

(817) 509-3322

United States Department of Agriculture

Natural Resources Conservation Service National Design, Construction, and Soil Mechanics Center	Subject:	ENG - Soil Mechanics Report Unconfined Compressive Strength – Headcut Erodibility Index (Kh) Plum Creek No. 21 Caldwell County, Texas	Date:	JUN 222015
501 W. Felix, Bldg. 23 Fort Worth, Texas 76115	То:	John Mueller, P.E. State Conservation Engineer NRCS, Temple, TX	File Code: Job No:	210-22 7564
Phone:				

INTRODUCTION

Plum Creek No. 21 is an existing embankment dam located in Caldwell County, Texas, approximately five miles north of the City of Lockhart. Figure 1 shows the location of the dam.

Seven boreholes (BH), Nos. 250 through 256, were advanced to depths ranging from 5.5 to 31 feet, along the western, inside edge of the auxiliary spillway. The borehole locations are depicted in Figure 2.

A total of 24 Shelby tubes were delivered to the Fort Worth Soil Mechanics Lab (SML) for testing. Requested testing included: index, dry unit weight, and unconfined compressive strength. The results of the unconfined compressive strength testing will be utilized to determine the headcut erodibility index, Kh. The SML's scope of work was to perform the testing and provide the results.

The Shelby tubes were transported to the Lincoln SML for unconfined compressive strength (UCC) testing. Index testing of the samples was completed at the Ft. Worth SML.

INTERPRETATION AND DISCUSSION OF DATA

Index Tests and Water Content

The auxiliary spillway samples were classified in the field during drilling operations. The Texas State Geologist indicated that the profile of the spillway consisted of a thin layer of soil overlying siltstone/claystone. The soil layer was described as either silt or clay.

The submitted samples were classified in accordance with ASTM D2487, Classification of Soils for Engineering Purposes (Unified Soil Classification System). The samples classified as either lean clay to lean clay with sand (CL) or fat clay (CH).

Based upon the index testing the existing auxiliary spillway grade has the following profile:

Borehole Location	Surficial soil
250	СН
251	CL
252	CL
253	СН
254	CL
255	CL
256	СН

In addition, review of the boring logs indicate that the siltstone/claystone contact occurs at the following approximate elevation within each borehole.

Borehole	Elevation (ft)
B-250	516.5
B-251	517.8
B-252	506.4
B-253	499.4
B-254	496.8
B-255	491.3
B-256	Siltstone/claystone not encountered

Furthermore, although soil surveys provide a generalized indication of the soils that may be encountered at a site, they can assist in borehole placement. The Web Soil Survey identified two soil series within the auxiliary spillway: Crockett and Crockett Sandy Loam. The Web Soil Survey classifies these soils, per the Unified Soil Classification system (USCS) as lean clay (CL) and inelastic silt (ML). The boreholes were only advanced within the Crockett soil series (CL). A soil survey map of the spillway is provided as Figure 3.

Plum Creek No. 21 – Job No. 7564 Caldwell County, TX Unconfined Compression – Headcut Erodibility Index (K_h)

The full complement of the samples' index properties are provided as Attachment 1, Form NRCS-ENG-354.

Dispersion Tests

Crumb and Double Hydrometer (ASTM D6572 and D4221) tests were performed on each of the samples. A crumb test result of 1 indicates that dispersion is not present or is minimal, but a result of 3 or 4 is an indicator that the clays are dispersive.

The Crumb sometimes provides a negative indication of dispersion for dispersive clays, so the Double Hydrometer test is utilized as a validation of the Crumb Test result. Double Hydrometer results less than about 60 indicate that dispersion is not a problem.

Most samples' Crumb Test results were a 1 or 2, for both the one and four hour readings, with an associated low double hydrometer reading. The following sample test results were mixed and could be an indication of dispersive soils.

Ft. Worth Lab Sample No.	Field Sample No.	Depth (ft)	Crumb Test Result (1 hr/4hr)	Double Hydrometer (%)
342	250.1	5.0 – 7.5	2/3	31
346	251.3	5.0 – 7.5	2/3	18
347	251.4	7.5 – 10.0	3/4	24
361	254.1	5.0 – 7.5	3 / 4	41

Unconfined Compressive Strength (qu)

The Unconfined Compressive Strength test (UCC) (ASTM D2166) was performed on 21 samples at the Lincoln SML. The samples were sheared at their natural moisture content and associated saturation level. The samples were also sheared at their extruded diameters which allowed for any remnant parent material structure such as fractures to impact the results of the test. That is the UCC is a conservative estimate of compressive and shear strength.

ASTM D2166-13 requires a height-to-diameter ratio (H/D) of 2 to 2.5; however, some of the samples did not meet the H/D requirement. The strengths from samples with an

H/D ratio less than 2.0 were not included in the table below. Additionally these samples are denoted by an asterisk (*) in Attachment 1. The results of the unconfined compressive strength tests are provided in the table below:

Ft. Worth Lab Sample No.	Field Sample No.	USCS	Depth (ft)	Natural Moisture Content (%)	Dry Unit Weight (pcf)	Percent Saturation (%)	q _u (psf)
343	250.2	СН	10.0-12.5	25.0	94.4	84	4,015
345	251.2	CL	2.5-5.0	13.1	108	62	12,110*
348	251.5	СН	10.0-12.5	20.7	101	81	6,268
349	251.6	СН	12.5-15.0	18.0	96.9	65	1,947
351	251.8	СН	20.0-22.5	22.1	93.3	72	3,347
355	252.2	СН	5.0-7.5	18.4	97.8	68	8,732
357	252.4	CL	15.0-17.5	16.4	90.0	50	1,598
361	254.1	CL	5.0-5.9	11.7	106	53	9,222
361B	254.1		5.9-6.55	12.6	110	64	9,501
362	254.2	CL	15.0-17.5	18.9	95.9	67	5,177
364	255.2	CL	10.0-12.5	22.0	101	88	6,656
365	256.1	СН	3.0-5.5	19.6	97.9	72	6,349

* Sample 345 maxed out the load cell before failing.

The dry densities of the samples were obtained by measuring the dimensions of the UCC slugs and moisture content, prior to testing. The saturation level of the UCC samples ranged from 25.7% to 87.8% with an average of 63.2%. It is worth noting that

Plum Creek No. 21 – Job No. 7564 Caldwell County, TX Unconfined Compression – Headcut Erodibility Index (K_h)

the Plum Creek 21 samples were considerably drier than samples from previous K_h investigations (Upper Brushy 32, Lower Brushy 20, Williams 3) which had saturation levels greater than 80%.

Additionally, UCC testing could not be performed on the following samples due to the accompanying reason:

Field Sample Nos.	Reason
250.1	In order to extrude sample, tube was cut multiple times. Resulting sample was not large enough to perform shear test.
251.1	Sample consisted of mainly topsoil and a shear sample could not be obtained.
251.6	In order to extrude sample, tube was cut multiple times. Resulting sample was not large enough to perform shear test.
251.9	Sample fell apart after extrusion.
253.1	In order to extrude sample, tube was cut multiple times. Resulting sample crumbled upon extrusion.

CONCLUSIONS AND RECOMMENDATIONS

The following are conclusions regarding the results of the testing:

- 1. The Web Soil Survey identified the soil within the existing auxiliary spillway predominantly as CL (Crockett soil series); however, it also noted the potential presence of a ML in the outside curve of the spillway.
 - a. Boreholes were not advanced along the outside edge of the spillway and the presence of an ML could not be determined.
 - b. CLs and MLs possess different erosion resistance characteristics.
- 2. The Crumb and Double Hydrometer testing identified most samples as being non-dispersive.
 - a. Mixed test results were obtained in the surficial soils at Boreholes 250, 251, and 254.
 - b. These soils may possess dispersive characteristics that would influence headcut erodibility.

- c. ASTM D4647 Pinhole Test could be performed on these samples to make clear the mixed test results.
- 3. The unconfined compressive strength test results ranged from 1,598 psf to 12,110 psf.
 - a. Most samples (81%) failed at a vertical strain of 5% or less.
 - i. Sample Nos. 251.4, 252.5, 253.2, 255.1 failed at vertical strains slightly above 5%.
 - b. Boreholes 251, 252 and 254 showed a loss of strength with depth.
 - i. This is atypical for cohesive shear strength which generally increases with depth.
- 4. The calculation of the headcut erodibility index (K_h) should be thought of in terms of a sensitivity analysis and all the factors contained within this report and the field documents should be take into account.

If you would like to discuss this report or if you need to request further testing, please contact me at (817) 509-3322.

Prepared by:

PHILLIP T. RIPPÉ, P.E. Head, Soil Mechanics Lab NRCS, Fort Worth, TX

Plum Creek No. 21 – Job No. 7564 Caldwell County, TX Unconfined Compression – Headcut Erodibility Index (K_h)

Figures:

Figure 1 – Site Map Figure 2 – Borehole Locations Figure 3 – Soils Map

Attachments:

- 1. Form NRCS-ENG-354, Soil Mechanics Laboratory Test Data, 2 sheets
- 2. Undisturbed Sample Characteristics, 12 sheets
- 3. Unconfined Compression Test Reports, 21 sheets
- cc: John Hrebik, Design Engineer, NRCS, Temple, TX Stephen Reinsch, Co-Director, NDCSMC, NRCS, Lincoln, NE Noller Herbert, Director, CED, NRCS, Washington, DC

