

DEPARTMENT OF THE ARMY DIVISION <u>Southwestern</u> INSTALLATION <u>Galv Dist, Eng Div</u>			1- PROJECT NASA Chan - Clear Creek		SHEET OF	
DRILLING LOG			2- LOCATION (Coordinates or Station) Sta 5+00 Tide 2.4 @ 09:30 hrs (MLT)			
4- HOLE NO. (As shown on drawing title and file No.) 3ST-7			3- DRILLING AGENCY U. S. Army Corps of Engineers			
6- DIRECTION OF HOLE ☐ VERTICAL ☐ INCLINED DEGREES WITH VERTICAL			7- THICKNESS OF OVER-BURDEN		8- DEPTH DRILLED INTO ROCK	
10- SIZE AND TYPE OF BIT Shelby Tube - 3"			11- DATUM FOR ELEVATION SHOWN (TBM or MSL)		9- TOTAL DEPTH OF HOLE 17.5 12- MANUFACTURER'S DESIGNATION OF DRILL	
13- TOTAL NO. OF OVERBURDEN SAMPLES TAKEN 3 Jars			14- TOTAL NO. CORE BOXES		15- ELEV. GROUND WATER	
17- ELEV. TOP OF HOLE			18- TOTAL CORE RECOVERY FOR BORING (%)		16- DATE HOLE STARTED 8 Jun 62 COMPLETED 8 June 62	
19- SIGNATURE OF INSPECTOR						
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
0.0	4.0	1.6	Water			
4.0	8.0		Gray mucky silty clay v/soft 3" ST penetrated w/weight of Kelly (stopped w/brake)			Jar 1
8.0	10.0		Gray sticky clay (CL) v/soft 3" ST penetrated w/weight of 5' rod & kelly			Jar 2
10.0	12.0	9.6 13.9	Gray sticky silty clay (CL) v/soft			Jar 3
12.0	14.0	-11.6	Gray brown soft clay (CH) stiff			Cont 1 1.00
14.0	16.0		Gray brown soft clay (CH) stiff			Cont 2 1.50
16.0	17.5		Gray brown soft clay (CH) v/stiff			Cont 3 2.00
Bottomed in above at 15.4 MLT Water 4.0						

REQUEST FOR AND RESULTS OF TESTS						PAGE NO. 1	NO. OF PAGES 1
A. <u>SWNGL</u> REQUEST FOR TEST <u>GG-19-62 dated 12 June 1958</u>							
1. TO: Southwestern Division Laboratory US Army Engineer Division, Southwestern Corps of Engineers 4815 Cass Street Dallas 35, Texas				2. FROM: Chief, F & M Branch Galveston District			
3. PRIME CONTRACTOR AND ADDRESS				4. MANUFACTURING PLANT NAME AND ADDRESS			
CONTRACT NUMBER				P. O. NUMBER			
5. END ITEM AND/OR PROJECT Spacecraft Center NASA Clear Lake Channel		6. SAMPLE NUMBER	7. LOT NO.	8. REASON FOR SUBMITTAL		9. DATE SUBMITTED	
10. MATERIAL TO BE TESTED Foundation	10a. QUANTITY SUBMITTED 13 carton & 27 jar samples	11. QUANTITY REPRESENTED	12. SPEC. & AMEND AND/OR DRAWING NO. & REV. FOR SAMPLE & DATE				
13. PURCHASED FROM OR SOURCE Holes 3ST-1 thru 3ST-11		14. SHIPMENT METHOD Gov't vehicle	15. DATE SAMPLED AND SUBMITTED BY				
16. REMARKS AND/OR SPECIAL INSTRUCTIONS AND/OR WAIVERS							
17. RECEIPT							
THE ABOVE MATERIAL HAS BEEN RECEIVED							
DATE 13 June 62		TYPED NAME AND TITLE A. H. FEESE, Engineer			SIGNATURE		
3. RESULTS OF TEST (Continue on plain white paper if more space is required)							
1. RESULTS ☐ ACCEPTABLE ☐ FAILURE INDICATED ☐ OTHER (Specify)				2. DATE REC'D 13 June 62	3. DATE REPORTED 9 July 62	4. LAB REPORT NUMBER SWDGL-7919-1	
5. TEST PERFORMED,		RESULTS OF TEST		SAMPLE RESULT		REQUIREMENTS	
<u>Hole No.</u>		<u>Depth</u>		<u>Dissolved Solids</u>		<u>Chlorides</u>	
						<u>AS Cl</u> <u>AS NaCl</u>	
3ST-3		3.7 - 10.0		0.58		0.19 0.31	
3ST-7		4.0 - 10.0		0.51		0.18 0.30	
Above values represent water soluble material as percent of weight of dry soil.							
SEND REPORT OF TESTS TO Copy furnished:							
District Engineer, Galveston District							
THE PRESCRIBED TESTS WERE MADE ON 3 - 5 July 1962 AND THE RESULTS THEREOF WERE AS SET FORTH ABOVE.							
DATE July 1962		NAME AND TITLE OF PERSON CONDUCTING TESTS K. M. COEN Engineer-in-Charge Southwestern Division Laboratory			SIGNATURE 		
FORM 1 JUL 58 1222		REPLACES DA FORMS 696, 1651 AND 10-208, WHICH ARE OBSOLETE.					

