TVA 64 (OS-9-65)

UNITED STATES GOVERNMENT

Memorandum

BSB 761210 012

TENNESSEE VALLEY AUTHORITY

TO : G. L. Buchanan, Chief, Civil Engineering and Design Branch, W3C126 C-K (2)

FROM : Gene Farmer, Chief, Construction Services Branch, E6B39 C-K

DATE : December 10, 1976

SUBJECT: JOHN SEVIER STEAM PLANT - NEW ASH DISPOSAL AREA - SOILS INVESTIGATION EN DES SOIL SCHEDULE NO. 6

As requested in your memorandum of May 6, 1976, the SME Laboratory has completed a field and laboratory investigation of foundation and borrow soils at the proposed dike location. Sampling and in-situ testing were completed between September 15 and September 30, 1976, using a CME 45B drill and hollow-stem augers.

General

The proposed site for the dike foundation, which lies southwest of John Sevier Steam Plant, is characterized by an ancient terrace alluvium overlying a dipping, laminated, shalelike residuum which grades into limy shale bedrock. See laboratory drawings 604K785 and 604K791. The area had previously been used as a borrow source. Consequently, considerable portions of the terrace and some of the residuum have been excavated.

The terrace materials are predominantly silty or sandy gravels with maximum-particle sizes ranging from fine gravel to cobble. Most of the coarse particles are well rounded and are made up of chert, quartzite, and various igneous rock types. A smaller percentage of the homogeneous terrace alluvium is lean to medium clay.

The residuum is characterized by dipping laminations and/or blocky shaly partings. These soils are primarily medium to fat clay and silt, although locally they can be more accurately described as weathered shale.

G. L. Buchanan
December 10, 1976

JOHN SEVIER STEAM PLANT - NEW ASH DISPOSAL AREA - SOILS INVESTIGATION

Foundation

The soil profile established by the 13 standard penetration borings drilled around the dike perimeter are shown on drawings 604K786 and 604K787. All borings were carried to a minimum depth equal to one half the dike height or refusal. Bedrock was found between el. 1105 and el. 1120. As shown on drawing 604K791, most subsoils are fine-grained lean to fat clay and lean to highly plastic silt, CL, CH, ML, and MH. These materials may be of either alluvial or residual origins being of very low permeability and exhibiting natural moisture contents generally near or above the plastic limit.

As indicated on the generalized foundation profile, about 4500 lineal feet of the dike will be underlain by an alluvial gravel stratum. While this deposit exhibits plasticity, with fines contents as low as 11 percent and averaging 20 percent, seepage through the gravel is a distinct possibility.

Standard penetration resistance is generally variable but reflects overall medium to stiff soil consistency. Exceptions are noted at borings 6 and 13 where weak materials with four blows per foot penetration resistance were encountered.

Undisturbed tube samples were obtained from borings 2 and 13 and are considered representative of weakest foundation soils. These samples show soils to be of medium to high moisture contents, medium to high void ratios, and low to medium dry density.

Selected samples were subjected to unconsolidated-undrained Q and consolidated-undrained R triaxial compression testing. Results of both types of tests disclose a wide range in soil strength with both high and low strengths determined. See the attached "Summary of Laboratory Test Data - Ash Disposal Dike Foundation."

Borrow

Drawing 604K785 shows the location of 36 auger borings drilled within the dike perimeter to obtain representative samples for evaluation as borrow material. The overburden profile established by these borings is presented on drawings 604K788, 604K789, and 604K790.

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JOHN SEVIER STEAM PLANT - NEW ASH DISPOSAL AREA - SOILS INVESTIGATION

The predominant soil type is elastic silt, MH, with lesser amounts of lean clay, clayey silt, and fat clay, CL, ML-CL, and CH. Also present are gravelly clayey sand, G-SC. The borrow area will yield the required 400,000 cubic yards of fill material.

Detailed laboratory testing established seven soil classes, with properties as shown on the attached "Summary of Laboratory Test Data - Borrow Soil Classes." It is noted that soil class VII contained 28 percent gravel and is therefore included in a separate family of curves.

All soil classes, except class VII, were subjected to Q and R triaxial compression testing at 95 percent compaction and at moisture contents 3 percent above and below optimum. Results are shown in the attached tabulation and generally are affected by widely varying molding water contents.

Summary

This investigation has shown that the proposed ash dike foundation is composed of both coarse- and fine-grained alluvial and residual soils of variable density and strength. A significant portion of the foundation contains a gravel stratum, which appears to be partially semipervious. Some method of seepage control is therefore recommended.

After an allowance is made for shrinkage, adequate quantities of borrow soils are available from the interior portion of the dike. However, high average natural moisture contents indicate the need for considerable drying prior to placement.

G. L. Buchanan
December 10, 1976

JOHN SEVIER STEAM PLANT - NEW ASH DISPOSAL AREA - SOILS INVESTIGATION

For design purposes, the following parameters are recommended:

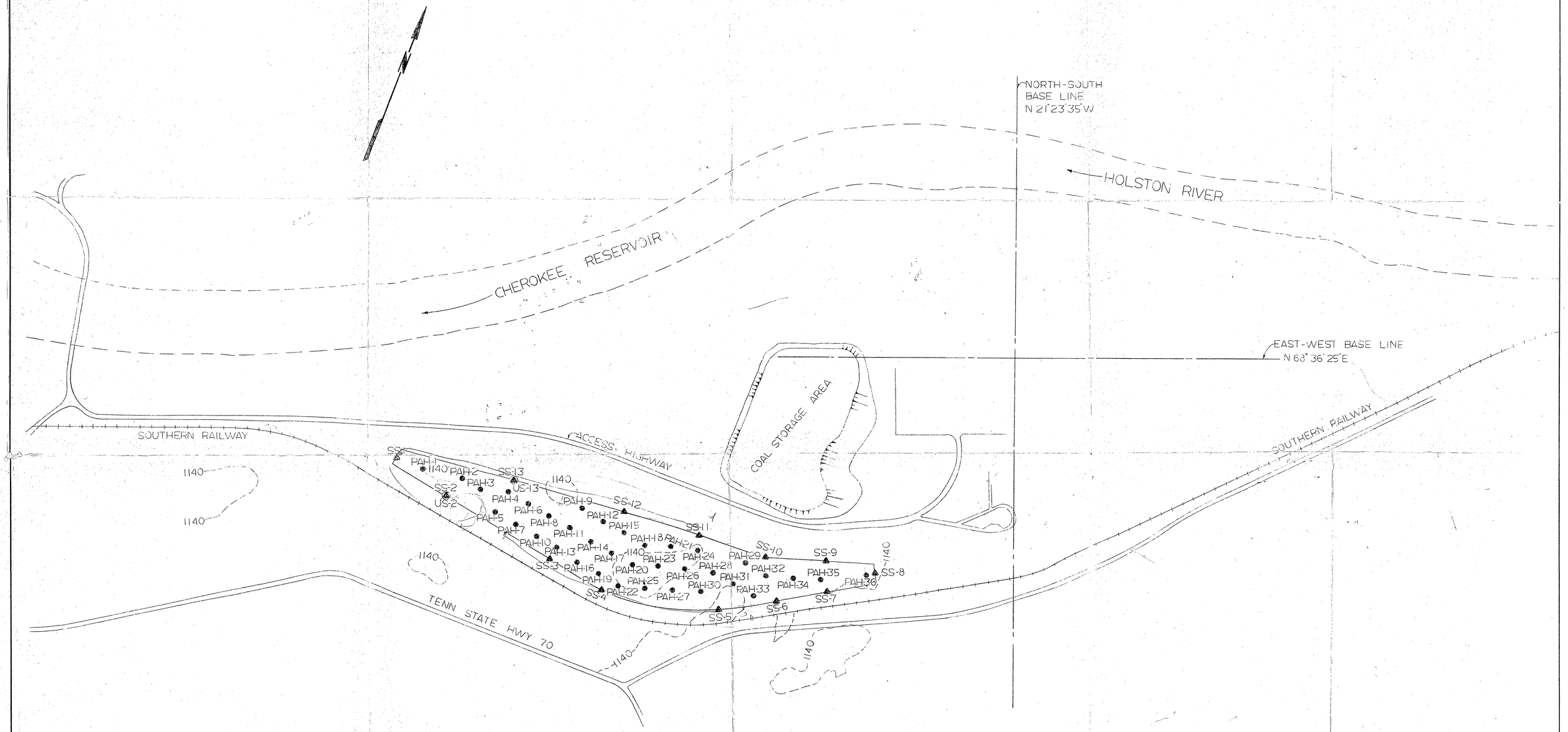
	γ_w pcf	Triaxial Q ϕ deg.	Triaxial Q c tsf	Triaxial R ϕ deg.	Triaxial R c tsf
Foundation	115	12	0.5	16	0.25
Borrow	125	5	1.1	16	0.2

Gene Farmer

WHC:BCJ
Attachments
CC (Attachments):
R. O. Lane, SME-K
H. H. Mull, E7B24 C-K
MEDS, E4B37 C-K

Samples from this investigation will be maintained at the laboratory until July 1977.

CDB '76 1214 001
12/14/76--GLB:NCH
CC: B. S. Montgomery, 5100 MTB-K
XC: MEDS, E4B37 C-K



LEGEND

▲ — SPLITSPOON BORING

○ — UNDISTURBED BORING

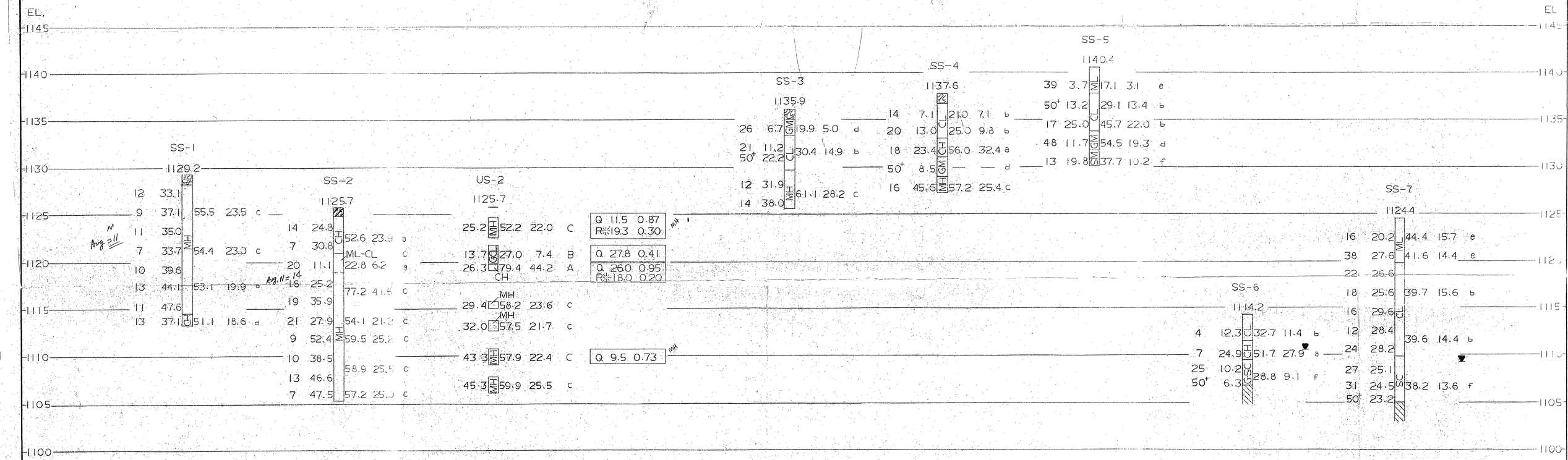
● — AUGER BORING

JOHN SEVIER STEAM PLANT

ASH DISPOSAL DIKE
PLAN OF
SOIL INVESTIGATION

TENNESSEE VALLEY AUTHORITY
MATERIALS ENGINEERING LABORATORY

SUBMITTED	RECOMMENDED	APPROVED
DHW GCS		
KNOXVILLE	11-23-76 41 CS 3 604K785P	



SYMBOLS

- — TOP SOIL
- — REFUSAL
- — FILL MATERIAL
- — GRAVEL AND COBBLE
- Q — UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST
- R — CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST SATURATED
- ▼ — WATER TABLE

LEGEND

BORING NO.
ELEVATION

BLOWS | NATURAL MOISTURE CONTENT | CLASSIFICATION | LIQUID LIMIT | PLASTICITY INDEX | SOIL TYPE | TYPE TEST | FRICTION ANGLE (DEGREES) | COHESION (TSF)

NOTE BLOWS PER FOOT WITH A 140 LB. HAMMER AND A 30 INCH DROP ON A 2 INCH OD SPLITSPOON SAMPLER

SCALE 1" = 5'

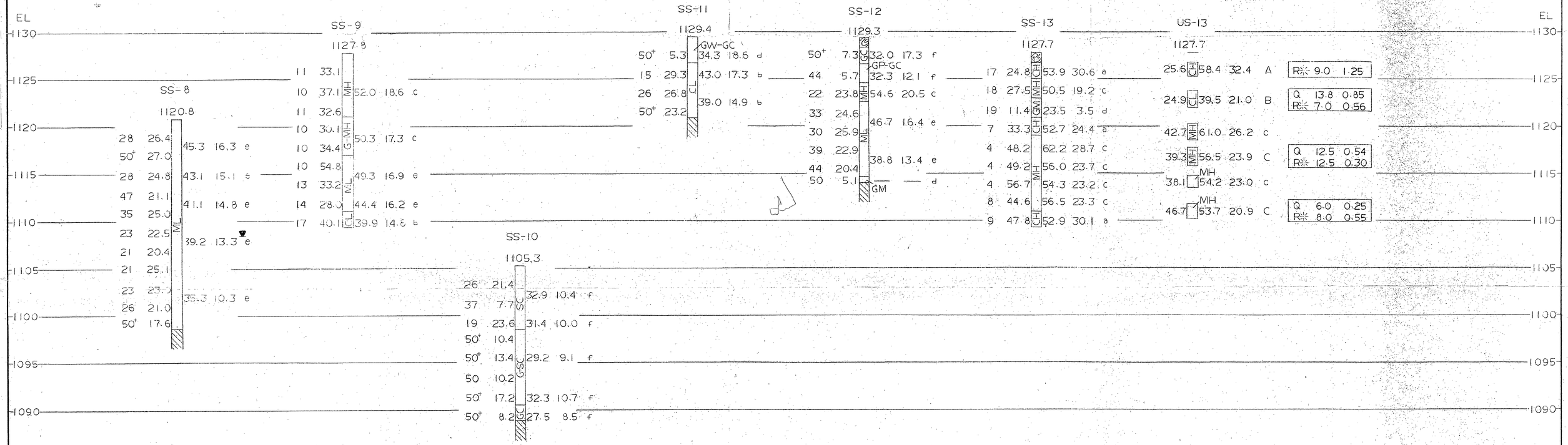
JOHN SEVIER STEAM PLANT

ASH DISPOSAL DIKE FOUNDATION INVESTIGATION

TENNESSEE VALLEY AUTHORITY
MATERIALS ENGINEERING LABORATORY

SUBMITTED	RECOMMENDED	APPROVED
DHW 3/8	WHB	ROL

KNOXVILLE	11-23-76	41	CS	3	604K786R0



SYMBOLS

- TOP SOIL
- REFUSAL
- Q — UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST
- R — CONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION TEST SATURATED
- ▼ — WATER TABLE

LEGEND

BORING NO.
ELEVATION

BLOWS | NATURAL MOISTURE CONTENT | CLASSIFICATION | LIQUID LIMIT | PLASTICITY INDEX | SOIL TYPE | TYPE TEST | FRICTION ANGLE (DEGREES) | COHESION (TSF)

NOTE BLOWS PER FOOT WITH A 140 LB HAMMER AND A 30 INCH DROP ON A 2 INCH OD SPLITSPOON SAMPLER

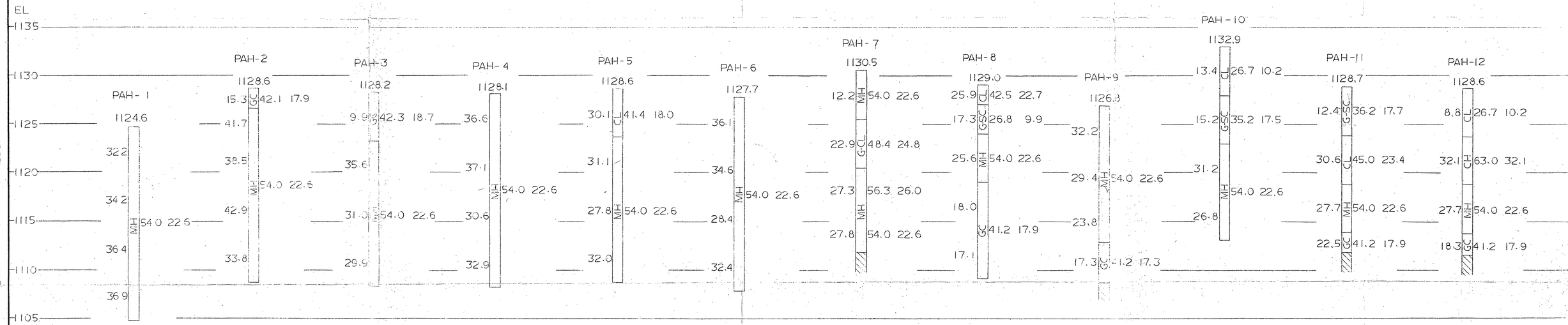
SCALE: 1" = 5'

JOHN SEVIER STEAM PLANT
ASH DISPOSAL DIKE
FOUNDATION INVESTIGATION

TENNESSEE VALLEY AUTHORITY
MATERIALS ENGINEERING LABORATORY

SUBMITTED	RECOMMENDED	APPROVED
DHW 9CS	WMB	ROL

KNOXVILLE	11-23-76	41	CS	3	604K787R0



SYMBOLS

▨ —REFUSAL

LEGEND

BORING NO.
ELEVATION

NATURAL MOISTURE CONTENT | CLASSIFICATION | LIQUID LIMIT | PLASTICITY INDEX

SCALE: 1"=5'

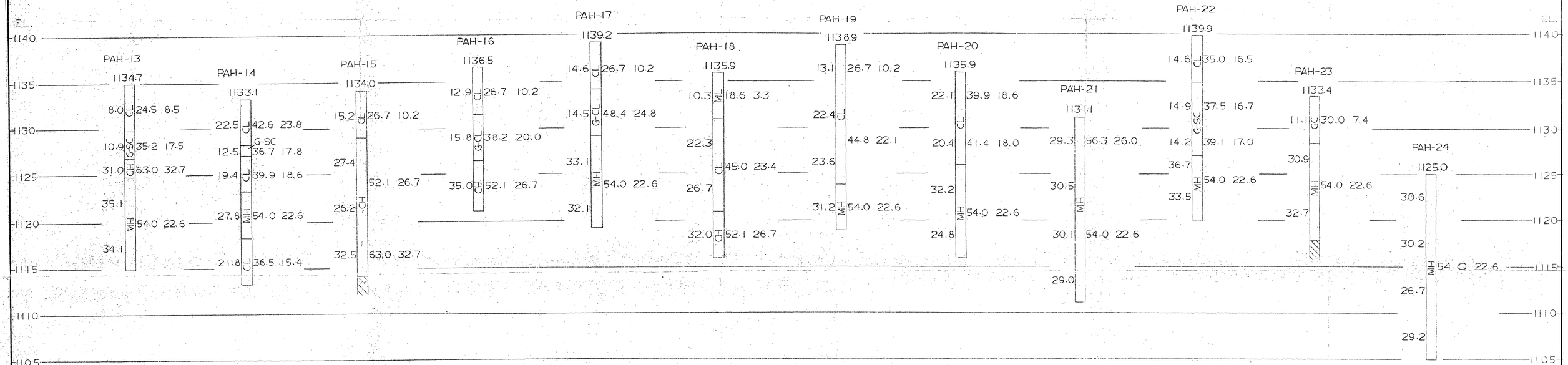
JOHN SEVIER STEAM PLANT

ASH DISPOSAL DIKE BORROW INVESTIGATION

TENNESSEE VALLEY AUTHORITY
MATERIALS ENGINEERING LABORATORY

SUBMITTED	RECOMMENDED	APPROVED
DHW 8CB	WHB	ROL

KNOXVILLE	11-23-76	41	CS	3	604K788RO



SYMBOLS

▨ —REFUSAL

LEGEND

BORING NO.
ELEVATION

NATURAL MOISTURE CONTENT | CLASSIFICATION | LIQUID LIMIT | PLASTICITY INDEX

SCALE: 1"=5'

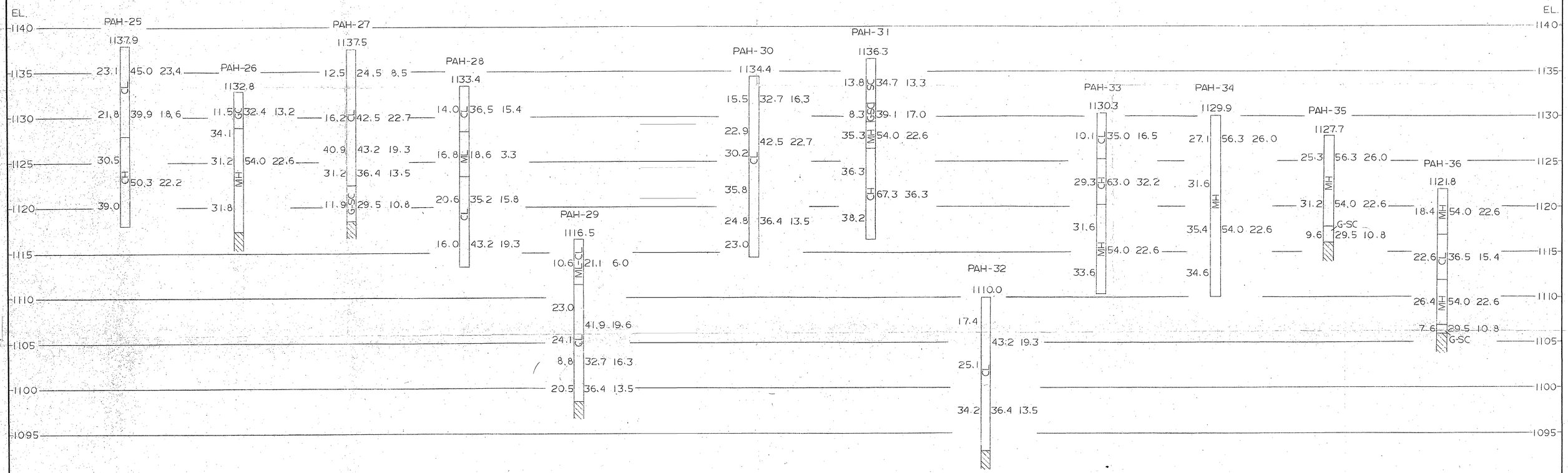
JOHN SEVIER STEAM PLANT

ASH DISPOSAL DIKE BORROW INVESTIGATION

TENNESSEE VALLEY AUTHORITY
MATERIALS ENGINEERING LABORATORY

SUBMITTED	RECOMMENDED	APPROVED
DWW 7-8	WMB	Rol

KNOXVILLE	112376	41	CS	3	604K789RO



SYMBOLS

▨ — REFUSAL

LEGEND

BORING NO.
ELEVATION

NATURAL MOISTURE CONTENT | CLASSIFICATION | LIQUID LIMIT | PLASTICITY INDEX

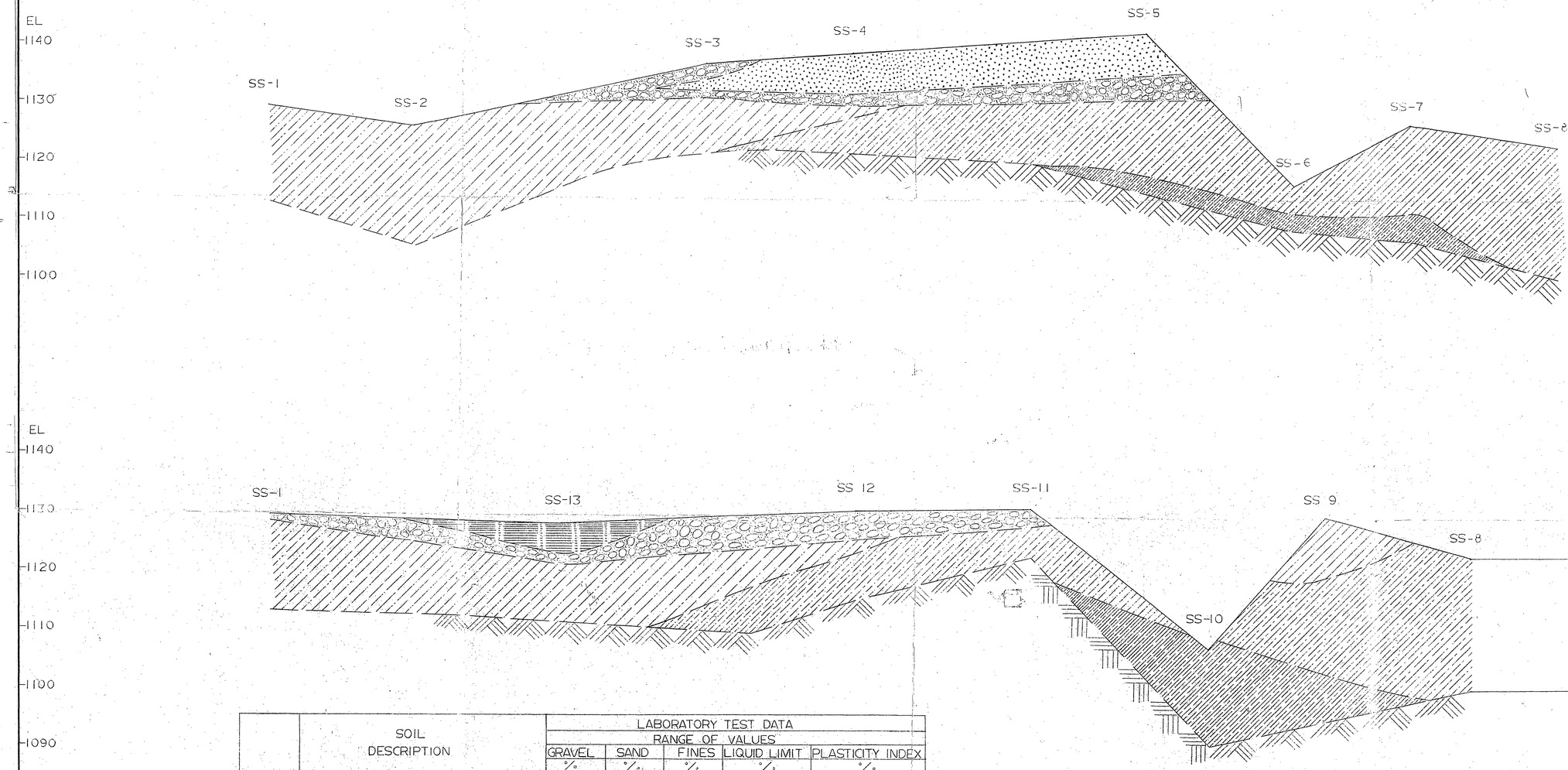
SCALE: 1"=5'

JOHN SEVIER STEAM PLANT
ASH DISPOSAL DIKE
BORROW INVESTIGATION

TENNESSEE VALLEY AUTHORITY
MATERIALS ENGINEERING LABORATORY

SUBMITTED	RECOMMENDED	APPROVED
DNW 208	WHS	ROL

KNOXVILLE	11-23-76	41	CS	3	604K790RO



	SOIL DESCRIPTION	LABORATORY TEST DATA RANGE OF VALUES				
		GRAVEL %	SAND %	FINES %	LIQUID LIMIT %	PLASTICITY INDEX %
Terrace Cohesive	TERRACE: MEDIUM CLAY & SILT, BROWN TO GRAY, HOMOGENEOUS, CH, MH	0	19-21	79-81	50-54	19-31
	TERRACE: SANDY LEAN TO MEDIUM CLAY & SILT, TAN TO GRAY, HOMOGENEOUS, CL & ML	0-3	22-36	64-78	17-46	3-22
Terrace Gravel	TERRACE: SILTY & CLAYEY GRAVEL WITH COBBLY ZONES, TAN, BROWN & BLACK, FINE TO COARSE ROUNDED, GM, GC, GP-GC & GW-GC	34-65	19-36	11-40	19-54	3-19
Residual Soil	RESIDUUM: MEDIUM TO FAT CLAY & SILT, LIGHT TO DARK BROWN, LAMINATED, BLOCKY, CH & MH	0-16	3-33	63-95	50-77	17-42
	RESIDUUM: LEAN TO MEDIUM CLAY & SILT, TAN TO BROWN, LAMINATED, BLOCKY. CL & ML	0-7	12-43	57-82	33-49	10-17
	WEATHERED SHALE: CLAYEY SAND SIZES, BROWN TO GRAY, LAMINATED, BLOCKY. SC & G-SC	5-33	27-53	25-46	27-38	8-14
	BEDROCK					

SCALE: HORIZ: 1"=200'
VERT: 1"=10'