FIGURES

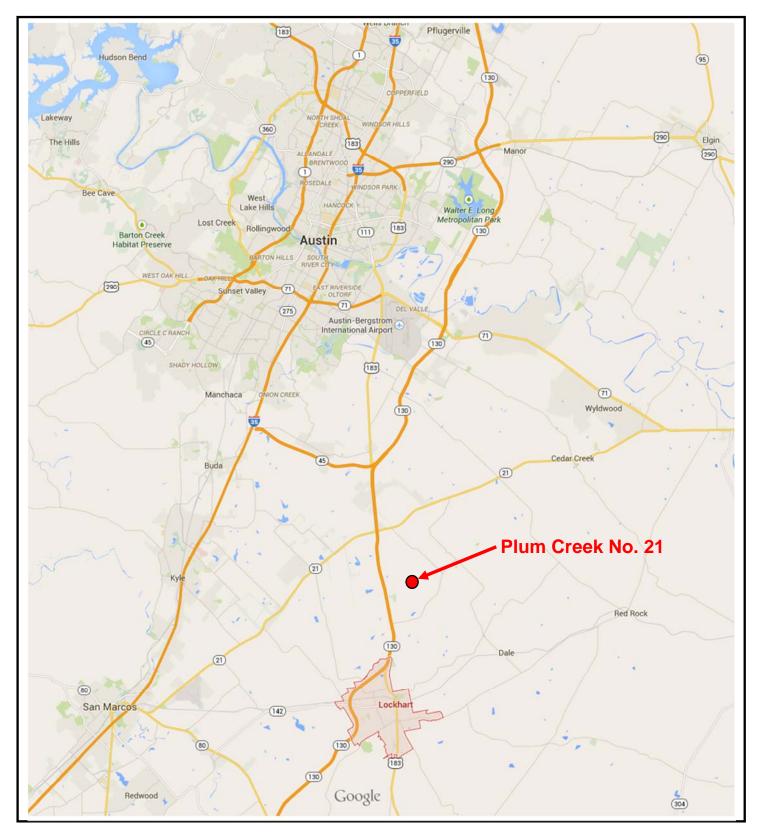


Figure 1 – Site Map

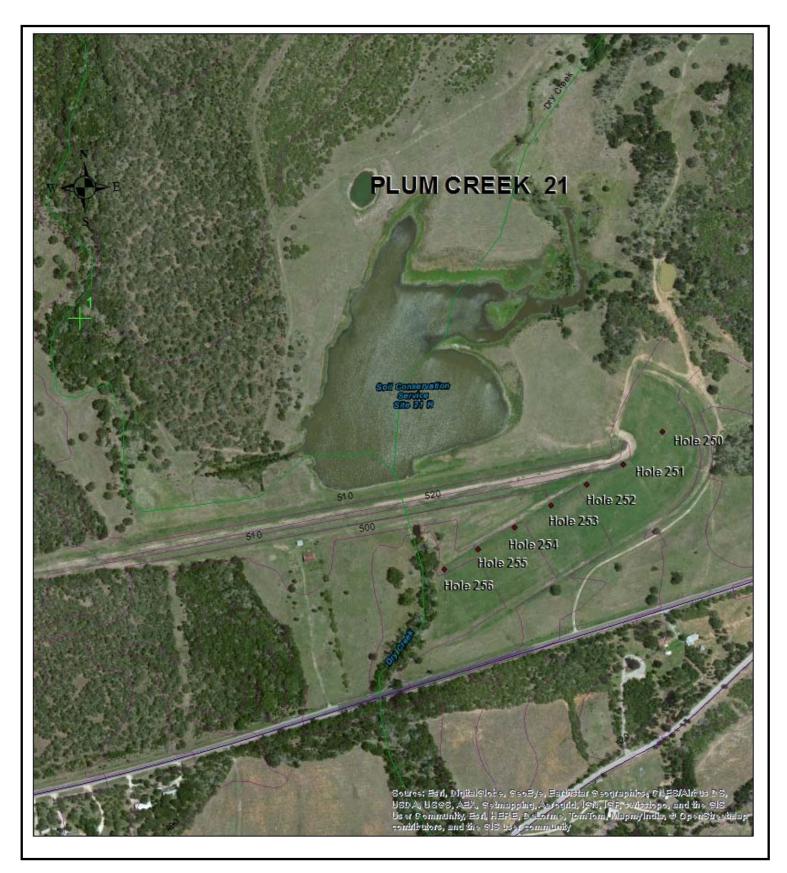


Figure 2 – Borehole Locations

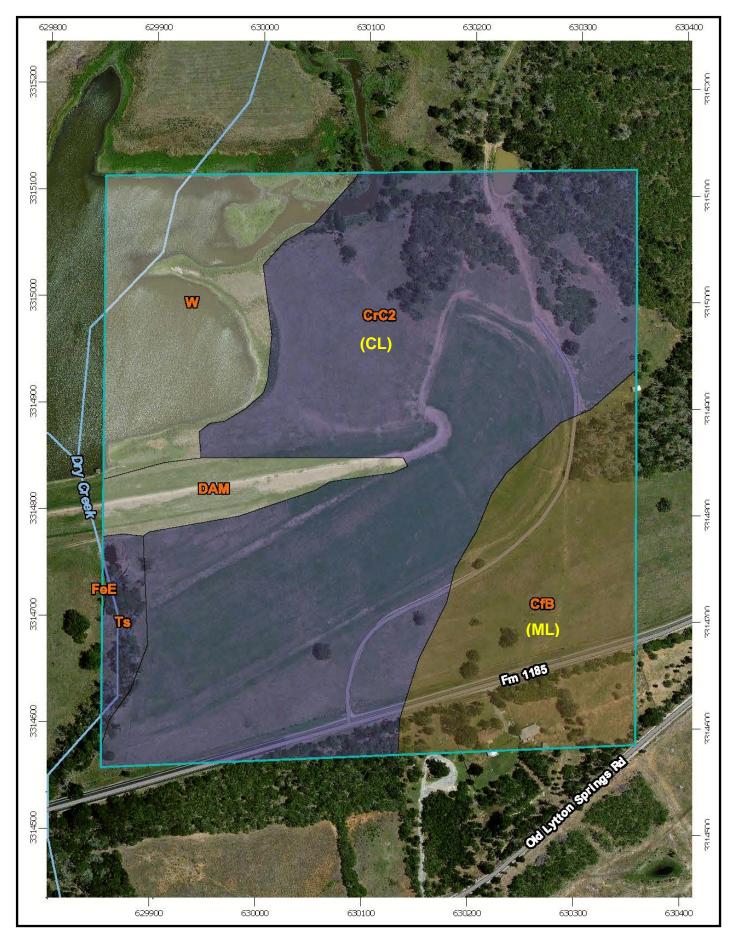


Figure 3 – Soil Map

Attachment 1

NRCS-ENG-354 Soil Mechanics Data

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																																Job No.	75	64		
	9/12	2/14	ТХ	WF	F-07			(Grain Si	ze Distrib		echanio xpresse			iner by E	Dry Wei	ight				Atterb	erg	ition	%	(%)	/eight	io		Dispe	rsion		Moisture	-Density			
	Lab. Sample	Field Comple	Plum Creek No. 21				Fii	nes				Sand	d				Grave	əl			Limit	ts	Classification	Salts ⁶	Natural Moisture (%)	Vatural Dry Unit Weigh (Ib/ft ³)	Percent Saturation	л.				ASTM	D698	0	Unconfined Compressive Strength (psf)	
	No.	No.	7564 Caldwell Co.	Depth (ft)	Sample Type																		d Cla	Soluble S	al Mo	Dry ((lb/f	ent S	Double Hydrometer	Crumb	Test	Pinhole	Max γ_d		G _S	onfin npres ingth	рН
			Location and Description				0.005 0			0.105	0.250 0).42 (0.84	#10 #4 2.0 4.7	6 9.52	5 12.7	19.05 2	25.4 3		6.2	L.	P.I.	Unified	Sol	Natur	atura	Perc	Hydr D	1 Hr	4 Hr	Ρi	(pcf)	w ₀ %		Cor Stre	
								13 63						mm mr	n mm	mm	mm r	mm r	nm m	1m	50		СН	0.5	22.1	z		31						0.70		
F14	342	250.1	Approx. 10+85 CL AS 21' left	5' - 7.5'	Undist.	26	36	43 63	5 75	89	98	99	99	100						;	50	31 (<0.5	22.1			51	2	3				2.73		
						24	10	70 70						100								22	011	0.5	05.0	04.4	04.0	00	1					0.75	4.015	-
	343	250.2	Approx. 10+85 CL AS 21' left	10' - 12.5'	Undist.	31	43 (50 79	90	-	-	-	-	100							52	33	СН	<0.5	25.0	94.4	84.0	26	1	1				2.75	4,015	
																				_																
	344	251.1	Approx. 14+05 CL AS 115' left	0' - 2.5'	Undist.	38	49 5	55 71	82	-	-	-	-	100							45	26	CL	<0.5	6.3			12	1	1				2.73		
																												1								
	345	251.2	Approx. 14+05 CL AS 115' left	2.5' - 5'	Undist.	33	41 4	49 63	3 73	85	97	98	99	100							45	25	CL	<0.5	13.1	108	61.6	15	1	2		-		2.72	12,110	
				Ŭ						ТТ										_				1												
	346	251.3	Approx. 14+05 CL AS 115' left	5' 7.5'	Undist.	27	34 4	42 64	78	99	100										42	20	CL	<0.5	12.8	88.6	37.8	18	2	3				2.73	2,182*	
				7.0																						1							1			
	347	251.4	Approx. 14+05 CL AS 115' left	7.5' - 10'	Undist.	31	42 8	55 74	92	-	-	-	-	100							52	32	СН	<0.5	17.6	91.6	55.2	24	3	4				2.75	2,303*	
				10																						1		T	r r				1			
	348	251.5	Approx. 14+05 CL AS 115' left	10' - 12.5'	Undist.	37	52 6	59 83	92	-	-	-	-	100						•	60	38	СН	<0.5	20.7	101	81.4	21	1	1				2.76	6,268	
			leit	12.5																																
	349	251.6	Approx. 14+05 CL AS 115' left	12.5' - 15'	Undist.	37	50 6	89 85	93	-	-	-	-	100						•	63	41 (СН	<0.5	18.0	96.9	64.5	20	1	2				2.74	1,947	
			leit	15																													1			
	350	251.7	Approx. 14+05 CL AS 115'	15' - 17.5'	Undist.	32	42 6	80 80	91	-	-	-	-	100							51	29	СН	<0.5	14.0	93.1	45.5	12	1	1				2.76	1,757*	
			left	17.5			1											1				[T		1	[ı ı		1		,			+
	351	251.8	Approx. 14+05 CL AS 115'	20' - 22.5'	Undist.	41	56	75 92	98	-	-	-	-	100						(63	41 (СН	<0.5	22.1	93.3	71.9	18	1	1				2.76	3,347	
			left	22.5		I			-		<u> </u>			<u> </u>										T			[T	, , ,							<u>_</u>
	352	251.9	Approx. 14+05 CL AS 115'	25' - 26.5'	Undist.	24	35 5	52 67	81	-	-	-	-	100							<mark>46</mark>	25	CL	<0.5	15.7			17	1	1				2.78		
			left	20.5													·									1		1	- 		1					
	353	251.10	Approx. 14+05 CL AS 115'	30' -	Undist.	23	33 8	50 79	91	-	-	-	-	100						_	48	24	CL	1.0	16.6	97.9	62.0	12	1	1				2.70	6,391	
			left	31'	ļ																	;						- <u></u>	+ 1							
	354	252.1	Approx. 16+04 CL AS118'	0' -	Undist.	24	31 4	44 65	78	-	-	-	-	100						:	30	14	CL	<0.5	8.2	89.6	25.7	16	1	1				2.64	8,974*	
		202.1	Left	2.5'		Į_	!		I		<u>I</u>	<u>I</u>	J.	I			++-	!			!	Į		4					, <u> </u> !							

Sheet _1__ of _2__

U.S. Department of Agriculture Natural Resources Conservation Service

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9/	12/14	ТХ	WF-07				Gr	ain Size I	Distribu			I Analys as Perc		er by Dr	y Weight				Atter		ation	%	(%)	Weight	tion		Dispe	ersion		Moisture-	-Density		_	
Lab. Sampl No.	e Field Sample No.	Plum Creek No. 21 7564	Depth (ft) Sampl			Fines	;				Sand					Gravel			Lin	nits	d Classification	Soluble Salts	Natural Moisture (%)	Unit it ³)	Percent Saturation	uble ometer	Cruml	b Test	Pinhole	ASTM [Max γ _d		Gs	Unconfined Compressive Strength (psf)	рН
		Caldwell Co.	Type	0.00 mn	02 0.00	5 0.02	0.05 mm	#200 # 0.074 0 mm r	140 # 105 0. nm r	#60 #40 .250 0.4 mm mn	2 0.8	34 2.0	4.76		12.7 1	3/4" 1" 9.05 25.4 mm mm	38.1	3" 76.2 mm	L.L.	P.I.	Unified	Sol	Natura	Natural Dry I (Ib/I	Pero	Dout	1 Hr	4 Hr	Pir	(pcf)	w ₀ %		Unc Con Stre	
355	252.2	Approx. 16+04 CL AS118' Left	5' - 7.5' Undis	.t.				95			-								66	45	СН	1.2		97.8	67.6	9	1	2				2.74	8,732	
356	252.3	Approx. 16+04 CL AS118' Left	10' - 12.5' Undis	. 42	2 59	79	92	96	-		-	100							66	43	СН	<0.5	22.2	92.6	71.7	32	2	2				2.74	3,640*	
357	252.4	Approx. 16+04 CL AS118' Left	15' - 17.5' Undis	it. 23	3 34	50	80	92	-		-	100							46	25	CL	<0.5	16.4	90	50.3	35	2	2				2.72	1,598	
358	252.5	Approx. 16+04 CL AS118' Left	25' - 26' Smal	25	5 35	45	63	78	-		-	100							45	24	CL	0.5	18.1	94.3	61.7	16	1	1				2.72	2,498*	
359	253.1	Approx. 18+04 CL AS120' Left	10' - 12.5' Smal	36	6 49	49	92	98	-		-	100							59	37	СН	<0.5	17.0			20	1	2				2.71		
360	253.2	Approx. 18+04 CL AS120' Left	20'- 22' Smal	29	42	53	77	86	-		-	100							52	30	СН	1.5	19.1	97.1	68.7	12	1	1				2.74	8,837*	
361	254.1	Approx. 20+03 CL AS117' Left	5' - 7.5' Smal	25	5 32	42	53	66	73 9	96 99	9 10	00							35	19	CL	<0.5	11.7 12.6	106	52.7 63.9	41	3	4				2.71 2.71	9,222 9,501	
362	254.2	Approx. 20+03 CL AS117' Left	15' - 17.5' Smal	31	42	54	78	87	-		-	100)						49	28	CL	2.1	18.9	95.9	T	14	1	1				2.73	5,177	
363	255.1	Approx. 22+03 CL AS 116' Left	5' - 7.5' Smal	25	5 36	48	78	89	-		-	100)						47	24	CL	<0.5	20.2	98.2	73.6	33	2	2				2.77	3,908*	
364	255.2	Approx. 22+03 CL AS 116' Left	10' - 12.5' Smal	II 31	39	52	77	87	-		-	100							49	27	CL	<0.5	22.0	101	87.8	15	2	2				2.74	6,656	
365	256.1	Approx. 22+04 CL AS 117' Left	3' - 5.5' Smal	37	48	65	85	91	-		-	100)						56	35	СН	<0.5	19.6	97.9	72.4	23	1	1				2.73	6,349	

Sheet _2__ of _2__

Attachment 2

Undisturbed Sample Characteristics

						LABORATORY NO.	
MATERIA TESTING RE		-	DEPARTMENT of AG L RESOURCES CONSEL			URBED SA ACTERIST	
		- 01					
Plum C TESTED AT	reet	<u>_ d </u>	<u>, 1-X</u>	APPROVED BY		DATE	
NDCSM	0-61	NCOLA	U. NE	ALLINOVED DI		1-12	-14
FIELD SAMPLE NO.	DEPTH (FT.)		SAMPLE LOCATION		TYPE OF SAMPLE	LABORATORY NO.
250.1	57		rebay? Au	(Spuch	F14-342	2.8"Shelby	15-58
COLOR	RELAT	IVE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET / PENETROMETER (T.S.F.)	VISUAL CLASSIFICATION (USCS)
Tan	1	St	and the second s		Grittu	and the second second	Sm
					Silly		
					2		
ω <u>21,8</u> % Y.	<u>152</u> g/cc				DESCRIBED BY	EK, RM	
30'	Vois 4	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	out Lube cut Lube cut tube	extraded 12" whe 16" when Silty,s Findex Comple	· Bottom h n in the th extruded. andy make only not	tring usable	pprovinate inded to
FIELD SAMPLE NO. 256, 2 COLOR	10 /0	TO 25' 5	CONSISTENCY	POROSITY OR	P14-343 TEXTURE	TYPE OF SAMPLE 2.8" Shelbi POOKET PENETROETER	LABORATORY NO. 15-59
NO.	FROM			W. SDWY	F14-343 TEXTURE	TYPE OF SAMPLE	LABORATORY NO.
NO. 256,2 COLOR	FROM			POROSITY OR ,	F14-343	TYPE OF SAMPLE 2.8" Shelbi	LABORATORY NO. 15-59 VISUAL CLASSFICATION (USCS)
NO. 256,2 COLOR Tanish/	FROM 10 1: RELA MOIS MOI	TO R51 TIVE TURE S1	CONSISTENCY	POROSITY OR ,	F14-343 TEXTURE Gritty Silty	TYPE OF SAMPLE 2.8" Shelbi	LABORATORY NO. 15-59 VISUAL CLASSFICATION (USCS)

NRCS-ENG-129 7-95					LABORATORY NC)
MATERIA TESTING RE		. DEPARTMENT of AG L RESOURCES CONSER			URBED SA ACTERIS	
	eek 21	, TV				
	tell as		APPROVED BY		DATE 1-10	2-15
FIELD SAMPLE	DEPTH (FT.) FROM TO	<u></u>	SAMPLE LOCATION		TYPE OF SAMPLE	LABORATORY NO.
251,1	0 F 5' F	1 Material cre	ST -AUX.SDWY	F14-344	2,8"Shelby	15-60
COLOR	RELATIVE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PENETROMETER (T.S.F.)	VISUAL CLASSIFICATION (USCS)
LA Brown	DRY	V.SIFE F	Coots/Trash	SMOOTH	²⁴ 73706539	CH_
MD, Brown	DAMO	V.STIFF 1	Loots Trash	Supp th	9.00.10/00/C25594	<u>CM</u>
w 14,9 % Yd -	<u>1.7 g</u> /cc			DESCRIBED BY	K, RM	
	2.8"	REMARKS				
► ▼	VOID HIZ"	$\sqrt{2}$	700 2	しんしてんの	~ · · · · · · ·	
	VOIDTIC	_ T	1040	-10" TOPS	son wit	th ally
	ropsoils]	Fullo Fash				
30 1	8-10	tuitrash	Botto	n 12-15" 1	ots of br.	earks, -
		25 1/2	rrank	SUVOIDS '	whoote	S-R'
	a construction of the second s		******			
2-71		broke		ODOX ON	$\mathcal{N}_{\mathcal{A}}$	
$ \rangle C$	4	- Voibleraci	4	National Constitution		
			Lenit	weight & Hz	6 takow	
					Photos	2
FIELD SAMPLE	DEPTH (FT.)	-	SAMPLE LOCATION		TYPE OF SAMPLE	LABORATOR NO.
251.2	FROM TO 2.5 51	Crest Aux.	Spwy	F14-345	10010111	
- <u>~), ~ [</u>	BELATIVE	T KOT MUL	POROSITY OR		POCKET PENETROMETER (T.S.F.)	VISUAL CLASSIFICATION (USCS)

ω

ISUAL SIFICATION USCS) 4.5+ SMOOTH VISTICE CIP Fine hosts Throughout 51-06-12 Jannigh Damp Brown 13,11% Y. 172 8/00 (From QU SKK DESCRIBED BY REMARKS 2.8" top 7" slightly darker krown & More moisture than rest of SAMPIR (10P2) Voio 2.1/2" Middle of SAMple Brake, use for (0+2 Saven 71) LOONI "broke STADER BOTTOM 12", SOMECTACKS & "broke" dryee (20F2) broke 30" 262 12082 5AVED 121 Recommend lofz for complex tests.