Results of Tests of Foundation Materials

Hole No.	SWD Sample No.	Depth, Feet	Type of Sample	Mechanical Analysis			Limits		Natural Conditions		Pocket Penetrometer, tsf	Classification
				Gr	Sa	Fi	LL	PI	Water Content %	Dry Density Lbs/cu.ft.		
3ST-1	S-12849	3.5 - 7.5	Jar						59.7	-	-	Dk.gray CLAY(CL). (v/soft)
	S-12850	7.5 - 10.0	Jar						43.0	-	-	Dk.gray CLAY(CL). (soft)
	S-12851	10.0 - 12.5	ST						21.7	107	2.75	Gray and yellow CLAY(CH), very stiff.
3ST-2	S-12852	3.2 - 5.0	Jar	0	18	82	68	16	88.0	-	-	Gray CLAY(CH). (v/so)
	S-12853	5.0 - 7.5	Jar	0	24	76	38	16	41.3	-	-	Dk.gray sandy CLAY(CL). (v/so)
	S-12854	7.5 - 10.8	Jar	0	18	82	41	16	74.1	-	-	Dk.gray CLAY(CL). (v/so)
	S-12855	10.8 - 12.5	ST	1	14	85	37	10	22.2	106	2.5	Gray and brownish-yellow CLAY(CL), very stiff.
	S-12915	15.5 - 16.0	Jar	0	23	77	34	13	34.5	-	-	Dk.gray sandy CLAY(CL), few shells.
3ST-3	S-12856	3.7 - 8.0	Jar						43.4	-	-	Dk.gray CLAY(CL).
	S-12857	8.0 - 10.0	Jar						43.4	-	-	Dk.gray CLAY(CL).
	S-12858	10.0 - 12.5	ST						24.4	102	2.5	Olive and gray CLAY(CH), very stiff.
3ST-4	S-12859	2.3 - 6.0	Jar						46.3	-	-	Dk.gray CLAY(CL). v/soft
	S-12860	6.0 - 10.0	Jar						52.5	-	-	Dk.gray CLAY(CL). v/soft
	S-12861	10.0 - 12.5	ST						37.1	82	0.25	Dk.gray CLAY(CL), very stiff.
3ST-5	S-12862	3.5 - 6.0	Jar						49.2	-	-	Dk.gray CLAY(CL).
	S-12863	6.0 - 8.5	Jar						57.3	-	-	Dk.gray CLAY(CL).
	S-12864	8.5 - 11.0	Jar						55.9	-	-	Dk.gray CLAY(CL).
	S-12865	11.0 - 13.0	ST						54.1	69.3	0.25+	Dk.gray CLAY(CL), soft.
3ST-6	S-12866	4.0 - 8.0	Jar						44.6	-	-	Dk.gray CLAY(CH).
	S-12867	8.0 - 10.0	Jar	0	10	90	45	12	47.9	-	-	Dk.gray CLAY(CL).
	S-12868	10.0 - 12.5	Jar						41.8	-	-	Gray CLAY(CL).
	S-12869	12.5 - 15.0	Jar						41.2	-	-	Gray CLAY(CL).
3ST-7	S-12870	4.0 - 8.0	Jar	0	13	87	65	14	79.9	-	-	Dk.gray CLAY(CH).
	S-12871	8.0 - 10.0	Jar						40.5	-	-	Dk.gray CLAY(CL).
	S-12872	10.0 - 12.0	Jar	3	14	83	42	11	40.5	-	-	Dk.gray CLAY(CL).
	S-12873	12.0 - 14.0	ST						26.7	99	1.25	Red and gray CLAY(CH), stiff.
3ST-8	S-12874	4.2 - 8.0	Jar						42.6	-	-	Dk.gray CLAY(CL).
	S-12875	8.0 - 10.0	Jar						42.6	-	-	Dk.gray CLAY(CL).
	S-12876	10.0 - 12.5	Jar						36.6	-	-	Dk.gray CLAY(CL).
3ST-9	S-12877	4.5 - 7.0	Jar						116.3	-	-	Dk.gray CLAY(CH).
	S-12878	7.0 - 10.0	Jar						40.3	-	-	Dk.gray CLAY(CL).
	S-12879	10.0 - 12.5	ST	1	32	67	28	13	24.6	103	0.5	Gray sandy CLAY(CL), medium consistency.
	S-12880	12.5 - 15.0	ST	0	9	91	56	13	28.7	96	1.5	Greenish-gray CLAY(CH), stiff.

