

# **Brunswick Harbor Modifications Study, Glynn County, GA**

## **Attachment B-3** ***Engineering and Design*** ***Historical Boring Logs***

**U.S. ARMY CORPS OF ENGINEERS  
SAVANNAH DISTRICT  
100 WEST OGLETHORPE AVENUE  
SAVANNAH, GEORGIA 31401**



**July 2021**

## Turning Basin

### Boring Logs:

103

104

105

106

107

108

109A

110

111

112



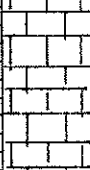


113

114

115

207

DRILLING LOG		DIVISION South Atlantic		INSTALLATION Brunswick, GA.		SHEET 1 OF 2 SHEETS	
1. PROJECT South Brunswick River Widening				10. SIZE AND TYPE OF BIT 1 3/8" splitspoon, 5" fish-			
2. LOCATION (Coordinates or Station) X-852237.14 Y-414094.57				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW tail, 4x5 1/2" dia & carbally bits			
3. DRILLING AGENCY Savannah District				12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314			
4. HOLE NO. (As shown on drawing title and file number) 103				13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED 4	UNDISTURBED 0
5. NAME OF DRILLER C.D. Justiss				14. TOTAL NUMBER CORE BOXES 1			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. ELEVATION GROUND WATER N/A		16. DATE HOLE	
7. THICKNESS OF OVERBURDEN 34.1' (24.0' water)				17. ELEVATION TOP OF HOLE 0.0'		18. TOTAL CORE RECOVERY FOR BORING 87 %	
8. DEPTH DRILLED INTO ROCK 6.8'				19. SIGNATURE OF INSPECTOR James Arthur, P.G. <i>J. Arthur, P.G.</i>			
9. TOTAL DEPTH OF HOLE 40.9'							
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'	0.0'	c	d	e	JAR	g BLOWS	
	20		Water			Scale change @ 20.0' and 35.0'. LAB CLASSIFICATION No. Class LL PL PI 1 CH 155 41 114 2 SP-SM NP NP NP 3 CH - - -	
	24.0'		Bottom of River 24.0' (CH) Dark grey to black fat CLAY.				
	25		(SM) Grey to greyish brown silty med. SAND. Some small shell fragments, calcareous.		1	Weight of tool string without hammer drove splitspoon from 24.0' to 31.1', cont'd. drive to 32.6'.	
	30		(CL) Grey, calcareous, lean CLAY. Partially indurated. Top of Rock 34.1'			Bouncing rods @ 34.1'. Hard material, could not fishtail to 34.1'. Cored using diamond bit.	
	31.1'		(LIMESTONE) Grey, clayey, soft to mod. hard, few small shells, mod. wea.		2	4	
	33.8'		35.0'-35.6' Grey to tannish grey, sandy, poorly cemented, badly broken.		3	27	
	34.1'		(CORE LOSS)		Box 1	Pull #1 From 34.1' To 35.0' Run 1.7' Rec 1.5' C.L. 0.2' Hyd. Pressure: 75 PSI Drilling Time: 16 Min.	
	35.6'		(CL) Light greenish grey, calcareous lean CLAY. Partially indurated.		Jar 4	Resumed splitspooning 100/0.9	
	35.8'						
	37.0'		Continued on sht 2				
NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.				BLOWS PER FOOT: Number required to drive 1 3/8" ID splitspoon w/ 140 lb. hammer falling 30".			

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No. 103		
PROJECT South Brunswick River Widening			INSTALLATION Brunswick, GA.		SHEET 2 OF 2 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
		c	d	e	f	g
37.40'	37'		(CL) Cont'd. 37.2'			
	38		(LIMESTONE) Light greenish-grey, fossiliferous, soft to mod. hard, intensely to highly jointed w/near horizontal open breaks. 38.0'-39.5' Soft, friable. 39.5'-40.4' Mod. hard to hard, intensely jointed.			Began coring at 37.2' w/4X5 1/2" carballoy bits.  Pull #2 From 37.2' To 40.9' Run 3.7' Rec 3.2' C.L. 0.5' Hyd. Pressure: 100 PSI Drilling Time: 10 Min.
	39					
	40			RQD 0%0	Box 1	
-40.4'			Core Loss			
-40.9'	41		Bottom of Boring 40.9'			









<b>DRILLING LOG</b>		DIVISION South Atlantic	INSTALLATION Brunswick, GA.	SHEET 1 OF 1 SHEETS
1. PROJECT South Brunswick River Widening		10. SIZE AND TYPE OF BIT 1 3/8" Splitspoon, 5" fish-		
2. LOCATION (Coordinates or Station) X - 853372.16 Y - 413108.57		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW tail		
3. DRILLING AGENCY Savannah District		12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314		
4. HOLE NO. (As shown on drawing title and file number) 106		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED 6	UNDISTURBED 0
5. NAME OF DRILLER C.D. Justice		14. TOTAL NUMBER CORE BOXES 0		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER N/A		
7. THICKNESS OF OVERBURDEN 40.7' (18.8' water)		16. DATE HOLE STARTED 4 May 1989 COMPLETED 4 May 1989		
8. DEPTH DRILLED INTO ROCK 0.0'		17. ELEVATION TOP OF HOLE 0.0'		
9. TOTAL DEPTH OF HOLE 40.7'		18. TOTAL CORE RECOVERY FOR BORING N/A		
		19. SIGNATURE OF INSPECTOR James Arthur, P.G. <i>J. Arthur, P.G.</i>		

ELEVATION 0.0'	DEPTH 0'	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. JAR	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Water			Scale change @ 15.0' Set 6" casing to -22.5' MLW by own weight.
	15		Bottom of River 18.8'			
-18.8'	20		(SP) Grey to tannish grey, poorly graded, med. to coarse SAND. Some small shell fragments, trace of silt, slightly calcareous.		1	Weight of tool string drove splitspoon from 18.8' to 19.7', cont'd. drive to 21.2'.
	25		(SC) Greenish grey clayey fine to med. SAND. Calcareous, some small & large shell fragments.			LAB CLASSIFICATION
-25.7'			(SM) Light grey, silty, fine to med. SAND. Calcareous, some small shell fragments, trace of fine limestone gravel & clay.		2	No. Class LL PL PI
	30		(SC) Light grey clayey fine to med. SAND. Calcareous, some small shell fragments.		3	1 SP NP NP NP 51
-28.7'			Light greenish grey partially indurated.		4	2 SC 36 23 13 27
-30.2'	35		Not indurated.		5	3 ML 18 15 3 30
-31.7'			Trace of fine to coarse limestone gravel.		6	48
-33.2'			Trace of fine limestone gravel.			94
-36.2'			Bottom of Boring 40.7'			50
-39.2'	40		NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.			39
-40.7'						44
						35
						36

**BLOWS PER FOOT:**  
Number required to drive 1 3/8" ID splitspoon w/ 140 lb. hammer falling 30".

<b>DRILLING LOG</b>		DIVISION South Atlantic	INSTALLATION Brunswick, GA.	SHEET 1 OF 1 SHEETS
1. PROJECT South Brunswick River Widening		10. SIZE AND TYPE OF BIT 1 3/8" splitspoon, 5" fish-tail		
2. LOCATION (Coordinates or Station) X - 852971.16 Y - 413413.57		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW		
3. DRILLING AGENCY Savannah District		12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314		
4. HOLE NO. (As shown on drawing title and file number) 105		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED 7	UNDISTURBED 0
5. NAME OF DRILLER C.D. Justiss		14. TOTAL NUMBER CORE BOXES 0		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER N/A		
7. THICKNESS OF OVERBURDEN 39.6' (26.6' water)		16. DATE HOLE	STARTED 25 Apr 1989	COMPLETED 25 Apr 1989
8. DEPTH DRILLED INTO ROCK 0.0'		17. ELEVATION TOP OF HOLE 0.0'		
9. TOTAL DEPTH OF HOLE 39.6'		18. TOTAL CORE RECOVERY FOR BORING N/A %		
		19. SIGNATURE OF INSPECTOR James Arthur, P.G. <i>J. Arthur, P.G.</i>		

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'	0b	c	d	*	JAR	g BLOWS
			Water			
	25		Bottom of River 26.6'			Scale change @ 25.0'. Set 6" casing to 31.0' by own weight.
-26.6'			(CH) Dark grey fat CLAY. Trace of very fine sand.		1	Weight of tool-string without hammer drove splitspoon from 26.6' to 30.6'. 0
-30.6'	30		(SC) Dark & light grey clayey fine to med. SAND. Calcareous, some small shell fragments.		2	Began using Zeogel mud at 32.1'. 27
-32.1'			Light greenish grey.		3	LAB CLASSIFICATION 51
-33.6'			With several dark grey fat clay layers approx. 1/2"-1" thick.		4	No. Class LL PL PI 39
-36.6'	35		No dark grey fat clay layers.		5	2 SC 32 15 17 30
-39.6'	40		Bottom of Boring 39.6'		6	33
			NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.		7	29
						BLOWS PER FOOT: Number required to drive 1 3/8" ID splitspoon w/ 140 lb. hammer falling 30".

<b>DRILLING LOG</b>		<b>DIVISION</b> South Atlantic	<b>INSTALLATION</b> Brunswick, GA.	<b>SHEET</b> 1 <b>OF 1 SHEETS</b>
<b>1. PROJECT</b> South Brunswick River Widening			<b>10. SIZE AND TYPE OF BIT</b> 1 3/8" splitspoon, 5" fish-	
<b>2. LOCATION (Coordinates or Station)</b> X - 853708.17 Y - 412736.57			<b>11. DATUM FOR ELEVATION SHOWN (TBM or MSL)</b> MLW tail	
<b>3. DRILLING AGENCY</b> Savannah District			<b>12. MANUFACTURER'S DESIGNATION OF DRILL</b> Falling 314	
<b>4. HOLE NO. (As shown on drawing title and file number)</b> 107		<b>13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN</b> DISTURBED: 8 UNDISTURBED: 0		
<b>5. NAME OF DRILLER</b> C.D. Justiss			<b>14. TOTAL NUMBER CORE BOXES</b> 0	
<b>6. DIRECTION OF HOLE</b> <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			<b>15. ELEVATION GROUND WATER</b> N/A	
<b>7. THICKNESS OF OVERBURDEN</b> 40.7' (20.6' water)			<b>16. DATE HOLE</b> STARTED: 25 Apr 1989 COMPLETED: 26 Apr 1989	
<b>8. DEPTH DRILLED INTO ROCK</b> 0.0'			<b>17. ELEVATION TOP OF HOLE</b> 0.0'	
<b>9. TOTAL DEPTH OF HOLE</b> 40.7'			<b>18. TOTAL CORE RECOVERY FOR BORING</b> N/A %	
			<b>19. SIGNATURE OF INSPECTOR</b> James Arthur, P.G. <i>J. Arthur, P.G.</i>	

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO. / JAR	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
0.0'	0'					BLOWS
			Water Bottom of River 20.6'			Set 6" casing to -21.4' MLW by own weight.
			(SM) Tannish-grey to grey, silty fine to med. SAND. Calcareous, some small shell fragments, trace of clay.			Scale change @ 20.0'.
-20.6'	20					
			(SP) Grey, poorly graded coarse SAND. Calcareous, some fine gravel & small shell fragments, trace of silt.		1	Weight of tool string without hammer drove splitspoon from 20.6' to 21.2'. cont'd.
-22.7'					2	drive to 22.7'. <u>0</u>
-25.7'	25					<u>23</u>
			(SC) Grey to light grey, clayey, fine to med. SAND. Calcareous, some shell fragments.		3	No splitspoon recovery on first attempt
-27.2'					4	from 22.7' to 24.2'. Re-drove splitspoon to 24.2' then cont'd. drive to 25.7'. <u>12</u>
-30.2'	30					<u>47</u>
			(CL) Light greenish grey, calcareous lean CLAY. Some fine sand & small shell fragments.		5	LAB CLASSIFICATION
-33.2'						No. Class LL PL PI <u>50</u>
			(SC) Light grey clayey fine to med. SAND. Calcareous, some fine to coarse limestone gravel & small shell fragments.		6	1 SP-SM NP NP NP
-34.7'					7	2 SP NP NP NP <u>63</u>
-36.2'	35					3 SC 29 16 13
			(CL) Light greenish grey, lean CLAY. Calcareous, some fine to coarse sand, trace of fine to coarse limestone gravel, partially indurated.		8	4 SC 31 17 14 <u>66</u>
-40.7'	40					<u>54</u>
			Same but not indurated, trace of fine to coarse limestone gravel.			<u>56</u>
			(SC) Light greenish grey, clayey fine to med. SAND. Calcareous, some small shell fragments & fine to coarse limestone gravel.			<u>55</u>
			Bottom of Boring 40.7'			
			NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.			
						<b>BLOWS PER FOOT:</b> Number required to drive 1 3/8" ID splitspoon w/ 140 lb. hammer falling 30".