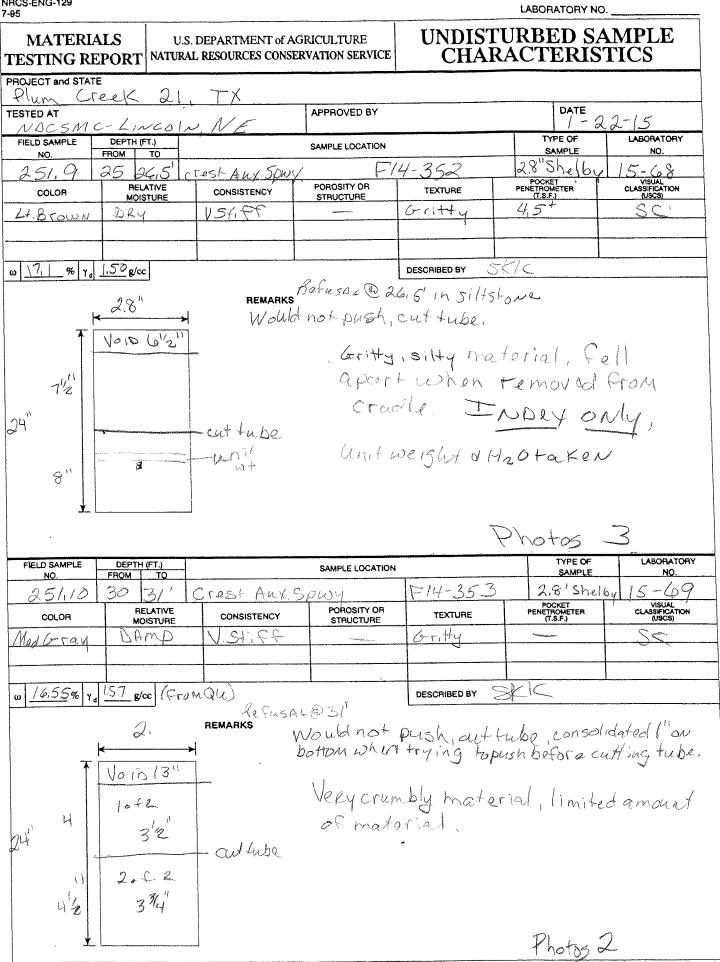
Photos 2

					LABORATORY NC	
MATERIA ESTING RI		J.S. DEPARTMENT of A RAL RESOURCES CONS			URBED SA ACTERIS	
OJECT and STAT						
Plum C	reek 2	L TX		·		
STED AT		N/C	APPROVED BY		DATE	
JUCSM	C- LINC	ON, NE			TYPEOF	U-LS LABORATORY
IELD SAMPLE NO.	DEPTH (FT.) FROM TO		SAMPLE LOCATION		SAMPLE	NO.
251.3	5 6,5'	Crest Aux, S	Salar El	4-346	28" Shelby	15-62
			POROSITY OR	TEXTURE	POCKET PENETROMETER (T.S.F.)	VISUAL
COLOR	MOISTURE	UNSISTENCT	STRUCTURE		(T.S.F.)	<u>(Uscs)</u> C.M
Tan	- DRY	1.2115	and the second s	SMOOTH_	*********	<u> </u>
			<u> </u>			
1276% Yo	<u>142</u> g/cc (C	romau)		DESCRIBED BY	<u>ik</u>	
	2.8"	REMARKS	Bottomcons	olidooled 1/2"	then would a	sot Push.
	<	>	Cut Lube			
1	Voip 1434	n				
			Very dr	y crumbly	SAMEJA	
	54 D			- <u> </u>	river part i	
	SAVED	71	10p halt	- Stavlad type	ther whon <3 though.	extruded,
	1 1 1		bariza	total conclusion	Ss though	
	6/21		161166	anial crack	the second s	
	62	- cuttube				
		- cut tube	Bo that	nhalf fel	apart - 1	
			Bo that		apart - 1	
	JNORF	- cut tube	Bo that	nhalf fel	apart - 1	
		6	Bo that	nhalf fel	apart - 1	
		1/2 h	Bo that	n half tell is section	apart.]	
		6	Bo that	n half tell is section	apart - 1	
FIELD SAMPLE	JN DEPTH (FT.)	1/2 h	Bo that	n half tell is section	apart.]	
FIELD SAMPLE NO.	DEPTH (FT.) FROM TO	Vaio Vaio Crumbly	Bo ttop on La SAMPLE LOCATION	nhalftell is section P	hatos a	LABORATORY
FIELD SAMPLE NO. 251.9	DEPTH (FT.) FROM TO 7.5 10	Lo' 1/2" Vails Crumbly Crumbly	BO HOA DN HA SAMPLE LOCATION	P F14-347	hatos a type of sample 28 "Shek	LABORATORY NO.
FIELD SAMPLE NO.	DEPTH (FT.) FROM TO	Lin Vaid Crumbly Crumbly Crust AUX CONSISTENCY	Bo ttop on La SAMPLE LOCATION	rhalf fell 13 Sachiew P F14-347 TEXTURE	hatos a type of sample 28"Shok penetrometer (r.s.F.)	LABORATORY
FIELD SAMPLE NO. 251.4	DEPTH (FT.) FROM TO 7.5 10 ³ RELATIVE	Lo' 1/2" Vails Crumbly Crumbly	BO HOA DN HA SAMPLE LOCATION	P F14-347	hatos a type of sample 28"Shel	LABORATORY
FIELD SAMPLE NO. 251.4 COLOR	DEPTH (FT.) FROM TO 7.5 10 ³ RELATIVE MOISTURE	Lin Vaid Crumbly Crumbly Crust AUX CONSISTENCY	BO HOA DN HA SAMPLE LOCATION	rhalf fell 13 Sachiew P F14-347 TEXTURE	hatos a type of sample 28"Shok penetrometer (r.s.F.)	LABORATORY
FIELD SAMPLE NO. 251.4 COLOR TAM	DEPTH (FT.) FROM TO 7.5 10 ³ RELATIVE MOISTURE	Crumbly Crumbly Crumbly Crust AUX CONSISTENCY V Stiff	BO HOA DN HA SAMPLE LOCATION	rhalf fell 13 Sachiew P F14-347 TEXTURE	hatos a type of sample 28"Shok penetrometer (r.s.F.)	LABORATORY
FIELD SAMPLE NO. 251.4 COLOR TAM	DEPTH (FT.) FROM TO 7.5 10 ³ RELATIVE MOISTURE	Crumbly Crumbly Crumbly Crust AUX CONSISTENCY V Stiff	BO HOA DN HA SAMPLE LOCATION	rhalf fell is sachion P F14-347 TEXTURE SMOOTH	hatos a type of sample 28"Shok penetrometer (r.s.F.)	LABORATORY
FIELD SAMPLE NO. 251.4 COLOR TAM	DEPTH (FT.) FROM TO 7.5 10 ³ RELATIVE MOISTURE	6'' Vaid Crumbly Crumbly Crumbly Crumbly Consistency VSYAF VSYAF	BO HON DN HU SAMPLE LOCATION SPW Y POROSITY OR STRUCTURE	A half fell is sachion P F14-347 TEXTURE SMOOTA DESCRIBED BY	hotos Type of SAMPLE 28 "Shek PENETROMETER (T.S.F.) 4. St 5KK, RM	LABORATORY
FIELD SAMPLE NO. 251.4 COLOR TAM	DEPTH (FT.) FROM TO 7.5 10 ³ RELATIVE MOISTURE DAM d 1.47 g/cc (F	6'' Vaid Crumbly Crumbly Crumbly Crumbly Consistency VSYAF VSYAF	BO HOA DN HA SAMPLE LOCATION	A half fell is sachion P F14-347 TEXTURE SMOOTA DESCRIBED BY	hotos Type of SAMPLE 28 "Shek PENETROMETER (T.S.F.) 4. St 5KK, RM	LABORATORY
FIELD SAMPLE NO. 251.4 COLOR TAM	DEPTH (FT.) FROM TO 7.5 10 ³ RELATIVE MOISTURE DAMP	6'' Void Crumbly Crumbly Crumbly Consistency V Staff Consistency N Staff Consistency N Staff REMARKS	SAMPLE LOCATION SAMPLE LOCATION SPW 4 POROSITY OR STRUCTURE	half fell is sachion P F14-347 TEXTURE SMOOTH DESCRIBED BY h, cut tube:	hatos a type of sample 28 "Shok PENETROMETER (T.S.F.) 4. St 5 KK, RM 5 Limes	LABORATORY NO. by 15-65 visual classification (USCS)
FIELD SAMPLE NO. 251.4 COLOR TAM	DEPTH (FT.) FROM TO 7.5 10 ³ RELATIVE MOISTURE DAMP	6'' Void Crumbly Crumbly Crumbly Consistency V Staff Consistency N Staff Consistency N Staff REMARKS	Bo HON on Hu SAMPLE LOCATION SPW Y POROSITY OR STRUCTURE Nould not pus ONly ab	half fell is sachion P F14-347 TEXTURE SMOOTA DESCRIBED BY h. cut tube! le to salvag	hotos o Type of SAMPLE 2 28 "Shek PENETROMETER (T.S.F.) 4. St 5 KK, RM 5 times 0 top 5", w	2 LABORATORY NO. 6415-63 CLASSIFICATION (USCS) C.A ill try
FIELD SAMPLE NO. 251.4 COLOR TAM	DEPTH (FT.) FROM TO 7.5 10 ³ RELATIVE MOISTURE DAM d 1.47 g/cc (F 2.5' Void 4 ¹¹ 2 ¹¹	Crumbly Crumbly Crumbly Crumbly Crumbly Consistency V Strff romQU' REMARKS V	Bo HON on Hu SAMPLE LOCATION SPW Y POROSITY OR STRUCTURE Nould not pus ONly ab	half fell is sachion P F14-347 TEXTURE SMOOTA DESCRIBED BY h. cut tube! le to salvag	hatos a type of sample 28 "Shok PENETROMETER (T.S.F.) 4. St 5 KK, RM 5 Limes	2 LABORATORY NO. 6415-63 CLASSIFICATION (USCS) C.A ill try
FIELD SAMPLE NO. 251.4 COLOR TAM	DEPTH (FT.) FROM TO 7.5 10 ³ RELATIVE MOISTURE DAM d 1.47 g/cc (F 2.5' Void 4 ¹¹ 2 ¹¹	Crumbly Crumbly Crumbly Crumbly Crumbly Consistency V Strff Consistency N Strff REMARKS V	SAMPLE LOCATION SAMPLE LOCATION SPWY POROSITY OR STRUCTURE Nould not pus ONly ab to run a	half fell is sachion P F14-347 TEXTURE SMOOTH DESCRIBED BY h. cut tubes le tosalvag	hotos o Type of SAMPLE 28"Shek PROTROMETER (T.S.F.) 4.5+ 5KK, RM 54.54 54.55 64.005"; wo st on this 5	2 LABORATORY NO. 5415-65 VISUAL CLASSIFICATION (USCS) C.A ill try ection,
FIELD SAMPLE NO. 251.4 COLOR TAM	DEPTH (FT.) FROM TO 7.5 10 ³ RELATIVE MOISTURE DAMP	6' VOID Crumbly Crumbly Crumbly Consistency V Staff Consistency V Staff Consistency N Staff Consistency N Staff Consistency N Staff Consistency N Staff Consistency N Staff Consistency N Staff Consistency N Staff Consistency Consistency N Staff Consistency Consistency N Staff Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consis	SAMPLE LOCATION SAMPLE LOCATION SPWY POROSITY OR STRUCTURE Nould not pus ONly ab to run a	half fell is sachion P F14-347 TEXTURE SMOOTH DESCRIBED BY h. cut tubes le tosalvag	hotos o Type of SAMPLE 2 28 "Shek PENETROMETER (T.S.F.) 4. St 5 KK, RM 5 times 0 top 5", w	2 LABORATORY NO. 5415-65 VISUAL CLASSIFICATION (USCS) C.A ill try ection,
FIELD SAMPLE NO. 251.4 COLOR TAM	DEPTH (FT.) FROM TO 7.5 10 ³ RELATIVE MOISTURE DAM d 1.47 g/cc (F 2.5' Void 4 ¹¹ 2 ¹¹	6'' VOID Crumbly Crumbly Crumbly Consistency V Stiff CONSISTENCY N Stiff COMQU' REMARKS V CONSISTENCY COMQU' REMARKS V	SAMPLE LOCATION SAMPLE LOCATION SPWY POROSITY OR STRUCTURE Nould not pus ONly ab to run a	half fell is sachion P F14-347 TEXTURE SMOOTH DESCRIBED BY h. cut tubes le tosalvag	hotos o Type of SAMPLE 28"Shek PROTROMETER (T.S.F.) 4.5+ 5KK, RM 54.54 54.55 64.005"; wo st on this 5	2 LABORATORY NO. 5415-65 VISUAL CLASSIFICATION (USCS) C.A ill try ection,
FIELD SAMPLE NO. 251.4 COLOR TAM	DEPTH (FT.) FROM TO 7.5 10 ³ RELATIVE MOISTURE DAM d 1.47 g/cc (F 2.5' Void 4 ¹¹ 2 ¹¹	6' VOID Crumbly Crumbly Crumbly Consistency V Staff Consistency V Staff Consistency N Staff Consistency N Staff Consistency N Staff Consistency N Staff Consistency N Staff Consistency N Staff Consistency Consistency N Staff Consistency Consistency N Staff Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Consistency Co	SAMPLE LOCATION SAMPLE LOCATION SPWY POROSITY OR STRUCTURE Nould not pus ONly ab to run a	half fell is sachion P F14-347 TEXTURE SMOOTH DESCRIBED BY h. cut tubes le tosalvag	hotos o Type of SAMPLE 28"Shek PROTROMETER (T.S.F.) 4.5+ 5KK, RM 54.54 54.55 64.005"; wo st on this 5	2 LABORATORY NO. 5415-65 VISUAL CLASSIFICATION (USCS) C.A ill try ection,
FIELD SAMPLE NO. 251.4 COLOR TAM	DEPTH (FT.) FROM TO 7.5 10 ³ RELATIVE MOISTURE DAM d 1.47 g/cc (F 2.5' Void 4 ¹¹ 2 ¹¹	Crumbly Crumbly Crumbly Crumbly Crumbly Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF	SAMPLE LOCATION SAMPLE LOCATION SPWY POROSITY OR STRUCTURE Nould not pus ONly ab to run a	half fell is sachion P F14-347 TEXTURE SMOOTH DESCRIBED BY h. cut tubes le tosalvag	hotos o Type of SAMPLE 28"Shek PROTROMETER (T.S.F.) 4.5+ 5KK, RM 54.54 54.55 64.005"; wo st on this 5	2 LABORATORY NO. 5415-65 VISUAL CLASSIFICATION (USCS) C.A ill try ection,
FIELD SAMPLE NO. 251.4 COLOR TAM	DEPTH (FT.) FROM TO 7.5 10 ³ RELATIVE MOISTURE DAM d 1.47 g/cc (F 2.5' Void 4 ¹¹ 2 ¹¹	6' Void Crumbly Crumbly Crumbly Crumbly VStAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY CONSISTENCY VSTAFF CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTR	SAMPLE LOCATION SAMPLE LOCATION SPWY POROSITY OR STRUCTURE Nould not pus ONly ab to run a	half fell is sachion P F14-347 TEXTURE SMOOTH DESCRIBED BY h. cut tubes le tosalvag	hotos o Type of SAMPLE 28"Shek PROTROMETER (T.S.F.) 4.5+ 5KK, RM 54.54 54.55 64.005"; wo st on this 5	2 LABORATORY NO. 5415-65 VISUAL CLASSIFICATION (USCS) C.A ill try ection,
FIELD SAMPLE NO. 251.4 COLOR TAM	DEPTH (FT.) FROM TO 7.5 10 ³ RELATIVE MOISTURE DAM d 1.47 g/cc (F 2.5' Void 4 ¹¹ 2 ¹¹	Crumbly Crumbly Crumbly Crumbly Crumbly Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF Consistency VSTAF	SAMPLE LOCATION SAMPLE LOCATION SPWY POROSITY OR STRUCTURE Nould not pus ONly ab to run a	half fell is sachion P F14-347 TEXTURE SMOOTH DESCRIBED BY h. cut tubes le tosalvag	hotos o Type of SAMPLE 28"Shek PROTROMETER (T.S.F.) 4.5+ 5KK, RM 54.54 54.55 64005"; wo st on this 5	2 LABORATORY NO. 5415-65 VISUAL CLASSIFICATION (USCS) C.A ill try ection,
FIELD SAMPLE NO. 251.4 COLOR TAM	DEPTH (FT.) FROM TO 7.5 10 ³ RELATIVE MOISTURE DAM d 1.47 g/cc (F 2.5' Void 4 ¹¹ 2 ¹¹	6' Void Crumbly Crumbly Crumbly Crumbly VStAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY VSTAFF CONSISTENCY CONSISTENCY VSTAFF CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSISTENCY CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTRUCTION CONSTR	SAMPLE LOCATION SAMPLE LOCATION SPWY POROSITY OR STRUCTURE Nould not pus ONly ab to run a	half fell is sachion P F14-347 TEXTURE SMOOTH DESCRIBED BY h. cut tubes le tosalvag	hotos o Type of SAMPLE 28"Shek PROTROMETER (T.S.F.) 4.5+ 5KK, RM 54.54 54.55 64005"; wo st on this 5	2 LABORATORY NO. 5415-65 VISUAL CLASSIFICATION (USCS) C.A ill try ection,