NASA CHANNEL IN CLEAR LAKE
INVEST OF CHANNEL DREDGING

TEST DATA SUMMARY

Sheet 2 of 3

FEATURE Log of Soil Boring

BORING NO.	SAMPLE NO.	DEPTH OR ELEV. OF SAMPLE	LABORATORY CLASSIFICATION	MECHANICAL ANALYSIS				ATTERBERG LIMITS		SPECIFIC GRAVITY G	NATURAL WATER CONTENT %	NATURAL DRY DENSITY LBS./CU. FT.	COMPACTION DATA		SHEAR DATA										PERMEABILITY		CONSOLIDATION DATA				REMARKS			
				GRAVEL %	SAND %	FINES %	D ₁₀ *	LL	PL				OPTIMUM WATER %	MAXIMUM DRY DENSITY LBS./CU. FT.	INITIAL e	DRY DENSITY LBS./CU. FT.	W _L %	W _P %	S _L %	TYPE TEST	SPECIMEN SIZE INCHES	TEST	σ ₁ T/SQ. FT.	σ ₃ T/SQ. FT.	C T/SQ. FT.	φ DEGREES	e	K FT./MIN.	P ₀ T/SQ. FT.	P _c T/SQ. FT.		C _c	t ₉₀ *	
3ST-7	62	0.0	TEST DONE BY DIV.																															
		14.0	TEST DONE BY DIV.																															
	4073	16.0	CL	3	16	81	2.75	39.5	17.0		25.3	106.4																						
	4074	17.5	SAME AS #4073				1.75				25.5	104.0																						
			TEST DONE BY DIV.																															
3ST-8	62	0.0	TEST DONE BY DIV.																															
		16.0	CL	0	35	65	0.0	25.2	7.0		27.5	98.7																						
		18.0	TEST DONE BY DIV.																															
3ST-9	62	0.0	TEST DONE BY DIV.																															
		15.0	CH	0	3	97	2.00	52.9	22.0		28.9	100.0																						
	4077	17.0	SAME AS #4076								22.2	110.5																						
		18.0	TEST DONE BY DIV.																															
3ST-10	62	0.0	TEST DONE BY DIV.																															
		14.0	CL	1	17	82	2.00	47.1	16.0		24.9	104.5																						
	4078	16.5	SAME AS #4078				2.25				26.1	104.1																						
		17.5	TEST DONE BY DIV.																															
3ST-11	62	0.0	TEST DONE BY DIV.																															
		15.0	CH	0	5	95	2.15	61.2	22.5		27.5	102.0																						
	4080	17.5	TEST DONE BY DIV.																															

* Values at Pressure T/SQ. FT.

- Triaxial Compression
UC - Unconfined Compression

DS - Direct Shear
UU - Unconsolidated Undrained

- Consolidated Drained
CU - Consolidated Undrained

11 June 1962

CLEAR CREEK CHANNEL - NASA
VANE SHEAR TESTS

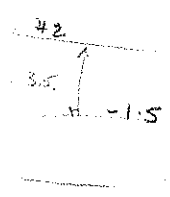
Boring No.	Depth/ft	Elev ^{MLT}	Vane Size	"T" Value	"S" Value	T/A
3ST-7	*0.0-1.0	-1.5 -2.5	2"	15	78	.039
	2.0-3.0	-3.5 -4.5	2"	25	129	.065
	4.0-5.0	-5.5 -6.5	2"	50	259	.130
	6.0-7.0	-7.5 -8.5	2"	65	336	.168
	8.0-9.0	-9.5 -10.5	2"	350	1810	.905
	9.0-10.0	-10.5 -11.5	2"	350	1810	.905

