

DOCUMENT CONTROL

55

SUSITNA HYDROELECTRIC PROJECT
WATANA BORROW SITE D AND RELICT CHANNEL
SUMMARY OF LABORATORY TEST DATA

ACRES

ACRES AMERICAN INCORPORATED
GEOTECHNICAL LABORATORY
BUFFALO, NEW YORK

DATE: _____
SHEET ____ OF ____

D60NO 5

HOLE NO.	SAMPLE NO.	DEPTH	SOIL UNIT	U.S. STANDARD SIEVE SIZES (PERCENT FINER THAN BY WEIGHT)																W _c %	L.L.	P.L.	P.I.	UNIFIED SOIL CLASSIFICATION
				12"	6"	3"	2"	1-1/2"	1"	3/4"	3/8"	#4	#10	#20	#40	#60	#100	#140	#200					
AA-16A	16A-1	3.0-5.0	C						100	97	91	87	84	77	70	61	51	45	39	9.9				
	16A-4a	9.0-11.0	C							100	99.5	98	95	89	82	76	70	65	60	16.8				
	16A-4b	9.0-11.0	C								100	99	91	62	32*	9	7	—	1	11.2				
	16A-6	13.0-13.5	C				100	89	89	89	81	78	71	61	49	38	30	25	21	9.2				
	16A-7	15.0-15.7	C				100	81	77	71	70	65	55	42	31	24	19	16	13	8.3				
	16A-8	17.0-17.2	C						100	92	90	88	82	70	55	44	37	33	29	10.7				
	16A-9	19.0-19.7	C							100	92	88	82	71	59	49	41	35	31	11.6				
	16A-10	21.8-23	C						100	99	94	89	80	65	50	40	32	27	23	11.3				
	16A-11	24-25.4																						
	16A-12a	26.2-26.5																						
	16A-12b	27.4-28.2	C							100	99	97	92	85	76	67	60	54	49	15.3				
	16A-13	28.2-28.6																						
	16A-14a	29.5-30.2	C						100	95	87	80	75	70	63	55	47	43	39	11.7				
	16A-14b	30.2-31.0	C							100	95	93	89	84	78	68	60	54	49	13.0				
	16A-15	31.0-31.9																						
	16A-16	33.0-33.4																						
	16A-17	34-36.0	C					100	84	78	74	73	71	69	67	66	64	63	61					
AA-16B	16B-18	36-38.0	C																	16.8				
	16B-19	38-38.2	C																	13.7				
	16B-20	38.2-39.2	C																	12.5				

REMARKS: * #80 SIEVE USED INSTEAD OF #60 SIEVE.

SUSITNA HYDROELECTRIC PROJECT
WATANA BORROW SITE D AND RELICT CHANNEL
SUMMARY OF LABORATORY TEST DATA

ACRES

ACRES AMERICAN INCORPORATED
GEOTECHNICAL LABORATORY
BUFFALO, NEW YORK

DATE: _____
SHEET _____ OF _____

HOLE NO.	SAMPLE NO.	DEPTH	STATIGRAPHIC UNIT	SPECIFIC GRAVITY	MOISTURE CONTENT %	DENSITY PCF	SHRINKAGE LIMIT	GRAIN SIZE						C _U ⁺	C _Z ^{**}	STANDARD PROCTOR		MODIFIED PROCTOR		ABSO-RPT %	UNIFIED SOIL CLASS.
								D ₁₀	D ₁₅	D ₃₀	D ₅₀	D ₆₀	D ₈₅			OMC	Y _{MAX}	OMC	Y _{MAX}		
AH-16A	16A-1	3.0-5.0	C		9.9																
	16A-4a	9.0-11.0	C		16.8																
	16A-4b	9.0-11.0	C		11.2																
	16A-6	13.0-13.5	C		9.2																
	16A-7	15.0-15.1	C		8.3																
	16A-8	17.0-17.2	C		10.7																
	16A-9	19.0-19.1	C		11.6																
	16A-10	21.8-23.0	C		11.3																
	16A-11	24.0-25.4																			
	16A-12a	26.2-26.5																			
	16A-12b	27.4-28.2	C		15.3																
	16A-13	29.2-29.6																			
	16A-14a	29.5-30.2	C		11.7																
	16A-14b	30.2-31.0	C		13.0																
	16A-15	31.0-31.9																			
	16A-16	33.0-33.4																			
	16A-17	34-36.0																			
AH-16B	16B-18	36.0-38.0	C		10.8																
	16B-19	38-38.2	C		13.7																
	16B-20	38.2-39.2	C		12.5																

* UNIFORMITY COEFFICIENT, $C_U = \frac{D_{60}}{D_{10}}$

** COEFFICIENT OF CURVATURE, $C_Z = \frac{(D_{30})^2}{(D_{10} \times D_{60})}$

REMARKS: _____

SUSITNA HYDROELECTRIC PROJECT
WATANA BORROW SITE D AND RELICT CHANNEL
SUMMARY OF LABORATORY TEST DATA



ACRES AMERICAN INCORPORATED
GEOTECHNICAL LABORATORY
BUFFALO, NEW YORK

DATE: _____
SHEET ____ OF ____

HOLE NO.	SAMPLE NO.	DEPTH	SOIL UNIT	U.S. STANDARD SIEVE SIZES (PERCENT FINER THAN BY WEIGHT)																W _c %	L.L.	P.L.	P.I.	UNIFIED SOIL CLASSIFICATION
				12"	6"	3"	2"	1-1/2"	1"	3/4"	3/8"	#4	#10	#20	#40	#60	#100	#140	#200					
16B	16B-21a	40.0- 42.0	C					100	92	92	87	84	81	78	74	71	67	64	60	11.5				
	16B-21b	41.0- 41.3	C							100	99	97	95	93	90	87	80	70	60	17.2				
	16B-22	42.0- 43.5	C					100	94	91	90	88	85	80	77	73	70	66	63	13.8				
	16B-23	44.0- 46.0	D								100	98	89	69	48	29	16	9	5	12.9				
	16B-24a	46.0- 46.6	D					100	72	49	46	34	29	25	21	18	15	12	9	5	5.9			
	16B-24b	46.6- 47.5	D								100	99	98	97	95	88	69	48	33	24.3				
	16B-24c	49.0- 46.6	D					100	93	88	79	77	72	69	62	49	35	22	13	8	4			
	16B-25	48- 49.5	D					100	86	80	74	72	72	71	71	68	57	45	41	17.1				
	16B-26	49.5- 50.7	D						100	96	94	93	89	83	72	69	57	43	32	15.9				
	16B-27	51.0- 51.3																						
	16B-28	52.0- 52.7	D					100	78	74	48	26	14	8	5	4	3	2	1	0	4.5			
	16B-29a	54.9- 55.5	D							100	100	100	99	98	96	90	77	58	38	21.9				
	16B-29b	54.2- 54.9	D					100	89	64	56	48	41	37	34	31	28	23	16	11	9.4			
	16B-30	56.0- 56.7	D					100	52	38	18	9	5	3	2	1	1	0.4	0	3.0				
	16B-31a	58.0- 58.9	D'					100	64	60	53	48	44	40	38	35	31	26	21	15	9.4			
	16B-31b	58.9- 59.3	D'									100	99	98	97	94	87	73	61	49	20.9			
	16B-32	60.5- 61.3																						
	16B-33	62.4- 62.8	D'									100	99.7	99	98	97	95	88	79	68	19.7			
	16B-34	64.3- 64.9	D'						100	98	97	96	94	92	90	87	84	79	74	17.9				
	16B-35	65.3- 66.9	D'									100	99	99	95	90	88	85	83	81	28.2			

REMARKS: _____

SUSITNA HYDROELECTRIC PROJECT
WATANA BORROW SITE D AND RELICT CHANNEL
SUMMARY OF LABORATORY TEST DATA

ACRES

ACRES AMERICAN INCORPORATED
GEOTECHNICAL LABORATORY
BUFFALO, NEW YORK

DATE: _____
SHEET _____ OF _____

HOLE NO.	SAMPLE NO.	DEPTH	STATIGRAPHIC UNIT	SPECIFIC GRAVITY	MOISTURE CONTENT %	DENSITY PCF	SHRINKAGE LIMIT	GRAIN SIZE						C _U *	C _Z **	STANDARD PROCTOR		MODIFIED PROCTOR		ABSO-RPT %	UNIFIED SOIL CLASS.
								D ₁₀	D ₁₅	D ₃₀	D ₅₀	D ₆₀	D ₈₅			OMC	γ _{MAX}	OMC	γ _{MAX}		
AH-16B	16B-21a	40-42.0			11.5																
	16B-21b	41-41.3			17.2																
	16B-22	42-43.5			13.8																
	16B-23	44-46.0			12.9																
	16B-24a	46-46.6			5.9																
	16B-24b	46.6-47.5			28.3																
	16B-23+24a*	44-46.6																			
	16B-25	48-49.5			17.1																
	16B-26	49.5-50.7			15.9																
	16B-27	51-51.3																			
	16B-28	52-52.7			4.5																
	16B-29a	54.9-55.5			21.9																
	16B-29b	54.2-54.9			9.4																
	16B-30	56-56.7			3.0																
	16B-31a	58-58.9			9.4																
	16B-31b	58.9-59.3			20.9																
	16B-32	60.5-61.3																			
	16B-33	62.4-62.8			19.7																
	16B-34	64.3-64.9			17.9																
	16B-35	65.3-66.9			28.2																

* UNIFORMITY COEFFICIENT, $C_U = \frac{D_{60}}{D_{10}}$

** COEFFICIENT OF CURVATURE, $C_Z = \frac{(D_{30})^2}{(D_{10} \times D_{60})}$

REMARKS: * COMBINED

SUSITNA HYDROELECTRIC PROJECT
WATANA BORROW SITE D AND RELICT CHANNEL
SUMMARY OF LABORATORY TEST DATA

ACRES

ACRES AMERICAN INCORPORATED
GEOTECHNICAL LABORATORY
BUFFALO, NEW YORK

DATE: _____
SHEET ____ OF ____

HOLE NO.	SAMPLE NO.	DEPTH	SOIL UNIT	U.S. STANDARD SIEVE SIZES (PERCENT FINER THAN BY WEIGHT)																W _c %	L.L.	P.L.	P.I.	UNIFIED SOIL CLASSIFICATION
				12"	6"	3"	2"	1-1/2"	1"	3/4"	3/8"	#4	#10	#20	#40	#60	#100	#140	#200					
AK-16B	16B-30a	67.3- 67.8																		24.2				
	16B-36b	67.5- 68.8	E							100	98	96	91	80	65	45	29	21	16	18.4				
	16B-37	69.5- 71.0	E						100	99	96	93	88	78	62	45	33	25	19	16.0				
	16B-38	71.3- 72.9	E					100	97	95	91	88	80	63	38	20	12	8	6	15.2				
	16B-40	75.0- 77.0	E								100	96	82	75	63	41	22	11	7	4.8				
	16B-41	80.0- 81.0	F					100	86	84	78	75	70	64	58	52	47	43	39	8.5				
	16B-42	81.7- 82.0																						
	16B-43	83.0- 84.0	F					100	97	96	90	85	79	73	65	59	54	49	45	9.3				
	16B-44	85.0- 85.7																						
	16B-45	86.0- 87.0	F				100	85	82	82	80	77	69	57	47	41	35	31	29	16.9				
	16B-46	87.0- 87.5																						
	16B-47	89.0- 89.3	F																					
	16B-48	91.3- 92.0							100	93	79	73	66	58	51	44	38	34	31	7.3				
	16B-49	94.0- 94.7																						
	16B-50	96.0- 96.4																						
	16B-51	98.0- 98.5																						
	16B-52	100.6- 101.2	F					100	94	89	85	80	75	67	59	52	46	42	38	10.0				
	16B-53	102.3- 102.4																						
	16B-54	104.5- 104.6																						
	16B-55	106.5- 106.7																						

REMARKS: _____

SUSITNA HYDROELECTRIC PROJECT
WATANA BORROW SITE D AND RELICT CHANNEL
SUMMARY OF LABORATORY TEST DATA

ACRES

ACRES AMERICAN INCORPORATED
GEOTECHNICAL LABORATORY
BUFFALO, NEW YORK

DATE: _____
SHEET ____ OF ____

HOLE NO.	SAMPLE NO.	DEPTH	STATIGRAPHIC UNIT	SPECIFIC GRAVITY	MOISTURE CONTENT %	DENSITY PCF	SHRINKAGE LIMIT	GRAIN SIZE						C _U *	C _Z **	STANDARD PROCTOR		MODIFIED PROCTOR		ABSO. RPT. %	UNIFIED SOIL CLASS.
								D ₁₀	D ₁₅	D ₃₀	D ₅₀	D ₆₀	D ₈₅			OMC	γ _{MAX}	OMC	γ _{MAX}		
AH-16B	16B-36a	67.3-67.8			24.2																
	16B-36b	67.8-68.0			18.4																
	16B-37	68.5-71.0			16.0																
	16B-38	71.3-72.9			15.2																
	16B-40	75.2-77.0			4.8																
	16B-41	80.0-81.0			8.5																
	16B-42	81.7-82.0																			
	16B-43	83-84.0			9.3																
	16B-44	85.0-85.7																			
	16B-45	86.0-87.0			16.9																
	16B-46	87.0-87.5																			
	16B-47	89.0-89.3																			
	16B-48	91.3-92.0			7.3																
	16B-49	94.0-94.7																			
	16B-50	96.0-96.4																			
	16B-51	98.0-98.5																			
	16B-52	100.6-101.2			10.0																
	16B-53	102.3-102.4																			
	16B-54	104.5-104.6																			
	16B-55	106.5-106.7																			

* UNIFORMITY COEFFICIENT, $C_U = \frac{D_{60}}{D_{10}}$

** COEFFICIENT OF CURVATURE, $C_Z = \frac{(D_{30})^2}{(D_{10} \times D_{60})}$

REMARKS: * COMBINED ANALYSIS

SUSITNA HYDROELECTRIC PROJECT
WATANA BORROW SITE D AND RELICT CHANNEL
SUMMARY OF LABORATORY TEST DATA

ACRES

ACRES AMERICAN INCORPORATED
GEOTECHNICAL LABORATORY
BUFFALO, NEW YORK

DATE: _____
SHEET ____ OF ____

HOLE NO.	SAMPLE NO.	DEPTH	SOIL UNIT	U.S. STANDARD SIEVE SIZES (PERCENT FINER THAN BY WEIGHT)															W _c %	L.L.	P.L.	P.I.	UNIFIED SOIL CLASSIFICATION
				12"	6"	3"	2"	1-1/2"	1"	3/4"	3/8"	#4	#10	#20	#40	#60	#100	#140	#200				
AH-163	16B-56	108.0- 108.1																					
	16B-57	112.0- 112.1	G					100	91	89	85	80	76	67	60	53	48	45	42	10.0			
	16B-58	116.0- 118.0	G																	29.3			
	16B-59	118.0- 120.0																		28.2			
	16B-60	120.0- 121.7																		28.9			
	16B-61	124.0- 126.0	G						100	98	98	98	98	98	98	98	98	98	97	97	28.6		
	16B-62	128.0- 130.0																					
	16B-63	132.0- 133.5	G																	34.1			
	16B-64	136.0- 137.5																		33.4			
	16B-65	140.0- 141.5	G							100	100	100	~~~~~							30.6			
	16B-66	144.0- 145.5	G																	28.1			
	16B-67	148.0- 149.2	I					100	93	85	69	63	58	52	46	41	37	34	31	10.4			
	16B-68	151.0- 152.0	I-CENTER						100	95	94	94	93	92	92	91	91	91	91	27.1			
	16B-69	153.0- 154.4																					
	16B-70	155.0- 156.0	I/I CONTACT					100	96	96	93	88	84	79	73	68	63	59	56	15.2			
	16B-71	157.0- 158.8																		15.8			
	16B-72	159.0- 161.0	J				100	88	88	88	82	79	76	73	69	66	62	60	58	14.9			
	16B-73	163.0- 164.1																		25.5			
	16B-74	167.0- 168.4																		28.1			

REMARKS: _____

SUSITNA HYDROELECTRIC PROJECT
WATANA BORROW SITE D AND RELICT CHANNEL
SUMMARY OF LABORATORY TEST DATA

ACRES

ACRES AMERICAN INCORPORATED
GEOTECHNICAL LABORATORY
BUFFALO, NEW YORK

DATE: _____
SHEET _____ OF _____

HOLE NO.	SAMPLE NO.	DEPTH	STATIGRAPHIC UNIT	SPECIFIC GRAVITY	MOISTURE CONTENT %	DENSITY PCF	SHRINKAGE LIMIT	GRAIN SIZE						C _U *	C _Z **	STANDARD PROCTOR		MODIFIED PROCTOR		ABSO-RPT %	UNIFIED SOIL CLASS.
								D ₁₀	D ₁₅	D ₃₀	D ₅₀	D ₆₀	D ₈₅			OMC	γ _{MAX}	OMC	γ _{MAX}		
AK-168	16B-56	108.0- 108.1																			
	16B-57	112.0- 112.7			10.0																
	16B-58	116.0- 118.0			29.3																
	16B-59	118.0- 120.0			28.2																
	16B-60	120.0- 121.7			28.9																
	16B-61	124.0- 126.0			28.6																
	16B-62	128.0- 130.0																			
	16B-63	132.0- 133.5			34.1																
	16B-64	136.0- 137.5			33.4																
	16B-65	140.0- 141.5			30.6																
	16B-66	144.0- 145.5			28.1																
	16B-67	148.0- 149.2			10.4																
	16B-68	151.0- 152.0			27.1																
	16B-69	153.0- 154.4																			
	16B-70	155.0- 156.0			15.2																
	16B-71	157.0- 158.8			15.8																
	16B-72	159.0- 161.0			14.9																
	16B-73	162.0- 164.1			25.5																
	16B-74	167.0- 168.4			28.1																

* UNIFORMITY COEFFICIENT, $C_U = \frac{D_{60}}{D_{10}}$

** COEFFICIENT OF CURVATURE, $C_Z = \frac{(D_{30})^2}{(D_{10} \times D_{60})}$

REMARKS: _____

WATER CONTENT DETERMINATION

Project SUSITMA HEP.