RCS-ENG-129 -95						LABORATORY NO)
MATERI FESTING RI			DEPARTMENT of AG			URBED SA ACTERIS	
PROJECT and STAT	re N	. 7	1 7-1				
Plum C TESTED AT				APPROVED BY		DATE	
NDCSM	C · LIV	10012	JNE			1-2	0-15 LABORATORY
FIELD SAMPLE NO.	DEPTH (F	т.) то		SAMPLE LOCATION		SAMPLE	NO.
251.5	10 1	25'	Crest Aux, Sp	wЧ	F14-348		15-64
COLOR	RELA MOIS		CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PENETROMETER (T.S.F.)	VISUAL CLASSIFICATION (USCS)
TAN	DAN		V.Stiff	prostationers a	SMOOTH		<u>SH</u>
w 20.71 % Ya	1.62-g/cc	(Fro	mQU)		DESCRIBED BY	K, RM	
	OQN	x	REMARKS	Would not	push, cut +	-ube	
	<u> 28</u> "	>			1		
T.	Voio	4114"		lop halff	oushed, bot	tom half w	sould
				not push.	Left bottom	nhalf in tu	ube as
	Inll	SAVE	0	there is e	nough of t	ophalf to	, ruen
Ď	12			compley	tasts Top	od bottom of	SAMOLA
		Now a construction of some	- cut tube	look the	SAMI SO a	554Ming ho	Hom half
				issAme	matorialo	STOPHALE	
	54.11 +ub	IN					
	+40	R_					
¥.							
					0	hotos 2	
					. \		LABORATORY
FIELD SAMPLE NO.	FROM	TO		SAMPLE LOCATION		TYPE OF SAMPLE	NQ.
251.6	12.5	15'	Aux Spwy CM	est	F14-349	2,8"She/6	
COLOR		LATIVE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PENETROMETER (T.S.F.)	VISLIAL CLASSIFICATION (USCS)
Marbled	DA		V.Stipe	**************************************	SMOOTH	4,5+	CH
Tans							′
brays						<u>_L</u>	<u> </u>
ω <u>18,00</u> % γ	1.55 g/c	x (Fro	MQU)			KK	
		,	REMARKS	uld not push	n. cuttube		
	. 28	х. 1	REMARKS				
	K	;	I Index	Q Q eres	ste crack	od y Korok	e in SOUDRA-
l Î	Voic	, 4 Ky"	Index broke	$\mathcal{O} \subset \mathcal{O}$	25 WOLDA .	e to Fundad	
. 14	1		L CI	11 ILSE	LOFZ Cor	completi	tests, first
12	102 5	AVEN	broke 55'2	2,	Mont Anori	ton prey	TESIS, HIO!
39 1	JUE	a server a server a server server a serve	- STORE	\` ∎`}€.	VI. La ct Fre	stay rog	ether use 20 P3
	+1/6	6 6 K	- cuttube	<i>دی</i> >	r 11123 125	08+ 5083.	
6	Nº TO	51/2	oroke				
	r	lan (alian (<mark>an an a</mark> l fair an an in	- curi du be				
	23	1.16	- curved when extruded				
6	125	(P.7	extruded	4		T	γ
				*		Phot	05 ~

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-95						
MATERI FESTING R		. DEPARTMENT of A L RESOURCES CONSE	UNDISTURBED SAMPLE CHARACTERISTICS			
ROJECT and STA	TE					
Plume	reek 21,	TX				
ESTED AT		_	APPROVED BY		DATE	15
FIELD SAMPLE	DEPTH (FT.)	<u>co(N, 10 C</u>			TYPE OF	LABORATORY
NO.	FROM TO		SAMPLE LOCATION		SAMPLE	NO.
251.7	15 17.51	Crust Aux.S	nw r	= 14-350	2,8"Shelb	1 15-66
COLOR	RELATIVE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PENETROMETER (T.S.F.)	VISUAL CLASSIFICATION (USCS)
rannish	DAMO	N.Stife	and the second sec	SHOOTH	4.5+	CM
<u>MAN S. C</u>				÷ · · ·		,
1399% Y	149 8/00 (Fr	unqu)			SKK	
			1 () and			
	<u>← 2,8''</u> →				USL, SEVERAL	
Disturbed	×	V A	Bottomha	1+0++005	action was	ua Not
Distarberg	Voio 41411	broke cracked	1	: Min tube		- 6
<i>I</i> -3,	1043	64	Was ak	she to extra	ude 3 sectie	its zuc
		-cuttuke	this s	Ample, al	1 have hor	izantal
11	Stillin tube	6' - would Not	push crac	ksebrakes	1 W W "	- ,
30'	0	f- cut tube	$ \lambda <$	1283.00	2043 Sira	+ 4.5
	1.23	- crackeep				
	20 LOSAVE	+ cut + ube	need	DILL FRESTS	then 3of	217
	0.53	currede	4 - 1 - 1 - 1 - 1 - 1 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 - 2 -	red.		
	30F3 6'SAVED	6 "				
Ľ.						
					Photos	2
FIELD SAMPLE	DEPTH (FT.)				TYPE OF	LABORATORY
NO.	FROM TO		SAMPLE LOCATION		SAMPLE	NO.
251.8	20 2251	Cres+ Aux Spli		+714-35,	/ 2.6 She Роскет	61/15-67 VISUAL
COLOR	RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	PENETROMETER (T.S.F.)	CLASSIFICATION (USCS)
Tournight	DAMO	VISAGE	No. or San for Staffing and a set	Smooth.	4.5+	<u></u>
aran						
						1
w 22.06%	Yd 1.49 8/00 (Fro	MQ4)		DESCRIBED BY	SKK	
		Push	20-22,5 R.	or GER		
	2.8"	REMARKS		of pushia	+la.h.	
	K	× '	Would A	pusition pusition	N Mase	
.7	Veib 41'2"		horiz	note he	iass in eve	Pilsontin.
3/2	A	F=15112 0~	al ca			
	SANED	+ ' when when a sube	00041		nb/JADIa Ky	
an' B'	100% Jon	" besico	US0 12		3 First Fo	1 comprex
30 8	1,01 6	-cut tube	+05+5	. VIRY C	ragile.	
	23ER SAURE UN	10 roke			×	
(1) A	12 55 62					
	and the second s	+ cuttube				
Le le	6 5 K-1)E 3083	<i></i>				
L .	3082					~
1	I_ L	J			Photos	: 3



				TININICT		
ATERIA ING RE		DEPARTMENT of A L RESOURCES CONSE	UNDISTURBED SAMPLE CHARACTERISTICS			
		·Τχ	<u></u>	<u></u>		
AT		COIN, NE	APPROVED BY		DATE	22-15
SAMPLE	DEPTH (FT.)		SAMPLE LOCATION	-,, _}?	TYPE OF SAMPLE	LABORATORY NO.
<u>10.</u> 52,1		WY. Spwy 5/0pe	2 2 v DS.CT	15+ F14-354	2.8"Shelby	15-70
OLOR	RELATIVE	CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PENETROMETER (T.S.F.)	VISUAL CLASSIFICATION (USCS)
UWO	DRY	N SKEP	Roots,	SMOOT	~	<u> </u>
			Trash			
10	102				<u></u>	
1 / % Yd	1.43 g/cc (From	iau)			5(4)	
	2.8"	REMARKS				
ן אר ר		Trash I	RU hata	and put	st.	- 1
Ţ.	VoibTI	fras L	anol-	Tial Kast	5 through	nout
	1082	~~~~ \	prey made offmple, - Vertical d	iopsoil	type may	rial
		\	vertical d	horizont	acrock	
	102			- vyr -qyr	A state of the	و آهمين"
22'	•					
	2042					
	151/					
	102					
				\mathcal{D}		
				Ph	otos 2	
D SAMPLE NO.	DEPTH (FT.) FROM TO		SAMPLE LOCATION		TYPE OF SAMPLE	LABORATORY NO.
,	FROM TO	Slape AuxSpis			TYPE OF SAMPLE	NO. 1415-71
NO. 52.5	FROM TO	CONSISTENCY			TYPE OF SAMPLE 5 2.8" She lo PENETROMETER (T.S.F.)	NQ.
<u>NO.</u>	FROM TO S 75' 4 RELATIVE MOISTURE		POROSITY OR	95× 14-36	TYPE OF SAMPLE	NO. 1415-71
NO. 52,5 COLOR	FROM TO S 75' 4 RELATIVE MOISTURE	CONSISTENCY	POROSITY OR STRUCTURE	057 <u>714-36</u> texture	TYPE OF SAMPLE 5 2.8" She lo PENETROMETER (T.S.F.)	NO. 1415-71
0. 2.5 DLOR <u>Nish</u>	FROM TO S 7,5' 1 RELATIVE MOISTURE MOIST	CONSISTENCY VStipp	POROSITY OR STRUCTURE	57 F14-36 TEXTURE SMOOT	TYPE OF SAMPLE S 28"SARK PENETROMETER (T.S.F.) 4/5 F	NO. 1415-71
NO. 52.5 SOLOR VNISA	FROM TO S 7,5' 1 RELATIVE MOISTURE MOIST	CONSISTENCY VStipp	POROSITY OR STRUCTURE	57 F14-36 TEXTURE SMOOT	TYPE OF SAMPLE 5 2.8" She lo PENETROMETER (T.S.F.)	NO. 1415-71
0. 2.5 DLOR <u>Nish</u>	FROM TO S 7,5' ' RELATIVE MOISTURE MOIST 1.57 g/cc (FromQU)	CONSISTENCY V Stipp laystone contr	POROSITY OR STRUCTURE	DESCRIBED BY	TYPE OF SAMPLE S 28"SARK PENETROMETER (T.S.F.) 4/5 F	NO. 1415-71
10. 52.5 10LOR 1Nish	FROM TO S 7,5' 1 RELATIVE MOISTURE MOIST	CONSISTENCY V Stipp laystone contr	POROSITY OR STRUCTURE	DESCRIBED BY	TYPE OF SAMPLE S 28"SARK PENETROMETER (T.S.F.) 4/5 F	NO. 1415-71
0. 2.5 DLOR <u>Nish</u>	FROM TO S 7,5' ' RELATIVE MOISTURE MOISTURE 157 g/cc (fromau) 2.8'	CONSISTENCY V Stipp laystone contr REMARKS W	POROSITY OR STRUCTURE	DESCRIBED BY	TYPE OF SAMPLE 28"She Ab PENETROMETER (T.S.F.) 415 F	NO. 1415-71
10. D2. 5 DLOR (N 13 h S. H4 % Ya	FROM TO S 7,5' ' RELATIVE MOISTURE MOIST 1.57 g/cc (FromQU)	CONSISTENCY V Stipp laystone contr REMARKS W	POROSITY OR STRUCTURE	DESCRIBED BY	TYPE OF SAMPLE 28"She Ab PENETROMETER (T.S.F.) 415 F	NO. 1415-71
10. D2. 5 DLOR (N 13 h S. H4 % Ya	FROM TO S 7,5' ' RELATIVE MOISTURE MOISTURE 157 g/cc (fromau) 2.8'	CONSISTENCY V Stipp laystone contr REMARKS W	POROSITY OR STRUCTURE	DESCRIBED BY	TYPE OF SAMPLE S 2.8" Shelt PENETROMETER (T.S.F.) 4155 KK	NO. V 15-71 CLASSIFICATION (JSCS) C14
NO. 52,5 COLOR MN 136	FROM TO 5 7,5' ' RELATIVE MOISTURE MOISTURE 157 g/cc (FROMQU) 2.8' Vo (A 3'/2)	CONSISTENCY VStipp laystone contr REMARKS W	POROSITY OR STRUCTURE	DESCRIBED BY FF Llay M PR 225-3	TYPE OF SAMPLE S 28" Shelt PENETROMETER (T.S.F.) 4155 KK KK First Gr	NO. 14/5-7/ CLASSIFICATION (USCS) COMP(ex
NO. 52.5 COLOR <u>MN 156</u> <u>8.44</u> % Ya	FROM TO S 75' 1 RELATIVE MOISTURE MOISTURE MOIST (57 g/cc (FromQ4) 2.8'' Vo (A 3'/2, ' Vo (A 3'/2, ' 10 F 3 13''	CONSISTENCY VStipp laystone contr REMARKS W	POROSITY OR STRUCTURE	EST FILI-36 TEXTURE SMOOPA DESCRIBED BY DESCRIBED BY DESCRIBED BY A, CHOT HUBA FE Llay M OR 20F3 - SOME ho	TYPE OF SAMPLE S 28" Shelt PENETROMETER (T.S.F.) 4155 KK KK First Gr	NO. 14/5-7/ CLASSIFICATION (USCS) COMP(ex
NO. 52.5 COLOR <u>MNISA</u> <u>5.44</u> % Yo	FROM TO S 75' 1 RELATIVE MOISTURE MOISTURE MOIST (57 g/cc (FromQ4) 2.8'' Vo (A 3'/2, ' 10 F 3 13''	CONSISTENCY VStipp laystone contr REMARKS W	POROSITY OR STRUCTURE	EST FILI-36 TEXTURE SMOOPA DESCRIBED BY DESCRIBED BY DESCRIBED BY A, CHOT HUBA FE Llay M OR 20F3 - SOME ho	TYPE OF SAMPLE S 28" Shelt PENETROMETER (T.S.F.) 4155 KK KK First Gr	NO. 14/5-7/ CLASSIFICATION (USCS) COMP(ex
NO. 52.5 COLOR <u>MN 156</u> <u>8.44</u> % Ya	FROM TO S 7,5' ' RELATIVE MOISTURE MOISTURE MOISTURE 157 g/cc (FromQU) 2.8' Voib 3'2' Voib 3'2' 10 F 3 13'' 20 F 3 6''4	CONSISTENCY VStipp laystone contr REMARKS W	POROSITY OR STRUCTURE	EST FILI-36 TEXTURE SMOOPA DESCRIBED BY DESCRIBED BY DESCRIBED BY A, CHOT HUBA FE Llay M OR 20F3 - SOME ho	TYPE OF SAMPLE S 28" Shelt PENETROMETER (T.S.F.) 4155 KK KK First Gr	NO. 14/5-7/ CLASSIFICATION (USCS) COMP(ex
10. 12.5 12.5 13.5 13.5 13.5 13.5 13.5 13.5 13.5 13.5 13.5 13.5 13.5 13.5 13.5 13.5 13.5 13.5 14.5 13.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 14.5 1	FROM TO S 75' : RELATIVE MOISTURE MOISTURE MOISTURE 157 8/00 (Fromak) 2.8' Voib 3'2 Voib 3'2 10 F 3 13' 20 F 3 6'4 30 F 3	CONSISTENCY VStipp laystone contr REMARKS W	POROSITY OR STRUCTURE	EST FILI-36 TEXTURE SMOOPA DESCRIBED BY DESCRIBED BY DESCRIBED BY A, CHOT HUBA FE Llay M OR 20F3 - SOME ho	TYPE OF SAMPLE S 28" Shelt PENETROMETER (T.S.F.) 4155 KK KK First Gr	NO. 14/5-7/ CLASSIFICATION (USCS) COMP(ex
2.5 OR Vish HH % Yd	FROM TO S 7,5' ' RELATIVE MOISTURE MOISTURE MOISTURE 157 g/cc (FromQU) 2.8' Voib 3'2' Voib 3'2' 10 F 3 13'' 20 F 3 6''4	CONSISTENCY VStipp laystone contr REMARKS W	POROSITY OR STRUCTURE	EST FILI-36 TEXTURE SMOOPA DESCRIBED BY DESCRIBED BY DESCRIBED BY A, CHOT HUBA FE Llay M OR 20F3 - SOME ho	TYPE OF SAMPLE S 28" Shelt PENETROMETER (T.S.F.) 4155 KK KK First Gr	COmplex