<b>DRILLING LOG</b>		<b>DIVISION</b> South Atlantic	<b>INSTALLATION</b> Brunswick, GA.	<b>SHEET</b> 1 OF 1 SHEETS
<b>1. PROJECT</b> South Brunswick River Widening		<b>10. SIZE AND TYPE OF BIT</b> 3/8" splitspoon, 5" fish-tail		
<b>2. LOCATION (Coordinates or Station)</b> X - 854615.19 Y - 412351.57		<b>11. DATUM FOR ELEVATION SHOWN (TBM or MSL)</b> MLW		
<b>3. DRILLING AGENCY</b> Savannah District		<b>12. MANUFACTURER'S DESIGNATION OF DRILL</b> Failing 314		
<b>4. HOLE NO. (As shown on drawing title and file number)</b> 109A		<b>13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN</b> 5	<b>DISTURBED</b> 0	<b>UNDISTURBED</b> 0
<b>5. NAME OF DRILLER</b> D. Justiss		<b>14. TOTAL NUMBER CORE BOXES</b> 0		
<b>6. DIRECTION OF HOLE</b> <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		<b>15. ELEVATION GROUND WATER</b> N/A		
<b>7. THICKNESS OF OVERBURDEN</b> 40.8' (13.9' water)		<b>16. DATE HOLE</b> STARTED 27 Apr 1989 COMPLETED 27 Apr 1989		
<b>8. DEPTH DRILLED INTO ROCK</b> 0.0'		<b>17. ELEVATION TOP OF HOLE</b> 0.0'		
<b>9. TOTAL DEPTH OF HOLE</b> 40.8'		<b>18. TOTAL CORE RECOVERY FOR BORING</b> N/A %		
		<b>19. SIGNATURE OF INSPECTOR</b> James Arthur, P.G. <i>J. Arthur, P.G.</i>		

ELEVATION 0.0' <sup>d</sup>	DEPTH 0' <sup>b</sup>	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. JAR	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	BLOWS 9
			Water			Set 6" casing to -18.4' MLW by own weight. Washed casing down to -23.7' MLW w/5" fishtail.	
	10		Bottom of River 13.9'			Scale change @ 20.0'.	
-13.9'			(SEE REMARKS)			NOTE: 13.9'-28.8' Cleaned out w/5" fishtail. See companion log hole #109 for additional overburden information.	
	20					LAB CLASSIFICATION No. Class LL PL PI	
	25					3 SC-H 51 21 30	
-28.8'	30		(SC) Light greenish grey, clayey, fine to med. SAND. Calcareous, some fine to coarse limestone gravel & small shell fragments.		1		37
							74
-33.3'	35		Trace of fine gravel.		2		100/0.4
							44
-36.3'	40		(SM) Light greenish grey, silty, fine to med. SAND. Calcareous, some small shell fragments, & fine limestone gravel.		3		41
							41
					4		47
							43
-40.8'			Bottom of Boring 40.8' NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.		5		
						BLOWS PER FOOT: Number required to drive 1 3/8" ID splitspoon w/ 140 lb. hammer falling 30".	

<b>DRILLING LOG</b>		<b>DIVISION</b> South Atlantic	<b>INSTALLATION</b> Brunswick, GA.	<b>SHEET 1</b> OF 2 SHEETS
<b>1. PROJECT</b> South Brunswick River Widening		<b>10. SIZE AND TYPE OF BIT</b> 1 3/8" splitspoon, 5" fish-tail		
<b>2. LOCATION (Coordinates or Station)</b> X - 855062.20 Y - 412140.57		<b>11. DATUM FOR ELEVATION SHOWN (TBM or MSL)</b> MLW		
<b>3. DRILLING AGENCY</b> Savannah District		<b>12. MANUFACTURER'S DESIGNATION OF DRILL</b> Falling 314		
<b>4. HOLE NO. (As shown on drawing title and file number)</b> 110		<b>13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN</b>	<b>DISTURBED</b> 8	<b>UNDISTURBED</b> 0
<b>5. NAME OF DRILLER</b> C.D. Justiss		<b>14. TOTAL NUMBER CORE BOXES</b> 0		
<b>6. DIRECTION OF HOLE</b> <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		<b>15. ELEVATION GROUND WATER</b> N/A		
<b>7. THICKNESS OF OVERBURDEN</b> 39.9' (14.3' water)		<b>16. DATE HOLE</b>		
<b>8. DEPTH DRILLED INTO ROCK</b> 0.0'		<b>STARTED</b> 3 May 1989 <b>COMPLETED</b> 3 May 1989		
<b>9. TOTAL DEPTH OF HOLE</b> 39.9'		<b>17. ELEVATION TOP OF HOLE</b> 0.0'		
		<b>18. TOTAL CORE RECOVERY FOR BORING</b> N/A %		
		<b>19. SIGNATURE OF INSPECTOR</b> James Arthur, P.G. <i>J. Arthur P.G.</i>		

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'	0' b	c	d	e	JAR	g
			Water			Scale change @ 10.0'. Set 6" casing to -16.1' MLW by own weight. Began using Zeogel mud @ 14.3'.
	10		Bottom of River 14.3'			
	14.3'		(SP) Grey to tannish grey, poorly graded med. to coarse SAND. Some small shell fragments, trace of silt, slightly calcareous.			
	15		(SM) Grey, silty, fine to med. SAND. Some small shell fragments, calcareous.		1	Weight of tool string without hammer drove splitspoon from 14.3' to 15.9', cont'd. drive to 17.4'.
	18.9'		(SC) Grey, clayey, fine to med. SAND. Calcareous, some fine to coarse limestone gravel & small shell fragments.		2	LAB CLASSIFICATION
	20					No. Class LL PL PI
	21.9'		(CL) Light grey, calcareous, lean CLAY. Trace of fine sand & small shell fragments.		3	3 SC 31 14 17
	23.4'				4	4 CL 27 17 10
	24.9'		(SC) Light grey, clayey, fine to med. SAND. Calcareous, trace of fine limestone gravel.		5	6 SC 29 15 14
	26.4'					82
	26.4'		Greenish grey, clayey, fine to med. sand, calcareous, trace of fine to coarse limestone gravel.		6	100/0.7
	30					41
	35				7	33
						27
						46
						100/0.8
						49
			Continued on sht 2			
			NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.			<b>BLOWS PER FOOT:</b> Number required to drive 1 3/8" ID splitspoon w/ 140 lb. hammer falling 30".

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		0.0' MLW		Hole No. 110	
PROJECT			INSTALLATION			SHEET 2	
South Brunswick River Widening			Brunswick, GA.			OF 2 SHEETS	
ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO. JAR	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	
a	b	c	d	e		g BLOWS	
-35.4'			(SC) Cont'd. Greenish grey clayey, med. to coarse sand, some fine to coarse limestone gravel, calcareous.		7 cont'd		32
-38.4'					8		34
-39.9'	40		(SM) Tannish grey, silty, fine to med. SAND. Calcareous, trace of fine limestone gravel & small shell fragments.  Bottom of Boring -39.9'				58

<b>DRILLING LOG</b>		DIVISION South Atlantic	INSTALLATION Brunswick, GA.	SHEET 1 OF 1 SHEETS
1. PROJECT South Brunswick River Widening		10. SIZE AND TYPE OF BIT 1 3/8" splitspoon, 5" fish-		
2. LOCATION (Coordinates or Station) X - 855546.20 Y - 412014.58		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW tail		
3. DRILLING AGENCY Savannah District		12. MANUFACTURER'S DESIGNATION OF DRILL Falling 314		
4. HOLE NO. (As shown on drawing title and file number) 111		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED 12	UNDISTURBED 0
5. NAME OF DRILLER C.D. Justiss		14. TOTAL NUMBER CORE BOXES 0		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER N/A		
7. THICKNESS OF OVERBURDEN 40.3'(11.3' water)		16. DATE HOLE STARTED COMPLETED 27 Apr 1989 28 Apr 1989		
8. DEPTH DRILLED INTO ROCK 0.0'		17. ELEVATION TOP OF HOLE 0.0'		
9. TOTAL DEPTH OF HOLE 40.3'		18. TOTAL CORE RECOVERY FOR BORING N/A %		
		19. SIGNATURE OF INSPECTOR James Arthur, P.G. <i>J. Arthur, P.G.</i>		

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO. JAR	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	BLOWS
0.0'	0						
	10		Water			Scale change @ 10.0'.	
-11.3'	11.3		Bottom of River 11.3'				0
	15		(SP) Grey to tannish grey, poorly graded med. to coarse SAND. Trace of silt & small shell fragments, slightly calcareous.		1	Weight of tool string without hammer drove splitspoon from 11.3' to 11.8', cont'd. drive to 13.3'.	2
			Coarse sand.		2		21
-19.3'	20		(SC) Grey to greenish grey, clayey, fine to med. SAND. Calcareous, some small shell fragments.		3	19.3'-20.8' No splitspoon recovery. Re-drove then cont'd. to 22.3'.	29
-21.8'			(CL) Greenish grey, calcareous lean CLAY. Trace of fine sand.		4	LAB CLASSIFICATION	7
-23.8'			Some fine sand & small shell fragments.		5	No. Class LL PL PI	14
-25.3'	25		(SC) Grey, clayey, fine to med. SAND. Some fine to coarse limestone gravel & small shell fragments, calcareous.		6	1 SP NP NP NP	8
			Greenish grey.		7	4 SW-SM 30 29 1	44
-31.3'	30		Light greenish grey.		8	6 CL 30 19 11	34
-34.3'			Light grey, clayey, med. to coarse sand, some fine limestone gravel & small shell fragments. Calcareous.		9	8 SC 37 14 23	91
-35.8'	35				10		72
					11		100/0.9
-40.3'	40		Bottom of Boring 40.3'		12		78
			NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.				52
						BLOWS PER FOOT: Number required to drive 1 3/8" ID splitspoon w/140 lb. hammer falling	48
							53
							100/0.8
							39
							33
							40

<b>DRILLING LOG</b>		DIVISION South Atlantic	INSTALLATION Brunswick, GA.	SHEET 1 OF 2 SHEETS
1. PROJECT South Brunswick River Widening		10. SIZE AND TYPE OF BIT 1 3/8" splitspoon, 5" fish-tail		
2. LOCATION (Coordinates or Station) X - 856009.21 Y - 411830.58		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW		
3. DRILLING AGENCY Savannah District		12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314		
4. HOLE NO. (As shown on drawing title and file number) 112		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED 10	UNDISTURBED 0
5. NAME OF DRILLER C.D. Justiss		14. TOTAL NUMBER CORE BOXES 0		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER N/A		
7. THICKNESS OF OVERBURDEN 28.0' (19.5' water)		16. DATE HOLE STARTED 3 May 1989		
8. DEPTH DRILLED INTO ROCK 1200'		17. ELEVATION TOP OF HOLE 0.0'		
9. TOTAL DEPTH OF HOLE 40.0'		18. TOTAL CORE RECOVERY FOR BORING N/A %		
		19. SIGNATURE OF INSPECTOR Jmaes Arthur, P.G.		

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO. JAR	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
0.0'	0'	c	d	e	f	g
			Water			
			Bottom of River 19.5'			Set 6" casing to -20.4' MLW by own weight. Scale change @ 10.0'. LAB CLASSIFICATION
	10		(SP) Greyish tan, poorly graded, med. to coarse SAND. Trace of silt & small shell fragments.			No. Class LL PL PI
			(SC) Grey, clayey, fine to med. SAND. Some small shell fragments, calcareous.			2 SC 36 14 22
	15		(SM) Grey, silty, fine to med. SAND. Calcareous, some small shell fragments, trace of clay.			4 CL 32 18 14
			(CL) Grey, calcareous, lean CLAY. Trace of fine sand & small shell fragments.		1	5 SC 37 13 24
-19.5'	20		Top of Rock 28.0'		2	7 SC 30 15 15
-22.0'			(LIMESTONE) Greenish grey, fossiliferous, clayey, sandy, soft to mod. hard, badly broken.		3	Weight of tool string without hammer drove splitspoon from 19.5' to 20.5', cont'd. drive to 22.0'.
-23.5'	25		(SC) Greenish grey, clayey, fine to med. SAND. Calcareous, some small shell fragments, trace of fine limestone gravel.		4	Mixed Zeogel mud @ 23.5'. 100/0.9
-25.0'					5	100/0.7
-28.0'						100/0.4
-29.5'	30					
-30.0'						
Continued on sht 2						
NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.						BLOWS PER FOOT: Number required to drive 1 3/8" ID splitspoon w/ 140 lb. hammer falling 30".

<b>DRILLING LOG</b>		<b>DIVISION</b> South Atlantic	<b>INSTALLATION</b> Brunswick, GA.	<b>SHEET 1</b> OF 1 SHEETS
<b>1. PROJECT</b> South Brunswick River Widening		<b>10. SIZE AND TYPE OF BIT</b> 3/8 splitspoon, 5" fish-tail		
<b>2. LOCATION (Coordinates or Station)</b> X - 856501.22 Y - 411697.59		<b>11. DATUM FOR ELEVATION SHOWN (TBM or MSL)</b> MLW		
<b>3. DRILLING AGENCY</b> Savannah District		<b>12. MANUFACTURER'S DESIGNATION OF DRILL</b> Falling 314		
<b>4. HOLE NO. (As shown on drawing title and file number)</b> 113		<b>13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN</b>	<b>DISTURBED</b> 6	<b>UNDISTURBED</b> 0
<b>5. NAME OF DRILLER</b> C.D. Justiss		<b>14. TOTAL NUMBER CORE BOXES</b> 0		
<b>6. DIRECTION OF HOLE</b> <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		<b>15. ELEVATION GROUND WATER</b> N/A		
<b>7. THICKNESS OF OVERBURDEN</b> 32.5' (27.6' water)		<b>16. DATE HOLE</b> STARTED 1 May 1989 COMPLETED 1 May 1989		
<b>8. DEPTH DRILLED INTO ROCK</b> 7.5'		<b>17. ELEVATION TOP OF HOLE</b> 0.0'		
<b>9. TOTAL DEPTH OF HOLE</b> 40.0'		<b>18. TOTAL CORE RECOVERY FOR BORING</b> N/A %		
		<b>19. SIGNATURE OF INSPECTOR</b> James Arthur, P.G.		

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO. JAR	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
0.0'	0'	c	d	e	JAR	g
			Water			
			Bottom of River 27.6'			
	20		(SP) Light brown poorly graded fine to med. SAND. Trace of silt & small shell fragments. 29.5'			Scale change @ 20.0'. Set 6" casing to -30.1' MLW by own weight.
	25		(SM) Grey, silty, fine to med. SAND. Trace of small shell fragments, slightly calcareous. 31.0'			LAB CLASSIFICATION No. Class LL PL PI 4 SC 29 14 15
-27.6'			(SP) Grey, poorly graded, fine to med. SAND. Trace of silt. 32.5'			
			Top of Rock 32.5'			
-29.5'	30		(LIMESTONE) Tannish light grey, fossiliferous, some fine to med. sand, poorly cemented, soft, friable, badly broken. 35.5'		1	Weight of tool string without hammer drove 18
-31.0'					2	splitspoon from 27.6' to 28.0', cont'd drive 47
-32.5'					3	to 29.5'. No recovery 9
					4	re-drove from 28.0' to 29.5' then cont'd. 54
-35.5'	35		Light greenish grey w/ grey streaks, clayey, sandy, soft, some fossils. 37.0'			61
-37.0'					5	67
-38.5'			Fossiliferous, some fine to med. sand, soft. 38.5'			39
-40.0'	40		Soft to mod. hard, poorly cemented.		6	77
			Bottom of Boring 40.0'			
			NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.			
						<b>BLOWS PER FOOT:</b> Number required to drive 1 3/8" ID splitspoon w/ 140 lb. hammer falling 30".

