



August 6, 2007

Mr. Jeff Sizemore, P.E.
SCDOT Road Design Office
Post Office Box 191
Columbia, South Carolina 29202-0191

Re: Summary of Geotechnical Investigation
SC 200 - Replace Bridge Over Wateree Creek
Fairfield County, South Carolina
SC File 20.131B.1; PIN No. 33478
Project No. BR-BR20 (004)
QORE Job No. 7272P, Report No. 115605

Dear Mr. Sizemore:

We have completed borings and laboratory testing for the referenced project, as requested in the SCDOT Interoffice Memo for the Request for Subsurface Investigation, dated January 16, 2007. Accompanying the Work Scope were preliminary plans including Plan and Profile drawings for the construction area. The borings were performed to evaluate the general subsurface soil, rock, and groundwater conditions in the vicinity of the end bents, interior bents, and roadway of the replacement bridge over Wateree Creek on SC-200.

Seventeen soil test borings (B-1 through B-17), two hand auger borings with dynamic cone penetrometer testing, and one analysis of shear wave velocity (by Refraction Microtremor at location SA-1) were performed near requested locations indicated on the plans and referenced Memo. Boring B-1 was offset from the requested location to avoid trespassing near a concerned resident's property line; Boring B-2 was offset slightly from the requested location due to topography (steep roadway embankment); and Borings B-8, B-10, and B-12 were offset approximately 8 to 15 feet from the requested locations to avoid the underlying bridge deck beams, to allow enough space for drilling operations, and to allow for safer and less traffic control situations. During a telephone conversation with Ms. Sara Stone, on March 23, 2007, we were authorized to terminate Hand Auger Borings HA-1 and HA-2 after encountering hand auger refusal. On March 29, 2007, during a telephone conversation, Ms. Stone authorized an additional five days of traffic control needed to complete borings within the roadway and bridge deck.

The borings were performed with a truck-mounted Acker AD II drill rig. The elevations at the boring locations were approximated from the topographic information on the provided Plan and Profile Sheets and field assessments. The station, elevation, and coordinates (latitude and longitude) of each boring are indicated on the attached Boring Logs. The coordinates were obtained using a portable Magellan SporTrak GPS unit (with a horizontal position accuracy of 10 feet) and should be considered approximate.

Roadway Borings B-1, B-3, B-14, and B-17 were extended to the planned termination depth of 15 and 25 feet below the ground surface. Roadway Borings B-2, B-15, and B-16 encountered auger refusal at depths of 11 to 16½ feet. Hand Auger Borings HA-1 and HA-2 also encountered auger refusal at depths of 6½ and 3 feet, respectively. The measurement of shear wave velocity at roadway boring location SA-1 (Refraction Microtremor analysis) was performed to a depth of 100 feet below the ground surface. Bridge Borings B-4 through B-13 were extended to auger refusal at depths of approximately 15 to 30 feet below the existing ground surface (or bridge deck), and rock coring was then extended approximately 10 to 20 feet into rock to depths of approximately 30 to 48½ feet below the existing ground surface (or bridge deck).

The soil samples collected from the borings were transported to our laboratory for engineering review and classification. We also obtained a bulk sample of the fill soils at station 543+00 (located near B-3), sampled between 0 and 3 feet. The subsurface soil data (including the soil descriptions, standard penetration test results, and measured groundwater depths) are presented on the attached Boring Logs.

Per the SCDOT Interoffice Memo for the Request for Subsurface Investigation, dated January 16, 2007, laboratory tests (including standard proctor, Atterberg limits, grain size distribution, natural moisture content, and triaxial shear compression) were performed on the obtained bulk sample from Station 543+00. Per the SCDOT Interoffice Memo for Soil Exploration Testing dated May 3, 2007, laboratory index tests (including grain size with wash #200 (with and without hydrometer), Atterberg limits, and natural moisture content) were performed on select samples from Borings B-1, B-3 through B-15, B-17, HA-1, and HA-2. The laboratory assignment from the SCDOT was received by QORE via email, on June 22, 2007, from Ms. Sara Stone. Fifteen rock core samples were requested for compressive strength testing. The samples were taken from selected core sections obtained from Borings B-5 through B-12. We were authorized to

apply the appropriate correction factor (per ASTM C42 / C42M-04) to obtain the compressive strength results, for the requested rock specimens obtained from Boring B-12 with dimensions less than the required 2.0 length/diameter ratio (per ASTM D 4543-04). Due to specimens from Boring B-5 (NQ-1) being too short to meet the required length/diameter ratio to obtain unbiased results, we omitted the requested rock specimen based on a conversation with Ms. Stone on July 26, 2007. Unconfined compressive strength test results for the fourteen core samples are summarized in the attached Results of Compressive Strength Testing of Rock Core Samples. The requested laboratory index test data is summarized in the attached table, and the individual grain size distribution reports, standard proctor report, and triaxial shear test report are also attached.

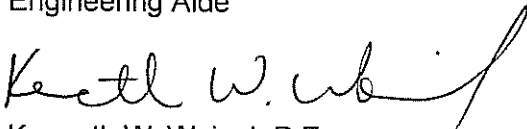
We appreciate the opportunity to be of service to the SCDOT on this project, and we look forward to working with you on future projects. Please contact us if you have any questions concerning the boring or laboratory test results.

Respectfully submitted,

QORE, Inc.
SC COA #C00356



Kevin B. Farmer
Engineering Aide



Kenneth W. Weinel, P.E.
Senior Engineer

Attachments: Boring Logs (19)
Analysis of Shear Wave Velocity (Refraction Microtremor) Log (Boring SA-1)
Results of Compressive Strength Testing of Rock Core Samples
Summary of Laboratory Index Test Results
Grain Size Distribution Test Reports (42)
Moisture/Density Relationships of Soil
Triaxial Shear Test Report

cc: Mr. Mickey Wilson

Results of Compressive Strength Testing of Rock Core Samples

County:	Fairfield
Road:	SC-200
File:	20.131B.1
Project No.:	BR-BR20 (004)
PIN No.:	33478
Project Name:	Replace Bridge Over Wateree Creek
QORE Job No.:	7272P
QORE Report No.	115605

Boring No.	Recovery & RQD (%)	Core (NQ) Number & Approximate Depth (feet)	Approximate Core Diameter (inches)	Compressive Strength (psi)
B-5	90 – 68	NQ – 4 [33½ -34]	1.99	11,750
B-6	65 – 47	NQ – 1 [28-30]	1.99	11,100
B-6	83 – 36	NQ – 4 [41½ -42]	1.99	14,860
B-7	75 – 69	NQ – 1 [28-29]	1.99	12,830
B-7	95 – 53	NQ – 3 [36-36½]	1.99	10,590
B-8	100 – 53	NQ – 1 [23½ -24½]	1.99	16,770
B-8	95 – 89	NQ – 3 [32-32½]	1.99	5,340
B-9	100 – 57	NQ – 1 [28-28½]	1.99	11,060
B-9	100 – 79	NQ – 4 [34-34½]	1.99	2,970
B-10	93 – 68	NQ – 2 [20½-21½]	1.98	8,410
B-11	100 – 75	NQ – 2 [33-34]	1.99	2,210
B-12	100 – 30	NQ – 2 [20-21]	1.99	860 ¹
B-12	92 – 45	NQ – 3 [28-29]	1.99	5,300 ¹
B-12	65 – 13	NQ – 5 [32-33]	2.00	1,310 ¹

Notes: 1. Compressive Strength calculated using correction factor per ASTM C42/C42M-04, due to specimen's length/diameter ratio less than 2.0.

SUMMARY OF LABORATORY INDEX TEST RESULTS
SC-200 - Replace Bridge Over Wateree Creek
Fairfield County, South Carolina
SCDOT Project No. BR-BR20(004); PIN No. 33478
QORE Job No. 7272P, Report No. 115605

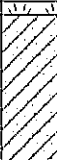
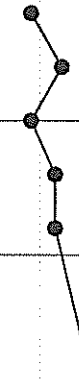
Boring No.	Sample Depth (ft)	Sample No.	Soil Classification		% Fines (% Passing #200 Sieve)	Atterberg Limits		Moisture Content (%)
			AASHTO	USCS		Liquid Limit (%)	Plasticity Index (%)	
B-1	0-2	SS-1	A-6(5)	SC	47.0	37	17	13.5
B-1	8-10	SS-5	A-7-5(18)	MH	73.6	53	23	23.2
B-3	4-6	SS-3	A-4	SC-SM	45.2	22	5	10.5
B-3	8-10	SS-5	A-6(14)	CL	80.5	38	18	26.5
B-4	4-6	SS-3	A-2-4	SM	34.9	18	NP	8.0
B-4	13.5-15	SS-6	A-4(1)	CL-ML	75.2	21	5	31.8
B-4	18.5-20	SS-7	A-4	SM	48.6	22	1	21.1
B-5	16-18	SS-1	[A-1-b]	[SW]	4.1	N/A	N/A	13.7
B-5	20-22	SS-3	[A-2-4]	[SM]	34.0	N/A	N/A	21.1
B-5	22-24	SS-4	A-4	SM	49.5	-	NP	20.6
B-6	16-18	SS-1	[A-1-b]	[SW-SM]	5.1	N/A	N/A	7.4
B-6	18-20	SS-2	[A-1-b]	[SW-SM]	6.4	N/A	N/A	11.6
B-6	20-22	SS-3	[A-1-b]	[SW-SM]	11.9	N/A	N/A	11.6
B-7	16-18	SS-1	A-2-4	SM	20.7	-	NP	17.3
B-7	18-20	SS-2	A-2-4	SC-SM	34.8	21	5	21.3
B-8	0-2	SS-1	A-4	SC-SM	37.5	25	7	13.6
B-8	2-4	SS-2	A-6(8)	CL	77.9	29	12	23.8
B-8	13.5-15	SS-6	[A-2-4]	SM	20.5	N/A	N/A	12.1
B-9	11-13	SS-1	A-6(8)	CL	74.5	32	13	23.6
B-9	13-15	SS-2	A-4(0)	CL-ML	56.9	21	5	20.3
B-9	17-19	SS-4	A-6(6)	CL	53.6	40	17	24.4
B-10	0-2	SS-1	A-7-6(16)	CL	82.8	42	19	19.0
B-10	2-4	SS-2	A-6(6)	CL	63.0	31	13	21.6
B-11	13-15	SS-1	A-2-6	SC	24.7	32	15	10.1
B-11	17-19	SS-3	A-2-4	SC-SM	29.1	27	7	10.8

SUMMARY OF LABORATORY INDEX TEST RESULTS
SC-200 - Replace Bridge Over Wateree Creek
Fairfield County, South Carolina
SCDOT Project No. BR-BR20(004); PIN No. 33478
QORE Job No. 7272P, Report No. 115605

Boring No.	Sample Depth (ft)	Sample No.	Soil Classification		% Fines (% Passing #200 Sieve)	Atterberg Limits		Moisture Content (%)
			AASHTO	USCS		Liquid Limit (%)	Plasticity Index (%)	
B-12	0-2	SS-1	A-6(9)	CL	79.1	31	13	27.0
B-12	2-4	SS-2	A-4(2)	CL	55.6	23	9	20.9
B-12	6-8	SS-3	A-6(6)	CL	54.6	39	16	22.3
B-13	2-4	SS-2	[A-2-4]	[SM]	35.6	N/A	N/A	13.1
B-13	4-6	SS-3	A-2-4	SC-SM	38.4	23	5	12.9
B-13	8-10	SS-5	A-6(12)	CL	71.0	38	20	22.8
B-14	2-4	SS-2	[A-2-4]	[SM]	31.2	N/A	N/A	12.8
B-14	6-8	SS-4	A-7-6(24)	CH	75.0	59	30	30.9
B-14	18.5-20	SS-7	[A-1-b]	[SM]	13.9	N/A	N/A	30.9
B-15	2-4	SS-2	[A-2-4]	[SM]	30.6	N/A	N/A	20.7
B-15	8-10	SS-5	[A-1-b]	[SM]	17.3	N/A	N/A	10.0
B-17	2-4	SS-2	A-4(2)	SM	43.7	34	10	20.7
B-17	6-8	SS-4	[A-2-4]	[SM]	19.7	N/A	N/A	6.9
HA-1	1-2	S-2	[A-7]	[CL]	63.9	N/A	N/A	26.9
HA-1	3-4	S-4	A-6(5)	CL	57.4	31	14	19.4
HA-2	1-2	S-2	A-6(8)	CL	62.8	37	16	18.5
BS-1	0-3	Bulk	A-4(2)	CL	53.0	30	8	11.5

Notes: NP = Non-plastic; N/A = Test Not Performed



SC 200 - RBO Wateree Creek Fairfield County, South Carolina File No. 20.131B.1; Project No. BR-BR20(004); PIN No. 33478					LOG OF BORING No. B-1 Station: 537+50 Offset: 9 Feet Left of Proposed CL							
Date Drilled: 3/23/07			Supervisor: QORE (7272P)			Notes: Coordinates: N34°29.379' W81°01.014'						
Casing Length: N/A			Ground Elevation: 324. Feet									
Hammer Type: <input checked="" type="checkbox"/> Gravity <input type="checkbox"/> Automatic <input checked="" type="checkbox"/> Other: Acker AD II												
Water Level: Not Encountered			Drilling Method: HSA									
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	STD. PENETRATION TEST DATA (blows/ft)		
	0.0	Top of Ground								5 10 20 40 70		
319	0.5	6 Inches Topsoil		0.	SS-1	4	4	5	9			
		Fill - Loose to Firm Brown, Reddish Brown, and Dark Brown Clayey Fine to Coarse Sand (SC)		2.	SS-2	7	7	6	13			
				4.	SS-3	3	3	6	9			
				6.	Residuum - Stiff Brown, Reddish Brown, and Light Brown Slightly Micaceous Elastic Silt with Sand (MH)	8.	SS-4	5	5		7	12
				8.		SS-5	5	6	6		12	
				13.5		SS-6	5	8	10		18	
314	12.	Firm Brown, Yellowish Brown, and Reddish Brown Micaceous Silty Fine to Medium Sand (SM)										
309	15.	Boring Terminated at 15 Feet										
304												
299												
294												
289												
284												
279												

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC DOT 7272P GPJ QOR CORP GDT B/3/07



SC 200 - RBO Wateree Creek Fairfield County, South Carolina File No. 20.131B.1; Project No. BR-BR20(004); PIN No. 33478					LOG OF BORING No. B-2 Station: 541+00 Offset: 12 Feet Left of Proposed CL									
Date Drilled: 3/23/07		Supervisor: QORE (7272P)			Notes: Coordinates: N34°29.437' W81°01.004'									
Casing Length: N/A		Ground Elevation: 306. Feet												
Hammer Type: <input checked="" type="checkbox"/> Gravity <input type="checkbox"/> Automatic <input checked="" type="checkbox"/> Other: Acker AD II														
Water Level: Not Encountered		Drilling Method: HSA												
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	STD. PENETRATION TEST DATA (blows/ft)				
	0.0	Top of Ground								5	10	20	40	70
	0.5	6 Inches Topsoil		0.	SS-1	5	5	6	11					
	2.	Fill - Firm White, Light Brown, and Brown Clayey Fine to Coarse Sand with Gravel (SC)		2.	SS-2	50/2"			100+					
301		Partially Weathered Rock - Sampled as Very Dense Light Brown, Reddish Brown, and Gray Fine to Coarse Sand (PWR)		4.	SS-3	50/3"			100+					
				6.	SS-4	50/3"			100+					
				8.	SS-5	50/2"			100+					
296	11.	Auger Refusal Encountered at 11 Feet; Boring Terminated												
291														
286														
281														
276														
271														
266														
261														

LEGEND

SAMPLER TYPE
SS - Split Spoon
ST - Shelby Tube
AWG - Rock Core, 1-1/8"
NQ - Rock Core, 1-7/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD
HSA - Hollow Stem Auger
CFA - Continuous Flight Augers
DC - Driving Casing
RW - Rotary Wash
RC - Rock Core



SC 200 - RBO Wateree Creek Fairfield County, South Carolina File No. 20.131B.1; Project No. BR-BR20(004); PIN No. 33478					LOG OF BORING No. B-3 Station: 543+00 Offset: 8 Feet Right of Proposed CL					
Date Drilled: 3/23/07		Supervisor: QORE (7272P)			Notes: Coordinates: N34°29.470' W81°00.997' Boring was backfilled upon completion.					
Casing Length: N/A		Ground Elevation: 299. Feet								
Hammer Type: <input checked="" type="checkbox"/> Gravity <input type="checkbox"/> Automatic <input checked="" type="checkbox"/> Other: Acker AD II										
Water Level: 8 Feet at Time of Boring (TOB)		Drilling Method: HSA								
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	STD. PENETRATION TEST DATA (blows/ft)
	0.0	Top of Roadway								5 10 20 40 70
	0.7	8 Inches Asphalt		0.	SS-1	4	4	4	8	
		Fill - Loose to Firm Yellowish Brown and Brown Silty Fine to Medium Sand (SM)		2.	SS-2	4	5	7	12	
	4.	Fill - Loose Yellowish Brown, Brown, and Brownish Red Silty, Clayey Fine to Medium Sand (SC-SM)		4.	SS-3	3	4	4	8	
294	6.	Fill - Stiff Brown, Gray, and Reddish Brown Sandy Silt (ML)		6.	SS-4	3	5	7	12	
	8.	Alluvium - Firm Gray Lean Clay with Sand (CL)		8.	SS-5	2	2	3	5	
289										
	14.	Residuum - Stiff Brown Silt with Sand (ML)		13.5	SS-6	5	5	7	12	
284	15.	Boring Terminated at 15 Feet								
279										
274										
269										
264										
259										
254										

LEGEND

SAMPLER TYPE

SS - Split Spoon	NQ - Rock Core, 1-7/8"
ST - Shelby Tube	CU - Cuttings
AWG - Rock Core, 1-1/8"	CT - Continuous Tube

DRILLING METHOD

HSA - Hollow Stem Auger	RW - Rotary Wash
CFA - Continuous Flight Augers	RC - Rock Core
DC - Driving Casing	



SC 200 - RBO Wateree Creek Fairfield County, South Carolina File No. 20.131B.1; Project No. BR-BR20(004); PIN No. 33478					LOG OF BORING No. B-4 Station: 543+55 Offset: 6 Feet Left of Proposed CL					
Date Drilled: 4/13/07		Supervisor: QORE (7272P)			Notes: Coordinates: N34°29.480' W81°00.993'					
Casing Length: 30 Feet		Ground Elevation: 298. Feet								
Hammer Type: <input checked="" type="checkbox"/> Gravity <input type="checkbox"/> Automatic <input checked="" type="checkbox"/> Other: Acker AD II										
Water Level: 23 Feet at TOB		Drilling Method: HSA/RC								
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	STD. PENETRATION TEST DATA (blows/ft)
	0.0	Top of Roadway								5 10 20 40 70
	0.8	9-1/2 Inches Asphalt		0.	SS-1	12	7	8	15	
	2.	Fill - Firm Brown, Reddish Brown, and Light Brown Silty Fine to Medium Sand (SM)		2.	SS-2	7	7	7	14	
293	4.	Fill - Stiff Brown, Reddish Brown, and Light Brown Sandy Clay (CL)		4.	SS-3	3	3	3	6	
		Fill - Loose Brown, Dark Brown, and Reddish Brown Silty Fine to Medium Sand (SM)		6.	SS-4	3	3	3	6	
288	9.5	Alluvium - Soft Brown, Gray, and Brownish Gray Silty Clay with Sand (CL-ML)		8.	SS-5	4	3	2	5	
				13.5	SS-6	3	2	2	4	
283				18.5	SS-7	7	10	11	21	
278	19.	Residuum - Very Firm Brown, Grayish Brown, and Reddish Brown Silty Fine Sand (SM)		23.5	SS-8	14	25	36	61	
273	23.	Very Dense Brown, Reddish Brown, and Gray Silty Fine to Coarse Sand (SM)		28.5	SS-9	50/5"			100+	
	28.	Partially Weathered Rock - Sampled as Very Dense Gray and White Silty Fine to Coarse Sand with Gravel (PWR)		30.	NQ-1					
268	30.	Auger Refusal Encountered at 30 Feet; Commenced NQ Rock Coring: Rock - Medium to Moderately Hard, Moderately Severe to Severely Weathered Gray, Dark Gray, and White Amphibolite NQ-1: REC - 100% RQD - 23% NQ-2: REC - 100% RQD - 45%		35.	NQ-2					
263										
258	40.	Coring Terminated at 40 Feet								
253										

LEGEND

SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
AWG - Rock Core, 1-1/8"






NQ - Rock Core, 1-7/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

HSA - Hollow Stem Auger
CFA - Continuous Flight Augers
DC - Driving Casing

RW - Rotary Wash
RC - Rock Core



SC 200 - RBO Wateree Creek Fairfield County, South Carolina File No. 20.131B.1; Project No. BR-BR20(004); PIN No. 33478					LOG OF BORING No. B-5 Station: 544+20 Offset: 6 Feet Right of Proposed CL									
Date Drilled: 4/9/07		Supervisor: QORE (7272P)			Notes: Coordinates: N34°29.490' W81°00.994'									
Casing Length: 29 Feet		Ground Elevation: 298. Feet												
Hammer Type: <input checked="" type="checkbox"/> Gravity <input type="checkbox"/> Automatic <input checked="" type="checkbox"/> Other: Acker AD II														
Water Level: 25 Feet at TOB; 17 Feet after 24 Hrs.		Drilling Method: HSA/RC												
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	STD. PENETRATION TEST DATA (blows/ft)				
	0.0	Top of Bridge Deck								5	10	20	40	70
	0.8	9 Inches Asphalt												
	1.3	6-1/2 Inches Concrete with Rebar												
		Open Space Between Bottom of Bridge Deck and Top of Ground												
293														
288														
283														
	16.	▼ Alluvium - Very Loose Brown and Gray Well-Graded Fine to Coarse Sand (SW)		16.										
	19.	Alluvium - Very Loose Gray and Brown Silty Fine Sand with Small Roots (SM)		18.	SS-1	3	2	0	2					
278				20.	SS-2	2	1	1	2					
				22.	SS-3	4	2	2	4					
	24.	▼ Residuum - Loose Gray and Brown Silty Fine to Medium Sand (SM)		24.	SS-4	1	1	0	1					
273					SS-5	5	3	7	10					
	28.5	Auger Refusal Encountered at 28-1/2 Feet; Commenced NQ Rock Coring:		28.5										
268	30.5	Rock - Medium to Moderately Hard, Moderately Severe to Severely Weathered Dark Gray, Greenish Gray, and White Amphibolite		30.5	NQ-1									
		NQ-1: REC - 98% RQD - 33%		33.5	NQ-2									
263		Rock - Moderate to Hard, Moderate to Moderately Severely Weathered Dark Gray, Gray, and Greenish Gray Amphibolite		35.5	NQ-3									
		NQ-2: REC - 92% RQD - 44%			NQ-4									
258		NQ-3: REC - 8% RQD - 0%		40.5	NQ-5									
		NQ-4: REC - 90% RQD - 68%												
253		NQ-5: REC - 100% RQD - 84%		45.5										
		NQ-6: REC - 100% RQD - 90%			NQ-6									
	48.5	Coring Terminated at 48-1/2 Feet												

LEGEND

SAMPLER TYPE

DRILLING METHOD

SS - Split Spoon NQ - Rock Core, 1-7/8"
ST - Shelby Tube CU - Cuttings
AWG - Rock Core, 1-1/8" CT - Continuous Tube

HSA - Hollow Stem Auger RW - Rotary Wash
CFA - Continuous Flight Augers RC - Rock Core
DC - Driving Casing



SC 200 - RBO Wateree Creek Fairfield County, South Carolina File No. 20.131B.1; Project No. BR-BR20(004); PIN No. 33478					LOG OF BORING No. B-6 Station: 544+20 Offset: 6 Feet Left of Proposed CL									
Date Drilled: 4/9/07		Supervisor: QORE (7272P)			Notes: Coordinates: N34°29.484' W81°00.992'									
Casing Length: 28 Feet		Ground Elevation: 298. Feet												
Hammer Type: <input checked="" type="checkbox"/> Gravity <input type="checkbox"/> Automatic <input checked="" type="checkbox"/> Other: Acker AD II														
Water Level: 25 Feet at TOB; 17 Feet after 24 Hrs.		Drilling Method: HSA/RC												
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	STD. PENETRATION TEST DATA (blows/ft)				
	0.0	Top of Bridge Deck								5	10	20	40	70
	0.8	9-1/4 Inches Asphalt												
	1.3	5-3/4 Inches Concrete with Rebar												
		Open Space Between Bottom of Bridge Deck and Top of Ground												
293														
288														
283	16.	▼ Alluvium - Loose to Very Loose Brown and Gray Well-Graded Fine to Coarse Sand with Silt (SW-SM)		16.										
				18.	SS-1	5	4	3	7					
278				20.	SS-2	2	1	0	1					
	21.5	Alluvium - Very Loose Gray Silty Fine to Medium Sand with Wood Pieces (SM)		22.	SS-3	2	2	2	4					
	24.	▼ Residuum - Loose Gray and Brown Clayey Fine to Medium Sand (SC)		24.	SS-4	3	2	1	3					
273					SS-5	3	2	5	7					
	27.5	Auger Refusal Encountered at 27-1/2 Feet; Commenced NQ Rock Coring:		27.5										
268		Rock - Moderately Hard to Hard, Moderate to Moderately Severely Weathered Gray, White, and Grayish Red Amphibolite		30.	NQ-1									
					NQ-2									
263	35.	NQ-1: REC - 65% RQD - 47% NQ-2: REC - 100% RQD - 85%		35.										
		Rock - Medium to Moderately Hard, Moderately Severe to Severely Weathered Gray, Dark Gray, and White Amphibolite			NQ-3									
258				40.										
		NQ-3: REC - 100% RQD - 0% NQ-4: REC - 83% RQD - 36% NQ-5: REC - 100% RQD - 26%		45.	NQ-4									
253					NQ-5									
	47.5	Coring Terminated at 47-1/2 Feet												

LEGEND

SAMPLER TYPE

DRILLING METHOD

SS - Split Spoon NQ - Rock Core, 1-7/8"
ST - Shelby Tube CU - Cuttings
AWG - Rock Core, 1-1/8" CT - Continuous Tube

HSA - Hollow Stem Auger RW - Rotary Wash
CFA - Continuous Flight Augers RC - Rock Core
DC - Driving Casing



SC 200 - RBO Wateree Creek Fairfield County, South Carolina File No. 20.131B.1; Project No. BR-BR20(004); PIN No. 33478					LOG OF BORING No. B-7									
Station: 544+85					Offset: 6 Feet Right of Proposed CL									
Date Drilled: 3/30/07 and 4/5/07			Supervisor: QORE (7272P)			Notes: Coordinates: N34°29.501' W81°00.991'								
Casing Length: 26 Feet			Ground Elevation: 298. Feet											
Hammer Type: <input checked="" type="checkbox"/> Gravity <input type="checkbox"/> Automatic <input checked="" type="checkbox"/> Other: Acker AD II														
Water Level: 16 Feet at TOB; 16 Feet after 24 Hrs.			Drilling Method: HSA/RC											
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	STD. PENETRATION TEST DATA (blows/ft)				
	0.0	Top of Bridge Deck								5	10	20	40	70
	0.8	9-3/4 Inches Asphalt												
	1.4	6-3/4 Inches Concrete with Rebar												
		Open Space Between Bottom of Bridge Deck and Top of Ground												
293														
288														
283														
	16.	6 Inches Topsoil		16.										
	16.5			18.	SS-1	5	3	2	5					
	18.	Alluvium - Loose Brown and Gray Silty Fine to Coarse Sand with Small Roots (SM)		18.										
278		Alluvium - Firm Gray and Brown Silty, Clayey Fine Sand with Wood Pieces (SC-SM)		20.	SS-2	4	3	3	6					
				22.	SS-3	3	3	2	5					
				24.	SS-4	5	3	5	8					
273	25.5	Partially Weathered Rock - Sampled as Very Dense Brown, Gray, and Reddish Brown Silty Fine to Coarse Sand (PWR)		24.	SS-5	4	18	50/4"	100+					
	27.	Auger Refusal Encountered at 27 Feet; Commenced NQ Rock Coring:		27.										
268		Rock - Moderately Hard to Hard, Moderately to Moderately Severely Weathered Gray, Greenish Gray, and Grayish Red Amphibolite		30.	NQ-1									
263				35.	NQ-2									
				40.	NQ-3									
258		NQ-1: REC - 75% RQD - 69%		45.	NQ-4									
		NQ-2: REC - 88% RQD - 67%												
		NQ-3: REC - 95% RQD - 53%												
		NQ-4: REC - 92% RQD - 78%												
253		NQ-5: REC - 100% RQD - 92%												
	47.	Coring Terminated at 47 Feet												

LEGEND

SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
AWG - Rock Core, 1-1/8"