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PUECT and STAT	eek 21,	Tx				
	1C- Lince		APPROVED BY		DATE	3/15
FIELD SAMPLE	DEPTH (FT.)		SAMPLE LOCATION		TYPE OF	LABORATORY
NO.	FROM TO			FUL 2 C	2.8"Shelby	NO. 15-72
2523	10 12,5' 5	x, + slope AuxSD	POROSITY OR		POCKET PENETROMETER (T.S.F.)	VISUAL CLASSIFICATION (USCS)
COLOR Tannist		V.Jrift	STRUCTURE	Smooth	4,5 ^L	<u>ruscs</u> C.H.
	- VEV	Vionet		(some gritty		
-bray						
22.15 % Yo	148 g/cc (From	ON) SI /ISTONO)	DESCRIBED BY	<u>K1</u> K	
		REMARKS		at push a	uttuke.	
	× 2,8"	X	110000	- the li		
Ŧ	VO10 4114"					.
51/2	12F2 54VEO 12F2 51/2"	-	10phal	+ tinally	pushed a	HOR
	107 - 5'6"	- cut tube	cuting	inhalf, k	pushed a	fwould
514	AOR ² 544	we nede	NOT PA	SK-Still	n tube.	
27 1						
		- cut hube	Crumb	1 matoria	1. Elakara	20
	Stillin	- cut tube	Crumb	y matoria	, flakas of	
Jour Surge	Stillin tube	- cut tube	Crumble Clay I	ly matorial out some c	1, Flakes of	alsa
JUSA .	Stillin tube Stillin		Crumb Clay k Use	ly matorial sut some c either T	1, flakes of Iritly feels of 2 or 2 of	alsa
voud No suish	Stillin tube		Crumb Clay k Use	ly matorial out some c	1, flakes of Iritly feels of 2 or 2 of	alsa
vourd No	Stillin tube Stillin		Crumb Clay k Use	ly matorial sut some c either T	l, flakes of pritty feels of 2 or 2 of ests	alsa
voud Not	Stillin tube Stillin tube		Crumb Clay & Mse For	ly matorial out some of either The complex to P	1, flakes of Iritly feels of 2 or 2 of	alsa
FIELD SAMPLE	Stillin tube Stillin tube DEPTH (FT.) FROM TO	· Cruttub	Crumb Clay E MSe For SAMPLE LOCATION	ly matoria out some c either T compley to P	1, flakes of pritty feeld of 2 or 2 of ests "hotos 2 Type Of SAMPLE	a (50- 2 LABORATOR NO.
YOUR NOT	Stillin tube Stillin tube <u>DEPTH(FT.)</u> FROM TO 15 17'		Crumb Clay & MSe For SAMPLE LOCATION	ly matorial out some of either The complex to P	I, Flakes of I Flakes of I Flakes of AFZ OR 201 ests Thotos 2 TYPE OF SAMPLE 2.8"Shelb.	LABORATOR NO. Y 15-73
FIELD SAMPLE	Stillin tube Stillin tube DEPTH (FT.) FROM TO	· Cruttub	Crumb Clay & WS e For SAMPLE LOCATION PUROSITY OR STRUCTURE	F14-357	1, flakes of pritty feeld of 2 or 2 of ests "hotos 2 Type Of SAMPLE	a (50- 2 LABORATOR NO.
FIELD SAMPLE NO. 252,4 COLOR	Stillin tube Stillin tube DEPTH (FT.) FROM TO 15 171 RELATIVE	Sy, + Slope Awys	Crumb Clay F U.S.e For SAMPLE LOCATION PWY POROSITY OR	F14-357	I, Flakes of I Flakes of I Flakes of AFZ OR 201 ests Thotos 2 TYPE OF SAMPLE 2.8"Shelb.	$\frac{150}{2}$
FIELD SAMPLE NO. 252,4 COLOR	Stillin tube Stillin tube FROM TO 15 171 RELATIVE MOISTURE	Sy, + Slope Awys	Crumb Clay & WS e For SAMPLE LOCATION PUROSITY OR STRUCTURE	F14-357	I, Flakes of I Flakes of I Flakes of AFZ OR 201 ests Thotos 2 TYPE OF SAMPLE 2.8"Shelb.	$\frac{150}{2}$
FIELD SAMPLE NO. 252.4 COLOR H. Tan	Stillin tube Stillin tube DEPTH (FT.) FROM TO 15 171 RELATIVE MOISTURE DRM	Syitslope Awys consistency	Crumb Clay & WS e For SAMPLE LOCATION PUROSITY OR STRUCTURE	F14-357 F14-357	I, Flakes of I Flakes of I Flakes of DF2 or 2 of ests Thotos 2 TYPE OF SAMPLE 2.8"Shelb.	$\frac{150}{2}$
FIELD SAMPLE NO. 252.4 COLOR H. Tan	Stillin tube Stillin tube DEPTH (FT.) FROM TO 15 171 RELATIVE MOISTURE DRM	Suttud	Crumb Clay & U.S.e For SAMPLE LOCATION POROSITY OR STRUCTURE Very Crump	F14-357 TEXTURE DESCRIBED BY	I, Flakos of TIHY Feeld OF 2 OR 2 of RSTS Hobs 2 TYPE OF SAMPLE R.8"Shelb. PENETROMETER (T.S.F.) DOKE	$\frac{150}{2}$
FIELD SAMPLE NO. 252.4 COLOR H. Tan	DEPTH (FT.) FROM TO 15 171 RELATIVE MOISTURE DRM d 144 g/cc (Fro	Suttud	Crumb Clay & U.S.e For SAMPLE LOCATION POROSITY OR STRUCTURE Very Crump	F14-357 TEXTURE DESCRIBED BY	I, Flakos of TIHY Feeld OF 2 OR 2 of RSTS Hobs 2 TYPE OF SAMPLE R.8"Shelb. PENETROMETER (T.S.F.) DOKE	$\frac{150}{2}$
FIELD SAMPLE NO. 252.4 COLOR H. Tan	Stillin tube Stillin tube DEPTH (FT.) FROM TO 15 171 RELATIVE MOISTURE DRM	Suttud	Crumb Clay & U.S.e For SAMPLE LOCATION POROSITY OR STRUCTURE Very Crump	F14-357 F14-357	I, Flakos of TIHY Feeld OF 2 OR 2 of RSTS Hobs 2 TYPE OF SAMPLE R.8"Shelb. PENETROMETER (T.S.F.) DOKE	$\frac{150}{2}$
FIELD SAMPLE NO. 252.4 COLOR Ht. Tan	DEPTH (FT.) FROM TO 15 171 RELATIVE MOISTURE DRM d 144 g/cc (Fro	Cuttub Sutslope Awys Consistency MQU) REMARKS PUSA	Crumb Clay & Use For SAMPLE LOCATION POROSITY OF STRUCTURE Very Crumple Very Crumple 15-175 Ro Would no	FI4-357 TEXTURE DESCRIBED BY 2 FUSAL @ 17 t pushic	I Flakes of I Flakes of DF2 OR 2 of ests "hotos 7 Type OF SAMPLE R.8"Shellow PENETROMETER (T.S.F.) DKC 71 W Luba	$\begin{array}{c} 150 \\ \hline \\ 150 \\ \hline 150 \\$
FIELD SAMPLE NO. 252.4 COLOR H. Tan	DEPTH (FT.) FROM TO 15 17' RELATIVE MOISTURE QRM d 144 g/cc (Fro 2.8'	Cuttub Sutslope Awys Consistency MQU) REMARKS PUSA	Crumble Clay & USe For SAMPLE LOCATION POROSITY OF STRUCTURE Very Crumph 15-175'R. Would no Very Y	FI4-357 TEXTURE DESCRIBED BY 2 FUSAL @ IT t pushic crumbly r	I, flakos of I, flakos of I, flakos of DF2 or 2 of ests "hobs 7 Type OF SAMPLE R. 8"Shelb. PENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) DENETPOMETER (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.) (T.S.F.)	LABORATOR NO. 15-73 (USCS) CH
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rpush J	Tube Shillin tube	- Cuttube			Photos	5 2	
Field SAMPLE NO.	Tube Stillin tube DEPTH (FT.) FROM TO		SAMPLE LOCATION	M. F. a. d. fr d	Photos	LABORATORY NO.	
FIELD SAMPLE	Tube Shilin tubi		SAMPLE LOCATION	M. F. a. d. fr d	Photos Photos Type OF SAMPLE	5 2 LABORATORY NO. 15-77	
FIELD SAMPLE	Tube Shilin tube DEPTH (FT.) FROM TO 5 (7.5' RELATIVE	E VIT 310 DE AUX.SPL CONSISTENCY	SAMPLE LOCATION	M. F. a. d. fr d	Photos	LABORATORY NO.	
FIELD SAMPLE NO. 254,1 COLOR	Tube Shilin tube FROM TO 5 7.5' RELATIVE MOISTURE	Exit Slope Aux. Spc	SAMPLE LOCATION	ME 24 FR	Photos Photos Type OF SAMPLE	5 2 LABORATORY NO. 15-77	
FIELD SAMPLE NO. 254,1	Tube Shilin tube DEPTH (FT.) FROM TO 5 (7.5' RELATIVE	E Sit Slope Aux. Spc CONSISTENCY	SAMPLE LOCATION	M.F. 2.4 + 2 F25+ F14-36, TEXTURE Gradient	Photos Type of SAMPLE 21,8"Shelf POCKET PENETROMETER (T.S.F.)	5 2 LABORATORY NO. 15-77	
FIELD SAMPLE NO. 254.1 COLOR Tan NK. Tan	Tube Shilin tubi DEPTH (FT.) FROM TO 5 7.5' RELATIVE MOISTURE LAMP DAMP	Exit Blope Aut. Spe CONSISTENCY V. St. FT V. St. FT	SAMPLE LOCATION SAMPLE LOCATION SAMPLE LOCATION SAMPLE LOCATION POROSITY OR STRUCTURE Trace Kosts	M.F. 2.4 + 2 F25+ F14-36, TEXTURE Gradient	Photos Type of SAMPLE 21,8"Shelf POCKET PENETROMETER (T.S.F.)	LABORATORY NO. 15-77 VISUAL CLASSIFICATION USCS)	
FIELD SAMPLE NO. 254.1 COLOR Tan NK. Tan	Tube Shillin tube DEPTH (FT.) FROM TO 5 7.5' RELATIVE MOISTURE DAMP DAMP	Exit Slope Aux Spe CONSISTENCY V.St.FF V.St.FF	SAMPLE LOCATION SAMPLE LOCATION M = 600 BS.C POROSITY OR STRUCTURE Trace Kosts Trace Roots Trace Roots	MELLINE FRST F14-36 TEXTURE Griffy Griffy	Photos Type of SAMPLE 21,8"Shelf POCKET PENETROMETER (T.S.F.)	LABORATORY NO. 15-77 VISUAL CLASSIFICATION USCS)	
FIELD SAMPLE NO. 254,1 COLOR Tan ΔK. Tan	Tube Shilin tube FROM TO 5 7.5' RELATIVE MOISTURE SAMP DAMP IMAMP	CONSISTENCY V.St.Fr V.St.Fr MQU S TOD OF Lube S	SAMPLE LOCATION SAMPLE LOCATION M = 600 BS.C POROSITY OR STRUCTURE Trace Kosts Trace Roots Trace Roots	MELLINE FRST F14-36 TEXTURE Griffy Griffy	Photos Type of sample d.8"Shelt penerrometer (T.S.F.)	LABORATORY NO. 15-77 VISUAL CLASSIFICATION USCS)	
FIELD SAMPLE NO. 254,1 COLOR TCL.N. MX. TCL. W. 11.67 % Ya	Tube Shilin tube FROM TO 5 7.5' RELATIVE MOISTURE SAMP DAMP IMAMP	Exit Blope Aux. Spe CONSISTENCY V. Stiff V. Stiff MQU	SAMPLE LOCATION SAMPLE LOCATION M = 600 BS.C POROSITY OR STRUCTURE Trace Kosts Trace Roots Trace Roots	MELLINE FRST F14-36 TEXTURE Griffy Griffy	Photos Type of sample d.8"Shelt penerrometer (T.S.F.)	LABORATORY NO. 15-77 VISUAL CLASSIFICATION USCS)	
FIELD SAMPLE NO. 254,1 COLOR Tan ΔK. Tan	Tube Shilin tubi DEPTH (FT.) FROM TO 5 7.5' RELATIVE MOISTURE LAMP DAMP I.69 g/cc (FTO 1.77 (From Q U Q, B''	CONSISTENCY V.St.Fr V.St.Fr MQU S TOD OF Lube S	SAMPLE LOCATION SAMPLE LOCATION SAMPLE LOCATION STRUCTURE Trace Roots Trace Roots Trace Roots SS bottom of -	MELCH + A Test F14-36 TEXTURE Griffy DESCRIBED BY S THD 1	Photos Type of SAMPLE 2,8"Shelt PENETROMETER (T.S.F.)	LABORATORY NO. VISUAL CLASSIFICATION (USCS) C.L	
FIELD SAMPLE NO. 254,1 COLOR Tan ΔK. Tan	Tube Shilin tubi DEPTH (FT.) FROM TO 5 7.5' RELATIVE MOISTURE LAMP DAMP I.69 g/cc (FTO 1.77 (From Q U Q, B''	CONSISTENCY V.St.Fr V.St.Fr MQU S TOD OF Lube S	SAMPLE LOCATION SAMPLE LOCATION SAMPLE LOCATION STRUCTURE Trace Roots Trace Roots Trace Roots SS bottom of -	MELCH + A Test F14-36 TEXTURE Griffy DESCRIBED BY S THD 1	Photos Type of SAMPLE 2,8"Shelt PENETROMETER (T.S.F.)	LABORATORY NO. VISUAL CLASSIFICATION (USCS) C.L	
FIELD SAMPLE NO. 254,1 COLOR Tan ΔK. Tan	Tube Shilin tube FROM TO 5 7.5' RELATIVE MOISTURE SAMP DAMP IMAMP	CONSISTENCY V.St.Fr V.St.Fr MQU S TOD OF Lube S	SAMPLE LOCATION SAMPLE LOCATION SAMPLE LOCATION STRUCTURE Trace Roots Trace Roots Trace Roots SS bottom of -	MELCH + A Test F14-36 TEXTURE Griffy DESCRIBED BY S THD 1	Photos Type of SAMPLE 2,8"Shelt PENETROMETER (T.S.F.)	LABORATORY NO. 15-77 VISUAL CLASSIFICATION USCS)	
FIELD SAMPLE NO. 254,1 COLOR Tan ΔK. Tan	Tube Shilin tubi DEPTH (FT.) FROM TO 5 7.5' RELATIVE MOISTURE LAMP DAMP I.69 g/cc (FTO 1.77 (From Q U Q, B''	Exit Stope Aut. Spe CONSISTENCY V. Stiff V. Stiff MQU STOD OF tube S REMARKS →	SAMPLE LOCATION SAMPLE LOCATION UN JE 600' 0 5.0 POROSITY OR STRUCTURE Trace Roots Trace Roots Trace Roots SS bottom of - Toph Callen	MELCHAR MELCHAR TESTURE Gritty Smooth to Gritty DESCRIBED BY S THD 1 All MGR.	Photos Type of SAMPLE 21,8"Shelt PENETROMETER (T.S.F.) KK	LABORATORY NO. NO. VISUAL CLASSIFICATION (USCS) C.L C.L C.L C.L C.L C.L C.L C.L	
FIELD SAMPLE NO. 254,1 COLOR Tan W. Tan W. Tan W. Tan (2,60	Tube Shilin tubi DEPTH (FT.) FROM TO 5 7.5' RELATIVE MOISTURE LAMP DAMP I.69 g/cc (FTO 1.77 (From Q U Q, B''	Exit Blope Aux Spe CONSISTENCY V.Stiff W.G. Stiff M.G. Stiff	SAMPLE LOCATION SAMPLE LOCATION ON TODO'DS.C POROSITY OR STRUCTURE Trace Koots Trace Roots Trace Roots SS bottom of Top h Callen Roots	MELLICH MELLICH MELLICH MELLICH	Photos Type of SAMPLE 21,8"Shelt POCKET PENETROMETER (T.S.F.) KK	LABORATORY NO. NO. VISUAL CLASSIFICATION (USCS) C.L C.L C.L C.L C.L C.L C.L C.L	
FIELD SAMPLE NO. 254,1 COLOR Tan ΔK. Tan	Tube Shilin tubi DEPTH (FT.) FROM TO 5 7.5' RELATIVE MOISTURE LAMP DAMP I.69 g/cc (FTO 1.77 (From Q U Q, B''	Exit Blope Aux Spe CONSISTENCY V.Stiff W.G. Stiff M.G. Stiff	SAMPLE LOCATION SAMPLE LOCATION ON TODO'DS.C POROSITY OR STRUCTURE Trace Koots Trace Roots Trace Roots SS bottom of Top h Callen Roots	MELLICH MELLICH MELLICH MELLICH	Photos Type of SAMPLE 21,8"Shelt POCKET PENETROMETER (T.S.F.) KK	LABORATORY NO. NO. VISUAL CLASSIFICATION (USCS) C.L C.L C.L C.L C.L C.L C.L C.L	
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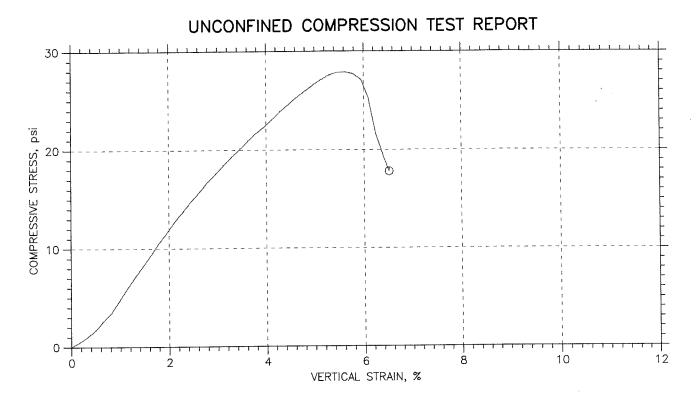
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FIELD SAMPLE	DEPTH (F		2 1 2 2	SAMPLE LOCATION		TYPE OF SAMPLE	LABORATORY NO.
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	<u> </u>	-1	11				
18.91 % Yo	1.54 g/c	e (Fron	nQu)		DESCRIBED BY		<u></u>
Jourse of	5+11	ex Ver 12	Disturba Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurdin Discurd	Bo H	on half 1ºtub	Protos	rpush-
FIELD SAMPLE	DEPTH	(FT.)		SAMPLE LOCATION		TYPE OF	LABORATOR NO.
NO.	FROM	TO				3 2,8"Shell	
255.1			Exit slope Aux S	POROSITY OR		POCKET PENETROMETER	VISUAL
COLOR		DISTURE	CONSISTENCY	STRUCTURE	TEXTURE	(T.S.F.)	CLASSIFICATION (USCS)
TAN	11	016+	V.Stiff	Fine Roots	Gr. Hu	1.4.5*	<u>SC</u>
Topol	1/07	1000		,,,,,,, _		SVV	
0 <u>20, 2</u> % Y	d <u>1.5 g</u> /	cc (Fra)	n QU)		DESCRIBED BY	SKK	
			REMARKS WC	ould not Aust	, cut tube		
	2,8	>	J				
Ā	VoiD		-1				he is
t I	VOID	٦ Z.	broke	Crun	ibly Mato	Rial, SAmpl	e Orake
lø		می می این این این این این این این این این ای	- cuttube	acru	mbled who	en trying \$	all de
		. Synamic and the second	- CUIFUOR BOINKD			VET	
30 6	and the second s			2500	FIONS SAVE	dare very.	traple
-		^{na na} na amin'ny fisiana	for the be	11 61	lof2 First	for comple	2x tost c
		a SAV	brake	V1 2 C	and the second		r r r s, rod r J
	1965	4314		Kes	hoteore is	s inducy UNI	7
124	SANE	0 11					
	1208	5 T.				1	,)
The second se	1		ر د است	no Cil .		handle a	1