*0.0 - Bottom of Lake
Water Depth - 3.5'
Tide - 2' MLT

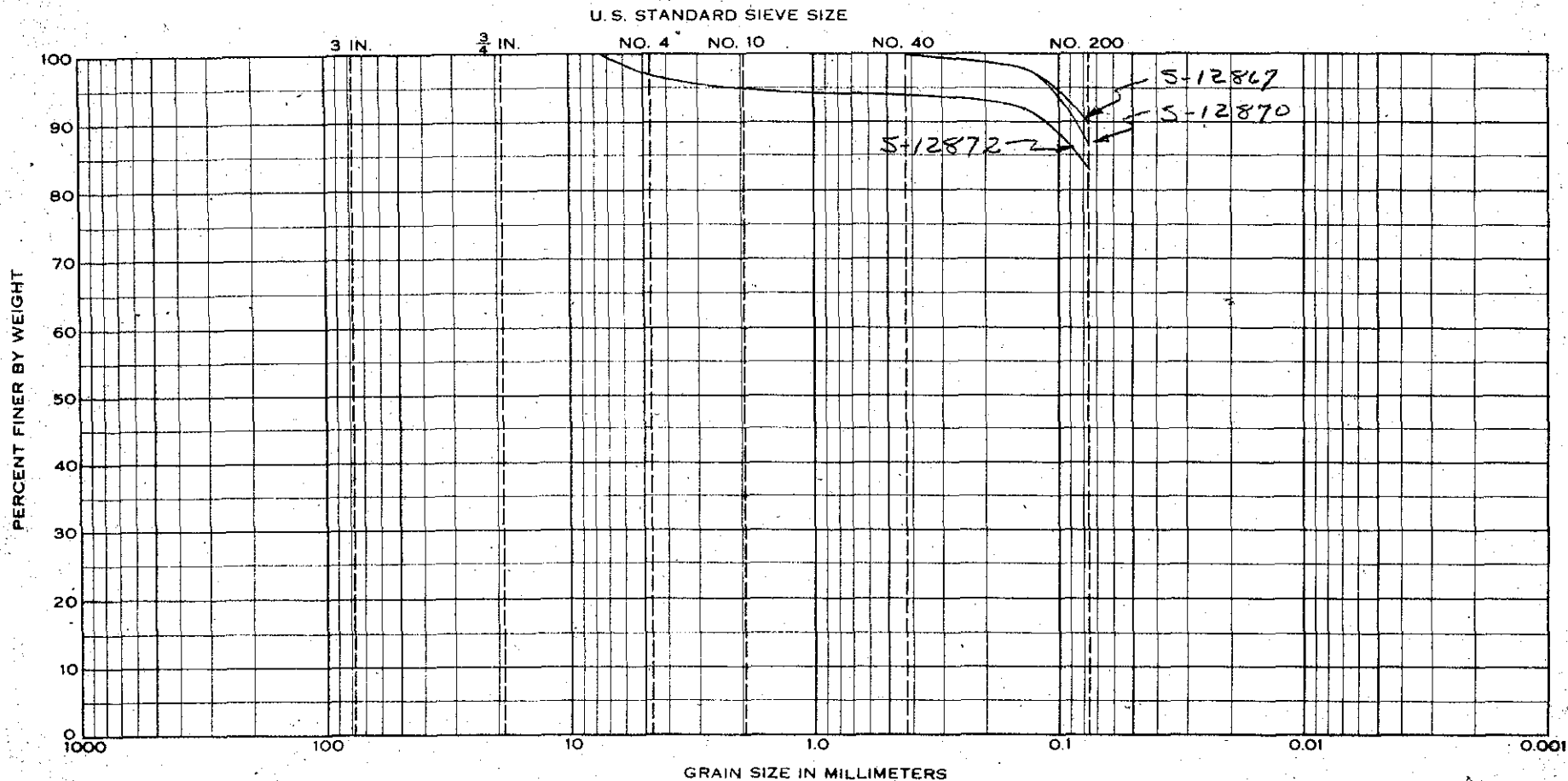
3ST-3	*0.0-1.0	-0.9 1.9	2"	10	52	.026
	2.0-3.0	-2.9 -3.9	2"	40	207	.104
	4.0-5.0	-4.9 -5.9	2"	60	310	.155
	6.0-7.0	-6.9 -7.9	2"	600/	3102	1.551
	8.0-9.0	-8.9 -9.9	2"	600/	3102	1.551

*0.0 - Bottom of Lake
Water depth - 3.0'
Tide - 2.1' MLT

"T" Value - Torque Reading
"S" Value - Shearing Resistance lbs/sq ft



2.1
3.0
2.1



COBBLES	GRAVEL		SAND			SILT OR CLAY
	Coarse	Fine	Coarse	Medium	Fine	

Sample No.	Elev or Depth	Classification	NatWC	LL	PL	PI		Project <i>NASA Clear Lake Channel</i> FOUNDATION MATERIAL Area <i>GALVESTON DISTRICT</i> Boring No. <i>3ST-6 & 3ST-7</i> Date
S-12867	8.0-10.0	CLAY (CL)		45	12	33	Hole No. 3ST-6	
S-12870	4.0-8.0	CLAY (CH)		65	14	51	Hole No. 3ST-7	
-12872	10.0-12.0	CLAY (CL)		42	11	31	"	

GRADATION CURVES

PLATE NO. 2

SWOGL REPORT NO. 7919