<b>DRILLING LOG</b>		DIVISION South Atlantic	INSTALLATION Brunswick, GA.	SHEET 1 OF 1 SHEETS
1. PROJECT South Brunswick River Widening			10. SIZE AND TYPE OF BIT 3/8" splitspoon, 5" fish-tail	11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW
2. LOCATION (Coordinates or Station) X - 857001.22 Y - 411680.59			12. MANUFACTURER'S DESIGNATION OF DRILL Falling 314	
3. DRILLING AGENCY Savannah District			13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED 7
4. HOLE NO. (As shown on drawing title and file number) 114			UNDISTURBED 0	
5. NAME OF DRILLER C.D. Jüstiss			14. TOTAL NUMBER CORE BOXES 0	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. ELEVATION GROUND WATER N/A	
7. THICKNESS OF OVERBURDEN 40.3' (21.2' water)			16. DATE HOLE	STARTED 2 May 1989
8. DEPTH DRILLED INTO ROCK 0.0'			COMPLETED 2 May 1989	
9. TOTAL DEPTH OF HOLE 40.3'			17. ELEVATION TOP OF HOLE 0.0'	
			18. TOTAL CORE RECOVERY FOR BORING N/A %	
			19. SIGNATURE OF INSPECTOR James Arthur, P.G. <i>J. Arthur, P.G.</i>	

ELEVATION	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	% CORE RECOVERY	BOX OR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of wedging, etc., if significant)
0.0'	0'	c	d	e	JAR	g BLOWS
			Water			Set 6" casing to -21.7' MLW by own weight.
			Bottom of River 21.2'			Scale change @ 20.0'.
-21.2'	20		(SC) Greenish grey, clayey, fine to med. SAND. Calcareous, some small shells & shell fragments.			
-25.3'	25		(CL) Greenish grey, calcareous, lean CLAY. Trace of fine sand & small shell fragments.	1		Weight of tool string without hammer drove splitspoon from 21.2' to 22.3', cont'd. drive to 23.8'.
-28.3'			(SC) Greenish grey clayey, fine to med. SAND. Calcareous, some fine limestone gravel & small shell fragments.	2		
-29.8'	30		Some fine to coarse limestone gravel.	3		LAB CLASSIFICATION
-32.8'			Trace of fine limestone gravel.	4		No. Class LL PL PI
-35.8'	35		Some fine to coarse limestone gravel.	5		100/0.5
-37.3'			(SM) Tannish light grey, silty fine to med. SAND. Calcareous, some small shell fragments.			33
-38.8'	40		Trace of fine to coarse limestone gravel.	6		43
-40.3'			Bottom of Boring 40.3'	7		57
			NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.			100/0.6
						45
						48
						60
						47
						BLOWS PER FOOT: Number required to drive 1 3/8" ID splitspoon w/ 140 lb. hammer falling 30".



<b>DRILLING LOG</b>		DIVISION South Atlantic	INSTALLATION Brunswick, GA.	SHEET 1 OF 1 SHEETS
1. PROJECT South Brunswick River Widening			10. SIZE AND TYPE OF BIT 1 3/8" splitspoon, 5" fish-tail	
2. LOCATION (Coordinates or Station) X - 857506.23 Y - 411651.60			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW	
3. DRILLING AGENCY Savannah District			12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314	
4. HOLE NO. (As shown on drawing title and file number) 115			13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED 6
5. NAME OF DRILLER C.D. Justiss			UNDISTURBED 0	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			14. TOTAL NUMBER CORE BOXES 0	
7. THICKNESS OF OVERBURDEN 34.5(28.0' water)			15. ELEVATION GROUND WATER N/A	
8. DEPTH DRILLED INTO ROCK 6.0'			16. DATE HOLE	STARTED 2 May 1989
9. TOTAL DEPTH OF HOLE 40.5'			COMPLETED 2 May 1989	
			17. ELEVATION TOP OF HOLE 0.0'	
			18. TOTAL CORE RECOVERY FOR BORING N/A %	
			19. SIGNATURE OF INSPECTOR James Arthur, P.G. <i>J. Arthur, P.G.</i>	

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'	0'	c	d	e	JAR	g
			Water			Scale change @ 20.0'. Set 6" casing to -28.7' MLW by own weight.
			Bottom of River 28.0'			LAB CLASSIFICATION No. Class LL PL PI 1 CL 31 19 12
	20		(CL) Light grey, calcareous, lean CLAY. Trace of fine sand & small shell fragments.			
			Light greenish grey.			
			Some fine to med. sand.			
	25		(SM) Tannish light grey, silty, fine to med. SAND. Calcareous, trace of clay & fine limestone gravel.			
			Top of Rock 34.5'		1	Weight of tool string without hammer drove splitspoon from 28.0' to 28.5', cont'd. drive to 30.0'. 67
	30		(LIMESTONE) Light greenish grey, fossiliferous, sandy, clayey, soft, poorly cemented, badly broken.		2	100/0.7
	31.5'				3	70'
	33.0'				4	15
	34.5'		(SC) Light greenish grey, clayey fine to med. SAND. Calcareous, some small shell fragments & fine limestone gravel.		5	40
	35				6	65
	37.5'					100/0.9
	40					48
	40.5'		Bottom of Boring 40.5'			
			NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.			BLOWS PER FOOT: Number required to drive 1 3/8" ID splitspoon w/ 140 lb. hammer falling 30".

DRILLING LOG		DIVISION SOUTH ATLANTIC	INSTALLATION BRUNSWICK, GA	SHEET 1 OF 1 SHEETS
1. PROJECT BRUNSWICK HARBOR DEEPENING PED			10. SIZE AND TYPE OF BIT 1 3/8" I. D. SPLITSPOON, 5 1/2" FISHTAIL	
2. LOCATION (Coordinates or Station) X-857730.98, Y-411973.30			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW	
3. DRILLING AGENCY SAVANNAH DISTRICT			12. MANUFACTURER'S DESIGNATION OF DRILL FALLING 314	
4. HOLE NO. (As shown on drawing title and file number) 207		13. TOTAL NO. OF SOIL SAMPLES TAKEN		
5. NAME OF DRILLER P. ROUNTREE		DISTURBED	UNDISTURBED	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		13	0	
7. THICKNESS OF OVERBURDEN 50.0' (WATER 30.5')		14. TOTAL NUMBER CORE BOXES 0		
8. DEPTH DRILLED INTO ROCK 0.0'		15. GROUND WATER ELEVATION N/A		
9. TOTAL DEPTH OF HOLE 50.0'		16. DATE MOLE STARTED	COMPLETED	
		9 APR 99	9 APR 99	
		17. ELEVATION TOP OF HOLE 0.0' MLW		
		18. TOTAL CORE RECOVERY FOR BORING N/A %		
		19. SIGNATURE OF INSPECTOR J. ARTHUR, P. G.		

ELEVATION (FT)	DEPTH (FT)	SYMBOLS	CLASSIFICATION OF MATERIALS (Description)	PERCENT MOISTURE CONTENT	JAR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	BLOWS/FT.
0.0	0		Water			Scale change at 30.0'. Used 6" diameter steel casing and Floridin drilling mud.	
-30.5'	30		BOTTOM OF HARBOR: 30.5'				
			(CH) Dark gray fat CLAY, calcareous.		1		26
			Some sand, trace of gravel.		2		26
-33.5'			(SC) Light olive gray fine to medium clayey SAND, trace of fine to coarse limestone gravel, calcareous.		3		29
-35.0'	35		(CL) Light olive gray lean CLAY, some silt and fine to coarse sand, calcareous.		4		41
			Some fine to coarse gravel.		5		51
					6		54
					7		35
-41.0'	40		(SC) Olive gray fine clayey SAND, trace of fine to coarse limestone gravel, calcareous.		8		30
-42.5'			(GC) Light olive gray fine to coarse clayey limestone GRAVEL, some medium to coarse sand size shell fragments, calcareous.		9		58
-44.0'	45		(SC) Light olive gray fine to medium clayey SAND, trace of fine limestone gravel, calcareous.		10		48
			Trace of dark gray fat clay in few layers up to 0.1' thick.		11		47
					12		94
					13		28
-50.0'	50		Olive gray, some fine limestone gravel.				
			BOTTOM OF BORING: 50.0'				

Lab Classification				
No.	Class	LL	PI	Moist.
1	CH	76	55	24.4%
3	-	-	-	19.9%
6	CL	37	18	21.0%
9	SC-SM	21	7	18.0%
C	ML	-	-	21.8%

Specific Gravity:  
No. 3 - 2.69

NOTE: SOILS VISUALLY FIELD CLASSIFIED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

BLOWS PER FOOT:  
NUMBER REQUIRED TO DRIVE 1 3/8" I. D. SPLITSPOON W/140 LB. HAMMER FALLING 30".

## Bend Widener

### Boring Logs:

179

30

176

134

175

42

146

130

129

102A

141

173

45

172

171

46

47

170

169

48

168

<b>DRILLING LOG</b>		DIVISION <b>SOUTH ATLANTIC</b>	INSTALLATION <b>BRUNSWICK, GA</b>	SHEET 1 OF 2 SHEETS
1. PROJECT <b>BRUNSWICK HARBOR DEEPENING PED</b>			10. SIZE AND TYPE OF BIT <b>1 3/8" I. D. SPLITSPOON, 4x5 1/2" DIAMOND BIT</b>	
2. LOCATION (Coordinates or Station) <b>X-878875.90, Y-402957.75</b>			11. DATUM FOR ELEVATION SHOWN (TBM or MSU) <b>MLW</b>	
3. DRILLING AGENCY <b>SAVANNAH DISTRICT</b>			12. MANUFACTURER'S DESIGNATION OF DRILL <b>FAILING 314</b>	
4. HOLE NO. (As shown on drawing title and file number) <b>179</b>		13. TOTAL NO. OF SOIL SAMPLES TAKEN DISTURBED: <b>3</b> UNDISTURBED: <b>0</b>		
5. NAME OF DRILLER <b>P. ROUNTREE</b>			14. TOTAL NUMBER CORE BOXES <b>1</b>	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. GROUND WATER ELEVATION <b>N/A</b>	
7. THICKNESS OF OVERBURDEN <b>32.0' (WATER 30.5')</b>			16. DATE HOLE STARTED <b>3 MAR 99</b> COMPLETED <b>3 MAR 99</b>	
8. DEPTH DRILLED INTO ROCK <b>19.2'</b>			17. ELEVATION TOP OF HOLE <b>0.0' MLW</b>	
9. TOTAL DEPTH OF HOLE <b>51.2'</b>			18. TOTAL CORE RECOVERY FOR BORING <b>49</b> %	
			19. SIGNATURE OF INSPECTOR <b>J. ARTHUR, P. G.</b>	