+ 1, F2 fellapart used 20F2 For QU. Photos 6

1CS-ENG-129 95						LABORATORY NO.	
MATERIA ESTING RE			. DEPARTMENT of AGI L RESOURCES CONSER			URBED SA ACTERIST	
Plum Cr	e o a K	21 7					
STED AT				APPROVED BY		DATE	9-15
FIELD SAMPLE	DEPTH (F		<u>N/5</u>	SAMPLE LOCATION		TYPE OF	LABORATORY NO.
<u>но.</u> 255,2	FROM	to 2.5' <i>E</i>	xitSlopcAux Sowy		06+ 514-364	2.8"Shilby	NO.
COLOR	REL	ATIVE	CONSISTENCY	POROSITY OR	TEXTURE	POCKET PENETROMETER (T.S.F.)	VISUAL CLASSIFICATION (USCS)
Id Brown		NIST	V.St.CF	STRUCTURE	Snipsthe	4,5+	<u> </u>
<u>Olday</u>	7.9+0	<u> </u>		(fine)	gitty		
21.98 % 1	<u>1.42</u> g/cc	Fron	1.04)		DESCRIBED BY	1	
<u> </u>				would Not !	pushicuttu		
L	2.8		REMARKS				
T	Vaio	33/ "	Assturbed.	111			
	Vaio	3-4	A is caron	Ch + Ype,	maxerialu	JITH SOLLO	sit
, I I	- E. S	2-	Crack	11cm	of 2 Cirst	- State	
12/2	VOX.	N	a an	USL (z	1 2 First	FOR LOMAL	R v
р. — — — — — — — — — — — — — — — — — — —		6		tests.			· · · · ·
0	SAVED		Louttube	Lotes	f cradics (harlantal	Sim
		I Find al	brake			a los de a mander en el conserva a serva el	1 ,
	-02-	-JB	eracks	Roh	d-		
3	nor-	SAT	cracks crack break				
	0	1 11	Process Instance				
¥	15		_]				,
						Photos	, 6
FIELD SAMPLE	DEPTH			SAMPLE LOCATION		TYPE OF SAMPLE	LABORATORY NO.
<u>NO.</u> 2561)	FROM 3	<u> </u>	Exit Aux Sowy 5	. H. (Alluman)	F14.365	2.8'Shelb.	1 15-81
COLOR	RE		CONSISTENCY	POROSITY OR STRUCTURE	TEXTURE	POCKET PENETROMETER (T.S.F.)	VISUAL CLASSIFICATION (USCS)
Famigh		MD	VS+:FF	Trace fine	SMooth	4.5*	CH
				Roots			
0 19.63% Y	1157 1	m (FC	21(24)		DESCRIBED BY	J SKK	
ω <u>19.00</u> % γ	_1		REMARKS Would	notoush r			
	2.	\mathcal{E}_{ν}	REMARKS WOULD	no por no	All Son Success		
Т	K		▶		LCC)		
V7	Voic	<u> </u>	+	Veky >	tiff but	crumbly n	raterial
34	1080	SAVED	cracks	Botto	whalf of	-too Sec	RIV
5			-cut tube	4204	id Not p	septiciti	int. ha
BD WOUND NOT	5+11			١.		134 -3 MI	In The W
wou push		icbl	-adtube	USE	either 1	of ZOR!	2002
I_I		- D	Two was		comple		
514	SAVE	\$ ^A 5"	- cuttube	× (2) ×	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	St 237 V	
1							
	iA	· · · · · · · · · · · · · · · · · · ·					
6	TF.K	20ert					
	E	+ 200				Photos.	3

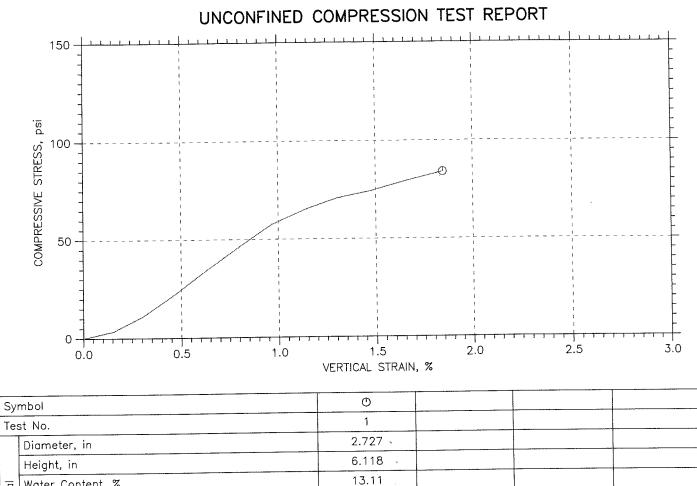
Attachment 3

Unconfined Compressive Strength Test Results (q_u)



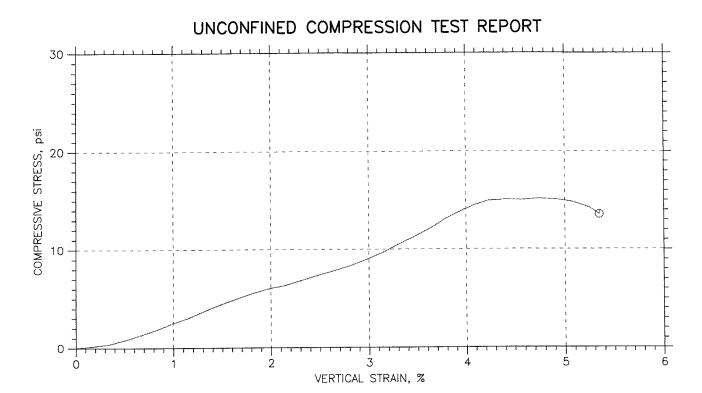
Symbol		Ō		
Test No.		1		
	Diameter, in	2.748 ,		·····
	Height, in	5.84 ,		
<u>a</u>	Water Content, %	24.99 ,		
Initial	Dry Density, pcf	94.39		
	Saturation, %	83.92		
	Void Ratio	0.819		
Ur	nconfined Compressive Strength, psi	27.88		
Ur	ndrained Shear Strength, psi	13.94		
Tiı	me to Failure, min	5.6707		
St	train Rate, %/min	1 ,		
Me	easured Specific Gravity	2.75 ·		
Li	quid Limit			
ΡI	astic Limit		 	
ΡI	lasticity Index			
Failure Sketch				

		Project: PLUM CREEK 21
Δ	NIRCC	Location: TX
V		Project No.: 15-59
	Natural	Boring No.: 250.2
		Sample Type: CORE
	Service	Description: AUX. SPWY, F14-343
	@~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	Remarks:



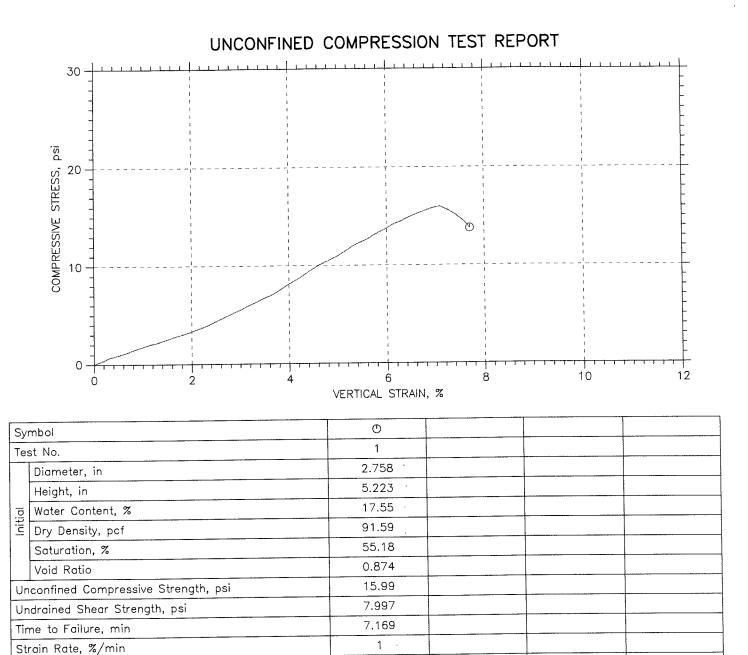
ial	Height, in	6.118		
	Water Content, %	13.11		
Initial	Dry Density, pcf	107.5		
	Saturation, %	61.53	 	
	Void Ratio	0.58		
Ur	nconfined Compressive Strength, psi	84.1	 	
Ur	ndrained Shear Strength, psi	42.05	 	
Tir	ne to Failure, min	1.8697	 	
St	rain Rate, %/min	1.		
	easured Specific Gravity	2.72 ·		
	quid Limit			
PI	astic Limit		 	
ΡI	asticity Index		 	
Failure Sketch				

		Project: PLUM CREEK 21
	NDCC	Location: TX
V		Project No.: 15-61
		Boring No.: 251.2
		Sample Type: CORE
	Conservation Service	Description: CREST AUX. SPWY, F14-345
	JU1 9160	Remarks: MAXED OUT LOAD CELL BEFORE SAMPLE FAILED



Symbol		O		
Test No.		1		
	Diameter, in	2.723		
	Height, in	4.133		
ial	Water Content, %	12.76		
Initial	Dry Density, pcf	88.63 _		
	Saturation, %	37.76		
	Void Ratio	0.923		
Ur	nconfined Compressive Strength, psi	15.15		
Ur	ndrained Shear Strength, psi	7.573		
Tir	ne to Failure, min	4.8352		
St	rain Rate, %/min	1 ,		
Me	easured Specific Gravity	2.73	 	
Li	quid Limit			
ΡI	astic Limit			
ΡI	asticity Index		 	
Failure Sketch				

		Project: PLUM CREEK 21
Δ	NRCC	Location: TX
	CUINT	Project No.: 15-62
	Natural	Boring No.: 251.3
	Resources Conservation	Sample Type: CORE
	Service	Description: CREST AUX. SPWY, F14-346
	26 W 1 2 3 % W	Remarks: NOTE: HEIGHT DOES NOT MEET ASTM HEIGHT/DIAMETER REQUIREMENTS



		Project: PLUM CREEK 21
$ \wedge$	NDCC	Location: TX
	CUNN	Project No.: 15-63
	Natural	Boring No.: 251.4
		Sample Type: CORE
		Description: CREST AUX. SPWY, F14-347
	JCIVILE	Remarks: NOTE: HEIGHT DOES NOT MEET ASTM HEIGHT/DIAMETER REQUIREMENTS