NQ - Rock Core, 1-7/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

HSA - Hollow Stem Auger
CFA - Continuous Flight Augers
DC - Driving Casing

RW - Rotary Wash
RC - Rock Core



SC 200 - RBO Wateree Creek Fairfield County, South Carolina File No. 20.131B.1; Project No. BR-BR20(004); PIN No. 33478					LOG OF BORING No. B-8 Station: 544+90 Offset: 20 Feet Left of Proposed CL									
Date Drilled: 4/4/07			Supervisor: QORE (7272P)			Notes: Coordinates: N34°29.497' W81°01.001'								
Casing Length: 22 Feet			Ground Elevation: 289. Feet											
Hammer Type: <input checked="" type="checkbox"/> Gravity <input type="checkbox"/> Automatic <input checked="" type="checkbox"/> Other: Acker AD II														
Water Level: 6 Feet at TOB			Drilling Method: HSA/RC											
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	STD. PENETRATION TEST DATA (blows/ft)				
	0.0	Top of Ground								5	10	20	40	70
	0.5	6 Inches Topsoil		0.	SS-1	4	4	5	9					
	2.	Alluvium - Loose Brown and Gray Silty, Clayey Fine to Medium Sand (SC-SM)		2.	SS-2	4	4	4	8					
284		Alluvium - Firm Brown, Reddish Brown, and Grayish Brown Lean Clay with Sand (CL)		4.	SS-3	4	4	4	8					
				6.	SS-4	2	3	4	7					
279				8.	SS-5	4	3	3	6					
	13.	Residuum - Very Firm Gray, Brown, and Yellowish Brown Silty Fine to Coarse Sand (SM)		13.5	SS-6	15	13	13	26					
274														
	17.	Very Dense Dark Gray, Brown, and Reddish Brown Silty Fine to Coarse Sand with Gravel (SM)		18.5	SS-7	29	40	38	78					
269				22.										
	22.	Auger Refusal Encountered at 22 Feet; Commenced NQ Rock Coring:		24.5	NQ-1									
264				27.5	NQ-2									
		Rock - Hard to Soft, Moderately to Moderately Severely Weathered Gray, Greenish Gray, and White Amphibolite with Quartz												
259					NQ-3									
		NQ-1: REC - 100% RQD - 53%		32.5										
		NQ-2: REC - 100% RQD - 94%			NQ-4									
254		NQ-3: REC - 95% RQD - 89%		37.5										
		NQ-4: REC - 98% RQD - 97%			NQ-5									
249		NQ-5: REC - 100% RQD - 100%												
	42.	Coring Terminated at 42 Feet												
244														

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	



SC 200 - RBO Wateree Creek Fairfield County, South Carolina File No. 20.131B.1; Project No. BR-BR20(004); PIN No. 33478					LOG OF BORING No. B-9 Station: 545+50 Offset: 6 Feet Right of Proposed CL									
Date Drilled: 3/29/07		Supervisor: QORE (7272P)			Notes: Coordinates: N34°29.512' W81°00.990'									
Casing Length: 25 Feet		Ground Elevation: 298. Feet												
Hammer Type: <input checked="" type="checkbox"/> Gravity <input type="checkbox"/> Automatic <input checked="" type="checkbox"/> Other: Acker AD II														
Water Level: 14 Feet at TOB; 14 Feet after 24 Hrs.		Drilling Method: HSA/RC												
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	STD. PENETRATION TEST DATA (blows/ft)				
	0.0	Top of Bridge Deck								5	10	20	40	70
	0.8	9-1/4 Inches Asphalt												
	1.4	6-1/2 Inches Concrete with Rebar												
		Open Space Between Bottom of Bridge Deck and Top of Ground												
293														
288	11.			11.										
	13.	Alluvium - Firm Brown, Gray, and Reddish Brown Lean Clay with Sand (CL)		13.	SS-1	3	3	2	5					
283		Alluvium - Firm to Very Stiff Brown, Gray, and Reddish Brown Sandy, Silty Clay (CL-ML)		15.	SS-2	3	4	4	8					
	16.5	Residuum - Stiff Brown, Dark Gray, and Gray Sandy Lean Clay (CL)		17.	SS-3	5	5	11	16					
	19.	Dense Brown, Light Brown, and Gray Silty Fine to Medium Sand (SM)		19.	SS-4	7	7	7	14					
278					SS-5	7	18	24	42					
273	23.	Partially Weathered Rock - Sampled as Very Dense Yellowish Brown, Brown, and Gray Silty Fine to Medium Sand (PWR)		24.5										
	25.	Auger Refusal Encountered at 25 Feet; Commenced NQ Rock Coring:		25.5	SS-6	50/4"			100+					
					NQ-1									
268		Rock - Hard to Soft, Moderately Severe to Severely Weathered Gray, Greenish Gray, and White Amphibolite		29.5	NQ-2									
				33.	NQ-3									
263		NQ-1: REC - 100% RQD - 57%		34.5	NQ-4									
		NQ-2: REC - 100% RQD - 30%												
		NQ-3: REC - 64% RQD - 33%												
		NQ-4: REC - 100% RQD - 79%												
258		NQ-5: REC - 93% RQD - 69%		39.5	NQ-5									
253	44.5	Coring Terminated at 44-1/2 Feet												

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC DOT 7272P G.P.I. QOR CORP GDI 8/3/07



SC 200 - RBO Wateree Creek Fairfield County, South Carolina File No. 20.131B.1; Project No. BR-BR20(004); PIN No. 33478					LOG OF BORING No. B-10 Station: 545+50 Offset: 18 Feet Left of Proposed CL					
Date Drilled: 4/3/07 and 4/4/07			Supervisor: QORE (7272P)			Notes: Coordinates: N34°29.513' W81°00.996' Authorized on 4/4/07 by Ms. Sara Stone to terminate rock coring at depth of 30 feet (after 15 feet of coring) due to coring barrel retrieval problems.				
Casing Length: 15 Feet			Ground Elevation: 289. Feet							
Hammer Type: <input checked="" type="checkbox"/> Gravity <input type="checkbox"/> Automatic <input checked="" type="checkbox"/> Other: Acker AD II										
Water Level: 6 Feet at TOB; 5 Feet after 24 Hrs.			Drilling Method: HSA/RC							
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	STD. PENETRATION TEST DATA (blows/ft)
	0.0	Top of Ground								5 10 20 40 70
	0.3	4 Inches Topsoil		0.	SS-1	7	7	6	13	
	2.	Fill - Stiff Brown Lean Clay (CL)		2.	SS-2	4	3	3	6	
284		Alluvium - Firm to Soft Reddish Brown, Green, and Gray Sandy Lean Clay (CL)		4.	SS-3	3	2	2	4	
	8.	Residuum - Stiff Brown, Yellowish Brown, Dark Brown, and Gray Sandy Clay (CL)		6.	SS-4	2	2	3	5	
279				8.	SS-5	5	7	8	15	
	12.	Partially Weathered Rock - Sampled as Very Dense Gray, Reddish Brown, and Brown Silty Fine to Medium Sand (PWR)		13.5	SS-6	10	50/2"		100+	
274	15.	Auger Refusal Encountered at 15 Feet; Commenced NQ Rock Coring: Rock - Medium to Moderately Hard, Moderately Severe to Severely Weathered Gray, Dark Gray, and White Amphibolite		15.	NQ-1					
269				20.	NQ-2					
264		NQ-1: REC - 78% RQD - 52% NQ-2: REC - 93% RQD - 68% NQ-3: REC - 78% RQD - 32%		25.	NQ-3					
259	30.	Coring Terminated at 30 Feet								
254										
249										
244										

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	



SC 200 - RBO Wateree Creek Fairfield County, South Carolina File No. 20.131B.1; Project No. BR-BR20(004); PIN No. 33478					LOG OF BORING No. B-11									
Date Drilled: 3/27/07 and 3/29/07			Supervisor: QORE (7272P)		Notes: Coordinates: N34°29.523' W81°00.982' Authorized by Ms. Sara Stone during a telephone conversation on 3/29/07 to terminate rock coring at depth of 45 feet based on RQD results.									
Casing Length: 22 Feet			Ground Elevation: 298. Feet											
Hammer Type: <input checked="" type="checkbox"/> Gravity <input type="checkbox"/> Automatic <input checked="" type="checkbox"/> Other: Acker AD II														
Water Level: 12 Feet at TOB; 12 Feet after 24 Hrs.			Drilling Method: HSA/RC											
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	STD. PENETRATION TEST DATA (blows/ft)				
										5	10	20	40	70
	0.0	Top of Bridge Deck												
	0.7	8-1/2 Inches Asphalt												
	1.3	6-3/4 Inches Concrete with Rebar												
		Open Space Between Bottom of Bridge Deck and Top of Creek Bed												
293														
288														
	13.	▼		13.										
283		Alluvium - Very Firm to Dense Gray, Reddish Brown, and Yellowish Brown Clayey Fine to Coarse Sand with Gravel (SC) [Blow Counts Likely Amplified by Gravel Observed in Split-Spoon Shoe]		15.	SS-1	4	9	18	27					
	17.			17.	SS-2	15	17	26	43					
	19.	Residuum - Very Firm Reddish Brown, Brown, and Gray Micaceous Silty, Clayey Fine to Medium Sand (SC-SM)		19.	SS-3	6	12	18	30					
278				21.	SS-4	26	39	50/4"	100+					
		Partially Weathered Rock - Sampled as Very Dense Brown, Dark Brown, and Gray Micaceous Silty Fine to Coarse Sand (PWR)			SS-5	50/5"			100+					
273				26.										
	26.	Auger Refusal Encountered at 26 Feet; Commenced NQ Rock Coring:		26.	NQ-1									
268		Rock - Soft, Severely Weathered Gray, Black, and Greenish Gray Amphibolite		30.										
	30.	NQ-1: REC - 30% RQD - 0%			NQ-2									
263		Rock - Soft to Moderately Hard, Moderately Severe to Severely Weathered Gray, Dark Gray, and Greenish Gray Amphibolite		35.										
					NQ-3									
258		NQ-2: REC - 100% RQD - 75% NQ-3: REC - 96% RQD - 77% NQ-4: REC - 100% RQD - 93%		40.										
					NQ-4									
253														
	45.	Coring Terminated at 45 Feet												

LEGEND

SAMPLER TYPE

SS - Split Spoon NQ - Rock Core, 1-7/8"
ST - Shelby Tube CU - Cuttings
AWG - Rock Core, 1-1/8" CT - Continuous Tube

DRILLING METHOD

HSA - Hollow Stem Auger RW - Rotary Wash
CFA - Continuous Flight Augers RC - Rock Core
DC - Driving Casing



SC 200 - RBO Wateree Creek Fairfield County, South Carolina File No. 20.131B.1; Project No. BR-BR20(004); PIN No. 33478					LOG OF BORING No. B-12					
Date Drilled: 4/2/07		Supervisor: QORE (7272P)			Notes: Coordinates: N34°29.523' W81°00.990' Authorized by Ms. Sara Stone during a telephone conversation on 4/2/07 to terminate rock coring at depth of 37 feet (after 20 feet of coring).					
Casing Length: 17 Feet		Ground Elevation: 289. Feet								
Hammer Type: <input checked="" type="checkbox"/> Gravity <input type="checkbox"/> Automatic <input checked="" type="checkbox"/> Other: Acker AD II										
Water Level: 2 Feet at TOB; 1-1/2 Feet after 24 Hrs.			Drilling Method: HSA/RC							
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	STD. PENETRATION TEST DATA (blows/ft)
	0.0	Top of Ground								5 10 20 40 70
	0.2	2 Inches Topsoil		0.	SS-1	3	2	3	5	
		Alluvium - Firm to Soft Brown and Gray Lean Clay with Sand (CL)		2.	SS-2	1	2	1	3	
284	4.	Alluvium - Firm Brown and Gray Sandy Lean Clay (CL)		4.	SS-3	0	0	5	5	
	5.5	Residuum - Firm to Very Stiff Reddish Brown, Yellowish Brown, and Gray Sandy Lean Clay (CL)		6.	SS-3	5	8	12	20	
279	7.	Firm to Dense Reddish Brown, Yellowish Brown, and Gray Silty Fine to Medium Sand (SM)		8.	SS-4	7	15	34	49	
	13.	Partially Weathered Rock - Sampled as Very Dense Reddish Brown, Light Brown, and Grayish Brown Silty Fine to Medium Sand (PWR)		13.5	SS-5	12	23	50/3"	100+	
274	17.	Auger Refusal Encountered at 17 Feet; Commenced NQ Rock Coring:		17.	NQ-1					
269		Rock - Very Soft to Soft, Moderately Severe to Severely Weathered Gray, White, and Greenish Gray Amphibolite		20.	NQ-2					
264		NQ-1: REC - 86% RQD - 0%		25.	NQ-3					
		NQ-2: REC - 100% RQD - 30%		30.	NQ-4					
259		NQ-3: REC - 92% RQD - 45%		32.	NQ-5					
		NQ-4: REC - 75% RQD - 0%								
254		NQ-5: REC - 65% RQD - 13%								
	37.	Coring Terminated at 37 Feet								
249										
244										

LEGEND

SAMPLER TYPE	
SS - Split Spoon	NQ - Rock Core, 1-7/8"
ST - Shelby Tube	CU - Cuttings
AWG - Rock Core, 1-1/8"	CT - Continuous Tube

DRILLING METHOD	
HSA - Hollow Stem Auger	RW - Rotary Wash
CFA - Continuous Flight Augers	RC - Rock Core
DC - Driving Casing	



SC 200 - RBO Wateree Creek Fairfield County, South Carolina File No. 20.131B.1; Project No. BR-BR20(004); PIN No. 33478					LOG OF BORING No. B-13 Station: 546+80 Offset: 6 Feet Right of Proposed CL					
Date Drilled: 3/26/07 and 3/27/07			Supervisor: QORE (7272P)			Notes: Coordinates: N34°29.536' W81°00.988'				
Casing Length: 23 Feet			Ground Elevation: 298. Feet							
Hammer Type: <input checked="" type="checkbox"/> Gravity <input type="checkbox"/> Automatic <input checked="" type="checkbox"/> Other: Acker AD II										
Water Level: 11 Feet after 24 Hours			Drilling Method: HSA/RC							
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	STD. PENETRATION TEST DATA (blows/ft)
	0.0	Top of Roadway								5 10 20 40 70
	0.7	8 Inches Asphalt		0.	SS-1	11	8	7	15	
		Fill - Firm Brown, Yellowish Brown, Dark Brown, and Gray Silty Fine to Medium Sand (SM)		2.	SS-2	5	7	5	12	
293	4.	Fill - Loose Brown, Yellowish Brown, and Gray Silty, Clayey Fine to Medium Sand (SC-SM)		4.	SS-3	3	3	4	7	
	8.	Alluvium - Firm Brown, Reddish Brown, and Grayish Brown Lean Clay with Sand and Wood Pieces (CL)		6.	SS-4	2	3	4	7	
288	12.	Alluvium - Brown Sandy Silt with Wood Pieces (ML) [Blow Counts Amplified by Wood]		8.	SS-5	3	4	4	8	
				13.5	SS-6	15	16	18	34	
283										
	19.	Residuum - Very Dense Reddish Brown, Brown, and Gray Silty Fine to Medium Sand (SM)		18.5	SS-7	9	22	36	58	
278	23.	Auger Refusal Encountered at 23 Feet; Commenced NQ Rock Coring:		23.	NQ-1					
273		Rock - Medium to Moderately Hard, Moderately Severe to Severely Weathered Gray, White, and Greenish Gray Amphibolite		25.	NQ-2					
		NQ-1: REC - 85% RQD - 45%		28.	NQ-3					
268		NQ-2: REC - 69% RQD - 38%		31.5	NQ-4					
	33.	NQ-3: REC - 86% RQD - 42%								
263		NQ-4: REC - 86% RQD - 86%								
		Coring Terminated at 33 Feet								
258										
253										

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	



SC 200 - RBO Wateree Creek Fairfield County, South Carolina File No. 20.131B.1; Project No. BR-BR20(004); PIN No. 33478					LOG OF BORING No. B-14				
Date Drilled: 3/22/07			Supervisor: QORE (7272P)		Notes: Coordinates: N34°29.582' W81°00.977'				
Casing Length: N/A			Ground Elevation: 298. Feet						
Hammer Type: <input checked="" type="checkbox"/> Gravity <input type="checkbox"/> Automatic <input checked="" type="checkbox"/> Other: Acker AD II									
Water Level: 8 Feet at TOB; 11 Feet after 24 Hrs.			Drilling Method: HSA						
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	STD. PENETRATION TEST DATA (blows/ft)			
						1st 6"	2nd 6"	3rd 6"	N Value
	0.0	Top of Ground							
	0.5	6 Inches Topsoil		0.	SS-1	3	4	4	8
	4.	Fill - Loose to Firm Brown, Dark Brown, and Gray Slightly Micaceous Silty Fine to Medium Sand (SM)		2.	SS-2	5	6	9	15
293	6.	Fill - Loose Brown, Light Brown, and Dark Brown Silty Fine to Coarse Sand (SM)		4.	SS-3	3	3	5	8
		Alluvium - Firm to Stiff Brown and Gray Fat Clay with Sand (CL)		6.	SS-4	4	4	4	8
288				8.	SS-5	4	4	5	9
	12.	Residuum - Very Dense to Dense Brown, Dark Brown, and Gray Micaceous Silty Fine to Coarse Sand (SM)		13.5	SS-6	18	30	39	69
283				18.5	SS-7	14	14	30	44
278	22.	Very Hard Brown Sandy Clay (CL)		23.5	SS-8	26	34	36	70
273	25.	Boring Terminated at 25 Feet							
268									
263									
258									
253									

LEGEND

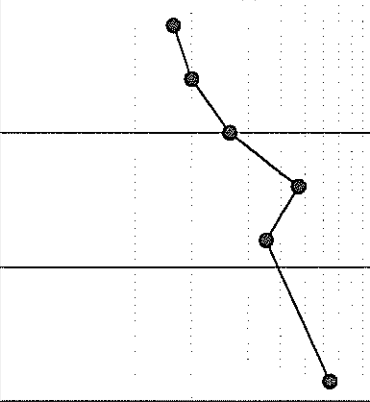
SAMPLER TYPE
SS - Split Spoon
ST - Shelby Tube
AWG - Rock Core, 1-1/8"

NQ - Rock Core, 1-7/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD
HSA - Hollow Stem Auger
CFA - Continuous Flight Augers
DC - Driving Casing

RW - Rotary Wash
RC - Rock Core



SC 200 - RBO Wateree Creek Fairfield County, South Carolina File No. 20.131B.1; Project No. BR-BR20(004); PIN No. 33478					LOG OF BORING No. B-15 Station: 551+00 Offset: 13 Feet Left of Proposed CL					
Date Drilled: 3/22/07			Supervisor: QORE (7272P)			Notes: Coordinates: N34°29.605' W81°00.972'				
Casing Length: N/A			Ground Elevation: 299. Feet							
Hammer Type: <input checked="" type="checkbox"/> Gravity <input type="checkbox"/> Automatic <input checked="" type="checkbox"/> Other: Acker AD II										
Water Level: Caved at 9 Ft. at TOB & after 24 Hrs.			Drilling Method: HSA							
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	STD. PENETRATION TEST DATA (blows/ft)
	0.0	Top of Ground								5 10 20 40 70
	0.5	6 inches Topsoil		0.	SS-1	4	4	4	8	
	2.	Fill - Loose Brown Silty Fine to Medium Sand with Small Roots (SM)		2.	SS-2	5	5	5	10	
		Residuum - Loose to Firm Brown, Light Brown, and Dark Brown Micaceous Silty Fine to Medium Sand (SM)		4.	SS-3	3	5	11	16	
294	6.			6.	SS-4	11	16	21	37	
		Dense to Very Firm Brown, Dark Brown, and Gray Micaceous Silty Fine to Coarse Sand (SM)		8.	SS-5	10	11	14	25	
289										
	12.	Very Dense Gray, Brown, and Dark Brown Micaceous Silty Fine to Medium Sand (SM)		13.5	SS-6	18	20	34	54	
284	16.5	Auger Refusal Encountered at 16-1/2 Feet; Boring Terminated								
279										
274										
269										
264										
259										
254										

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	



SC 200 - RBO Wateree Creek Fairfield County, South Carolina File No. 20.131B.1; Project No. BR-BR20(004); PIN No. 33478					LOG OF BORING No. B-16									
Station: 553+00					Offset: 20 Feet Right of Proposed CL									
Date Drilled: 3/22/07			Supervisor: QORE (7272P)			Notes: Coordinates: N34°29.632' W81°00.956'								
Casing Length: N/A			Ground Elevation: 300. Feet											
Hammer Type: <input checked="" type="checkbox"/> Gravity <input type="checkbox"/> Automatic <input checked="" type="checkbox"/> Other: Acker AD II														
Water Level: Not Encountered			Drilling Method: HSA											
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6" 2nd 6" 3rd 6"			N Value	STD. PENETRATION TEST DATA (blows/ft)				
						5	10	20		40	70			
	0.0	Top of Ground												
	0.5	6 Inches Topsoil		0.	SS-1	29	50/4"		100+					>>
		Partially Weathered Rock - Sampled as Very Dense Gray, Brown, and White Micaceous Silty Fine to Medium Sand (PWR) [Very Limited Recovery for SS-1, 2, 3, and 5; No Recovery for SS-4]		2.	SS-2	36	50/4"		100+					>>
				4.	SS-3	50/5"		100+						>>
295				6.	SS-4	50/2"		100+						>>
	8.			8.	SS-5	39	50/4"		100+					>>
290		Partially Weathered Rock - Sampled as Very Dense Gray, White, and Brown Micaceous Silty Fine to Coarse Sand with Gravel (PWR)												
	12.	Auger Refusal Encountered at 12 Feet; Boring Terminated												
285														
280														
275														
270														
265														
260														
255														

LEGEND

SAMPLER TYPE

SS - Split Spoon
ST - Shelby Tube
AWG - Rock Core, 1-1/8"

NQ - Rock Core, 1-7/8"
CU - Cuttings
CT - Continuous Tube

DRILLING METHOD

HSA - Hollow Stem Auger
CFA - Continuous Flight Augers
DC - Driving Casing

RW - Rotary Wash
RC - Rock Core



SC 200 - RBO Wateree Creek Fairfield County, South Carolina File No. 20.131B.1; Project No. BR-BR20(004); PIN No. 33478					LOG OF BORING No. B-17 Station: 556+50 Offset: 14 Feet Left of Proposed CL					
Date Drilled: 3/23/07			Supervisor: QORE (7272P)			Notes: Coordinates: N34°29.686' W81°00.934'				
Casing Length: N/A			Ground Elevation: 307. Feet							
Hammer Type: <input checked="" type="checkbox"/> Gravity <input type="checkbox"/> Automatic <input checked="" type="checkbox"/> Other: Acker AD II										
Water Level: Not Encountered			Drilling Method: HSA							
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 6"	2nd 6"	3rd 6"	N Value	STD. PENETRATION TEST DATA (blows/ft)
										5 10 20 40 70
	0.0	Top of Ground								
	0.5	6 Inches Topsoil		0.	SS-1	5	5	6	11	
	2.	Fill - Stiff Brown Sandy Clay with Small Roots (CL)		2.	SS-2	12	16	29	45	
	4.	Residuum - Dense Yellowish Brown, Brown, and Gray Silty Fine to Medium Sand (SM)		4.	SS-3	14	17	28	45	
302		Dense Brown, Gray, and Light Brown Micaceous Silty Fine to Medium Sand (SM)		6.	SS-4	9	16	23	39	
297				8.	SS-5	9	14	26	40	
	12.	Partially Weathered Rock - [Classified as PWR Based on N-value; No Recovery for SS-6]		13.5	SS-6	50/1"			100+	
292	15.	Boring Terminated at 15 Feet								
287										
282										
277										
272										
267										
262										

LEGEND

SAMPLER TYPE	
SS - Split Spoon	NQ - Rock Core, 1-7/8"
ST - Shelby Tube	CU - Cuttings
AWG - Rock Core, 1-1/8"	CT - Continuous Tube

DRILLING METHOD	
HSA - Hollow Stem Auger	RW - Rotary Wash
CFA - Continuous Flight Augers	RC - Rock Core
DC - Driving Casing	



SC 200 - RBO Wateree Creek Fairfield County, South Carolina File No. 20.131B.1; Project No. BR-BR20(004); PIN No. 33478					LOG OF BORING No. HA-1					
Date Drilled: 3/22/07 and 3/23/07			Supervisor: QORE (7272P)		Notes: Coordinates: N34°29.559' W81°00.976' Hand auger boring terminated at 6.5 feet, as authorized by Ms. Sara Stone during a telephone conversation on 3/23/07.					
Casing Length: N/A			Ground Elevation: 292. Feet							
Hammer Type: <input checked="" type="checkbox"/> Gravity <input type="checkbox"/> Automatic <input checked="" type="checkbox"/> Other: Dynamic Cone Penet.										
Water Level: 2 Feet at TOB; 2 Feet after 24 Hrs.			Drilling Method: Hand Auger							
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 1-3/4"	2nd 1-3/4"	3rd 1-3/4"	N Value	PENETROMETER TEST DATA (blows/increment)
										5 10 20 40 70
	0.0	Top of Ground								
	0.5	3 Inches Leaves and 3 Inches Topsoil		0.	S-1	2	2	2	2	
	2.	Fill - Soft Reddish Brown and Brown Sandy Clay with Roots (CL)		1.	S-2	4	4	4	4	
		Alluvium - Firm to Soft Brown and Gray Sandy Lean Clay (CL)		2.	S-3	2	8	7	7	
				3.	S-4	4	6	6	6	
287	5.			4.	S-5	3	4	5	4	
	6.5	Residuum - Stiff to Very Stiff Yellowish Brown and Gray Clay (CL)		5.	S-6	8	21	30+	25	
		Hand Auger Refusal Encountered at 6-1/2 Feet; Boring Terminated		6.	S-7	39	30+		30+	
282										
277										
272										
267										
262										
257										
252										
247										

LEGEND

SAMPLER TYPE		DRILLING METHOD	
SS - Split Spoon	NQ - Rock Core, 1-7/8"	HSA - Hollow Stem Auger	RW - Rotary Wash
ST - Shelby Tube	CU - Cuttings	CFA - Continuous Flight Augers	RC - Rock Core
AWG - Rock Core, 1-1/8"	CT - Continuous Tube	DC - Driving Casing	

SC DOT 7272P GFI QOR CORP GDT 6/3/07



SC 200 - RBO Wateree Creek Fairfield County, South Carolina File No. 20.131B.1; Project No. BR-BR20(004); PIN No. 33478					LOG OF BORING No. HA-2 Station: 553+50 Offset: 36 Feet Right of Proposed CL					
Date Drilled: 3/22/07 and 3/23/07			Supervisor: QORE (7272P)			Notes: Coordinates: N34°29.637' W81°00.951' Hand auger boring terminated at 3 feet, as authorized by Ms. Sara Stone during a telephone conversation on 3/23/07.				
Casing Length: N/A			Ground Elevation: 307. Feet							
Hammer Type: <input checked="" type="checkbox"/> Gravity <input type="checkbox"/> Automatic <input checked="" type="checkbox"/> Other: Dynamic Cone Penet.										
Water Level: Not Encountered			Drilling Method: Hand Auger							
Elevation (ft)	Depth (ft)	MATERIAL DESCRIPTION	Graphic Log	Sample Depth (ft)	Sample No./Type	1st 1-3/4"	2nd 1-3/4"	3rd 1-3/4"	N Value	PENETROMETER TEST DATA (blows/increment)
	0.0	Top of Ground								5 10 20 40 70
	0.5	6 Inches Topsoil	1	0.	S-1	3	8	7	7	
	1.5	Cultivated Soil Zone - Firm Yellowish Brown Sandy Lean Clay with Roots (CL)	2	1.	S-2	1	8	10	9	
	3.		3	2.	S-3	2	30+		30+	
		Residuum - Loose to Firm Yellowish Brown, Reddish Brown, and Light Brown Clayey Fine to Medium Sand (SC)								
		Hand Auger Refusal Encountered at 3 Feet; Boring Terminated								
302										
297										
292										
287										
282										
277										
272										
267										
262										

LEGEND

SAMPLER TYPE

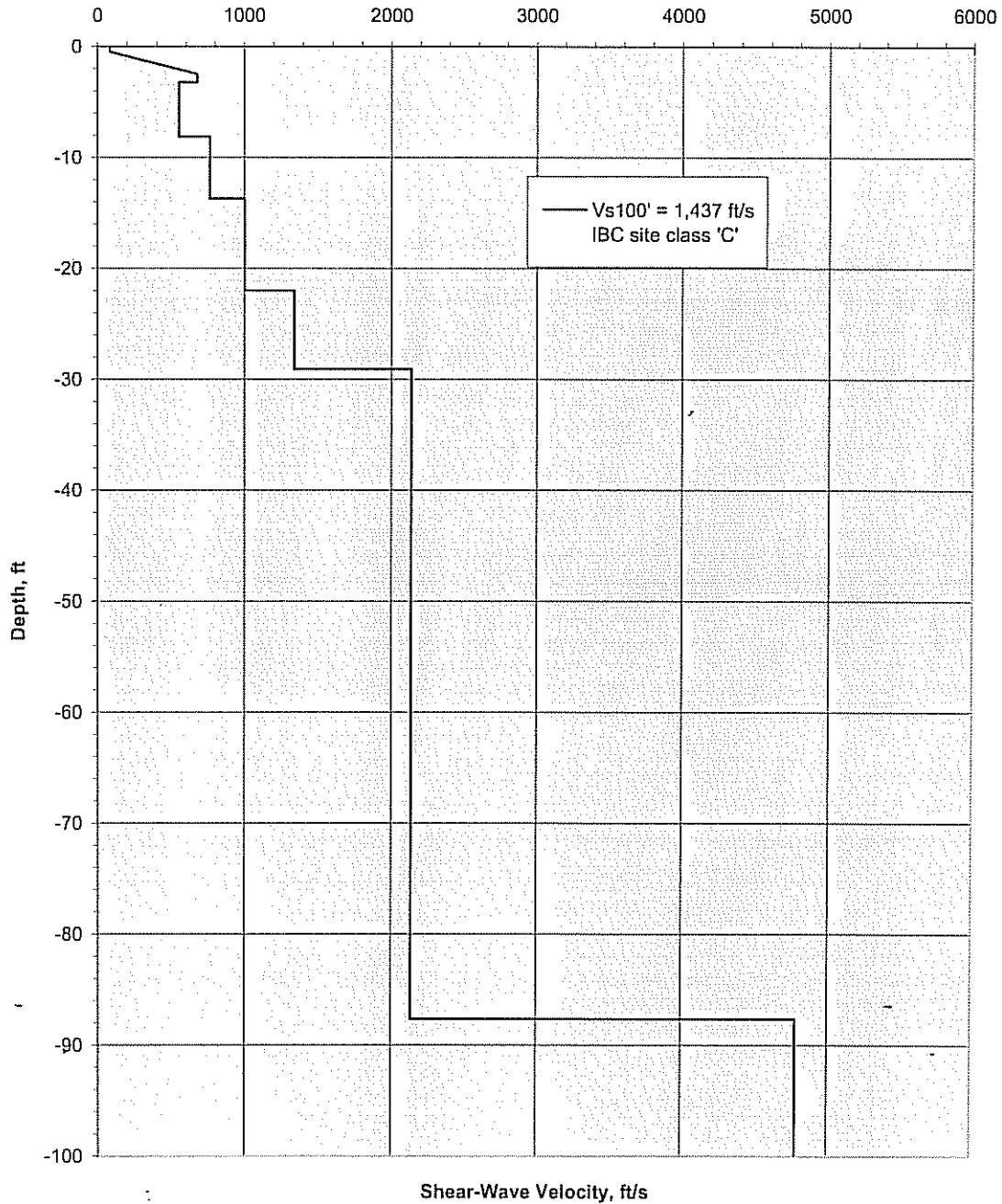
DRILLING METHOD

SS - Split Spoon	NQ - Rock Core, 1-7/8"
ST - Shelby Tube	CU - Cuttings
AWG - Rock Core, 1-1/8"	CT - Continuous Tube