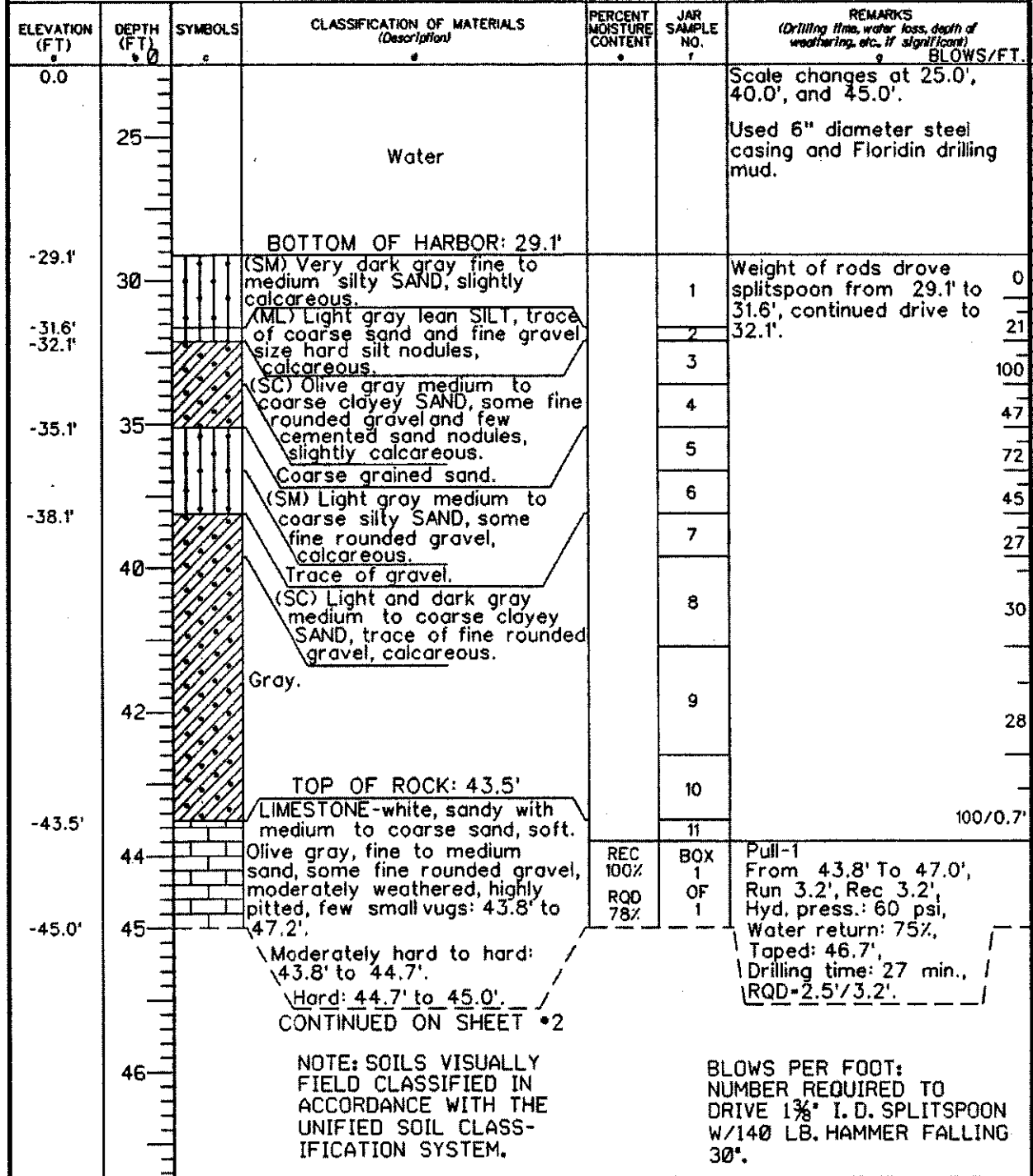
ELEVATION (FT)	DEPTH (FT)	SYMBOLS	CLASSIFICATION OF MATERIALS (Description)	PERCENT MOISTURE CONTENT	JAR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) BLOWS/FT.
0.0			Water			Scale change at 30.0'. Used 6" diameter steel casing and Floridin drilling mud.
-30.5'	30		<b>BOTTOM OF HARBOR: 30.5'</b> (SP) Brown fine to medium poorly graded SAND, trace of small shell fragments, calcareous.		1	
-31.5'			(SM) Gray fine to medium silty SAND, indurated, calcareous.		2	Bouncing rods at 32.0'. 51
-32.0'	32		<b>TOP OF ROCK: 32.0'</b> LIMESTONE-light olive gray, moderately to highly weathered, some medium to coarse sand, trace of fine rounded gravel and shell fragments, soft.	REC 30%		Pull-1 From 32.0' To 36.0', Run 4.0', Rec 1.2', C. L. 2.8', Hyd. press.: "0" psi, Water return: 0%, Taped: 35.2', Drilling time: 8 min., RQD=0.4'/4.0'.
-33.2'	34		Fragmented: 32.0' to 33.2'. Gravelly with fine rounded gravel, highly porous, pitted and vuggy with small to large vugs, moderately hard to hard, intensely to highly jointed: 32.2' to 33.2'.	RQD 10%		Note: Pushed casing down to re-seat at 35.3'.
-36.0'	36		Low angle open joints: 32.2', 32.3', 32.5', 33.0', 33.1', 33.2'. CORE LOSS.	REC 85%	BOX 1 OF 1	Pull-2 From 36.0' To 38.0', Run 2.0', Rec 1.7', C. L. 0.3', Hyd. press.: "0" psi, Water return: 0%, Taped: 37.3', Drilling time: 4 min., RQD=1.1'/2.0'.
-37.7'	38		LIMESTONE-continued. Some fine rounded gravel, moderately hard to soft: 36.0' to 37.7'.	RQD 55%		
-38.0'			Fragmented: 36.7' to 36.9'.	REC 21%		Pull-3 From 38.0' To 41.3', Run 3.3', Rec 0.7', C. L. 2.6', Hyd. press.: "0" psi, Water return: 80%, Taped: 38.0', Drilling time: 9 min., RQD=0%.
-38.7'			Low angle open joints: 36.0', 36.4', 36.7', 36.9', 37.3', 37.7'. CORE LOSS.			
-41.0'	40		LIMESTONE-continued, soft, fragmented. CORE LOSS.	RQD 0%		
			CONTINUED ON SHEET *2			
	42					
	44					

NOTE: SOILS VISUALLY FIELD CLASSIFIED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

BLOWS PER FOOT:  
NUMBER REQUIRED TO DRIVE 1 3/8" I. D. SPLITSPOON W/140 LB. HAMMER FALLING 30".

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE 0.0' MLW		Hole No. 179		
PROJECT BRUNSWICK HARBOR DEEPENING PED			INSTALLATION BRUNSWICK, GA		SHEET 2 OF 2 SHEETS	
ELEVATION (FT)	DEPTH (FT)	SYMBOLS	CLASSIFICATION OF MATERIALS (Description)	PERCENT MOISTURE CONTENT	JAR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
	41		CORE LOSS-continued.	REC 0% RQD 0%	BOX 1 OF 1	Pull-3, continued.
-43.8'			(ML) Light gray lean SILT, indurated, calcareous.		JAR 3	Pull-4 From 41.3' To 41.8', Run 0.5', Rec 0.0', C. L. 0.5' Hyd. press.: "0" psi, Water return: 70%, Taped: 38.3', Drilling time: 3 min., RQD=0%.
-44.5'			LIMESTONE-light olive gray, moderately to highly weathered, soft, fragmented, trace of sand and fine rounded gravel. Fragmented: 44.5' to 45.2'.	REC 82% RQD 41%		Pull-5 From 41.8' To 43.8', Run 2.0', Rec 0.0', C. L. 0.2' Water return: 100%, Taped: 42.3', Drilling time: 8 min., RQD=0%.
-45.9'			CORE LOSS.			Splitspooned from 43.8' to 44.5'.
-46.2'			LIMESTONE-continued. Some fine rounded gravel and coarse sand: 46.2' to 50.2'. Very soft, plastic: 46.2' to 46.4', 47.5' to 47.8', 48.4' to 49.4'. Low angle open joints: 46.2', 47.5', 47.8', 49.5', 50.2'.	REC 80% RQD 52%	BOX 1 OF 1	Pull-6 From 44.5' To 46.2', Run 1.7', Rec 1.4', C. L. 0.3', Hyd. press.: 100 psi, Water return: 85%, Taped: 45.7', Drilling time: 29 min., RQD=0.7'/1.7'.
-50.2'			CORE LOSS.			Pull-7 From 46.2' To 51.2', Run 5.0', Rec 4.0', C. L. 1.0', Hyd. press.: 100 psi, Water return: 85%, Taped: 50.8', Drilling time: 13 min., RQD=2.6'/5.0'.
-51.2'			BOTTOM OF BORING: 51.2'			
	53					Lab Classification
						No. Class LL PI Moist.
						1 - - - 19.6%
						2 SM NP NP 8.2%
						3 SC 48 25 9.7%
						Specific Gravity: No. 1 - 2.64
	55					
	57					
	59					
			NOTE: SOILS VISUALLY FIELD CLASSIFIED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.			BLOWS PER FOOT: NUMBER REQUIRED TO DRIVE 1 3/8" I. D. SPLITSPOON W/140 LB. HAMMER FALLING 30".

<b>DRILLING LOG</b>		<b>DIVISION</b> SOUTH ATLANTIC	<b>INSTALLATION</b> BRUNSWICK, GA	<b>SHEET</b> 1 OF 2 SHEETS
1. PROJECT BRUNSWICK HARBOR DEEPENING PED			10. SIZE AND TYPE OF BIT 1 1/8" I.D. SPLITSPOON, 5/8" FISHTAIL, 4-5/8" CARBOLLOY BIT	
2. LOCATION (Coordinates or Station) X-879739.33, Y-402162.45			11. DATUM FOR ELEVATION SHOWN (BM or MSL) MLW	
3. DRILLING AGENCY SAVANNAH DISTRICT			12. MANUFACTURER'S DESIGNATION OF DRILL FALLING 314	
4. HOLE NO. (As shown on drawing title and file number) 177		13. TOTAL NO. OF SOIL SAMPLES TAKEN DISTURBED: 11 UNDISTURBED: 0		
5. NAME OF DRILLER P. ROUNTREE			14. TOTAL NUMBER CORE BOXES 1	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. GROUND WATER ELEVATION N/A	
7. THICKNESS OF OVERBURDEN 43.5' (WATER 29.1')			16. DATE HOLE STARTED: 25 FEB 99 COMPLETED: 2 MAR 99	
8. DEPTH DRILLED INTO ROCK 7.0'			17. ELEVATION TOP OF HOLE 0.0' MLW	
9. TOTAL DEPTH OF HOLE 50.5'			18. TOTAL CORE RECOVERY FOR BORING 69 %	
			19. SIGNATURE OF INSPECTOR J. ARTHUR, P. G.	



DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE 0.0' MLW		Hole No. 177		
PROJECT BRUNSWICK HARBOR DEEPENING PED			INSTALLATION BRUNSWICK, GA		SHEET 2 OF 2 SHEETS	
ELEVATION (FT) a	DEPTH (FT) b 45	SYMBOLS c	CLASSIFICATION OF MATERIALS (Description) d	PERCENT MOISTURE CONTENT e	JAR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g BLOWS/FT.
			LIMESTONE-olive gray, sandy with fine to medium sand, some fine rounded gravel, moderately weathered, highly pitted, few small vugs, moderately hard. Hard: 46.4' to 46.7', 47.0' to 47.2'.			Pull-1, continued.
-47.2'	47		Soft to moderately hard: 46.7' to 47.0'.	REC 40%	BOX 1 OF 1	Pull-2 From 47.0' To 50.5', Run 3.5', Rec 1.4', C.L. 2.1', Hyd. press.: "0" psi, Water return: 75%, Drilling time: 6 min., ROD-0%.
-48.4'	49		(SC) Olive gray medium to coarse clayey SAND, little fine rounded gravel, partially indurated, slightly calcareous. Very stiff to hard. Very soft, calcareous. CORE LOSS.	ROD 0%		
-50.5'			BOTTOM OF BORING: 50.5'			
	51					Lab Classification
						No. Class LL PI Moist.
						1 SP-SM NL NP 47.9%
						3 SM 32 7 12.0%
						4 SM 41 15 13.5%
	53					5 SM NL NP 7.5%
						7 SC 59 32 15.9%
						Specific Gravity: No. 4 = 2.70
	55					
	57					
	59					
	61					
	63					
			NOTE: SOILS VISUALLY FIELD CLASSIFIED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.			BLOWS PER FOOT: NUMBER REQUIRED TO DRIVE 1 3/8" I. D. SPLITSPOON W/140 LB. HAMMER FALLING 30".

<b>DRILLING LOG</b>		DIVISION <b>SOUTH ATLANTIC</b>		INSTALLATION <b>BRUNSWICK, GA</b>		SHEET <b>1</b> OF <b>1</b> SHEETS	
1. PROJECT <b>BRUNSWICK HARBOR DEEPENING PED</b>				10. SIZE AND TYPE OF BIT <b>1 3/8" I.D. SPLITSPOON, 3/4" FISHTAIL, 4x3/4" CARBOLLOY BIT</b>			
2. LOCATION (Coordinates or Station) <b>X-880086.63, Y-402595.52</b>				11. DATUM FOR ELEVATION SHOWN (TBM or MSL) <b>MLW</b>			
3. DRILLING AGENCY <b>SAVANNAH DISTRICT</b>				12. MANUFACTURER'S DESIGNATION OF DRILL <b>FAILING 314</b>			
4. HOLE NO. (As shown on drawing title and file number)		<b>176</b>		13. TOTAL NO. OF SOIL SAMPLES TAKEN		DISTURBED: <b>14</b> UNDISTURBED: <b>0</b>	
5. NAME OF DRILLER <b>P. ROUNTREE</b>				14. TOTAL NUMBER CORE BOXES <b>1</b>			
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				15. GROUND WATER ELEVATION <b>N/A</b>			
7. THICKNESS OF OVERBURDEN <b>47.5' (WATER 30.9')</b>				16. DATE HOLE		STARTED: <b>25 FEB 99</b> COMPLETED: <b>25 FEB 99</b>	
8. DEPTH DRILLED INTO ROCK <b>2.5'</b>				17. ELEVATION TOP OF HOLE <b>0.0' MLW</b>			
9. TOTAL DEPTH OF HOLE <b>50.0'</b>				18. TOTAL CORE RECOVERY FOR BORING <b>100</b> %			
				19. SIGNATURE OF INSPECTOR <b>J. ARTHUR, P. G.</b>			