2.75

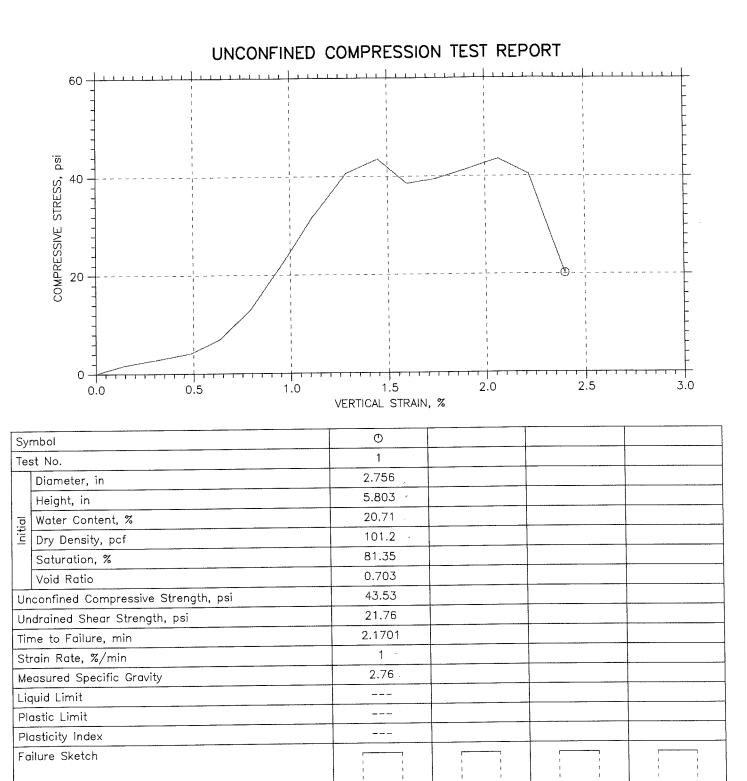
_ _ _

Measured Specific Gravity

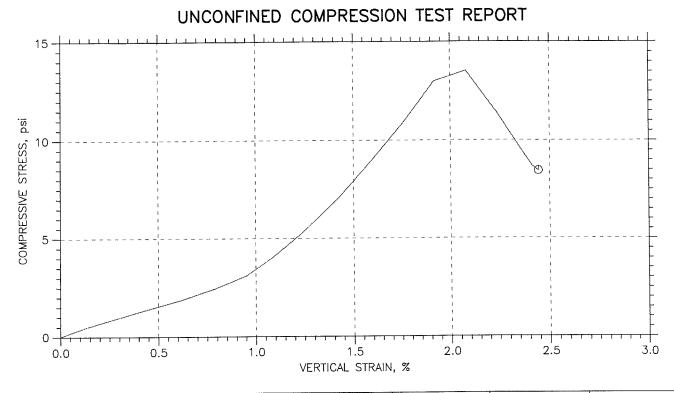
Liquid Limit

Plastic Limit

Plasticity Index Failure Sketch

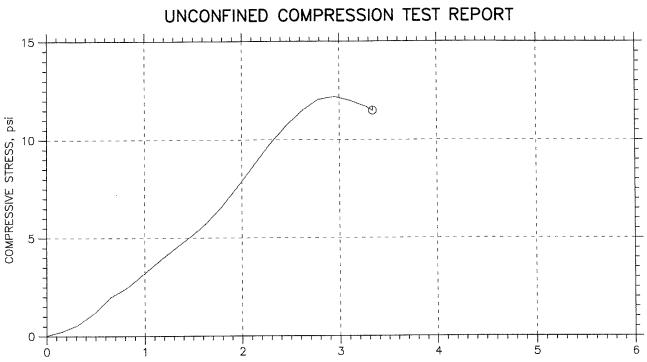


	_	
		Project: PLUM CREEK 21
\wedge	,NRCS	Location: TX
V		Project No.: 15-64
		Boring No.: 251.5
		Sample Type: CORE
	Service	Description: CREST AUX. SPWY, F14-348
	JUINICC	Remarks:



Symbol		Ō		
Test No.		1		
	Diameter, in	2.736		
	Height, in	5.837	 	
ā	Water Content, %	18.00 、	 	
Initial	Dry Density, pcf	96.86 🗸	 	
	Saturation, %	64.40		
	Void Ratio	0.766		
Ur	confined Compressive Strength, psi	13.52		
Ur	ndrained Shear Strength, psi	6.761		
Tir	me to Failure, min	2.1702	 · · · · · · · · · · · · · · · · · · ·	
St	rain Rate, %/min	1 ,		
Me	easured Specific Gravity	2.74		
Lie	quid Limit			
PI	astic Limit			
PI	asticity Index			
Failure Sketch				

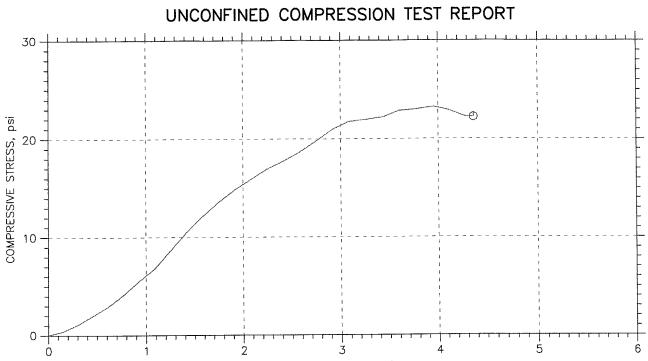
		Project: PLUM CREEK 21
$ \Lambda $	NRCC	Location: TX
V		Project No.: 15-65
	Natural	Boring No.: 251.6
		Sample Type: CORE
	Service	Description: CREST AUX. SPWY, F14-349
	30,7,00	Remarks:



VERTICAL	STRAIN,	%
	,	

Symbol		O		
Test No.		1		
_	Diameter, in	2.694		
	Height, in	5.06 、		
ā	Water Content, %	13.99		
Initial	Dry Density, pcf	93.13		
	Saturation, %	45.43		
	Void Ratio	0.85		
Ur	confined Compressive Strength, psi	12.2		
Ur	ndrained Shear Strength, psi	6.099		
Tir	ne to Failure, min	3.001		
St	rain Rate, %/min	1 ,		
Me	easured Specific Gravity	2.76		
Li	quid Limit			
ΡI	astic Limit			
ΡI	asticity Index			
Failure Sketch				

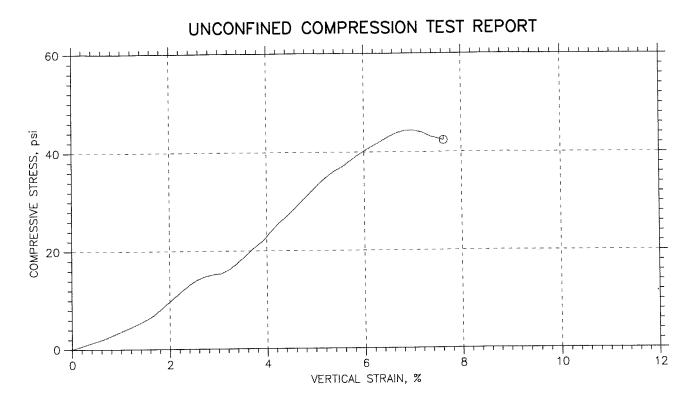
		Project: PLUM CREEK 21
$\Delta_{\rm L}$	NIRCC	Location: TX
V		Project No.: 15-66
		Boring No.: 251.7
		Sample Type: CORE
	Service	Description: CREST AUX. SPWY, F14-350
	at we to be to	Remarks: NOTE: HEIGHT DOES NOT MEET ASTM HEIGHT/DIAMETER REQUIREMENTS



VERTICAL STRAIN, %

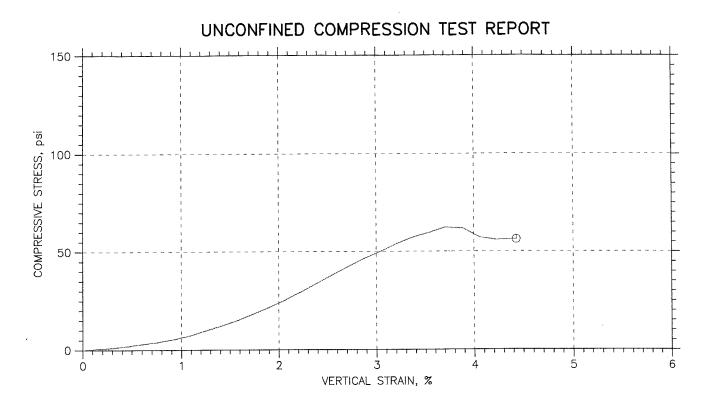
Sy	mbol	O		
Test No.		1		
	Diameter, in	2.69 -		
	Height, in	5.981 ·	-	
Initial	Water Content, %	22.06 .		
	Dry Density, pcf	93.27		
	Saturation, %	71.85		
	Void Ratio	0.847		
Ur	confined Compressive Strength, psi	23.24		
Ur	ndrained Shear Strength, psi	11.62		
Tir	ne to Failure, min	4.0045		
St	rain Rate, %/min	1.		
Me	easured Specific Gravity	2.76 .		
Lic	quid Limit			
Pl	astic Limit			
PI	asticity Index			
Failure Sketch				

		Project: PLUM CREEK 21
	NRCC	Location: TX
W	'IVI (C)	Project No.: 15-67
		Boring No.: 251.8
	Resources Conservation	Sample Type: CORE
	Service	Description: CREST AUX. SPWY, F14-351
	0011100	Remarks:



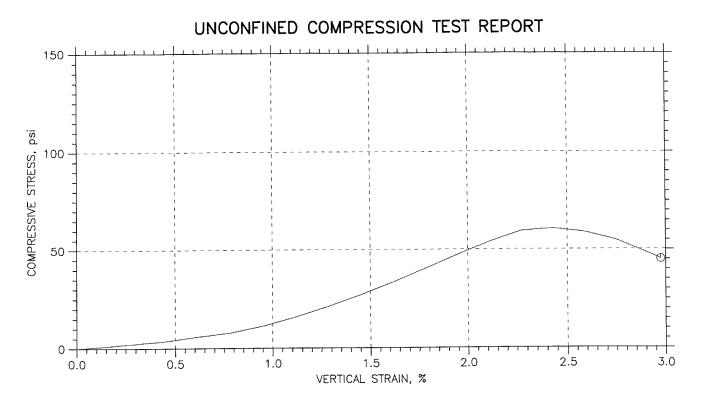
Sy	mbol	Ø		
	st No.	1		
	Diameter, in	2.68		
Initial	Height, in	3.687		
	Water Content, %	16.55 _,		
	Dry Density, pcf	97.92		
	Saturation, %	61.92		
	Void Ratio	0.721		
Ur	nconfined Compressive Strength, psi	44.38	 	
Ur	ndrained Shear Strength, psi	22.19		
Tir	me to Failure, min	7.0013	 	
St	rain Rate, %/min	1 /	 	
M	easured Specific Gravity	2.70		
Li	quid Limit		 	
ΡI	astic Limit		 	
ΡI	asticity Index		 	
Fo	ailure Sketch			

		Project: PLUM CREEK 21
Λ	NIRCC	Location: TX
V	NICO	Project No.: 15-69
		Boring No.: 251.10
		Sample Type: CORE
	Sonvico	Description: CREST AUX. SPWY, F14-353
	30,9700	Remarks: NOTE: HEIGHT DOES NOT MEET ASTM HEIGHT/DIAMETER REQUIREMENTS



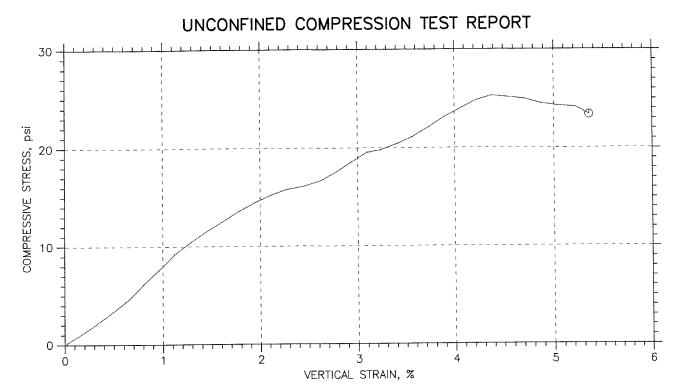
Sy	rmbol	O		
Test No.		1		
	Diameter, in	2.694 -		
Initial	Height, in	5.163 .		-
	Water Content, %	8.17 ,		
	Dry Density, pcf	89.56		
	Saturation, %	25.69	·	
	Void Ratio	0.84		
U	nconfined Compressive Strength, psi	62.32		
U	ndrained Shear Strength, psi	31.16		
Tir	me to Failure, min	3.8365		
St	rain Rate, %/min	1		
Me	easured Specific Gravity	2.64 ′		
Lie	quid Limit			
ΡI	astic Limit			
ΡI	asticity Index			
Failure Sketch				

		Project: PLUM CREEK 21
0	NIRCC	Location: TX
	L MICO	Project No.: 15-70
Natural		Boring No.: 252.1
	Resources Conservation	Sample Type: CORE
	Service	Description: AUX. SPWY SLOPE ~ 200' D.S., F14-354
	uP \u I X / \x \u	Remarks: NOTE: HEIGHT DOES NOT MEET ASTM HEIGHT/DIAMETER REQUIREMENTS



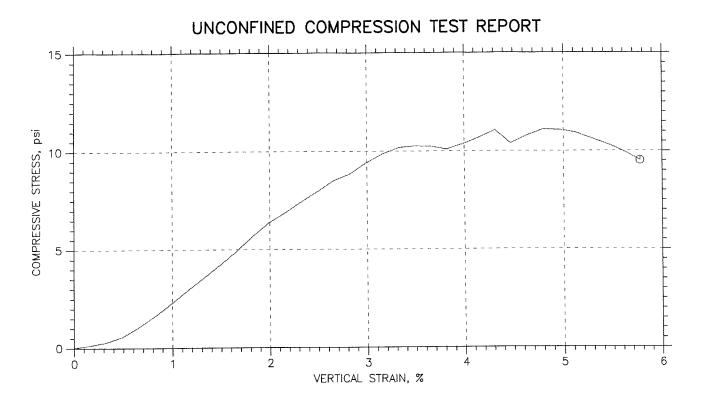
Sy	rmbol	O	 	
Test No.		1		
	Diameter, in	2.755		
Initial	Height, in	5.945 🔹		
	Water Content, %	18.44		
	Dry Density, pcf	97.82		
	Saturation, %	67.50		
	Void Ratio	0.749		
U	nconfined Compressive Strength, psi	60.64		
U	ndrained Shear Strength, psi	30.32		
Ti	me to Failure, min	2.5016		
St	rain Rate, %/min	1,		
М	easured Specific Gravity	2.74 .		
Li	quid Limit			
PI	astic Limit			
PI	asticity Index			
Fo	ailure Sketch			

		Project: PLUM CREEK 21
Δ		Location: TX
V		Project No.: 15-71
		Boring No.: 252.5
		Sample Type: CORE
	Service	Description: AUX. SPWY SLOPE ~ 200' D.S. CREST, F14-355
	W 10 X X X 10	Remarks:



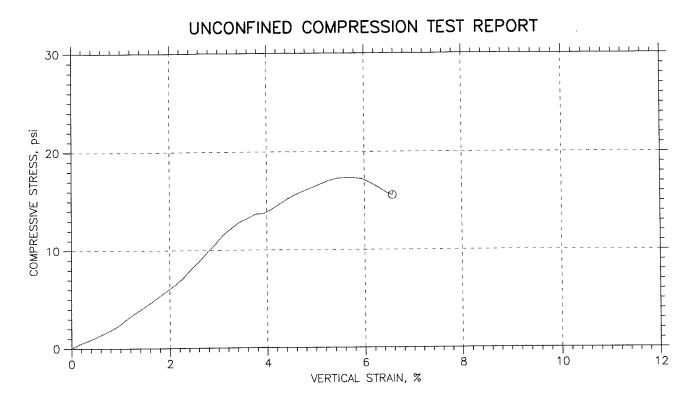
Sy	mbol	O		
Test No.		1		
	Diameter, in	2.74 ·		
	Height, in	4.863		
al	Water Content, %	22.15		
Initial	Dry Density, pcf	92.61		
	Saturation, %	71.66		
	Void Ratio	0.847		
Unconfined Compressive Strength, psi		25.28		
Un	drained Shear Strength, psi	12.64		
Tir	ne to Failure, min	4.5038		
St	rain Rate, %/min	1,		
Me	asured Specific Gravity	2.74		
Lic	quid Limit			
Plo	astic Limit			
Plo	asticity Index			
Failure Sketch				