Job No. P570055

Location of Project WATANA BORROW SITE D

Description of Soil _____

Tested By RAW

Date of Testing 7/16/92

Date of Weighing _____

	16-1 ^①	16-4 ^①	① 15-7	① 15-8	①
Boring no.	A-1	A-4b	A-7	A-8	16-4a
Container no. (cup)	61	258	260	257	259
Wt. of cup + wet soil	1215	883	1234	479	1182
Wt. of cup + dry soil	1129	820	1160	457	1049
Wt. of cup	258 gm	259	263.5	252	258
Wt. of dry soil	871	561	896.5	205	791
Wt. of water	86	63	74	22	133
Water content, w%	9.9	11.2	8.3	10.7	16.8%

	①				
Boring no.	16-6				
Container no. (cup)	54				
Wt. of cup + wet soil	1217				
Wt. of cup + dry soil	1136				
Wt. of cup	257				
Wt. of dry soil	879				
Wt. of water	81				
Water content, w%	9.2%				

WATER CONTENT DETERMINATION

Project SUSITNA HYDRO Job No. P570155

Location of Project WATANA BORROW SITE D

Description of Soil _____

Tested By L. Ashford Date of Testing 7/17/82

OK RAW 7/18/82

Date of Weighing _____

TEST Boring no.	(H) WL-15-38-MC	(C) WL-16-9-MC	(C) WL-16-10-MC		
Container no. (cup)	61	257	260		
Wt. of cup + wet soil	1919	1006	1413		
Wt. of cup + dry soil	1743	928	1296		
Wt. of cup	258	258	261		
Wt. of dry soil	1485	670	1035		
Wt. of water	176	78	117		
Water content, w%	11.9	11.6	11.3		

Boring no.					
Container no. (cup)					
Wt. of cup + wet soil					
Wt. of cup + dry soil					
Wt. of cup					
Wt. of dry soil					
Wt. of water					
Water content, w%					

WATER CONTENT DETERMINATION

Project SUSITNA HYDRO Job No. P570155

Location of Project CAMP WATANA

Description of Soil _____

Tested By J. Ashford Date of Testing 7/18/82

Date of Weighing _____

TEST Boring no.	WL-16-12b-MC	WL-16-14a-MC	WL-16-14b-MC		
Container no. (cup)	61	259	4		
Wt. of cup + wet soil	1388	1069	1067		
Wt. of cup + dry soil	1238	984	976		
Wt. of cup	258	259	278		
Wt. of dry soil	980	725	698		
Wt. of water	150	85	91	WATER	LOSS
Water content, w%	15.3%	11.7%	13.0%		

Boring no.					
Container no. (cup)					
Wt. of cup + wet soil					
Wt. of cup + dry soil					
Wt. of cup					
Wt. of dry soil					
Wt. of water					
Water content, w%					

WATER CONTENT DETERMINATION

Project SUSITNA HYDRO Job No. P570155

Location of Project CAMP WATANA

Description of Soil _____

Tested By J. Astford Date of Testing 7/18/82

Date of Weighing _____

TEST Boring no.	WL-16-12b-MC	WL-16-14a-MC	WL-16-14b-MC		
Container no. (cup)	61	259	4		
Wt. of cup + wet soil	1388	1069	1067		
Wt. of cup + dry soil	1238	984	976		
Wt. of cup	258	259	278		
Wt. of dry soil	980	725	698		
Wt. of water	150	85	91		
Water content, w%	15.3%	11.7%	13.0%		

Boring no.					
Container no. (cup)					
Wt. of cup + wet soil					
Wt. of cup + dry soil					
Wt. of cup					
Wt. of dry soil					
Wt. of water					
Water content, w%					

WATER CONTENT DETERMINATION

Project SUSITNA H.E.P. Job No. P5700

Location of Project WATANA BORROW SITE D

Description of Soil _____

Tested By RAW Date of Testing _____

Date of Weighing _____

(C)

Boring no.	16B-18				
Container no. (cup)	63				
Wt. of cup + wet soil	451				
Wt. of cup + dry soil	432				
Wt. of cup	256				
Wt. of dry soil	176				
Wt. of water	19				
Water content, w%	10.8%				

Boring no.					
Container no. (cup)					
Wt. of cup + wet soil					
Wt. of cup + dry soil					
Wt. of cup					
Wt. of dry soil					
Wt. of water					
Water content, w%					

WATER CONTENT DETERMINATION

Project SUSITNA HEP Job No. P5701.55

Location of Project WATANA BORROW AREA D

Description of Soil _____

Tested By _____ Date of Testing _____

Date of Weighing _____

	(C)	(C)	(C)	(C)	(C)
Boring no.	16B-19	16B-20	16B-21a	16B-21b	16B-22
Container no. (cup)			258		
Wt. of cup + wet soil	132 g	1451 g	1288	731 g	1372
Wt. of cup + dry soil	675	1318	1182	662	1237
Wt. of cup	258 g	256 g	258	261 g	260
Wt. of dry soil	417	1062	924	401	977
Wt. of water	57	133	106	69	135
Water content, w%	13.7%	12.5%	11.5%	17.2%	13.8%

	(D)	(D)	(D)	(D)	(D)
Boring no.	16B-23	16B-24a	16B-24b	16B-25	16B-26
Container no. (cup)	4	3	270		
Wt. of cup + wet soil	1651 g	1186 g	1390	826	1377
Wt. of cup + dry soil	1494	1134	1143	745	1225
Wt. of cup	277 g	261 g	270	272	272
Wt. of dry soil	1217	873	873	473	953
Wt. of water	157	52	247	81	152
Water content, w%	12.9%	5.9%	28.3%	17.1%	15.9%

WATER CONTENT DETERMINATION

Project SUSITNA Job No. P5701-55

Location of Project WATANA BORROW SITE D

Description of Soil _____

Tested By SAA Date of Testing _____

Date of Weighing _____

	(D)	(E)	(D)		(D)
Boring no.	16B-29a	16B-36a	16B-31a	16B-35	16B-34
Container no. (cup)	59				
Wt. of cup + wet soil	1503	1041	1275		1152
Wt. of cup + dry soil	1280	889	1187		1016
Wt. of cup	262	260	258		259
Wt. of dry soil	1018	629	929		757
Wt. of water	223	412	348		136
Water content, w%	21.9%	64.2%	37.4%	LL	17.9%

	(D)	(D)			
Boring no.	16B-31b	16B-30	FM-27		
Container no. (cup)			2		
Wt. of cup + wet soil	876	1022	1041		
Wt. of cup + dry soil	769	1000			
Wt. of cup	259	258	272		
Wt. of dry soil	510	742			
Wt. of water	107	22			
Water content, w%	20.9%	3.0%			

WATER CONTENT DETERMINATION

Project SUSITNA HEP Job No. P5701.55

Location of Project WATANA DAMSITE BORROW AREA "D."

Description of Soil _____

Tested By A. Ashford Date of Testing 7/22

Date of Weighing 7/22/82

	(D)	(D')	(E)	(E)	(E)
Boring no.	16B-29B	16B-33	16B-36b	16B-37	16B-38
Container no. (cup)	4	1	268.0	260	63
Wt. of cup + wet soil	1532	1037	1451	1718	1984
Wt. of cup + dry soil	1424	909	1267	1517	1757
Wt. of cup	277	260	268	260	261
Wt. of dry soil	1147	649	999	1257	1496
Wt. of water	108	128	184	201	227
Water content, w%	9.4%	19.7%	18.4%	16.0%	15.2%

	(D)	(D')			
Boring no.	16B-28	16B-35			
Container no. (cup)	2	260			
Wt. of cup + wet soil	1090	639			
Wt. of cup + dry soil	1055	556			
Wt. of cup	273	262			
Wt. of dry soil	782	294			
Wt. of water	35	83			
Water content, w%	4.5%	28.2%			

LAMINATED

WATER CONTENT DETERMINATION

Project SUBITNA Job No. _____

Location of Project WATANA BORROW SITE D

Description of Soil _____

Tested By _____ Date of Testing _____

Date of Weighing _____

	(E)	(F)	(F)	(F)	(F)
Boring no.	16B-40	16B-41	16B-43	16B-45	16B-(47,48,49)
Container no. (cup)	61	1	244	159	255
Wt. of cup + wet soil	1490	2576	1661	1573	1940
Wt. of cup + dry soil	1434	1472	1542	1383	1825
Wt. of cup	271	261	268	261	259
Wt. of dry soil	1163	1211	1274	1122	1569
Wt. of water	56	164	119	190	115
Water content, w%	4.8%	8.5%	9.3%	16.9%	7.3%

Boring no.	17-30a	17-30b	17-29		
Container no. (cup)	61	270	257		
Wt. of cup + wet soil	1635	1918	856		
Wt. of cup + dry soil	1469	1781	751		
Wt. of cup	257	270	259		
Wt. of dry soil	1212	1511	492		
Wt. of water	166	137	105		
Water content, w%	13.7%	9.1%	21.3%		

WATER CONTENT DETERMINATION

Project SUSTINA H.E.P. Job No. P5700.55
 Location of Project WATANA BORROW SITE D

Description of Soil _____

Tested By _____ Date of Testing 7/25/82

Date of Weighing _____

	(E)	(F/G)			
Boring no.	168-52	168-57			
Container no. (cup)	257	61			
Wt. of cup + wet soil	1301	1291			
Wt. of cup + dry soil	1206	1197			
Wt. of cup	259	258			
Wt. of dry soil	947	939			
Wt. of water	95	94			
Water content, w%	10.0%	10.0%			

X FIELD PREPARED
 X FIELD

Boring no.					
Container no. (cup)					
Wt. of cup + wet soil					
Wt. of cup + dry soil					
Wt. of cup					
Wt. of dry soil					
Wt. of water					
Water content, w%					

WATER CONTENT DETERMINATION

Project SUSITUA N.E.P. Job No. P500155

Location of Project WATONA CAMP

Description of Soil CLAY UNIT G

Tested By [Signature] Date of Testing 7/25/82

Calc. by BAW. 7/31/82

Date of Weighing 7/27/82

Boring no.	16B-59	16B-60	16B-63	16B-64	16B-65
Container no. (cup)	54	255	5-2	257	257
Wt. of cup + wet soil	1015	775	491	834	1442
Wt. of cup + dry soil	849	659	400	690	1165
Wt. of cup	260	257	133	287	259
Wt. of dry soil	589	402	267	403	906
Wt. of water	166	116	91	144	277
Water content, w%	28.2	28.9	34.1	33.4	30.6

LAMINATED

SLIGHTLY VARIED

LAMINATED

Boring no.	16B-66	16B-61	16B-58		
Container no. (cup)	260		260		
Wt. of cup + wet soil	761	1201	650		
Wt. of cup + dry soil	653	994	562		
Wt. of cup	268	271	262		
Wt. of dry soil	385	723	300		
Wt. of water	108	207	88		
Water content, w%	28.1	28.6	29.3		

LAMINATED
V. CLEAN

LAMINATED

WATER CONTENT DETERMINATION

Project SUSITNA H.E.P. Job No. P570155

Location of Project CAMP WATANA

Description of Soil _____

Tested By A. Ashford Date of Testing 7/26/82

ck Rm 7/29/82

Date of Weighing _____

	I	I	I		
TEST Boring no.	16B-67	16B-68	16B-70		
Container no. (cup)	258	3	270		
Wt. of cup + wet soil	1594	1446	1455		
Wt. of cup + dry soil	1468	1193	1298		
Wt. of cup	258	260	270		
Wt. of dry soil	1210	933	1028		
Wt. of water	126	253	157		
Water content, w%	10.4%	27.7%	15.2%		

Boring no.					
Container no. (cup)					
Wt. of cup + wet soil					
Wt. of cup + dry soil					
Wt. of cup					
Wt. of dry soil					
Wt. of water					
Water content, w%					

WATER CONTENT DETERMINATION

Project SUBI TANA H.E.P. Job No. P570155

Location of Project CAMP WATANA

Description of Soil _____

Tested By A. Ashford Date of Testing 7/28/82

✓ Date of Weighing _____

	<u>①</u>	<u>①</u>	<u>①</u> VARVED?	<u>①</u>	
Boring no.	16B-71	16B-72	16B-73	16B-74	
Container no. (cup)	260	54	3	2680	
Wt. of cup + wet soil	1674	1559	1603	1832	
Wt. of cup + dry soil	1482	1390	1330	1489	
Wt. of cup	263	259	261	269	
Wt. of dry soil	1219	1131	1069	1220	M.S.G.A.
Wt. of water	192	169	273	343	
Water content, w%	15.8	14.9	25.5	28.1	

Boring no.					
Container no. (cup)					
Wt. of cup + wet soil					
Wt. of cup + dry soil					
Wt. of cup					
Wt. of dry soil					
Wt. of water					
Water content, w%					

WATER CONTENT DETERMINATION

Project SUSITNA Job No. P570151

Location of Project WATANA BORROW SITE D

Description of Soil _____

Tested By _____ Date of Testing _____

HYDROMETER (D)

Date of Weighing _____

DRY WEIGHT OF SOIL

Boring no.	16B-35				
Container no. (cup)	145				
Wt. of cup + wet soil	—				
Wt. of cup + dry soil	188.25				
Wt. of cup	136.27				
Wt. of dry soil	51.98				
Wt. of water					
Water content, w%					

Boring no.					
Container no. (cup)					
Wt. of cup + wet soil					
Wt. of cup + dry soil					
Wt. of cup					
Wt. of dry soil					
Wt. of water					
Water content, w%					

WATER CONTENT DETERMINATION

Project SUSITNA Job No. 9570155

Location of Project CAMP WATANA

Description of Soil GRAY CLAY

Tested By [Signature] Date of Testing 7/29/82

(G) DRY WEIGHT (G) DRY WEIGHT (G) DRY WEIGHT (G) Date of Weighing 8
for hydrometer

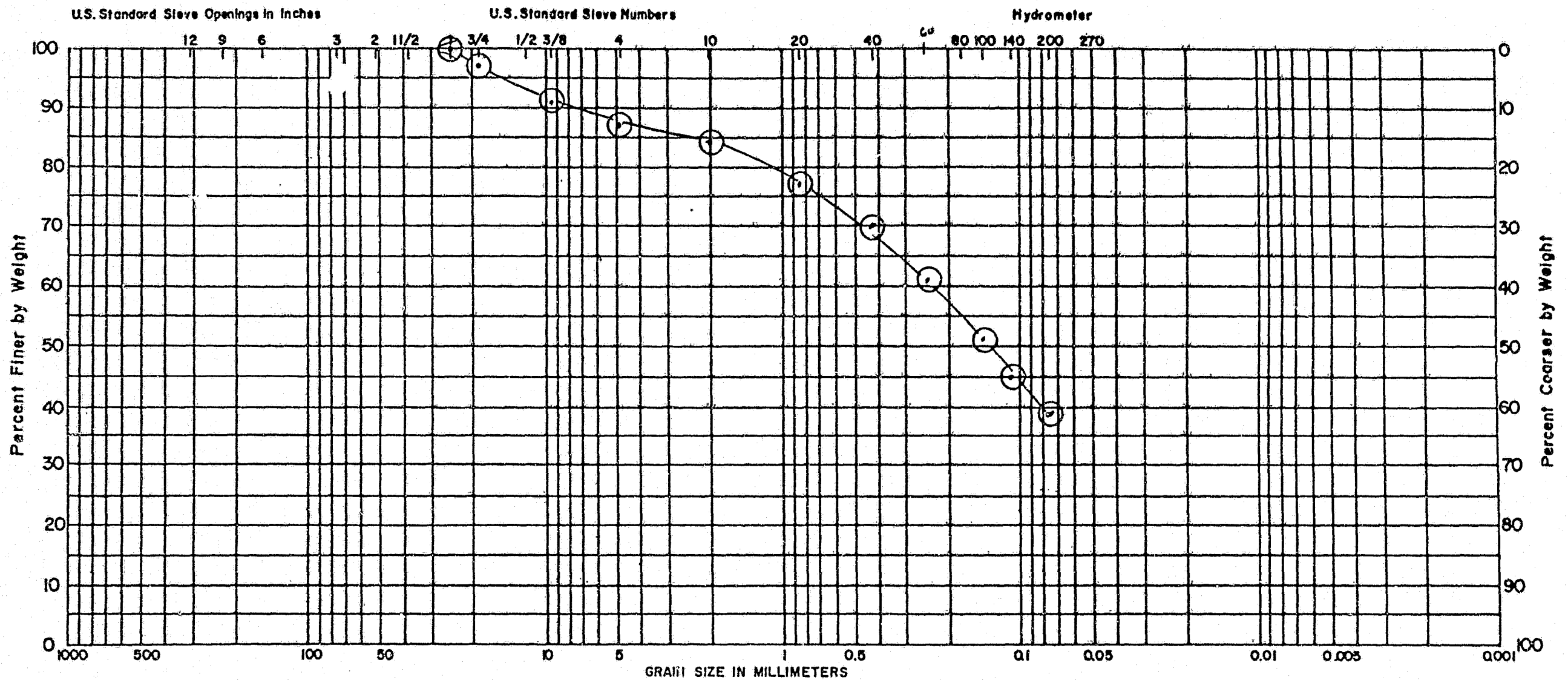
Boring no.	16B-63	16B-58	16B-66		
Container no. (cup)	165	S-2	165		
Wt. of cup + wet soil					
Wt. of cup + dry soil	184.12	186.60	188.02		
Wt. of cup	136.08	136.63	136.10		
Wt. of dry soil	48.04	49.97	51.92		
Wt. of water	-5	-5	-5		
Water content, w%	43.0	45.0	46.9		

7/30

7/31

8/1

Boring no.					
Container no. (cup)					
Wt. of cup + wet soil					
Wt. of cup + dry soil					
Wt. of cup					
Wt. of dry soil					
Wt. of water					
Water content, w%					

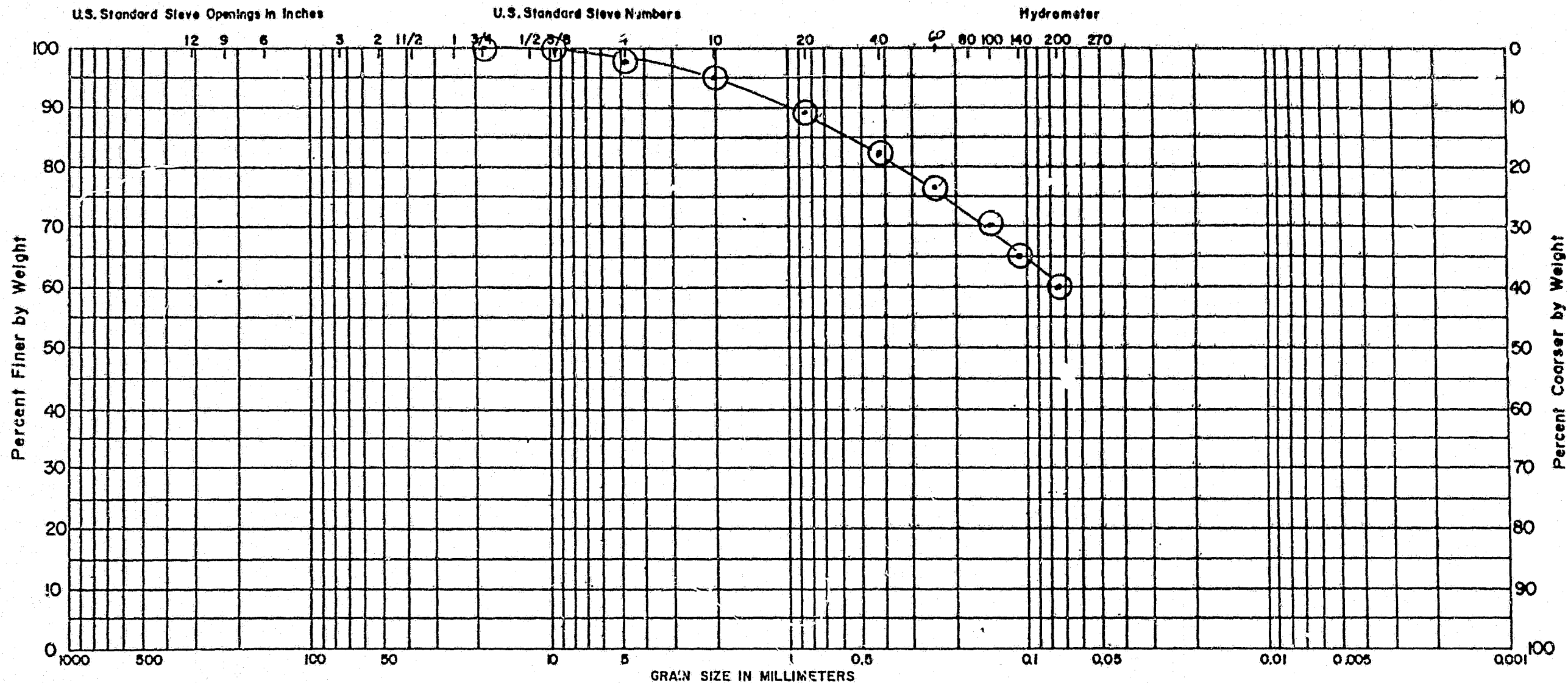


BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
WL-16A-1-GA	AH-16A	16-1	3.0-5.0	⊙	SM