HSA - Hollow Stem Auger	RW - Rotary Wash
CFA - Continuous Flight Augers	RC - Rock Core
DC - Driving Casing	



Job No. 7272P - SC 200 - RBO Wateree Creek
File No. 20.131B.1; Project No. BR-BR20(004); PIN No. 33478
Station: 547+05
Offset: 10 Feet Right of Proposed CL
Boring No. SA-1 Vs Model



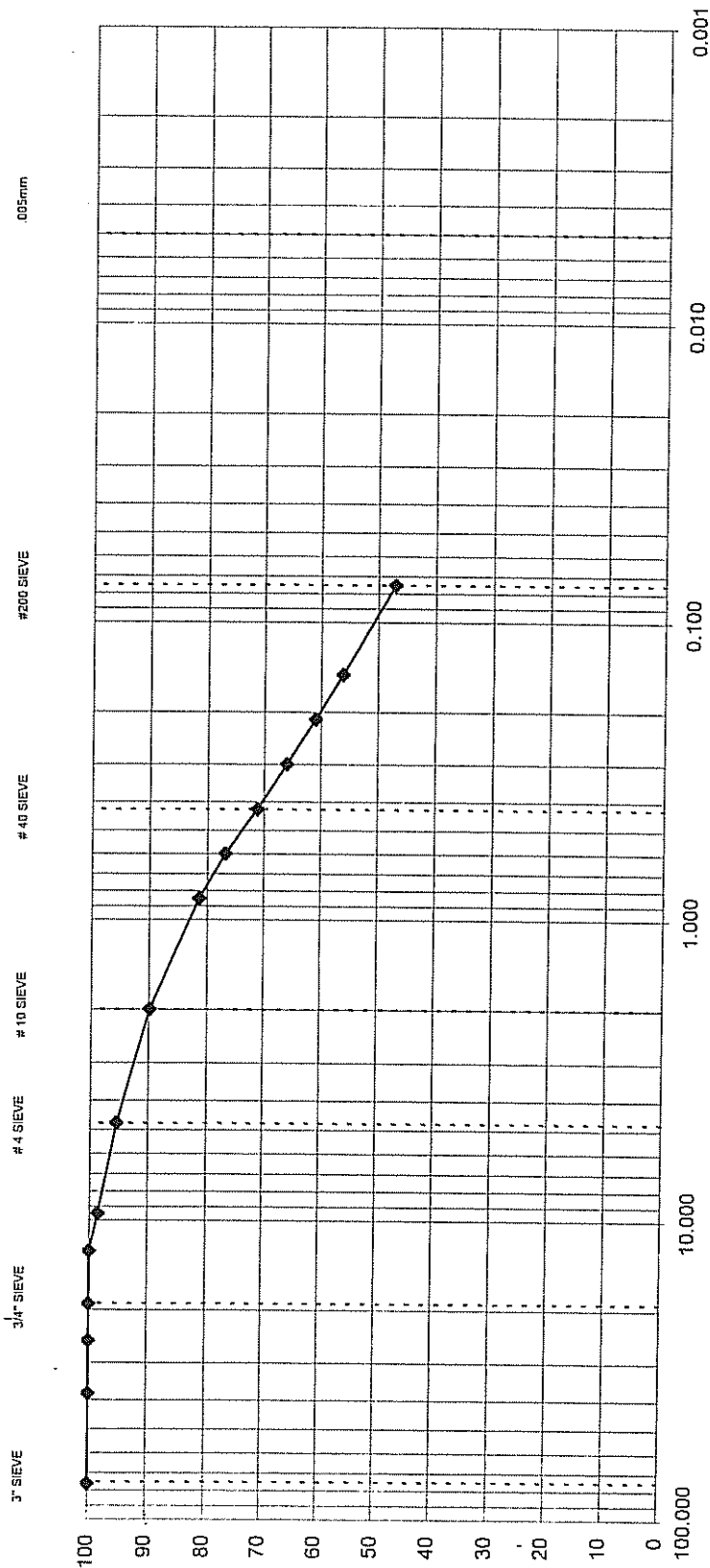


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PROPERTY SCIENCES

GRAIN SIZE DISTRIBUTION TEST REPORT (ASTM D422)



JOB NAME:	SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478				
JOB NO.:	7272P	REPORT NO.:	115605	DATE:	7/23/2007
BORING / PIT NO.:	B-1	DEPTH / ELEV.:	0 - 2'	SAMPLE NO.:	SS-1
SAMPLE LOCATION:	SS				
SOIL DESCRIPTION:	Brown, Reddish Brown, and Dark Brown Clayey Fine to Coarse Sand				
LIQUID LIMIT, %:	37	PLASTICITY INDEX, %:	17	MOISTURE, %:	13.5
D ₁₀ , MM:	-	D ₃₀ , MM:	-	D ₆₀ , MM:	0.21
CLASSIFICATION	UNIFIED:		SC	AASHTO:	A-6(5)
GRAVEL		SAND		FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	CLAY
SP. GRAVITY, G _s : -					
FINES, %: 47.0					
COEFF. OF CURVATURE, C _c : -					
COEFF. OF UNIFORMITY, C _u : -					



GRAIN SIZE IN MILLIMETERS



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PROPERTY SCIENCES

GRAIN SIZE DISTRIBUTION TEST REPORT (ASTM D422)



JOB NAME: SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478

JOB NO.: 7272P REPORT NO.: 115605 DATE: 7/23/2007 REVIEWED BY: KBF

BORING / PIT NO.: B-1 DEPTH / ELEV.: 8' - 10' SAMPLE NO.: SS-5 SAMPLE TYPE: SS

SAMPLE LOCATION: -

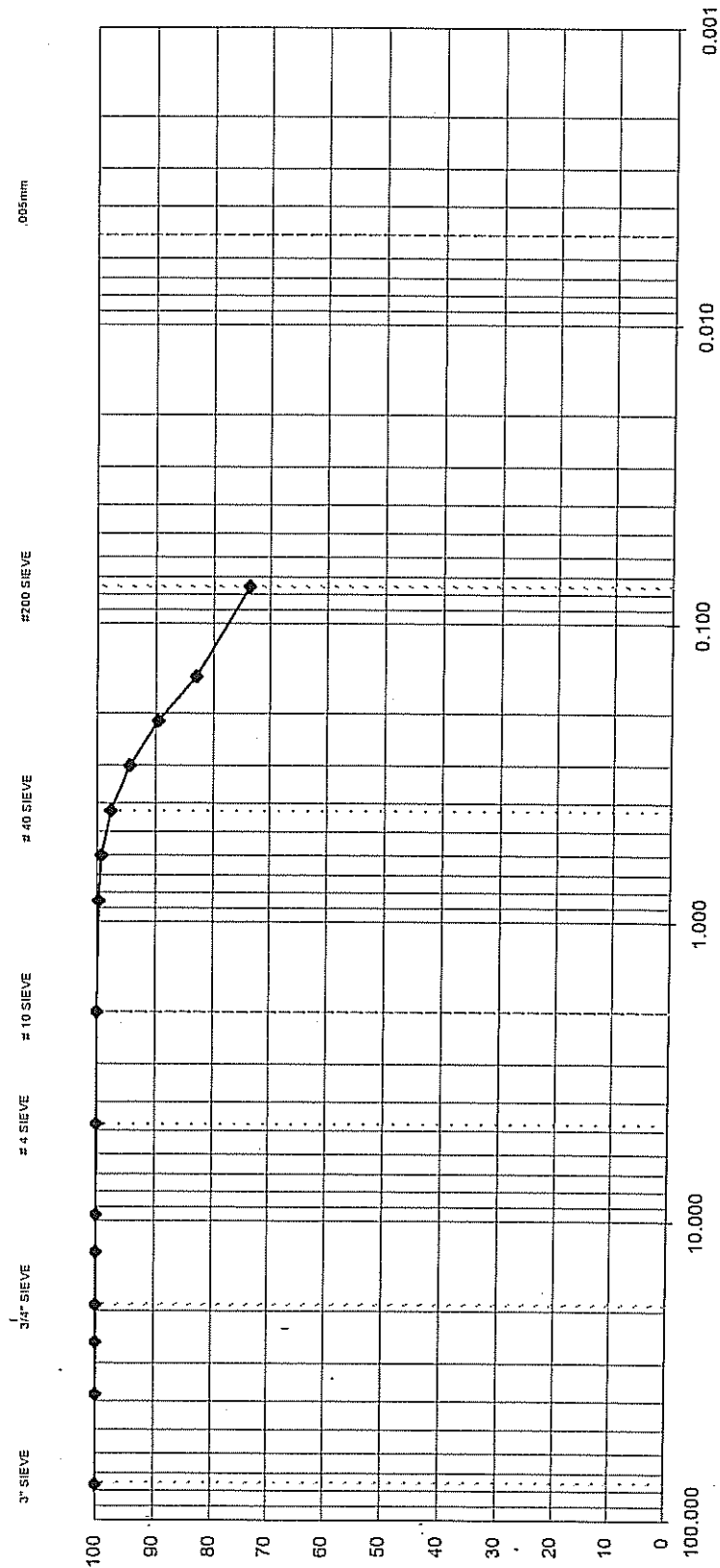
SOIL DESCRIPTION: Brown, Reddish Brown, and Light Brown Slightly Micaceous Elastic Silt with Sand

LIQUID LIMIT, %: 53 PLASTICITY INDEX, %: 23 MOISTURE, %: 23.2 SP. GRAVITY, G_s: -

D₁₀, MM: - D₃₀, MM: - D₆₀, MM: - COEFF. OF CURVATURE, C_c: 73.6

CLASSIFICATION UNIFIED: MH AASHTO: A-7-5(18) COEFF. OF UNIFORMITY, C_u: -

GRAVEL			SAND			FINES		
COARSE	FINE		COARSE	MEDIUM	FINE	SILT	CLAY	



GRAIN SIZE IN MILLIMETERS



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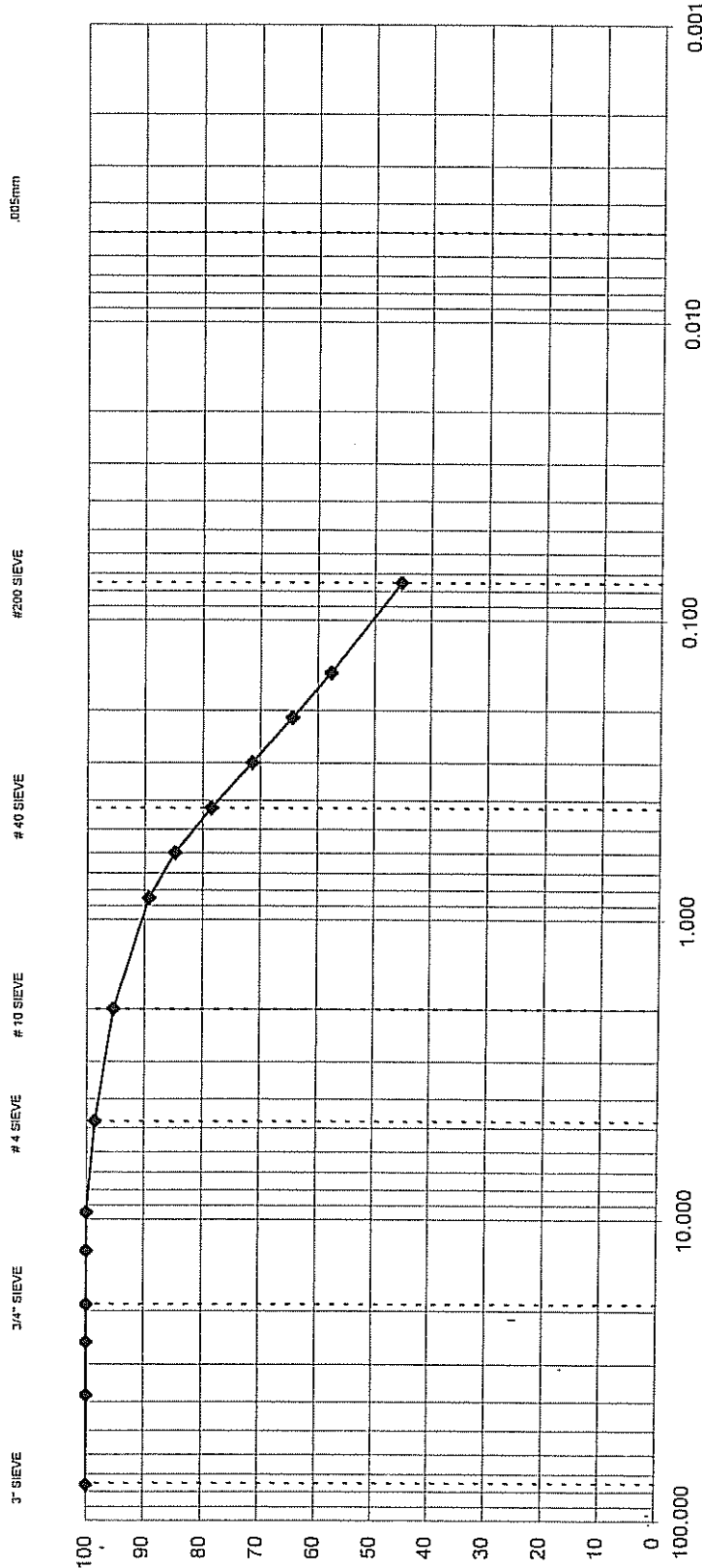
PROPERTY SCIENCES

GRAIN SIZE DISTRIBUTION TEST REPORT (ASTM D422)



JOB NAME:	SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478				
JOB NO.:	7272P	REPORT NO.:	115605	DATE:	7/23/2007
BORING / PIT NO.:	B - 3	DEPTH / ELEV.:	4' - 6'	SAMPLE NO.:	SS-3
SAMPLE LOCATION:	SS				
SOIL DESCRIPTION:	Yellowish Brown, Brown, and Brownish Red Silty, Clayey Fine to Medium Sand				
LIQUID LIMIT, %:	22	PLASTICITY INDEX, %:	5	MOISTURE, %:	10.5
D10, MM:	-	D30, MM:	-	D60, MM:	0.17
CLASSIFICATION	UNIFIED: SC-SM AASHTO: A-4				
	SP. GRAVITY, Gs: -				
	FINES, %: 45.2				
	COEFF. OF CURVATURE, C _c : -				
	COEFF. OF UNIFORMITY, C _u : -				

GRAVEL		SAND		FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	CLAY





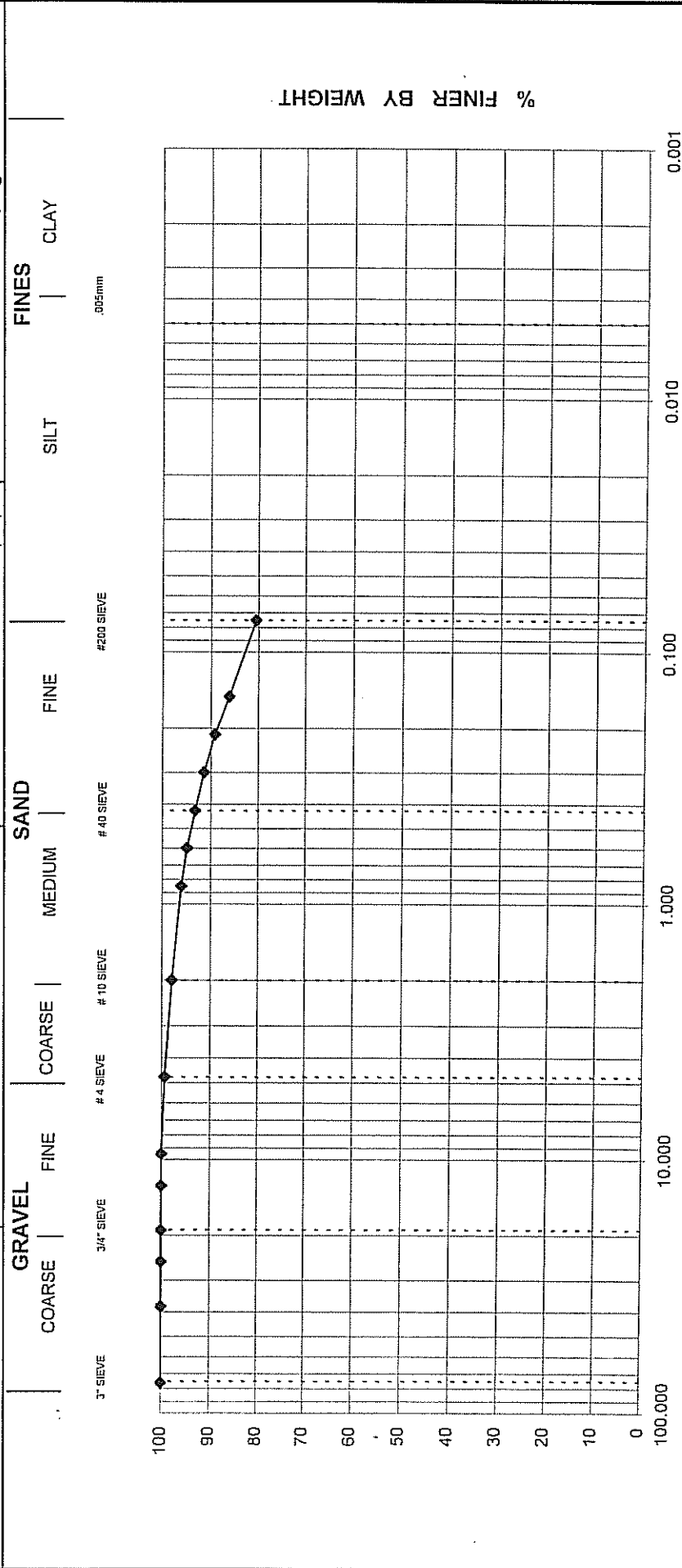
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PROPERTY SCIENCES

GRAIN SIZE DISTRIBUTION TEST REPORT (ASTM D422)



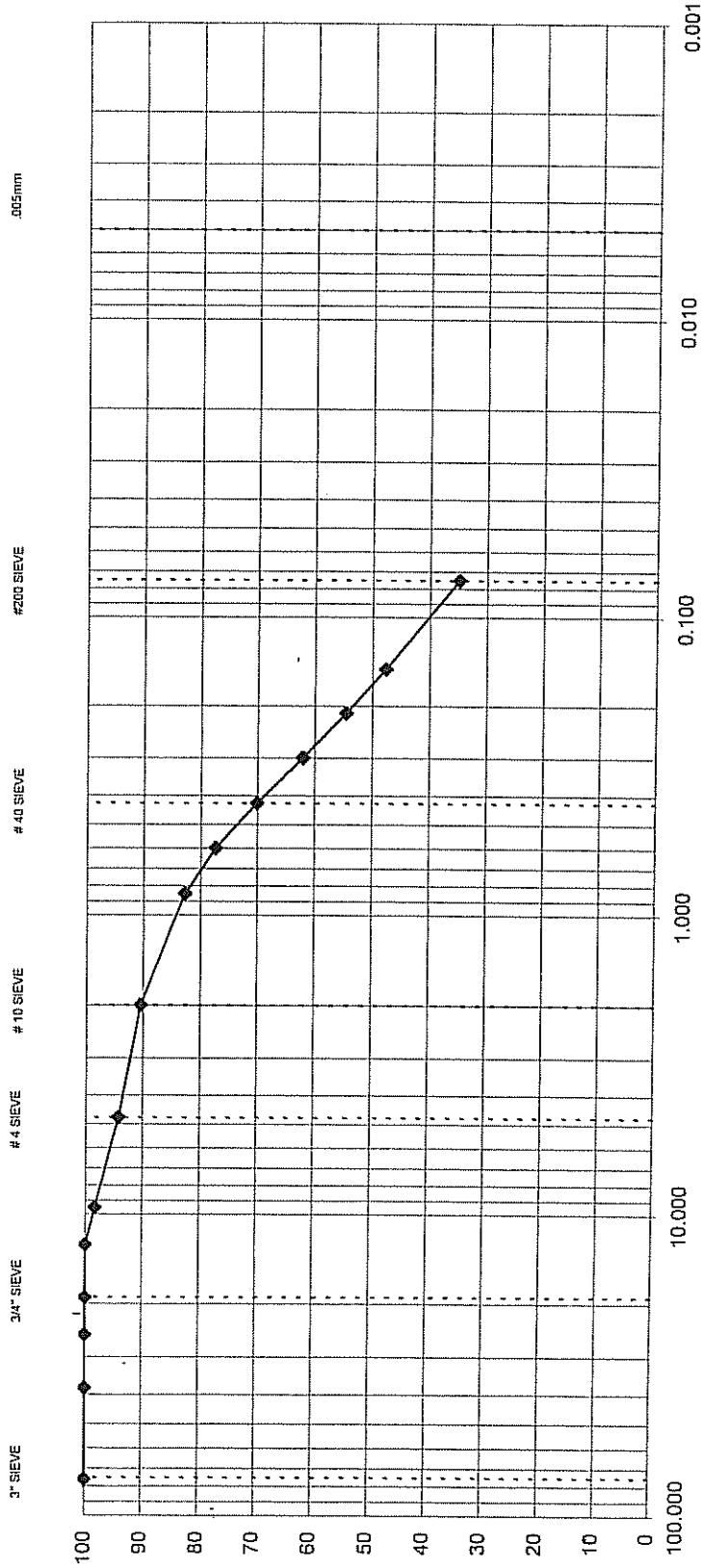
JOB NAME:	SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478				
JOB NO.:	7272P	REPORT NO.:	115605	DATE:	7/23/2007
BORING / PIT NO.:	B - 3	DEPTH / ELEV.:	8' - 10'	SAMPLE NO.:	SS-5
SAMPLE LOCATION:	SS				
SOIL DESCRIPTION:	Gray Lean Clay with Sand				
LIQUID LIMIT, % :	38	PLASTICITY INDEX, % :	18	MOISTURE, % :	26.5
D10, MM :	-	D30, MM :	-	D60, MM :	-
CLASSIFICATION	UNIFIED : CL AASHTO : A-6(14)				
GRAVEL		SAND		FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	SILT
CLAY					



GRAIN SIZE DISTRIBUTION TEST REPORT (ASTM D422)

JOB NAME :	SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478				
JOB NO. :	7272P	REPORT NO. :	115605	DATE :	7/23/2007
BORING / PIT NO. :	B - 4	DEPTH / ELEV. :	4' - 6'	SAMPLE NO. :	SS-3
SAMPLE LOCATION :	SS				
SOIL DESCRIPTION :	Brown, Dark Brown, and Reddish Brown Silty Fine to Medium Sand				
LIQUID LIMIT, % :	18	PLASTICITY INDEX, % :	NP	MOISTURE, % :	8.0
D10, MM :	-	D30, MM :	-	D60, MM :	0.27
CLASSIFICATION	UNIFIED : SM AASHTO : A-2-4				
	SP. GRAVITY, Gs : -				
	FINES, % : 34.9				
	COEFF. OF CURVATURE, C _c : -				
	COEFF. OF UNIFORMITY, C _u : -				

GRAVEL		SAND		FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	CLAY

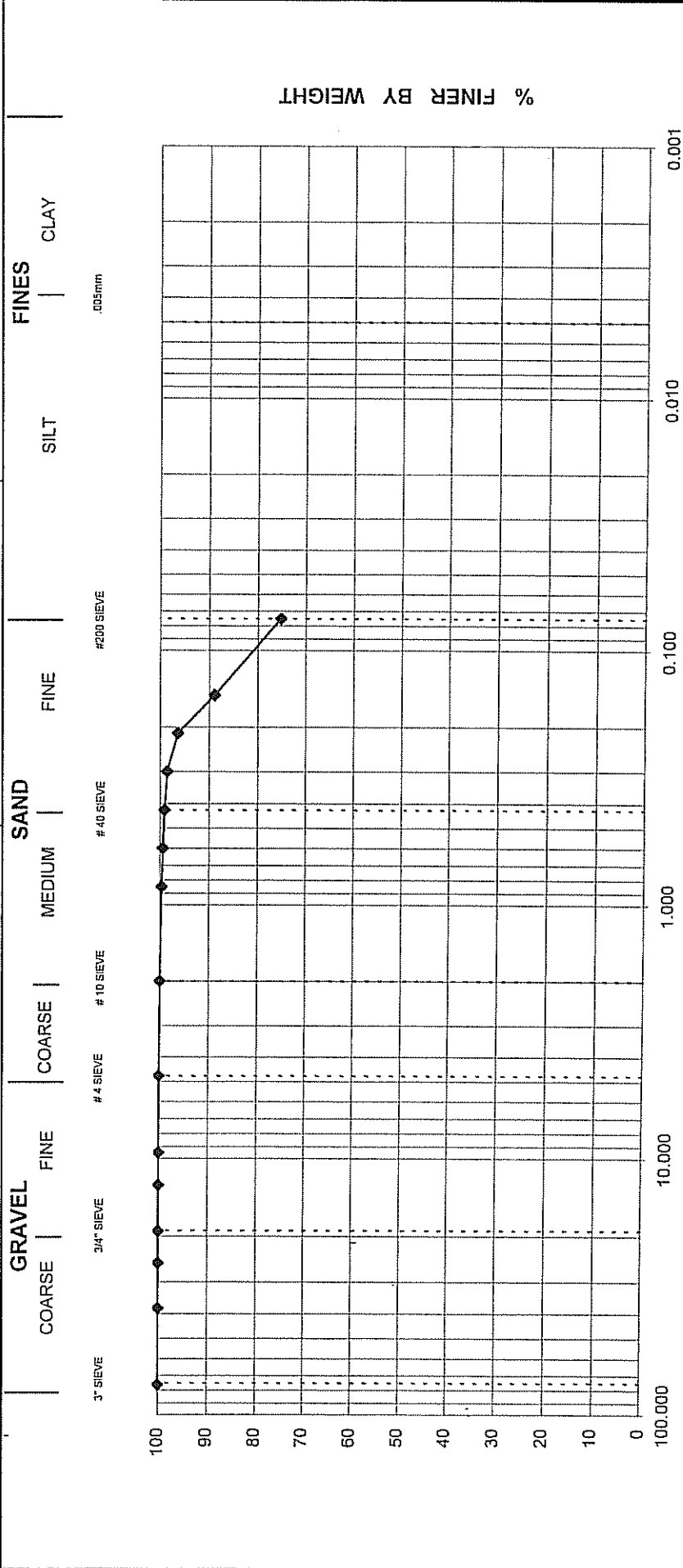


GRAIN SIZE IN MILLIMETERS

GRAIN SIZE DISTRIBUTION TEST REPORT

(ASTM D422)

JOB NAME :	SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478				
JOB NO. :	7272P	REPORT NO. :	115605	DATE :	7/23/2007
REVIEWED BY :	KBF				
BORING / PIT NO. :	B-4	DEPTH / ELEV. :	13.5' - 15'	SAMPLE NO. :	SS-6
SAMPLE TYPE :	SS				
SAMPLE LOCATION :	-				
SOIL DESCRIPTION :	Brown, Gray, and Brownish Gray Silty Clay with Sand				
LIQUID LIMIT, % :	21	PLASTICITY INDEX, % :	5	MOISTURE, % :	31.8
D10, MM :	-	D30, MM :	-	COEFF. OF CURVATURE, C_c :	-
CLASSIFICATION	UNIFIED : CL-ML AASHTO : A-4(1)				
SP. GRAVITY, G_s :	-				
FINES, % :	75.2				
COEFF. OF UNIFORMITY, C_u :	-				





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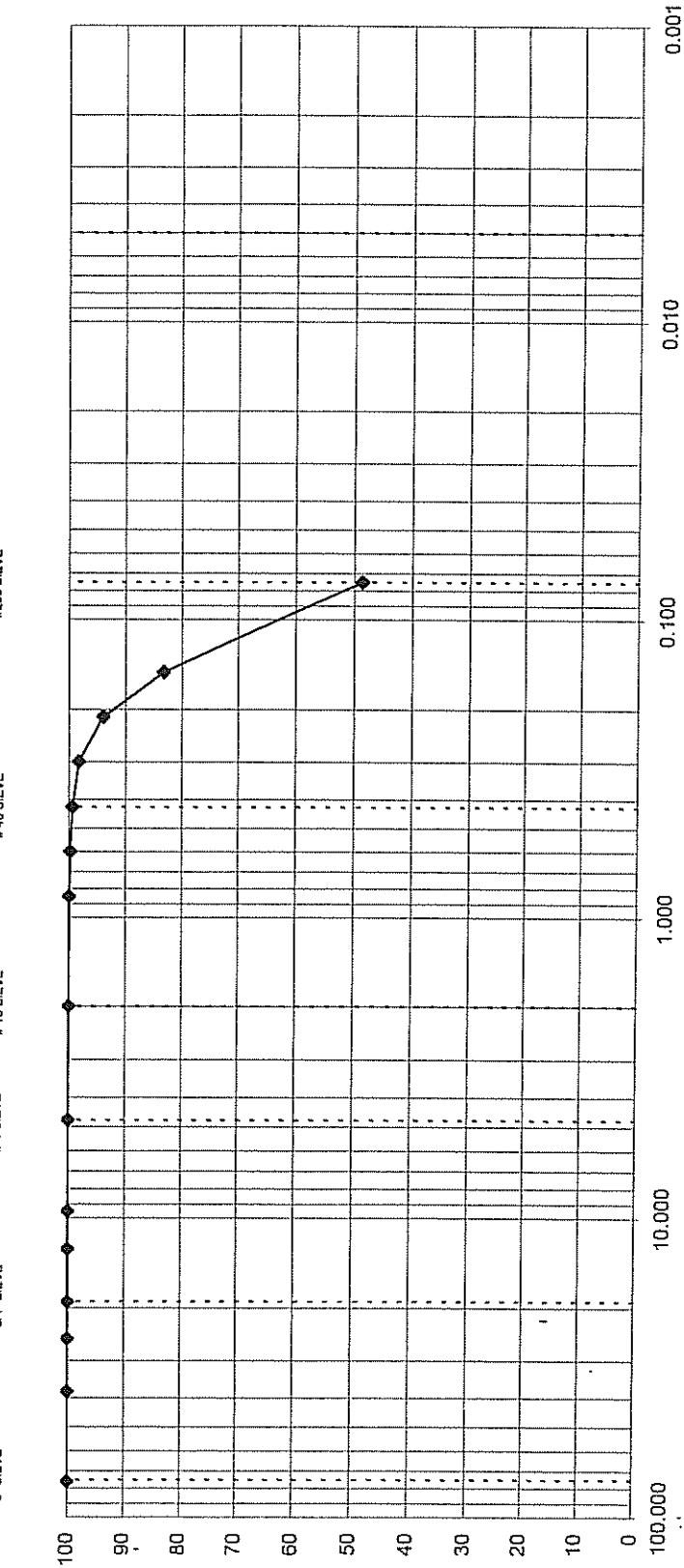
PROPERTY SCIENCES

GRAIN SIZE DISTRIBUTION TEST REPORT (ASTM D422)



JOB NAME :	SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478				
JOB NO. :	7272P	REPORT NO. :	115605	DATE :	7/23/2007
BORING / PIT NO. :	B - 4	DEPTH / ELEV. :	18.5' - 20'	SAMPLE NO. :	SS-7
SAMPLE LOCATION :	SS				
SOIL DESCRIPTION :	Brown, Grayish Brown, and Reddish Brown Silty Fine Sand				
LIQUID LIMIT, % :	22	PLASTICITY INDEX, % :	1	MOISTURE, % :	21.1
D10, MM :	-	D30, MM :	-	D60, MM :	0.095
CLASSIFICATION	UNIFIED : SM AASHTO : A-4				
SP. GRAVITY, Gs :	-				
FINES, % :	48.6				
COEFF. OF CURVATURE, C _c :	-				
COEFF. OF UNIFORMITY, C _u :	-				

GRAVEL		SAND		FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	CLAY
3" SIEVE	3/4" SIEVE	#4 SIEVE	#10 SIEVE	#40 SIEVE	#200 SIEVE
					.005mm



GRAIN SIZE IN MILLIMETERS

% FINER BY WEIGHT



Q O R E
PROPERTY SCIENCES

PARTICLE-SIZE DISTRIBUTION TEST REPORT

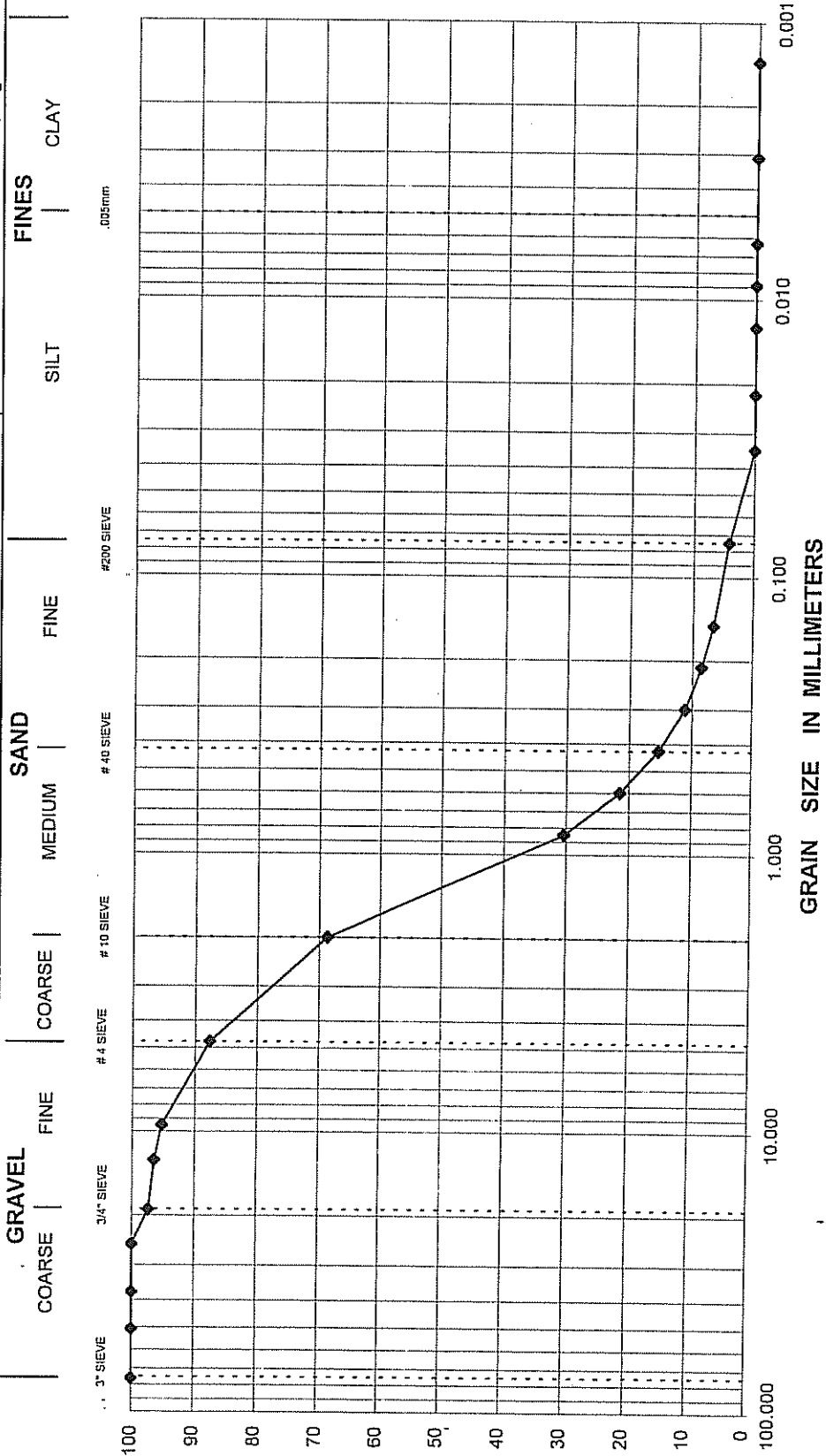
SIEVE AND HYDROMETER

ASTM D422



REV1.0/1703

JOB NAME :	SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478				
JOB NO. :	7272P	REPORT NO. :	115605	DATE :	7/24/07
BORING / PIT NO. :	B - 5	DEPTH / ELEV. :	16' - 18'	SAMPLE NO. :	SS-1
SAMPLE LOCATION :					
SOIL DESCRIPTION : Brown and Gray Well-Graded Fine to Coarse Sand					
LIQUID LIMIT, % :	N/A	PLASTICITY INDEX, % :	N/A	MOISTURE, % :	13.7
D10, MM :	0.26	D30, MM :	0.84	D60, MM :	1.7
CLASSIFICATION	UNIFIED :	[SW]	AASHTO :	[A-1-b]	
					SP. GRAVITY, G _s :
					FINES, % :
					COEFF. OF CURVATURE, C _c :
					COEFF. OF UNIFORMITY, C _u :



PARTICLE-SIZE DISTRIBUTION TEST REPORT

SIEVE AND HYDROMETER

ASTM D422



REV1.B/17/03

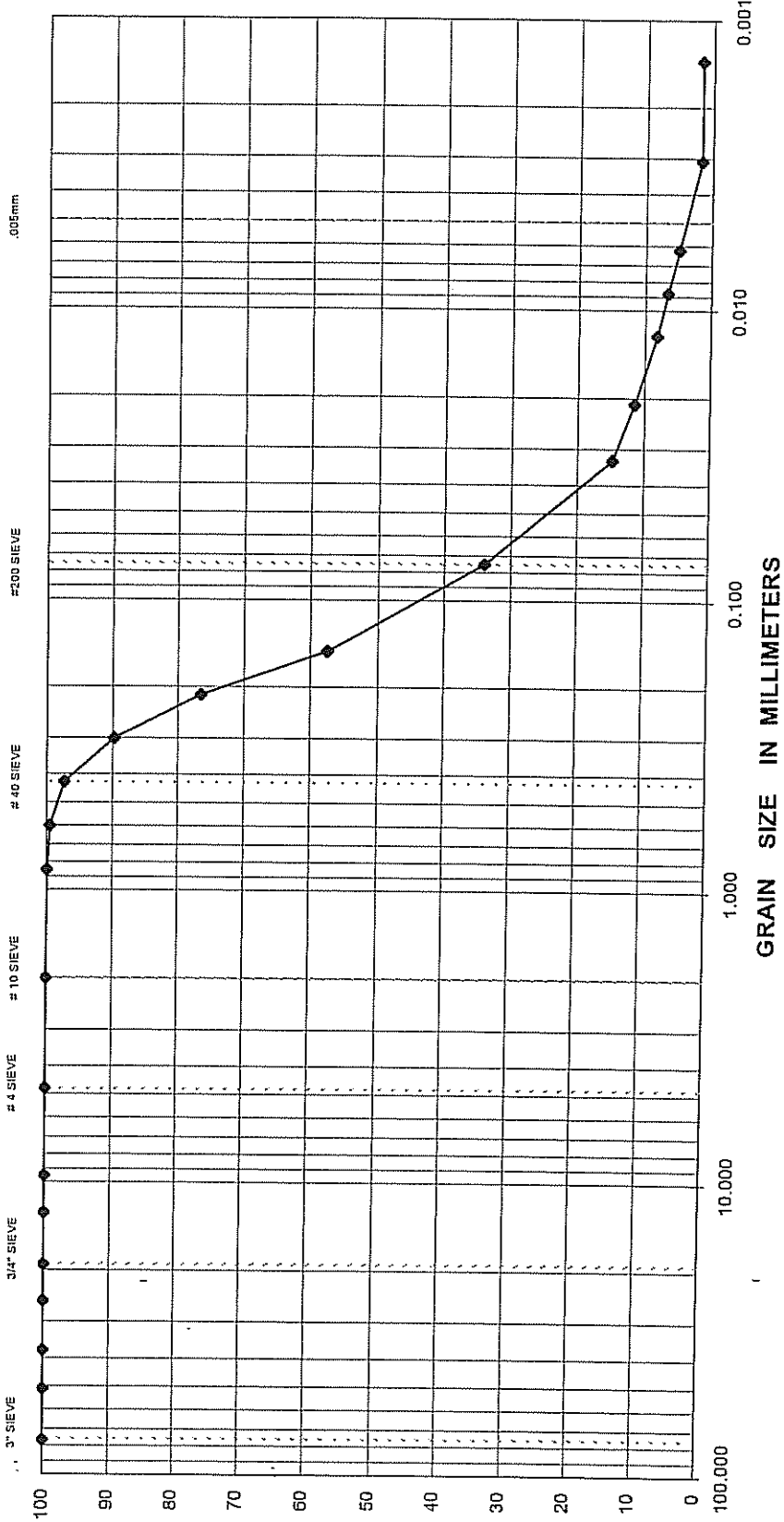
JOB NAME : SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478

JOB NO. :	7272P	REPORT NO. :	115605	DATE :	7/24/07	REVIEWED BY :	KBF
BORING / PIT NO. :	B - 5	DEPTH / ELEV. :	20' - 22'	SAMPLE NO. :	SS-3	SAMPLE TYPE :	SS

SAMPLE LOCATION :

SOIL DESCRIPTION : Gray Silty Fine Sand with Small Roots		SP. GRAVITY, G _s :	2.73
LIQUID LIMIT, % :	N/A	MOISTURE, % :	21.1
D ₁₀ , MM :	0.017	D ₆₀ , MM :	0.063
PLASTICITY INDEX, % :	N/A	COEFF. OF CURVATURE, C _c :	1.4
CLASSIFICATION :	UNIFIED : [SM]	AASHTO : [A-2-4]	COEFF. OF UNIFORMITY, C _u :
			10.0

GRAVEL		SAND		FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	CLAY

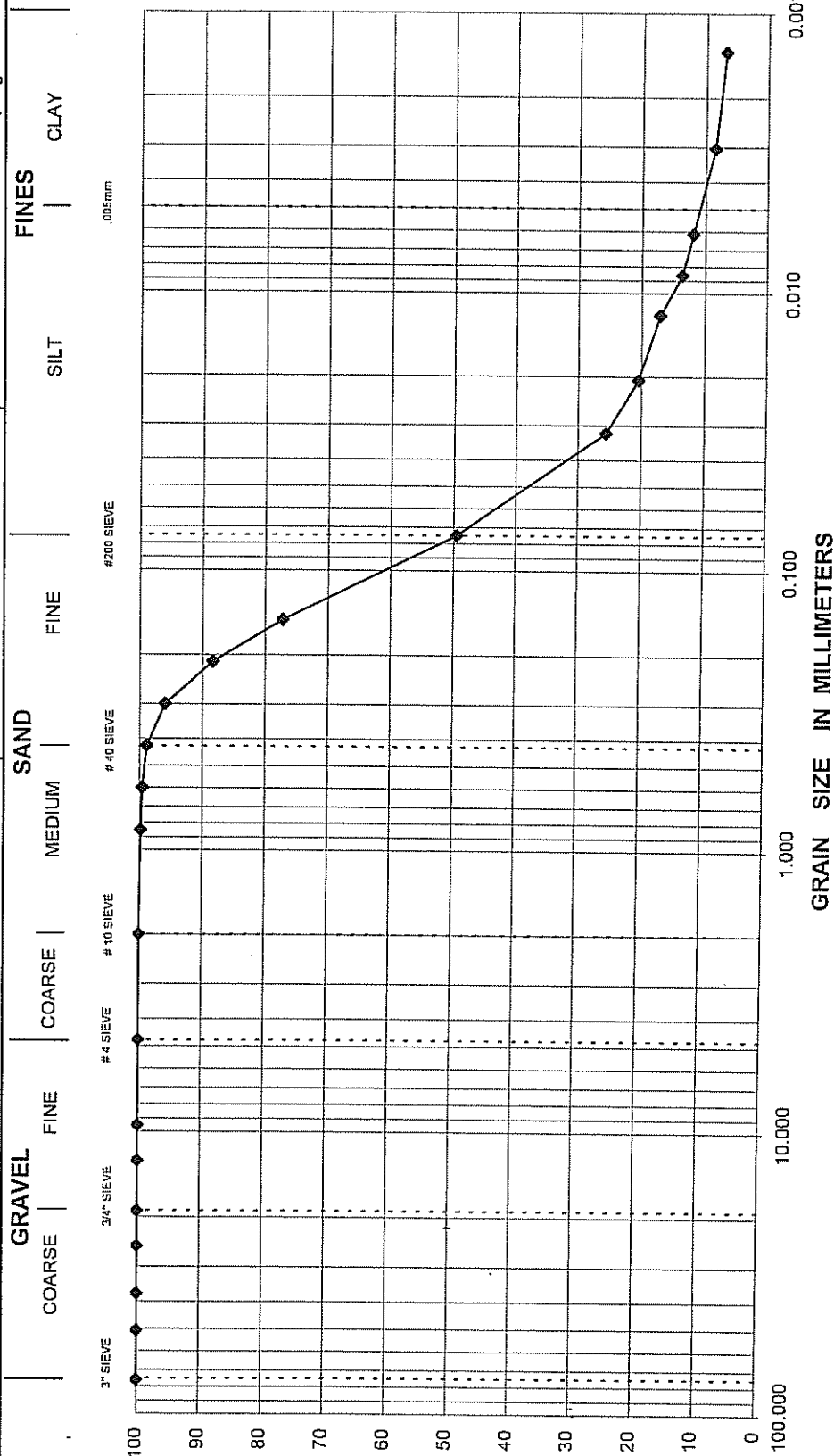


PARTICLE-SIZE DISTRIBUTION TEST REPORT SIEVE AND HYDROMETER

REV1.0/1703



JOB NAME :		SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478			
JOB NO. :	7272P	REPORT NO. :	115605	DATE :	7/24/07
BORING / PIT NO. :	B - 5	DEPTH / ELEV. :	22' - 24'	SAMPLE NO. :	SS-4
SAMPLE LOCATION :		SS			
SOIL DESCRIPTION : Gray and Brown Silty Fine Sand					
LIQUID LIMIT, % :	-	PLASTICITY INDEX, % :	NP	MOISTURE, % :	20.6
D10, MM :	0.0041	D30, MM :	0.038	D60, MM :	0.098
CLASSIFICATION		UNIFIED :	SM	AASHTO :	A-4
		SP. GRAVITY, Gs :		2.70	
		FINES, % :		49.5	
		COEFF. OF CURVATURE, C _c :		3.6	
		COEFF. OF UNIFORMITY, C _u :		23.9	

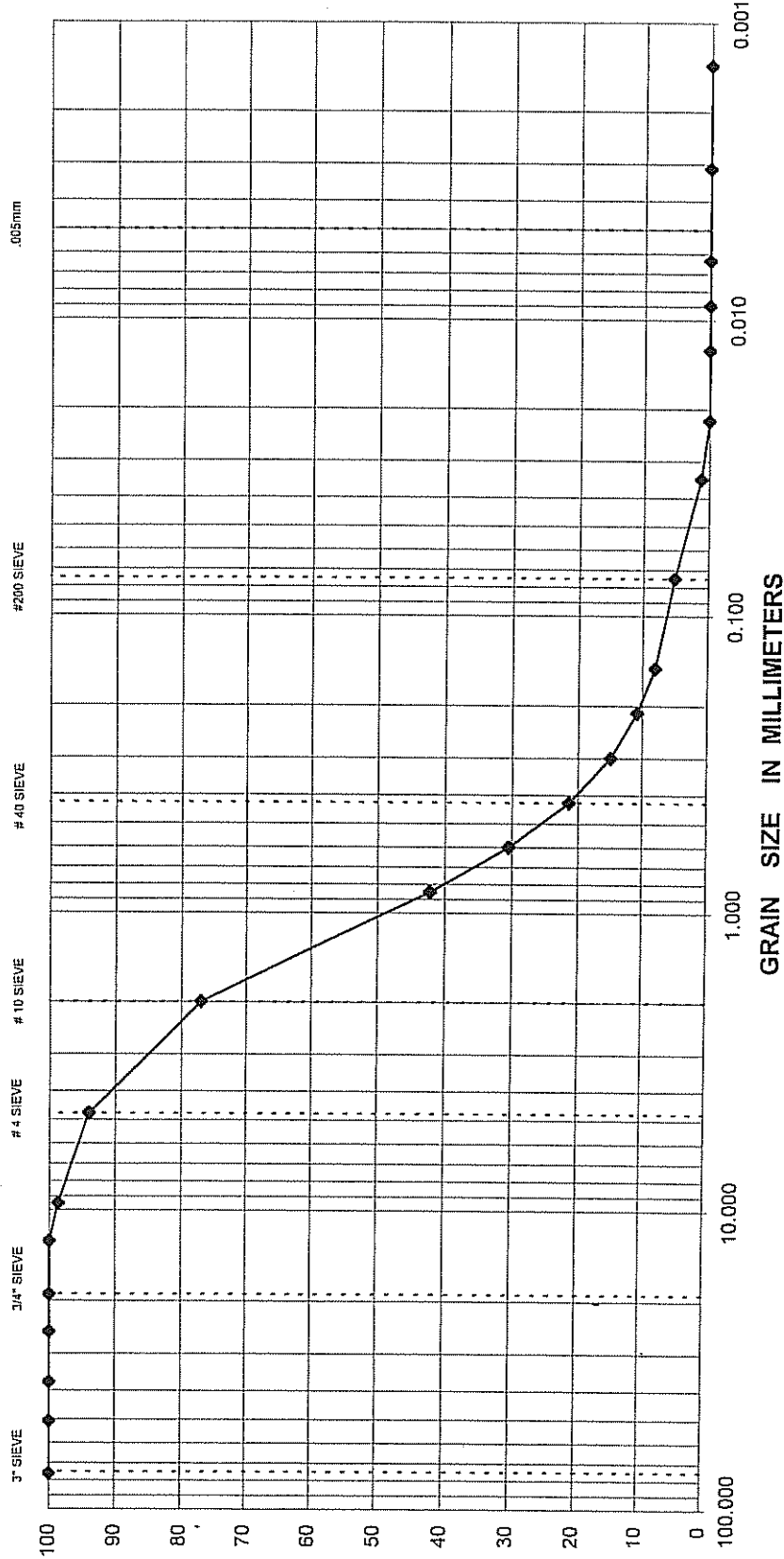


PARTICLE-SIZE DISTRIBUTION TEST REPORT SIEVE AND HYDROMETER

REV1, 9/17/03

JOB NAME :	SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478			
JOB NO. :	7272P	REPORT NO. :	115605	DATE : 7/24/07
BORING / PIT NO. :	B - 6	DEPTH / ELEV. :	16' - 18'	SAMPLE NO. : SS-1
SAMPLE LOCATION :	SS			
SOIL DESCRIPTION :	Brown and Gray Well-Graded Fine to Coarse Sand with Silt			
LIQUID LIMIT, % :	N/A	PLASTICITY INDEX, % :	N/A	MOISTURE, % : 7.4
D10, MM :	0.19	D30, MM :	0.59	COEFF. OF CURVATURE, C _c : 1.3
CLASSIFICATION	UNIFIED :	[SW-SM]	AASHTO :	[A-1-b]
				COEFF. OF UNIFORMITY, C _u : 7.4

GRAVEL		SAND		FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	CLAY



PARTICLE-SIZE DISTRIBUTION TEST REPORT SIEVE AND HYDROMETER ASTM D422

REV1, 9/17/03

JOB NAME : SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478

JOB NO. : 7272P REPORT NO. : 115605 DATE : 7/24/07 REVIEWED BY : *KLF*

BORING / PIT NO. : B - 6 DEPTH / ELEV. : 18' - 20' SAMPLE NO. : SS-2 SAMPLE TYPE : SS

SAMPLE LOCATION :

SOIL DESCRIPTION : Brown and Gray Well-Graded Fine to Coarse Sand with Silt

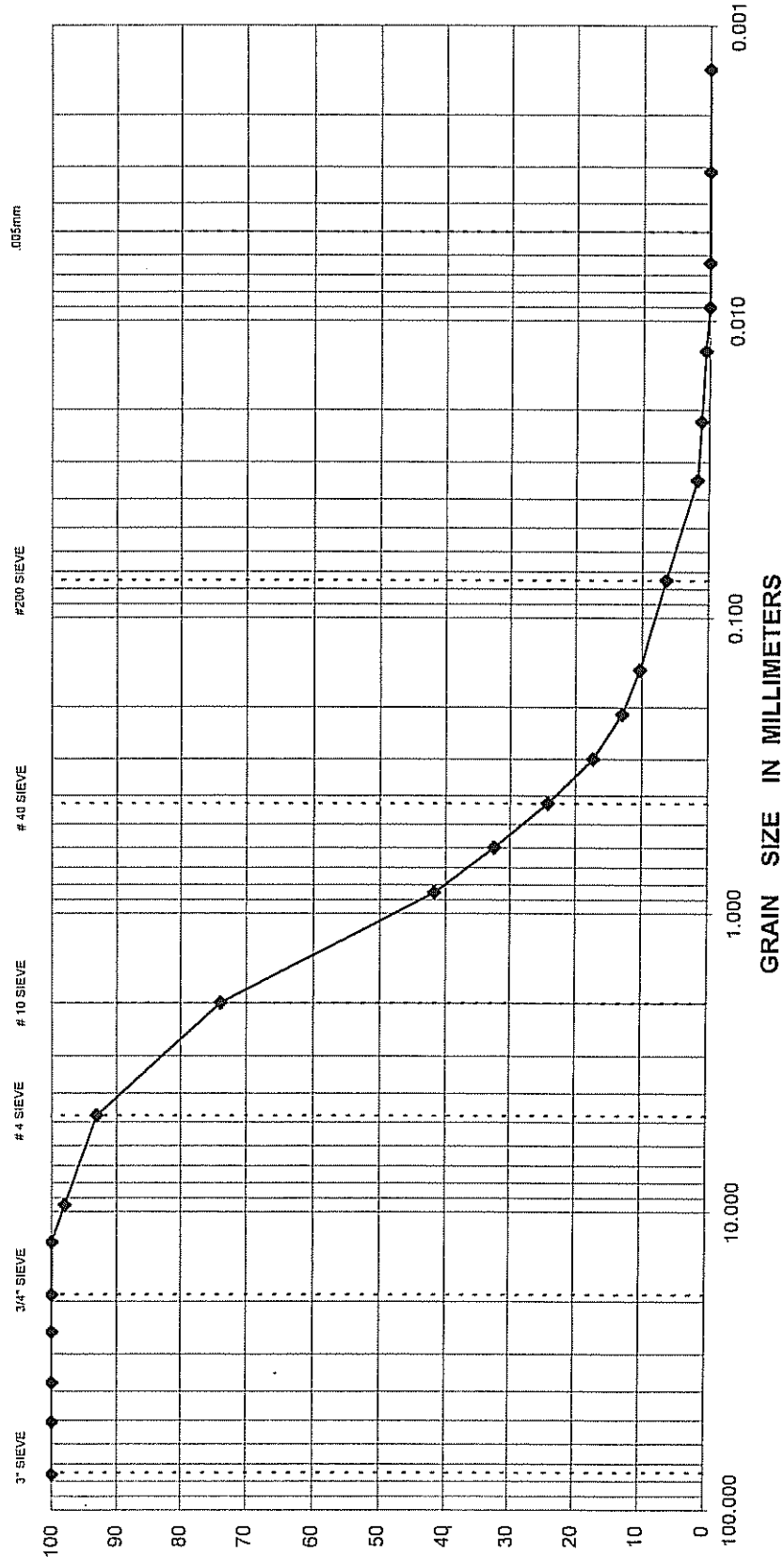
LIQUID LIMIT, % : N/A PLASTICITY INDEX, % : N/A MOISTURE, % : 11.6 SP. GRAVITY, G_s : 2.70

D₁₀, MM : 0.15 D₃₀, MM : 0.54 D₆₀, MM : 1.4 COEFF. OF CURVATURE, C_c : 6.4

CLASSIFICATION UNIFIED : [SW-SM] AASHTO : [A-1-b] COEFF. OF UNIFORMITY, C_u : 1.4

CLASSIFICATION UNIFIED : [SW-SM] AASHTO : [A-1-b] COEFF. OF UNIFORMITY, C_u : 9.3

GRAVEL		SAND		FINES	
COARSE	FINE	COARSE	FINE	SILT	CLAY



PARTICLE-SIZE DISTRIBUTION TEST REPORT **SIEVE AND HYDROMETER** **ASTM D422**

REV1, 9/17/03

JOB NAME : SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478

JOB NO. : 7272P **REPORT NO. :** 115605 **DATE :** 7/24/07 **REVIEWED BY :** *KBF*

BORING / PIT NO. : B - 6 **DEPTH / ELEV. :** 20' - 22' **SAMPLE NO. :** SS-3 **SAMPLE TYPE :** SS

SAMPLE LOCATION :

SOIL DESCRIPTION : Brown and Gray Well-Graded Fine to Coarse Sand with Silt

LIQUID LIMIT, % : N/A **PLASTICITY INDEX, % :** N/A **MOISTURE, % :** 11.6 **SP. GRAVITY, Gs :** 2.69

D10, MM : 0.037 **D30, MM :** 0.23 **D60, MM :** 0.95 **COEFF. OF CURVATURE, C_c :** 11.9

CLASSIFICATION **UNIFIED :** [SW-SM] **AASHTO :** [A-1-b] **COEFF. OF UNIFORMITY, C_u :** 1.5

GRAVEL **COARSE** **FINE** **SAND** **MEDIUM** **FINE** **SILT** **CLAY**

FINES

GRAVEL **COARSE** **FINE** **SAND** **MEDIUM** **FINE** **SILT** **CLAY**

GRAVEL **COARSE** **FINE** **SAND** **MEDIUM** **FINE** **SILT** **CLAY**

GRAVEL **COARSE** **FINE** **SAND** **MEDIUM** **FINE** **SILT** **CLAY**

GRAVEL **COARSE** **FINE** **SAND** **MEDIUM** **FINE** **SILT** **CLAY**

GRAVEL **COARSE** **FINE** **SAND** **MEDIUM** **FINE** **SILT** **CLAY**

GRAVEL **COARSE** **FINE** **SAND** **MEDIUM** **FINE** **SILT** **CLAY**

GRAVEL **COARSE** **FINE** **SAND** **MEDIUM** **FINE** **SILT** **CLAY**

GRAVEL **COARSE** **FINE** **SAND** **MEDIUM** **FINE** **SILT** **CLAY**

GRAVEL **COARSE** **FINE** **SAND** **MEDIUM** **FINE** **SILT** **CLAY**

GRAVEL **COARSE** **FINE** **SAND** **MEDIUM** **FINE** **SILT** **CLAY**

GRAVEL **COARSE** **FINE** **SAND** **MEDIUM** **FINE** **SILT** **CLAY**

GRAVEL **COARSE** **FINE** **SAND** **MEDIUM** **FINE** **SILT** **CLAY**

GRAVEL **COARSE** **FINE** **SAND** **MEDIUM** **FINE** **SILT** **CLAY**

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GRAVEL **COARSE** **FINE** **SAND** **MEDIUM** **FINE** **SILT** **CLAY**