		Project: PLUM CREEK 21
Δ	NIRCC	Location: TX
W	NINCO	Project No.: 15-72
		Boring No.: 252.3
;		Sample Type: CORE
	Service	Description: AUX. SPWY SLOPE ~ 200' DS CREST WEATHERED CLAYSTONE/SILTSTONE, F14-356
	JU19700	Remarks: NOTE: HEIGHT DOES NOT MEET ASTM HEIGHT/DIAMETER REQUIREMENTS



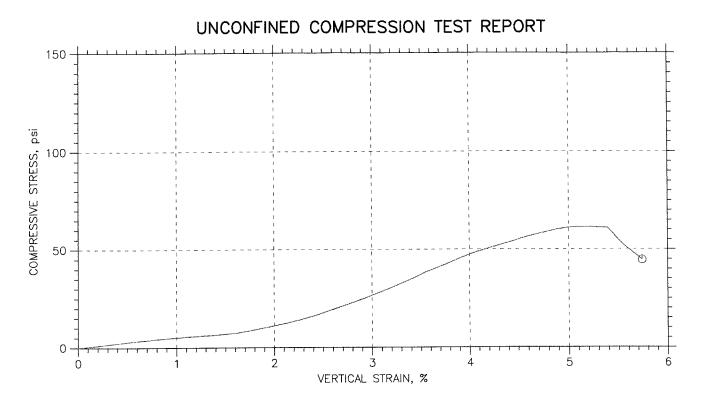
Symbol		O		
Test No.		1		
	Diameter, in	2.779 ,		
Initial	Height, in	5.895		
	Water Content, %	16.41 ^		
	Dry Density, pcf	89.95	 	
	Saturation, %	50.28		
	Void Ratio	0.888		
Ur	nconfined Compressive Strength, psi	11.1		
U	ndrained Shear Strength, psi	5.552		
Ti	me to Failure, min	4.8354		
St	rain Rate, %/min	1 '	 	
M	easured Specific Gravity	2.72 \		
Li	quid Limit			
PI	astic Limit			
PI	asticity Index			
Failure Sketch				

		Project: PLUM CREEK 21
Λ		Location: TX
1 Con	CJINI	Project No.: 15-73
		Boring No.: 252.4
	Resources Conservation	Sample Type: CORE
	Service	Description: AUX. SPWY SLOPE ~ 200' DS CREST REFUSAL AT 17', F14-357
	att i i i i i i i i i i i i i i i i i i	Remarks:



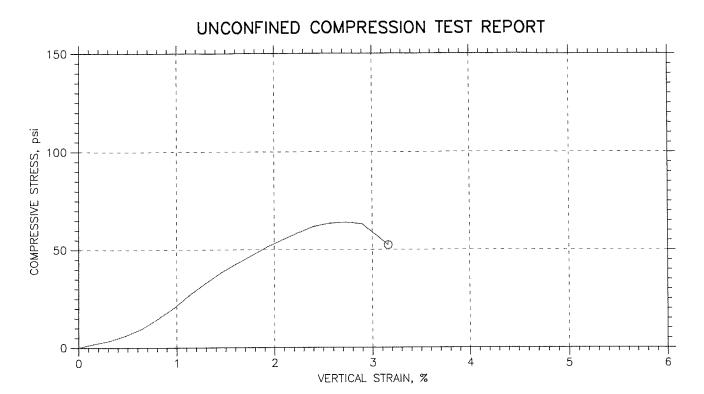
Sy	/mbol	O	 	
Te	est No.	1		
	Diameter, in	2.664		
Initial	Height, in	4.97 '		
	Water Content, %	18.13 ,	 	
	Dry Density, pcf	94.33	 	
	Saturation, %	61.65	 	
	Void Ratio	0.8	 	
Ur	nconfined Compressive Strength, psi	17.35	 	
Ur	ndrained Shear Strength, psi	8.676	 	
Tir	me to Failure, min	5.8343	 	
St	rain Rate, %/min	1	 	
Me	easured Specific Gravity	2.72	 	
Li	quid Limit			
PI	astic Limit		 	
PI	asticity Index		 	
Failure Sketch				

		Project: PLUM CREEK 21
Δ	NIRCC	Location: TX
V	NINCO	Project No.: 15-74
		Boring Na.: 252.5
		Sample Type: CORE
	Service	Description: AUX. SPWY SLOPE ~ 200' DS CREST WEATHERED SILTSTONE, F14-358
	JUINIC	Remarks: NOTE: HEIGHT DOES NOT MEET ASTM HEIGHT/DIAMETER REQUIREMENTS



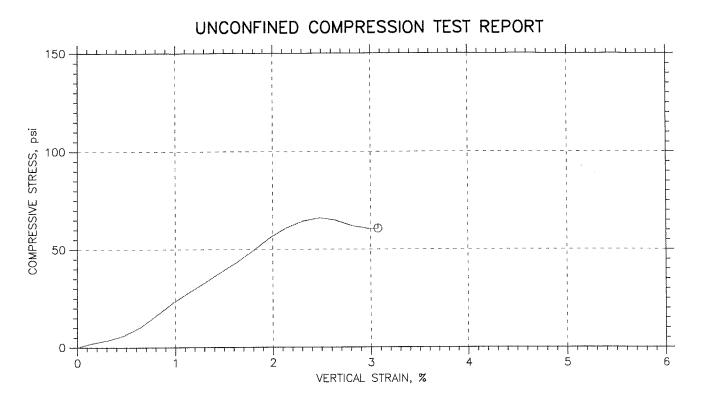
Symbol		O		
Test No.		1		
	Diameter, in	2.7		
Initial	Height, in	4.294		
	Water Content, %	19.08		
	Dry Density, pcf	97.1		
	Saturation, %	68.65		
	Void Ratio	0.762		
Ur	nconfined Compressive Strength, psi	61.37		
Ur	ndrained Shear Strength, psi	30.68		
Tir	me to Failure, min	5.3347		
St	rain Rate, %/min	1		
Me	easured Specific Gravity	2.74		
Lie	quid Limit			
ΡI	astic Limit			
ΡI	asticity Index			
Failure Sketch				

		Project: PLUM CREEK 21
\square	Natural	Location: TX
W		Project No.: 15-76
		Boring No.: 253.2
		Sample Type: CORE
	Service	Description: EXIT SLOPE AUX. SPWY ~ 400' DS CREST, F14-360
	~~~~	Remarks: NOTE: HEIGHT DOES NOT MEET ASTM HEIGHT/DIAMETER REQUIREMENTS



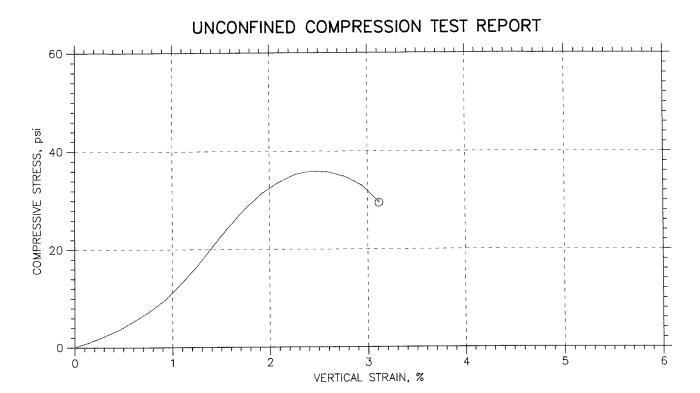
Sy	rmbol	O		
Test No.		1		
	Diameter, in	2.735 -		
Initial	Height, in	5.528		
	Water Content, %	11.67		
	Dry Density, pcf	105.7 ,		
	Saturation, %	52.68		
	Void Ratio	0.6		
Unconfined Compressive Strength, psi		64.04	 	
U	ndrained Shear Strength, psi	32.02		
Tii	me to Failure, min	2.8376		
St	rain Rate, %/min	1		
Me	easured Specific Gravity	2.71 ′		
Li	quid Limit			
ΡI	astic Limit			
P١	asticity Index		 	
Failure Sketch				

		Project: PLUM CREEK 21
$ \Lambda $	NIRCC	Location: TX
V	Natural	Project No.: 15-77A
		Boring No.: 254.1
	Resources Conservation	Sample Type: CORE
	Service	Description: EXIT SLOPE AUX. SPWY ~ 600' DS CREST CC TOP OF TUBE SS BOTTOM OF TUBE, F14-361
		Remarks:



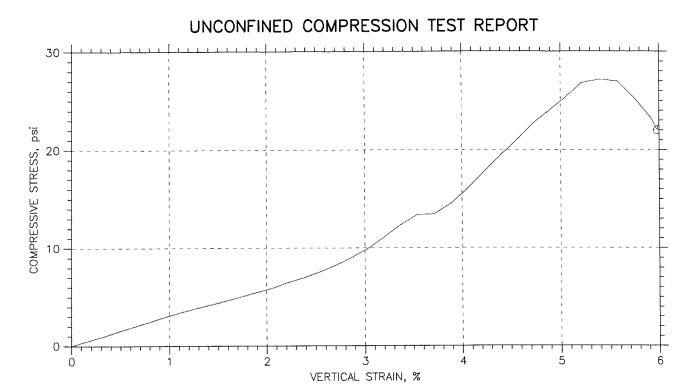
Symbol		O		
Test No.		1		
	Diameter, in	2.763 /		
Initial	Height, in	5.896 ,		
	Water Content, %	12.60 /		
	Dry Density, pcf	110.2		
	Saturation, %	63.76		
	Void Ratio	0.536		
Unconfined Compressive Strength, psi		65.98		
Ur	ndrained Shear Strength, psi	32.99		
Tir	me to Failure, min	2.5017		
St	rain Rate, %/min	1		
Me	easured Specific Gravity	2.71 >		
Lie	quid Limit			
PI	astic Limit			
ΡI	asticity Index			
Failure Sketch				

		Project: PLUM CREEK 21
$ \Lambda $		Location: TX
	INI/CD	Project No.: 15-77B
	Natural	Boring No.: 254.1
	Resources Conservation	Sample Type: CORE
	Service	Description: EXIT SLOPE AUX. SPWY ~ 600' DS CREST CC TOP OF TUBE SS BOTTOM OF TUBE, F14-361
		Remarks:



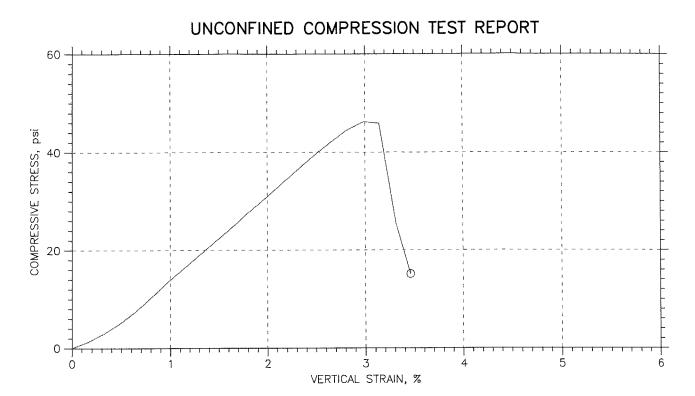
Sy	mbol	O		
Test No.		1		
	Diameter, in	2.759		
Initial	Height, in	5.931 ,		
	Water Content, %	18.91 ,		
	Dry Density, pcf	95.88 -		
	Saturation, %	66.38		
	Void Ratio	0.777		
Unconfined Compressive Strength, psi		35.95		
Undrained Shear Strength, psi		17.97		
Tir	ne to Failure, min	2.5017		
Strain Rate, %/min		1		
Me	easured Specific Gravity	2.73 ,		
Lic	quid Limit			
PI	astic Limit			
PI	asticity Index			
Failure Sketch				

		Project: PLUM CREEK 21
$\Lambda$		Location: TX
	INI/CD	Project No.: 15-78
	Natural	Boring No.: 254.2
	Resources Conservation	Sample Type: CORE
	Service	Description: EXIT SLOPE AUX. SPWY ~ 600' DS CREST CLAYSTONE, F14-362
	JCI 9760	Remarks:



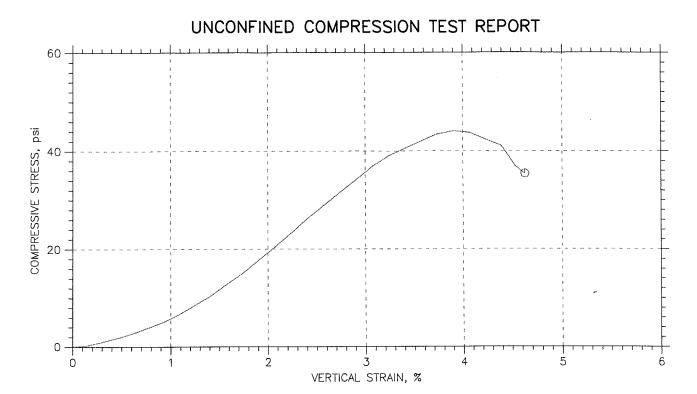
Symbol		O		
Test No.		1		
	Diameter, in	2.776 ,		
Initial	Height, in	4.243 ,		
	Water Content, %	20.21		
	Dry Density, pcf	98.17 .		
	Saturation, %	73.52		
	Void Ratio	0.761		
Ur	nconfined Compressive Strength, psi	27.14		
Ur	ndrained Shear Strength, psi	13.57		
Time to Failure, min		5.5029		
St	rain Rate, %/min	1		
Me	easured Specific Gravity	2.77 .		
Li	quid Limit			
ΡI	astic Limit			
PI	asticity Index			
Failure Sketch				

	NRCS Natural Resources Conservation Service	Project: PLUM CREEK 21
		Location: TX
W		Project No.: 15-79
		Boring No.: 255.1
		Sample Type: CORE
		Description: EXIT SLOPE AUX. SPWY ~800' DS CREST, F14-363
		Remarks: NOTE: HEIGHT DOES NOT MEET ASTM HEIGHT/DIAMETER REQUIREMENTS



Symbol		O		
Test No.		1		
Initial	Diameter, in	2.766		
	Height, in	6.131 ,		
	Water Content, %	21.98 ,		
	Dry Density, pcf	101.4 ,		
	Saturation, %	87.78		
	Void Ratio	0.686		
Unconfined Compressive Strength, psi		46.22		
Undrained Shear Strength, psi		23.11		
Time to Failure, min		3.0011		
Strain Rate, %/min		1		
Measured Specific Gravity		2.74		
Liquid Limit				
Plastic Limit				
Plasticity Index				
Fa	ilure Sketch			

Q,	NRCS Natural Resources Conservation	Project: PLUM CREEK 21
		Location: TX
		Project No.: 15-80
		Boring No.: 255.2
		Sample Type: CORE
		Description: EXIT SLOPE AUX. SPWY ~800' DS CREST, F14-364
		Remarks:



Symbol		O		
Test No.		1		
Initial	Diameter, in	2.717 ,		
	Height, in	5.546		
	Water Content, %	19.63 ,	1	
	Dry Density, pcf	97.88		
	Saturation, %	72.29		
	Void Ratio	0.741		
Unconfined Compressive Strength, psi		44.09		
Undrained Shear Strength, psi		22.04		
Ti	me to Failure, min	4.0001		
Strain Rate, %/min		1		
Measured Specific Gravity		2.73 .		
Liquid Limit				
Plastic Limit				
Plasticity Index				
Fo	ilure Sketch			

NRCS Natural Resources Conservation	Project: PLUM CREEK 21
	Location: TX
	Project No.: 15-81
	Boring No.: 256.1
	Sample Type: CORE
	Description: EXIT SLOPE AUX. SPWY SILT, F14-365
	Remarks: