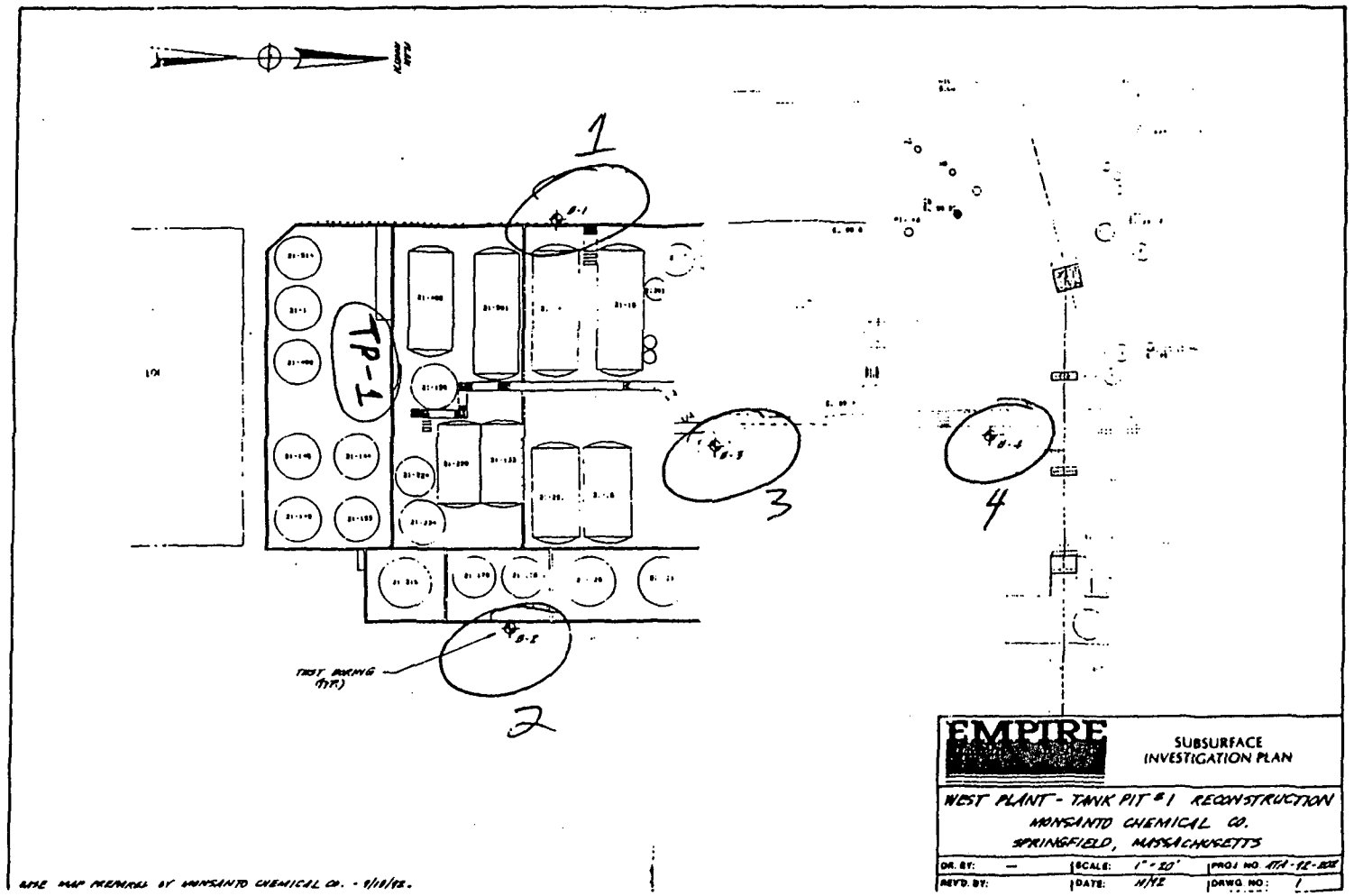
APPROXIMATE SCALE:
500' 0 500'

BLASLAND & BOUCK
ENGINEERS, P.C.

50664

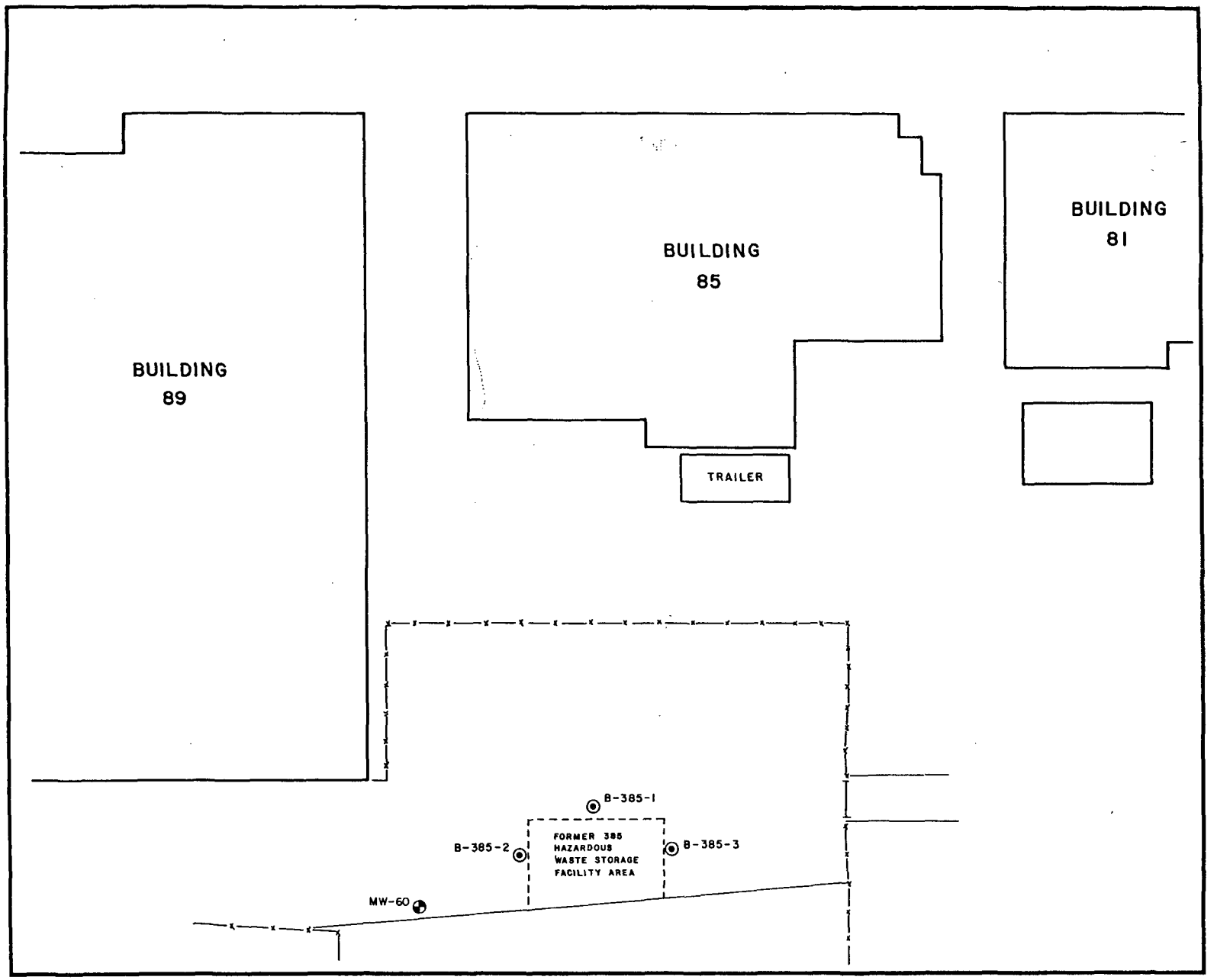

CHICOPEE RIVER
CHICOPEE RIVER
CHICOPEE RIVER
ORIGINAL AVENUE
PARKING
PARKING
PARKING
FORMER MONSANTO AVE
WEST MONSANTO ACCESS ROAD TO GATE #2
EAST MONSANTO ACCESS ROAD TO GATE 1
MAIN LINE TRACK
WORCESTER ST.
WORCESTER STREET
GATE 1
GATE 2
GATE 3
GATE 4
GATE 5
GATE 6
GATE 7
GATE 8
NOTE: SHADED AREA POLYMER OPERATIONS
Monsanto
BUILDING DESIGNATION PLAN
INDIAN ORCHARD PLANT
PLANT 1670
TYPE PLT
SIZE D
NUMBER 900-0008
REV 3

TANK PIT #1



SITE MAP PREPARED BY MONSANTO CHEMICAL CO. - 9/18/92.

FIGURE 1



LEGEND

GROUND-WATER MONITORING WELL

SOIL BORING

MONSANTO CHEMICAL COMPANY
HAZARDOUS WASTE
STORAGE FACILITY 385

SOIL BORING LOCATIONS

80' 0 80'

BLASLAND & BOUCK ENGINEERS, P.C.
ENGINEERS & GEOSCIENTISTS