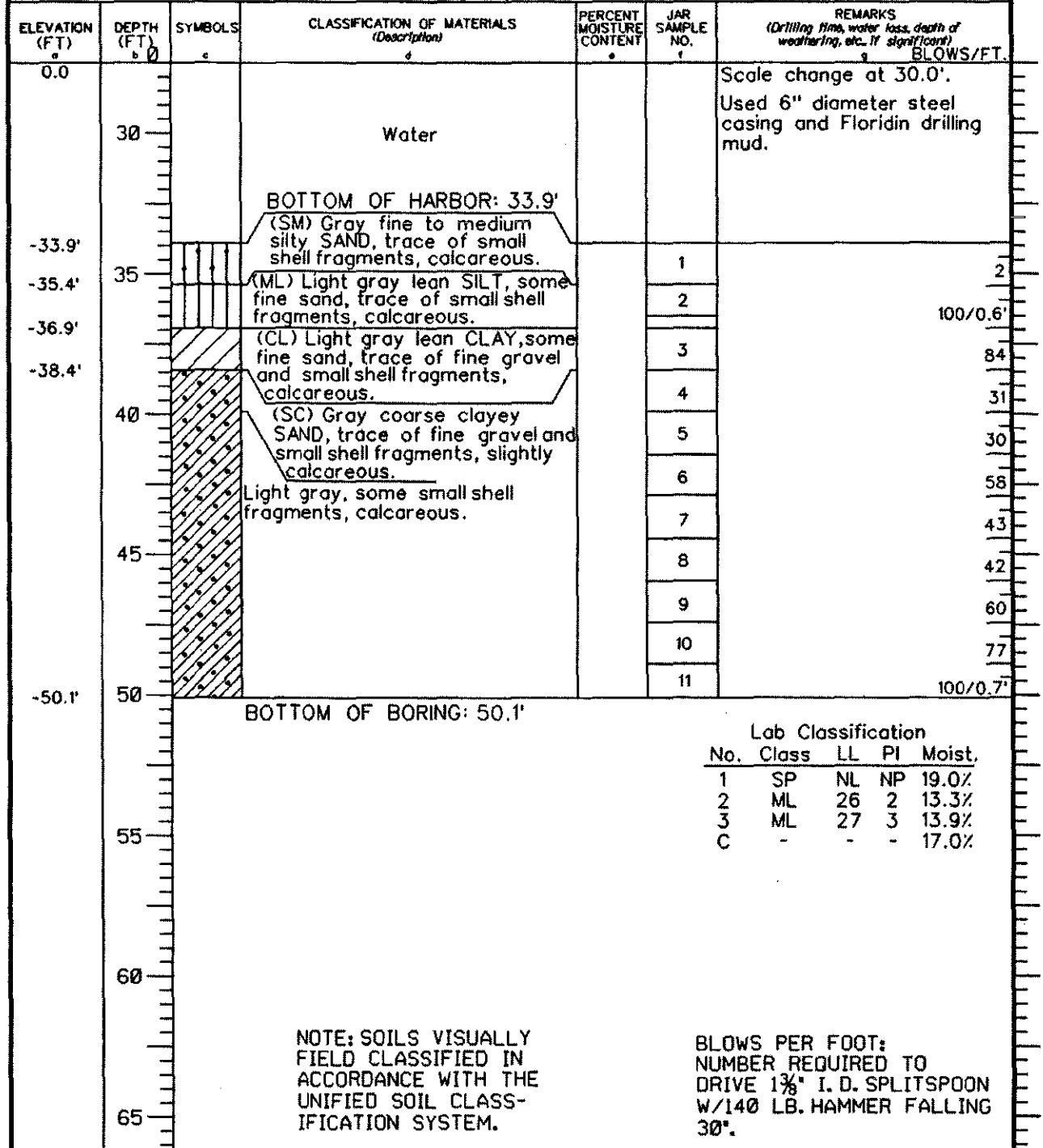
ELEVATION (FT)	DEPTH (FT)	SYMBOLS	CLASSIFICATION OF MATERIALS (Description)	PERCENT MOISTURE CONTENT	JAR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	BLOWS/FT.
0.0	0		Water BOTTOM OF HARBOR: 30.9'			Scale changes at 30.0' and 45.0'. Used 6" diameter steel casing and Floridin drilling mud.	
-30.9'	30		(SP) Grayish brown fine to medium poorly graded SAND, trace of silt and small shell fragments, calcareous.		1		
-31.4'			(CL) Light olive gray lean CLAY, some silt, trace of fine to medium sand, slightly calcareous		2		100/0.5'
-33.9'	35		(SP) Light gray medium to coarse poorly graded SAND, trace of silt and fine gravel, calcareous.		3		29
			Coarse grained, some fine gravel.		4		76
			Fine to medium grained, no gravel.		5		98
			Coarse grained.		6		100/0.5'
	40		(SM) Light gray medium to coarse silty SAND, trace of fine rounded gravel, calcareous.		7		100/0.3'
-41.4'			(SC) Gray fine to medium clayey SAND, few layers of clean sand, calcareous.		8		83
-42.9'	45		Dark gray, no clean sand.		9	Lab Classification No. Class LL PI Moist.76	
			(ML) Light gray lean SILT, some medium to coarse sand and fine gravel size cemented sand nodules, calcareous.		10	1 - - - 17.6%	
-46.6'	47		TOP OF ROCK: 47.5'		11	3 SM NP NP 15.3% 52	
			LIMESTONE-olive gray, sandy with medium to coarse sand, trace of fine rounded gravel, hard.		12	5 - - - 11.4%	
-47.5'	49		Soft: 47.9' to 48.7'. Soft to moderately hard: 48.9'-50.0'. Fragmented and clayey: 47.9'-48.7', 48.5'-48.9' and 49.5'-50.0'.	REC 100%	13	10 SP-SC 51 24 26.2%	100/0.7'
-50.0'			BOTTOM OF BORING: 50.0'	ROD 0%	14	C - - - 14.9% 48	100/0.7'
	51					Specific Gravity: No. 10 = 2.64	
	53					Splitspoon refusal at 47.5'.	

NOTE: SOILS VISUALLY FIELD CLASSIFIED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

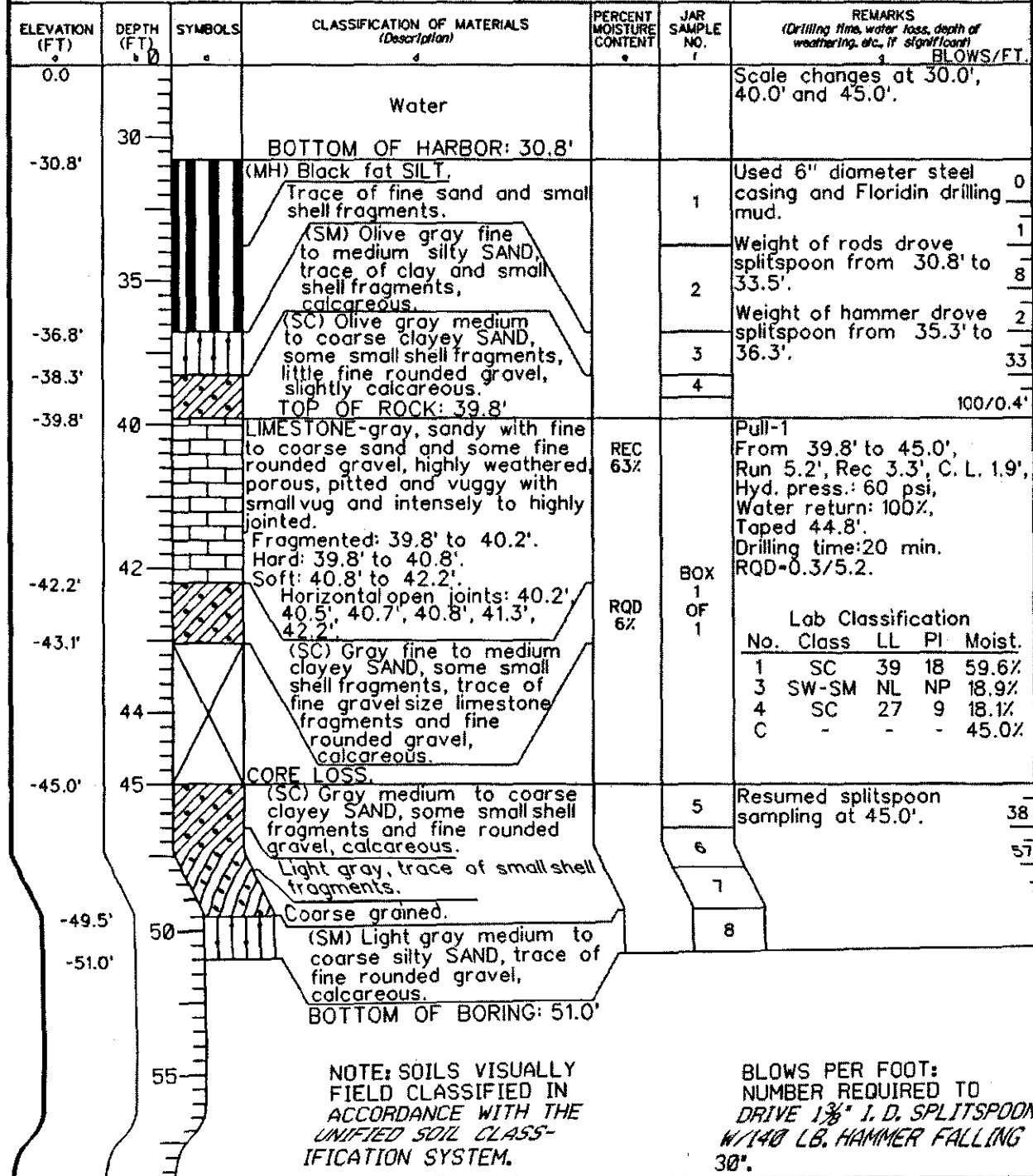
BLOWS PER FOOT:  
NUMBER REQUIRED TO DRIVE 1 3/8" I. D. SPLITSPOON W/140 LB. HAMMER FALLING 30".



<b>DRILLING LOG</b>		DIVISION <b>SOUTH ATLANTIC</b>	INSTALLATION <b>BRUNSWICK, GA</b>	SHEET <b>1</b> OF 1 SHEETS
1. PROJECT <b>BRUNSWICK HARBOR DEEPENING PED</b>			10. SIZE AND TYPE OF BIT <b>1 3/8" I. D. SPLITSPOON, 5 1/2" FISHTAIL</b>	
2. LOCATION (Coordinates or Station) <b>X-881107.43, Y-402515.14</b>			11. DATUM FOR ELEVATION SHOWN (TBM or MSU) <b>MLW</b>	
3. DRILLING AGENCY <b>SAVANNAH DISTRICT</b>			12. MANUFACTURER'S DESIGNATION OF DRILL <b>FALLING 314</b>	
4. HOLE NO. (As shown on drawing title and file number) <b>134</b>		13. TOTAL NO. OF SOIL SAMPLES TAKEN DISTURBED <b>11</b> UNDISTURBED <b>0</b>		
5. NAME OF DRILLER <b>J. STAFFORD</b>			14. TOTAL NUMBER CORE BOXES <b>0</b>	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. GROUND WATER ELEVATION <b>N/A</b>	
7. THICKNESS OF OVERBURDEN <b>50.1' (WATER 33.9')</b>			16. DATE HOLE STARTED <b>18 JAN 99</b> COMPLETED <b>18 JAN 99</b>	
8. DEPTH DRILLED INTO ROCK <b>0.0'</b>			17. ELEVATION TOP OF HOLE <b>0.0' MLW</b>	
9. TOTAL DEPTH OF HOLE <b>50.1'</b>			18. TOTAL CORE RECOVERY FOR BORING <b>N/A</b> %	
			19. SIGNATURE OF INSPECTOR <b>J. ARTHUR, P. G.</b>	



DRILLING LOG		DIVISION SOUTH ATLANTIC	INSTALLATION BRUNSWICK, GA	SHEET 1 OF 1 SHEETS
1. PROJECT BRUNSWICK HARBOR DEEPENING PED			10. SIZE AND TYPE OF BIT 1 3/8" I.D. SPLITSPOON, 5/2" FISHTAIL, 4x5/2" DIA. BIT	
2. LOCATION (Coordinates or Station) X-881513.05, Y-402844.56			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW	
3. DRILLING AGENCY SAVANNAH DISTRICT			12. MANUFACTURER'S DESIGNATION OF DRILL FAILING 314	
4. HOLE NO. (As shown on drawing title and file number) 175		13. TOTAL NO. OF SOIL SAMPLES TAKEN DISTURBED 8 UNDISTURBED 0		
5. NAME OF DRILLER P. ROUNTREE			14. TOTAL NUMBER CORE BOXES 1	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. GROUND WATER ELEVATION N/A	
7. THICKNESS OF OVERBURDEN 39.8' (WATER 30.8')			16. DATE HOLE STARTED 23 FEB 99 COMPLETED 24 FEB 99	
8. DEPTH DRILLED INTO ROCK 11.2'			17. ELEVATION TOP OF HOLE 0.0' MLW	
9. TOTAL DEPTH OF HOLE 51.0'			18. TOTAL CORE RECOVERY FOR BORING 63.5 %	
			19. SIGNATURE OF INSPECTOR J. ARTHUR, P. G.	



NOTE: SOILS VISUALLY FIELD CLASSIFIED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

BLOWS PER FOOT: NUMBER REQUIRED TO DRIVE 1 3/8" I. D. SPLITSPOON W/140 LB. HAMMER FALLING 30".

<b>DRILLING LOG</b>		DIVISION <b>South Atlantic</b>	INSTALLATION <b>Savannah Dist.</b>	SHEET <b>1</b> OF 1 SHEETS
1. PROJECT <b>Brunswick Harbor</b>			10. SIZE AND TYPE OF BIT <b>1 1/2" splitspoon, 23/4 x 3 7/8"</b>	
2. LOCATION (Coordinates or Station) <b>X - 882051.67 Y - 402770.79</b>			11. DATUM FOR ELEVATION SHOWN (FDM or MLLW) <b>M.L.W.</b>	
3. DRILLING AGENCY <b>Savannah Dist.</b>			12. MANUFACTURER'S DESIGNATION OF DRILL <b>Falling 314</b>	
4. HOLE NO. (As shown on drawing title and file number) <b>42</b>			13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	DISTURBED <b>3</b> UNDISTURBED <b>0</b>
5. NAME OF DRILLER <b>King</b>			14. TOTAL NUMBER CORE BOXES <b>1</b>	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. ELEVATION GROUND WATER	
7. THICKNESS OF OVERBURDEN			16. DATE HOLE STARTED <b>13 May</b> COMPLETED <b>13 May, 1966</b>	
8. DEPTH DRILLED INTO ROCK			17. ELEVATION TOP OF HOLE <b>0.0'</b>	
9. TOTAL DEPTH OF HOLE <b>45.2'</b>			18. TOTAL CORE RECOVERY FOR BORING <b>70 %</b>	
			19. SIGNATURE OF INSPECTOR <b>J.A. Ferland</b>	

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'	0'	c	d	e	f	g
			Water			Blows per Foot: Number required to drive 1 1/2" ID splitspoon w/140 lb hammer falling 30".
-35.8'	35					
-37.0'			OH organic material, sandy shell fragments, black.			
			SP sand, poorly graded, medium grained, poorly graded, clayey, grey.		1	
	40		CL clay, stiff, lean, calcareous		2	
-40.8'			GC gravel 1/4-1/3" sub-round, feldspar & quartz, calcar. sandy, grey.		3	
-41.4'						
-42.6'						
-43.9'						
-45.2'	45		Limestone, conglomeratic 1/4-1/3" quartz & feldspar pebbles, well indurated, may neither be penetrated with knife blade, nor broken in hand.	70	1	Full 1 41.6' - 45.2' Run 3.6' Ret 2.5' CI 1.1'
			SC sand, medium grained, poorly graded, clayey, calcareous, grey.			
						Bottom of hole 45.2'
						Note: Soils field classified in accordance with Unified Soil Classification System.
						Note: Interval 38.4' - 39.9' penetrated with hydraulically pushed jetspoon -400psi.