GRAVEL **COARSE** **FINE** **SAND** **MEDIUM** **FINE** **SILT** **CLAY**

GRAVEL **COARSE** **FINE** **SAND** **MEDIUM** **FINE** **SILT** **CLAY**

GRAVEL **COARSE** **FINE** **SAND** **MEDIUM** **FINE** **SILT** **CLAY**

GRAVEL **COARSE** **FINE** **SAND** **MEDIUM** **FINE** **SILT** **CLAY**

GRAVEL **COARSE** **FINE** **SAND** **MEDIUM** **FINE** **SILT** **CLAY**

GRAVEL **COARSE** **FINE** **SAND** **MEDIUM** **FINE** **SILT** **CLAY**

GRAVEL **COARSE** **FINE** **SAND** **MEDIUM** **FINE** **SILT** **CLAY**

GRAVEL **COARSE** **FINE** **SAND** **MEDIUM** **FINE** **SILT** **CLAY**

GRAVEL **COARSE** **FINE** **SAND** **MEDIUM** **FINE** **SILT** **CLAY**

GRAVEL **COARSE** **FINE** **SAND** **MEDIUM** **FINE** **SILT** **CLAY**

GRAVEL **COARSE** **FINE** **SAND** **MEDIUM** **FINE** **SILT** **CLAY**

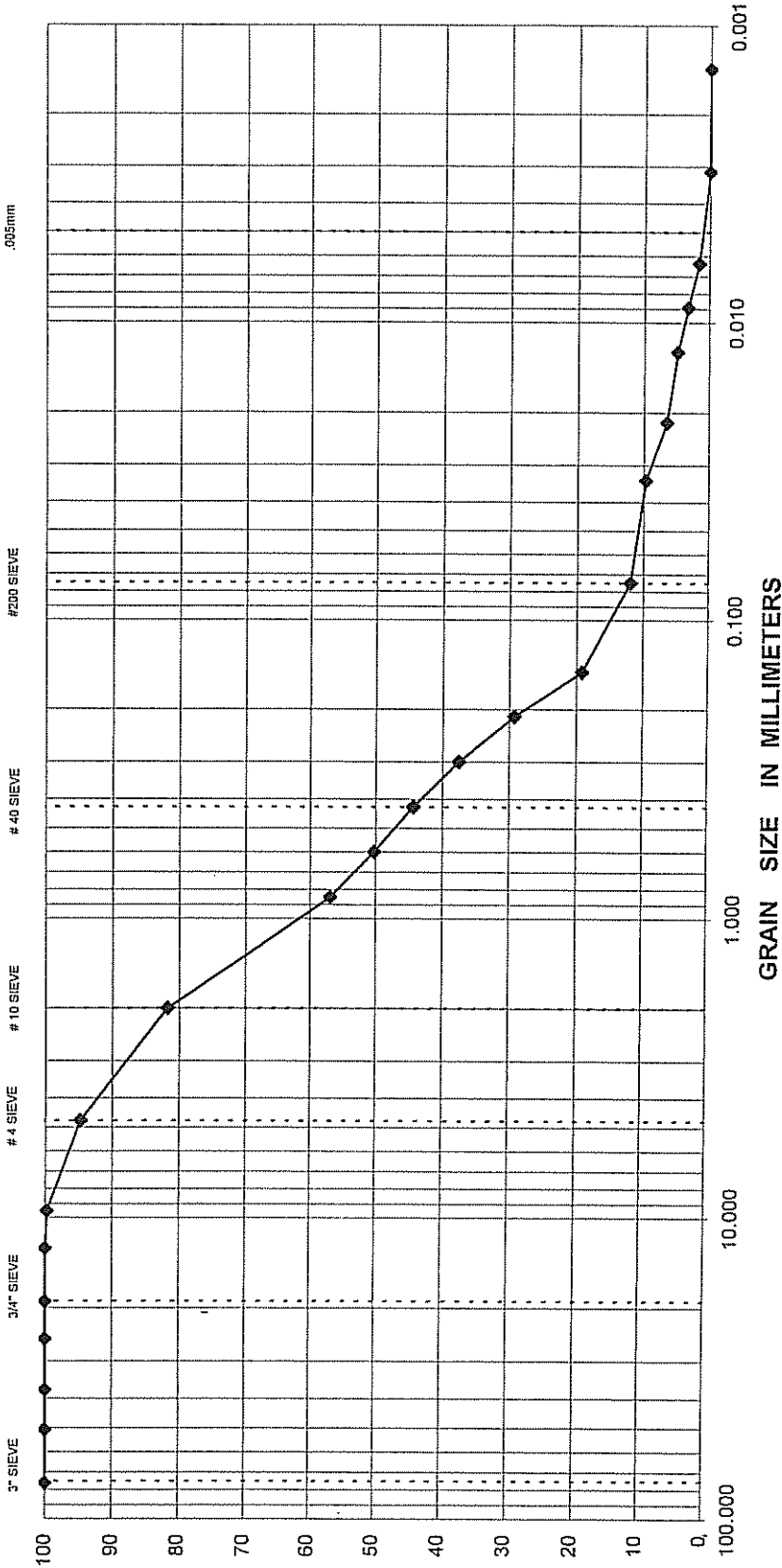
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GRAVEL **COARSE** **FINE** **SAND** **MEDIUM** **FINE** **SILT** **CLAY**

GRAVEL **COARSE** **FINE** **SAND** **MEDIUM** **FINE** **SILT** **CLAY**

GRAVEL **COARSE** **FINE** **SAND** **MEDIUM** **FINE** **SILT** **CLAY**

GRAVEL **COARSE** **FINE** **SAND** **MEDIUM** **FINE** **SILT** **CLAY**



% FINER BY WEIGHT

GRAIN SIZE IN MILLIMETERS



REV1,9/17/03

REPORT NO.:	115605	DATE:	7/24/07	REVIEWED BY: <i>KBF</i>
DEPTH / ELEV.:	16' - 18'	SAMPLE NO.:	SS-1	SAMPLE TYPE: SS
BOHRING / PIT NO.:	B - 7			

SAMPLE LOCATION :

SOIL DESCRIPTION : Brown and Gray Silty Fine to Coarse Sand with Small Roots	SP. GRAVITY, Gs :	2.68
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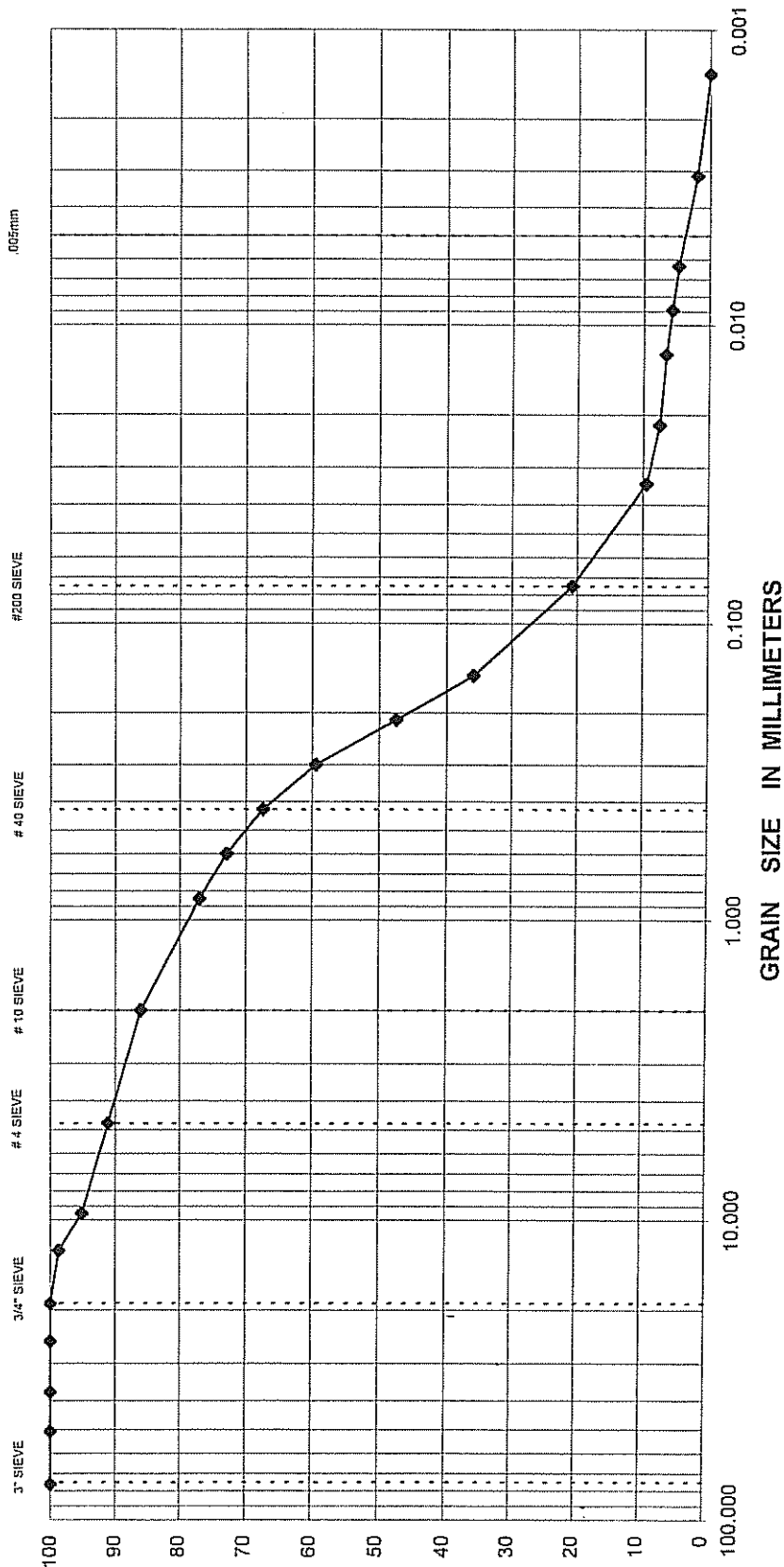
LIQUID LIMIT, % :	-	PLASTICITY INDEX, % :	NP	MOISTURE, % :	17.3	FINES, % :	20.7
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D10, MM :	0.036	D30, MM :	0.13	D60, MM :	0.31	COEFF. OF CURVATURE, C _c :	1.5
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CLASSIFICATION	UNIFIED :	SM	AASHTO :	A-2-4	COEFF. OF UNIFORMITY, C _u :	8.6

	SAND	EINES
	GRAVEL	EINES

FINE SAND		MEDIUM SAND		FINE GRAVEL		COARSE GRAVEL		FINE SILT		MEDIUM SILT		FINE CLAY		MEDIUM CLAY		FINE SILT	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18



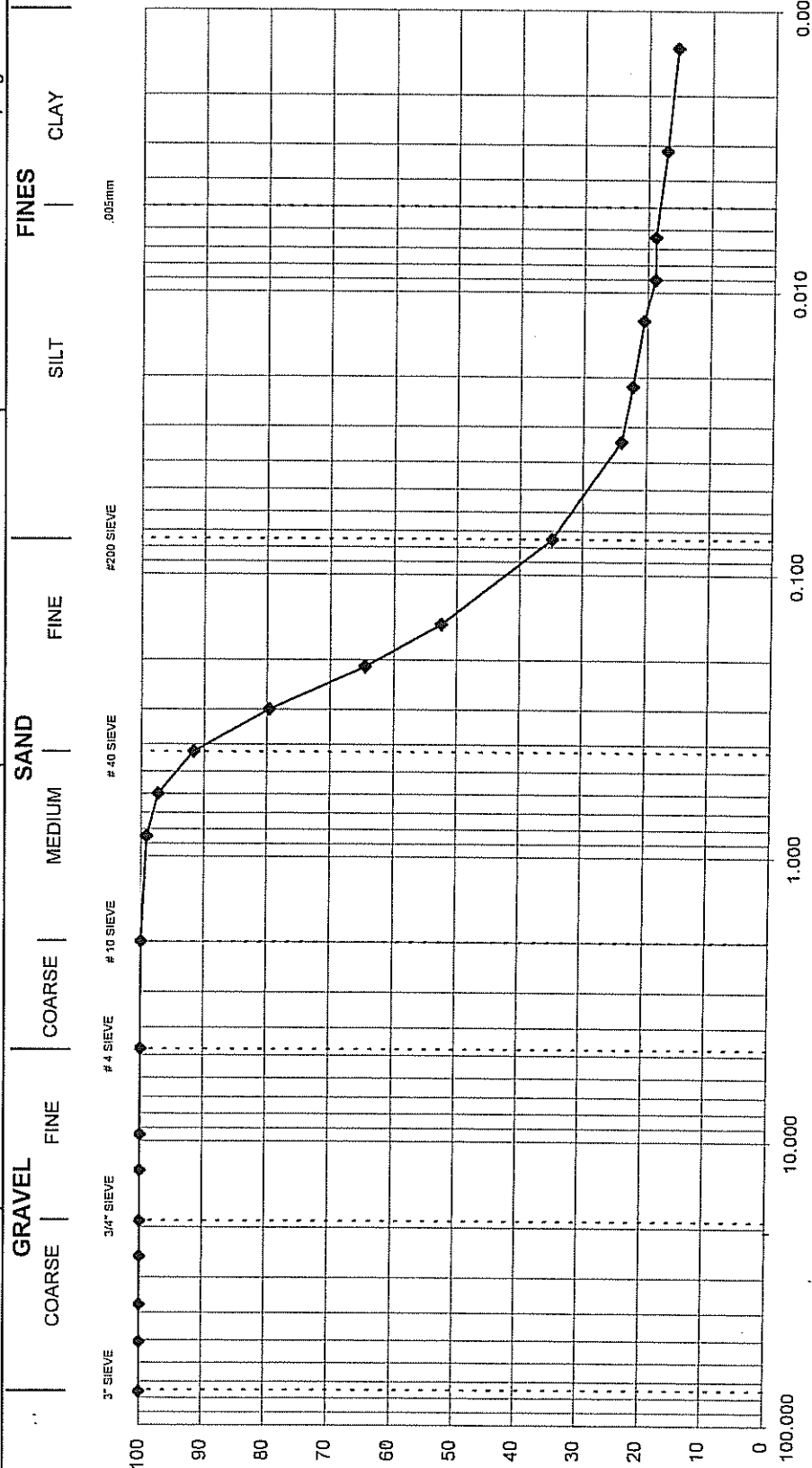
PARTICLE-SIZE DISTRIBUTION TEST REPORT

SIEVE AND HYDROMETER

ASTM D422

REV. 01/7/03

JOB NAME :	SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478
JOB NO. :	7272P
REPORT NO. :	115605
DATE :	7/24/07
REVIEWED BY :	KBF
BORING / PIT NO. :	B - 7
DEPTH / ELEV. :	18' - 20'
SAMPLE NO. :	SS-2
SAMPLE TYPE :	SS
SAMPLE LOCATION :	
SOIL DESCRIPTION :	Gray and Brown Silty, Clayey Fine Sand with Wood Pieces
LIQUID LIMIT, % :	21
PLASTICITY INDEX, % :	5
MOISTURE, % :	21.3
FINES, % :	34.8
D10, MM :	0.053
D60, MM :	0.18
COEFF. OF CURVATURE, C_c :	-
UNIFIED :	SC-SM
AASHTO :	A-2-4
COEFF. OF UNIFORMITY, C_u :	-



GRAVEL		SAND		FINES	
COARSE	FINE	COARSE	FINE	SILT	CLAY

PARTICLE-SIZE DISTRIBUTION TEST REPORT

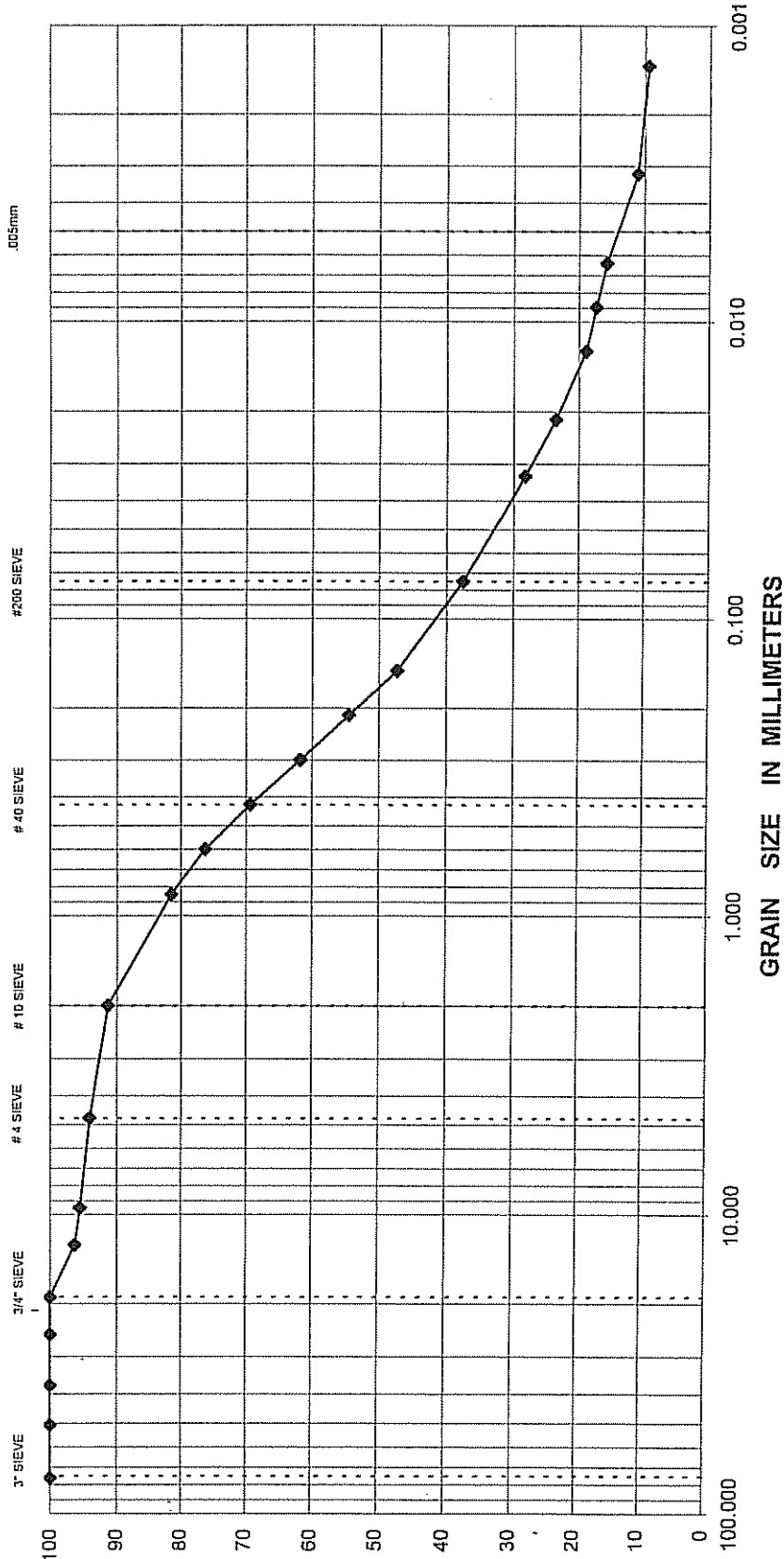
SIEVE AND HYDROMETER

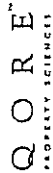
ASTM D422

REV1.01/7/03

JOB NAME:	SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478			
JOB NO.:	7272P	REPORT NO.:	115605	DATE: 7/24/07
BORING / PIT NO.:	B - 8	DEPTH / ELEV.:	0 - 2'	SAMPLE NO.: SS-1
SAMPLE LOCATION:	SS			
SOIL DESCRIPTION:	Brown and Gray Silty, Clayey Fine to Medium Sand			
LIQUID LIMIT, %:	25	PLASTICITY INDEX, %:	7	MOISTURE, %: 13.6
D10, MM:	0.0018	D30, MM:	0.038	D60, MM: 0.28
CLASSIFICATION	UNIFIED: SC-SM		AASHTO: A-4	
			COEFF. OF UNIFORMITY, C_u: 155.6	
			COEFF. OF CURVATURE, C_c: 2.9	
			FINES, %: 37.5	
			SP. GRAVITY, G_s: 2.72	

GRAVEL		SAND		FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	CLAY





AA5HTO R1B

REV1,9/17/03

7/24/07	REVIEWED BY: KBF
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SAMPLE NO.: SS-2

1000

MOISTURE % :	238
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DOO, MIN.	0.040
ASCIUTO	ASCIUTO

AND

Year	1950 Projection (%)	1960 Projection (%)
1950	7.0	7.0
1960	8.0	8.0
1970	9.0	9.0
1980	10.0	11.0
1990	11.0	13.0
2000	12.0	15.0
2010	13.0	17.0
2020	14.0	19.0
2030	15.0	20.0
2040	16.0	20.0
2050	17.0	20.0

[illegible]

Age Group	Percentage of Respondents
18-29	~85
30-49	~90
50-69	~95
70+	~95

[illegible]

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140	141	142	143	144	145	146	147	148	149	150	151	152	153	154	155	156	157	158	159	160	161	162	163	164	165	166	167	168	169	170	171	172	173	174	175	176	177	178	179	180	181	182	183	184	185	186	187	188	189	190	191	192	193	194	195	196	197	198	199	200	201	202	203	204	205	206	207	208	209	210	211	212	213	214	215	216	217	218	219	220	221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240	241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260	261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	280	281	282	283	284	285	286	287	288	289	290	291	292	293	294	295	296	297	298	299	300	301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320	321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340	341	342	343	344	345	346	347	348	349	350	351	352	353	354	355	356	357	358	359	360	361	362	363	364	365	366	367	368	369	370	371	372	373	374	375	376	377	378	379	380	381	382	383	384	385	386	387	388	389	390	391	392	393	394	395	396	397	398	399	400	401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420	421	422	423	424	425	426	427	428	429	430	431	432	433	434	435	436	437	438	439	440	441	442	443	444	445	446	447	448	449	450	451	452	453	454	455	456	457	458	459	460	461	462	463	464	465	466	467	468	469	470	471	472	473	474	475	476	477	478	479	480	481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500	501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520	521	522	523	52
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[illegible]

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IN MILLIMETERS

[illegible]

JOB NO.:

BORING / PIT

SOIL DESCR

D10 MM .

CLASSICAL

27

09

50

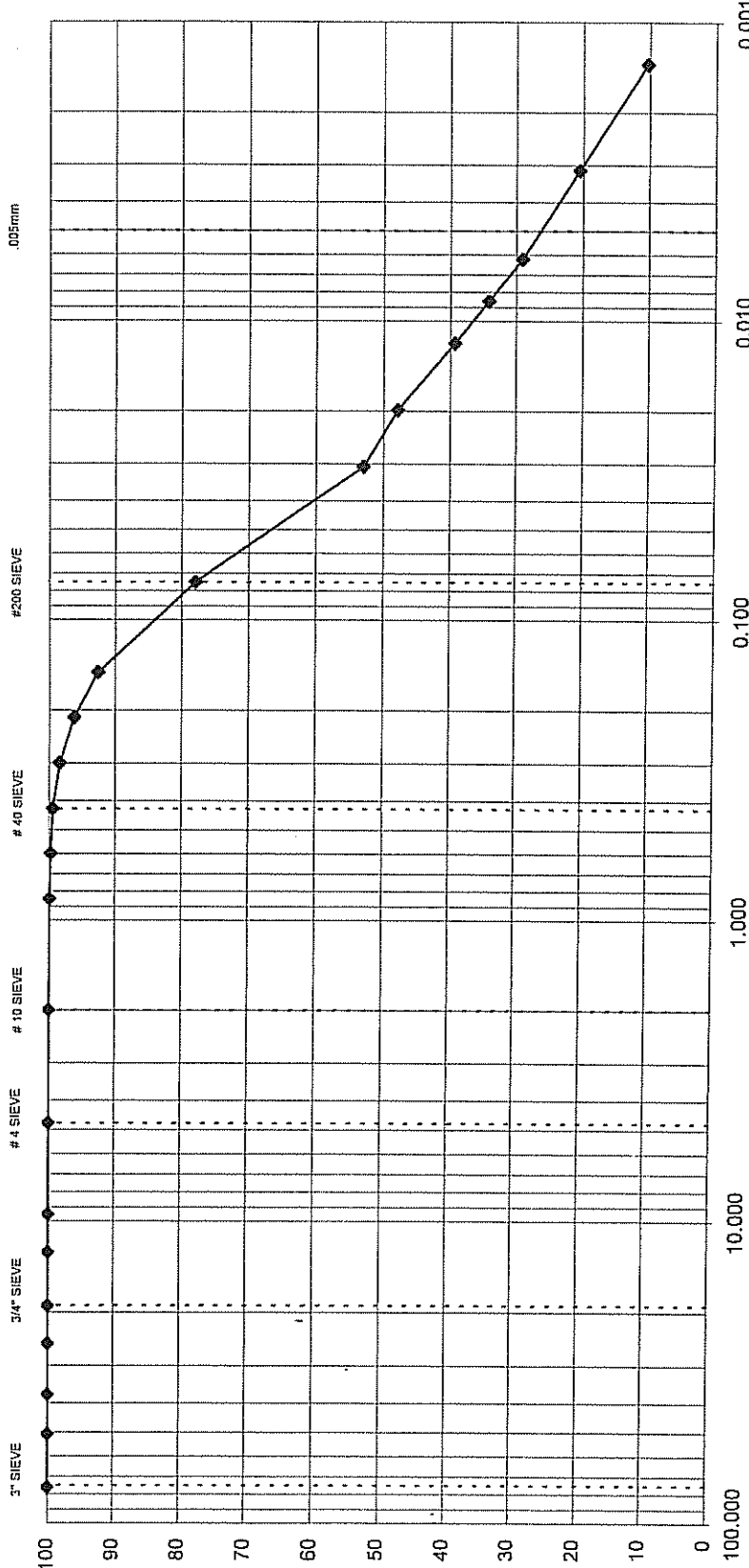
40

30

22

100

100





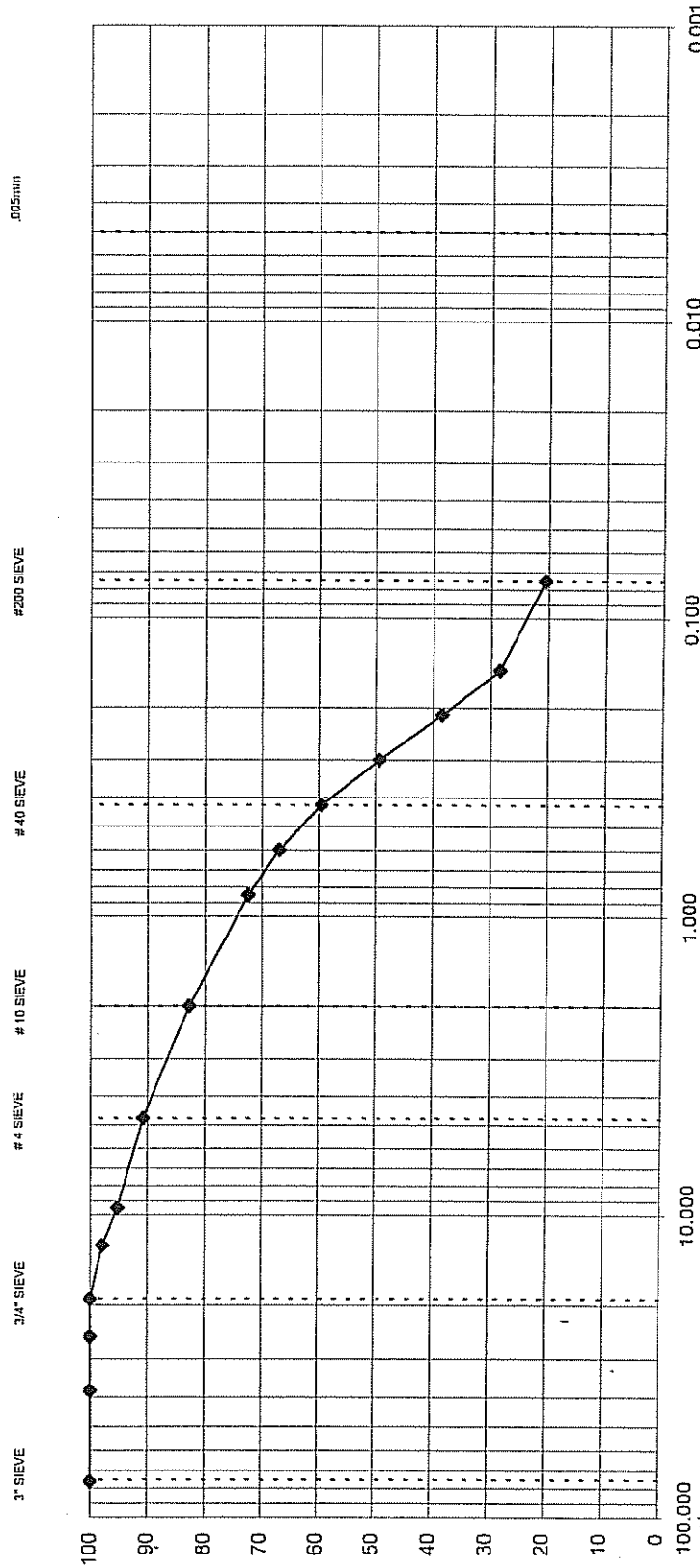
Q O R E[™]
PROPERTY SCIENCES

GRAIN SIZE DISTRIBUTION TEST REPORT (ASTM D422)



JOB NAME:	SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478				
JOB NO.:	7272P	REPORT NO.:	115605	DATE:	7/23/2007
BORING / PIT NO.:	B - 8	DEPTH / ELEV.:	13.5' - 15'	SAMPLE NO.:	SS-6
SAMPLE LOCATION:	SS				
SOIL DESCRIPTION:	Gray, Brown, and Yellowish Brown Silty Fine to Coarse Sand				
LIQUID LIMIT, %:	N/A	PLASTICITY INDEX, %:	N/A	MOISTURE, %:	12.1
D10, MM:	-	D30, MM:	0.16	D60, MM:	0.44
CLASSIFICATION	UNIFIED:	[SM]	AASHTO:	[A-2-4]	

GRAVEL		SAND		FINES	
COARSE	FINE	COARSE	FINE	SILT	CLAY



PARTICLE-SIZE DISTRIBUTION TEST REPORT

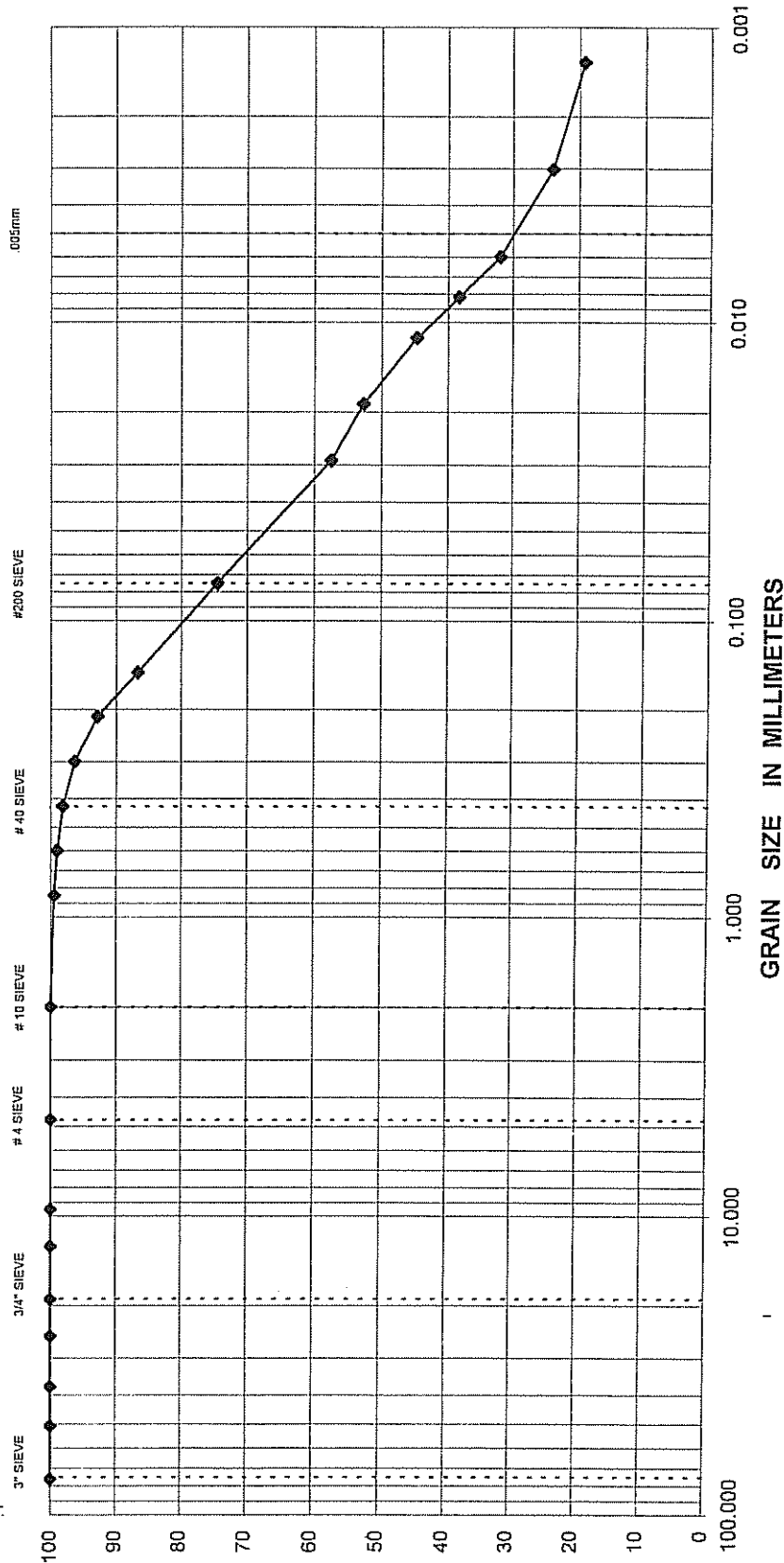
SIEVE AND HYDROMETER

ASTM D422

REV 1.9/17/03

JOB NAME: SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478			
JOB NO.: 7272P	REPORT NO.: 115605	DATE: 7/24/07	REVIEWED BY: KBF
BORING / PIT NO.: B-9	DEPTH / ELEV.: 11' - 13'	SAMPLE NO.: SS-1	SAMPLE TYPE: SS
SAMPLE LOCATION:			
SOIL DESCRIPTION: Brown, Gray, and Reddish Brown Lean Clay with Sand			
LIQUID LIMIT, %: 32	PLASTICITY INDEX, %: 13	MOISTURE, %: 23.6	SP. GRAVITY, Gs: 2.74
D10, MM: -	D30, MM: 0.0050	D60, MM: 0.033	FINES, %: 74.5
CLASSIFICATION		COEFF. OF CURVATURE, C _c : -	COEFF. OF UNIFORMITY, C _u : -
UNIFIED: CL		AASHTO: A-6(8)	

GRAVEL		SAND		FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	CLAY



PARTICLE-SIZE DISTRIBUTION TEST REPORT

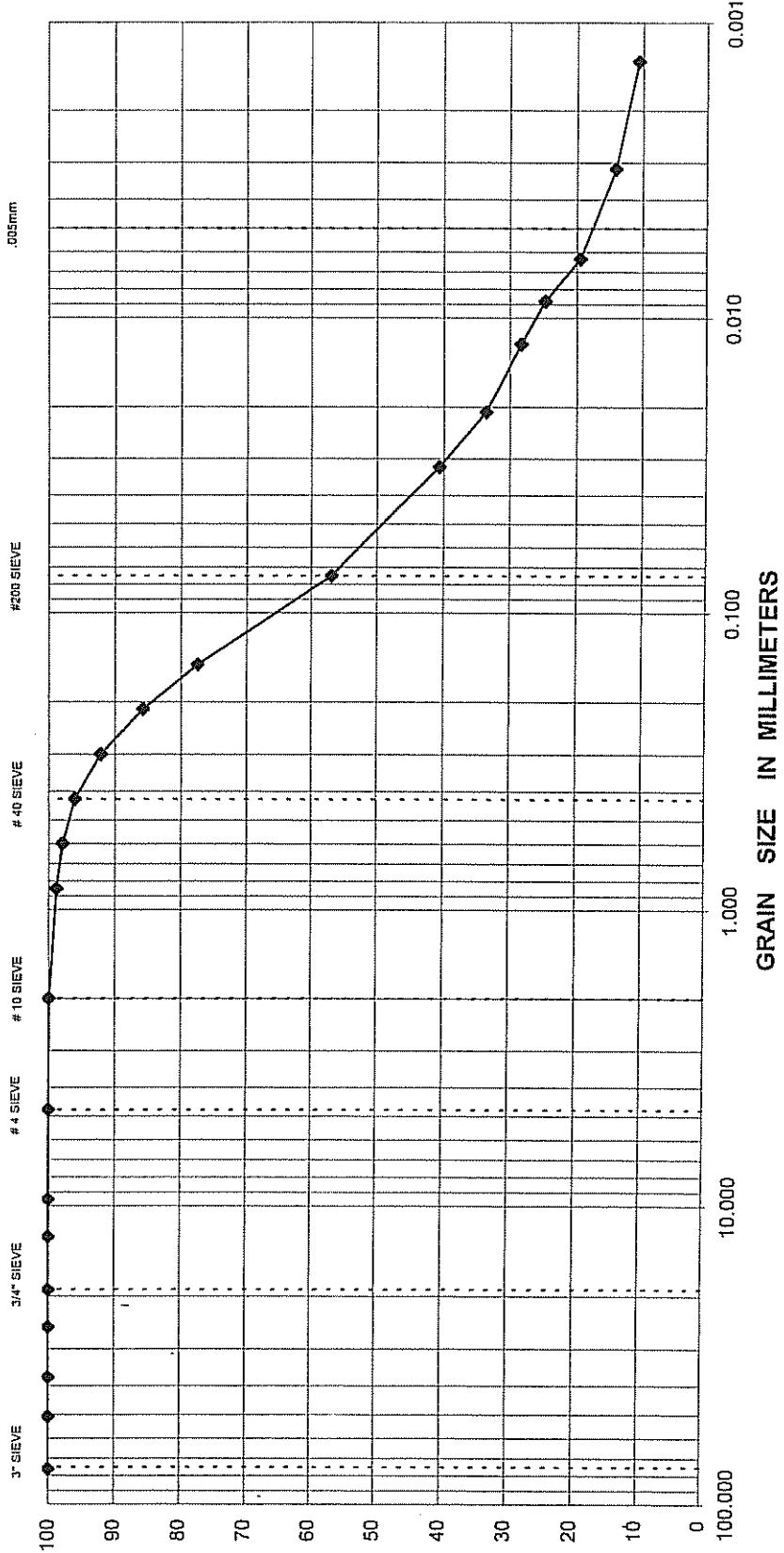
SIEVE AND HYDROMETER

ASTM D422

REV. 9/17/03

JOB NAME : SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pln No. 33478			
JOB NO. : 7272P	REPORT NO. : 115605	DATE : 7/24/07	REVIEWED BY : <i>KBF</i>
BORING / PIT NO. : B - 9	DEPTH / ELEV. : 13' - 15'	SAMPLE NO. : SS-2	SAMPLE TYPE : SS
SAMPLE LOCATION :			
SOIL DESCRIPTION : Brown, Gray, and Reddish Brown Sandy Silty Clay			
LIQUID LIMIT, % : 21	PLASTICITY INDEX, % : 5	MOISTURE, % : 20.3	SP. GRAVITY, Gs : 2.73
D10, MM : 0.0012	D30, MM : 0.016	D60, MM : 0.083	FINES, % : 56.9
UNIFIED : CL-ML		AASHTO : A-4(0)	COEFF. OF CURVATURE, C _c : 2.6
CLASSIFICATION		COEFF. OF UNIFORMITY, C _u : 69.2	

GRAVEL		SAND		FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	CLAY





442
AASHTO R16
5A

REV1.9/17/03

REVIEWED BY: KBF

	BORING / PIT NO.:	B - 9	DEPTH / ELEV.:	17' - 19'	SAMPLE NO.:	SS-4	SAMPLE TYPE:	SS
--	-------------------	-------	----------------	-----------	-------------	------	--------------	----

SOIL DESCRIPTION : Brown, Dark Gray, and Gray Sandy Lean Clay	SP. GRAVITY, Gs :	2.84
---	-------------------	------

LIQUID LIMIT, % :	40	PLASTICITY INDEX, % :	17	MOISTURE, % :	24.4	FINES, % :	53.6
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D10 . MM :	-	D30 . MM :	0.012	D60 . MM :	0.13	COEFF. OF CURVATURE, C _c :	-
------------	---	------------	-------	------------	------	---------------------------------------	---

[illegible]

Sieve Size (mm)	Percentage Passing (%)
3	100
4	100
10	100
20	95
40	85
60	75
100	65
200	55
300	45
400	35
500	30
600	25
800	20
1000	15
1250	10
1500	5
2000	2
2500	1
3000	0.5
3500	0.2
4000	0.1
4500	0.05
5000	0.02
5500	0.01
6000	0.005
6500	0.002
7000	0.001
7500	0.0005
8000	0.0002
8500	0.0001
9000	0.00005
9500	0.00002
10000	0.00001

% FINER BY WEIGHT

PARTICLE-SIZE DISTRIBUTION TEST REPORT SIEVE AND HYDROMETER

ASTM D422

REV1.0/17/03

JOB NAME: SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478

JOB NO.: 7272P REPORT NO.: 115605 DATE: 7/24/07 REVIEWED BY: *KBF*
BORING / PIT NO.: B-10 DEPTH / ELEV.: 0 - 2' SAMPLE NO.: SS-1 SAMPLE TYPE: SS

SAMPLE LOCATION:

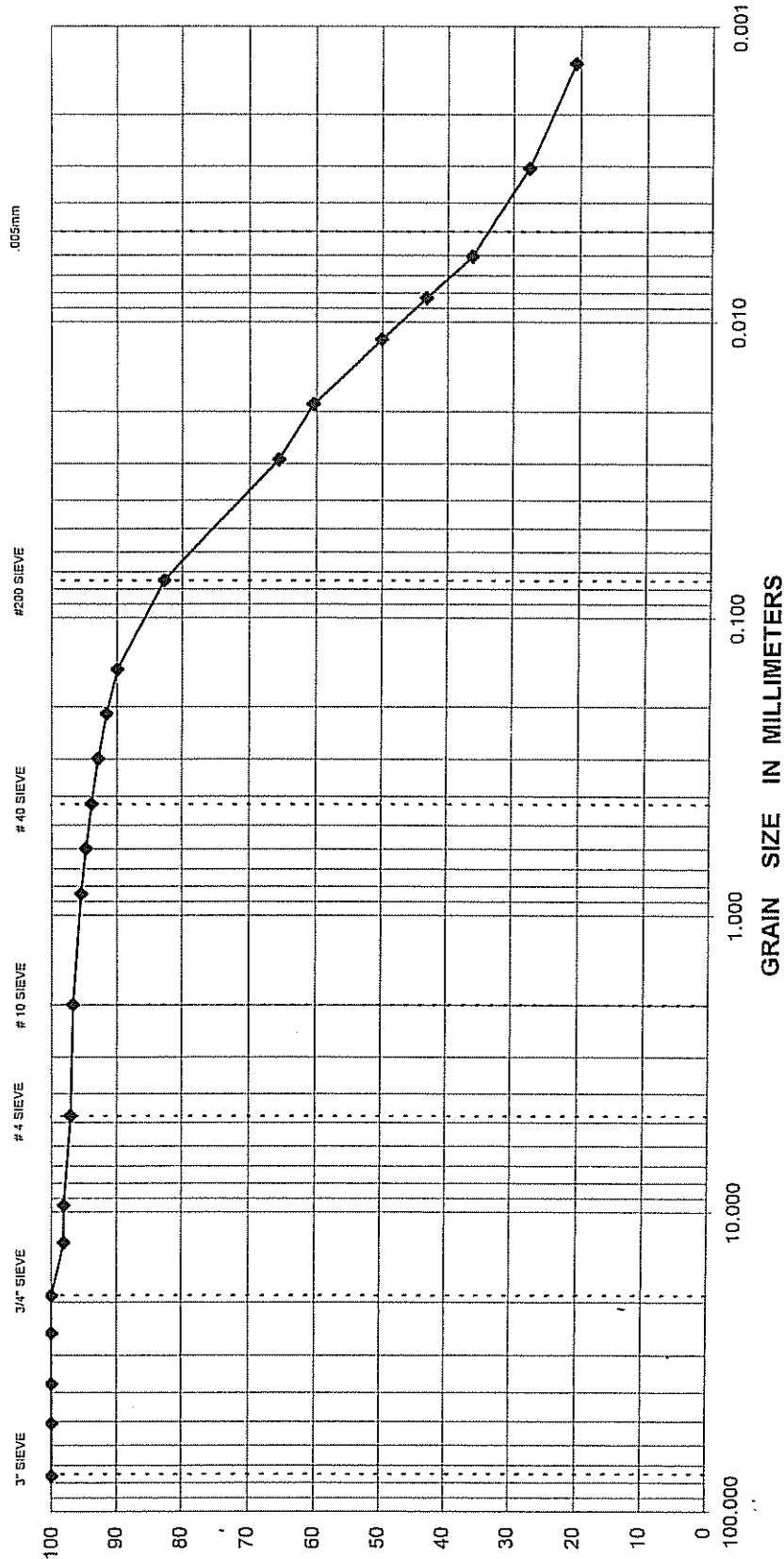
SOIL DESCRIPTION: Brown Lean Clay

LIQUID LIMIT, %: 42 PLASTICITY INDEX, %: 19 MOISTURE, %: 19.0 SP. GRAVITY, G_s: 2.68

D₁₀, MM: - D₃₀, MM: 0.0037 D₆₀, MM: 0.019 COEFF. OF CURVATURE, C_c: 82.8

CLASSIFICATION UNIFIED: CL AASHTO: A-7-6(16) COEFF. OF UNIFORMITY, C_u: -

GRAVEL		SAND		FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	CLAY



PARTICLE-SIZE DISTRIBUTION TEST REPORT SIEVE AND HYDROMETER ASTM D422

REV. 01/17/03

JOB NAME : SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478

JOB NO. : 7272P REPORT NO. : 115605 DATE : 7/24/07 REVIEWED BY : *KBF*

BORING / PIT NO. : B-10 DEPTH / ELEV. : 2' - 4' SAMPLE NO. : SS-2 SAMPLE TYPE : SS

SAMPLE LOCATION :

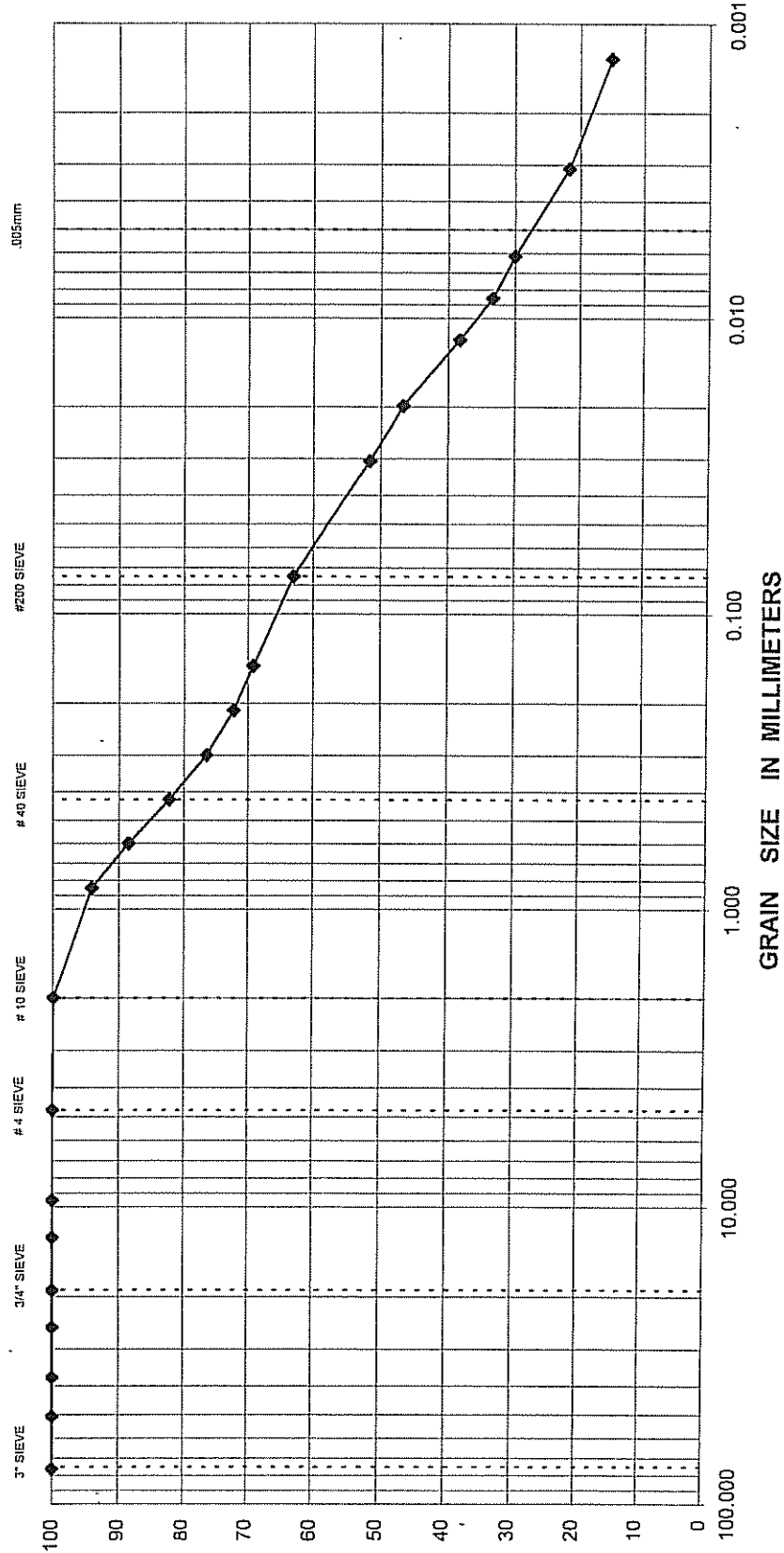
SOIL DESCRIPTION : Reddish Brown, Green, and Gray Sandy Lean Clay

LIQUID LIMIT, % : 31 PLASTICITY INDEX, % : 13 MOISTURE, % : 21.6 SP. GRAVITY, Gs : 2.72

D10, MM : - D30, MM : 0.0062 D60, MM : 0.060 COEFF. OF CURVATURE, C_c : 63.0

CLASSIFICATION UNIFIED : CL AASHTO : A-6(6) COEFF. OF UNIFORMITY, C_u : -

GRAVEL		SAND		FINES	
COARSE	FINE	COARSE	FINE	SILT	CLAY



PARTICLE-SIZE DISTRIBUTION TEST REPORT

SIEVE AND HYDROMETER

ASTM D422

REV: 01/17/03

JOB NAME: SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); P'n No. 33478

JOB NO.: 7272P REPORT NO.: 115605 DATE: 7/24/07 REVIEWED BY: *KBF*

BORING / PIT NO.: B-11 DEPTH / ELEV.: 13' - 15' SAMPLE NO.: SS-1 SAMPLE TYPE: SS

SAMPLE LOCATION:

SOIL DESCRIPTION: Gray, Reddish Brown, and Yellowish Brown Clayey Fine to Coarse Sand with Gravel

LIQUID LIMIT, %: 32 PLASTICITY INDEX, %: 15 MOISTURE, %: 10.1 SP. GRAVITY, G_s: 2.84

D₁₀, MM: 0.0020 D₃₀, MM: 0.14 D₆₀, MM: 0.98 COEFF. OF CURVATURE, C_c: 24.7

CLASSIFICATION UNIFIED: SC AASHTO: A-2-6 COEFF. OF UNIFORMITY, C_u: 10.0

CLASSIFICATION UNIFIED: SC AASHTO: A-2-6 COEFF. OF UNIFORMITY, C_u: 490.0

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

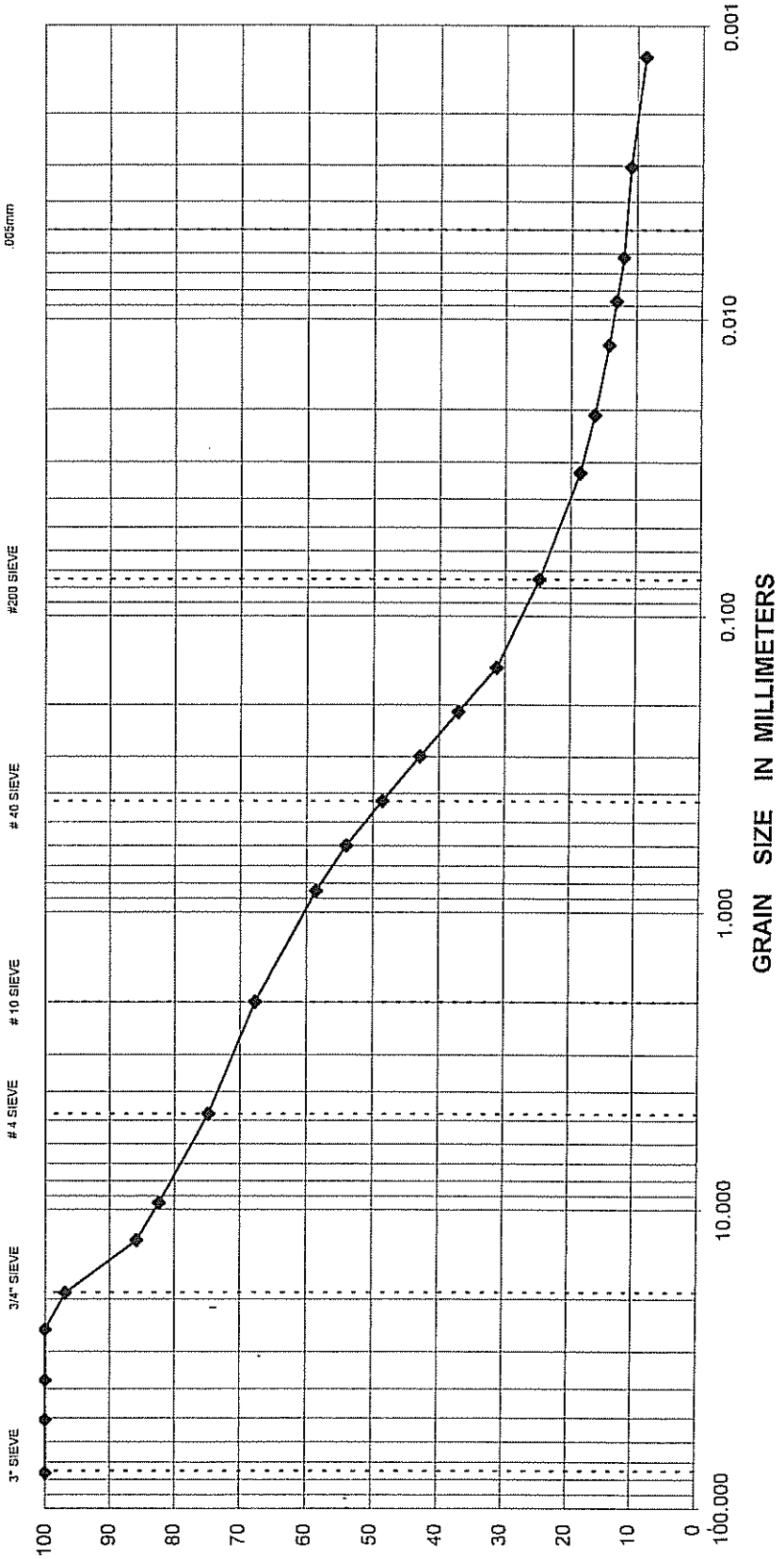
GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY

GRAVEL COARSE FINE SAND MEDIUM FINE FINES SILT CLAY



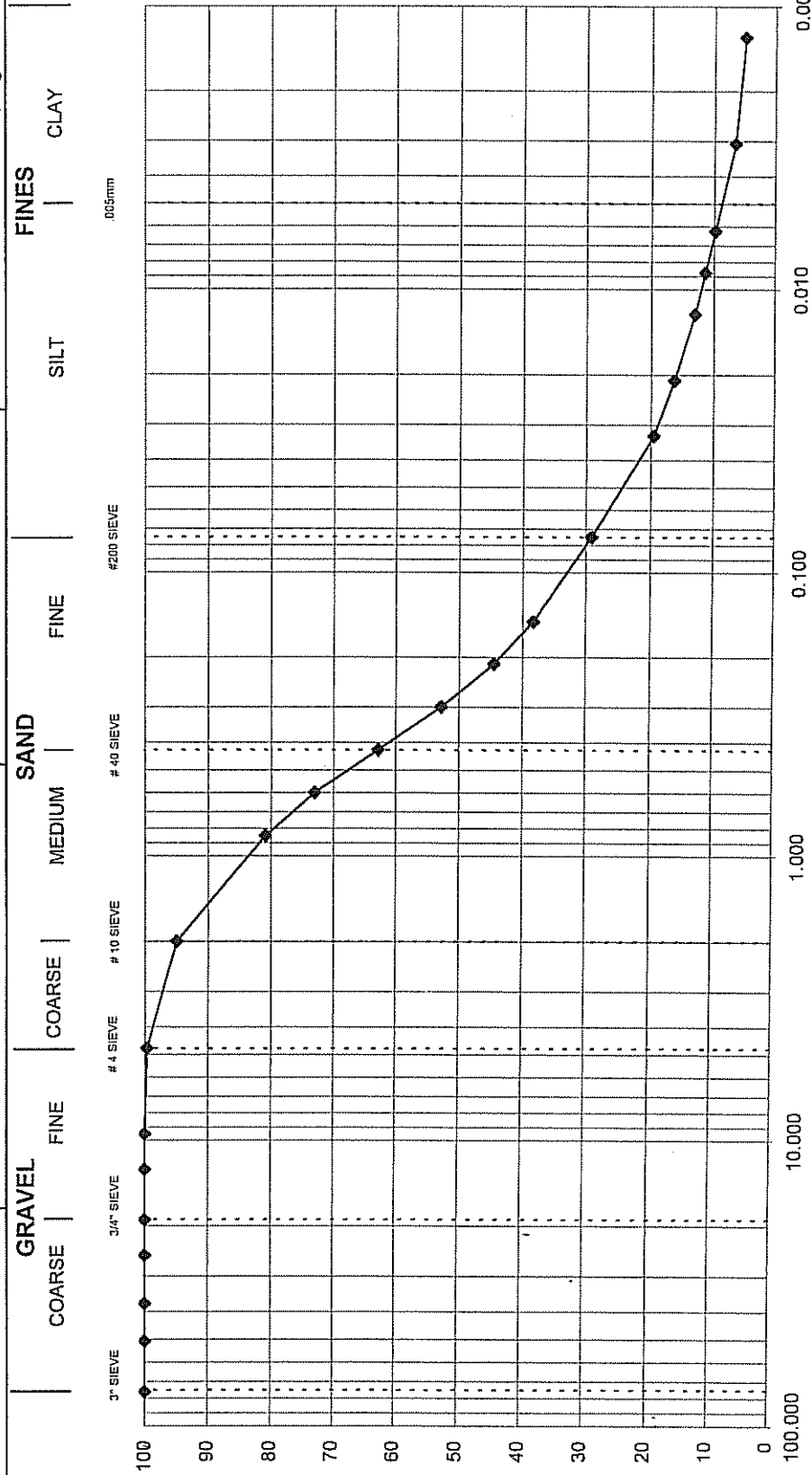
PARTICLE-SIZE DISTRIBUTION TEST REPORT

SIEVE AND HYDROMETER

ASTM D422

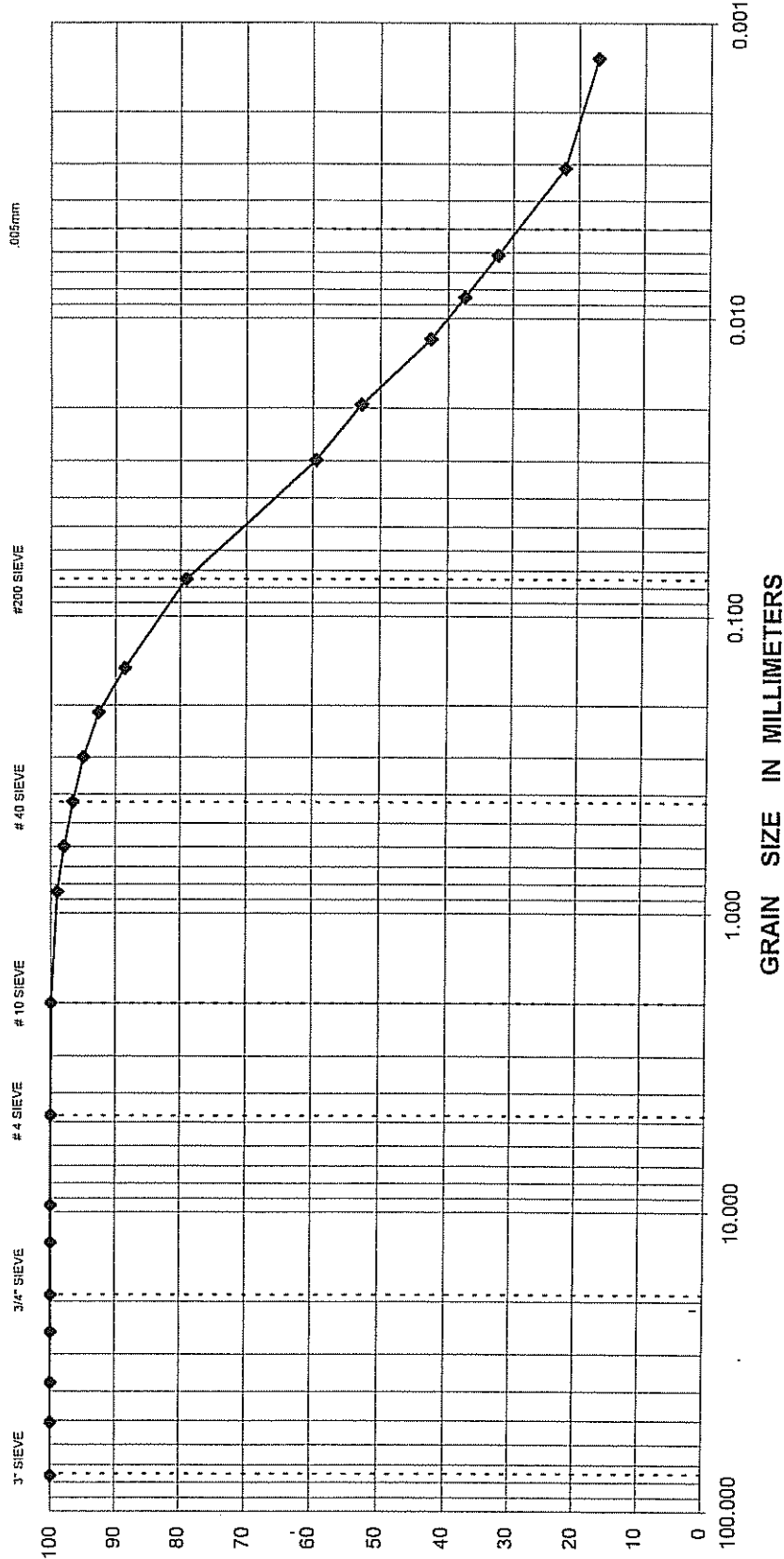
REV. 01/17/03

JOB NAME :	SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478			
JOB NO. :	7272P	REPORT NO. :	115605	DATE : 7/24/07
BORING / PIT NO. :	B-11	DEPTH / ELEV. :	17' - 19'	SS-3
SAMPLE LOCATION :	REVIEWED BY : KBF			
SOIL DESCRIPTION :	SAMPLE TYPE : SS			
LIQUID LIMIT, % :	27	PLASTICITY INDEX, % :	7	SP. GRAVITY, G_s : 2.92
D₁₀, MM :	0.0065	D₆₀, MM :	0.081	FINES, % : 10.8
CLASSIFICATION	UNIFIED : SC-SM	AASHTO : A-2-4	COEFF. OF CURVATURE, C_c : 0.38	
			COEFF. OF UNIFORMITY, C_u : 2.7	
			COEFF. OF UNIFORMITY, C_u : 58.5	





GRAVEL		SAND		FINES	
COARSE	FINE	COARSE	FINE	SILT	CLAY



PARTICLE-SIZE DISTRIBUTION TEST REPORT SIEVE AND HYDROMETER ASTM D422

REV1.0/17/03

JOB NAME: SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478

JOB NO.: 7272P REPORT NO.: 115605 DATE: 7/24/07 REVIEWED BY: *KBF*

BORING / PIT NO.: B-12 DEPTH / ELEV.: 2' - 4' SAMPLE NO.: SS-2 SAMPLE TYPE: SS

SAMPLE LOCATION:

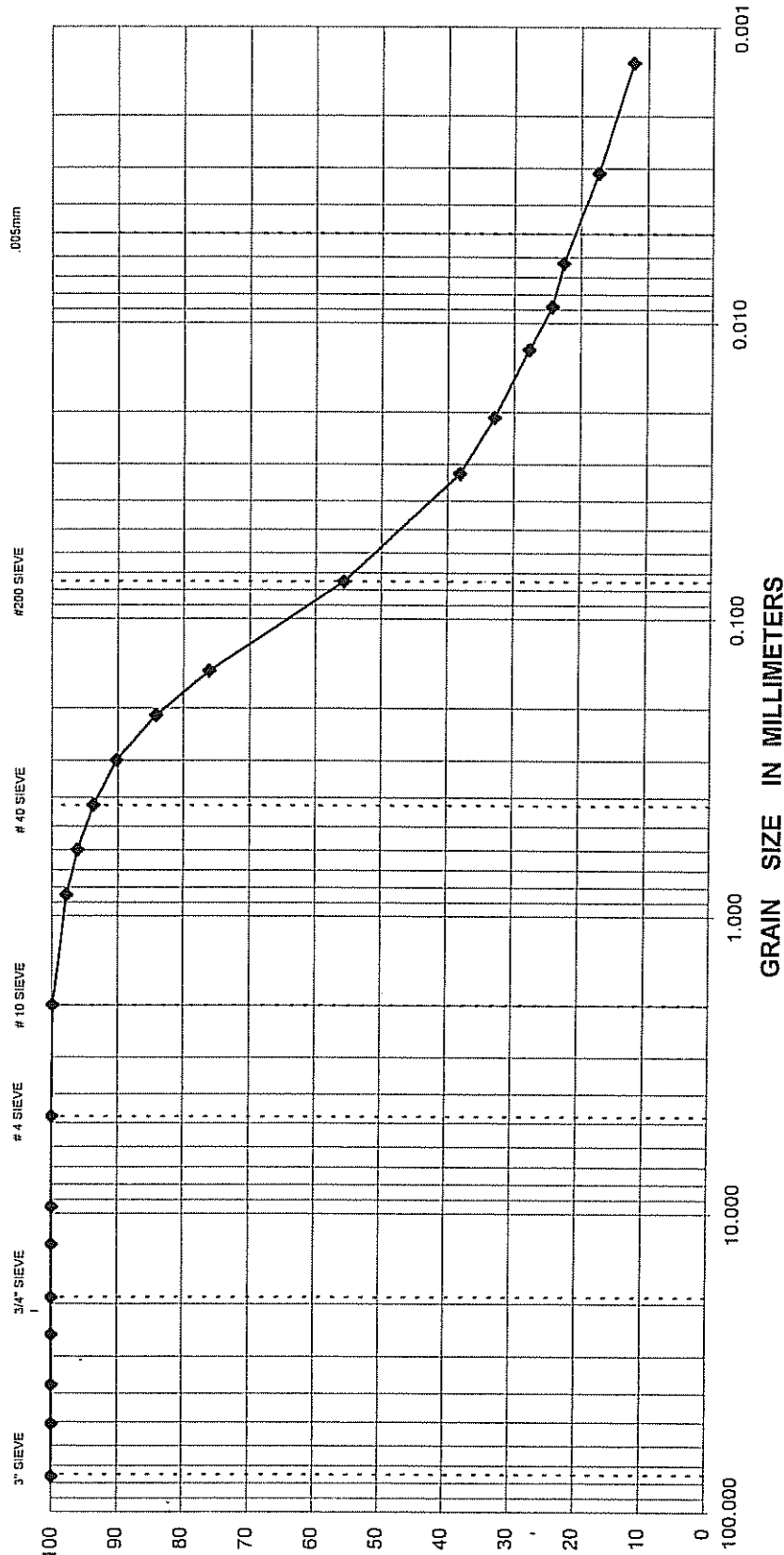
SOIL DESCRIPTION: Brown and Gray Sandy Lean Clay

LIQUID LIMIT, %: 23 PLASTICITY INDEX, %: 9 MOISTURE, %: 20.9 FINES, %: 2.74

D10, MM: - D30, MM: 0.016 D60, MM: 0.087 COEFF. OF CURVATURE, C_c : -

CLASSIFICATION UNIFIED: CL AASHTO: A-4(2) COEFF. OF UNIFORMITY, C_u : -

GRAVEL		SAND		FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	CLAY



PARTICLE-SIZE DISTRIBUTION TEST REPORT

SIEVE AND HYDROMETER

ASTM D422

REV1.9/17/03

JOB NAME : SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478

JOB NO. : 7272P REPORT NO. : 115605 DATE : 7/24/07 REVIEWED BY : *KBF*

BORING / PIT NO. : B-12 DEPTH / ELEV. : 6' - 8' SAMPLE NO. : SS-3 SAMPLE TYPE : SS

SAMPLE LOCATION : SP. GRAVITY, Gs : 2.88

SOIL DESCRIPTION : Reddish Brown, Yellowish Brown, and Gray Sandy Lean Clay FINES, % : 54.6

LIQUID LIMIT, % : 39 PLASTICITY INDEX, % : 16 MOISTURE, % : 22.3

D10, MM : - D30, MM : 0.013 D60, MM : 0.11 COEFF. OF CURVATURE, C_c : -

CLASSIFICATION UNIFIED : CL AASHTO : A-6(6) COEFF. OF UNIFORMITY, C_u : -

GRAVEL COARSE FINE SAND MEDIUM FINE SILT CLAY

3" SIEVE 3/4" SIEVE #4 SIEVE #10 SIEVE #20 SIEVE #40 SIEVE #60 SIEVE #100 SIEVE #200 SIEVE #425 SIEVE

100 90 80 70 60 50 40 30 20 10 0

100.000 10.000 1.000 0.100 0.010 0.001

GRAIN SIZE IN MILLIMETERS

% FINER BY WEIGHT

100 90 80 70 60 50 40 30 20 10 0

100.000 10.000 1.000 0.100 0.010 0.001

GRAIN SIZE IN MILLIMETERS

% FINER BY WEIGHT

100 90 80 70 60 50 40 30 20 10 0

100.000 10.000 1.000 0.100 0.010 0.001

GRAIN SIZE IN MILLIMETERS

% FINER BY WEIGHT

100 90 80 70 60 50 40 30 20 10 0

100.000 10.000 1.000 0.100 0.010 0.001

GRAIN SIZE IN MILLIMETERS

% FINER BY WEIGHT

100 90 80 70 60 50 40 30 20 10 0

100.000 10.000 1.000 0.100 0.010 0.001

GRAIN SIZE IN MILLIMETERS

% FINER BY WEIGHT

100 90 80 70 60 50 40 30 20 10 0

100.000 10.000 1.000 0.100 0.010 0.001

GRAIN SIZE IN MILLIMETERS

% FINER BY WEIGHT

100 90 80 70 60 50 40 30 20 10 0

100.000 10.000 1.000 0.100 0.010 0.001

GRAIN SIZE IN MILLIMETERS

% FINER BY WEIGHT

100 90 80 70 60 50 40 30 20 10 0

100.000 10.000 1.000 0.100 0.010 0.001

GRAIN SIZE IN MILLIMETERS



GRAIN SIZE IN MILLIMETERS

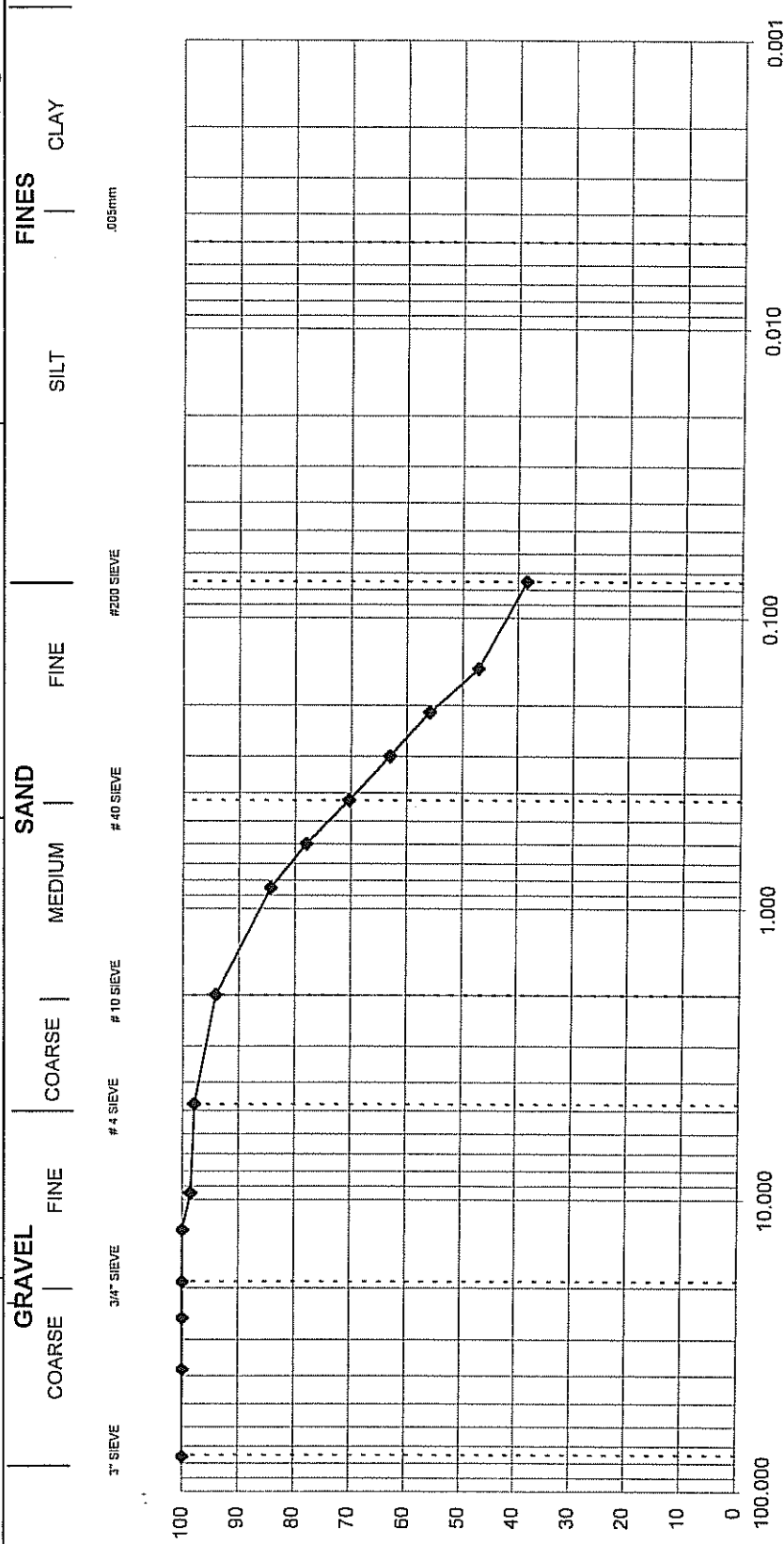


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PROPERTY SCIENCES

GRAIN SIZE DISTRIBUTION TEST REPORT (ASTM D422)



JOB NAME :		SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478			
JOB NO. :	7272P	REPORT NO. :	115605	DATE :	7/23/2007
BORING / PIT NO. :	B - 13	DEPTH / ELEV. :	4' - 6'	SAMPLE NO. :	SS-3
SAMPLE LOCATION :		SS			
SOIL DESCRIPTION : Brown, Yellowish Brown, and Gray Silty, Clayey Fine to Medium Sand					
LIQUID LIMIT, % :	23	PLASTICITY INDEX, % :	5	MOISTURE, % :	12.9
D ₁₀ , MM :	-	D ₃₀ , MM :	-	D ₆₀ , MM :	0.26
CLASSIFICATION		UNIFIED :	SC-SM	AASHTO :	A-2-4
		GRAVEL		SAND	
		COARSE	FINE	COARSE	FINE
		SILT		CLAY	
		SP. GRAVITY, G _s :		FINES, % :	
				38.4	
		COEFF. OF CURVATURE, C _c :		-	
		COEFF. OF UNIFORMITY, C _u :		-	



GRAIN SIZE IN MILLIMETERS



Q O R E[™]
PROPERTY SCIENCES

GRAIN SIZE DISTRIBUTION TEST REPORT (ASTM D422)



JOB NAME : SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478

JOB NO. : 7272P REPORT NO. : 115605 DATE : 7/23/2007 REVIEWED BY : *KBF*

BORING / PIT NO. : B - 13 DEPTH / ELEV. : 8' - 10' SAMPLE NO. : SS-5 SAMPLE TYPE : SS

SAMPLE LOCATION : -

SOIL DESCRIPTION : Brown, Reddish Brown, and Grayish Brown Lean Clay with Sand and Wood Pieces

LIQUID LIMIT, % : 38 PLASTICITY INDEX, % : 20 MOISTURE, % : 22.8 SP. GRAVITY, G_s : -

D₁₀, MM : - D₃₀, MM : - D₆₀, MM : - COEFF. OF CURVATURE, C_c : 71.0

CLASSIFICATION UNIFIED : CL AASHTO : A-6(12) COEFF. OF UNIFORMITY, C_u : -

GRAVEL COARSE FINE SAND MEDIUM FINE SILT CLAY

3" SIEVE 3/4" SIEVE #4 SIEVE #10 SIEVE #40 SIEVE #200 SIEVE .005mm

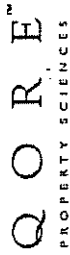
100 90 80 70 60 50 40 30 20 10 0

100.000 10.000 1.000 0.100 0.010 0.001

GRAIN SIZE IN MILLIMETERS

% FINER BY WEIGHT

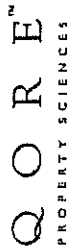
Soil Classification: CL (Clay), A-6(12) (AASHTO)



AAR
AASHTO R18

GRAVEL		SAND		FINES	
COARSE	FINE	COARSE	MEDIUM	SILT	CLAY





SM
AASHTO R18

PROPERTY SCIENCES

JOB NO.:	7272P	REPORT NO.:	115605	DATE:	7/23/2007
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BORING / PIT NO.:	B - 14	DEPTH / ELEV.:	6' - 8'	SAMPLE NO.:	SS-4	SAMPLE TYPE	SS
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SOIL DESCRIPTION: Brown and Gray Fat Clay with Sand

LIQUID LIMIT, % :	59	PLASTICITY INDEX, %
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[illegible][illegible][illegible]

GRAVEL	SAND	FINES
1	1	1

	COARSE	FINE	COARSE	MEDIUM	FINE	SILT	CLAY
1							
2							
3							
4							
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81							

	# 40 SIEVE	# 10 SIEVE	# 200 SIEVE	.005mm
3/4" SIEVE				
3" SIEVE				

Days of Exposure	Control (○)	100% Humidity (●)	100% Humidity + 100% Oxygen (■)
0	0	0	0
1	2	10	15
2	3	18	25
3	4	25	32
4	5	30	38
5	6	33	42
6	7	35	44
7	8	36	45
8	9	37	45
9	10	38	45
10	10	38	45

1

[illegible]

22

[illegible]

人

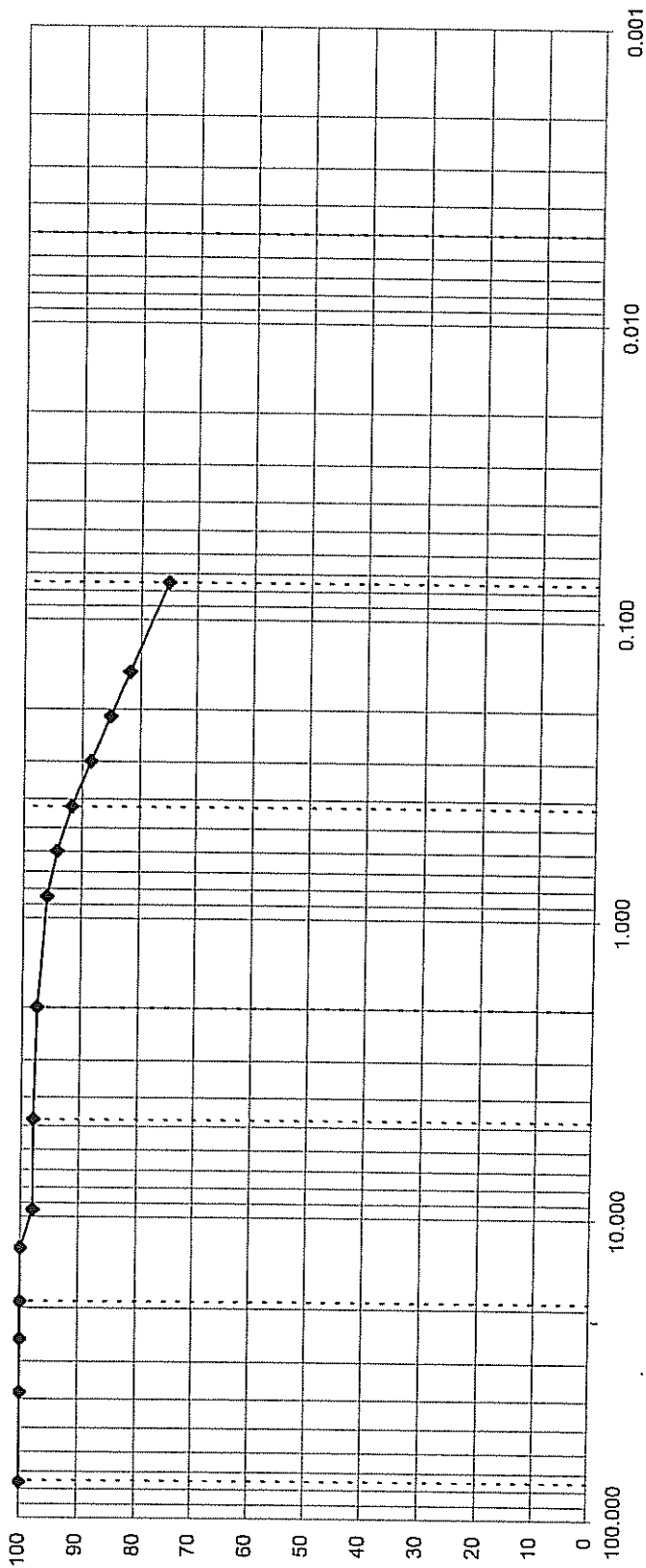
[illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible][illegible]

Timeline diagram showing the progression of time from 1970 to 1990. The timeline is marked with years and includes a section labeled 'U' for 'Unlabeled' and a section labeled '100' for '100%'. The timeline is divided into segments by vertical lines, with some segments containing dots or other markers.

100.000
10.000
1.000
0.100
0.010
0.001

CBAIN	SIZE	IN	TH	FL	CL	CO
0	1	1	1	1	1	1

GRAIN SIZE IN MILLIMETERS



GRAIN SIZE IN MILLIMETERS



Q O R E

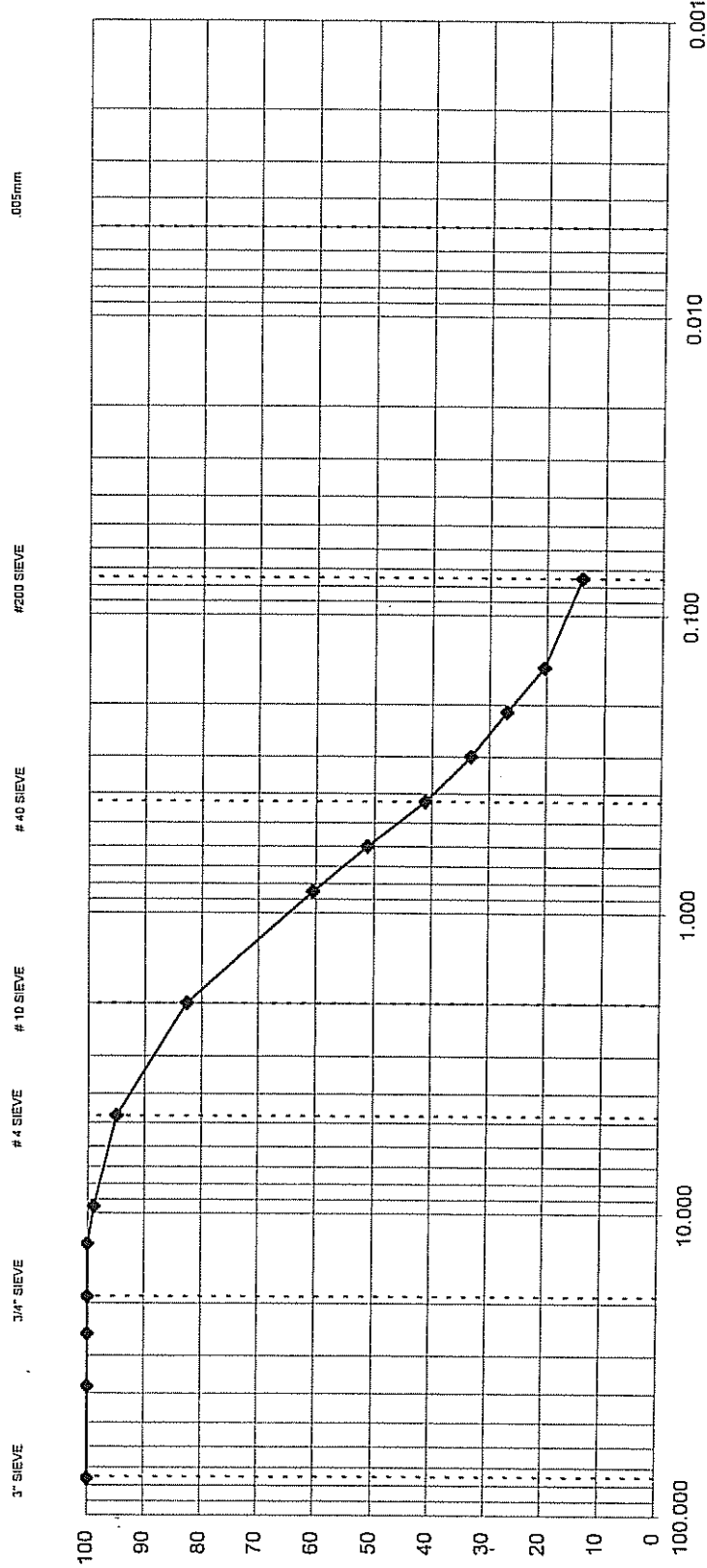
PROPERTY SCIENCES

GRAIN SIZE DISTRIBUTION TEST REPORT (ASTM D422)



JOB NAME :		SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478			
JOB NO. :		REPORT NO. :	DATE :	7/23/2007	REVIEWED BY : <i>KBF</i>
BORING / PIT NO. :		B - 14	DEPTH / ELEV. :	18.5' - 20'	SAMPLE NO. : SS-7
SAMPLE LOCATION :		SS			
SOIL DESCRIPTION : Brown, Dark Brown, and Gray Micaceous Silty Fine to Coarse Sand					
LIQUID LIMIT, % :		N/A	PLASTICITY INDEX, % :	N/A	MOISTURE, % :
D10, MM :		-	D30, MM :	0.26	D60, MM :
CLASSIFICATION		UNIFIED :	[SM]	AASHTO :	[A-1-b]
		SP. GRAVITY, G _s :		-	
		FINES, % :		13.9	
		COEFF. OF CURVATURE, C _c :		-	
		COEFF. OF UNIFORMITY, C _u :		-	

GRAVEL		SAND		FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	CLAY



GRAIN SIZE IN MILLIMETERS

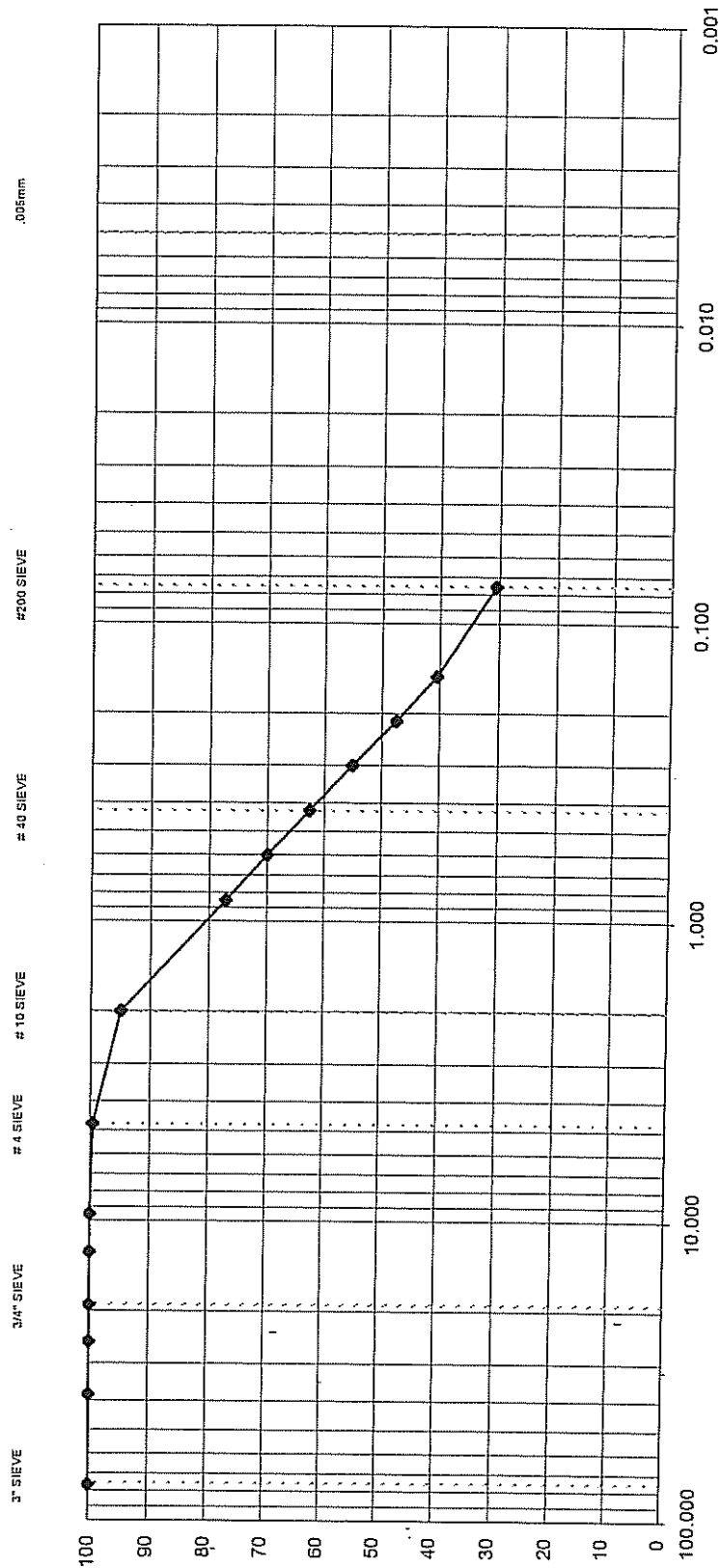
% FINER BY WEIGHT

GRAIN SIZE DISTRIBUTION TEST REPORT

(ASTM D422)

JOB NAME:	SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478				
JOB NO.:	7272P	REPORT NO.:	115605	DATE:	7/23/2007
BORING / PIT NO.:	B - 15	DEPTH / ELEV.:	2' - 4'	SAMPLE NO.:	SS-2
SAMPLE LOCATION:	SS				
SOIL DESCRIPTION:	Brown, Light Brown, and Dark Brown Micaceous Silty Fine to Medium Sand				
LIQUID LIMIT, %:	N/A	PLASTICITY INDEX, %:	N/A	MOISTURE, %:	20.7
D ₁₀ , MM:	-	D ₃₀ , MM:	0.072	D ₆₀ , MM:	0.38
CLASSIFICATION	UNIFIED: [SM] AASHTO: [A-2-4]				

GRAVEL		SAND		FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	CLAY



GRAIN SIZE IN MILLIMETERS

% FINER BY WEIGHT



GRAIN SIZE IN MILLIMETERS



5M
AASHTO R19

[illegible]

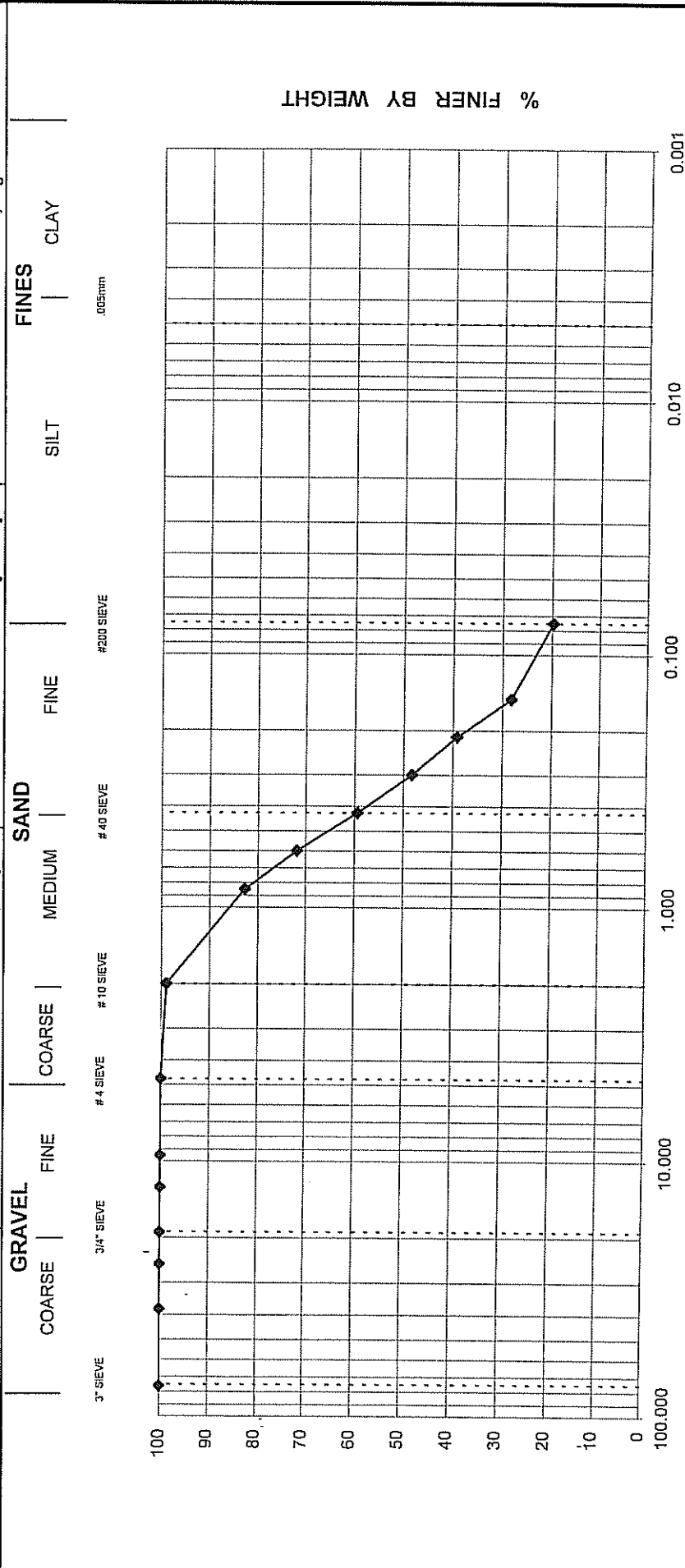


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PROPERTY SCIENCES

GRAIN SIZE DISTRIBUTION TEST REPORT (ASTM D422)



JOB NAME:	SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478						
JOB NO.:	7272P	REPORT NO.:	115605	DATE:	7/23/2007	REVIEWED BY:	KBF
BORING / PIT NO.:	B - 17	DEPTH / ELEV.:	6' - 8'	SAMPLE NO.:	SS-4	SAMPLE TYPE:	SS
SAMPLE LOCATION: -							
SOIL DESCRIPTION: Brown, Gray, and Light Brown Micaceous Silty Fine to Medium Sand							
LIQUID LIMIT, %:	N/A	PLASTICITY INDEX, %:	N/A	MOISTURE, %:	6.9	SP. GRAVITY, G _s :	-
D ₁₀ , MM:	-	D ₃₀ , MM:	0.17	D ₆₀ , MM:	0.43	FINES, %:	19.7
CLASSIFICATION							
UNIFIED: [SM]				AASHTO: [A-2-4]		COEFF. OF CURVATURE, C _c : -	
COEFF. OF UNIFORMITY, C _u : -							





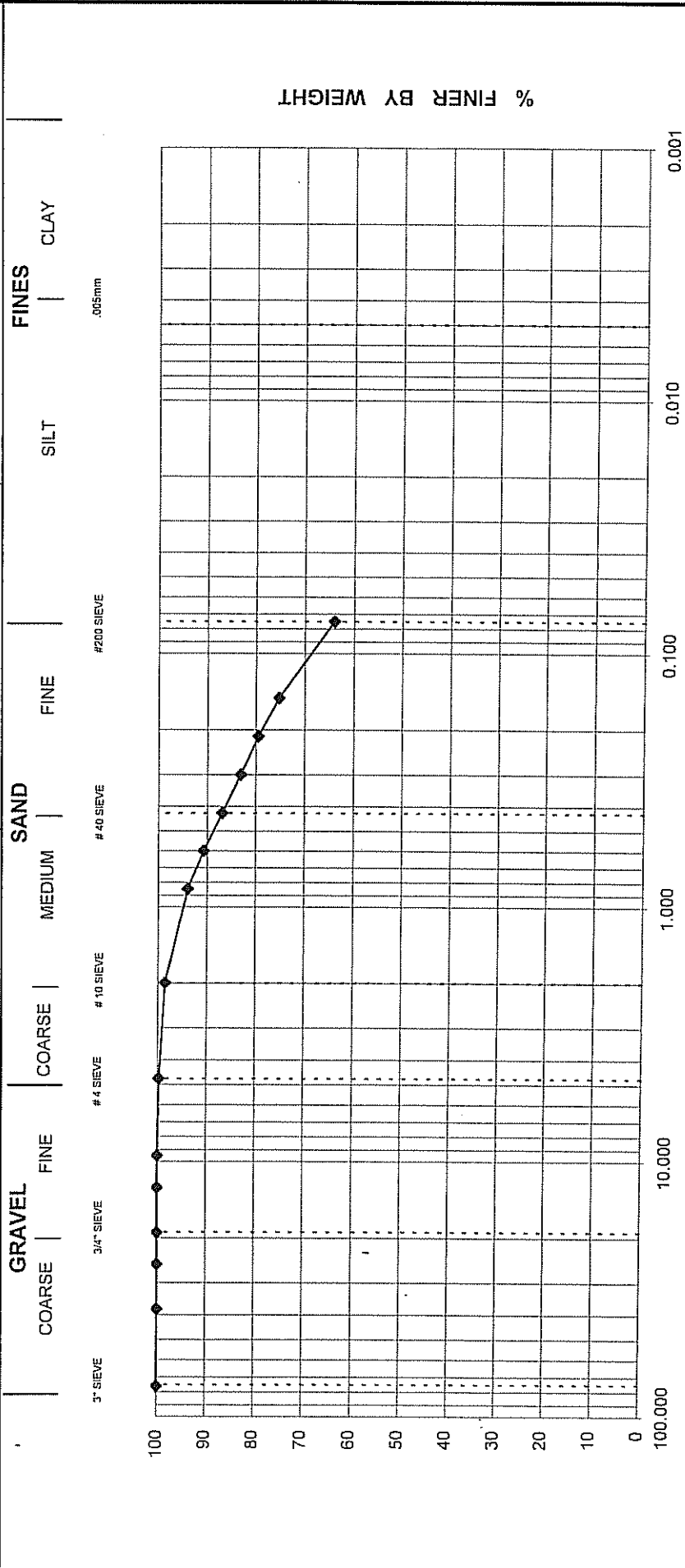
QORE™

PROPERTY SCIENCES

GRAIN SIZE DISTRIBUTION TEST REPORT (ASTM D422)



JOB NAME:		SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478			
JOB NO.:	7272P	REPORT NO.:	115605	DATE:	7/23/2007
BORING / PIT NO.:	HA - 1	DEPTH / ELEV.:	1' - 2'	SAMPLE NO.:	S - 2
SAMPLE LOCATION:		HAB			
SOIL DESCRIPTION: Reddish Brown and Brown Sandy Clay with Roots					
LIQUID LIMIT, %:	N/A	PLASTICITY INDEX, %:	N/A	MOISTURE, %:	26.9
D10, MM:	-	D30, MM:	-	D60, MM:	-
CLASSIFICATION		UNIFIED:	[CL]	AASHTO:	[A-7]
		SP. GRAVITY, Gs: -			
		FINES, %: 63.9			
		COEFF. OF CURVATURE, Cc: -			
		COEFF. OF UNIFORMITY, Cu: -			





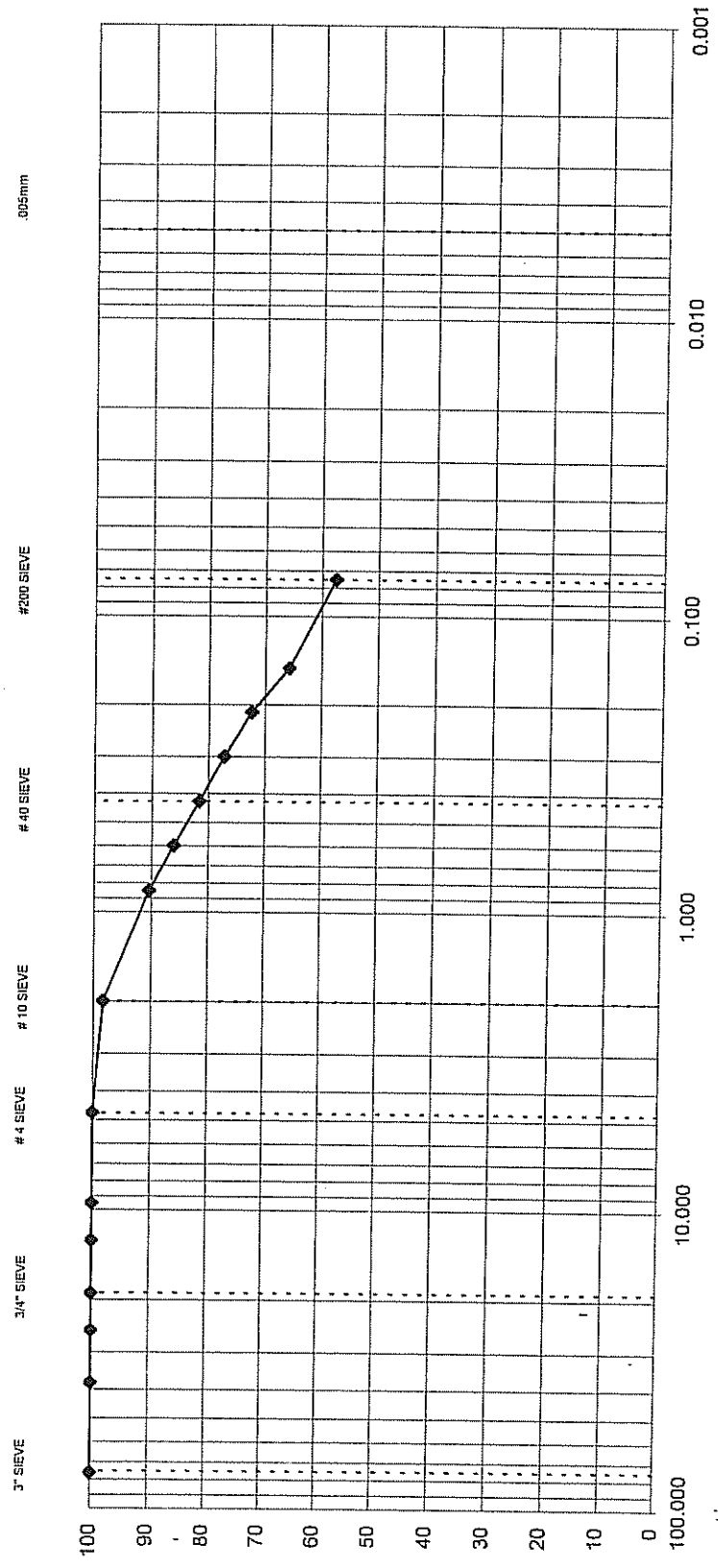
QORE[™]
PROPERTY SCIENCES

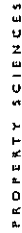
GRAIN SIZE DISTRIBUTION TEST REPORT (ASTM D422)



JOB NAME:	SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478				
JOB NO.:	7272P	REPORT NO.:	115605	DATE:	7/23/2007
BORING / PIT NO.:	HA - 1	DEPTH / ELEV.:	3' - 4'	SAMPLE NO.:	S - 4
SAMPLE LOCATION:	HAB				
SOIL DESCRIPTION:	Brown and Gray Sandy Lean Clay				
LIQUID LIMIT, %:	31	PLASTICITY INDEX, %:	14	MOISTURE, %:	19.4
D10, MM:	-	D30, MM:	-	COEFF. OF CURVATURE, C _c :	0.093
CLASSIFICATION	UNIFIED:		CL	AASHTO:	A-6(5)
SP. GRAVITY, G _s :		-			
FINES, %:		57.4			
COEFF. OF UNIFORMITY, C _u :		-			

GRAVEL		SAND		FINES	
COARSE	FINE	COARSE	MEDIUM	FINE	CLAY



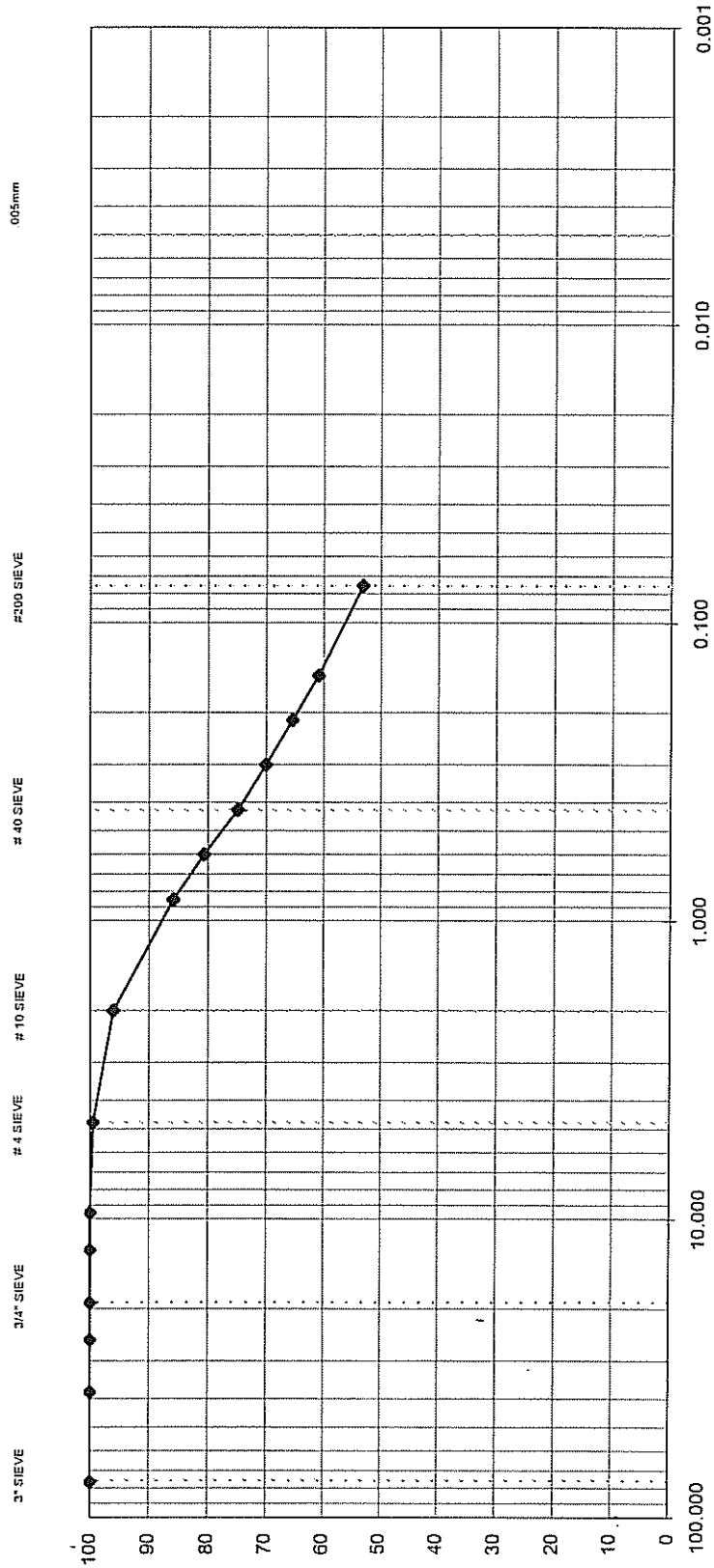


GRAIN SIZE IN MILLIMETERS

GRAIN SIZE DISTRIBUTION TEST REPORT (ASTM D422)

JOB NAME : SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478			
JOB NO. : 7272P	REPORT NO. : 115605	DATE : 4/30/2007	REVIEWED BY : KBF
BORING / PIT NO. : -	DEPTH / ELEV. : 0 - 3'	SAMPLE NO. : BS-1	SAMPLE TYPE : Bulk
SAMPLE LOCATION : Station: 543+00			
SOIL DESCRIPTION : Brown and Yellowish Brown Sandy Lean Clay			
LIQUID LIMIT, % : 30	PLASTICITY INDEX, % : 8	MOISTURE, % : 11.5	SP. GRAVITY, G_s : 2.72
D₁₀, MM : -	D₃₀, MM : -	D₆₀, MM : 0.15	FINES, % : 53.0
CLASSIFICATION		UNIFIED : CL	AASHTO : A-4(2)
		COEFF. OF CURVATURE, C_c : -	COEFF. OF UNIFORMITY, C_u : -

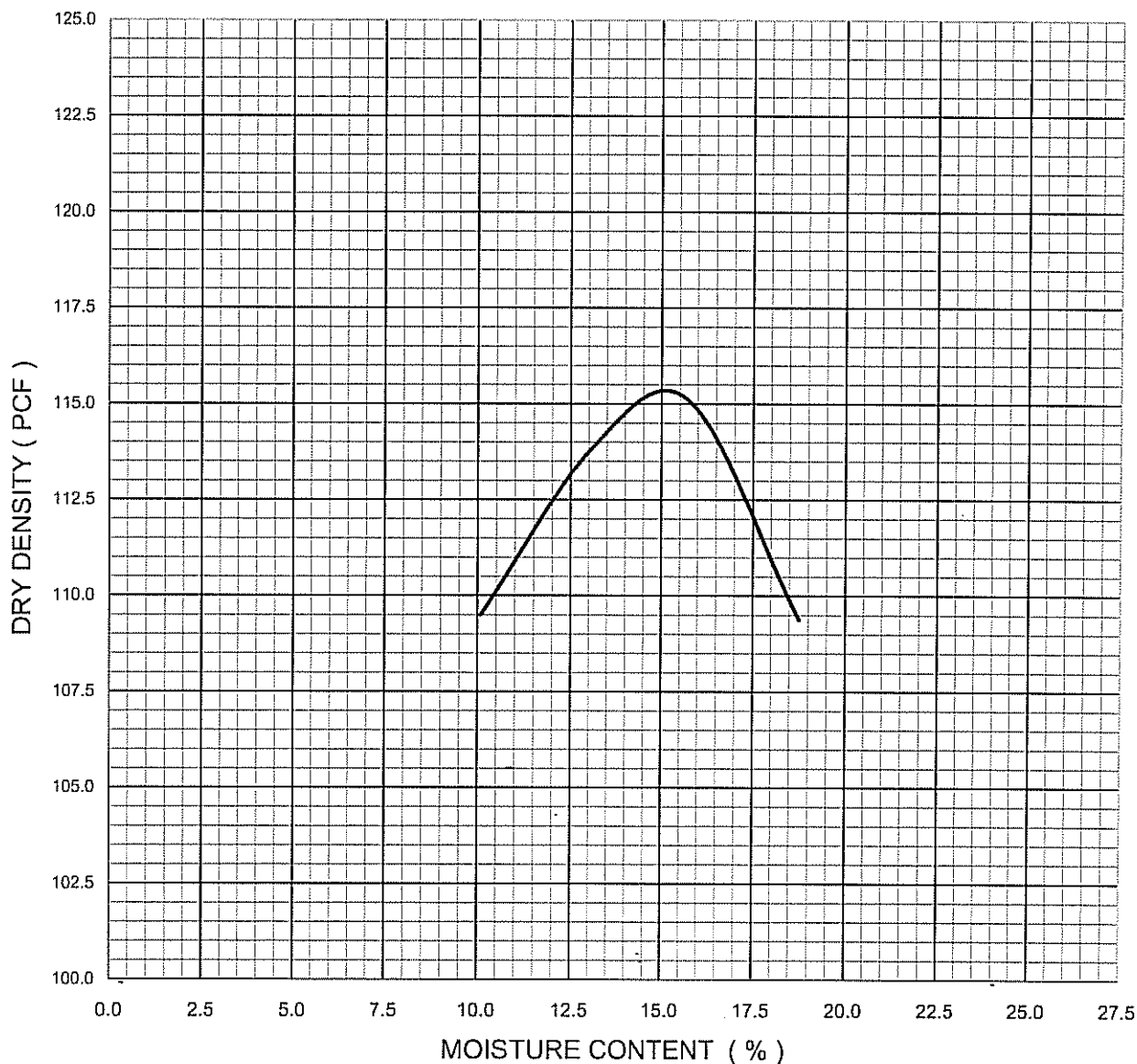
GRAVEL			SAND			FINES		
COARSE	FINE		COARSE	MEDIUM	FINE	SILT	CLAY	



GRAIN SIZE IN MILLIMETERS

MOISTURE / DENSITY RELATIONSHIPS OF SOIL (AASHTO T-99)

JOB NAME : SC-200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478				
CLIENT : SCDOT Research & Materials Laboratory				
JOB NO. : 7272P		REPORT NO. : 115605	DATE : 04/25/07	REVIEWED BY : KBF
BORING / PIT NO. : -		DEPTH / ELEV. : 0 - 3'	SAMPLE NO. : BS-1	
SAMPLE LOCATION : Station: 543+00				
SOIL DESCRIPTION : Brown and Yellowish Brown Sandy Lean Clay				
LIQUID LIMIT , % : 30		PLASTICITY INDEX , % : 8	FINES , % : 53.0	
CLASSIFICATION :		USCS : CL	AASHTO : A-4(2)	
PROCTOR TYPE : STANDARD		PROCEDURE : A	OVERSIZE , % : -	IN-SITU M.C. : 11.5%
UNCORRECTED MAXIMUM DRY DENSITY , PCF : 115.4			CORRECTED MAXIMUM DRY DENSITY , PCF : -	
UNCORRECTED OPTIMUM MOISTURE CONTENT , % : 15.1			CORRECTED OPTIMUM MOISTURE CONTENT , % : -	






DISTRIBUTION :

TRIAXIAL SHEAR TEST REPORT (ASTM D 4767)



REV4,1/13/04

JOB NAME: SC 200 - RBO Wateree Creek; File No. 20.131B.1; Project No. BR-BR20(004); Pin No. 33478
JOB NO.: 7272P **REPORT NO.:** 115605 **REVIEWED BY:** KBF **DATE:** 4/30/07
BORING / PIT NO.: - **DEPTH / ELEV.:** 0 - 3' **SAMPLE NO.:** BS - 1 **TYPE:** Bulk
SAMPLE LOCATION: Station: 543+00
SOIL DESCRIPTION: Brown & Yellowish Brown Sandy Lean Clay
LL, %: 30 **PI, %:** 8 **FINES, %:** 53.0 **G_s:** 2.72

SPECIMEN PROPERTIES									TEST PARAMETERS , TEST TYPE : CU/PP				
	INITIAL				AFTER CONSOLIDATION				SPECIMEN NO.		1	2	3
SPECIMEN NO.		1	2	3		1	2	3	B Value		0.95	0.95	0.95
DIAMETER , INCHES	D _o	2.82	2.83	2.82	D _c	2.82	2.81	2.79	BACK PRESSURE, ksf	U _o	8.6	8.6	8.6
HEIGHT , INCHES	H _o	6.03	6.01	6.03	H _c	6.02	5.97	5.96	CONFINING PRESSURE , ksf	σ ₃	1.0	3.0	5.0
WATER CONTENT, %	W _o	15.1	15.1	15.1	W _c	20.0	19.0	18.4	MAX. DEVIATOR STRESS ,ksf	σ ₁ -σ ₃	2.7	4.0	5.6
DRY DENSITY, PCF	γ _{dryo}	109.3	109.5	109.6	γ _{dryc}	109.9	111.9	113.1	ULT. DEVIATOR STRESS , ksf	σ ₁ -σ ₃	2.7	4.0	5.6
SATURATION ,%	S _o	74.3	74.6	75.0	S _c	104.2	103.7	101.3	Specimen Shape @				
VOID RATIO	e _o	0.553	0.551	0.548	e _c	0.544	0.517	0.500	Failure	Bulged			

CONTROLLED: Strain @ 0.062 % per minute T50, Minutes = 6.46
PROCTOR TYPE: Standard, MAXIMUM DRY DENSITY, PCF : 115.4, OPTIMUM MOISTURE CONTENT, % : 15.1
REMOVED: Specimens were remolded to 95 % of maximum dry density at about 0.0 % wet of o.m.c.

SHEAR STRENGTH PARAMETERS	TOTAL		EFFECTIVE	
	COHESION, C (ksf) :		APPARENT COHESION, (ksf) :	
	ANGLE OF INTER. FRICTION, φ (DEGREES) 15		ANGLE OF INTER. FRICTION, φ' (DEGREES) : 37	