JOHN SEVIER STEAM PLANT

ASH DISPOSAL DIKE GENERALIZED FOUNDATION PROFILE

TENNESSEE VALLEY AUTHORITY
MATERIALS ENGINEERING LABORATORY

SUBMITTED	RECOMMENDED	APPROVED
DHW & CS	11/16	RDL

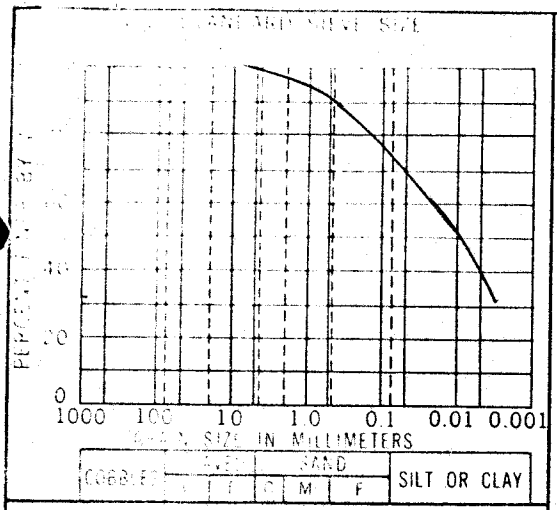
KNOXVILLE	11-23-76	41	CS	3	604K791RO

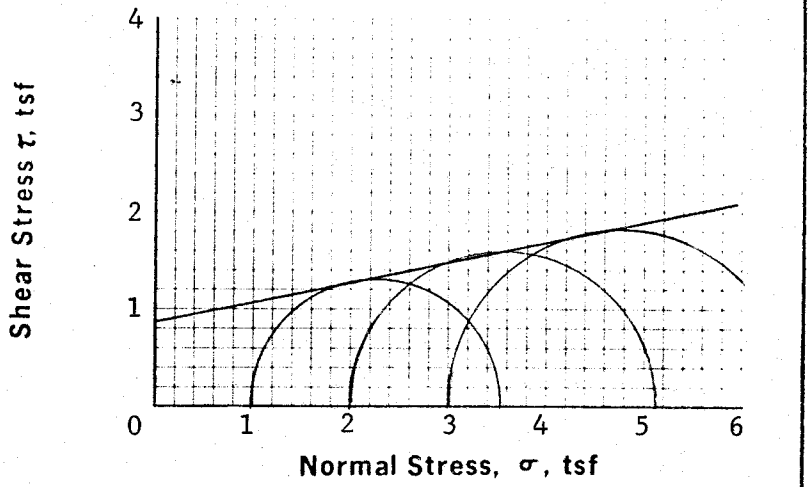
JOHN SEVIER STEAM PLANT

ASH DISPOSAL DIKE FOUNDATION

SUMMARY OF LABORATORY TEST DATA

Elevation	Soil Symbol	Soil Type	Natural Moisture %	Natural Moisture % Sat.	Standard Penetration	Grain-Size Analysis Gravel %	Sand %	Silt %	Clay %	D10 mm	Atterb. Limits Liq. Limit %	Plastic. Index %	Dry Density pcf	Void Ratio	Triaxial Q Undisturbed ϕ deg.	Triaxial Q Undisturbed c tsf	Saturated Triaxial R Apparent ϕ deg.	Saturated Triaxial R Apparent c tsf	Saturated Triaxial R Effective ϕ deg.	Saturated Triaxial R Effective c tsf
Boring US-2, Surface Elevation 1125.7																				
1124.7-1122.6	MH	C	25.2	83.3	14	1	26	33	40	-	52.2	22.0	94.4	0.839	11.5	0.87	19.3	0.30	31.1	0.00
1121.7-1119.9	G-CL	B	13.7	48.9	14	12	23	39	26	-	27.0	7.4	96.4	0.745	27.8	0.41				
1119.7-1119.1	CH	A	26.3	80.5	16	0	4	23	73	-	79.4	44.2	90.8	0.894	26.0	0.95	18.0	0.20	31.0	0.10
1115.7-1115.1	MH	c	29.4	82.6	19	0	10	47	43	-	58.2	23.6	87.3	0.989						
1113.7-1112.7	MH	c	32.0	88.7	21	0	15	42	43	-	57.5	21.7	87.0	1.008						
1110.7-1109.1	MH	C	43.3	94.0	10	0	11	48	41	-	57.9	22.4	76.0	1.276	9.5	0.73	17.0	0.20	-	-
1107.7-1106.1	MH	c	45.3	93.6	10	0	6	54	40	-	59.9	25.5	74.1	1.351						
Boring US-13, Surface Elevation 1127.7																				
1126.7-1125.3	CH	A	25.6	82.9	17	0	12	36	52	-	58.4	32.4	92.0	0.839			9.0	1.25	30.0	0.00
1123.7-1122.0	CL	B	24.9	82.8	18	0	34	27	39	-	39.5	21.0	93.0	0.807	13.8	0.85	7.0	0.56	32.0	0.00
1120.2-1118.6	MH	c	42.7	90.6	7	0	6	41	53	-	61.0	26.2	74.7	1.290						
1117.7-1115.8	MH	C	39.3	93.7	4	0	10	47	43	-	56.5	23.9	80.1	1.143	12.5	0.54	12.5	0.30	36.5	0.00
1114.7-1113.5	MH	c	38.1	94.2	4	0	12	45	43	-	54.2	23.0	81.3	1.112						
1111.7-1110.2	MH	C	46.7	95.2	8	0	7	54	39	-	53.7	20.9	73.1	1.349	6.0	0.25	8.0	0.55	22.0	0.25

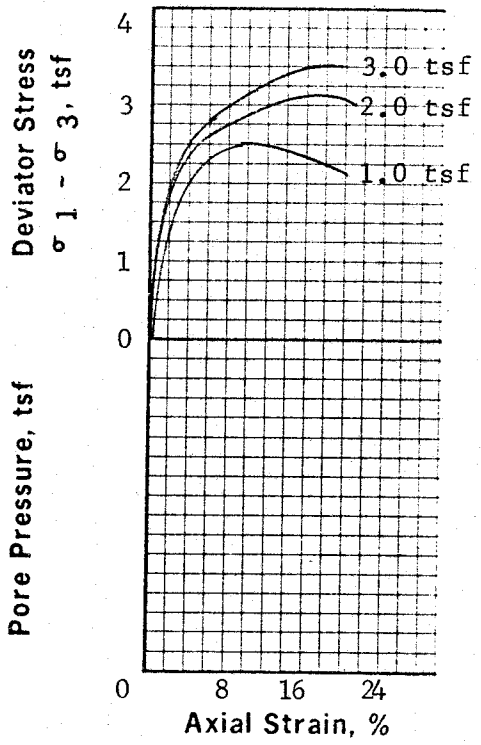




Type of Specimen Undisturbed	
Classification MH	
LL. 52.2	G 2.77
Pl. 22.0	D_{10} -

Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	11.5	0.20	0.87
Effective	-	-	-

Specimen Number		1	2	3	4
Initial	Moisture Content, %	23.7	21.4	20.6	
	Dry Density, pcf	97.5	101.7	102.7	
	Void Ratio	.773	.701	.684	
	Saturation, %	84.8	84.7	83.5	
Before Shearing	Moisture Content after Saturation, %	-	-	-	
	Saturation, %	-	-	-	
	Moisture Content after Consolidation, %	-	-	-	
	Void Ratio after Consolidation	-	-	-	
Final Moisture Content ,%		23.4	21.4	20.5	
Minor Principal Stress, σ_3, tsf		1.00	2.00	3.00	
Major Principal Stress, σ_1, tsf		3.57	5.10	6.51	
Effective Minor Principal Stress, $\bar{\sigma}_3$, tsf		-	-	-	
Effective Major Principal Stress, $\bar{\sigma}_1$, tsf		-	-	-	
Time to Failure, min.		10	16	19	
Rate of strain, %/min.		1.00	1.00	1.00	
Specimen Height, in.		3.18	3.18	3.18	
Specimen Diameter, in.		1.40	1.40	1.40	



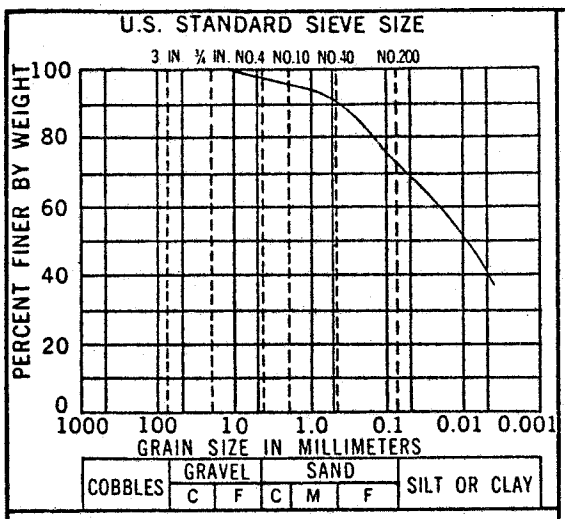
Remarks: Specimens are nonuniform in density and moisture.

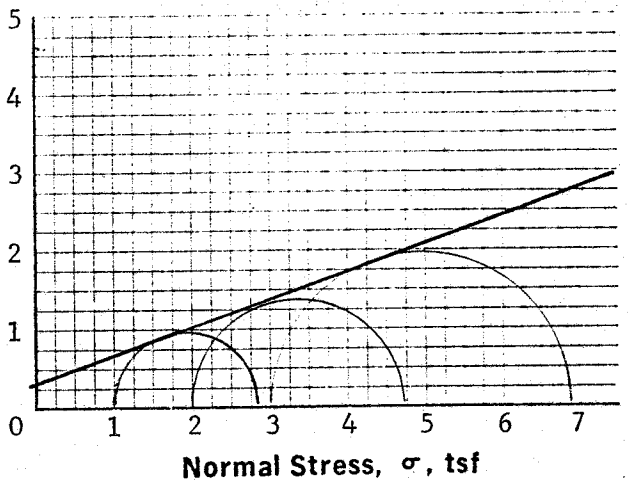
Project: John Sevier S.P.

Feature Ash Disposal Dike

Boring No. US-2	Sample No. 1
Station	Offset
Date 10-15-76	Elev. 1123.7-1123.2

TRIAXIAL COMPRESSION TEST (Q)

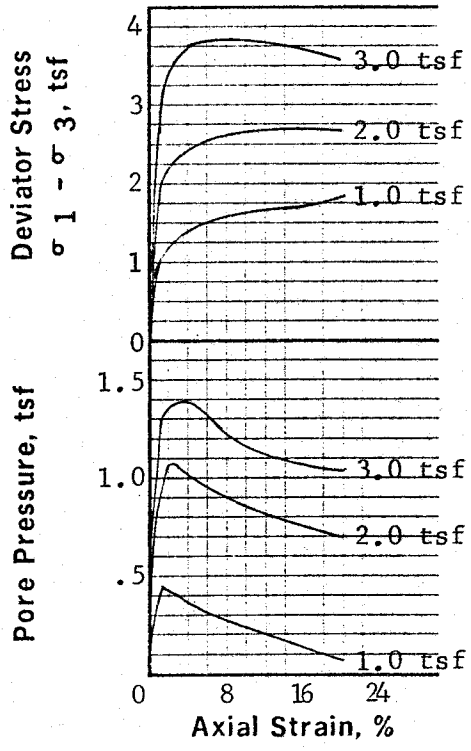




Type of Specimen	Undisturbed
Classification	MH
LL. 52.2	**G** 2.77
PI. 22.0	**D_{10}** -

Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	19.3	0.35	0.30
Effective	31.1	0.60	0.00

Specimen Number		1	2	3	4
Initial	Moisture Content, %	30.7	28.6	26.8	
	Dry Density, pcf	86.9	88.2	89.2	
	Void Ratio	.991	.961	.939	
	Saturation, %	86.0	82.5	78.9	
Before Shearing	Moisture Content after Saturation, %	35.8	34.7	33.9	
	Saturation, %	100	100	100	
	Moisture Content after Consolidation, %	33.9	32.2	31.7	
	Void Ratio after Consolidation	.919	.891	.878	
Final Moisture Content ,%		33.9	32.2	31.7	
Minor Principal Stress, σ 3, tsf		1.00	2.00	3.00	
Major Principal Stress, σ 1, tsf		2.81	4.73	6.88	
Effective Minor Principal Stress, $\bar{\sigma}$ 3, tsf		0.91	1.19	1.78	
Effective Major Principal Stress, $\bar{\sigma}$ 1, tsf		2.72	3.92	5.66	
Time to Failure, min.		94	73	40	
Rate of strain, %/min.		0.20	0.20	0.20	
Specimen Height, in.		3.12	3.12	3.12	
Specimen Diameter, in.		1.40	1.40	1.40	



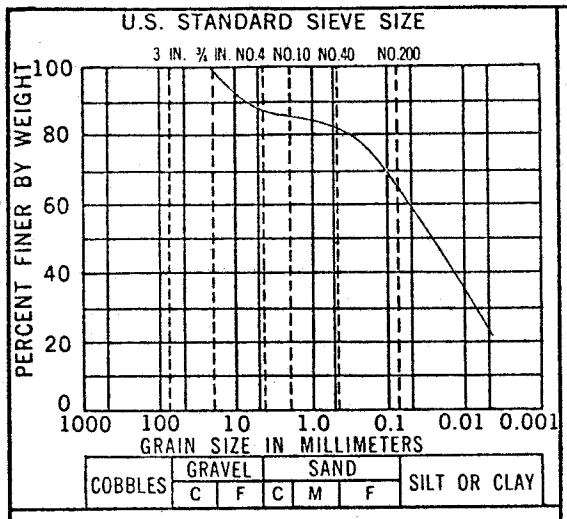
Remarks:

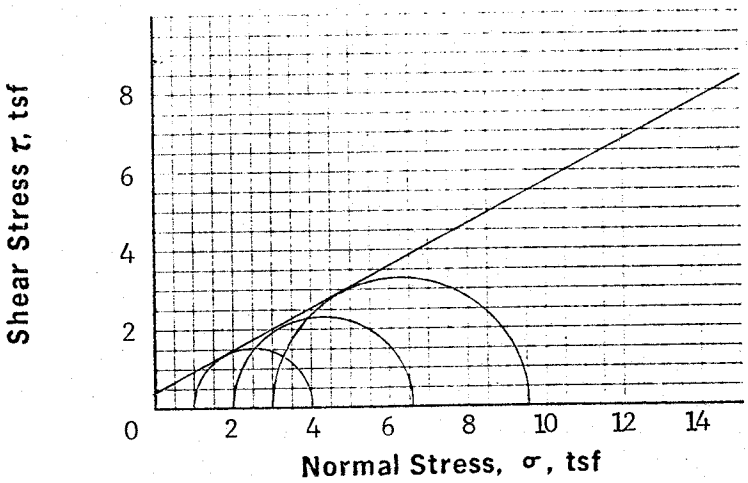
Project: John Sevier Steam Plant

Feature Ash Disposal Dike

Boring No. US-2	**Sample No.** 1
Station	**Offset**
Date 11-17-76	**Elev.** 1124.7-1122.7

TRIAXIAL COMPRESSION TEST (R)

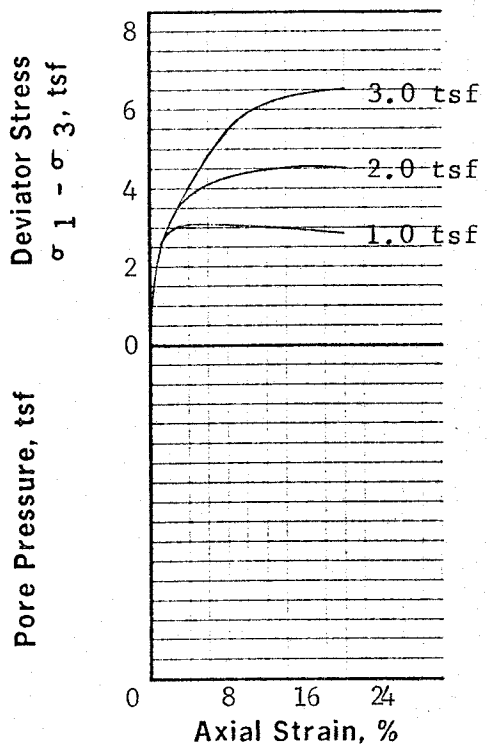




Type of Specimen	Undisturbed
Classification	G-CL
LL. 27.0	G 2.69
PI. 7.4	D_{10} -

Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	27.8	0.53	0.41
Effective	-	-	-

Specimen Number		1	2	3	4
Initial	Moisture Content, %	11.7	12.0	11.9	
	Dry Density, pcf	99.5	98.2	98.3	
	Void Ratio	.688	.710	.708	
	Saturation, %	45.7	45.6	45.4	
Before Shearing	Moisture Content after Saturation, %	-	-	-	
	Saturation, %	-	-	-	
	Moisture Content after Consolidation, %	-	-	-	
	Void Ratio after Consolidation	-	-	-	
Final Moisture Content ,%		11.5	12.0	11.9	
Minor Principal Stress, σ 3, tsf		1.00	2.00	3.00	
Major Principal Stress, σ 1, tsf		4.03	6.55	9.51	
Effective Minor Principal Stress, σ̄ 3, tsf		-	-	-	
Effective Major Principal Stress, σ̄ 1, tsf		-	-	-	
Time to Failure, min.		7	16	20	
Rate of strain, %/min.		1.00	1.00	1.00	
Specimen Height, in.		3.12	3.12	3.12	
Specimen Diameter, in.		1.40	1.40	1.40	



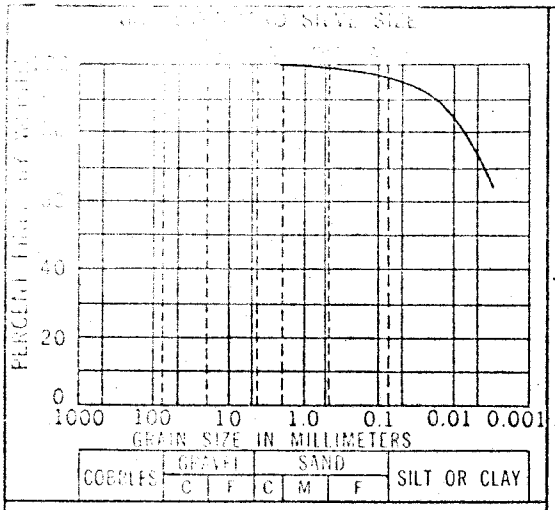
Remarks:

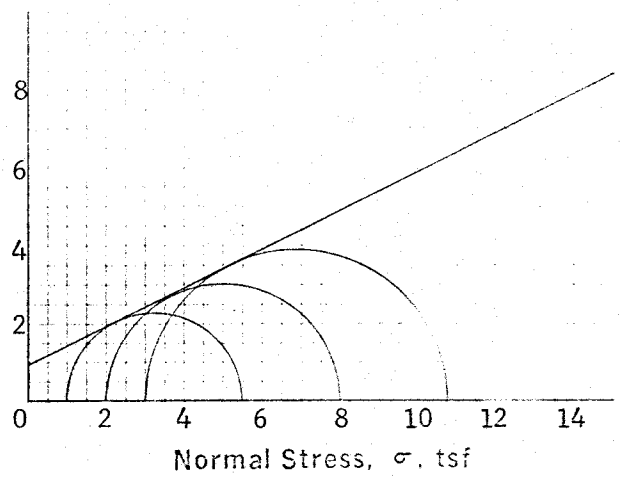
Project: John Sevier Steam Plant

Feature Ash Disposal Dike

Boring No. US-2	Sample No. 2
Station	Offset
Date 11/10/76	Elev. 1120.7-1120.2

TRIAXIAL COMPRESSION TEST (Q)

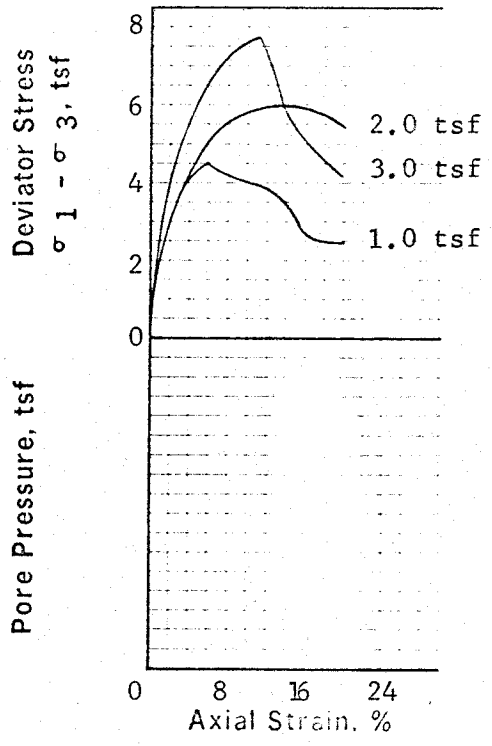




Type of Specimen	Undisturbed
Classification	CH
LL. 79.4	G 2.75
PI. 44.2	D_{10} -

Shear Strength	ø Deg.	Tan ø	c tsf
Apparent	26.0	0.49	0.95
Effective	-	-	-

Specimen Number		1	2	3	4
Initial	Moisture Content, %	25.5	22.1	24.0	
	Dry Density, pcf	91.4	94.8	95.3	
	Void Ratio	.879	.811	.802	
	Saturation, %	79.7	74.8	82.3	
Before Shearing	Moisture Content after Saturation, %	-	-	-	
	Saturation, %	-	-	-	
	Moisture Content after Consolidation, %	-	-	-	
	Void Ratio after Consolidation	-	-	-	
Final Moisture Content ,%		25.4	22.0	24.0	
Minor Principal Stress, σ_3, tsf		1.00	2.00	3.00	
Major Principal Stress, σ_1, tsf		5.52	7.99	10.66	
Effective Minor Principal Stress, $\bar{\sigma}_3$, tsf		-	-	-	
Effective Major Principal Stress, $\bar{\sigma}_1$, tsf		-	-	-	
Time to Failure, min.		6	14	11	
Rate of strain, %/min.		1.00	1.00	1.00	
Specimen Height, in.		3.12	3.12	3.12	
Specimen Diameter, in.		1.40	1.40	1.40	



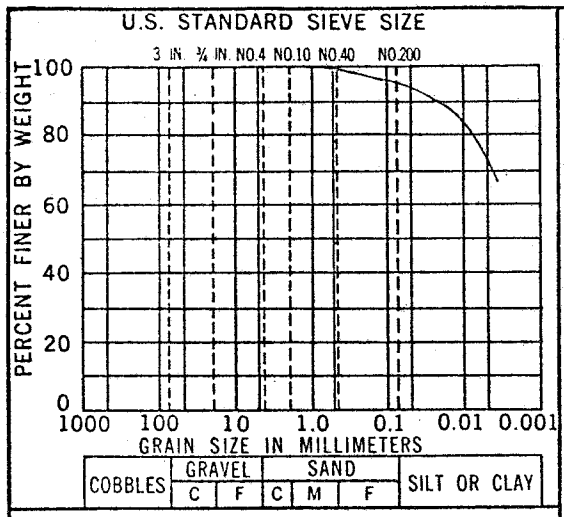
Remarks:

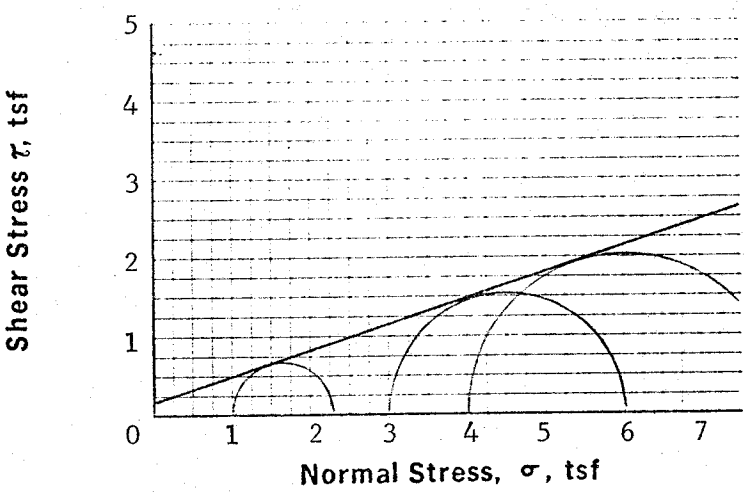
Project: John Sevier Steam Plant

Feature Ash Disposal Dike

Boring No. US-2A	Sample No. 2
Station	Offset
Date 10-22-76	Elev 1119.7-1119.2

TRIAXIAL COMPRESSION TEST (Q)

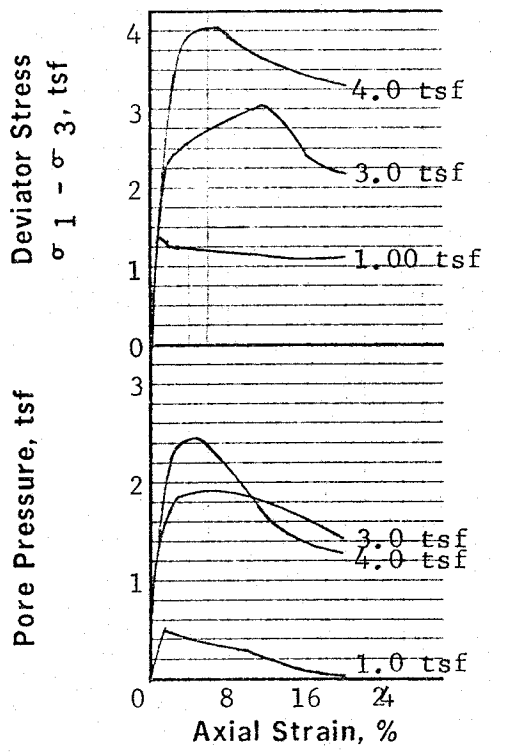




Type of Specimen	Undisturbed		
Classification	CH		
LL.	79.4	**G**	2.75
PI.	44.2	D_{10}	-

Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	18.0	0.33	0.20
Effective	31.0	0.60	0.10

Specimen Number		1	2	3	4
Initial	Moisture Content, %	29.5	25.4	27.9	
	Dry Density, pcf	86.9	90.2	89.8	
	Void Ratio	.976	.903	.912	
	Saturation, %	83.0	77.3	84.1	
Before Shearing	Moisture Content after Saturation, %	35.5	32.8	33.2	
	Saturation, %	100	100	100	
	Moisture Content after Consolidation, %	34.5	30.3	31.6	
	Void Ratio after Consolidation	.944	.845	.832	
Final Moisture Content ,%		34.5	30.3	31.6	
Minor Principal Stress, σ_3, tsf		1.00	3.00	4.00	
Major Principal Stress, σ_1, tsf		2.28	6.03	8.01	
Effective Minor Principal Stress, $\bar{\sigma}_3$, tsf		0.46	1.21	1.75	
Effective Major Principal Stress, $\bar{\sigma}_1$, tsf		1.74	4.24	5.76	
Time to Failure, min.		6	47	40	
Rate of strain, %/min.		0.20	0.20	0.20	
Specimen Height, in.		3.12	3.12	3.12	
Specimen Diameter, in.		1.40	1.40	1.40	



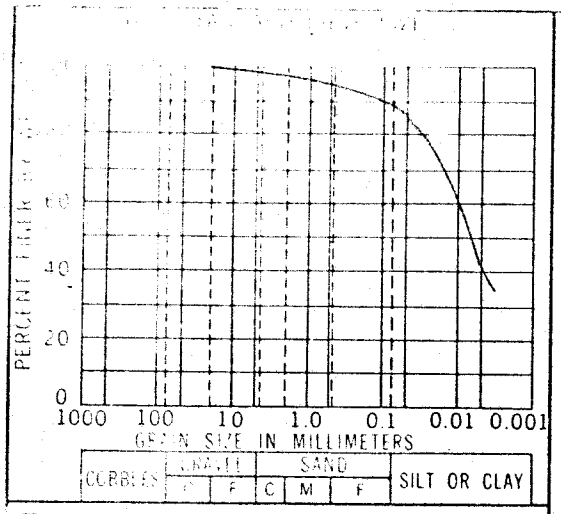
Remarks:

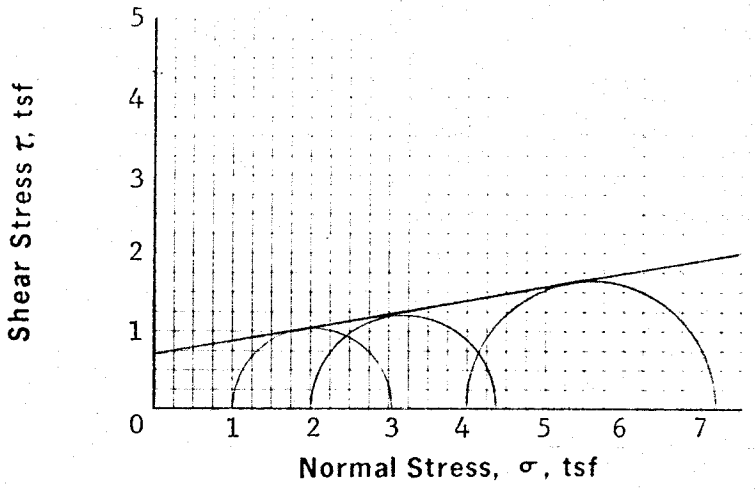
Project: John Sevier Steam Plant

Feature Ash Disposal Dike

Boring No. US-2A	**Sample No.** 2
Station	**Offset**
Date 11-12-76	**Elev.** 1119.2-1118.8

TRIAXIAL COMPRESSION TEST (R)