ACRES	SUSITNA HYDROELECTRIC PROJECT	
	ALASKA POWER AUTHORITY	
WATANA BORROW SITE D AND RELICT CHANNEL		
ACRES AMERICAN INCORPORATED		

GRADATION ANALYSIS CURVES

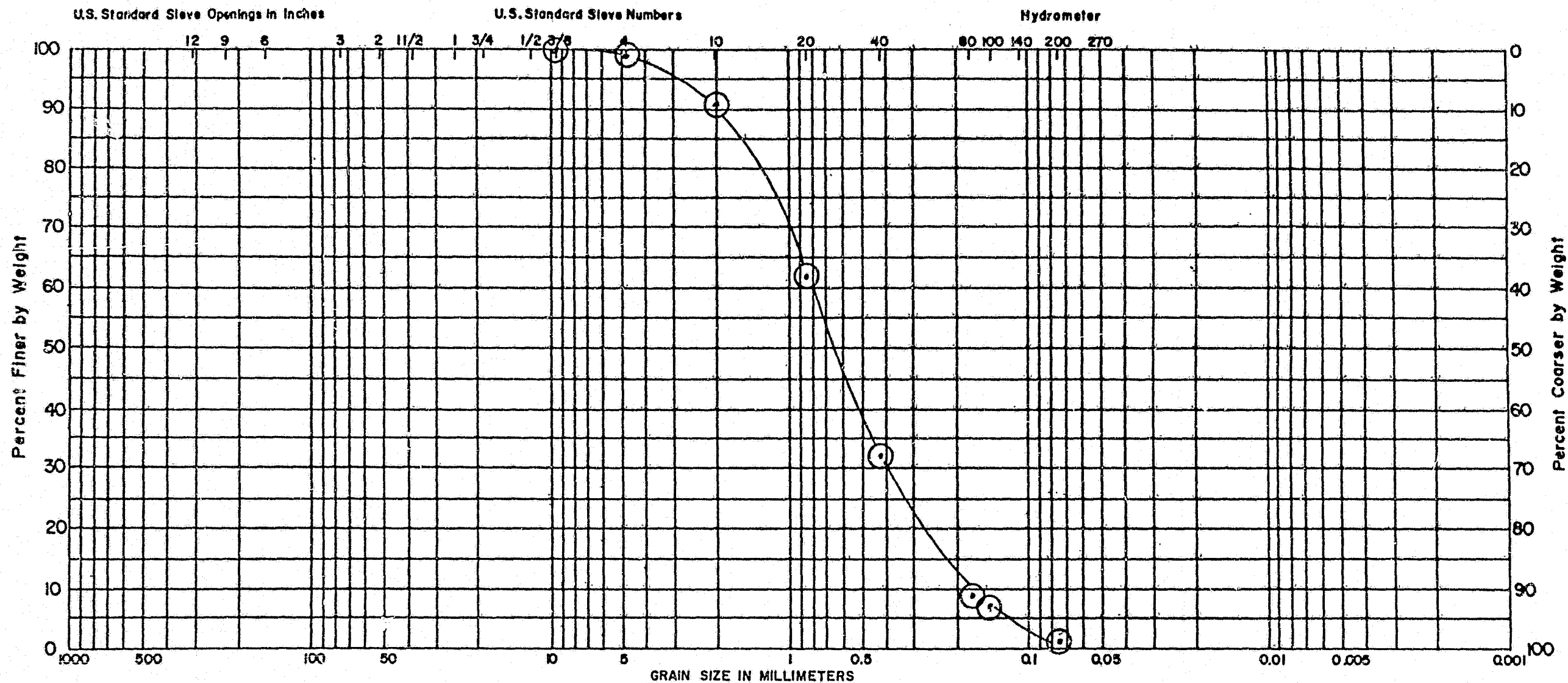


BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
WL-16A-9a-9A	AH-16A	16A-9a	9.0-11.0	⊙	CL-ML

ACRES	SUSITNA HYDROELECTRIC PROJECT	
	ALASKA POWER AUTHORITY	
WATANA BORROW SITE D AND RELICT CHANNEL		
ACRES AMERICAN INCORPORATED		C

GRADATION ANALYSIS CURVES

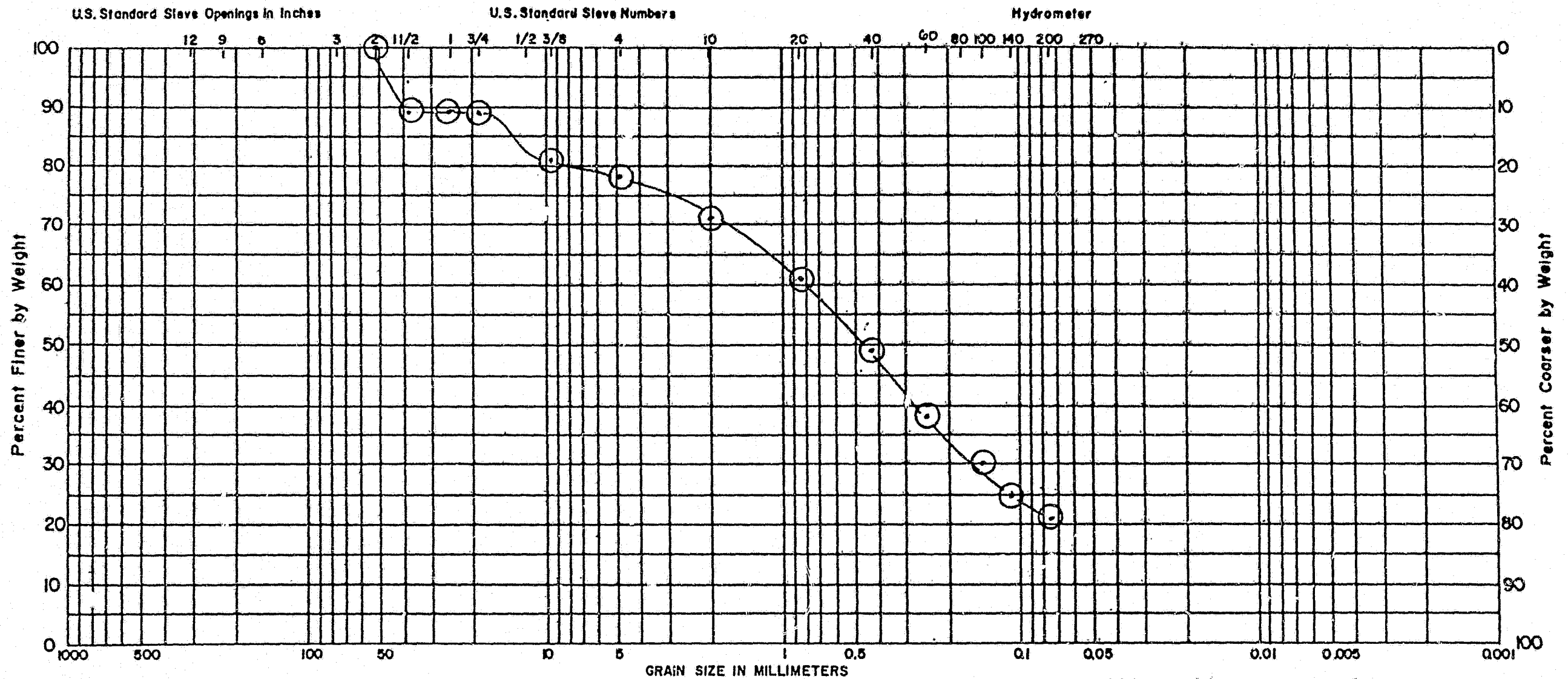


BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
WL-16A-4b-5A	AH-16A	16A-4b	9.0-11.0	⊙	SW

ACRES	SUSITNA HYDROELECTRIC PROJECT	
	ALASKA POWER AUTHORITY	
WATANA BORROW SITE D AND RELICT CHANNEL		
ACRE	AMERICAN INCORPORATED	

GRADATION ANALYSIS CURVES

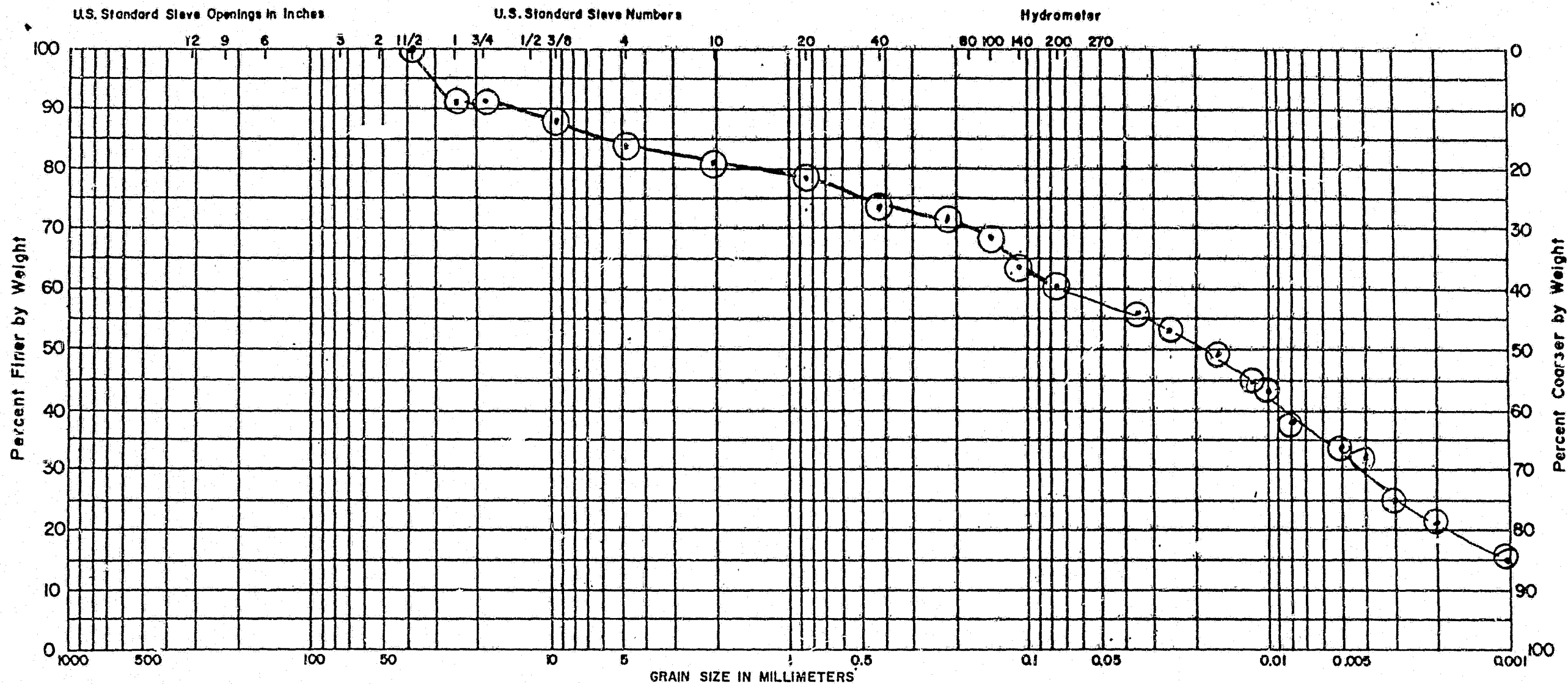


BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
WL-16A-6-GA	AH-16A	16A-6	13.0-13.5	⊙	SM-SC

ACRES	SUSITNA HYDROELECTRIC PROJECT	
	ALASKA POWER AUTHORITY	
WATANA BORROW SITE D AND RELICT CHANNEL		
ACRES AMERICAN INCORPORATED		(

GRADATION ANALYSIS CURVES

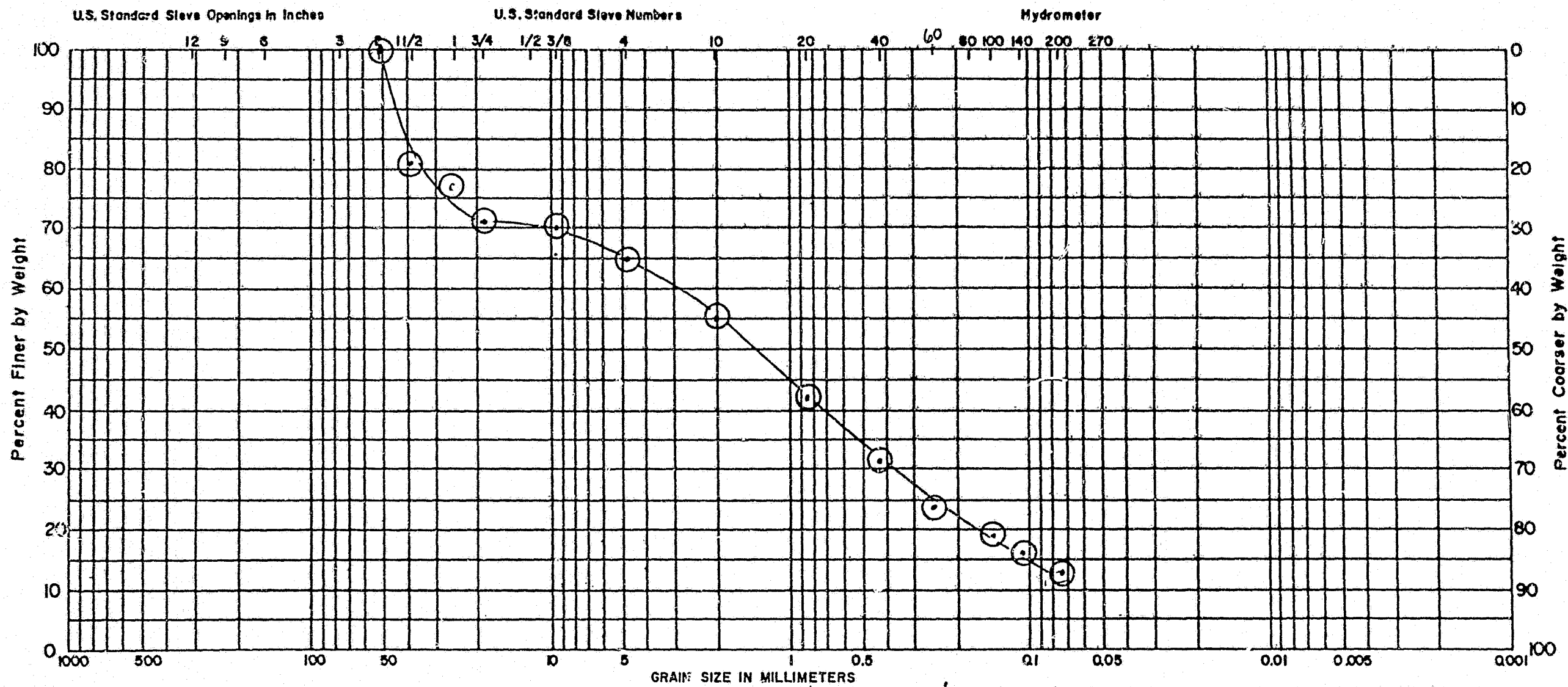


BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
WL-16B-21a	AH-16B	21a	40.0-42.0	⊙	CL-CIF

ACRES	SUSITNA HYDROELECTRIC PROJECT	
	ALASKA POWER AUTHORITY	
WATANA BORROW SITE D AND RELICT CHANNEL		
ACRES AMERICAN INCORPORATED		

GRADATION ANALYSIS CURVES



BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

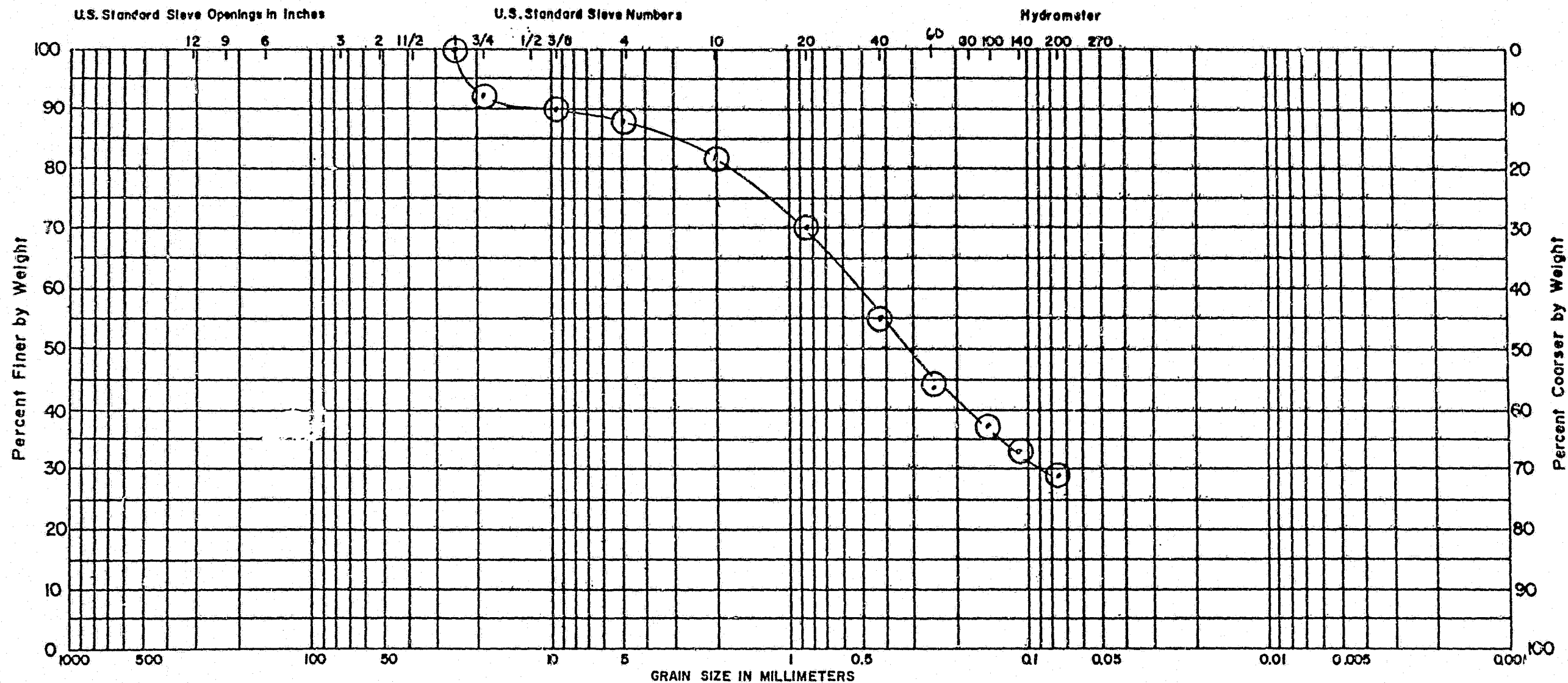
LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
WL-16A-7-6A	AH-16A	16A-7	15.0-15.7	⊙	SM-SW

SUSITNA HYDROELECTRIC PROJECT
ALASKA POWER AUTHORITY

WATANA BORROW SITE D
AND RELICT CHANNEL

ACRES AMERICAN INCORPORATED

GRADATION ANALYSIS CURVES

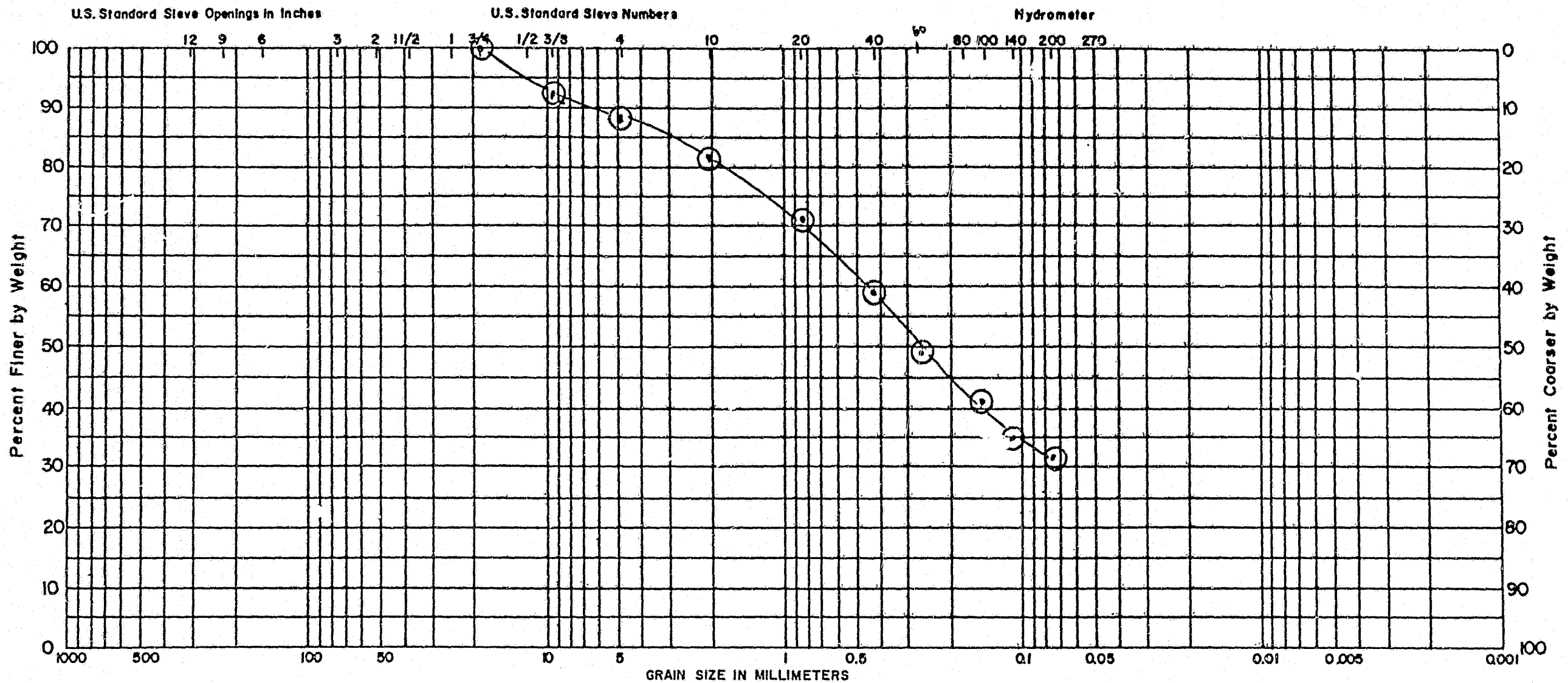


BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
WL-16A-8-5A	AH-16A	16A-8	17.0-17.2	⊙	SM-Sc

ACRES	SUSITNA HYDROELECTRIC PROJECT	
	ALASKA POWER AUTHORITY	
WATANA BORROW SITE D AND RELICT CHANNEL		
ACRES AMERICAN INCORPORATED		C

GRADATION ANALYSIS CURVES

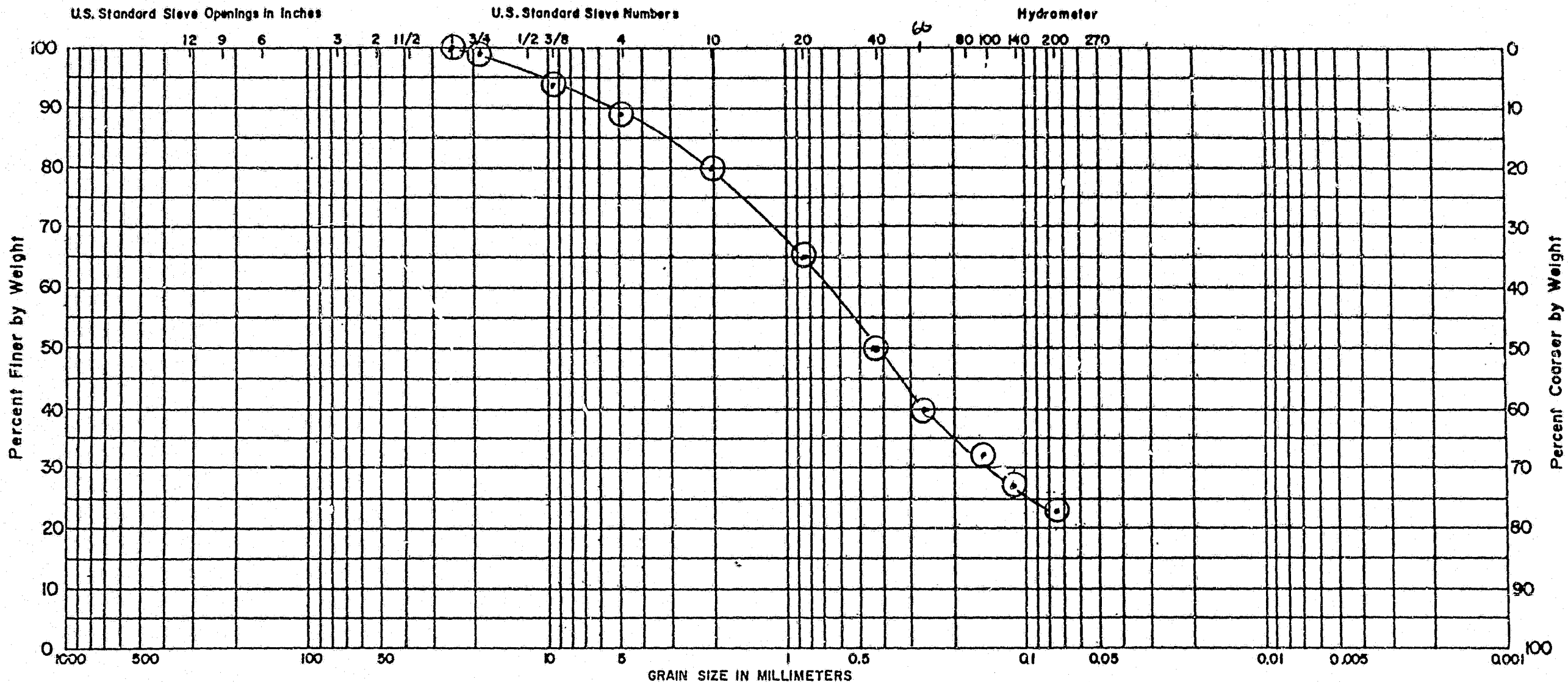


BOULDERS	CORBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
WL-18-9-GA	16	18-9	19.0-19.1	⊙	SM

ACRES	SUSITNA HYDROELECTRIC PROJECT	
	ALASKA POWER AUTHORITY	
WATANA BORROW SITE D AND RELICT CHANNEL		
ACRES AMERICAN INCORPORATED		

GRADATION ANALYSIS CURVES



BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
WL-16-109A	AH-16	16-10a	21.8-23.0	⊙	SM



SUSITNA HYDROELECTRIC PROJECT

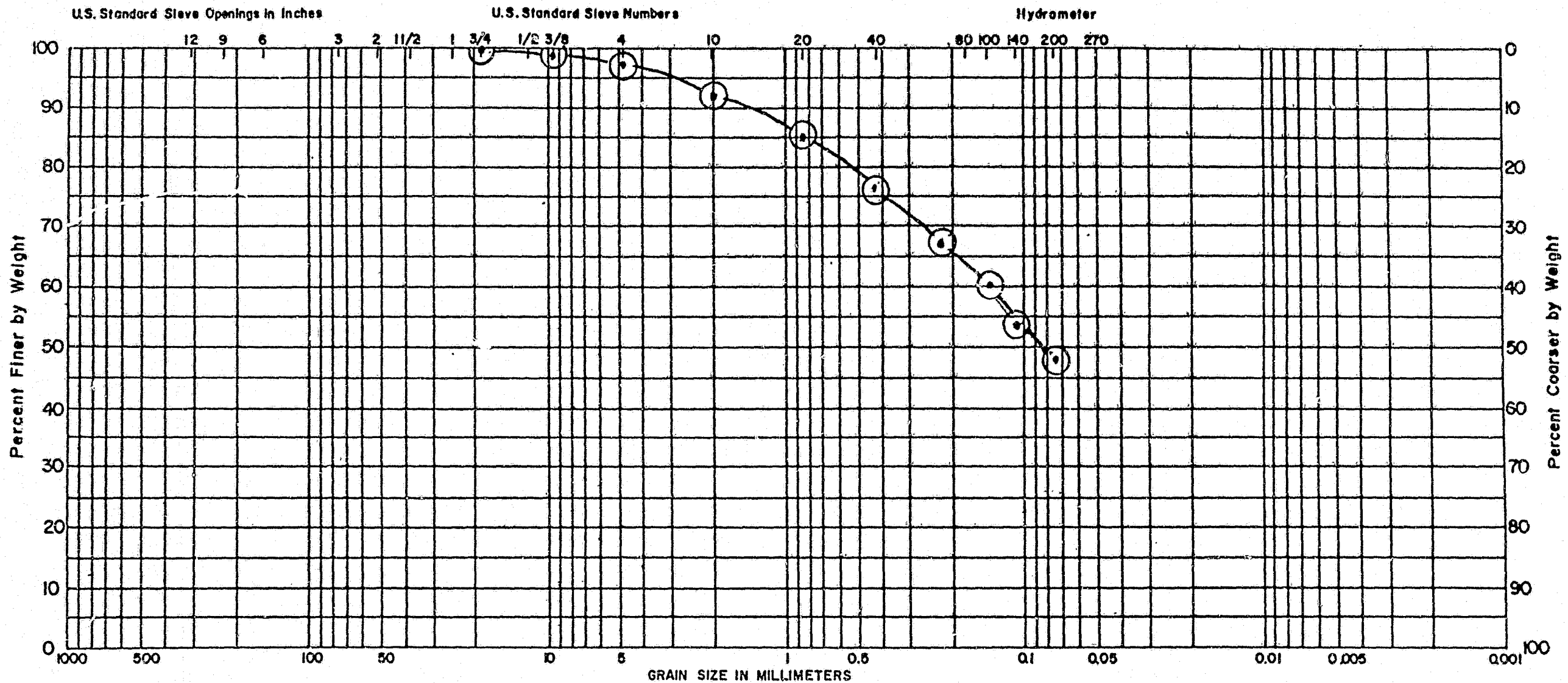
ALASKA POWER AUTHORITY

WATANA BORROW SITE D

AND RELICT CHANNEL

ACRES AMERICAN INCORPORATED

GRADATION ANALYSIS CURVES

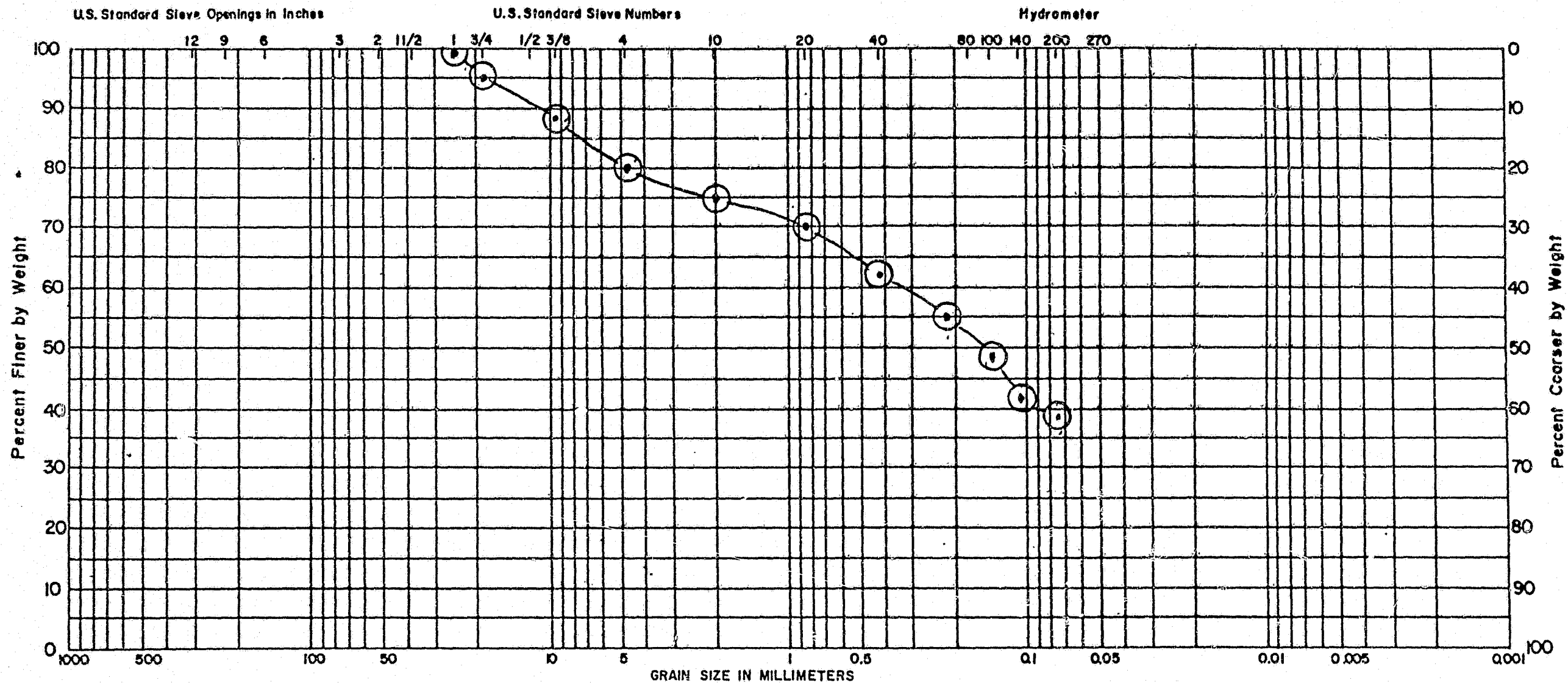


BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
WL-16-12B	AH-16	12B	27.4-28.2	⊙	SW-ML

	SUSITNA HYDROELECTRIC PROJECT	
	ALASKA POWER AUTHORITY	
WATANA BORROW SITE D AND RELICT CHANNEL		
ACRES AMERICAN INCORPORATED		

GRADATION ANALYSIS CURVES

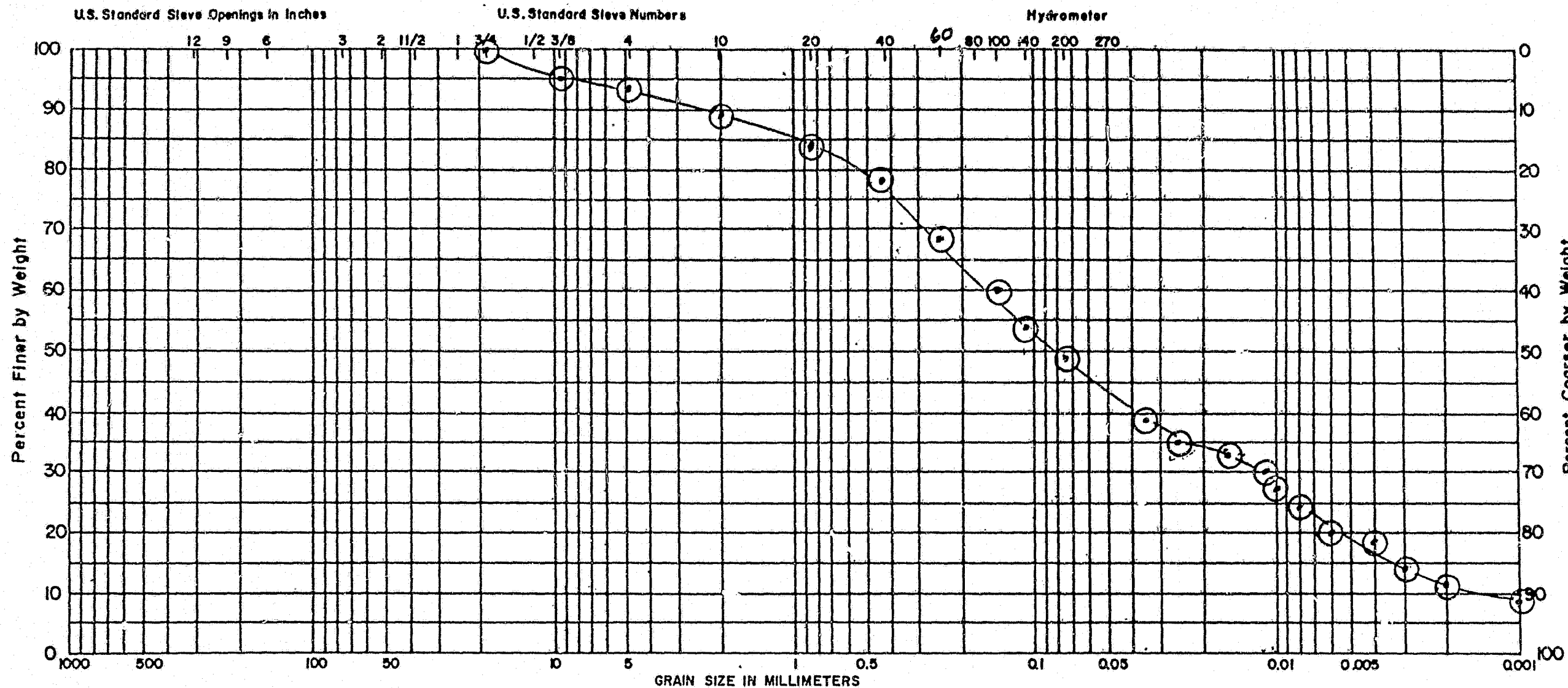


BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
W-16-14a	AH-16	14a	29.5-30.2	(A)	SM

ACRES	SUSITNA HYDROELECTRIC PROJECT	
	ALASKA POWER AUTHORITY	
WATANA BORROW SITE D AND RELICT CHANNEL		
ACRES AMERICAN INCORPORATED		

GRADATION ANALYSIS CURVES

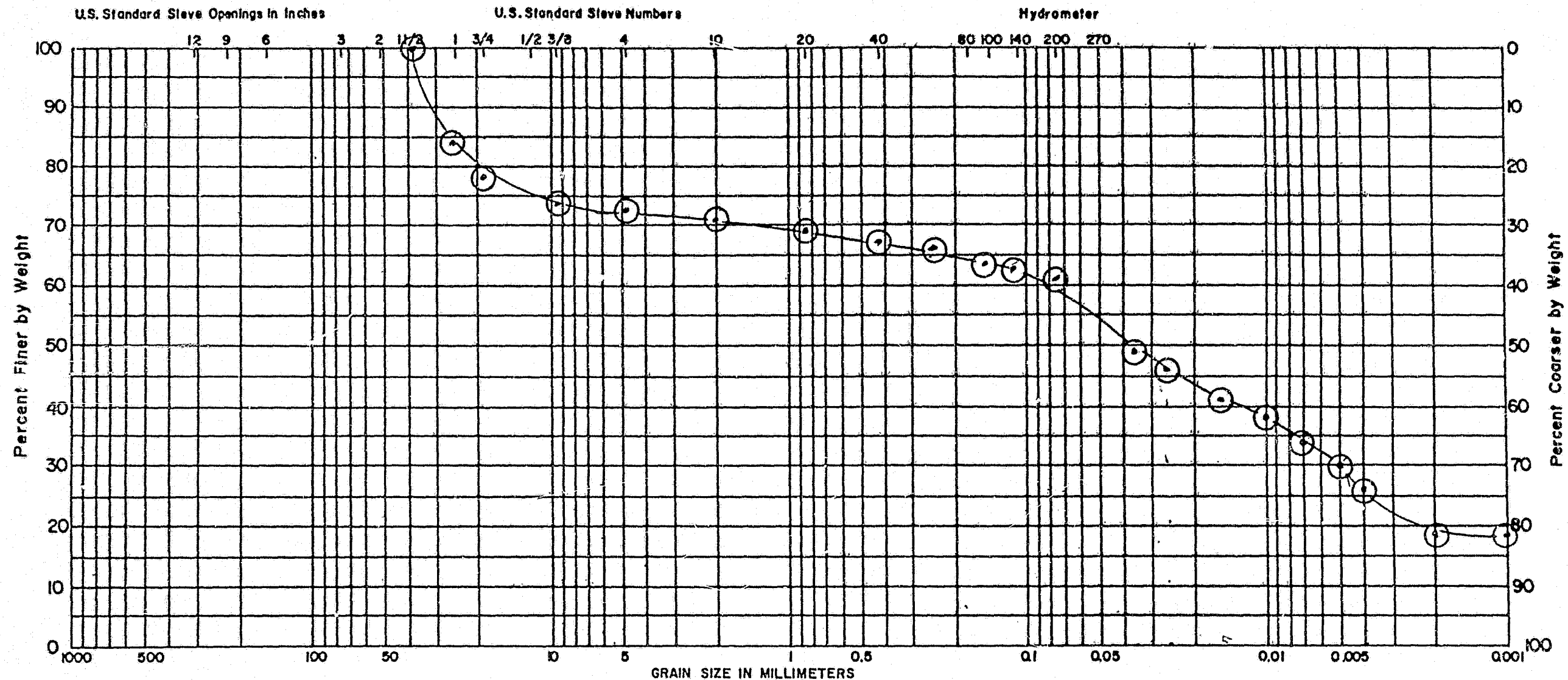


BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
WL-16-14b-GA/H	AH-16	16-14b	30.2-31.0	⊙	CL-SC

ACRES	SUSITNA HYDROELECTRIC PROJECT	
	ALASKA POWER AUTHORITY	
WATANA BORROW SITE D AND RELICT CHANNEL		
ACRES AMERICAN INCORPORATED		

GRADATION ANALYSIS CURVES

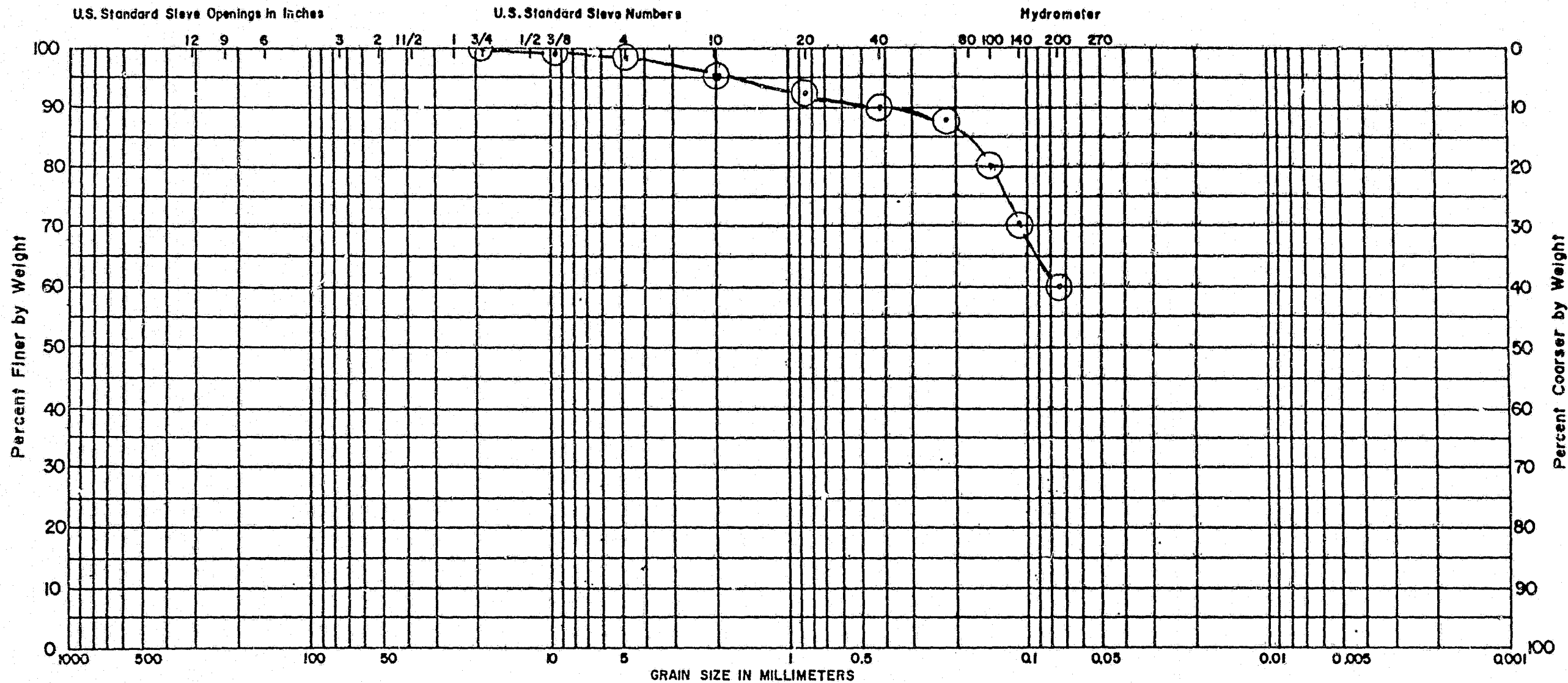


BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
WL-167-6A/HY	AH-16B	16-17	34-36	⊙	CL

ACRES	SUSITNA HYDROELECTRIC PROJECT	
	ALASKA POWER AUTHORITY	
WATANA BORROW SITE D AND RELICT CHANNEL		
ACRES AMERICAN INCORPORATED		

GRADATION ANALYSIS CURVES



BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
WL-16B-21b	AH-16B	21b	41.0-41.3	⊙	ML



SUSITNA HYDROELECTRIC PROJECT

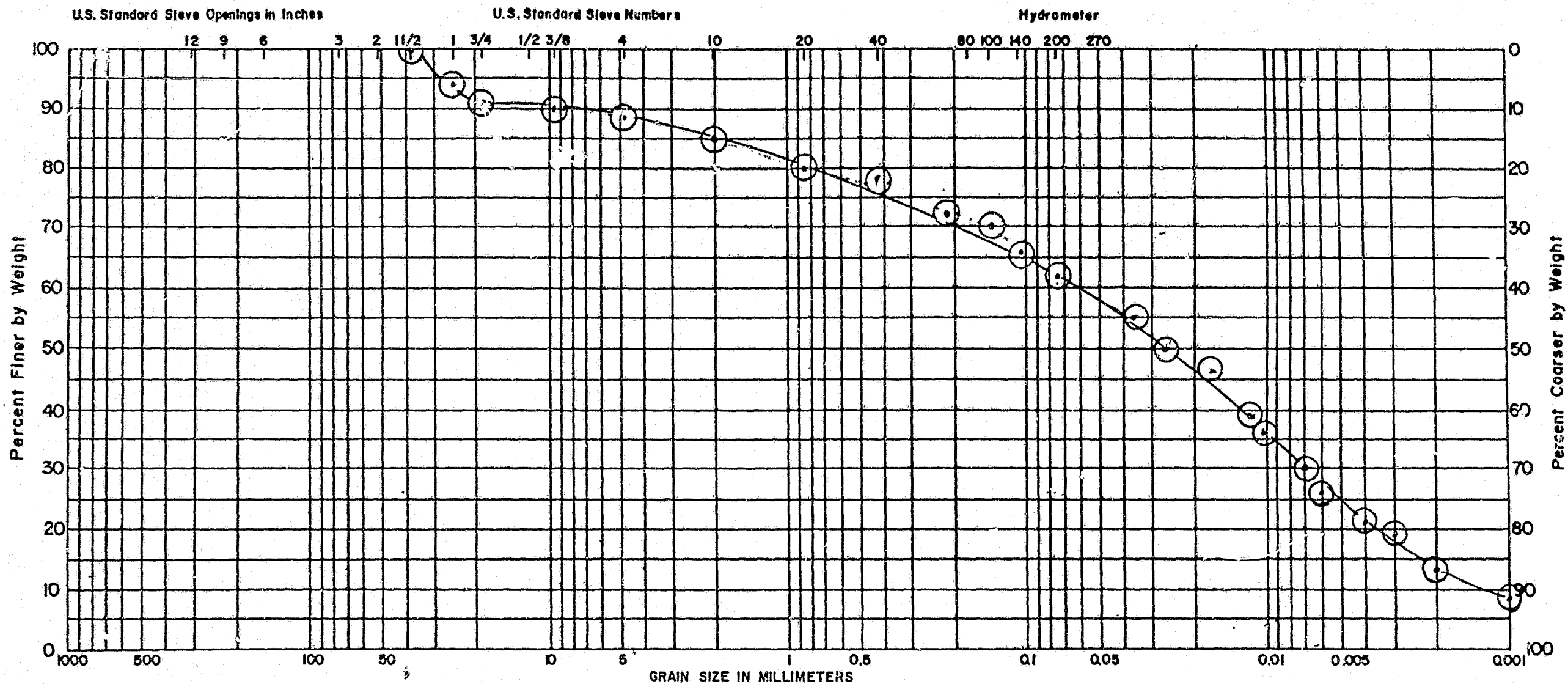
ALASKA POWER AUTHORITY

WATANA BORROW SITE D

AND RELICT CHANNEL

ACRES AMERICAN INCORPORATED

GRADATION ANALYSIS CURVES

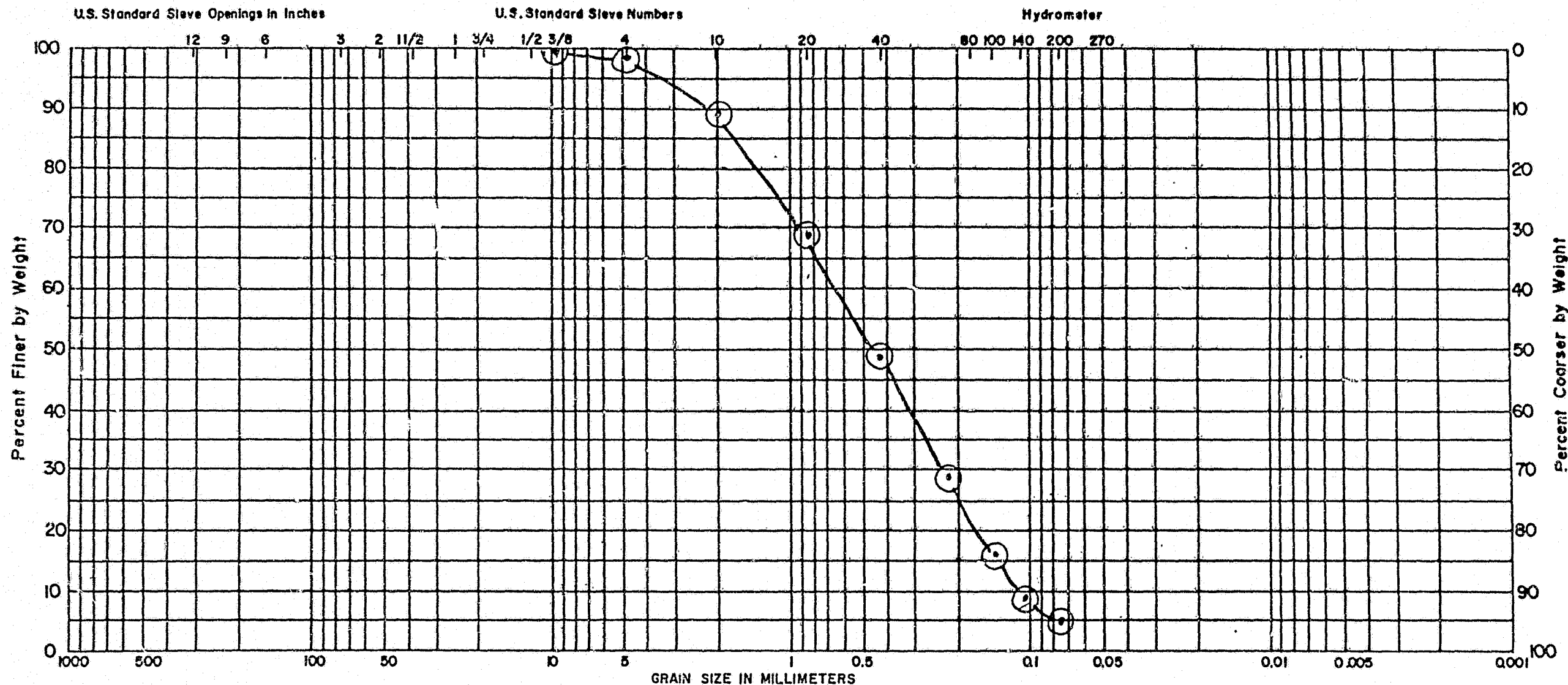


BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
WL-16B-22	AH-16B	22	42.0-43.5	⊙	CL

ACRES	SUSITNA HYDROELECTRIC PROJECT	
	ALASKA POWER AUTHORITY	
WATANA BORROW SITE D AND RELICT CHANNEL		
ACRES AMERICAN INCORPORATED		

GRADATION ANALYSIS CURVES

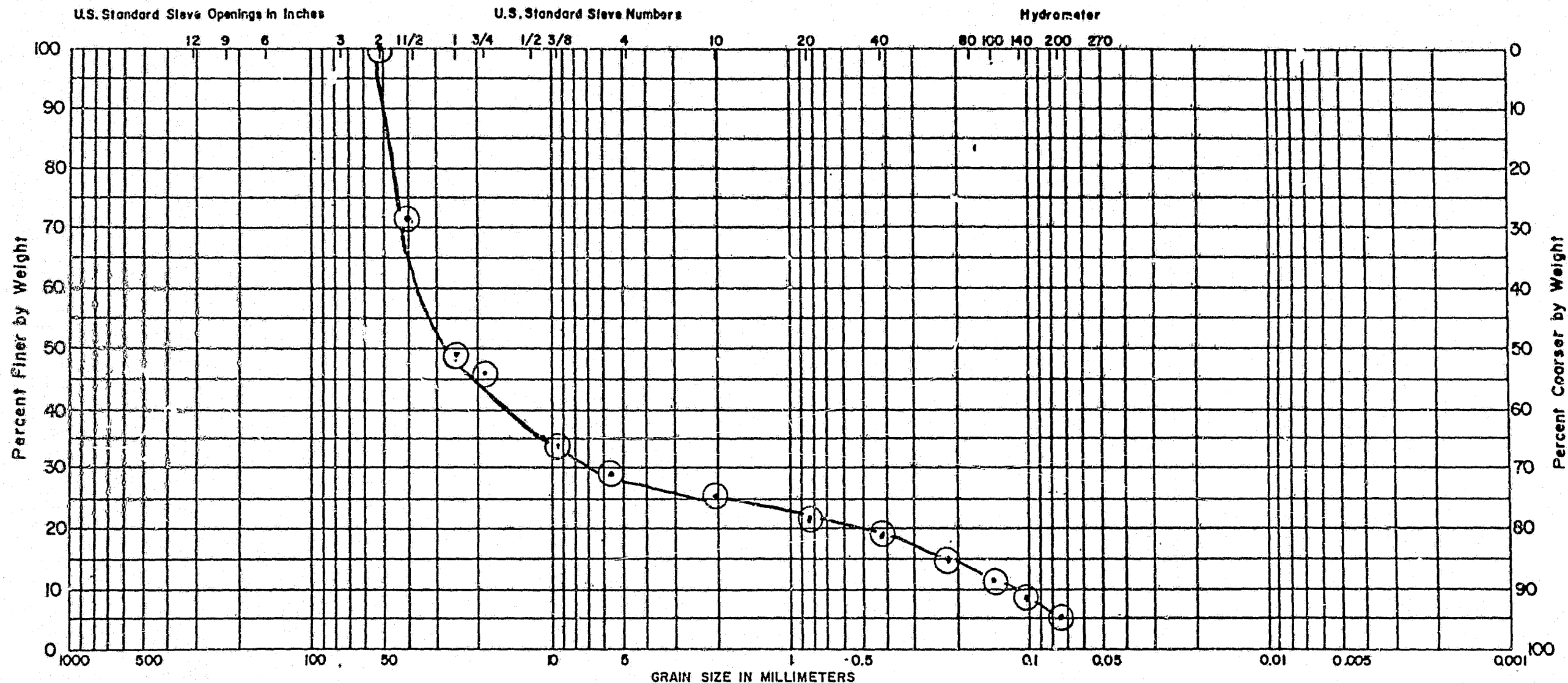


BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
WL-16B-23	AH-16B	16B-23	44.0-46.0	①	SW

ACRES	SUSITNA HYDROELECTRIC PROJECT	
	ALASKA POWER AUTHORITY	
WATANA BORROW SITE D AND RELICT CHANNEL		
ACRES AMERICAN INCORPORATED		

GRADATION ANALYSIS CURVES



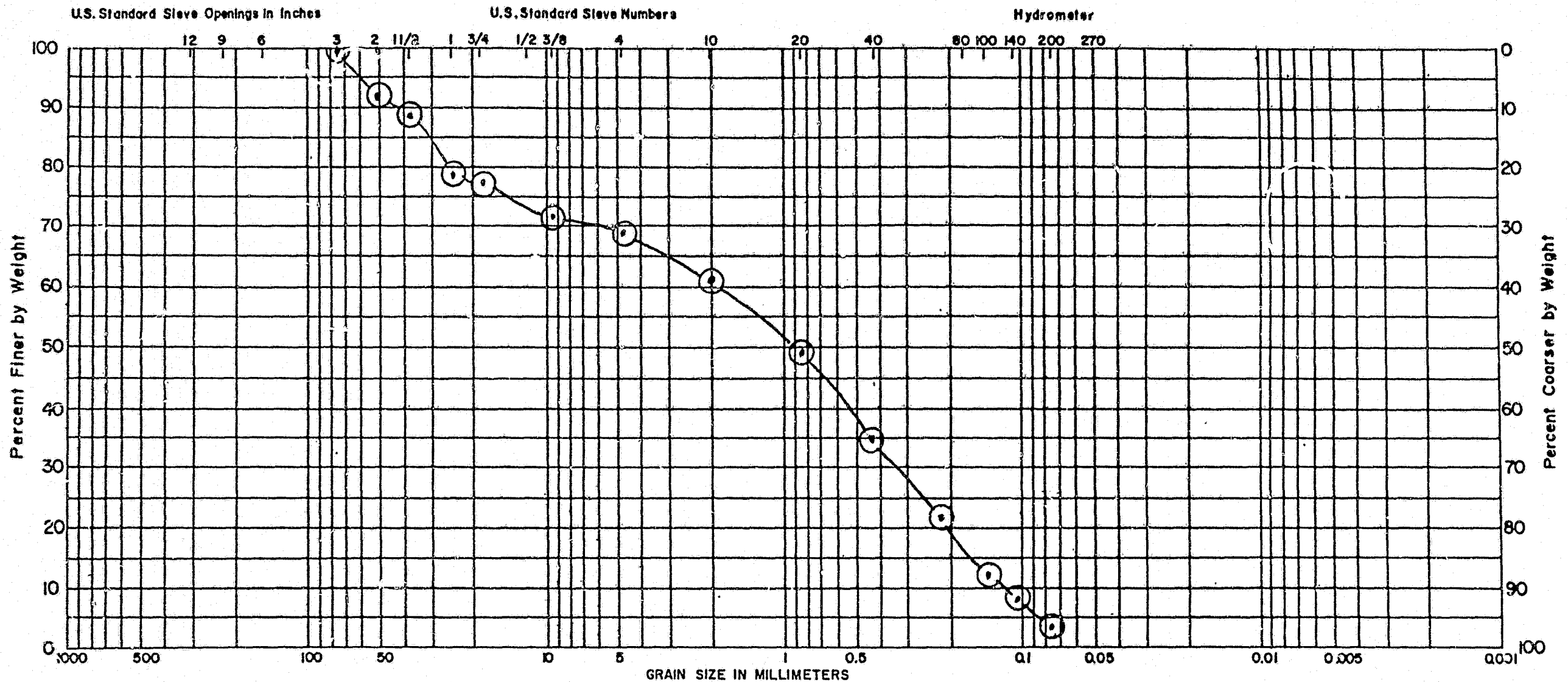
BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Slit Sizes	Clay Sizes

LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
WL-16B-24a	AH-16B	24a	46.0-46.6	⊙	GP
				NOT REPRESENTATIVE TOO SMALL OF SMALL FOR PARTICLE SIZES	

SUSITNA HYDROELECTRIC PROJECT
ALASKA POWER AUTHORITY

WATANA BORROW SITE D
AND RELICT CHANNEL

ACRES AMERICAN INCORPORATED

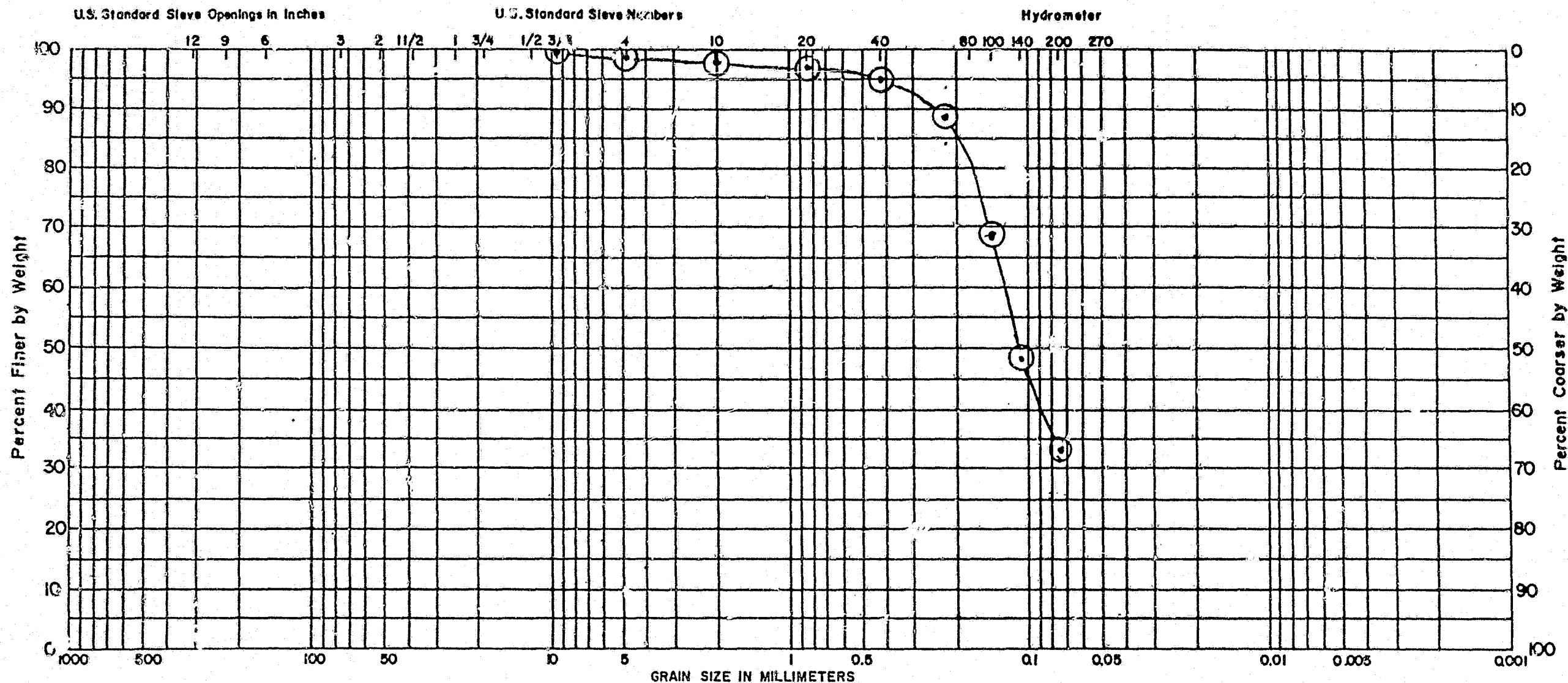


BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
WL-16B	AH-16B	23 & 24a	44.0 - 46.0	⊙	SW
23 & 24a					

ACRES	SUSITNA HYDROELECTRIC PROJECT	
	ALASKA POWER AUTHORITY	
WATANA BORROW SITE D AND RELICT CHANNEL		
ACRES AMERICAN INCORPORATED		

GRADATION ANALYSIS CURVES

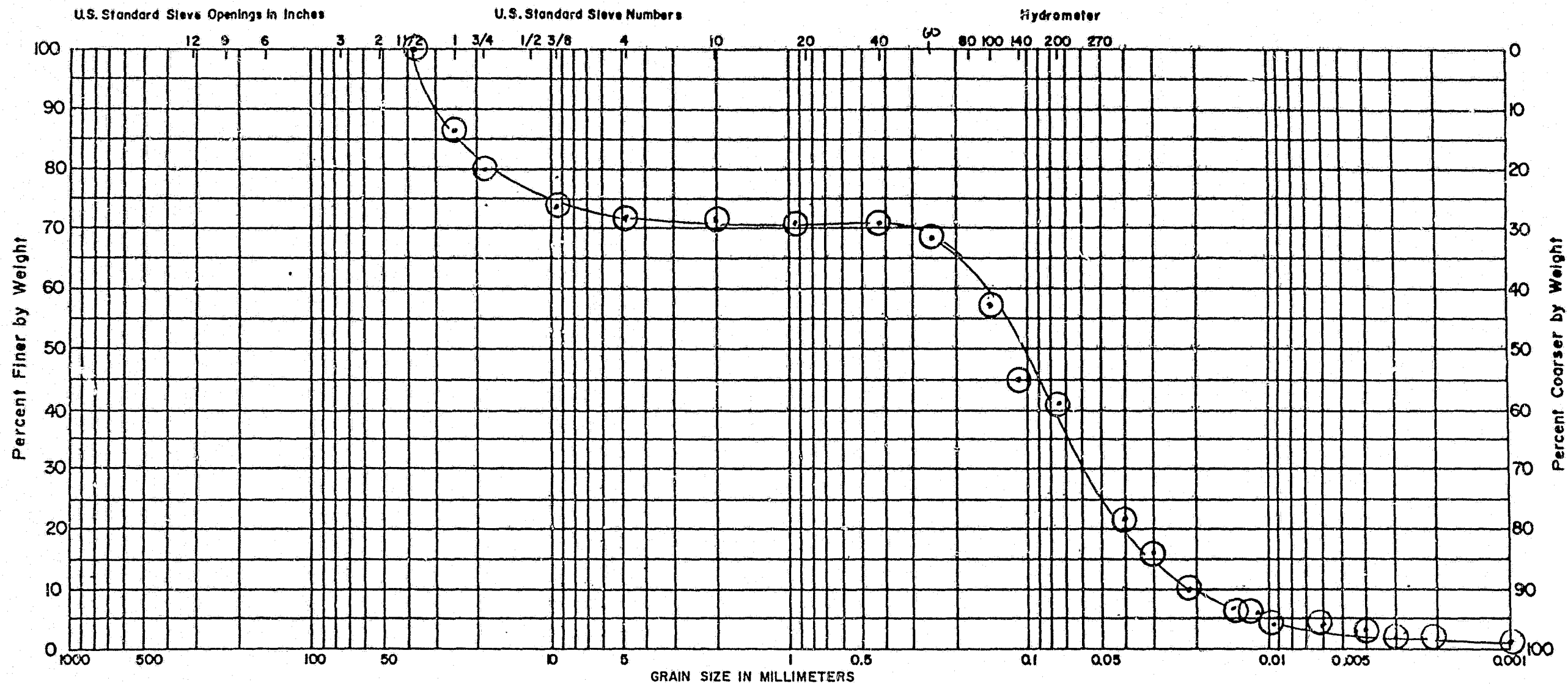


BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
WL-16B-24B	AH-16B	24b	46.6-47.5	①	SM

ACRES	SUSITNA HYDROELECTRIC PROJECT	
	ALASKA POWER AUTHORITY	
WATANA BORROW SITE D AND RELICT CHANNEL		
ACRES AMERICAN INCORPORATED		

GRADATION ANALYSIS CURVES

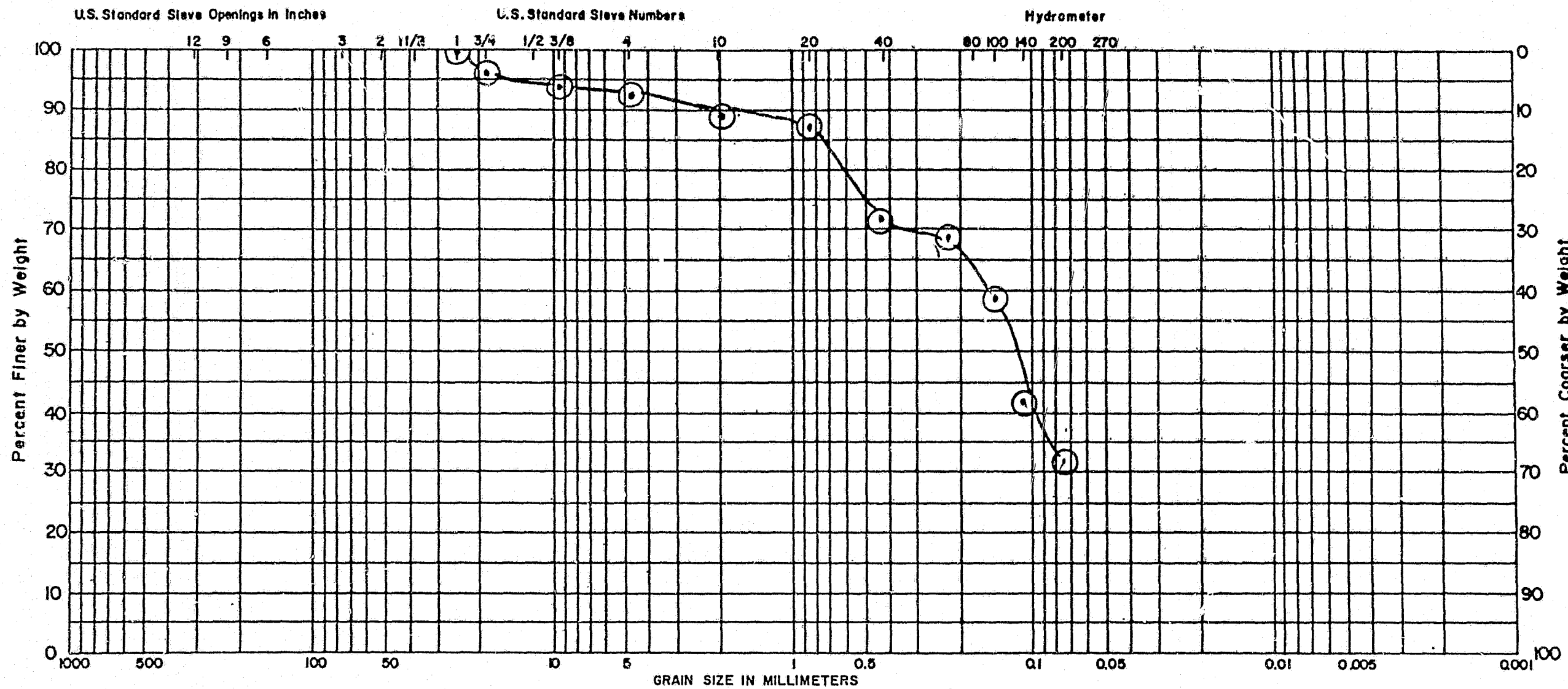


BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
WL-16B-25-AY	AH-16B	16B-25	48.0-49.5	○	SM

ACRES	SUSITNA HYDROELECTRIC PROJECT	
	ALASKA POWER AUTHORITY	
WATANA BORROW SITE D AND RELICT CHANNEL		
ACRES AMERICAN INCORPORATED		

GRADATION ANALYSIS CURVES



BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
WL-16B-26	AH-16B	16B-26	49.5-50.7	⊙	SM

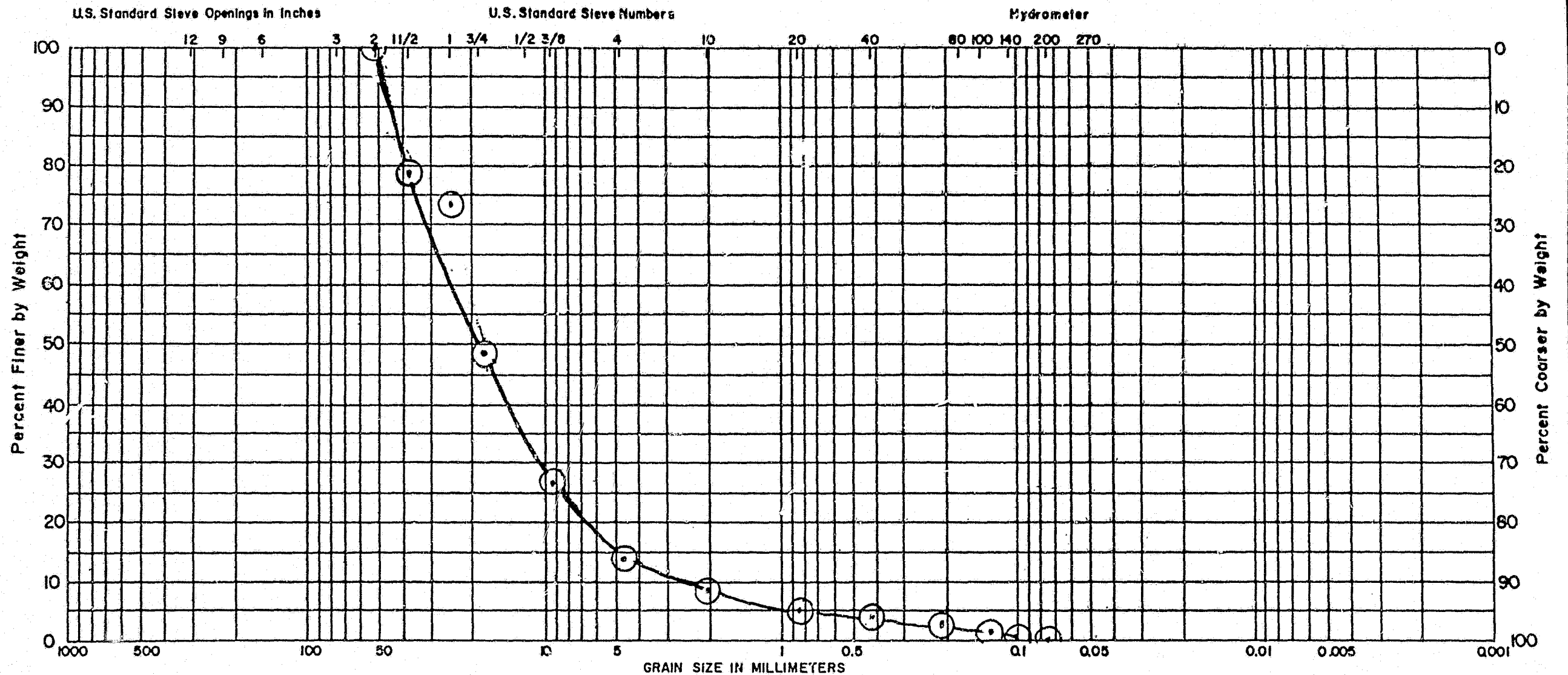
SUSITNA HYDROELECTRIC PROJECT

ALASKA POWER AUTHORITY

WATANA BORROW SITE D
AND RELICT CHANNEL

ACRES AMERICAN INCORPORATED

GRADATION ANALYSIS CURVES



BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

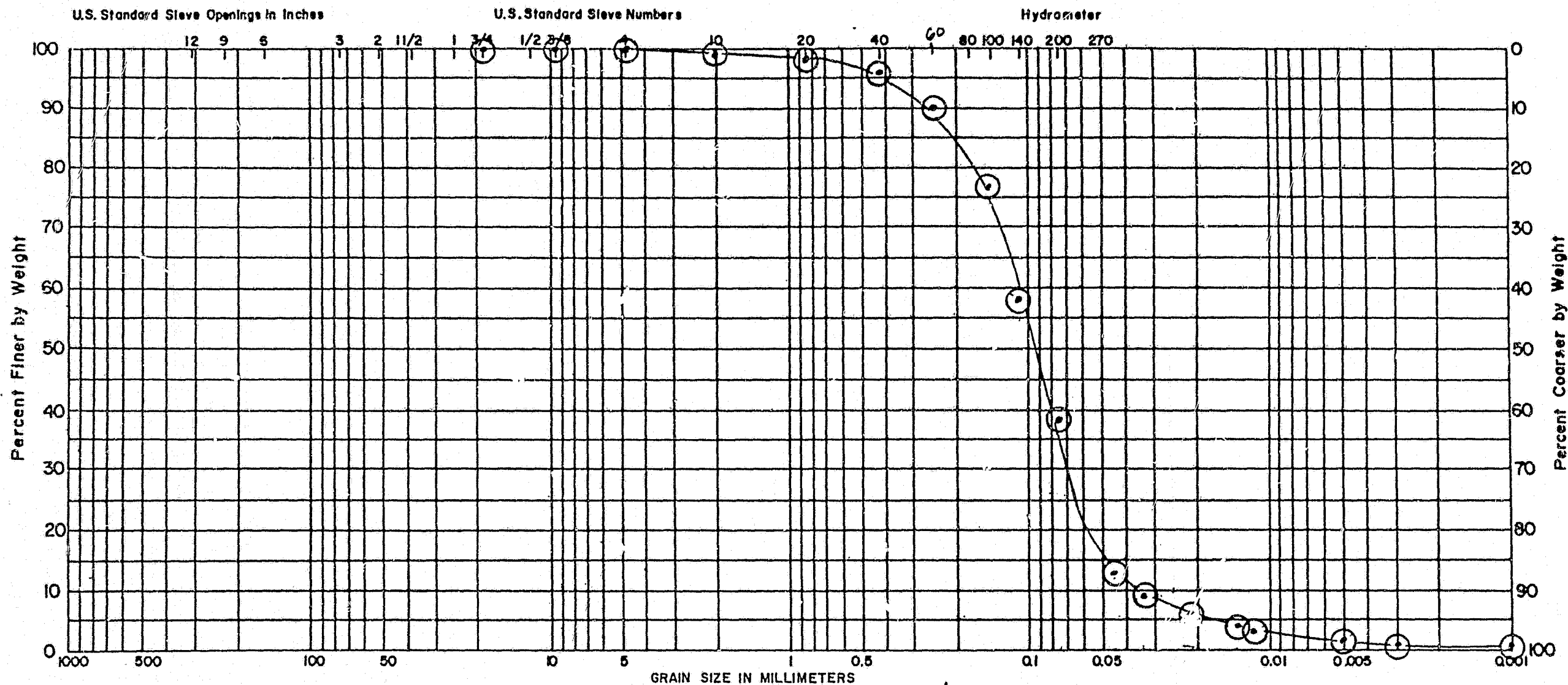
LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
Wk-16B-28	AH-16B	28	52.0 - 52.7	⊙	GP
				NOT REPRESENTATIVE (TOO SMALL OF SAMPLE FOR SIZE OF PARTICLES)	

SUSITNA HYDROELECTRIC PROJECT
ALASKA POWER AUTHORITY

**WATANA BORROW SITE D
AND RELICT CHANNEL**

ACRES AMERICAN INCORPORATED

GRADATION ANALYSIS CURVES

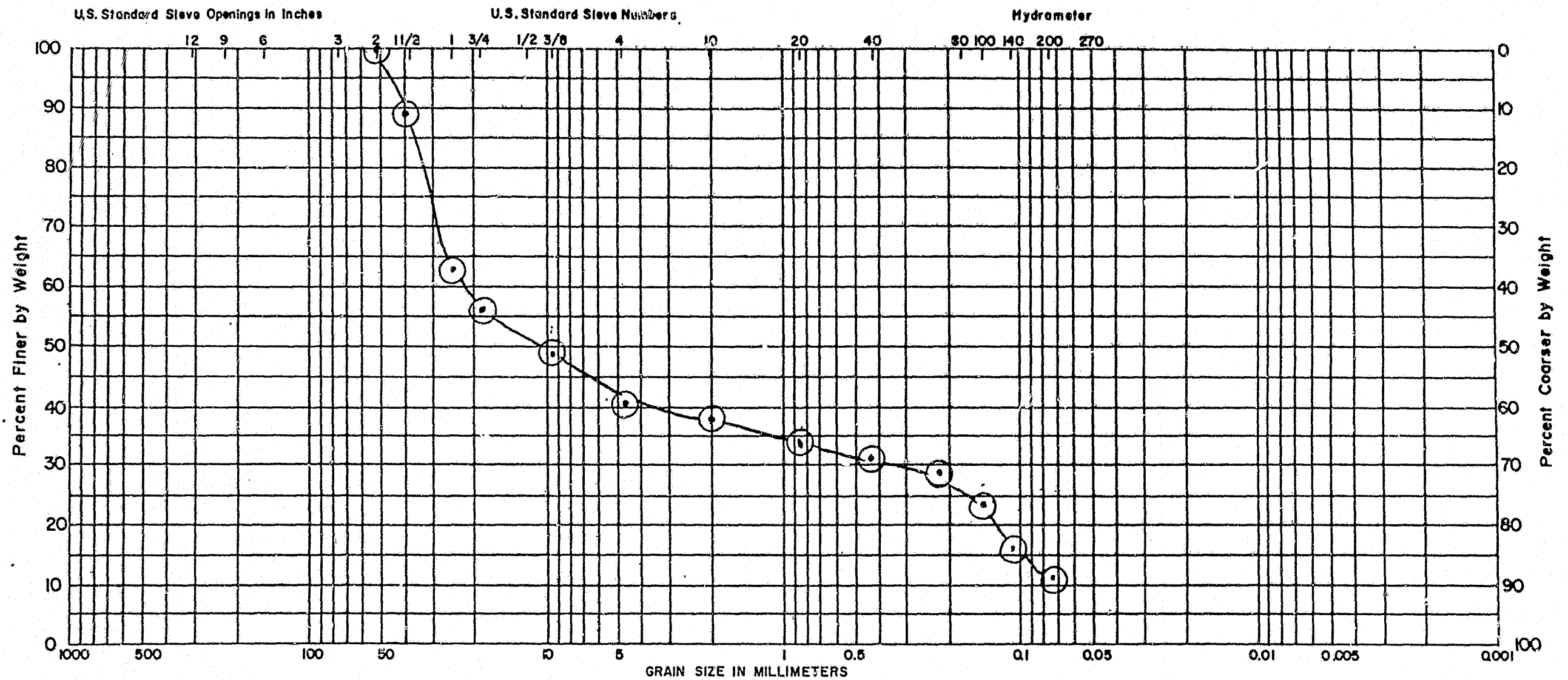


BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
WL-16B-29a-GA/11	AH-16B	16B-29a	54.9-55.0	⊙	ML

ACRES	SUSITNA HYDROELECTRIC PROJECT	
	ALASKA POWER AUTHORITY	
WATANA BORROW SITE D AND RELICT CHANNEL		
ACRES AMERICAN INCORPORATED		

GRADATION ANALYSIS CURVES



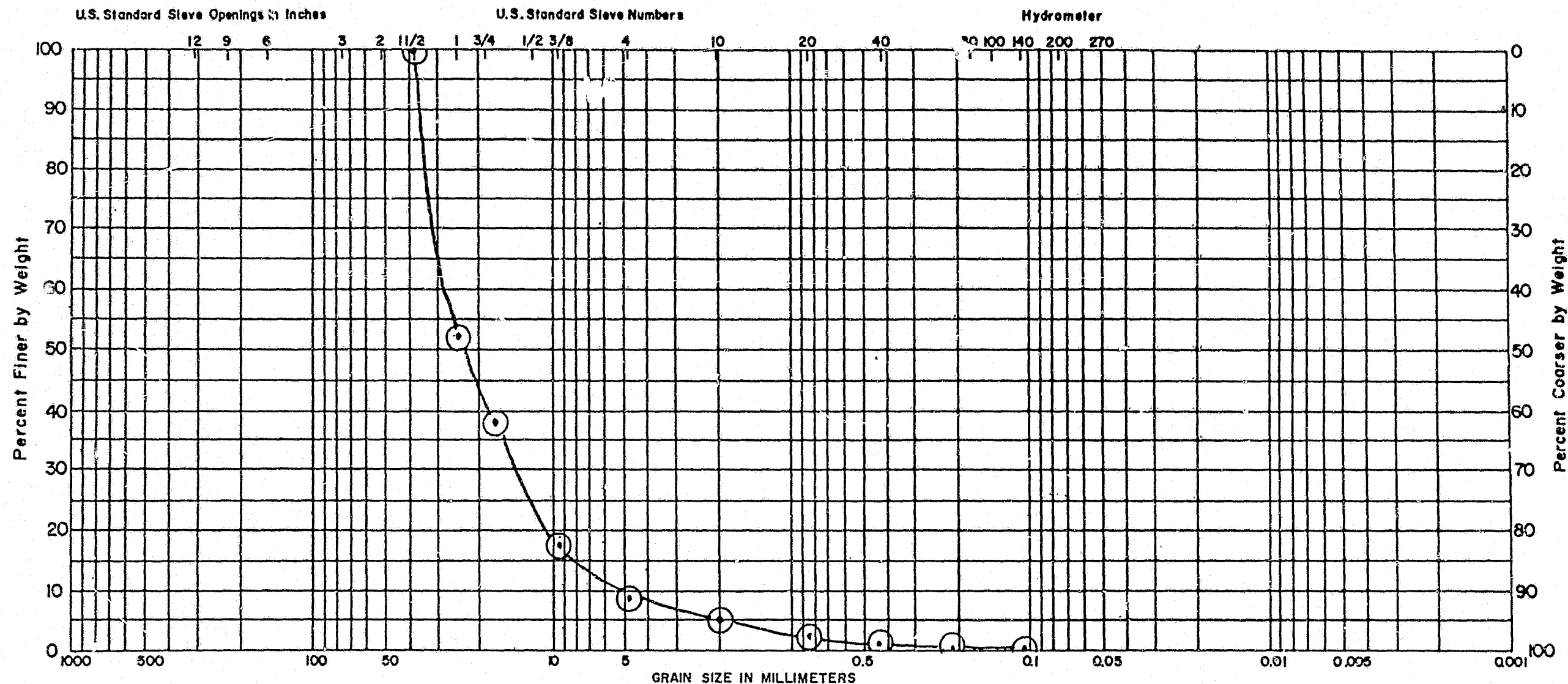
BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
WH-16B-29b	AH-16B	29B	54.2-54.9	⊙	GW-GM

SUSITNA HYDROELECTRIC PROJECT
ALASKA POWER AUTHORITY

WATANA BORROW SITE D
AND RELICT CHANNEL

ACRES AMERICAN INCORPORATED

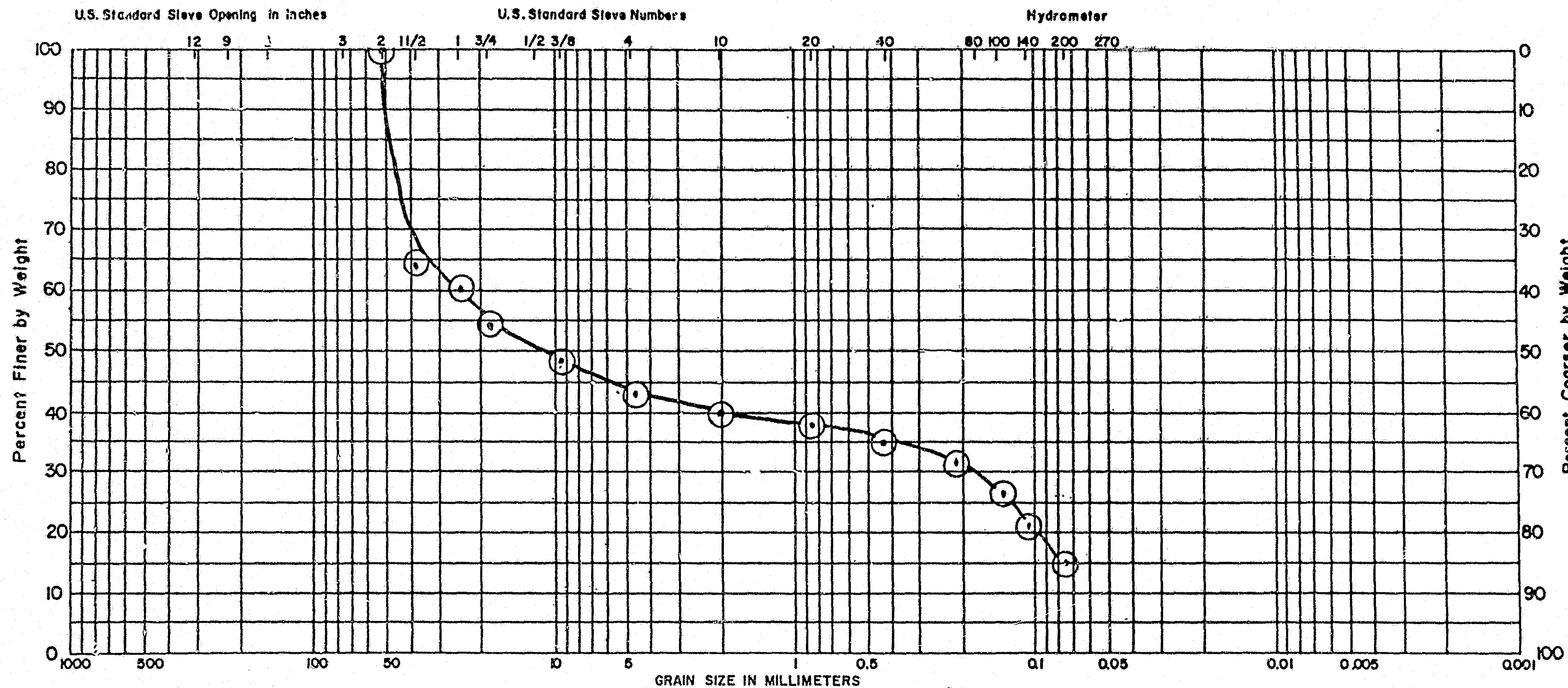


BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
WL-16B-30	AH-16B	16B-30	56.0-56.7	⊙	GP
				(NOT REPRESENTATIVE TOO SMALL OF SAMPLES FOR PARTICLE SIZE)	

ACRES	SUSITNA HYDROELECTRIC PROJECT	
	ALASKA POWER AUTHORITY	
WATANA BORROW SITE D AND RELICT CHANNEL		
ACRES AMERICAN INCORPORATED		

GRADATION ANALYSIS CURVES

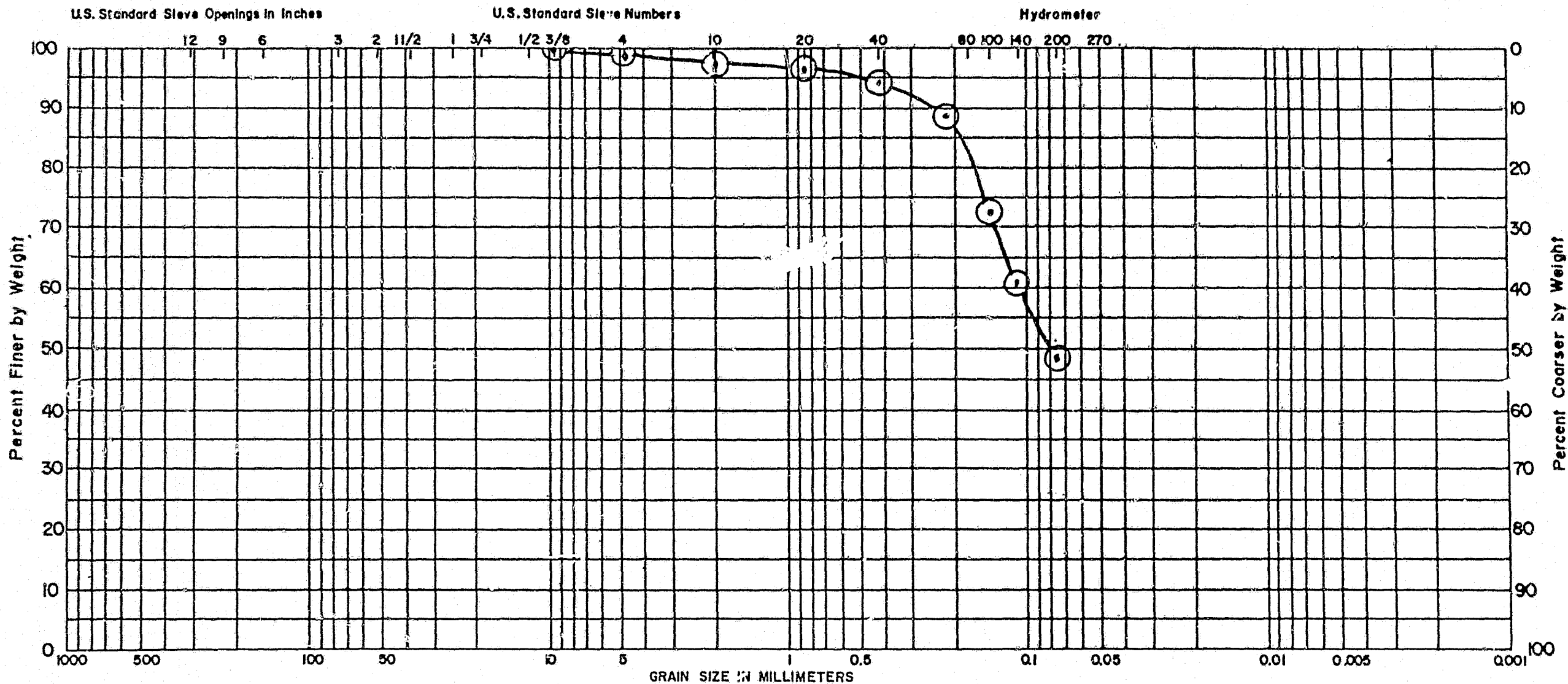


BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
WL-16B-31a	AH-16B	31a	58.0 - 58.9	⊙	GM - GW

ACRES	SUSITNA HYDROELECTRIC PROJECT	
	ALASKA POWER AUTHORITY	
WATANA BORROW SITE D AND RELICT CHANNEL		
ACRES AMERICAN INCORPORATED		

GRADATION ANALYSIS CURVES

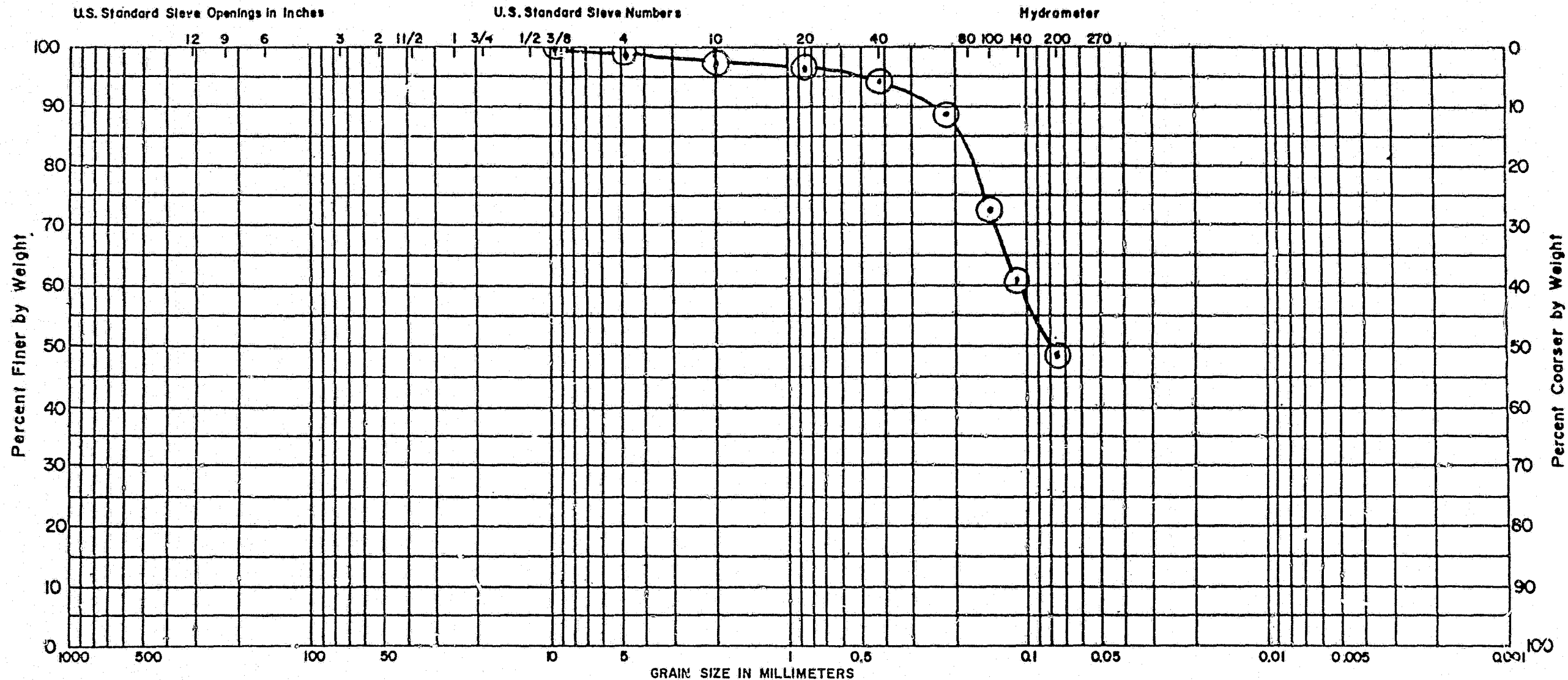


BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
WL-10B-31b-6A	AH-16B	16B-31b	58.9-59.3	⊙	SM-WL

ACRES	SUSITNA HYDROELECTRIC PROJECT	
	ALASKA POWER AUTHORITY	
WATANA BORROW SITE D AND RELICT CHANNEL		
ACRES AMERICAN INCORPORATED		

GRADATION ANALYSIS CURVES



BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
WL-16B-31b-9A	AH-16B	16B-31b	58.9-59.3	⊙	SM-ML



SUSITNA HYDROELECTRIC PROJECT

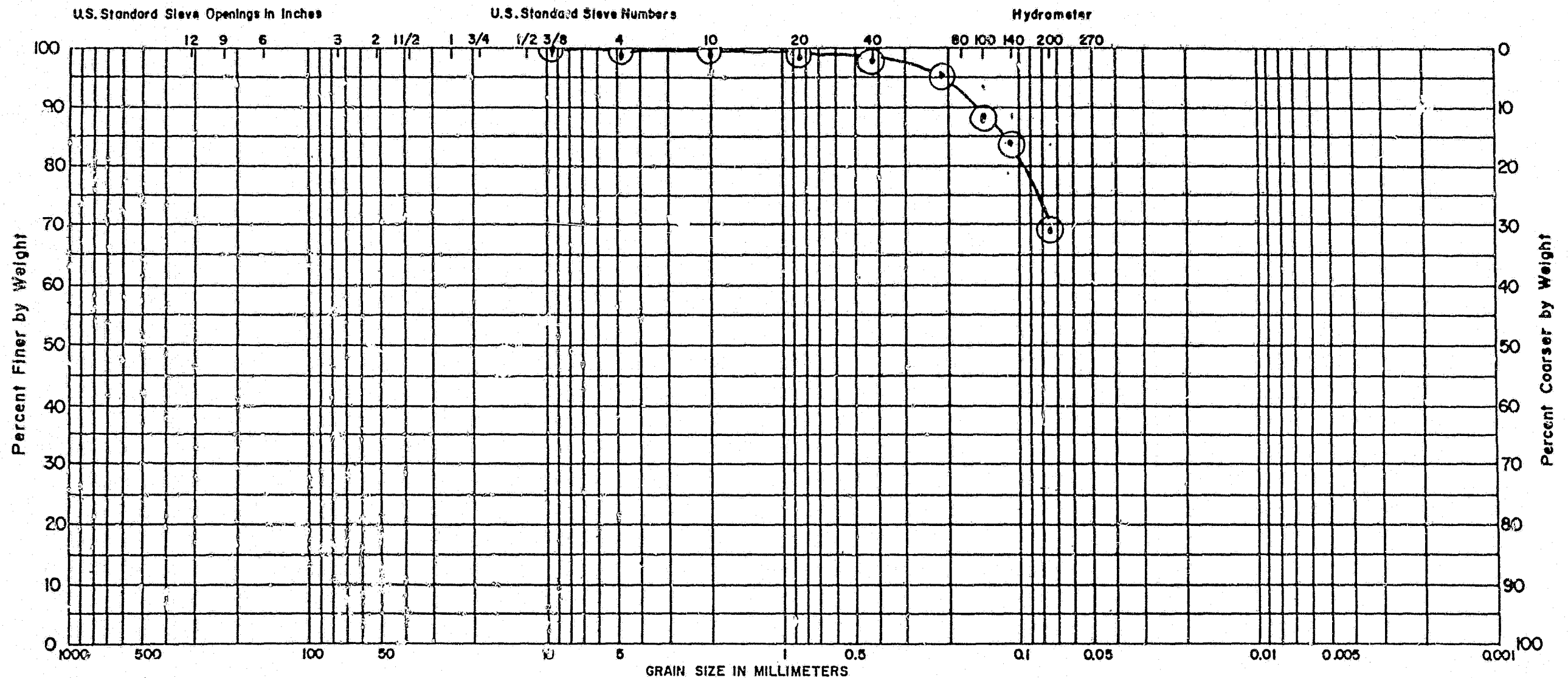
ALASKA POWER AUTHORITY

WATANA BORROW SITE D

AND RELICT CHANNEL

ACRES AMERICAN INCORPORATED

GRADATION ANALYSIS CURVES

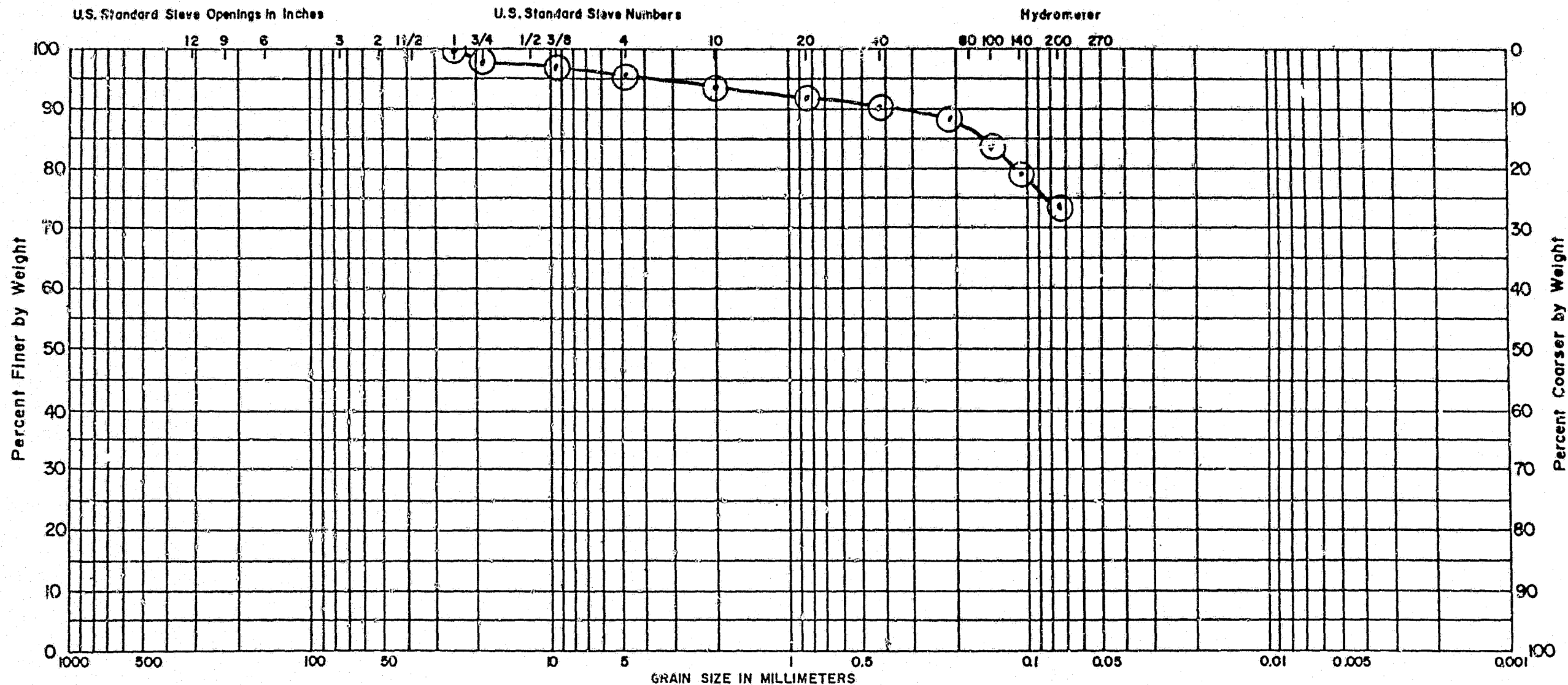


BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
WL-16B-33	AH-16B	16B-33	62.4-62.8	⊙	ML

ACRES	SUSITNA HYDROELECTRIC PROJECT	
	ALASKA POWER AUTHORITY	
WATANA BORROW SITE D AND RELICT CHANNEL		
ACRES AMERICAN INCORPORATED		

GRADATION ANALYSIS CURVES

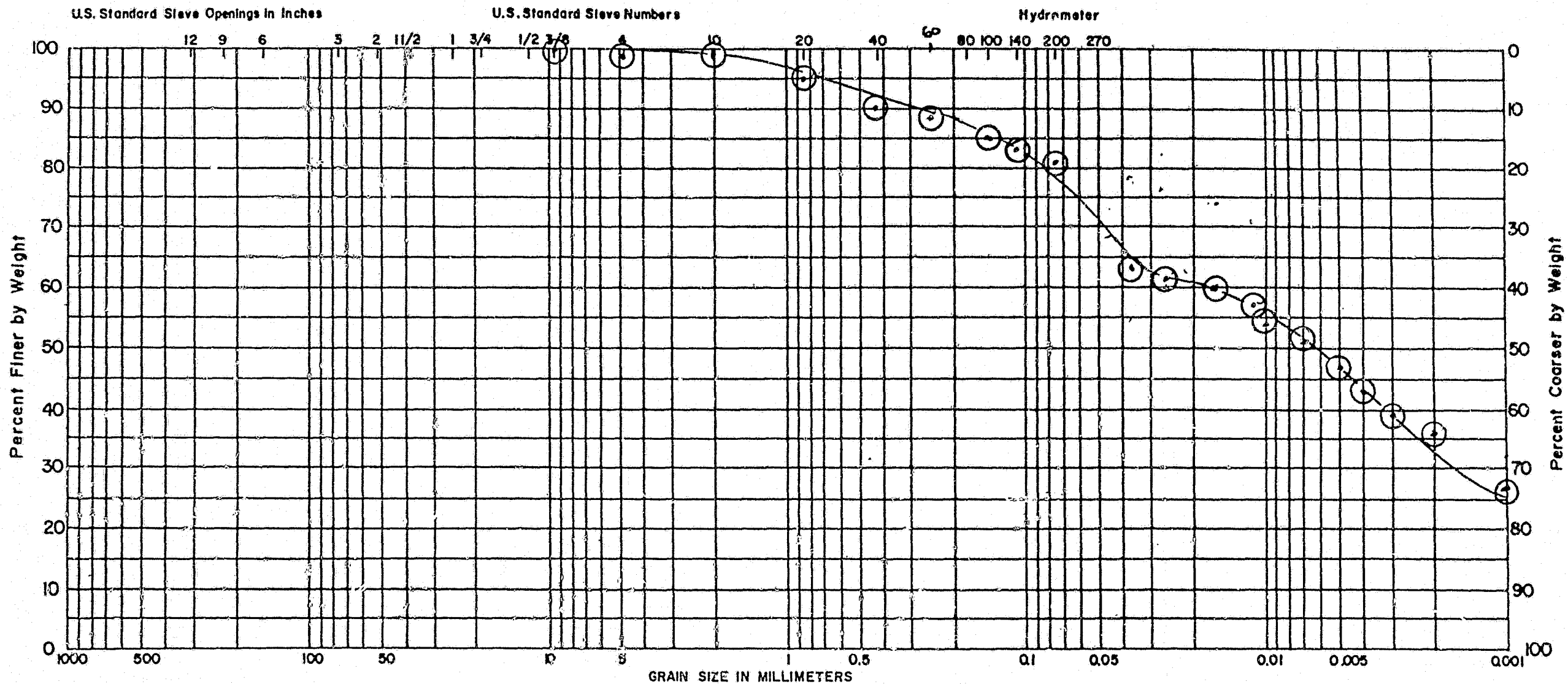


BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
WL-16B-34	AH-16B	34	64.3-64.9	⊙	ML-CL

ACRES	SUSITNA HYDROELECTRIC PROJECT	
	ALASKA POWER AUTHORITY	
WATANA BORROW SITE D AND RELICT CHANNEL		
ACRES AMERICAN INCORPORATED		

GRADATION ANALYSIS CURVES

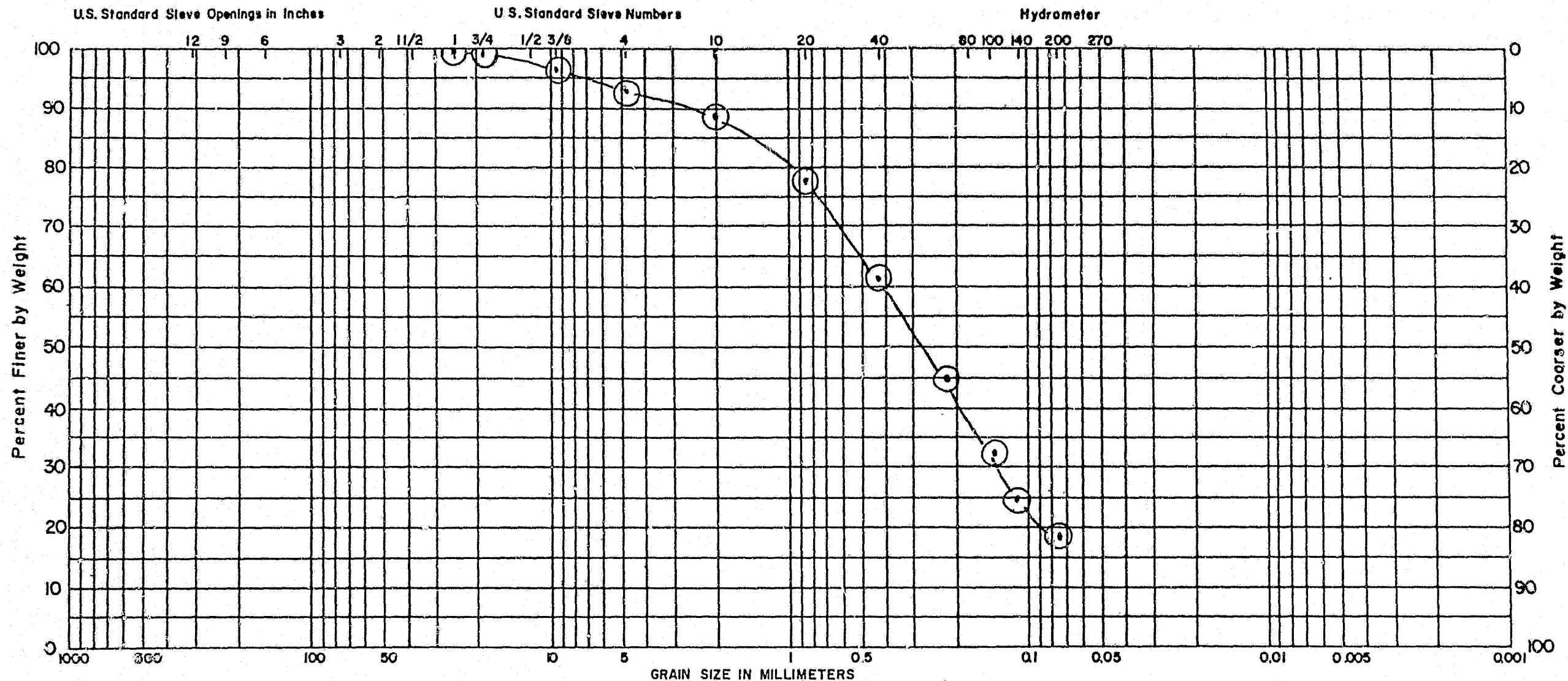


BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
WL-16B-35-6A-1H	AH-16B	16B-35	65.3-66.9	⊖	ML

	SUSITNA HYDROELECTRIC PROJECT	
	ALASKA POWER AUTHORITY	
WATANA BORROW SITE D AND RELICT CHANNEL		
ACRES AMERICAN INCORPORATED		2. (-200)

GRADATION ANALYSIS CURVES



BOULDERS	COBBLES	GRAVEL		SAND			FINES	
		Coarse	Fine	Coarse	Medium	Fine	Silt Sizes	Clay Sizes

LAB TEST NO.	BORING NO.	SAMPLE NO.	DEPTH	CURVE SYMBOL	CLASSIFICATION
WL-168-37	AH-16B	168-37	69.5-71.0	(a)	SM

ACRES	SUSITNA HYDROELECTRIC PROJECT	
	ALASKA POWER AUTHORITY	
WATANA BORROW SITE D AND RELICT CHANNEL		
ACRES AMERICAN INCORPORATED		

GRADATION ANALYSIS CURVES