DRILLING LOG		DIVISION SOUTH ATLANTIC	INSTALLATION BRUNSWICK, GA	SHEET 1 OF 1 SHEETS
1. PROJECT BRUNSWICK HARBOR DEEPENING PED			10. SIZE AND TYPE OF BIT 1 3/8" I. D. SPLITSPOON, 5/2" FISHTAIL	
2. LOCATION (Coordinates or Station) X-882920.23, Y-403018.10			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW	
3. DRILLING AGENCY SAVANNAH DISTRICT			12. MANUFACTURER'S DESIGNATION OF DRILL FAILING 314	
4. HOLE NO. (As shown on drawing title and file number)		146	13. TOTAL NO. OF SOIL SAMPLES TAKEN DISTURBED 12 UNDISTURBED 0	
5. NAME OF DRILLER J. PICKETT			14. TOTAL NUMBER CORE BOXES 0	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. GROUND WATER ELEVATION N/A	
7. THICKNESS OF OVERBURDEN 50.8' (WATER 32.8')			16. DATE HOLE STARTED 2 FEB 99 COMPLETED 2 FEB 99	
8. DEPTH DRILLED INTO ROCK 0.0'			17. ELEVATION TOP OF HOLE 0.0' MLW	
9. TOTAL DEPTH OF HOLE 50.8'			18. TOTAL CORE RECOVERY FOR BORING N/A	
			19. SIGNATURE OF INSPECTOR J. ARTHUR, P. G.	

ELEVATION (FT)	DEPTH (FT)	SYMBOLS	CLASSIFICATION OF MATERIALS (Description)	PERCENT MOISTURE CONTENT	JAR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc. if significant)	BLOWS/FT.																														
0.0	0					Scale change at 30.0'. Used 6" diameter steel casing and Floridin drilling mud.																															
	30		Water																																		
			BOTTOM OF HARBOR: 32.8'																																		
-32.8'	35	Vertical lines	(SM) Gray and very dark gray fine silty SAND, trace of small shell fragments, calcareous. Some clay.		1		4																														
-35.8'		Vertical lines	(SP) Gray fine poorly graded SAND, trace of silt, calcareous. Fine to medium grained.		2		3																														
		Vertical lines			3		10																														
		Vertical lines			4		15																														
-38.8'	40	Vertical lines	(SM) Gray fine to medium silty SAND, trace of fine gravel, calcareous.		5		45																														
-40.3'		Vertical lines	(GC) Gray fine clayey rounded GRAVEL, some fine to medium sand, calcareous.		6	Reset casing to 43.8' after drive.	20																														
-41.8'		Vertical lines	(SC) Gray coarse clayey SAND, some fine gravel.		7		49																														
		Vertical lines			8		29																														
-44.8'	45	Vertical lines	(SM) Gray coarse silty SAND, some fine gravel, calcareous. Fine to medium grained.		9		44																														
		Vertical lines			10		56																														
		Vertical lines			11		70																														
-50.8'	50	Vertical lines	Medium to coarse grained, some small shell fragments, trace of fine gravel.		12		75																														
			BOTTOM OF BORING: 50.8'																																		
	55					<table border="1"> <thead> <tr> <th colspan="5">Lab Classification</th> </tr> <tr> <th>No.</th> <th>Class</th> <th>LL</th> <th>PI</th> <th>Moist.</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>SP-SM</td> <td>NP</td> <td>NP</td> <td>33.9%</td> </tr> <tr> <td>4</td> <td>-</td> <td>-</td> <td>-</td> <td>19.8%</td> </tr> <tr> <td>5</td> <td>SP-SM</td> <td>NP</td> <td>NP</td> <td>13.5%</td> </tr> <tr> <td>C</td> <td>-</td> <td>-</td> <td>-</td> <td>32.2%</td> </tr> </tbody> </table>	Lab Classification					No.	Class	LL	PI	Moist.	1	SP-SM	NP	NP	33.9%	4	-	-	-	19.8%	5	SP-SM	NP	NP	13.5%	C	-	-	-	32.2%	
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NOTE: SOILS VISUALLY FIELD CLASSIFIED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

BLOWS PER FOOT: NUMBER REQUIRED TO DRIVE 1 3/8" I. D. SPLITSPOON W/140 LB. HAMMER FALLING 30".

<b>DRILLING LOG</b>		DIVISION SOUTH ATLANTIC	INSTALLATION BRUNSWICK, GA	SHEET 1 OF 1 SHEETS
1. PROJECT BRUNSWICK HARBOR DEEPENING PED			10. SIZE AND TYPE OF BIT 1 3/8" I. D. SPLITSPOON, 5/2" FISHTAIL	
2. LOCATION (Coordinates or Station) X-883696.42, Y-403425.26			11. DATUM FOR ELEVATION SHOWN (TBM or MSU) MLW	
3. DRILLING AGENCY SAVANNAH DISTRICT			12. MANUFACTURER'S DESIGNATION OF DRILL FAILING 314	
4. HOLE NO. (As shown on drawing title and file number) 130		13. TOTAL NO. OF SOIL SAMPLES TAKEN DISTURBED 10 UNDISTURBED 0		
5. NAME OF DRILLER J. STAFFORD			14. TOTAL NUMBER CORE BOXES 0	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. GROUND WATER ELEVATION N/A	
7. THICKNESS OF OVERBURDEN 51.0' (WATER 26.7')			16. DATE HOLE STARTED 16 DEC 98 COMPLETED 16 DEC 98	
8. DEPTH DRILLED INTO ROCK 0.0'			17. ELEVATION TOP OF HOLE 0.0' MLW	
9. TOTAL DEPTH OF HOLE 51.0'			18. TOTAL CORE RECOVERY FOR BORING N/A %	
19. SIGNATURE OF INSPECTOR J. ARTHUR, P. G.				

ELEVATION (FT) a	DEPTH (FT) b	SYMBOLS c	CLASSIFICATION OF MATERIALS (Description) d	PERCENT MOISTURE CONTENT e	JAR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc. if significant) g BLOWS/FT.
0.0	0					Scale change at 25.0'. Used 6" diameter steel casing and Floridin drilling mud.
-26.7'	26.7		Water BOTTOM OF HARBOR: 26.7'			
			(MH) Black fat SILT.		1	Weight of rods drove splitspoon from 26.7' to 40.5'. Had change of material at 40.0' and 40.5'.
-39.3'	39.3		(SP) Light brown fine poorly graded SAND, trace of silt and small shell fragments.		2	
-40.5'	40.5		(SC) Gray fine clayey SAND, trace of small shell fragments. Fine to medium grained.		3	
			Trace of fine gravel, calcareous, partially indurated from 43.5'-45.0'.		4	Weight of hammer drove splitspoon from 40.5' to 42.0'.
			Medium to coarse grained, non-calcareous.		5	
-48.0'	48.0		(SP) Gray medium to coarse poorly graded SAND, trace of fine gravel.		6	
					7	
					8	
					9	
					10	
			BOTTOM OF BORING: 51.0'			

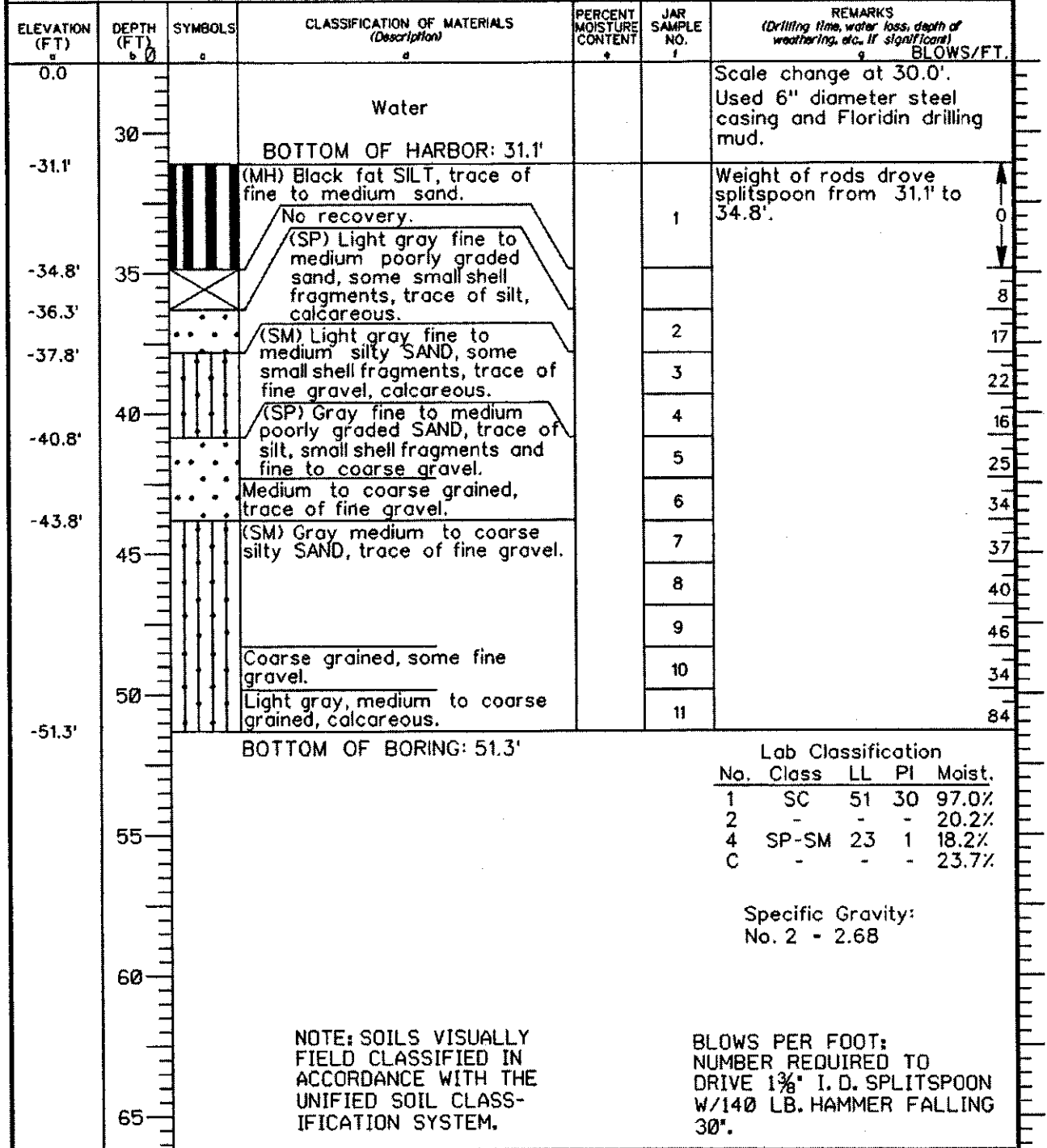
Lab Classification				
No.	Class	LL	Pl	Moist.
1	CH	92	54	160.5%
4	SC	45	27	61.3%
C	-	-	-	58.0%

NOTE: SOILS VISUALLY FIELD CLASSIFIED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

BLOWS PER FOOT:  
NUMBER REQUIRED TO DRIVE 1 3/8" I. D. SPLITSPOON W/140 LB. HAMMER FALLING 30".

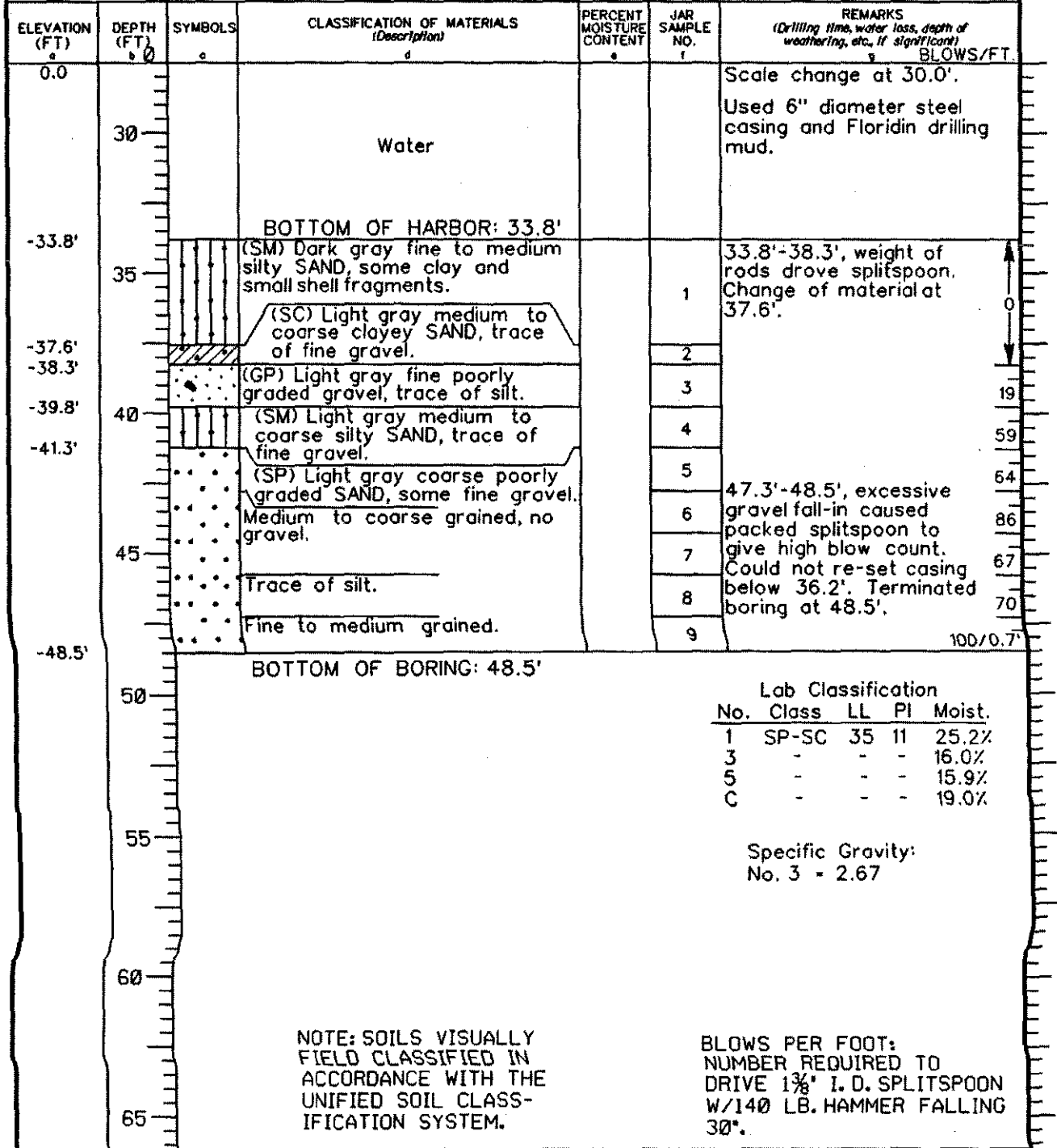
DRILLING LOG		DIVISION SOUTH ATLANTIC	INSTALLATION BRUNSWICK, GA	SHEET 1 OF 1 SHEETS
1. PROJECT BRUNSWICK HARBOR DEEPENING PED			10. SIZE AND TYPE OF BIT 1 3/8" I. D. SPLITSPOON, 5 1/2" FISHTAIL	
2. LOCATION (Coordinates or Station) X-884318.87, Y-403183.64			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW	
3. DRILLING AGENCY SAVANNAH DISTRICT			12. MANUFACTURER'S DESIGNATION OF DRILL FAILING 314	
4. HOLE NO. (As shown on drawing title and file number) 129		13. TOTAL NO. OF SOIL SAMPLES TAKEN DISTURBED 11    UNDISTURBED 0		
5. NAME OF DRILLER J. STAFFORD			14. TOTAL NUMBER CORE BOXES 0	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DFG. FROM VERT.			15. GROUND WATER ELEVATION N/A	
7. THICKNESS OF OVERBURDEN 51.3' (WATER 31.1')			16. DATE HOLE STARTED 16 DEC 98 COMPLETED 16 DEC 98	
8. DEPTH DRILLED INTO ROCK 0.0'			17. ELEVATION TOP OF HOLE 0.0' MLW	
9. TOTAL DEPTH OF HOLE 51.3'			18. TOTAL CORE RECOVERY FOR BORING N/A %	
			19. SIGNATURE OF INSPECTOR J. ARTHUR, P. G.	