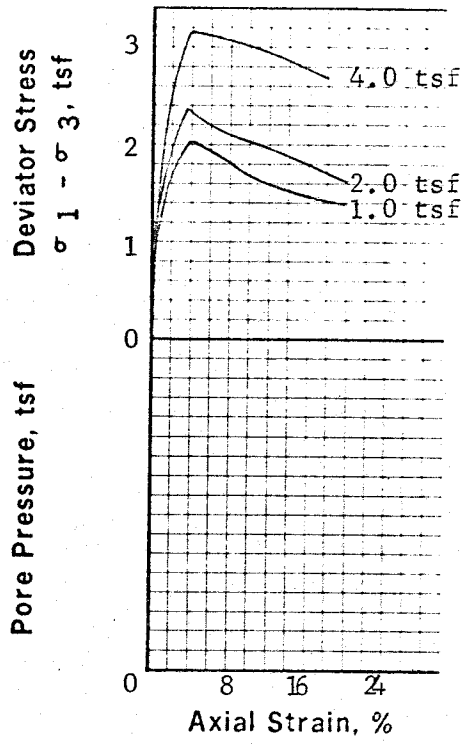




Type of Specimen	Undisturbed
Classification	MH
L.L. 57.9	G 2.77
P.I. 22.4	D_{10} -

Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	9.5	0.17	0.73
Effective	-	-	-

Specimen Number		1	2	3	4
Initial	Moisture Content, %	43.9	46.0	42.0	
	Dry Density, pcf	75.6	73.2	77.4	
	Void Ratio	1.287	1.361	1.235	
	Saturation, %	94.5	93.6	94.2	
Before Shearing	Moisture Content after Saturation, %	-	-	-	
	Saturation, %	-	-	-	
	Moisture Content after Consolidation, %	-	-	-	
	Void Ratio after Consolidation	-	-	-	
Final Moisture Content ,%		43.3	44.9	41.3	
Minor Principal Stress, σ 3, tsf		1.00	2.00	4.00	
Major Principal Stress, σ 1, tsf		3.05	4.37	7.17	
Effective Minor Principal Stress, $\bar{\sigma}$ 3, tsf		-	-	-	
Effective Major Principal Stress, $\bar{\sigma}$ 1, tsf		-	-	-	
Time to Failure, min.		4	5	5	
Rate of strain, %/min.		1.00	1.00	1.00	
Specimen Height, in.		3.12	3.12	3.12	
Specimen Diameter, in.		1.40	1.40	1.40	



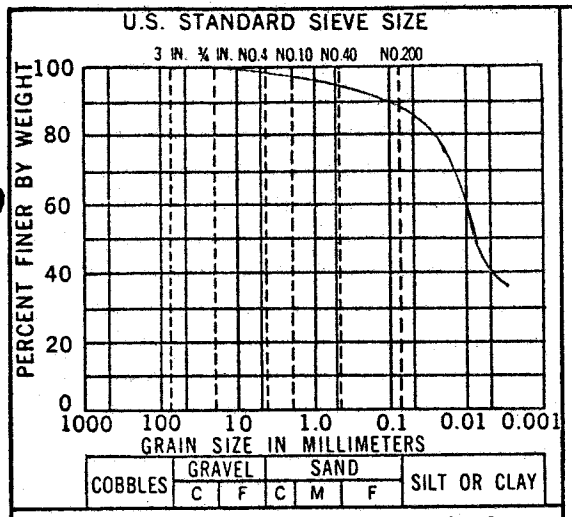
Remarks:

Project: John Sevier Steam Plant

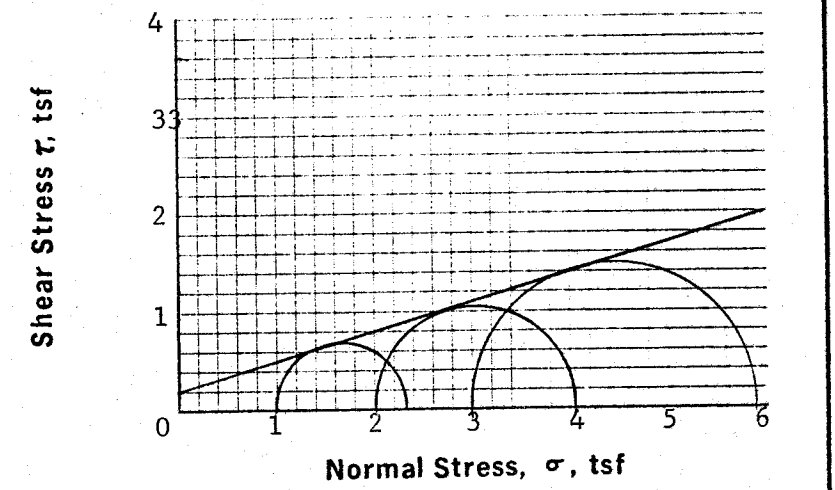
Feature Ash Disposal Dike

Boring No. US-2	**Sample No.** 5
Station	**Offset**
Date 10-20-76	**Elev.** 1110.2-1109.7

TRIAXIAL COMPRESSION TEST (Q)

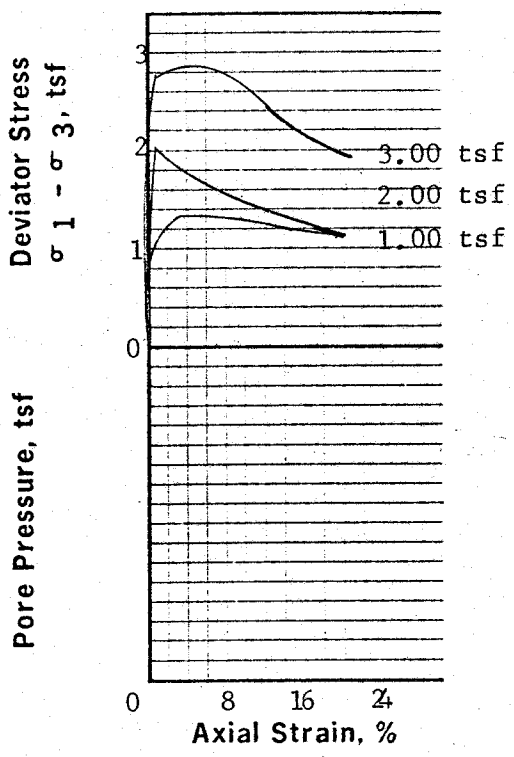


Type of Specimen Undisturbed	
Classification MH	
LL. 57.9	**G** 2.77
PI. 22.4	D_{10} -



Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	17.0	0.31	0.20
Effective	-	-	-

Specimen Number		1	2	3	4
Initial	Moisture Content, %	42.1	42.5	40.7	
	Dry Density, pcf	76.7	76.3	77.8	
	Void Ratio	1.256	1.267	1.223	
	Saturation, %	92.9	92.8	92.3	
Before Shearing	Moisture Content after Saturation, %	45.3	45.7	44.1	
	Saturation, %	100	100	100	
	Moisture Content after Consolidation, %	43.4	42.8	39.7	
	Void Ratio after Consolidation	1.203	1.162	1.069	
Final Moisture Content ,%		43.4	42.8	39.7	
Minor Principal Stress, σ 3, tsf		1.00	2.00	3.00	
Major Principal Stress, σ 1, tsf		2.32	4.04	5.91	
Effective Minor Principal Stress, σ̄ 3, tsf		*	*	*	
Effective Major Principal Stress, σ̄ 1, tsf		*	*	*	
Time to Failure, min.		9	6	20	
Rate of strain, %/min.		0.20	0.20	0.20	
Specimen Height, in.		3.18	3.18	3.18	
Specimen Diameter, in.		1.40	1.40	1.40	



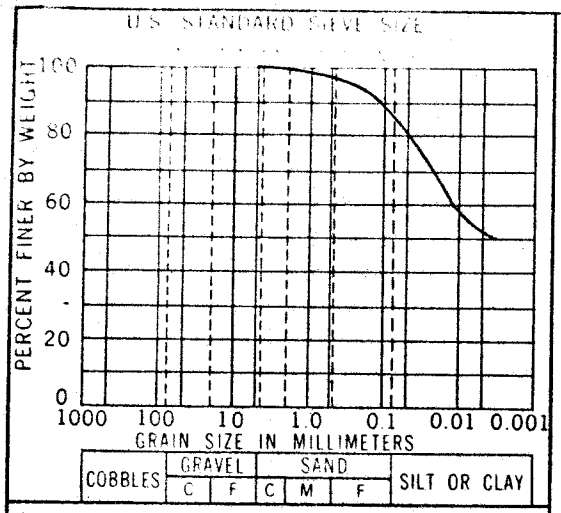
Remarks: *Pore pressure readings were erroneous

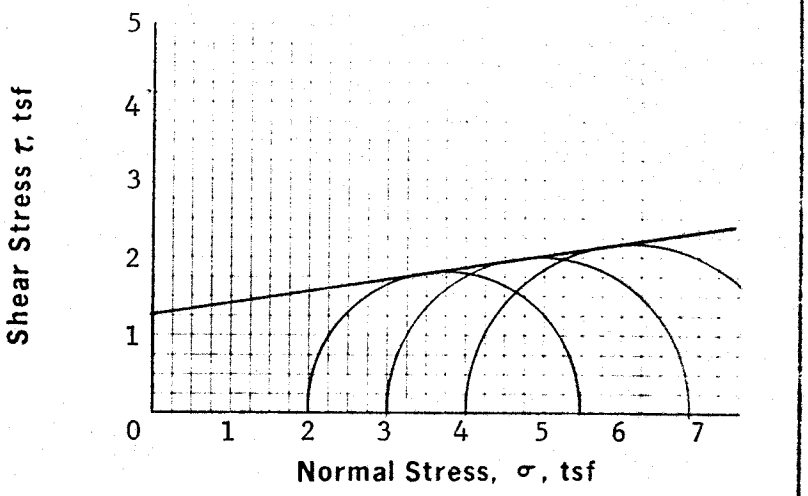
Project: John Sevier Steam Plant

Feature Ash Disposal Dike

Boring No. US-2	**Sample No.** 5
Station	**Offset**
Date 11-19-76	**Elev.** 1109.7-1109.2

TRIAXIAL COMPRESSION TEST (R)

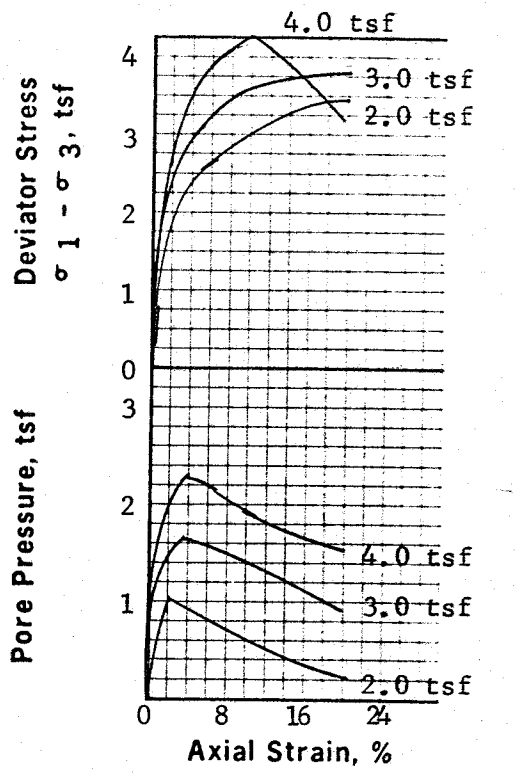




Type of Specimen	Undisturbed
Classification	CH
LL. 58.4	G 2.71
PI. 32.4	D_{10} -

Shear Strength	ø Deg.	Tan ø	C. tsf
Apparent	9.0	0.16	1.25
Effective	30.0	0.58	0.00

Specimen Number		1	2	3	4
Initial	Moisture Content, %	25.4	25.0	25.6	
	Dry Density, pcf	93.1	93.2	92.8	
	Void Ratio	.818	.815	.822	
	Saturation, %	84.2	83.2	84.4	
Before Shearing	Moisture Content after Saturation, %	30.2	30.1	30.3	
	Saturation, %	100	100	100	
	Moisture Content after Consolidation, %	27.9	27.1	27.8	
	Void Ratio after Consolidation	.750	.714	.704	
Final Moisture Content ,%		27.9	27.1	27.8	
Minor Principal Stress, σ 3, tsf		2.00	3.00	4.00	
Major Principal Stress, σ 1, tsf		5.49	6.87	8.24	
Effective Minor Principal Stress, $\bar{\sigma}$ 3, tsf		1.74	1.96	2.08	
Effective Major Principal Stress, $\bar{\sigma}$ 1, tsf		5.23	5.83	6.32	
Time to Failure, min.		100	90	50	
Rate of strain, %/min.		0.2	0.2	0.2	
Specimen Height, in.		3.18	3.18	3.18	
Specimen Diameter, in.		1.40	1.40	1.40	

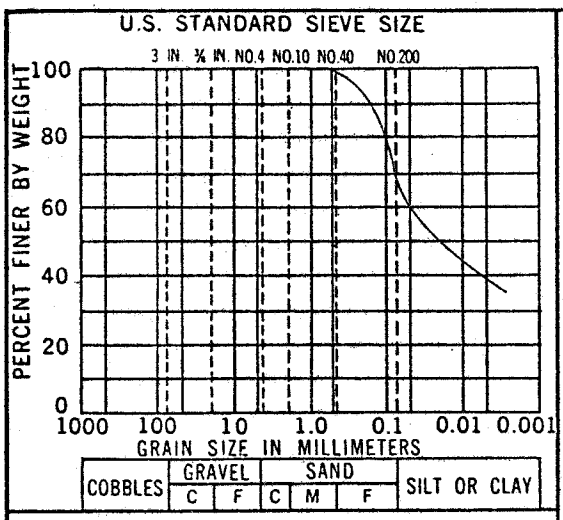


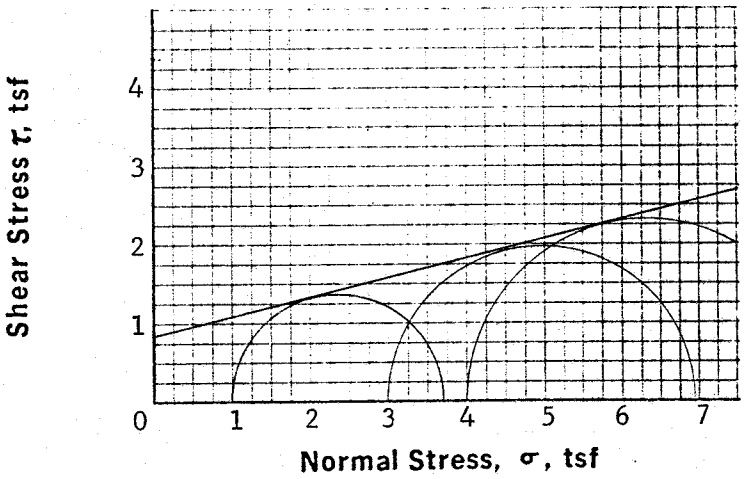
Remarks:

Project:	John Sevier Steam Plant
Feature	Ash Disposal Dike
Boring No. US-13	Sample No. 1
Station	Offset
Date 10-27-76	Elev. 1126.2-1125.7

TRIAXIAL COMPRESSION TEST (R)

Soil Form 9

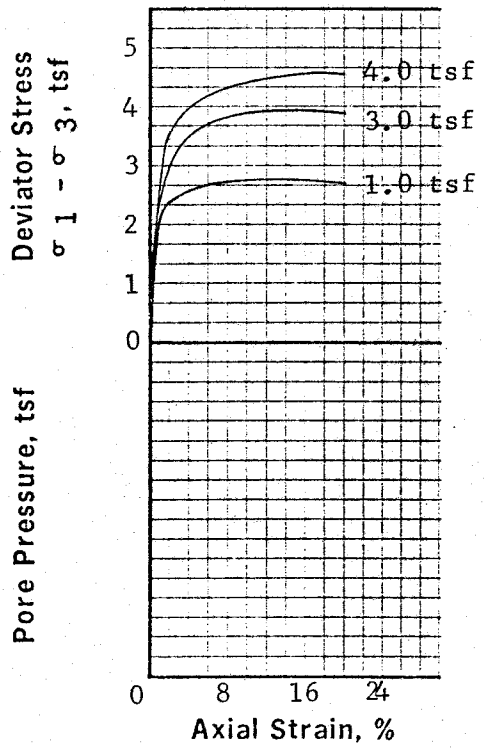




Type of Specimen	Undisturbed
Classification	CL
LL. 39.5	**G** 2.69
PI. 21.0	**D_{10}** -

Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	13.8	.25	0.85
Effective	-	-	-

Specimen Number		1	2	3	4
Initial	Moisture Content, %	21.8	22.5	23.4	
	Dry Density, pcf	95.9	96.3	95.3	
	Void Ratio	.752	.744	.762	
	Saturation, %	78.0	81.3	82.6	
Before Shearing	Moisture Content after Saturation, %	-	-	-	
	Saturation, %	-	-	-	
	Moisture Content after Consolidation, %	-	-	-	
	Void Ratio after Consolidation	-	-	-	
Final Moisture Content ,%		21.7	22.5	23.4	
Minor Principal Stress, σ 3, tsf		1.00	3.00	4.00	
Major Principal Stress, σ 1, tsf		3.70	6.90	8.58	
Effective Minor Principal Stress, σ̄ 3, tsf		-	-	-	
Effective Major Principal Stress, σ̄ 1, tsf		16	15	18	
Time to Failure, min.		1.00	1.00	1.00	
Rate of strain, %/min.		3.12	3.12	3.12	
Specimen Height, in.		1.40	1.40	1.40	
Specimen Diameter, in.					



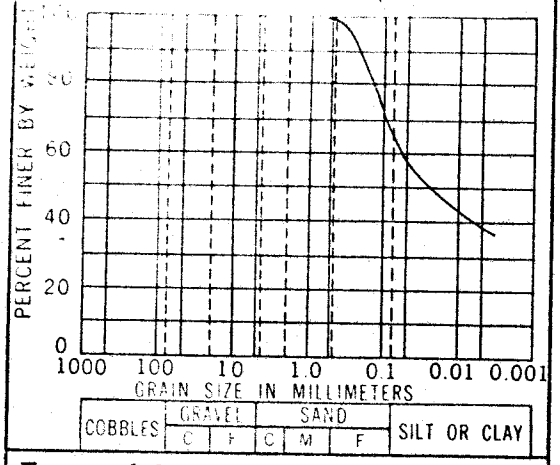
Remarks:

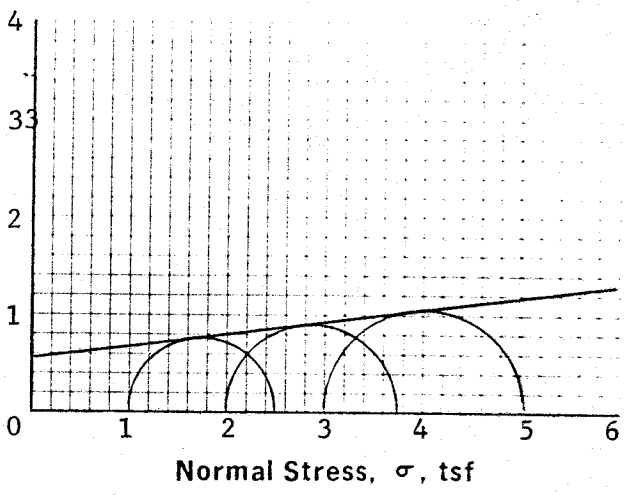
Project: John Sevier Steam Plant

Feature Ash Disposal Dike

Boring No. US-13	Sample No. 2
Station	Offset
Date 10-20-76	Elev. 1122.7-1122.2

TRIAXIAL COMPRESSION TEST (Q)

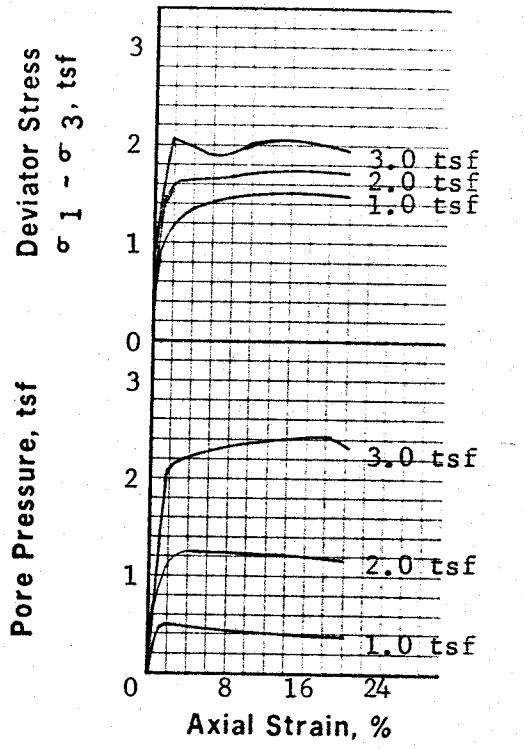




Type of Specimen	Undisturbed
Classification	CL
LL. 39.5	G 2.69
PI. 21.0	D_{10} -

Shear Strength	ø Deg.	Tan ø	C. tsf
Apparent	7.0	0.12	0.56
Effective	32.0	0.62	0.00

Specimen Number		1	2	3	4
Initial	Moisture Content, %	28.2	26.9	25.9	
	Dry Density, pcf	89.7	90.8	90.9	
	Void Ratio	.872	.849	.847	
	Saturation, %	87.0	85.2	82.2	
Before Shearing	Moisture Content after Saturation, %	32.4	31.6	31.5	
	Saturation, %	100.0	100.0	100.0	
	Moisture Content after Consolidation, %	31.0	29.2	27.6	
	Void Ratio after Consolidation	.750	.798	.726	
Final Moisture Content ,%		31.0	29.2	27.6	
Minor Principal Stress, σ 3, tsf		1.00	2.00	3.00	
Major Principal Stress, σ 1, tsf		2.52	3.75	5.07	
Effective Minor Principal Stress, $\bar{\sigma}$ 3, tsf		0.63	0.81	0.91	
Effective Major Principal Stress, $\bar{\sigma}$ 1, tsf		2.15	2.56	2.98	
Time to Failure, min.		70	80	9	
Rate of strain, %/min.		0.20	0.20	0.20	
Specimen Height, in.		3.12	3.12	3.12	
Specimen Diameter, in.		1.40	1.40	1.40	



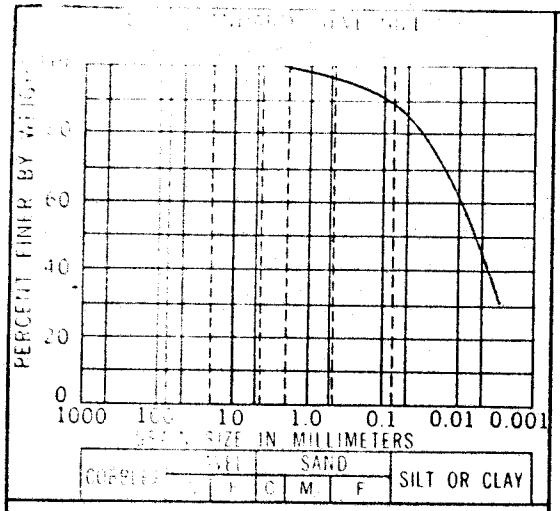
Remarks:

Project: John Sevier Steam Plant

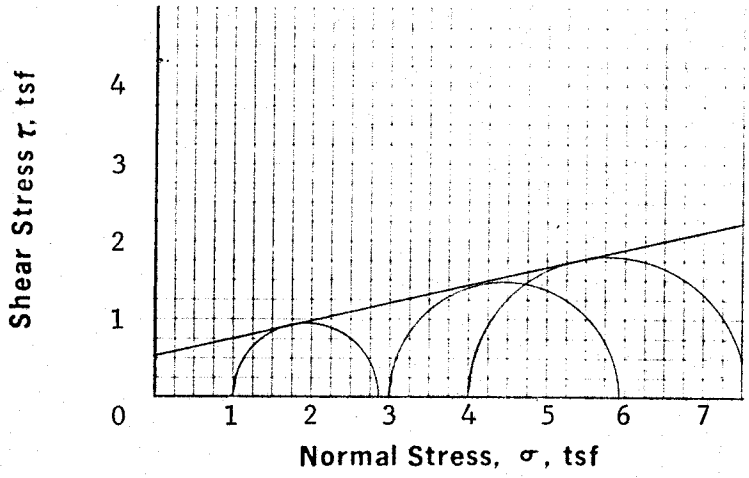
Feature Ash Disposal Dike

Boring No. US-13	Sample No. 2
Station	Offset
Date 10-22-76	Elev. 1123.2-1122.7

TRIAXIAL COMPRESSION TEST (R)

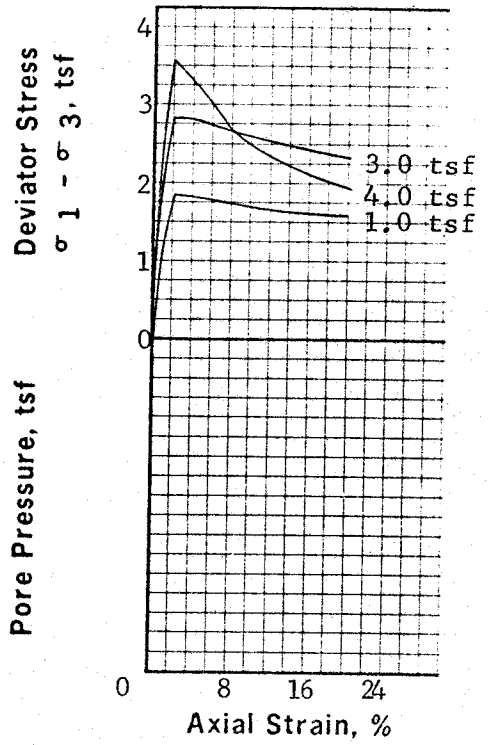


Type of Specimen	Undisturbed
Classification	MH
LL. 56.5	G 2.74
PI. 23.9	D_{10} -



Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	12.5	0.22	0.54
Effective			

Specimen Number		1	2	3	4
Initial	Moisture Content, %	34.1	37.6	35.7	
	Dry Density, pcf	82.7	80.3	84.8	
	Void Ratio	1.070	1.129	1.017	
	Saturation, %	87.4	91.2	96.2	
Before Shearing	Moisture Content after Saturation, %	-	-	-	
	Saturation, %	-	-	-	
	Moisture Content after Consolidation, %	-	-	-	
	Void Ratio after Consolidation	-	-	-	
Final Moisture Content ,%		34.0	37.4	35.5	
Minor Principal Stress, σ 3, tsf		1.00	3.00	4.00	
Major Principal Stress, σ 1, tsf		2.86	5.87	7.56	
Effective Minor Principal Stress. $\bar{\sigma}$ 3, tsf		-	-	-	
Effective Major Principal Stress. $\bar{\sigma}$ 1, tsf		-	-	-	
Time to Failure, min.		3	3	2	
Rate of strain, %/min.		1.00	1.00	1.00	
Specimen Height, in.		3.12	3.12	3.12	
Specimen Diameter, in.		1.40	1.40	1.40	



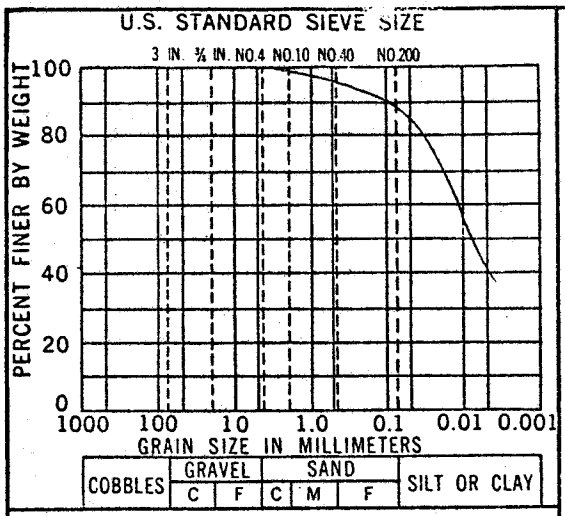
Remarks:

Project: John Sevier Steam Plant

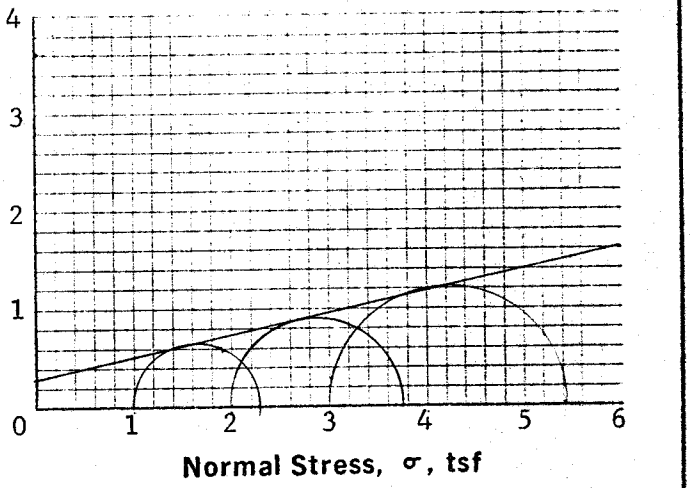
Feature Ash Disposal Dike

Boring No. US-13	Sample No. 4
Station	Offset
Date 10-20-76	Elev. 1117.2-1116.7

TRIAXIAL COMPRESSION TEST (Q)

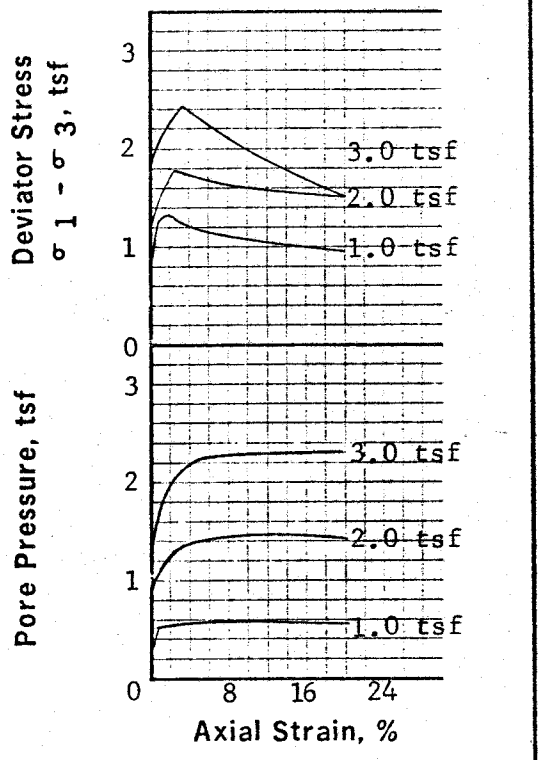


Type of Specimen	Undisturbed
Classification	MH
LL. 56.5	**G** 2.74
PI. 23.9	**D_{10}** -



Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	12.5	0.22	0.30
Effective	36.5	0.74	0.00

	Specimen Number	1	2	3	4
Initial	Moisture Content, %	49.0	49.6	49.5	
	Dry Density, pcf	69.4	68.6	69.4	
	Void Ratio	1.463	1.494	1.463	
	Saturation, %	91.7	90.9	92.7	
Before Shearing	Moisture Content after Saturation, %	53.4	54.5	53.4	
	Saturation, %	100	100	100	
	Moisture Content after Consolidation, %	48.6	47.7	45.4	
	Void Ratio after Consolidation	1.396	1.303	1.116	
Final Moisture Content ,%		48.6	47.7	45.4	
Minor Principal Stress, σ 3, tsf		1.00	2.00	3.00	
Major Principal Stress, σ 1, tsf		2.29	3.76	5.42	
Effective Minor Principal Stress, $\bar{\sigma}$ 3, tsf		0.50	0.65	0.83	
Effective Major Principal Stress, $\bar{\sigma}$ 1, tsf		1.79	2.41	3.25	
Time to Failure, min.		6	12	15	
Rate of strain, %/min.		0.20	0.20	0.20	
Specimen Height, in.		3.18	3.18	3.18	
Specimen Diameter, in.		1.40	1.40	1.40	



Remarks:

Project: John Sevier S. P.

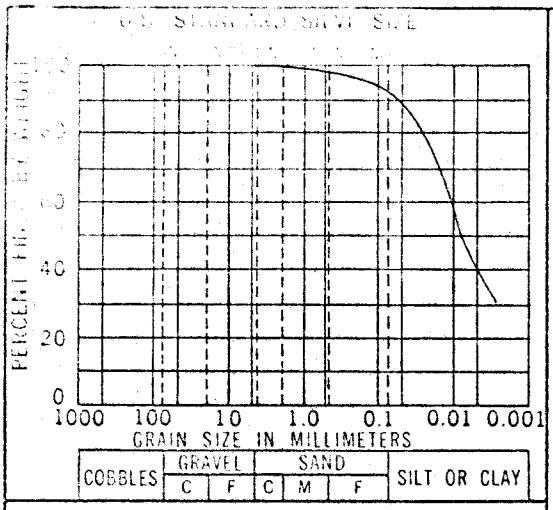
Feature Ash Disposal Dike

Boring No. US-13 | Sample No. 4

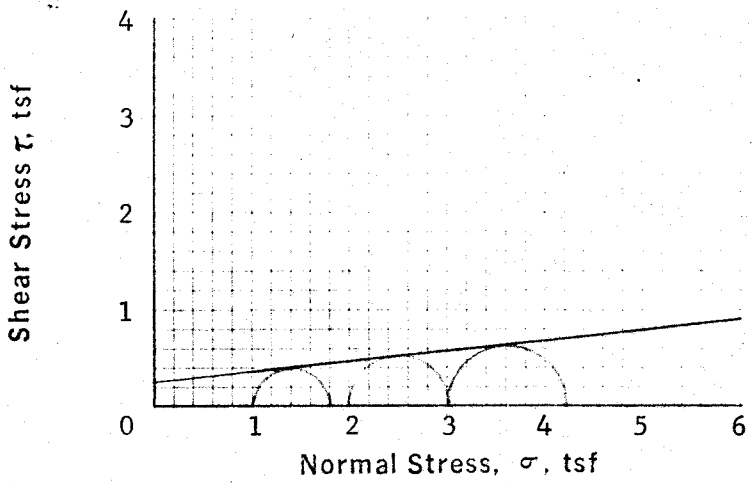
Station | Offset

Date 10-19-76 | Elev. 1116.7-1116.2

TRIAXIAL COMPRESSION TEST (R)

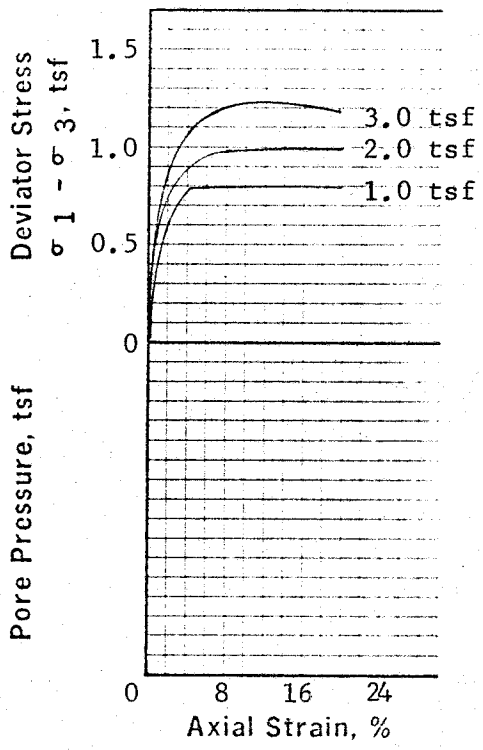


Type of Specimen	Undisturbed
Classification	MH
LL. 53.7	G 2.75
PI. 20.9	D_{10} -



Shear Strength	ø Deg.	Tan ø	C. tsf
Apparent	6.0	0.11	0.25
Effective	-	-	-

Specimen Number		1	2	3	4
Initial	Moisture Content, %	48.6	48.0	49.2	
	Dry Density, pcf	72.5	72.8	72.5	
	Void Ratio	1.369	1.358	1.369	
	Saturation, %	97.6	97.2	98.9	
Before Shearing	Moisture Content after Saturation, %	-	-	-	
	Saturation, %	-	-	-	
	Moisture Content after Consolidation, %	-	-	-	
	Void Ratio after Consolidation	-	-	-	
Final Moisture Content ,%		47.8	47.6	48.4	
Minor Principal Stress, σ 3, tsf		1.00	2.00	3.00	
Major Principal Stress, σ 1, tsf		1.82	3.00	4.25	
Effective Minor Principal Stress, $\bar{\sigma}$ 3, tsf		-	-	-	
Effective Major Principal Stress, $\bar{\sigma}$ 1, tsf		-	-	-	
Time to Failure, min.		4	9	14	
Rate of strain, %/min.		1.00	1.00	1.00	
Specimen Height, in.		3.09	3.09	3.09	
Specimen Diameter, in.		1.40	1.40	1.40	



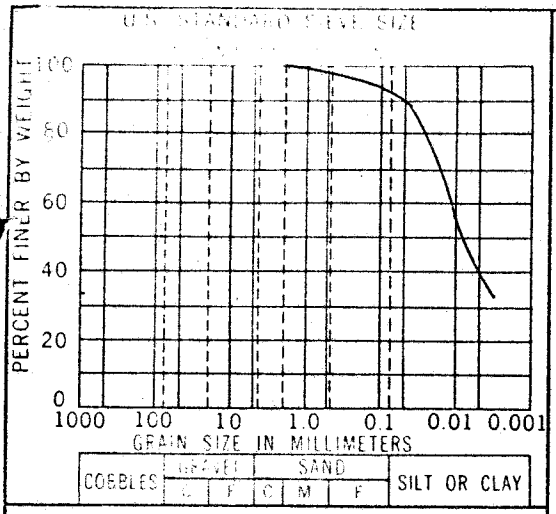
Remarks:

Project: John Sevier Steam Plant

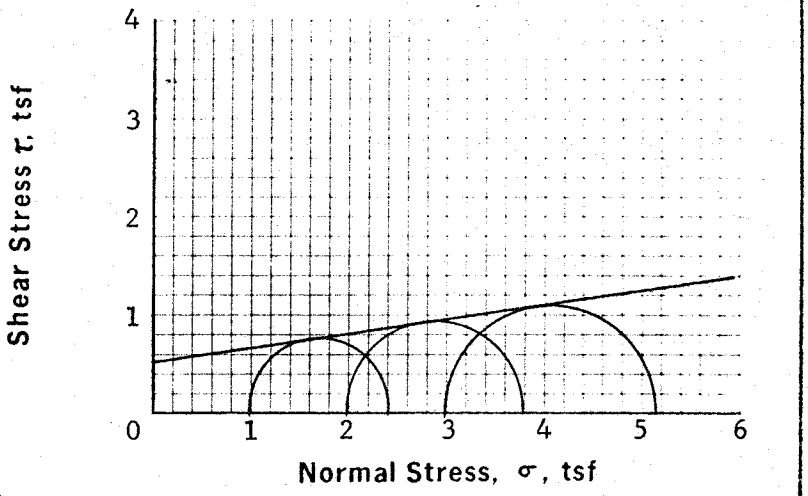
Feature Ash Disposal Dike

Boring No. US-13	Sample No. 6
Station	Offset
Date 10-26-76	Elev. 1111.2-1110.7

TRIAXIAL COMPRESSION TEST (Q)

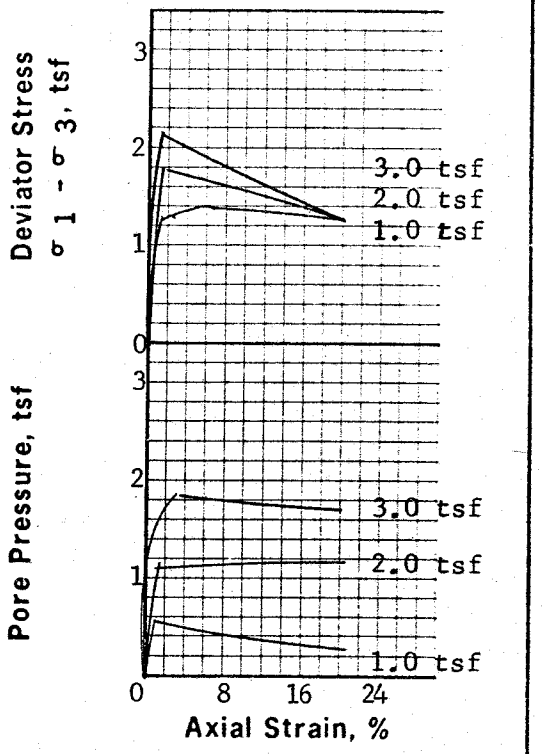


Type of Specimen	Undisturbed
Classification	MH
LL. 53.7	G 2.75
PI. 20.9	D_{10} -



Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	8.0	0.14	0.55
Effective	22.0	0.40	0.25

Specimen Number		1	2	3	4
Initial	Moisture Content, %	43.6	48.6	46.1	
	Dry Density, pcf	74.6	71.0	72.4	
	Void Ratio	1.302	1.419	1.370	
	Saturation, %	92.1	94.3	92.5	
Before Shearing	Moisture Content after Saturation, %	47.3	51.6	49.8	
	Saturation, %	100	100	100	
	Moisture Content after Consolidation, %	43.2	46.1	43.5	
	Void Ratio after Consolidation	1.237	1.276	1.153	
Final Moisture Content ,%		43.2	46.1	43.5	
Minor Principal Stress, σ 3, tsf		1.00	2.00	3.00	
Major Principal Stress, σ 1, tsf		2.39	3.80	5.16	
Effective Minor Principal Stress, $\bar{\sigma}$ 3, tsf		0.56	0.88	1.19	
Effective Major Principal Stress, $\bar{\sigma}$ 1, tsf		1.95	2.68	3.35	
Time to Failure, min.		30	9	9	
Rate of strain, %/min.		0.20	0.20	0.20	
Specimen Height, in.		3.18	3.18	3.18	
Specimen Diameter, in.		1.40	1.40	1.40	



Remarks:

Project: John Sevier Steam Plant

Feature Ash Disposal Dike

Boring No. US = 13	Sample No. 6
Station	Offset
Date 10-20-76	Elev. 1110.7-1110.2

TRIAXIAL COMPRESSION TEST (R)

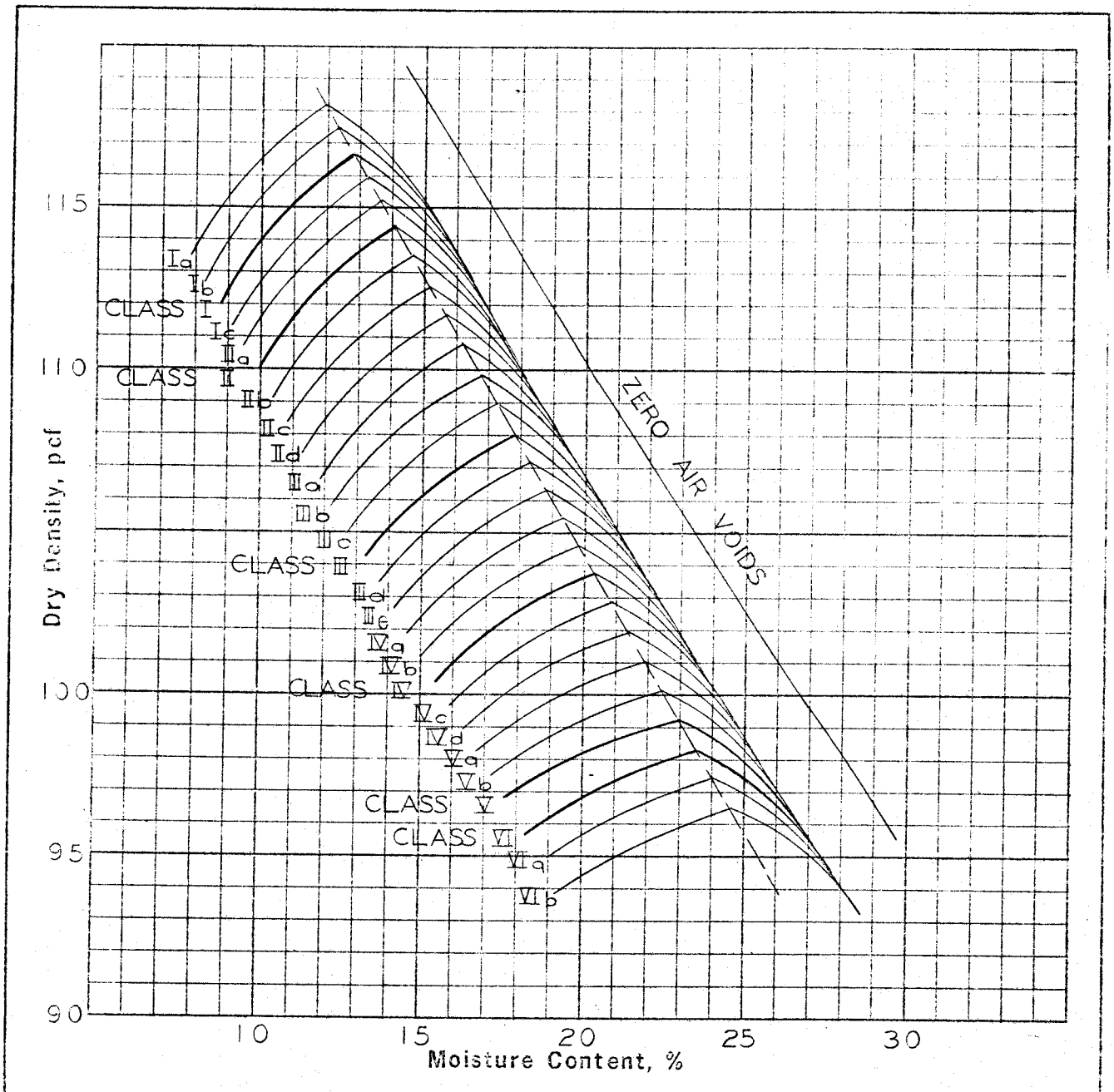
JOHN SEVIER STEAM PLANT

ASH DISPOSAL DIKE

SUMMARY OF LABORATORY TEST DATA

BORROW SOIL CLASSES

Class		I	II	III	IV	V	VI	VII
Symbol		ML-CL	CL	CL	CH	MH	CH	G-SC
Percent of Total		2	18	15	4	48	4	9
Mechanical and Hydrometer Analysis								
Gravel, percent		0	0	0	0	0	0	28
Sand, percent		38	31	26	20	17	10	37
Silt, percent		41	37	34	37	39	37	17
Clay, percent		21	32	40	43	44	53	18
Atterberg Limits								
Liquid limit, percent		19.9	33.9	43.7	51.2	55.2	65.2	36.1
Plastic limit, percent		15.2	18.9	22.0	26.8	30.9	30.7	19.7
Plasticity index, percent		4.7	15.0	21.7	24.4	24.3	34.5	16.4
Shrinkage limit, percent		-	-	-	22.23	24.05	25.12	-
Standard Proctor Compaction								
Optimum moisture, percent		12.8	14.1	17.9	20.4	23.0	23.5	12.4
Maximum density, pcf		116.8	114.5	108.0	103.7	99.2	98.2	120.0
Penetration resistance, psi		383	920	535	495	535	610	-
Shear Strength At 3% Above Optimum Moisture and At 95% of Maximum Density								
Triaxial Q:	ϕ degrees	2.9	4.9	8.8	10.0	7.0	5.0	-
	c tsf	0.46	1.06	1.18	1.19	1.14	1.50	-
Triaxial R:	ϕ degrees	15.5	16.5	15.0	16.0	15.0	15.1	-
	c tsf	0.50	0.15	0.25	0.35	0.27	0.37	-
Shear Strength At 3% Below Optimum Moisture and At 95% of Maximum Density								
Triaxial Q:	ϕ degrees	32.0	30.9	28.5	24.0	27.9	17.6	-
	c tsf	0.52	0.80	0.97	1.40	0.74	1.67	-
Triaxial R:	ϕ degrees	14.5	15.0	17.0	17.3	15.3	16.2	-
	c tsf	0.10	0.13	0.13	0.17	0.26	0.22	-



Soil Class	Gravel %	Sand %	Silt %	Clay %	Specific Gravity	LL %	PI %	Optimum Moisture, %	Maximum Density, pcf
I-ML-CL	0	38	41	21	2.66	19.9	4.7	12.8	116.8
II-CL	0	31	37	32	2.75	33.9	15.0	14.1	114.5
III-CL	0	26	34	40	2.77	43.7	21.7	17.9	108.0
IV-CH	0	20	37	43	2.78	51.2	24.4	20.4	103.7
V-MH	0	17	39	44	2.81	55.2	24.3	23.0	99.2
VI-CH	0	10	37	53	2.79	65.2	34.5	23.5	98.2

Plus No. 4 Specific Gravity, S S D	2.55
Plus No. 4 Absorption, %	1.32

Remarks:

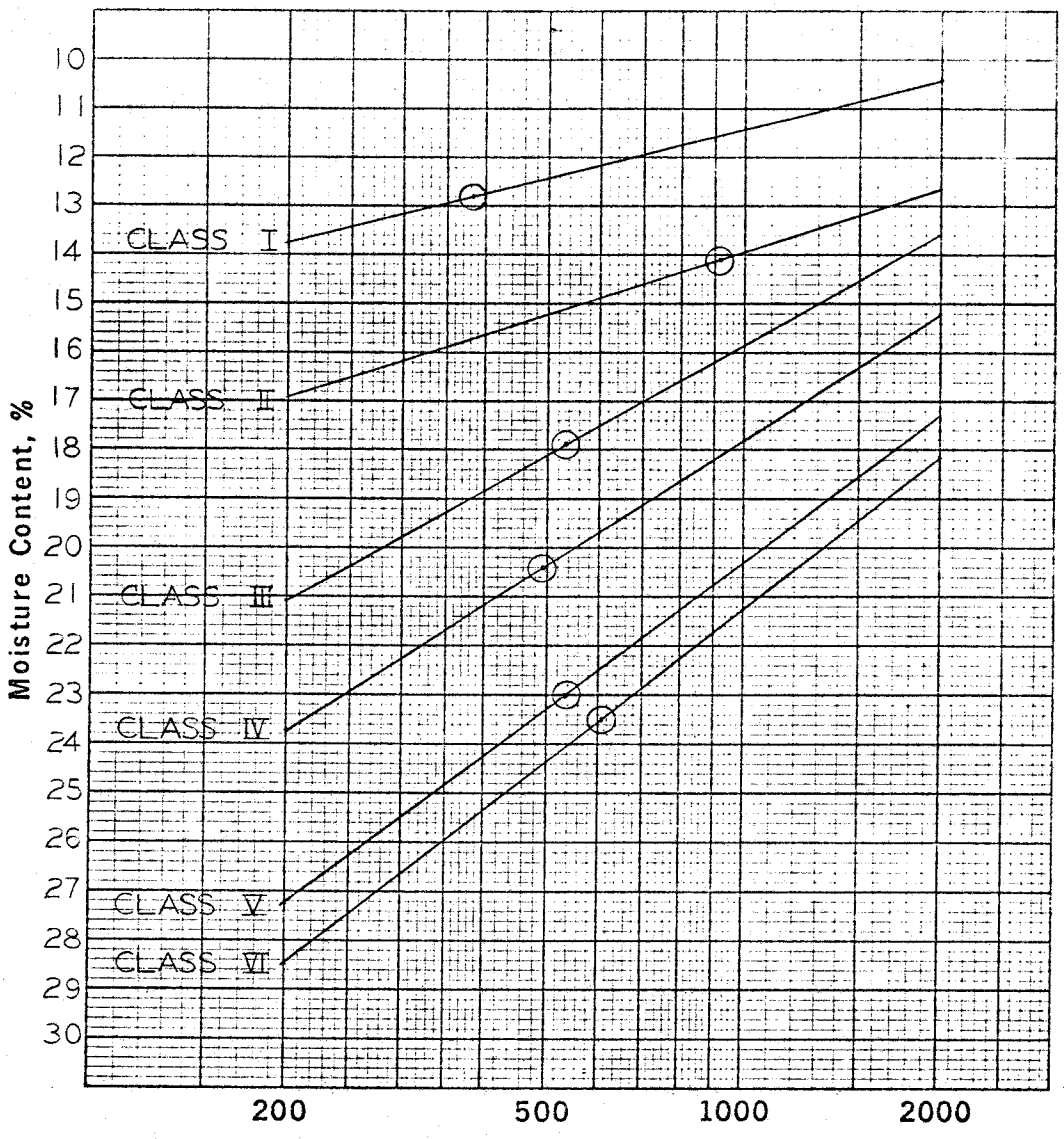
Project JOHN SEVIER S. P.

Feature ASH DISPOSAL DIKE

ASTM Designation D-698

Date Tested 12-1-76

COMPACTION TEST (FAMILY OF CURVES)



Soil Class	Optimum Moisture, %	Maximum Density, pcf	Penetration Resistance, psi
I-ML-CL	12.8	116.8	383
II-CL	14.1	114.5	920
III-CL	17.9	108.0	535
IV-CH	20.4	103.7	495
V-MH	23.0	99.2	535
VI-CH	23.5	98.2	610

Remarks:

⊙ Denotes Optimum Moisture

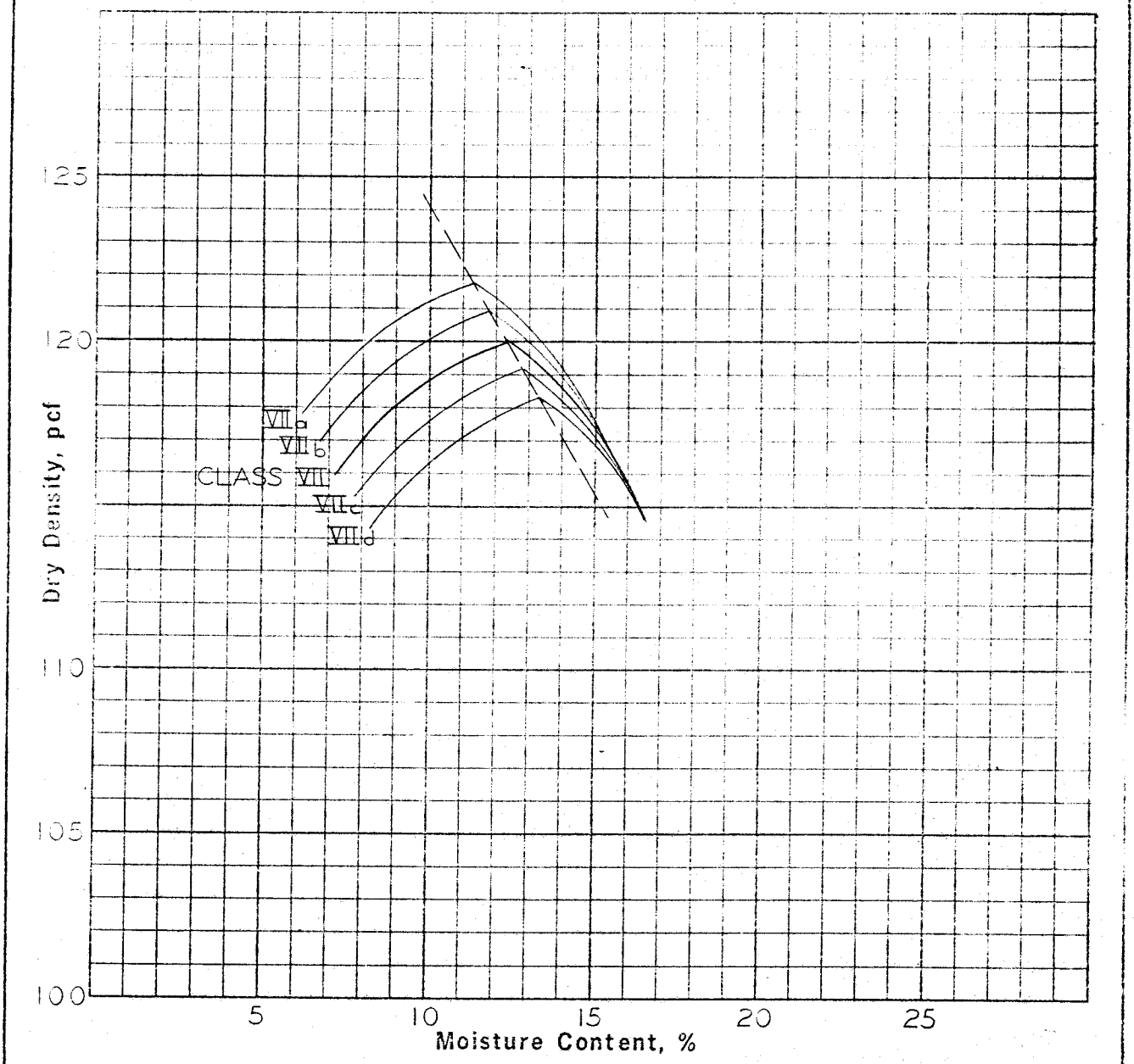
Project JOHN SEVIER S.P.

Feature ASH DISPOSAL DIKE

ASTM Designation — —

Date Tested 12-1-76

MOISTURE - PENETRATION TEST



Soil Class	Gravel %	Sand %	Silt %	Clay %	Specific Gravity	LL %	PI %	Optimum Moisture, %	Maximum Density, pcf
VII-G-SC	28	37	17	18	2.76	36.1	16.4	12.4	120.0

Plus No. 4 Specific Gravity, S S D	2.55
Plus No. 4 Absorption, %	1.32

Remarks:

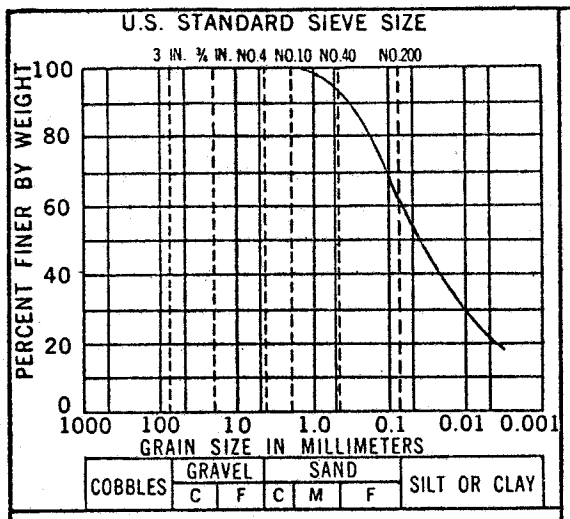
Project JOHN SEVIER S. P.

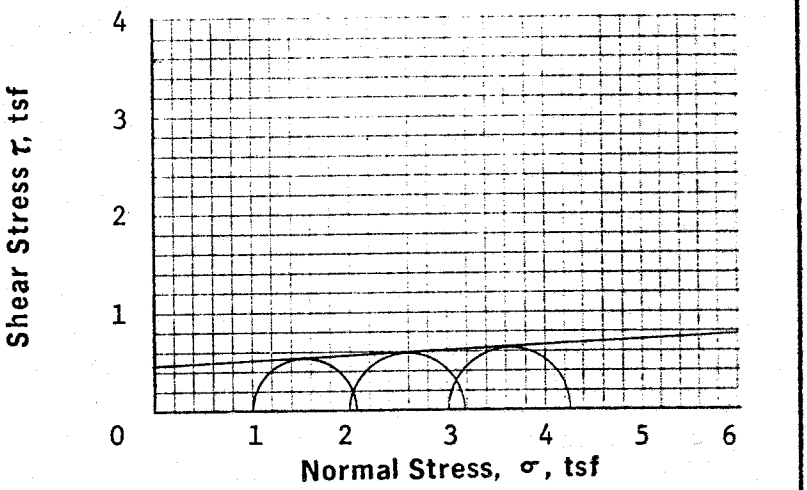
Feature ASH DISPOSAL DIKE

ASTM Designation D-698-D

Date Tested 12-1-76

COMPACTION TEST (FAMILY OF CURVES)

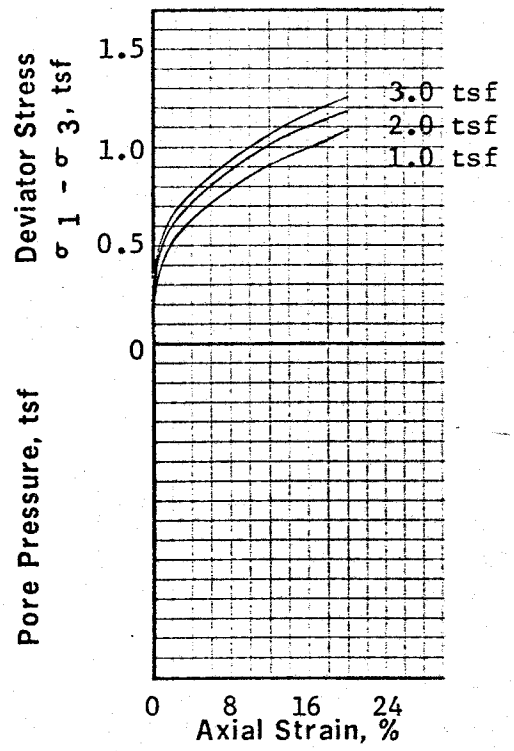




Type of Specimen	Remolded*
Classification	ML-CL
LL. 19.9	G 2.66
PI. 4.7	D_{10} --

Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	2.9	.05	0.46
Effective	--	--	--

Specimen Number		1	2	3	4
Initial	Moisture Content, %	15.6	15.6	15.5	
	Dry Density, pcf	111.1	111.1	111.1	
	Void Ratio	.495	.495	.494	
	Saturation, %	83.8	83.8	83.7	
Before Shearing	Moisture Content after Saturation, %	--	--	--	
	Saturation, %	--	--	--	
	Moisture Content after Consolidation, %	--	--	--	
	Void Ratio after Consolidation	--	--	--	
Final Moisture Content ,%		15.5	15.5	15.5	
Minor Principal Stress, σ 3, tsf		1.00	2.00	3.00	
Major Principal Stress, σ 1, tsf		2.09	3.19	4.26	
Effective Minor Principal Stress, σ̄ 3, tsf		--	--	--	
Effective Major Principal Stress, σ̄ 1, tsf		--	--	--	
Time to Failure, min.		20	20	20	
Rate of strain, %/min.		1.00	1.00	1.00	
Specimen Height, in.		3.17	3.17	3.17	
Specimen Diameter, in.		1.40	1.40	1.40	



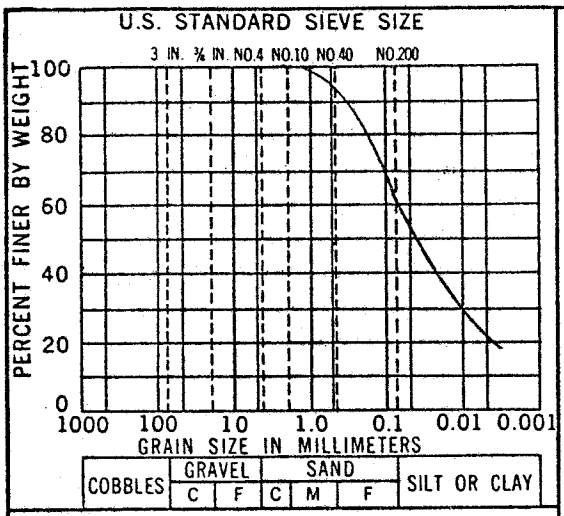
Remarks: *Remolded at 3% above optimum moisture and at 95% of standard proctor density.

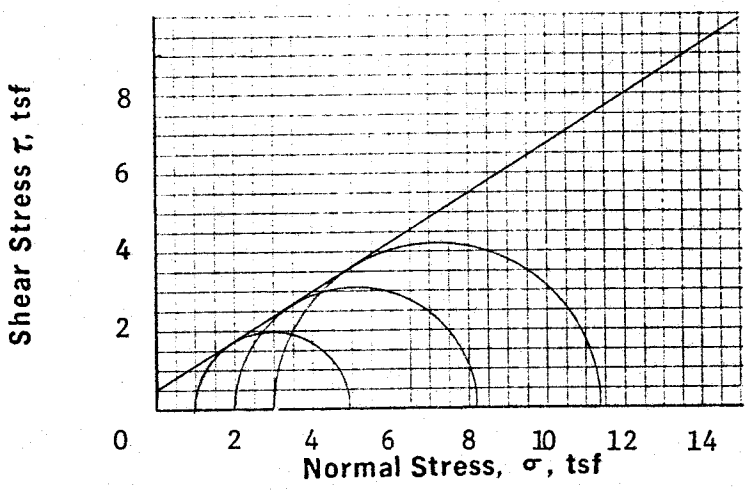
Project: John Sevier SP

Feature Ash Disposal Dike

Boring No.	Sample No. Class I
Station	Offset
Date 11-8-76	Elev.

TRIAXIAL COMPRESSION TEST (Q)

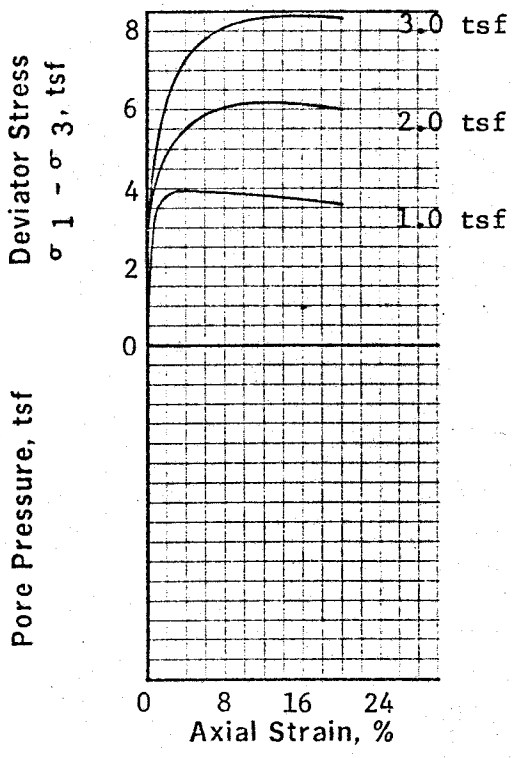




Type of Specimen	Remolded*
Classification	ML-CL
LL. 19.9	G 2.66
PI. 4.7	D_{10} --

Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	32.0	.62	0.52
Effective	--	--	--

Specimen Number		1	2	3	4
Initial	Moisture Content, %	9.9	9.8	10.0	
	Dry Density, pcf	110.8	110.9	110.7	
	Void Ratio	.499	.498	.500	
	Saturation, %	52.7	52.2	53.2	
Before Shearing	Moisture Content after Saturation, %	--	--	--	
	Saturation, %	--	--	--	
	Moisture Content after Consolidation, %	--	--	--	
	Void Ratio after Consolidation	--	--	--	
Final Moisture Content ,%		9.8	9.8	9.9	
Minor Principal Stress, σ 3, tsf		1.00	2.00	3.00	
Major Principal Stress, σ 1, tsf		4.97	8.22	11.44	
Effective Minor Principal Stress, σ̄ 3, tsf		--	--	--	
Effective Major Principal Stress, σ̄ 1, tsf		--	--	--	
Time to Failure, min.		4	13	15	
Rate of strain, %/min.		1.00	1.00	1.00	
Specimen Height, in.		3.17	3.17	3.17	
Specimen Diameter, in.		1.40	1.40	1.40	



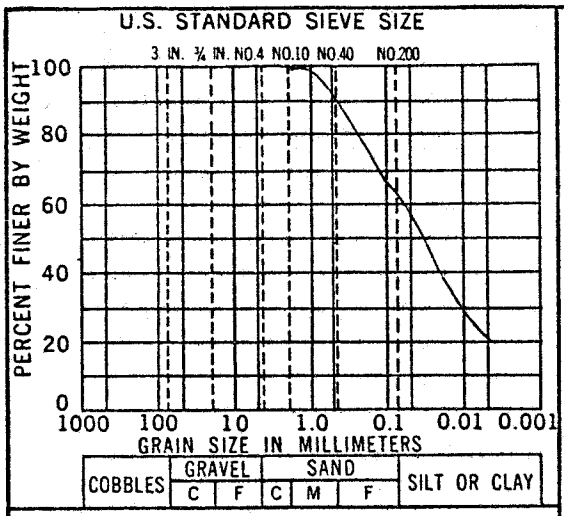
Remarks: *Remolded at 3% below optimum moisture and at 95% of standard proctor density.

Project: John Sevier SP

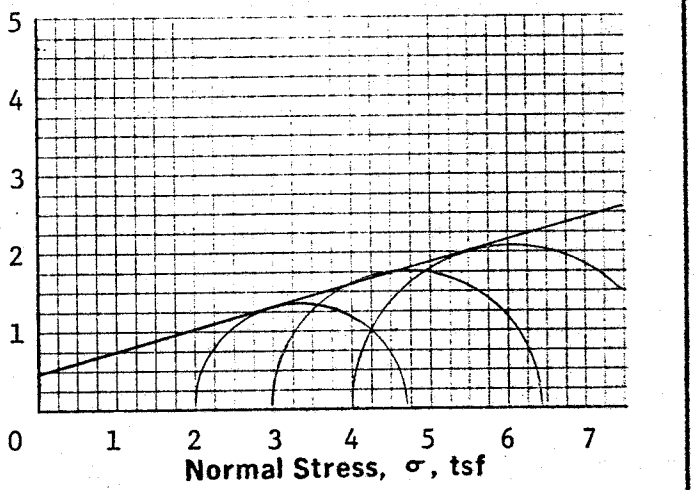
Feature Ash Disposal Dike

Boring No.	Sample No. Class I
Station	Offset
Date 11-8-76	Elev.

TRIAXIAL COMPRESSION TEST (Q)

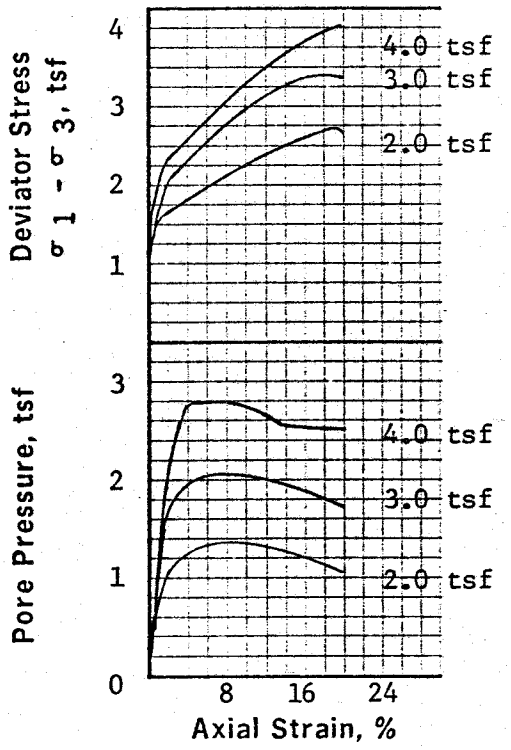


Type of Specimen	Remolded*
Classification	ML-CL
LL. 19.9	G 2.66
PI. 4.7	D_{10} --



Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	15.5	.28	0.50
Effective	34.5	.69	0.10

Specimen Number		1	2	3	4
Initial	Moisture Content, %	16.0	15.6	15.7	
	Dry Density, pcf	110.8	111.1	111.0	
	Void Ratio	.499	.495	.496	
	Saturation, %	85.5	83.8	84.4	
Before Shearing	Moisture Content after Saturation, %	18.8	18.6	18.6	
	Saturation, %	100.0	100.0	100.0	
	Moisture Content after Consolidation, %	14.7	14.5	14.3	
	Void Ratio after Consolidation	.468	.355	.444	
Final Moisture Content ,%		14.7	14.5	14.3	
Minor Principal Stress, σ 3, tsf		2.00	3.00	4.00	
Major Principal Stress, σ 1, tsf		4.72	6.41	8.06	
Effective Minor Principal Stress, σ̄ 3, tsf		0.95	1.26	1.47	
Effective Major Principal Stress, σ̄ 1, tsf		3.67	4.67	5.53	
Time to Failure, min.		80	99	100	
Rate of strain, %/min.		0.20	0.20	0.20	
Specimen Height, in.		3.17	3.17	3.17	
Specimen Diameter, in.		1.40	1.40	1.40	



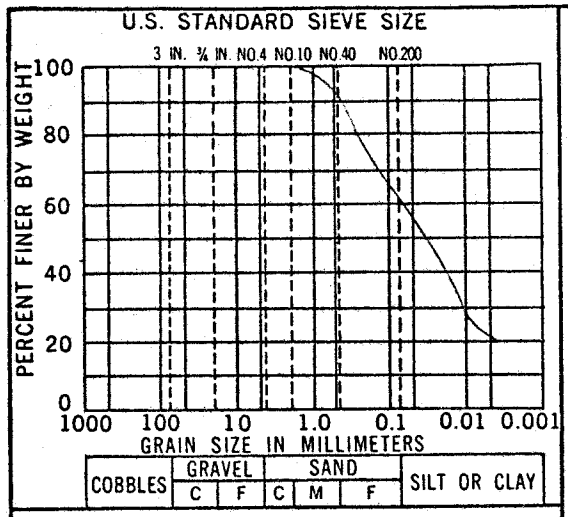
Remarks: *Remolded at 3% above optimum moisture and at 95% of standard proctor density.

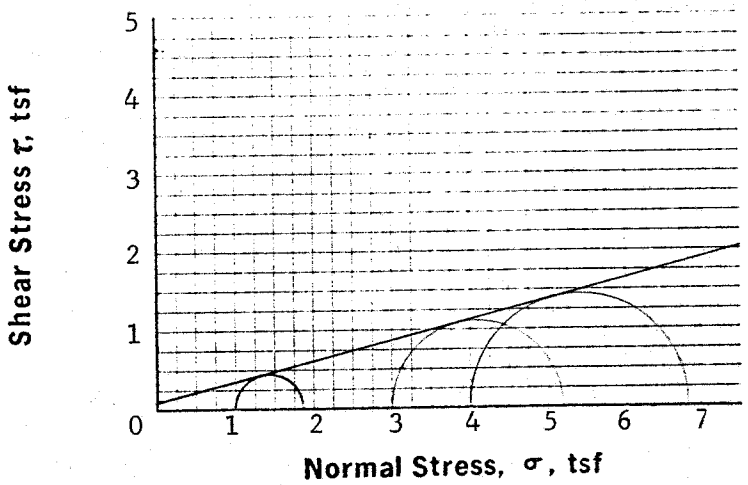
Project: John Sevier SP

Feature Ash Disposal Dike

Boring No.	Sample No. Class I
Station	Offset
Date 11-10-76	Elev.

TRIAXIAL COMPRESSION TEST (R)

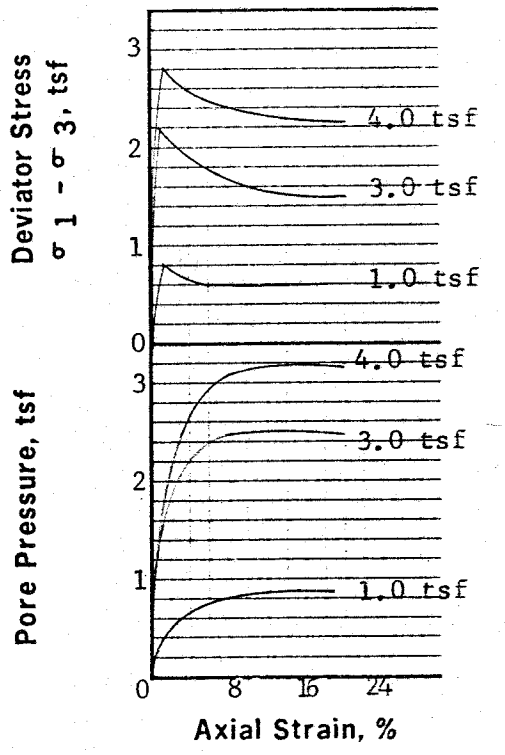




Type of Specimen	Remolded*
Classification	ML-CL
LL. 19.9	**G** 2.66
PI. 4.7	**D_{10}** -

Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	14.5	0.26	0.10
Effective	22.5	0.41	0.00

Specimen Number		1	2	3	4
Initial	Moisture Content, %	9.9	9.7	9.7	
	Dry Density, pcf	110.8	110.9	111.0	
	Void Ratio	.499	.497	.496	
	Saturation, %	52.9	51.9	52.0	
Before Shearing	Moisture Content after Saturation, %	18.8	18.7	18.6	
	Saturation, %	100	100	100	
	Moisture Content after Consolidation, %	17.3	16.1	15.8	
	Void Ratio after Consolidation	.460	.459	.432	
Final Moisture Content ,%		17.3	16.1	15.8	
Minor Principal Stress, σ 3, tsf		1.00	3.00	4.00	
Major Principal Stress, σ 1, tsf		1.87	5.21	6.83	
Effective Minor Principal Stress, $\bar{\sigma}$ 3, tsf		0.68	1.60	2.19	
Effective Major Principal Stress, $\bar{\sigma}$ 1, tsf		1.59	3.81	5.02	
Time to Failure, min.		4	7	9	
Rate of strain, %/min.		0.20	0.20	0.20	
Specimen Height, in.		3.17	3.17	3.17	
Specimen Diameter, in.		1.40	1.40	1.40	



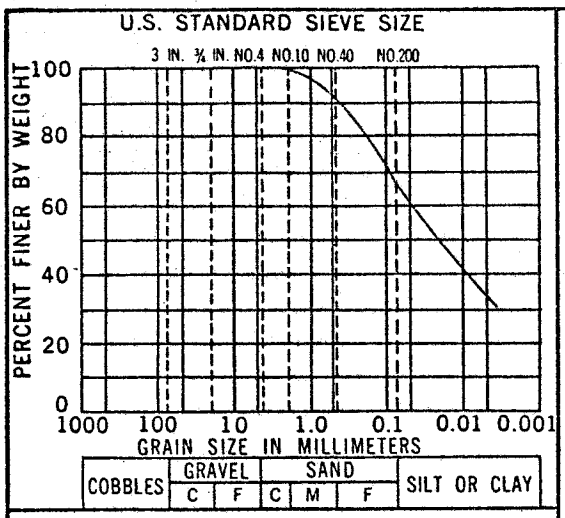
Remarks: *Remolded at 3% below optimum moisture and at 95% of standard proctor density.

Project: John Sevier Steam Plant

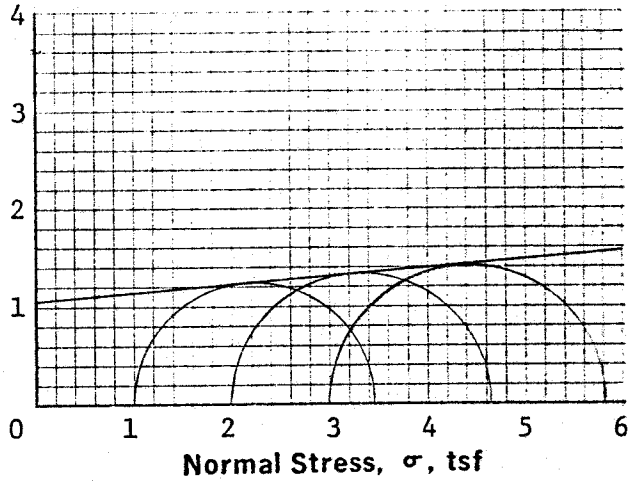
Feature Ash Disposal Dike

Boring No.	**Sample No.** Class I
Station	**Offset**
Date 12-2-76	**Elev.**

TRIAXIAL COMPRESSION TEST (R)

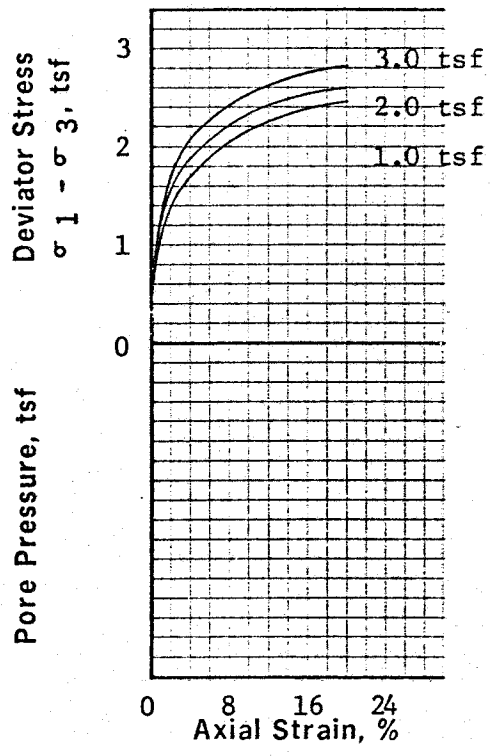


Type of Specimen	*Remolded		
Classification	CL		
LL.	33.9	G	2.75
PI.	15.0	D_{10}	--



Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	4.9	.09	1.06
Effective	--	--	--

Specimen Number		1	2	3	4
Initial	Moisture Content, %	16.7	16.8	16.8	
	Dry Density, pcf	109.2	109.1	109.1	
	Void Ratio	.573	.574	.574	
	Saturation, %	80.1	80.5	80.5	
Before Shearing	Moisture Content after Saturation, %	--	--	--	
	Saturation, %	--	--	--	
	Moisture Content after Consolidation, %	--	--	--	
	Void Ratio after Consolidation	--	--	--	
Final Moisture Content ,%		16.7	16.7	16.7	
Minor Principal Stress, σ_3, tsf		1.00	2.00	3.00	
Major Principal Stress, σ_1, tsf		3.45	4.61	5.84	
Effective Minor Principal Stress, $\bar{\sigma}_3$, tsf		--	--	--	
Effective Major Principal Stress, $\bar{\sigma}_1$, tsf		--	--	--	
Time to Failure, min.		20	20	20	
Rate of strain, %/min.		1.00	1.00	1.00	
Specimen Height, in.		3.17	3.17	3.17	
Specimen Diameter, in.		1.40	1.40	1.40	



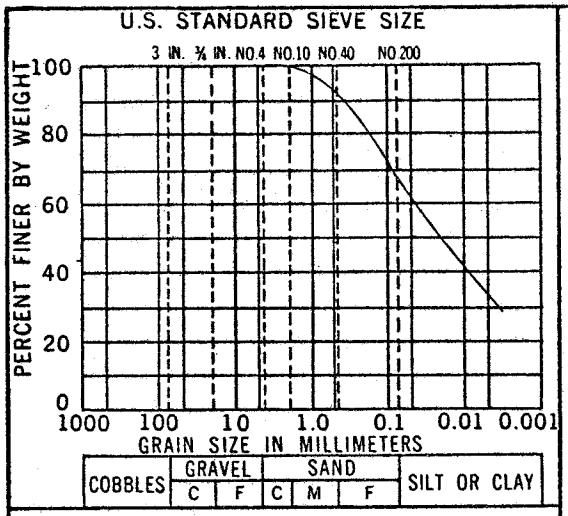
Remarks: *Remolded at 3% above optimum moisture and at 95% of standard proctor density.

Project: John Sevier SP

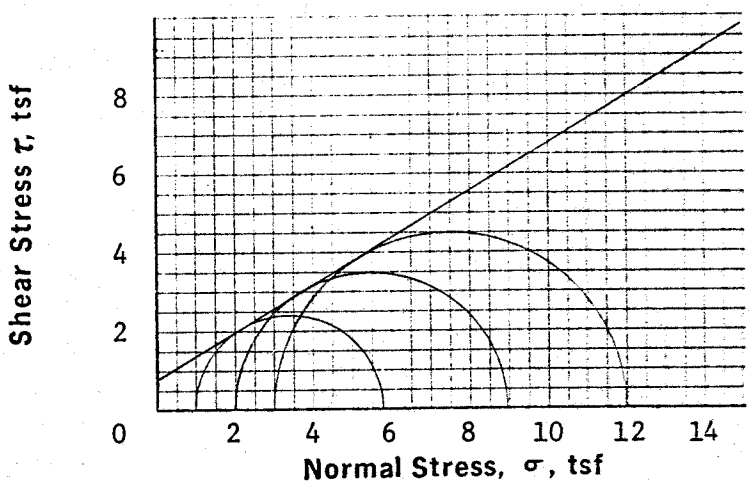
Feature Ash Disposal Dike

Boring No.	Sample No. Class II
Station	Offset
Date 11-8-76	Elev.

TRIAXIAL COMPRESSION TEST (Q)

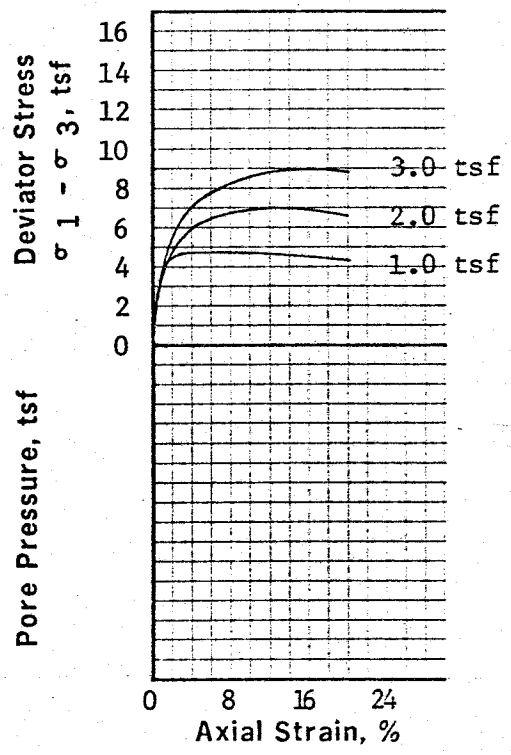


Type of Specimen	Remolded*		
Classification	CL		
LL.	33.9	G	2.75
PI.	15.0	D_{10}	--



Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	30.9	.60	0.80
Effective	--	--	--

Specimen Number		1	2	3	4
Initial	Moisture Content, %	11.4	11.4	11.2	
	Dry Density, pcf	108.5	108.6	108.7	
	Void Ratio	.582	.581	.579	
	Saturation, %	53.8	53.7	53.2	
Before Shearing	Moisture Content after Saturation, %	--	--	--	
	Saturation, %	--	--	--	
	Moisture Content after Consolidation, %	--	--	--	
	Void Ratio after Consolidation	--	--	--	
Final Moisture Content ,%		11.3	11.4	11.2	
Minor Principal Stress, σ_3, tsf		1.00	2.00	3.00	
Major Principal Stress, σ_1, tsf		5.76	8.97	11.96	
Effective Minor Principal Stress, $\bar{\sigma}_3$, tsf		--	--	--	
Effective Major Principal Stress, $\bar{\sigma}_1$, tsf		--	--	--	
Time to Failure, min.		4	13	16	
Rate of strain, %/min.		1.00	1.00	1.00	
Specimen Height, in.		3.17	3.17	3.17	
Specimen Diameter, in.		1.40	1.40	1.40	



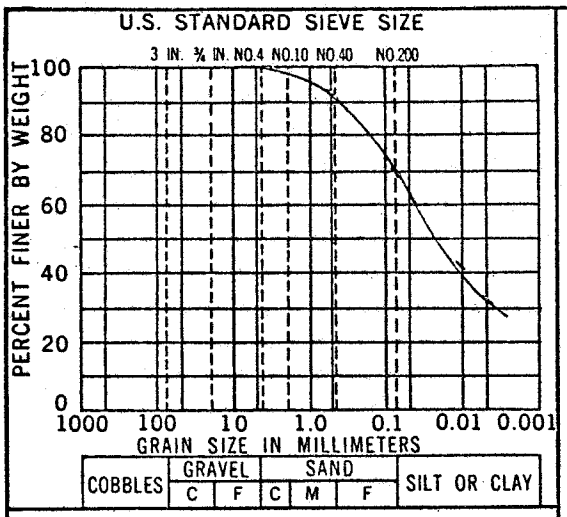
Remarks: *Remolded at 3% below optimum moisture and at 95% of standard proctor density.

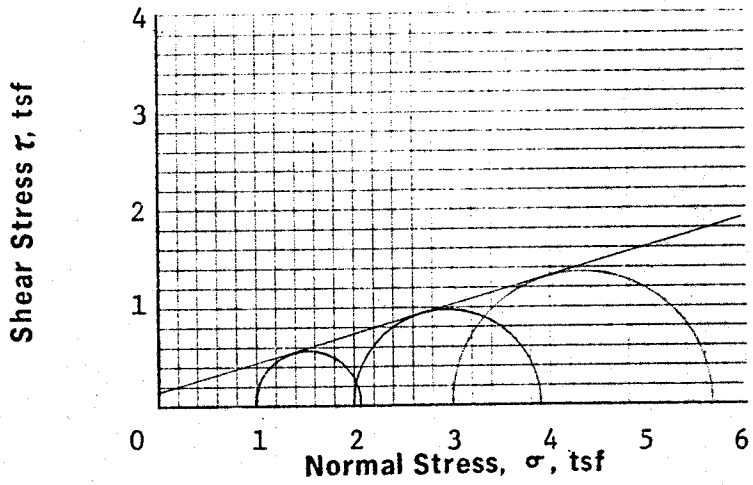
Project: John Sevier SP

Feature Ash Disposal Dike

Boring No.	Sample No. Class II
Station	Offset
Date 11-8-76	Elev.

TRIAXIAL COMPRESSION TEST (Q)

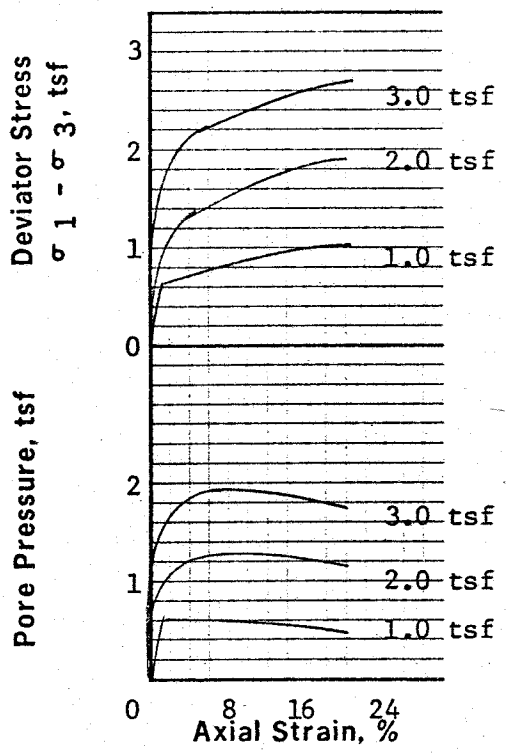




Type of Specimen	Remolded*
Classification	CL
LL. 33.9	G 2.75
PI. 15.0	D_{10} --

Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	16.5	.30	0.15
Effective	31.0	.60	0.00

Specimen Number		1	2	3	4
Initial	Moisture Content, %	17.2	17.3	17.3	
	Dry Density, pcf	108.8	108.6	108.6	
	Void Ratio	.590	.593	.593	
	Saturation, %	80.7	80.9	80.8	
Before Shearing	Moisture Content after Saturation, %	21.3	21.4	21.4	
	Saturation, %	100	100	100	
	Moisture Content after Consolidation, %	19.1	18.0	17.3	
	Void Ratio after Consolidation	.530	.512	.489	
Final Moisture Content ,%		19.1	18.0	17.3	
Minor Principal Stress, σ 3, tsf		1.00	2.00	3.00	
Major Principal Stress, σ 1, tsf		2.06	3.89	5.67	
Effective Minor Principal Stress, $\bar{\sigma}$ 3, tsf		0.52	0.82	1.24	
Effective Major Principal Stress, $\bar{\sigma}$ 1, tsf		1.58	2.71	3.91	
Time to Failure, min.		90	90	90	
Rate of strain, %/min.		0.2	0.2	0.2	
Specimen Height, in.		3.16	3.16	3.16	
Specimen Diameter, in.		1.40	1.40	1.40	



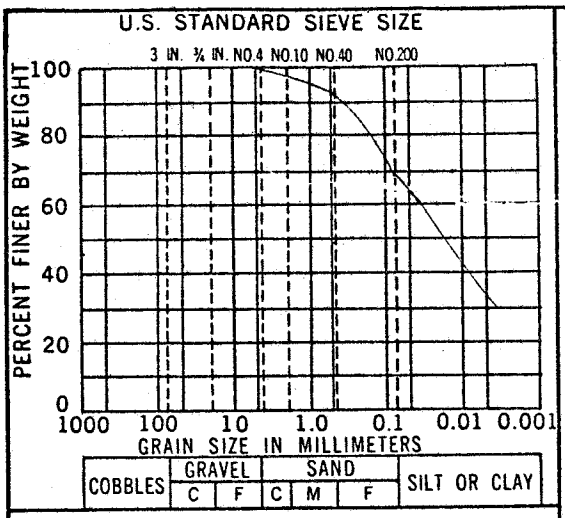
Remarks: *Remolded at 3% above optimum moisture and at 95% of standard proctor density.

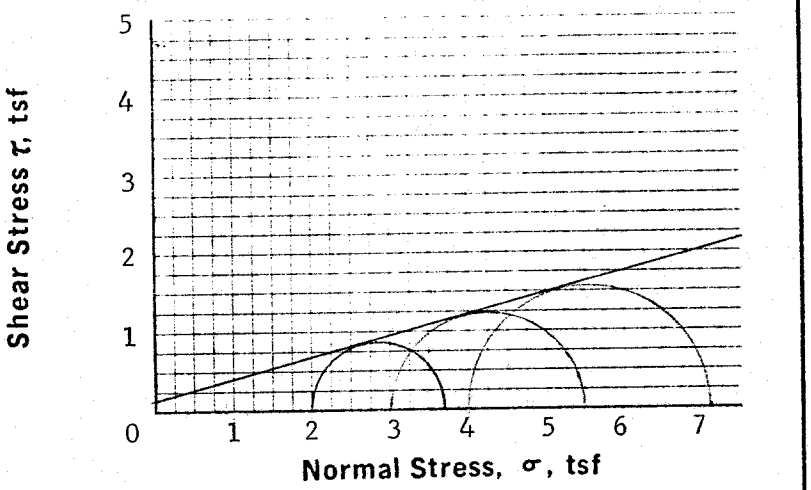
Project: John Sevier SP

Feature Ash Disposal Dike

Boring No.	Sample No. Class II
Station	Offset
Date 11-11-76	Elev.

TRIAXIAL COMPRESSION TEST (R)

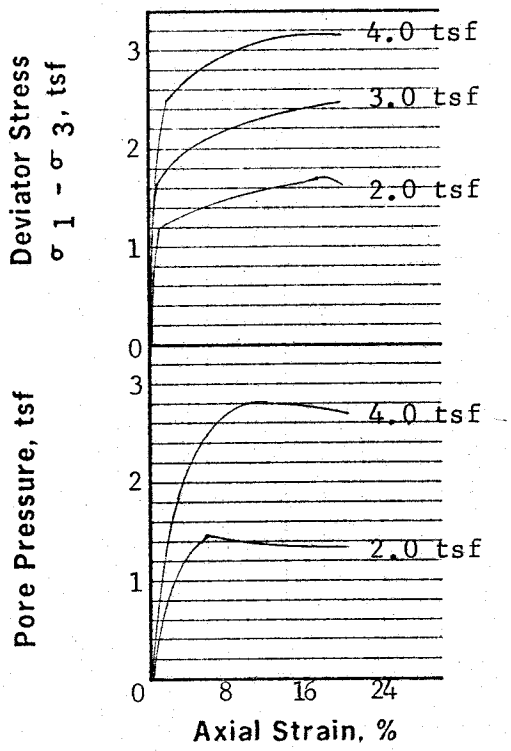




Type of Specimen	Remolded*
Classification	CL
LL. 33.9	**G** 2.75
PI. 15.0	D_{10} -

Shear Strength	ø Deg.	Tan ø	C. tsf
Apparent	15.0	.27	0.13
Effective	35.0	.70	0.00

	Specimen Number	1	2	3	4
Initial	Moisture Content, %	11.0	11.2	11.1	
	Dry Density, pcf	109.0	108.7	108.9	
	Void Ratio	.575	.579	.578	
	Saturation, %	52.7	53.2	52.9	
Before Shearing	Moisture Content after Saturation, %	20.9	21.0	21.0	
	Saturation, %	100	100	100	
	Moisture Content after Consolidation, %	19.7	18.1	18.1	
	Void Ratio after Consolidation	.543	.505	.533	
Final Moisture Content ,%		19.7	18.1	18.1	
Minor Principal Stress, σ 3, tsf		2.00	3.00	4.00	
Major Principal Stress, σ 1, tsf		3.73	5.50	7.13	
Effective Minor Principal Stress, $\bar{\sigma}$ 3, tsf		0.58	-	1.18	
Effective Major Principal Stress, $\bar{\sigma}$ 1, tsf		2.31	-	4.31	
Time to Failure, min.		90	100	80	
Rate of strain, %/min.		0.20	0.20	0.20	
Specimen Height, in.		3.17	3.17	3.17	
Specimen Diameter, in.		1.40	1.40	1.40	



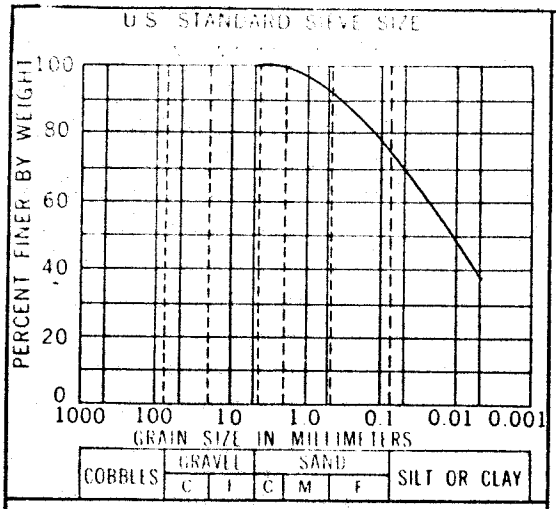
Remarks: *Remolded at 3% below optimum moisture and at 95% of standard proctor density

Project: John Sevier Steam Plant

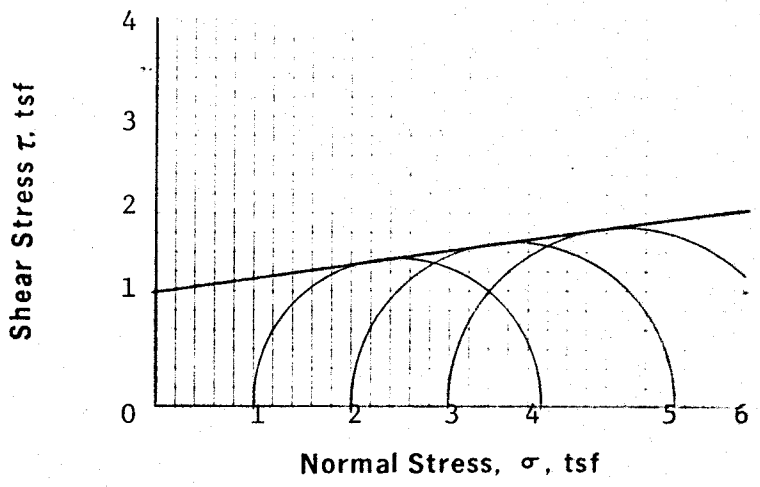
Feature Ash Disposal Dike

Boring No.	**Sample No.** Class II
Station	**Offset**
Date 11-12-76	**Elev.**

TRIAXIAL COMPRESSION TEST (R)

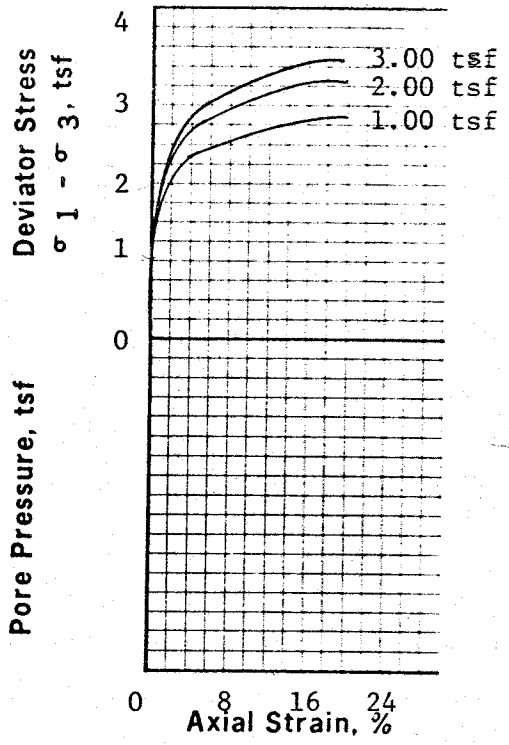


Type of Specimen	Remolded*
Classification	CL
LL. 43.7	G 2.77
PI. 21.7	D_{10} –



Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	8.8	0.15	1.18
Effective	–	–	–

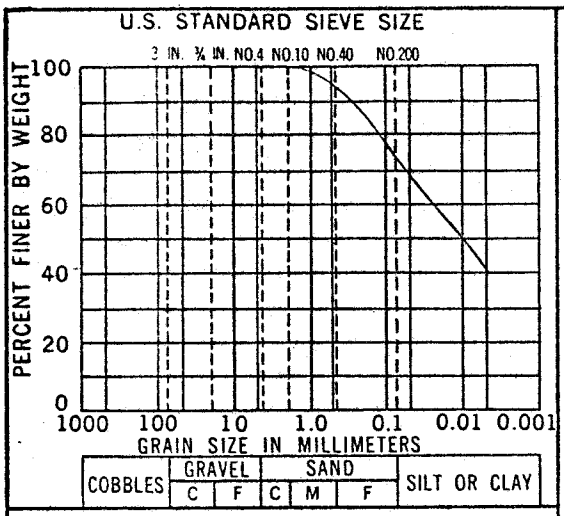
Specimen Number		1	2	3	4
Initial	Moisture Content, %	20.8	20.8	20.9	
	Dry Density, pcf	102.6	102.6	102.4	
	Void Ratio	.686	.686	.688	
	Saturation, %	84.2	84.2	84.3	
Before Shearing	Moisture Content after Saturation, %	–	–	–	
	Saturation, %	–	–	–	
	Moisture Content after Consolidation, %	–	–	–	
	Void Ratio after Consolidation	–	–	–	
Final Moisture Content ,%		20.7	20.7	20.9	
Minor Principal Stress, σ 3, tsf		1.00	2.00	3.00	
Major Principal Stress, σ 1, tsf		3.93	5.31	6.58	
Effective Minor Principal Stress, $\bar{\sigma}$ 3, tsf		–	–	–	
Effective Major Principal Stress, $\bar{\sigma}$ 1, tsf		–	–	–	
Time to Failure, min.		18	18	19	
Rate of strain, %/min.		1.0	1.0	1.0	
Specimen Height, in.		3.16	3.16	3.16	
Specimen Diameter, in.		1.40	1.40	1.40	

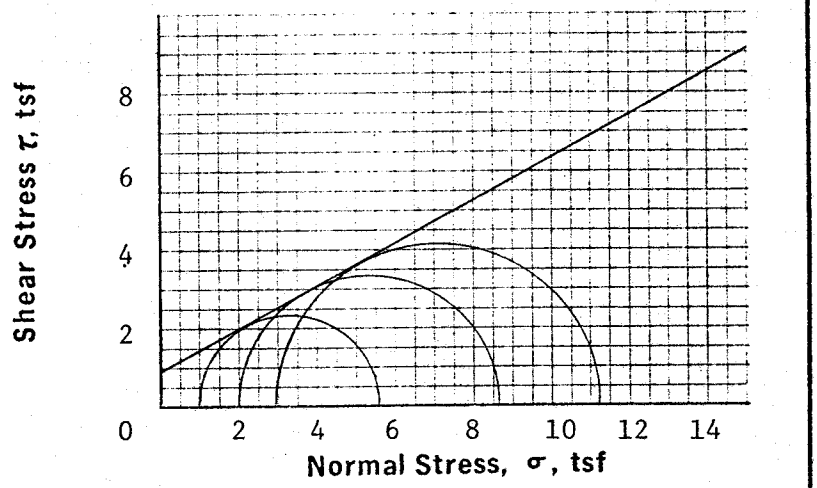


Remarks: *Remolded at 3 percent above optimum moisture and of 95 percent of standard proctor density.

Project:	John Sevier Steam Plant
Feature	Ash Disposal Dike
Boring No.	Sample No. Class III
Station	Offset
Date 10-26-76	Elev.

TRIAXIAL COMPRESSION TEST (Q)

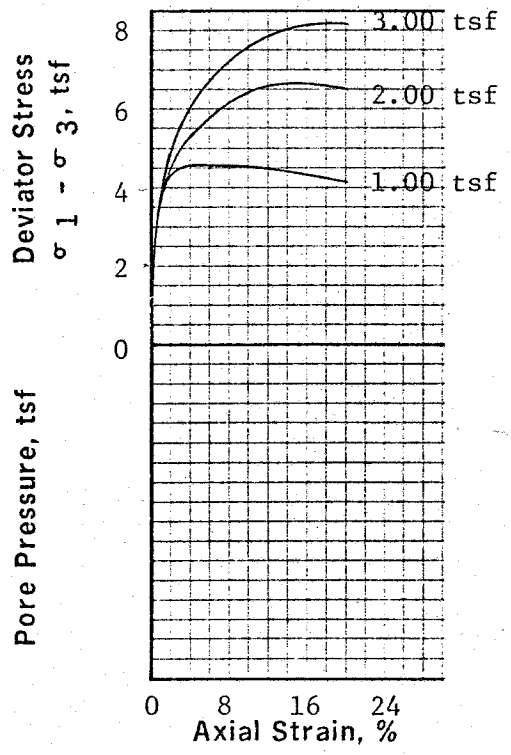




Type of Specimen	Remolded*
Classification	CL
LL. 43.7	G 2.77
Pl. 21.7	D_{10} –

Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	28.5	0.55	0.97
Effective	–	–	–

Specimen Number		1	2	3	4
Initial	Moisture Content, %	15.1	15.1	15.0	
	Dry Density, pcf	102.3	102.3	102.4	
	Void Ratio	.691	.690	.688	
	Saturation, %	60.7	60.7	60.4	
Before Shearing	Moisture Content after Saturation, %	–	–	–	
	Saturation, %	–	–	–	
	Moisture Content after Consolidation, %	–	–	–	
	Void Ratio after Consolidation	–	–	–	
Final Moisture Content ,%		15.1	15.1	15.0	
Minor Principal Stress, σ 3, tsf		1.00	2.00	3.00	
Major Principal Stress, σ 1, tsf		5.55	8.63	11.24	
Effective Minor Principal Stress, σ̄ 3, tsf		–	–	–	
Effective Major Principal Stress, σ̄ 1, tsf		–	–	–	
Time to Failure, min.		6	16	19	
Rate of strain, %/min.		1.00	1.00	1.00	
Specimen Height, in.		3.17	3.17	3.17	
Specimen Diameter, in.		1.40	1.40	1.40	



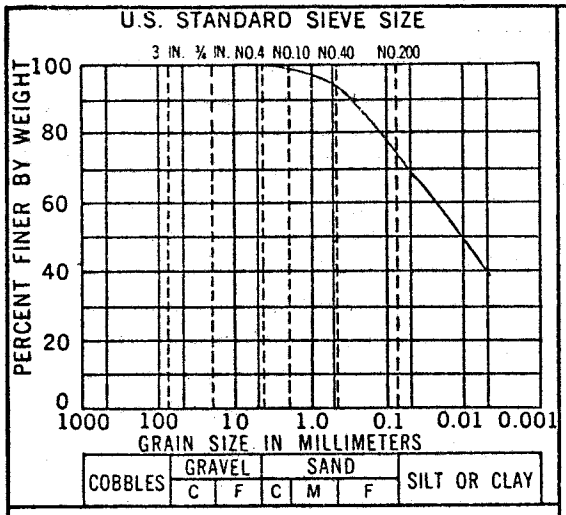
Remarks: *Remolded at 3% below optimum moisture and at 95% of tandard proctor density.

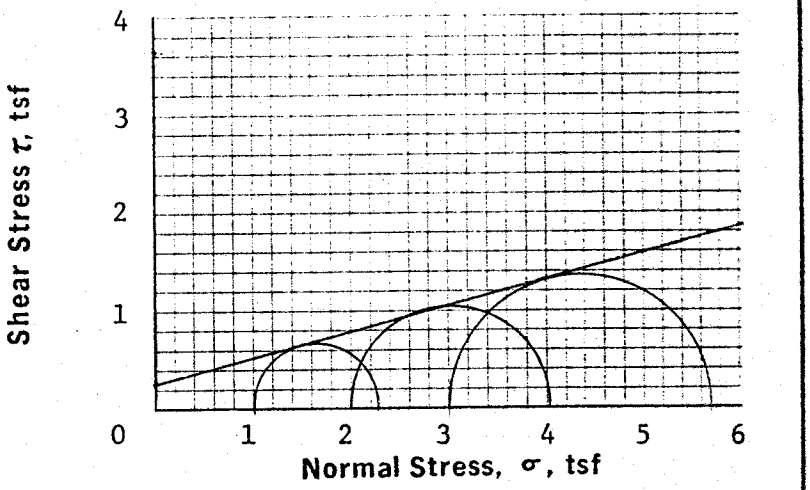
Project: John Sevier Steam Plant

Feature Ash Disposal Dike

Boring No.	Sample No. Class III
Station	Offset
Date 11-8-76	Elev.

TRIAXIAL COMPRESSION TEST (Q)

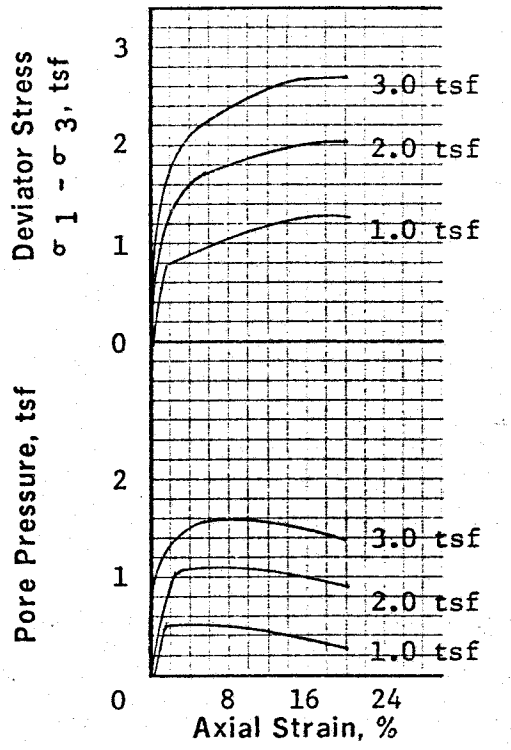




Type of Specimen	Remolded*
Classification	CL
LL. 43.7	G 2.77
PI. 21.7	D_{10} --

Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	15.0	0.27	0.25
Effective	25.0	0.47	0.13

Specimen Number		1	2	3	4
Initial	Moisture Content, %	20.9	21.0	20.7	
	Dry Density, pcf	102.5	102.4	102.7	
	Void Ratio	.687	.688	.684	
	Saturation, %	84.4	84.6	83.9	
Before Shearing	Moisture Content after Saturation, %	24.8	24.8	24.7	
	Saturation, %	100	100	100	
	Moisture Content after Consolidation, %	24.6	24.0	23.1	
	Void Ratio after Consolidation	.671	.641	.590	
Final Moisture Content ,%		24.6	24.0	23.1	
Minor Principal Stress, σ 3, tsf		1.00	2.00	3.00	
Major Principal Stress, σ 1, tsf		2.25	4.03	5.67	
Effective Minor Principal Stress, $\bar{\sigma}$ 3, tsf		0.65	1.09	1.58	
Effective Major Principal Stress, $\bar{\sigma}$ 1, tsf		1.90	3.12	4.25	
Time to Failure, min.		90	90	90	
Rate of strain, %/min.		0.2	0.2	0.2	
Specimen Height, in.		3.16	3.16	3.16	
Specimen Diameter, in.		1.40	1.40	1.40	



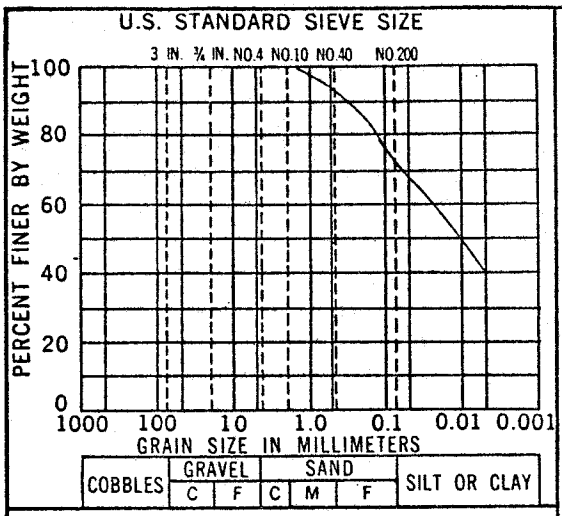
Remarks: *Remolded at 3% above optimum moisture and at 95% of standard proctor density.

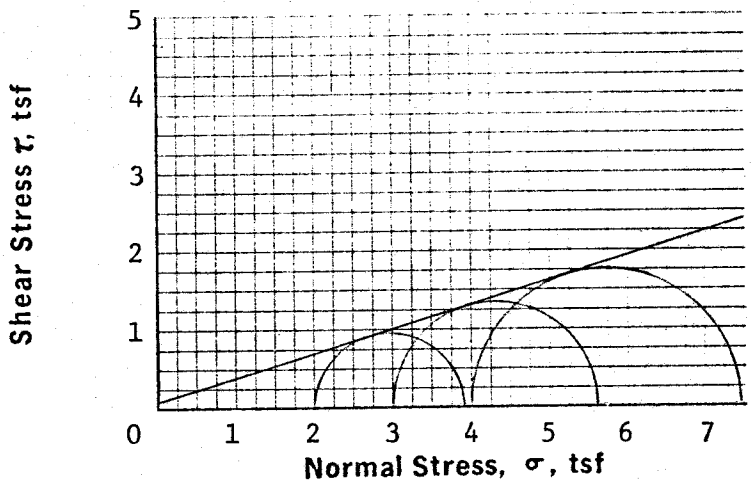
Project: John Sevier SP

Feature Ash Disposal Dike

Boring No.	Sample No. Class III
Station	Offset
Date 11-4-76	Elev.

TRIAXIAL COMPRESSION TEST (R)

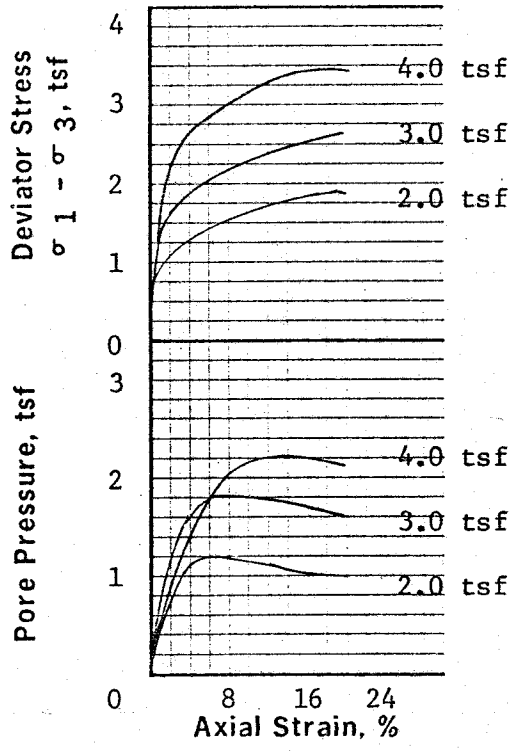




Type of Specimen	Remolded*		
Classification	CL		
LL.	43.7	**G**	2.77
PI.	21.7	D_{10}	--

Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	17.0	0.31	0.13
Effective	27.0	0.51	0.07

Specimen Number		1	2	3	4
Initial	Moisture Content, %	15.1	14.9	15.1	
	Dry Density, pcf	102.4	102.5	102.4	
	Void Ratio	.688	.687	.688	
	Saturation, %	60.7	60.1	60.7	
Before Shearing	Moisture Content after Saturation, %	24.8	24.8	24.8	
	Saturation, %	100.0	100.0	100.0	
	Moisture Content after Consolidation, %	24.4	23.5	21.9	
	Void Ratio after Consolidation	.628	.607	.628	
Final Moisture Content ,%		24.4	23.5	21.9	
Minor Principal Stress, σ 3, tsf		2.00	3.00	4.00	
Major Principal Stress, σ 1, tsf		3.89	5.65	7.47	
Effective Minor Principal Stress, $\bar{\sigma}$ 3, tsf		0.96	1.38	1.85	
Effective Major Principal Stress, $\bar{\sigma}$ 1, tsf		2.85	4.03	5.32	
Time to Failure, min.		90	98	100	
Rate of strain, %/min.		0.20	0.20	0.20	
Specimen Height, in.		3.17	3.17	3.17	
Specimen Diameter, in.		1.40	1.40	1.40	



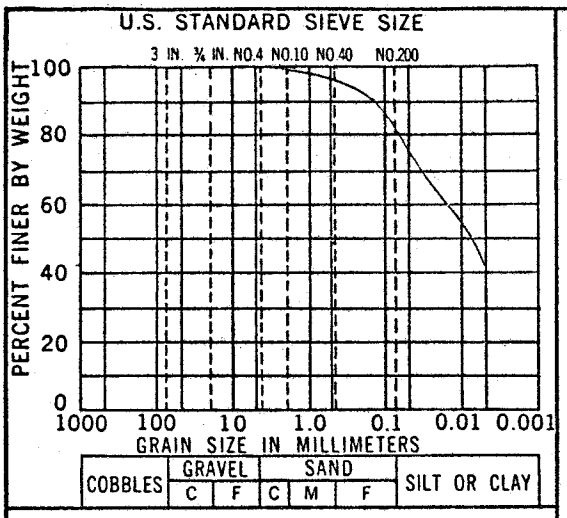
Remarks: *Remolded at 3% below optimum moisture and at 95% of standard proctor density.

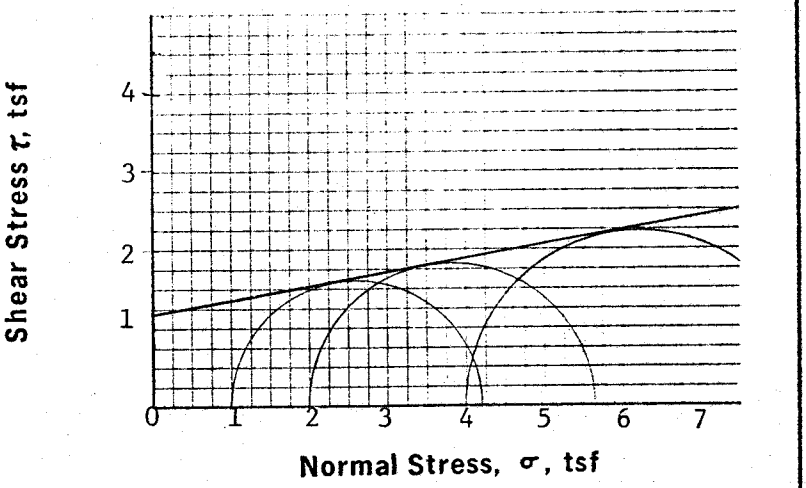
Project: John Sevier SP

Feature Ash Disposal Dike

Boring No.	Sample No. Class III
Station	Offset
Date 11-8-76	Elev.

TRIAXIAL COMPRESSION TEST (R)

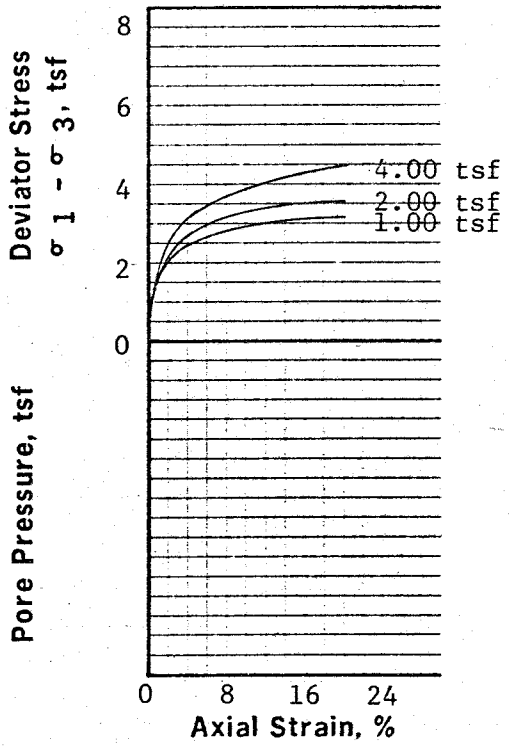




Type of Specimen	Remolded*
Classification	CH
LL. 51.2	**G** 2.78
PI. 24.4	**D_{10}** –

Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	10.0	.18	1.19
Effective	–	–	–

Specimen Number		1	2	3	4
Initial	Moisture Content, %	23.4	23.4	23.3	
	Dry Density, pcf	98.5	98.5	98.6	
	Void Ratio	.762	.762	.760	
	Saturation, %	85.3	85.3	85.1	
Before Shearing	Moisture Content after Saturation, %	–	–	–	
	Saturation, %	–	–	–	
	Moisture Content after Consolidation, %	–	–	–	
	Void Ratio after Consolidation	–	–	–	
Final Moisture Content ,%		23.4	23.4	23.3	
Minor Principal Stress, σ 3, tsf		1.00	2.00	4.00	
Major Principal Stress, σ 1, tsf		4.21	5.64	8.46	
Effective Minor Principal Stress, $\bar{\sigma}$ 3, tsf		–	–	–	
Effective Major Principal Stress, $\bar{\sigma}$ 1, tsf		–	–	–	
Time to Failure, min.		20	20	20	
Rate of strain, %/min.		1.00	1.00	1.00	
Specimen Height, in.		3.17	3.17	3.17	
Specimen Diameter, in.		1.40	1.40	1.40	



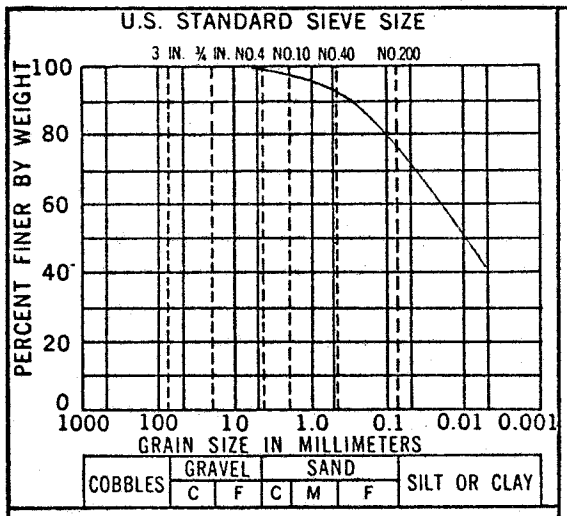
Remarks: *Remolded at 3% above optimum moisture and at 95% of standard proctor density

Project: John Sevier Steam Plant

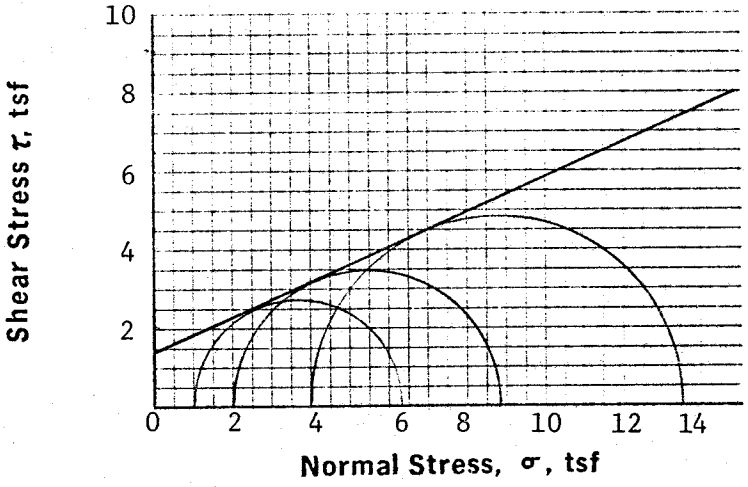
Feature Ash Disposal Dike

Boring No.	**Sample No.** Class IV
Station	**Offset**
Date 11-18-76	**Elev.**

TRIAXIAL COMPRESSION TEST (Q)

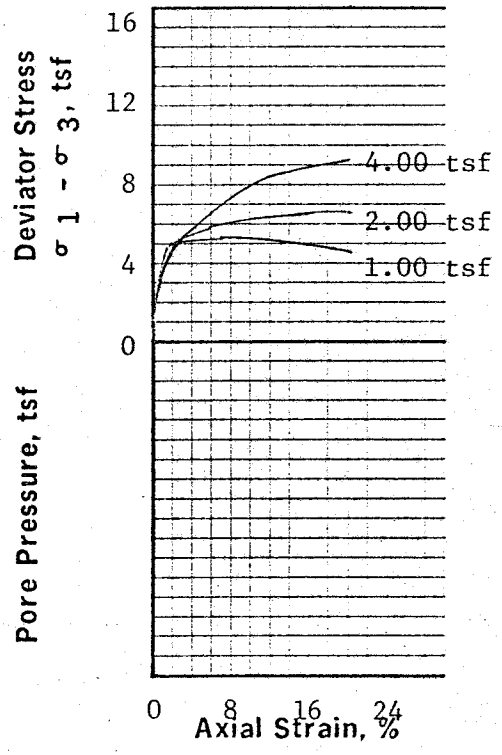


Type of Specimen	Remolded*
Classification	CH
LL. 51.2	G 2.78
PI. 24.4	D_{10} –



Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	24.0	.45	1.40
Effective	–	–	–

Specimen Number		1	2	3	4
Initial	Moisture Content, %	17.1	17.4	17.2	
	Dry Density, pcf	98.7	98.4	98.6	
	Void Ratio	.759	.763	.760	
	Saturation, %	62.6	63.5	63.1	
Before Shearing	Moisture Content after Saturation, %	–	–	–	
	Saturation, %	–	–	–	
	Moisture Content after Consolidation, %	–	–	–	
	Void Ratio after Consolidation	–	–	–	
Final Moisture Content ,%		17.0	17.4	17.3	
Minor Principal Stress, σ 3, tsf		1.00	2.00	4.00	
Major Principal Stress, σ 1, tsf		6.32	8.86	13.51	
Effective Minor Principal Stress, $\bar{\sigma}$ 3, tsf		–	–	–	
Effective Major Principal Stress, $\bar{\sigma}$ 1, tsf		–	–	–	
Time to Failure, min.		7	17	20	
Rate of strain, %/min.		1.0	1.0	1.0	
Specimen Height, in.		3.16	3.16	3.16	
Specimen Diameter, in.		1.40	1.40	1.40	



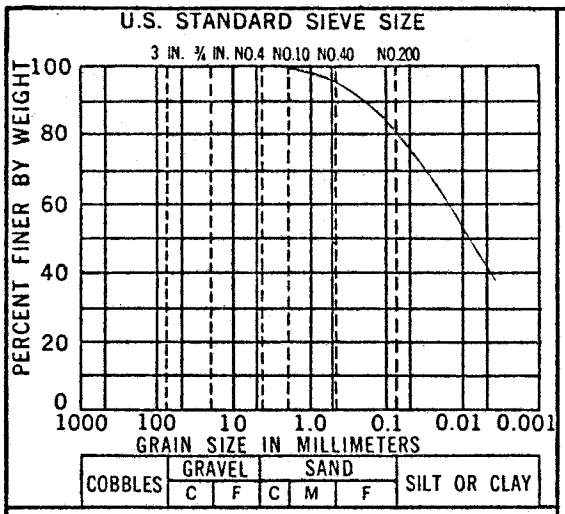
Remarks: *Remolded at 3% below optimum moisture and at 95% of standard proctor density.

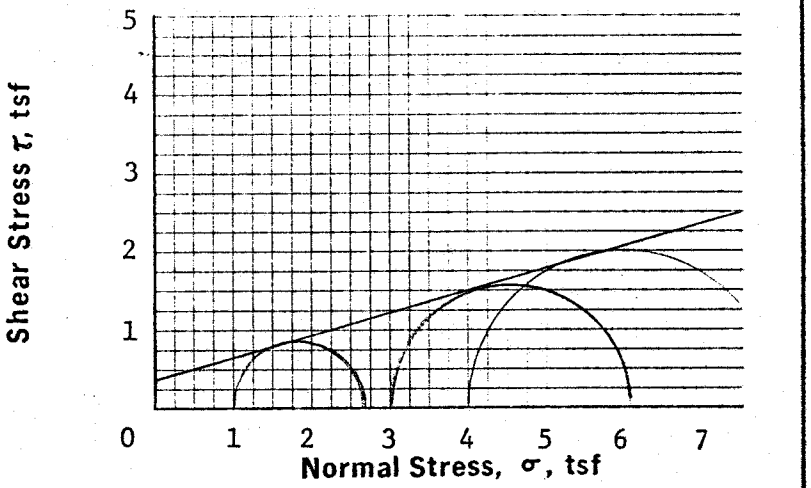
Project: John Sevier Steam Plant

Feature Ash Disposal Dike

Boring No.	Sample No. Class IV
Station	Offset
Date 11-5-76	Elev.

TRIAXIAL COMPRESSION TEST (Q)

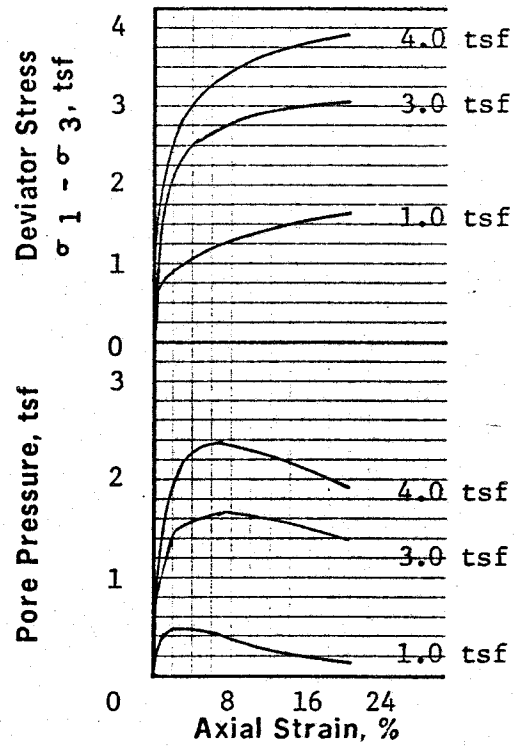




Type of Specimen	Remolded*
Classification	CH
LL. 51.2	G 2.78
PI. 24.4	D_{10} --

Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	16.0	0.29	0.35
Effective	30.0	0.58	0.00

Specimen Number		1	2	3	4
Initial	Moisture Content, %	23.4	23.2	23.1	
	Dry Density, pcf	98.5	98.8	98.8	
	Void Ratio	.761	.756	.757	
	Saturation, %	85.5	85.3	85.0	
Before Shearing	Moisture Content after Saturation, %	27.4	27.2	27.2	
	Saturation, %	100.0	100.0	100.0	
	Moisture Content after Consolidation, %	24.0	26.6	25.8	
	Void Ratio after Consolidation	.661	.641	.666	
Final Moisture Content ,%		24.0	26.6	25.8	
Minor Principal Stress, σ_3, tsf		1.00	3.00	4.00	
Major Principal Stress, σ_1, tsf		2.65	6.07	7.92	
Effective Minor Principal Stress, $\bar{\sigma}_3$, tsf		0.88	1.55	2.02	
Effective Major Principal Stress, $\bar{\sigma}_1$, tsf		2.53	4.62	5.94	
Time to Failure, min.		103	90	100	
Rate of strain, %/min.		0.20	0.20	0.20	
Specimen Height, in.		3.17	3.17	3.17	
Specimen Diameter, in.		1.40	1.40	1.40	



Remarks: *Remolded at 3% Above optimum moisture and at 95% of standard proctor density.

Project: John Sevier SP

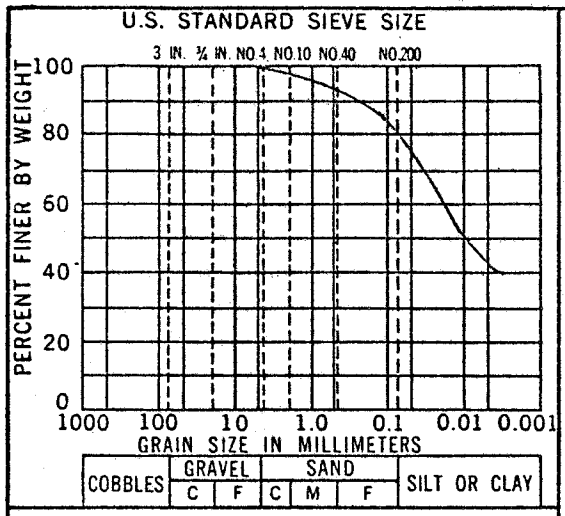
Feature Ash Disposal Dike

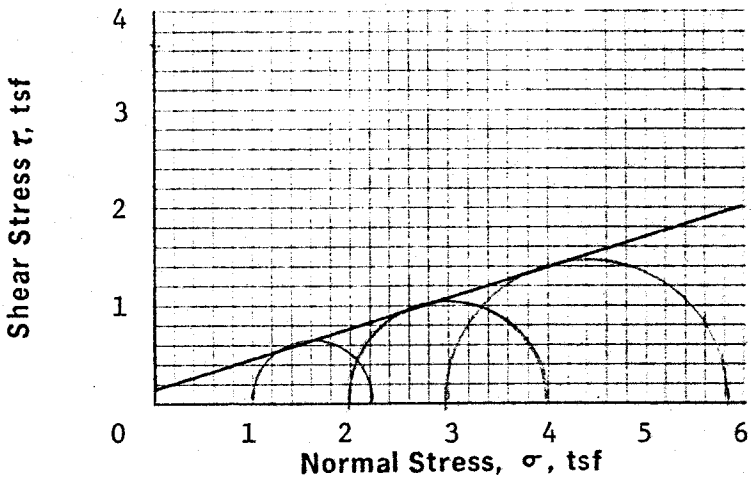
Boring No. | Sample No. Class IV

Station | Offset

Date 11-9-76 | Elev.

TRIAXIAL COMPRESSION TEST (R)

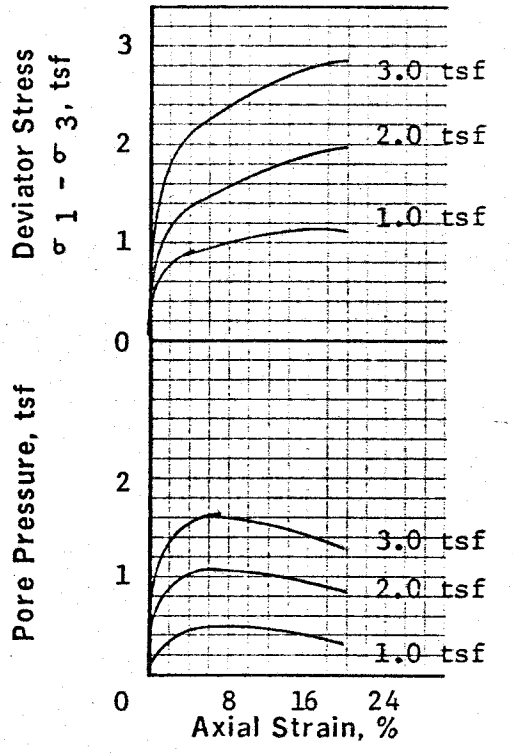




Type of Specimen	Remolded*		
Classification	CH		
LL.	51.2	G	2.78
PI.	24.4	D_{10}	--

Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	17.3	0.31	0.17
Effective	27.5	0.52	0.04

Specimen Number		1	2	3	4
Initial	Moisture Content, %	17.4	17.6	17.5	
	Dry Density, pcf	98.5	98.3	98.4	
	Void Ratio	.762	.766	.764	
	Saturation, %	63.4	64.0	63.7	
Before Shearing	Moisture Content after Saturation, %	27.4	27.5	27.5	
	Saturation, %	100	100	100	
	Moisture Content after Consolidation, %	27.3	25.8	26.1	
	Void Ratio after Consolidation	.755	.716	.679	
Final Moisture Content ,%		27.3	25.8	26.1	
Minor Principal Stress, σ_3, tsf		1.00	2.00	3.00	
Major Principal Stress, σ_1, tsf		2.19	3.99	5.86	
Effective Minor Principal Stress, $\bar{\sigma}_3$, tsf		0.60	1.13	1.62	
Effective Major Principal Stress, $\bar{\sigma}_1$, tsf		1.79	3.12	4.48	
Time to Failure, min.		90	95	90	
Rate of strain, %/min.		0.2	0.2	0.2	
Specimen Height, in.		3.16	3.16	3.16	
Specimen Diameter, in.		1.40	1.40	1.40	



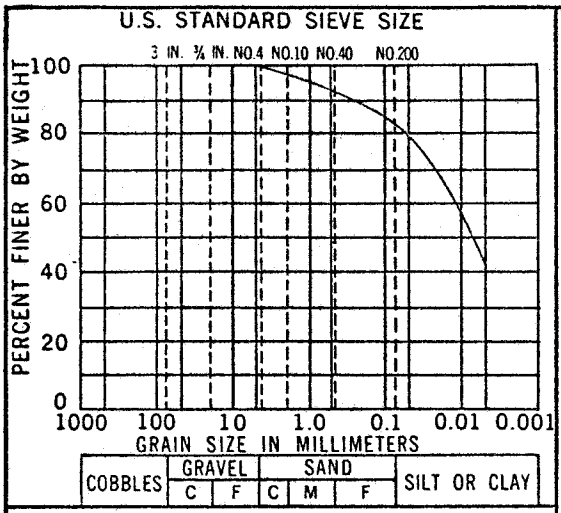
Remarks: Remolded at 3% below optimum moisture and at 95% of standard proctor density.

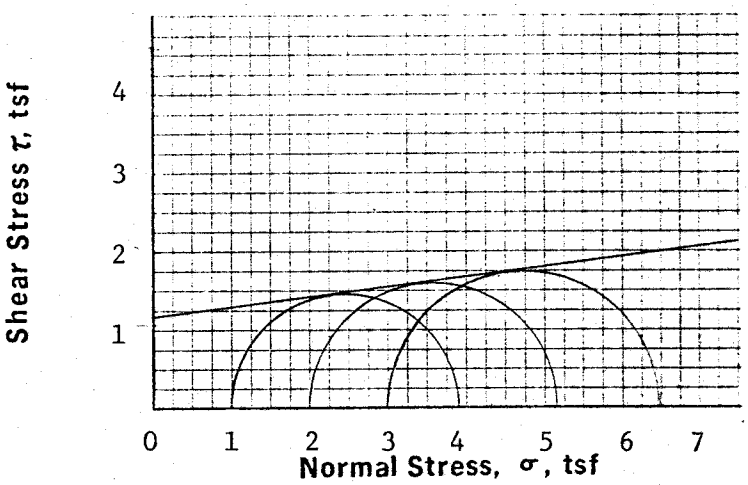
Project: John Sevier SP

Feature Ash Disposal Dike

Boring No.	Sample No. Class IV
Station	Offset
Date 11-5-76	Elev.

TRIAXIAL COMPRESSION TEST (R)

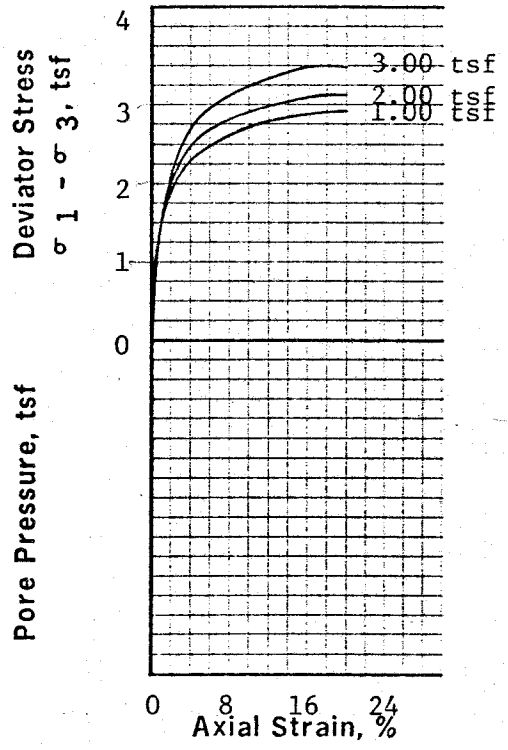




Type of Specimen	Remolded*
Classification	MH
LL. 55.2	G 2.81
PI. 24.3	D_{10} –

Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	7.0	0.12	1.14
Effective	–	–	–

Specimen Number		1	2	3	4
Initial	Moisture Content, %	25.9	26.1	26.2	
	Dry Density, pcf	94.2	94.0	94.0	
	Void Ratio	.862	.865	.867	
	Saturation, %	84.5	84.7	84.9	
Before Shearing	Moisture Content after Saturation, %	–	–	–	
	Saturation, %	–	–	–	
	Moisture Content after Consolidation, %	–	–	–	
	Void Ratio after Consolidation	–	–	–	
Final Moisture Content ,%		25.8	26.1	26.2	
Minor Principal Stress, σ 3, tsf		1.00	2.00	3.00	
Major Principal Stress, σ 1, tsf		3.91	5.15	6.45	
Effective Minor Principal Stress, σ̄ 3, tsf		–	–	–	
Effective Major Principal Stress, σ̄ 1, tsf		–	–	–	
Time to Failure, min.		19	19	19	
Rate of strain, %/min.		1.00	1.00	1.00	
Specimen Height, in.		3.17	3.17	3.17	
Specimen Diameter, in.		1.40	1.40	1.40	



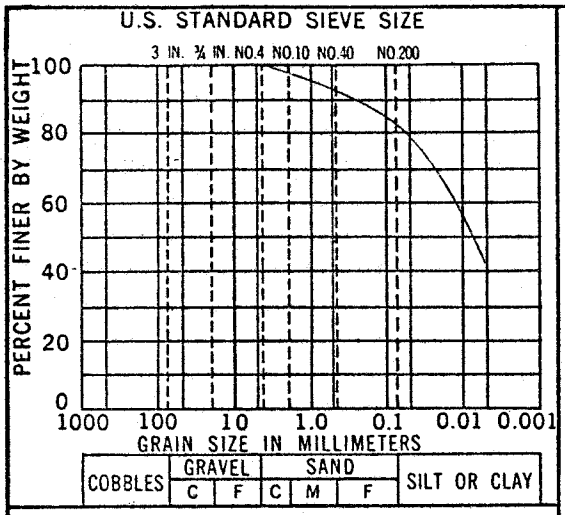
Remarks: *Remolded at 3% above optimum moisture and at 95% of standard proctor density.

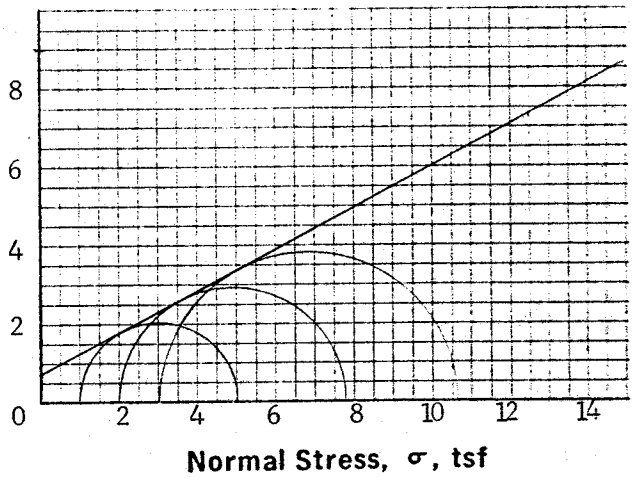
Project: John Sevier Steam Plant

Feature Ash Disposal Dike

Boring No.	Sample No. Class V
Station	Offset
Date 11-8-76	Elev.

TRIAXIAL COMPRESSION TEST (Q)

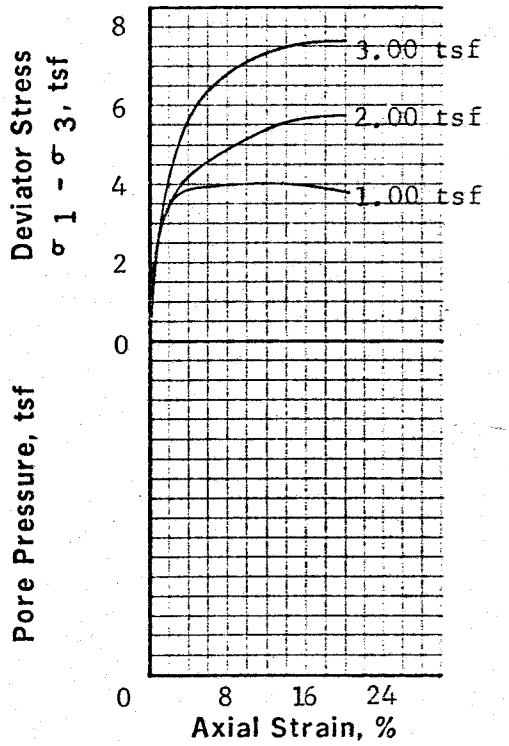




Type of Specimen	Remolded*
Classification	MH
LL. 55.2	G 2.81
PI. 24.3	D_{10} -

Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	27.9	0.53	0.74
Effective	-	-	-

Specimen Number		1	2	3	4
Initial	Moisture Content, %	20.1	20.1	19.9	
	Dry Density, pcf	94.1	94.1	94.2	
	Void Ratio	.865	.865	.862	
	Saturation, %	65.2	65.5	64.9	
Before Shearing	Moisture Content after Saturation, %	-	-	-	
	Saturation, %	-	-	-	
	Moisture Content after Consolidation, %	-	-	-	
	Void Ratio after Consolidation	-	-	-	
Final Moisture Content ,%		20.1	20.1	19.9	
Minor Principal Stress, σ 3, tsf		1.00	2.00	3.00	
Major Principal Stress, σ 1, tsf		5.02	7.73	10.63	
Effective Minor Principal Stress, σ̄ 3, tsf		-	-	-	
Effective Major Principal Stress, σ̄ 1, tsf		-	-	-	
Time to Failure, min.		10	18	18	
Rate of strain, %/min.		1.00	1.00	1.00	
Specimen Height, in.		3.17	3.17	3.17	
Specimen Diameter, in.		1.40	1.40	1.40	



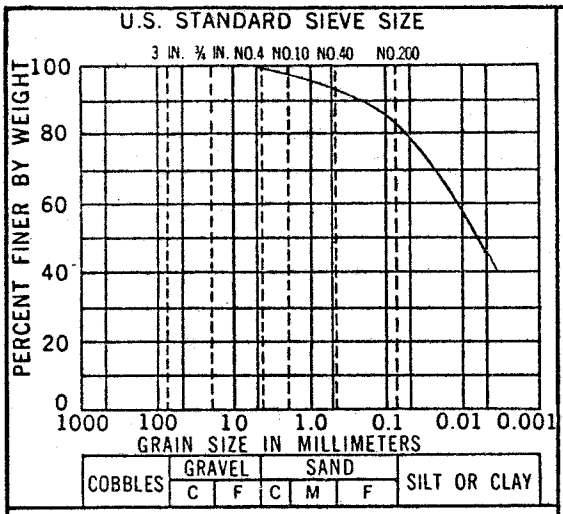
Remarks: *Remolded at 3% below optimum moisture and at 95% of standard proctor density.

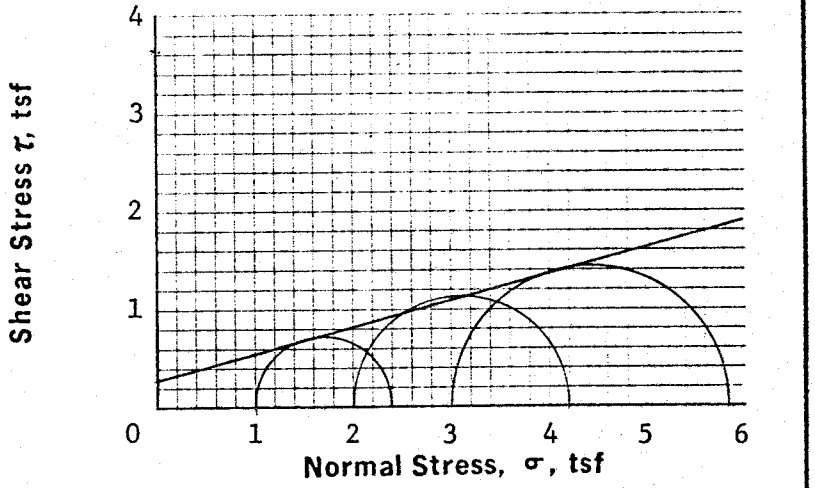
Project: John Sevier Steam Plant

Feature Ash Disposal Dike

Boring No.	Sample No. Class V
Station	Offset
Date 11-8-76	Elev.

TRIAXIAL COMPRESSION TEST (Q)

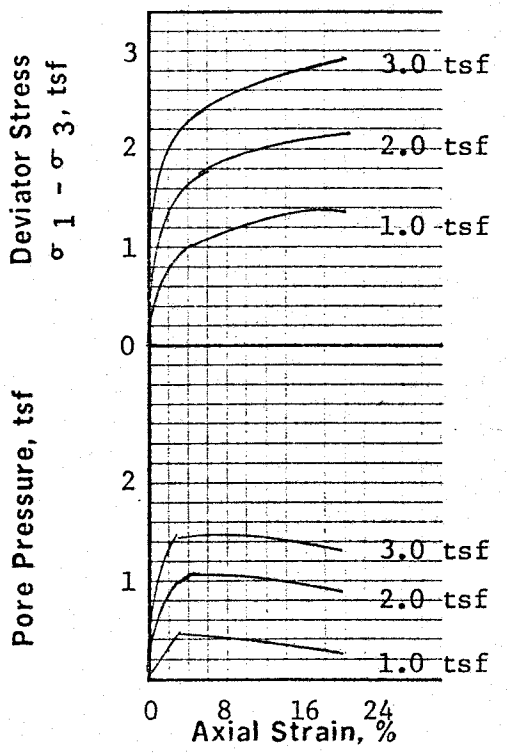




Type of Specimen	Remolded*
Classification	MH
LL. 55.2	G 2.81
Pl. 24.3	D_{10} --

Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	15.0	0.27	0.27
Effective	25.5	0.48	0.10

Specimen Number		1	2	3	4
Initial	Moisture Content, %	26.0	25.9	26.0	
	Dry Density, pcf	94.2	94.2	94.1	
	Void Ratio	.863	.863	.865	
	Saturation, %	84.7	84.4	84.6	
Before Shearing	Moisture Content after Saturation, %	30.7	30.7	30.8	
	Saturation, %	100	100	100	
	Moisture Content after Consolidation, %	29.7	27.9	27.2	
	Void Ratio after Consolidation	.835	.785	.764	
Final Moisture Content ,%		29.7	27.9	27.2	
Minor Principal Stress, σ 3, tsf		1.00	2.00	3.00	
Major Principal Stress, σ 1, tsf		2.39	4.19	5.86	
Effective Minor Principal Stress, $\bar{\sigma}$ 3, tsf		0.73	1.15	1.68	
Effective Major Principal Stress, $\bar{\sigma}$ 1, tsf		2.12	3.34	4.54	
Time to Failure, min.		80	90	90	
Rate of strain, %/min.		0.2	0.2	0.2	
Specimen Height, in.		3.16	3.16	3.16	
Specimen Diameter, in.		1.40	1.40	1.40	



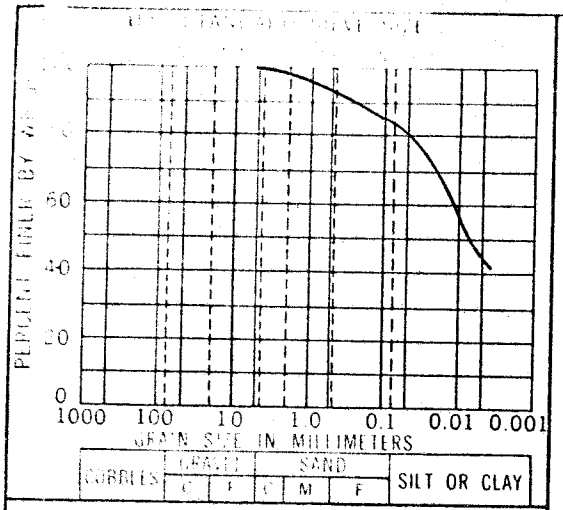
Remarks: *Remolded at 3% above optimum moisture and at 95% of standard proctor density.

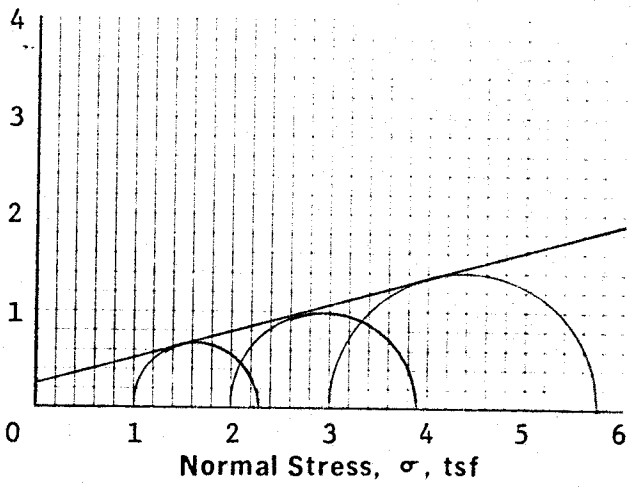
Project: John Sevier SP

Feature Ash Disposal Dike

Boring No.	Sample No. Class V
Station	Offset
Date 10-28-76	Elev.

TRIAXIAL COMPRESSION TEST (R)

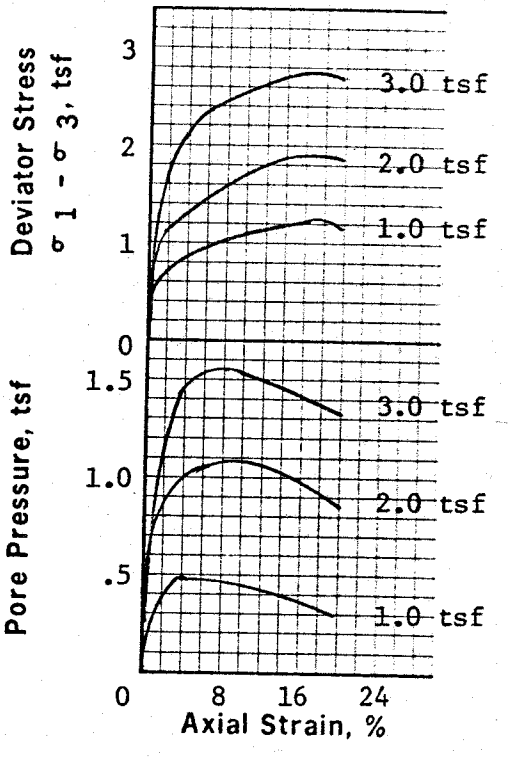




Type of Specimen	Remolded*		
Classification	MH		
LL.	55.2	G	2.81
PI.	24.3	D_{10}	--

Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	15.3	0.27	0.26
Effective	26.0	0.49	0.06

Specimen Number		1	2	3	4
Initial	Moisture Content, %	19.9	19.9	20.0	
	Dry Density, pcf	94.2	94.2	94.1	
	Void Ratio	.861	.861	.865	
	Saturation, %	64.8	64.8	64.9	
Before Shearing	Moisture Content after Saturation, %	30.7	30.7	30.8	
	Saturation, %	100	100	100	
	Moisture Content after Consolidation, %	27.0	28.6	27.8	
	Void Ratio after Consolidation	.757	.802	.781	
Final Moisture Content ,%		27.0	28.6	27.8	
Minor Principal Stress, σ 3, tsf		1.00	2.00	3.00	
Major Principal Stress, σ 1, tsf		2.24	3.89	5.76	
Effective Minor Principal Stress, σ̄ 3, tsf		0.63	1.04	1.61	
Effective Major Principal Stress, σ̄ 1, tsf		1.87	2.93	4.37	
Time to Failure, min.		90	90	90	
Rate of strain, %/min.		0.20	0.20	0.20	
Specimen Height, in.		3.17	3.17	3.17	
Specimen Diameter, in.		1.40	1.40	1.40	



Remarks: *Remolded at 3% below optimum moisture and at 95% of standard proctor density.

Project: John Sevier SP

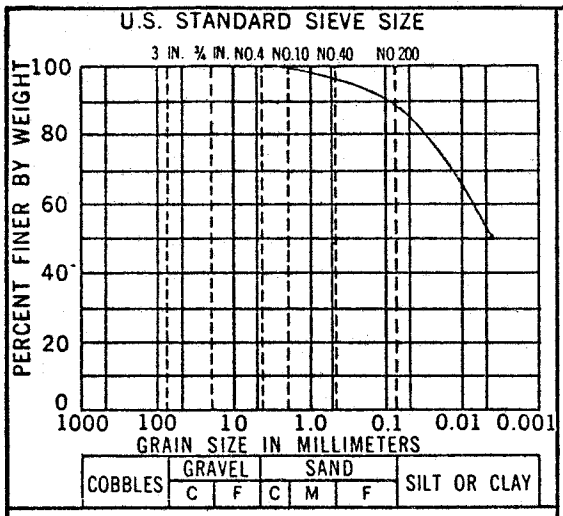
Feature Ash Disposal Dike

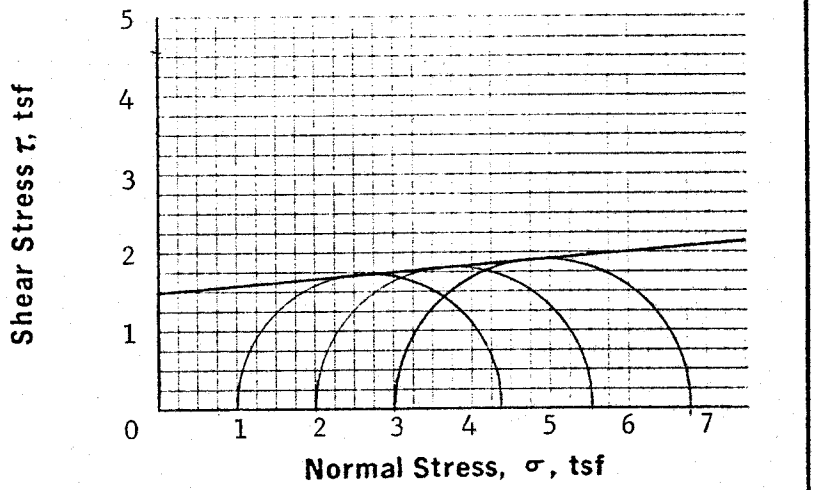
Boring No. | Sample No. Class V

Station | Offset

Date 11-3-76 | Elev.

TRIAXIAL COMPRESSION TEST (R)

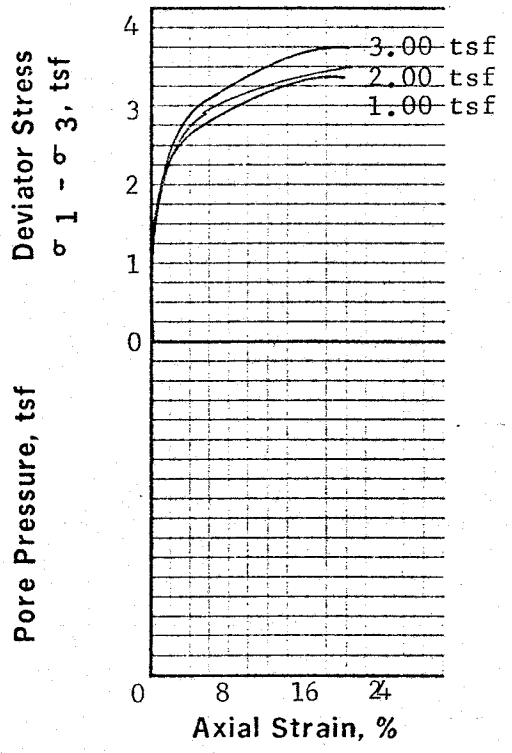




Type of Specimen	Remolded *
Classification	CH
LL. 65.2	**G** 2.79
Pl. 34.5	**D_{10}** -

Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	5.0	.09	1.50
Effective	-	-	-

Specimen Number		1	2	3	4
Initial	Moisture Content, %	26.7	26.4	26.8	
	Dry Density, pcf	93.1	93.3	93.0	
	Void Ratio	.872	.866	.873	
	Saturation, %	85.6	85.1	85.8	
Before Shearing	Moisture Content after Saturation, %	-	-	-	
	Saturation, %	-	-	-	
	Moisture Content after Consolidation, %	-	-	-	
	Void Ratio after Consolidation	-	-	-	
Final Moisture Content ,%		26.7	26.3	26.8	
Minor Principal Stress, σ 3, tsf		1.00	2.00	3.00	
Major Principal Stress, σ 1, tsf		4.36	5.52	6.76	
Effective Minor Principal Stress, $\bar{\sigma}$ 3, tsf		-	-	-	
Effective Major Principal Stress, $\bar{\sigma}$ 1, tsf		-	-	-	
Time to Failure, min.		19	20	19	
Rate of strain, %/min.		1.0	1.0	1.0	
Specimen Height, in.		3.16	3.16	3.16	
Specimen Diameter, in.		1.40	1.40	1.40	



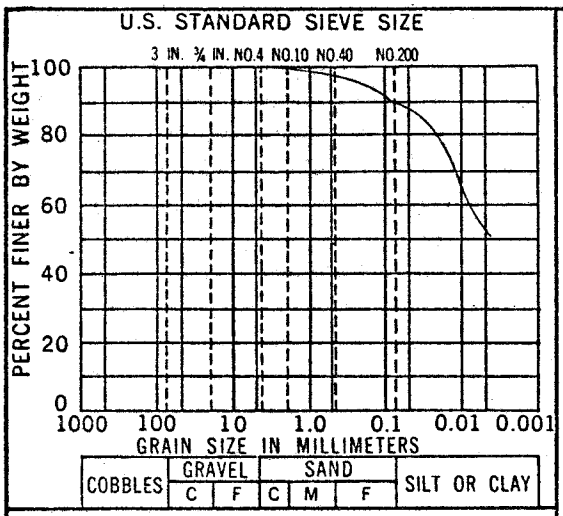
Remarks: *Remolded at 3% above optimum moisture and at 95% of standard proctor density.

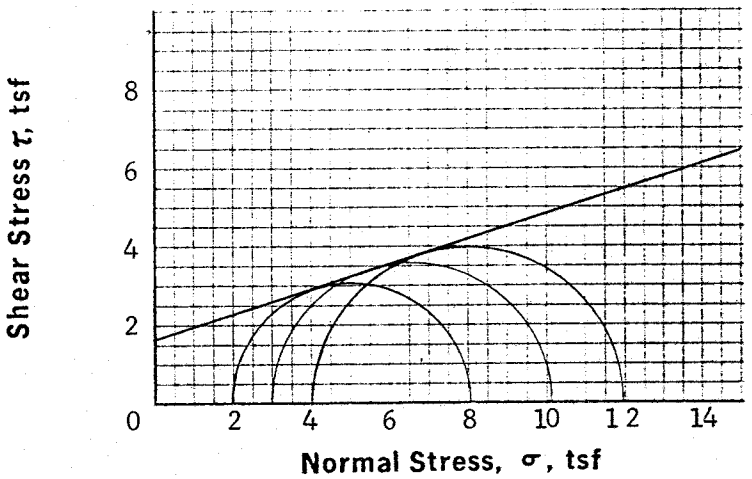
Project: John Sevier Steam Plant

Feature Ash Disposal Dike

Boring No.	**Sample No.** Class VI
Station	**Offset**
Date 10-28-76	**Elev.**

TRIAXIAL COMPRESSION TEST (Q)

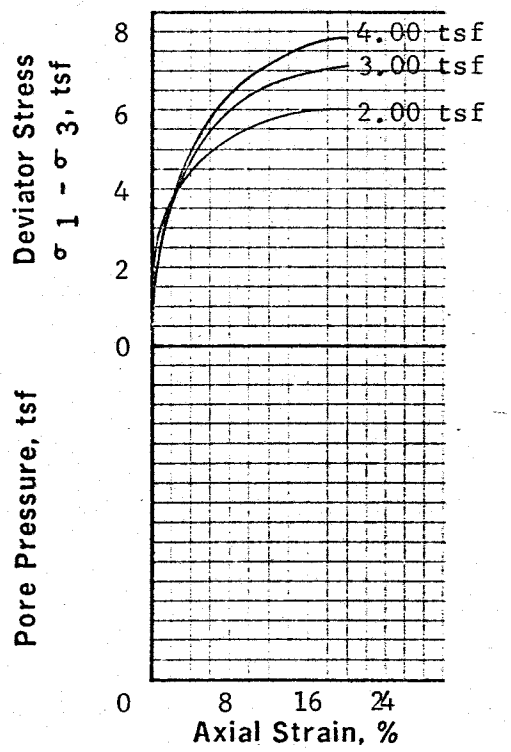




Type of Specimen	Remolded *
Classification	CH
LL. 65.2	**G** 2.79
PI. 34.5	**D_{10}** -

Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	17.6	.32	1.67
Effective	-	-	-

Specimen Number		1	2	3	4
Initial	Moisture Content, %	20.7	20.5	20.7	
	Dry Density, pcf	93.1	93.3	93.1	
	Void Ratio	.871	.868	.871	
	Saturation, %	66.4	66.0	66.2	
Before Shearing	Moisture Content after Saturation, %	-	-	-	
	Saturation, %	-	-	-	
	Moisture Content after Consolidation, %	-	-	-	
	Void Ratio after Consolidation	-	-	-	
Final Moisture Content ,%		20.7	20.5	20.6	
Minor Principal Stress, σ_3, tsf		2.00	3.00	4.00	
Major Principal Stress, σ_1, tsf		8.05	10.14	11.93	
Effective Minor Principal Stress, $\bar{\sigma}_3$, tsf		-	-	-	
Effective Major Principal Stress, $\bar{\sigma}_1$, tsf		-	-	-	
Time to Failure, min.		20	20	20	
Rate of strain, %/min.		1.00	1.00	1.00	
Specimen Height, in.		3.17	3.17	3.17	
Specimen Diameter, in.		1.40	1.40	1.40	



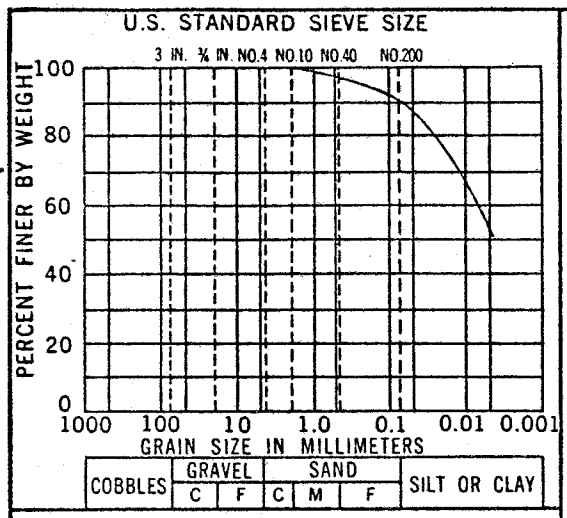
Remarks: *Remolded at 3% below optimum moisture and at 95% of standard proctor density

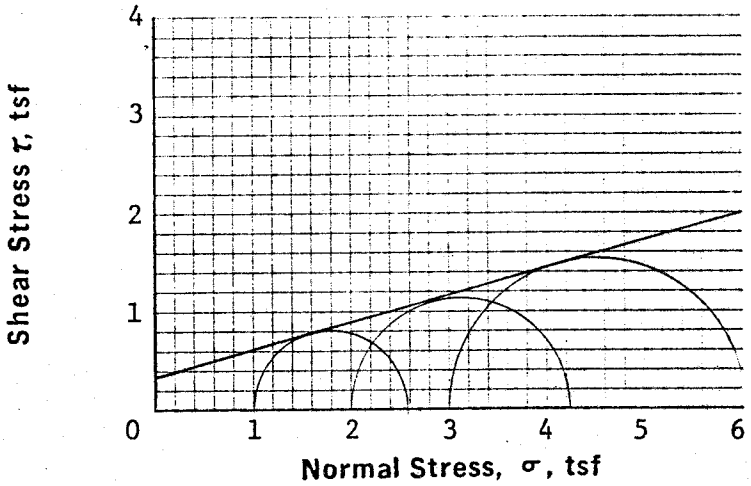
Project: John Sevier Steam Plant

Feature Ash Disposal Dike

Boring No.	Sample No. Class VI
Station	Offset
Date 11-8-76	Elev.

TRIAXIAL COMPRESSION TEST (Q)

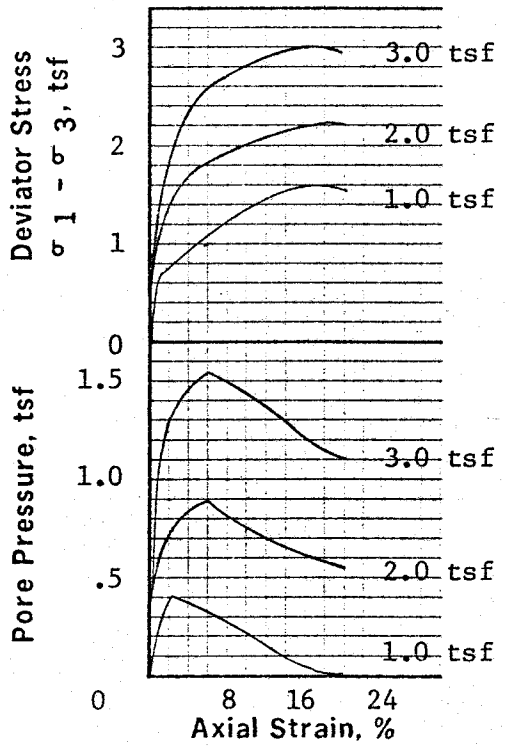




Type of Specimen	Remolded*
Classification	CH
LL. 65.2	G 2.79
PI. 34.5	D_{10} --

Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	15.1	0.27	0.37
Effective	26.1	0.49	0.04

Specimen Number		1	2	3	4
Initial	Moisture Content, %	26.8	26.8	26.8	
	Dry Density, pcf	93.1	93.1	93.1	
	Void Ratio	.872	.872	.872	
	Saturation, %	85.9	85.9	85.9	
Before Shearing	Moisture Content after Saturation, %	31.2	31.2	31.2	
	Saturation, %	100	100	100	
	Moisture Content after Consolidation, %	30.3	29.3	30.6	
	Void Ratio after Consolidation	.842	.819	.755	
Final Moisture Content ,%		30.3	29.3	30.6	
Minor Principal Stress, σ 3, tsf		1.00	2.00	3.00	
Major Principal Stress, σ 1, tsf		2.57	4.23	6.05	
Effective Minor Principal Stress, $\bar{\sigma}$ 3, tsf		0.89	1.44	1.85	
Effective Major Principal Stress, $\bar{\sigma}$ 1, tsf		2.46	3.67	4.90	
Time to Failure, min.		80	90	90	
Rate of strain, %/min.		0.20	0.20	0.20	
Specimen Height, in.		3.17	3.17	3.17	
Specimen Diameter, in.		1.40	1.40	1.40	



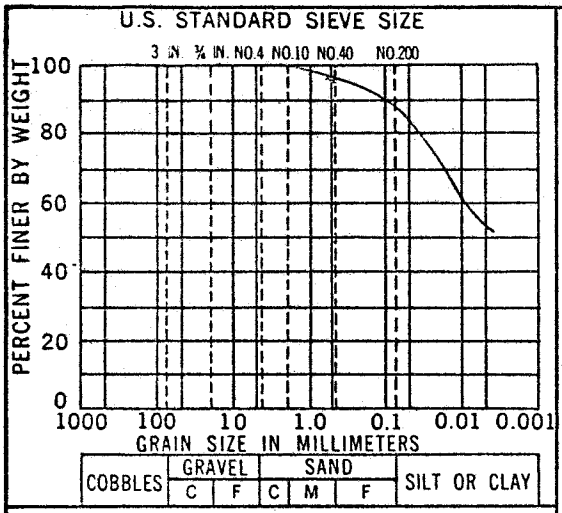
Remarks: *Remolded at 3% above optimum moisture and at 95% of standard proctor density.

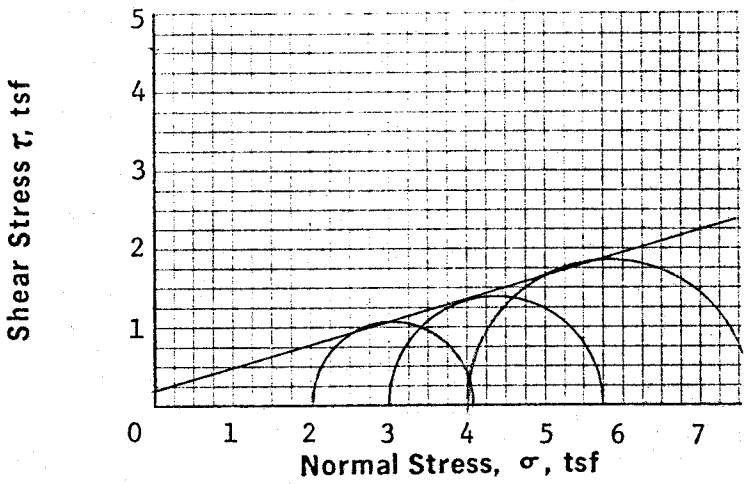
Project: John Sevier SP

Feature Ash Disposal Dike

Boring No.	Sample No. Class VI
Station	Offset
Date 11-1-76	Elev.

TRIAXIAL COMPRESSION TEST (R)

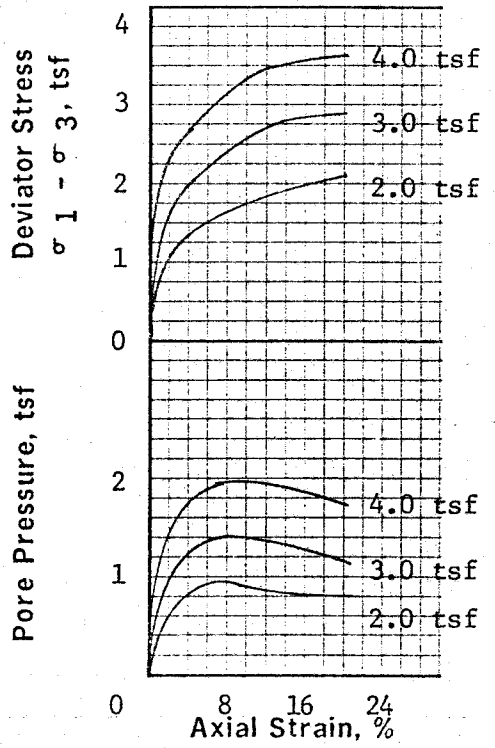




Type of Specimen	Remolded*		
Classification	CH		
LL.	65.2	G	2.79
Pl.	34.5	D_{10}	--

Shear Strength	ø Deg.	Tan ø	C, tsf
Apparent	16.2	.29	0.22
Effective	26.0	.49	0.00

Specimen Number		1	2	3	4
Initial	Moisture Content, %	20.6	20.7	20.4	
	Dry Density, pcf	93.2	93.1	93.3	
	Void Ratio	.868	.870	.867	
	Saturation, %	66.1	66.3	65.7	
Before Shearing	Moisture Content after Saturation, %	31.1	31.2	31.1	
	Saturation, %	100	100	100	
	Moisture Content after Consolidation, %	30.2	30.3	29.6	
	Void Ratio after Consolidation	.792	.786	.695	
Final Moisture Content ,%		30.2	30.3	29.6	
Minor Principal Stress, σ 3, tsf		2.00	3.00	4.00	
Major Principal Stress, σ 1, tsf		4.08	5.75	7.66	
Effective Minor Principal Stress, σ̄ 3, tsf		1.25	1.73	2.21	
Effective Major Principal Stress, σ̄ 1, tsf		3.33	4.48	5.87	
Time to Failure, min.		100	80	90	
Rate of strain, %/min.		0.2	0.2	0.2	
Specimen Height, in.		3.16	3.16	3.16	
Specimen Diameter, in.		1.40	1.40	1.40	



Remarks: *Remolded at 3% below optimum moisture and at 95% of standard proctor density.

Project: John Sevier SP

Feature Ash Disposal Dike

Boring No.	Sample No. Class VI
Station	Offset
Date 11-4-76	Elev.

TRIAXIAL COMPRESSION TEST (R)