<b>DRILLING LOG</b>		DIVISION South Atlantic	INSTALLATION Brunswick, Ga.	SHEET 1 OF 1 SHEETS
1. PROJECT Brunswick Harbor Bar Channel			10. SIZE AND TYPE OF BIT 4X5 1/2" core bbl w/dia	
2. LOCATION (Coordinates or Station) X - 884669.69 Y - 403661.84			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) DIC MLW	
3. DRILLING AGENCY Savannah District			12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314	
4. HOLE NO. (As shown on drawing title and file number) 102A			13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN DISTURBED 0 UNDISTURBED 0	
5. NAME OF DRILLER C.D. Justiss			14. TOTAL NUMBER CORE BOXES 1	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. ELEVATION GROUND WATER N/A	
7. THICKNESS OF OVERBURDEN 32.4' (32.0' water)			16. DATE HOLE STARTED 5 Dec 1986 COMPLETED 5 Dec 1986	
8. DEPTH DRILLED INTO ROCK 4.5'			17. ELEVATION TOP OF HOLE 0.0' MLW	
9. TOTAL DEPTH OF HOLE 36.9'			18. TOTAL CORE RECOVERY FOR BORING 77.6% 19. SIGNATURE OF INSPECTOR Matthew Delano, Geologist	

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'	0'	c	d	e	f	g
			Water			NOTE: Hole #102A was drilled to recover rock as determined in boring #102. Set 6" casing to 32.0' & mixed revert mud.
-32.0'	32		Bottom of Channel: -32.0'			
-32.4'	32		SM-H-Black, very fine grained fat silty sand. Top of Rock: 32.4'	61.5%	Box 1 of 1	Pull #1 From 32.0' To 34.6' Run 2.6' Rec 1.6' C.L. 1.0' U.L. 0.5' NOTE: U.L. appears to be washed away sand seams. C.D. 34.1'
-33.6'	34		Conglomeratic Sandstone- Mod. hard, mod. wea., fine to coarse grained, highly spaced sand filled joints dark greenish-grey, porous little calcitic cement, conglomeratic grains are rounded quartz gravels.	95.6%		Pull #2 From 34.6' To 36.9' Run 2.3' Rec 2.2' C.L. 0.1' U.L. 0.1' NOTE: U.L. was washed away. 0.5' was left in hole. C.D. 36.4'.
-34.1'	34		Core Loss-See note Pull #1.			
-36.3'	36		Conglomeratic Sandstone- See 32.4' to 33.6'.			
-36.9'	36		Core Loss-See note Pull #2.			
			Bottom of Boring: -36.9' MLW			
			NOTE: Soils visually field classified in accordance with the Unified Soil Classification System.			

DRILLING LOG		DIVISION SOUTH ATLANTIC	INSTALLATION BRUNSWICK, GA	SHEET 1 OF 1 SHEETS
1. PROJECT BRUNSWICK HARBOR DEEPENING PED			10. SIZE AND TYPE OF BIT 1 3/8" I. D. SPLITSPOON, 5/2" FISHTAIL	
2. LOCATION (Coordinates or Station) X-885399.26, Y-403471.61			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW	
3. DRILLING AGENCY SAVANNAH DISTRICT			12. MANUFACTURER'S DESIGNATION OF DRILL FAILING 314	
4. HOLE NO. (As shown on drawing title and file number) 141		13. TOTAL NO. OF SOIL SAMPLES TAKEN DISTURBED: 9 UNDISTURBED: 0		
5. NAME OF DRILLER J. STAFFORD			14. TOTAL NUMBER CORE BOXES 0	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. GROUND WATER ELEVATION N/A	
7. THICKNESS OF OVERBURDEN 48.5' (WATER 33.8')			16. DATE HOLE STARTED 25 JAN 99 COMPLETED 25 JAN 99	
8. DEPTH DRILLED INTO ROCK 0.0'			17. ELEVATION TOP OF HOLE 0.0' MLW	
9. TOTAL DEPTH OF HOLE 48.5'			18. TOTAL CORE RECOVERY FOR BORING N/A	
19. SIGNATURE OF INSPECTOR J. ARTHUR, P. G.				





DRILLING LOG		DIVISION SOUTH ATLANTIC	INSTALLATION BRUNSWICK, GA	SHEET 1 OF 1 SHEETS
1. PROJECT BRUNSWICK HARBOR DEEPENING PED			10. SIZE AND TYPE OF BIT 1 3/8" I.D. SPLITSPOON, 5/2" FISHTAIL	
2. LOCATION (Coordinates or Station) X-885934.44, Y-403831.13			11. DATUM FOR ELEVATION SHOWN (FBM or MSL) MLW	
3. DRILLING AGENCY SAVANNAH DISTRICT			12. MANUFACTURER'S DESIGNATION OF DRILL FAILING 314	
4. HOLE NO. (As shown on drawing title and file number) 173		13. TOTAL NO. OF SOIL SAMPLES TAKEN DISTURBED 10 UNDISTURBED 0		
5. NAME OF DRILLER P. ROUNTREE			14. TOTAL NUMBER CORE BOXES 0	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. GROUND WATER ELEVATION N/A	
7. THICKNESS OF OVERBURDEN 50.8' (WATER 36.1')			16. DATE HOLE STARTED 21 FEB 99 COMPLETED 21 FEB 99	
8. DEPTH DRILLED INTO ROCK 0.0'			17. ELEVATION TOP OF HOLE 0.0' MLW	
9. TOTAL DEPTH OF HOLE 50.8'			18. TOTAL CORE RECOVERY FOR BORING N/A %	
19. SIGNATURE OF INSPECTOR J. ARTHUR, P. G.				

ELEVATION (FT)	DEPTH (FT)	SYMBOLS	CLASSIFICATION OF MATERIALS (Description)	PERCENT MOISTURE CONTENT	JAR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	BLOWS/FT.
0.0			Water			Scale change at 35.0'. Used 6" diameter steel casing and Floridin drilling mud.	
	35		BOTTOM OF HARBOR: 36.1'				
-36.1'		(GM)	Dark gray fine silty rounded gravel, some medium to coarse sand, trace of small shell fragments, calcareous.		1	Weight of rods drove splitspoon from 36.1' to 37.6' and 37.6' to 38.6'.	0
					2		2
-39.1'		(SM)	Dark gray coarse silty SAND, some fine rounded gravel.		3		30
-40.6'			(SP) Gray coarse poorly graded SAND, some fine rounded gravel, trace of small shell fragments.		4		19
			Trace of fine gravel.		5		21
			Medium to coarse grained, trace of silt.		6		30
			Some fine gravel.		7		30
			Trace of fine gravel.		8		37
			Light gray, fine to medium grained, no gravel.		9		100/0.4'
					10		100/0.7'
			BOTTOM OF BORING: 50.8'				
	55					Lab Classification	
						No. Class LL PI Moist.	
						1 & 2 SW 25 0 15.0%	
						3 SW-SM 32 6 12.6%	
						C - - - 12.7%	
	60						
	65						
	70						

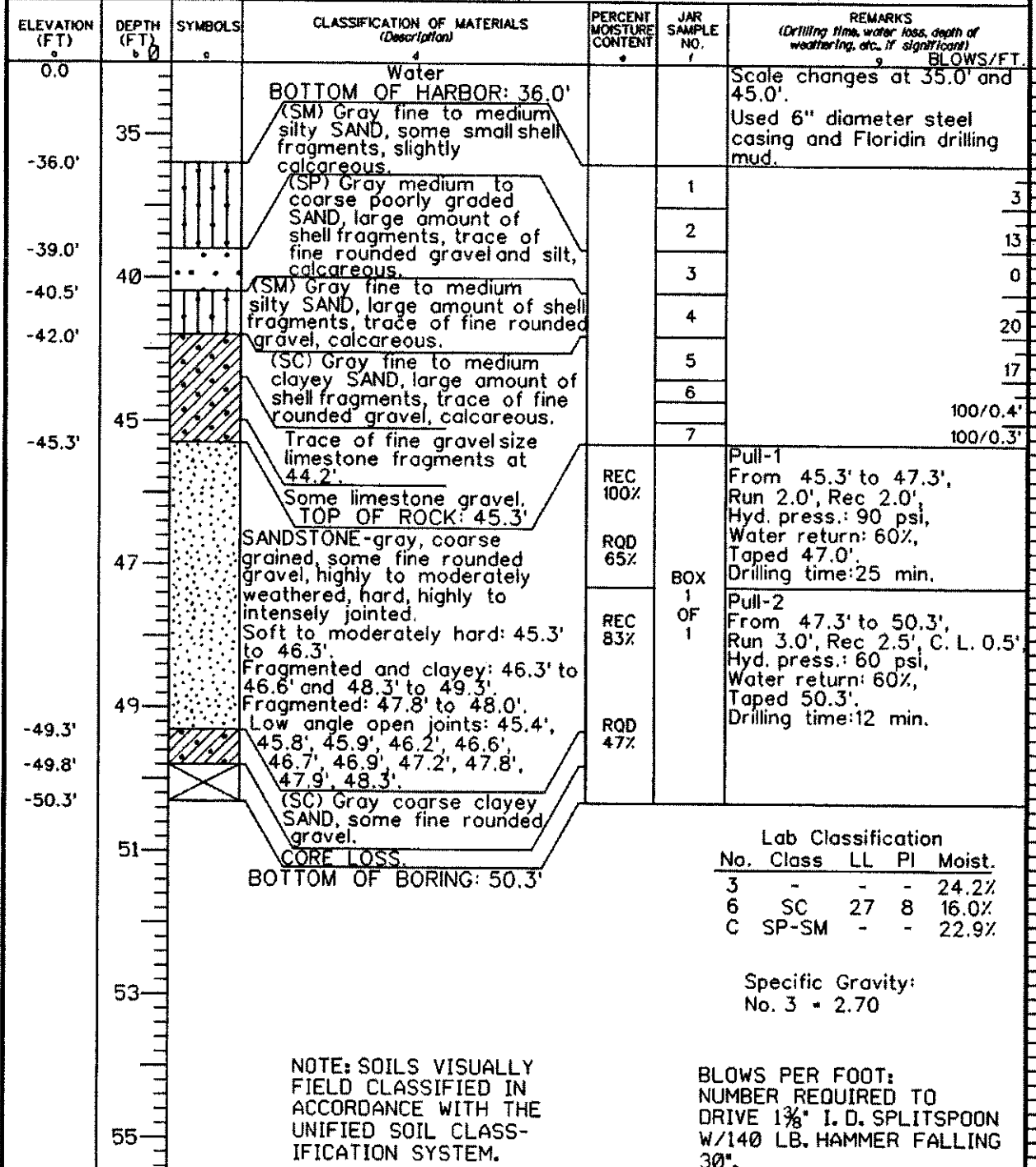
NOTE: SOILS VISUALLY FIELD CLASSIFIED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

BLOWS PER FOOT: NUMBER REQUIRED TO DRIVE 1 3/8" I.D. SPLITSPOON W/140 LB. HAMMER FALLING 30".

<b>DRILLING LOG</b>		DIVISION South Atlantic	INSTALLATION Savannah Dist.	SHEET 1 OF 1 SHEETS
1. PROJECT Brunswick Harbor			10. SIZE AND TYPE OF BIT 1 1/2" splitspoon, 2 5/4 x 3 7/8	
2. LOCATION (Coordinates or Station) X - 886661.71 Y - 404021.87			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) M.L.W.	
3. DRILLING AGENCY Savannah Dist.			12. MANUFACTURER'S DESIGNATION OF DRILL Falling 314	
4. HOLE NO. (As shown on drawing title and file number) 45		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN		DISTURBED 4 UNDISTURBED 0
5. NAME OF DRILLER King			14. TOTAL NUMBER CORE BOXES 0	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. ELEVATION GROUND WATER	
7. THICKNESS OF OVERBURDEN			16. DATE HOLE STARTED 25 April COMPLETED 25 April, 1966	
8. DEPTH DRILLED INTO ROCK			17. ELEVATION TOP OF HOLE 0.0'	
9. TOTAL DEPTH OF HOLE 44.4'			18. TOTAL CORE RECOVERY FOR BORING 7 %	
			19. SIGNATURE OF INSPECTOR J.A. Ferland	

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'	0'	c	d	e	f	g
	30		Water			Blows per Foot: Number required to drive 1 1/2" ID splitspoon w/140 lb hammer falling 30".
- 31.2'			SM sand, fine silty, well graded, calcareous, grey.		1	38
	35		medium grained			17
- 36.3'			Interval 36.3' - 36.5' lost		2	20 50/.3'
- 36.5'						no samples retained
	40		SM sand, well graded, medium grained (2) 0.2' layers well indurated limestone layers at top of full, may neither be broken in hand nor penetrated with knife blade.	07	3	Full 1 36.5' - 42.2' Run 5.7' Rec 0.4' G1 5.3'
- 43.0'			GM gravel, silty, contains quartz, feldspar, phos. nodule			32 42.2
- 44.4'	45		Bottom of Hole 44.4		4	100/.7' 44.4
						Note: Soils field class- ified in accordance with Unified Soil Classificat- ion System.

<b>DRILLING LOG</b>		DIVISION <b>SOUTH ATLANTIC</b>	INSTALLATION <b>BRUNSWICK, GA</b>	SHEET 1 OF 1 SHEETS
1. PROJECT <b>BRUNSWICK HARBOR DEEPENING PED</b>			10. SIZE AND TYPE OF BIT <b>1 3/8" I.D. SPLITSPOON, 5/2" FISHTAIL, 4x3/2" DIA. BIT</b>	
2. LOCATION (Coordinates or Station) <b>X-886782.47, Y-404711.67</b>			11. DATUM FOR ELEVATION SHOWN (FBM or MSL) <b>MLW</b>	
3. DRILLING AGENCY <b>SAVANNAH DISTRICT</b>			12. MANUFACTURER'S DESIGNATION OF DRILL <b>FAILING 314</b>	
4. HOLE NO. (As shown on drawing title and file number) <b>172</b>		13. TOTAL NO. OF SOIL SAMPLES TAKEN DISTURBED: <b>7</b> UNDISTURBED: <b>0</b>		
5. NAME OF DRILLER <b>P. ROUNTREE</b>			14. TOTAL NUMBER CORE BOXES <b>1</b>	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. GROUND WATER ELEVATION <b>N/A</b>	
7. THICKNESS OF OVERBURDEN <b>45.3' (WATER 36.0')</b>			16. DATE HOLE STARTED <b>20 FEB 99</b> COMPLETED <b>20 FEB 99</b>	
8. DEPTH DRILLED INTO ROCK <b>5.0'</b>			17. ELEVATION TOP OF HOLE <b>0.0' MLW</b>	
9. TOTAL DEPTH OF HOLE <b>50.3'</b>			18. TOTAL CORE RECOVERY FOR BORING <b>90 %</b>	
19. SIGNATURE OF INSPECTOR <b>J. ARTHUR, P. G.</b>				



<b>DRILLING LOG</b>		DIVISION <b>SOUTH ATLANTIC</b>	INSTALLATION <b>BRUNSWICK, GA</b>	SHEET <b>1</b> OF <b>1</b> SHEETS
1. PROJECT <b>BRUNSWICK HARBOR DEEPENING PED</b>			10. SIZE AND TYPE OF BIT <b>1 3/8" I.D. SPLITSPOON, 5/8" FISHTAIL, 4x5/8" DIA. BIT</b>	
2. LOCATION (Coordinates or Station) <b>X-887292.14, Y-403990.22</b>			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) <b>MLW</b>	
3. DRILLING AGENCY <b>SAVANNAH DISTRICT</b>			12. MANUFACTURER'S DESIGNATION OF DRILL <b>FAILING 314</b>	
4. HOLE NO. (As shown on drawing title and file number) <b>171</b>		13. TOTAL NO. OF SOIL SAMPLES TAKEN DISTURBED: <b>10</b> UNDISTURBED: <b>0</b>		
5. NAME OF DRILLER <b>P. ROUNTREE</b>			14. TOTAL NUMBER CORE BOXES <b>1</b>	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. GROUND WATER ELEVATION <b>N/A</b>	
7. THICKNESS OF OVERBURDEN <b>44.6' (WATER 31.4')</b>			16. DATE HOLE STARTED: <b>20 FEB 99</b> COMPLETED: <b>20 FEB 99</b>	
8. DEPTH DRILLED INTO ROCK <b>5.8'</b>			17. ELEVATION TOP OF HOLE <b>0.0' MLW</b>	
9. TOTAL DEPTH OF HOLE <b>50.4'</b>			18. TOTAL CORE RECOVERY FOR BORING <b>5.2</b> %	
			19. SIGNATURE OF INSPECTOR <b>J. ARTHUR, P. G.</b>	

ELEVATION (FT)	DEPTH (FT)	SYMBOLS	CLASSIFICATION OF MATERIALS (Description)	PERCENT MOISTURE CONTENT	JAR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	BLOWS/FT.
0.0			Water			Scale changes at 30.0' and 45.0'. Used 6" diameter steel casing and Floridin drilling mud.	
-31.4'	30		<b>BOTTOM OF HARBOR: 31.4'</b>				
			(SM) Gray fine to medium silty SAND, some small shell fragments, trace of clay, calcareous.		1	Weight of rods drove splitspoon from 31.4' to 32.9'.	0
			Olive gray, trace of small shell fragments, no clay, non-calcareous.		2	Weight of hammer drove splitspoon from 32.9' to 34.1'.	3
	35				3		36
					4	Lab Classification	46
			(SP) Gray fine to medium poorly graded SAND, trace of silt.		5	No. Class LL PI Moist.	
			(SM) Gray fine to medium silty SAND, trace of small shell fragments and fine rounded gravel, calcareous.		6	2 SP-SM NL NP 28.7%	53
	40				7	6 - - 16.7%	
			(ML) Gray lean SILT, some clay and fine to medium sand, trace of fine rounded gravel, calcareous.		8	8 SM NL NP 13.2%	25
					9	C SP-SM - - 21.5%	35
			(SP) Gray medium to coarse poorly graded SAND, trace of fine rounded gravel and silt. <b>TOP OF ROCK: 44.6'</b>				60
	45		<b>SANDSTONE</b> -gray, coarse grained, some fine rounded gravel, moderately to highly weathered, hard, highly porous, pitted and vuggy with small vugs, slightly calcareous.	REC 10%		Pull-1 From 44.6' to 47.6', Run 3.0', Rec 0.3', C. L. 2.7', Hyd. press.: "0" psi, Water return: 10%, Taped 44.7', Drilling time: 15 min.	100/0.7'
			<b>CORE LOSS.</b>	RQD 10%	BOX 1		
				REC 0%		Pull-2 From 47.6' to 50.4', Run 2.8', Rec 0.0', C. L. 2.8', Hyd. press.: "0" psi, Water return: 20%, Taped 47.3', Drilling time: 2 min. Note: Went back into hole from 48.9' to 50.4' with splitspoon to recover lost core sample.	
	47						
			(SP) Gray coarse poorly graded SAND, some fine round gravel.		10		
	49			RQD 0%			
			<b>BOTTOM OF BORING: 50.4'</b>				
	51						
	53						

NOTE: SOILS VISUALLY FIELD CLASSIFIED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

BLOWS PER FOOT:  
NUMBER REQUIRED TO DRIVE 1 3/8" I.D. SPLITSPOON W/140 LB. HAMMER FALLING 30".

<b>DRILLING LOG</b>		DIVISION South Atlantic	INSTALLATION Savannah Dist.	SHEET 1 OF 1 SHEETS
1. PROJECT Brunswick Harbor		10. SIZE AND TYPE OF BIT 1 1/2" splitspoon		
2. LOCATION (Coordinates or Station) X - 887752.71 Y - 404933.90		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) M.L.M.		
3. DRILLING AGENCY Savannah Dist.		12. MANUFACTURER'S DESIGNATION OF DRILL Falling 314		
4. HOLE NO. (As shown on drawing title and file number) 46		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	DISTURBED 2	UNDISTURBED 0
5. NAME OF DRILLER King		14. TOTAL NUMBER CORE BOXES 0		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER		
7. THICKNESS OF OVERBURDEN		16. DATE HOLE	STARTED 12 May, 1966	COMPLETED 12 May, 1966
8. DEPTH DRILLED INTO ROCK		17. ELEVATION TOP OF HOLE 0.0'		
9. TOTAL DEPTH OF HOLE 44.8'		18. TOTAL CORE RECOVERY FOR BORING %		
		19. SIGNATURE OF INSPECTOR J.A. Ferland		

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'	0'	c	d	e	f	g
	30		Water			Blows per Foot: Number required to drive 1 1/2" ID splitspoon w/140 lb hammer falling 30".
-33.0'			GM clay, sandy, highly plastic shell fragments, dark grey.		1	
-34.9'	35		SP sand, fine, poorly graded slightly clayey, green.		2	
-37.6'			Interval 37.6' - 39.4' lost, no sample retained			
-39.4'	40		SP sand, fine, poorly graded, fine, green.			
-40.7'			Interval 40.7' - 43.3' lost, no sample retained.			
-43.3'			SP sand, fine, poorly graded clayey, gray.			
-44.8'	45					Bottom of hole 44.8'. Note: Soils field classified in accordance with Unified Soil Classification System.

<b>DRILLING LOG</b>		DIVISION <b>Southern Atlantic</b>	INSTALLATION <b>Savannah Dist.</b>	SHEET 1 OF 1 SHEETS
1. PROJECT <b>Brunswick Harbor</b>			10. SIZE AND TYPE OF BIT <b>1 1/2" splitspoon, 2 3/4 x 3 7/8</b>	
2. LOCATION (Coordinates or Station) <b>X - 888351.70 Y - 405734.92</b>			11. DATUM FOR ELEVATION SHOWN ( <b>W.L.M.</b> or <b>M.S.M.</b> ) <b>M.L.W.</b>	
3. DRILLING AGENCY <b>Savannah Dist.</b>			12. MANUFACTURER'S DESIGNATION OF DRILL <b>Falling 314</b>	
4. HOLE NO. (As shown on drawing title and file number) <b>47</b>			13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN DISTURBED: <b>4</b> UNDISTURBED: <b>0</b>	
5. NAME OF DRILLER <b>King</b>			14. TOTAL NUMBER CORE BOXES <b>1</b>	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. ELEVATION GROUND WATER	
7. THICKNESS OF OVERBURDEN			16. DATE HOLE STARTED: <b>12 May</b> COMPLETED: <b>12 May, 1966</b>	
8. DEPTH DRILLED INTO ROCK			17. ELEVATION TOP OF HOLE <b>0.0'</b>	
9. TOTAL DEPTH OF HOLE <b>46.6'</b>			18. TOTAL CORE RECOVERY FOR BORING <b>49 %</b>	
			19. SIGNATURE OF INSPECTOR <b>J.A. Ferland</b>	

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'	0'	c	d	e	f	g
			Water			Blows per Foot: Number required to drive 1 1/2" ID splitspoon w/140 lb hammer falling 30" 89
-31.1'	30		CH clay, sandy, highly plastic shell fragments, grey.		1	10 20 40 60 80 100
-32.4'			SP sand, fine, poorly graded slightly clayey, light green.		2	Interval 32.6' - 34.8' penetrated w/ 2" hydraulically pushed.
-34.8'	35		Interval 34.8' - 37.7' lost, no. sample retained			
-37.7'			SP sand, fine, poorly graded, clean, light green.		3	50
-40.2'	40		CL clay, lean, calcareous, with small feldspar pebbles, grey.		4	77 100/.3' 50/.2'
-42.9'			Limestone, argillaceous, porous, conglomeratic 1/2"-1" sub-rounded quartz and feldspar pebbles, well indurated may neither be broken in hand nor penetrated with knife blade.	49	1	Full 1 42.9' - 46.6' Run 3.7' Rec 1.8' CL 1.9'
-43.9'	45		SP sand, clayey, calcareous, phosphatic, grey.			Note: Soils field classified in accordance with Unified Soil Classification System.
-46.6'			Bottom of Hole 46.6'			

DRILLING LOG		DIVISION SOUTH ATLANTIC	INSTALLATION BRUNSWICK, GA	SHEET 1 OF 1 SHEETS
1. PROJECT BRUNSWICK HARBOR DEEPENING PED			10. SIZE AND TYPE OF BIT 3/8" I.D. SPLITSPOON, 9/16" FISHTAIL, 4 x 9/16" DIAMOND BIT	
2. LOCATION (Coordinates or Station) X-888820.45, Y-406025.02			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW	
3. DRILLING AGENCY SAVANNAH DISTRICT			12. MANUFACTURER'S DESIGNATION OF DRILL FAILING 314	
4. HOLE NO. (As shown on drawing title and file number) 170		13. TOTAL NO. OF SOIL SAMPLES TAKEN	DISTURBED 9	UNDISTURBED 0
5. NAME OF DRILLER P. ROUNTREE			14. TOTAL NUMBER CORE BOXES 1	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. GROUND WATER ELEVATION N/A	
7. THICKNESS OF OVERBURDEN 46.0' (WATER 32.5')			16. DATE HOLE STARTED 19 FEB 99 COMPLETED 19 FEB 99	
8. DEPTH DRILLED INTO ROCK 5.0'			17. ELEVATION TOP OF HOLE 0.0' MLW	
9. TOTAL DEPTH OF HOLE 51.0'			18. TOTAL CORE RECOVERY FOR BORING 88 %	
			19. SIGNATURE OF INSPECTOR J. ARTHUR, P. G.	

ELEVATION (FT)	DEPTH (FT)	SYMBOLS	CLASSIFICATION OF MATERIALS (Description)	PERCENT MOISTURE CONTENT	JAR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) BLOWS/FT.
0.0	0					Scale changes at 30.0' and 45.0'. Used 6" diameter steel casing and Floridin drilling mud.
	30		Water			
			BOTTOM OF HARBOR: 32.5'			
-32.5'	35	Vertical lines	(SM) Gray fine to medium silty SAND, some small shell fragments, slightly calcareous. Some small to large shell fragments.		1	1
					2	19
					3	39
-37.0'	40	Vertical lines with dots	(SP) Gray fine to medium poorly graded SAND, trace of silt.		4	39
					5	44
					6	31
-41.5'	45	Vertical lines with dots	(ML) Gray lean SILT, some clay and fine to medium sand, calcareous. Trace of clay.		7	61
					8	50
-44.5'	45	Vertical lines with dots	(SM) Gray fine to medium silty SAND, some fine gravel, calcareous.		9	46.0' to 46.2', splitspoon refusal. No recovery. Began coring at 46.0'. 100/0.7'
-46.0'	47	Vertical lines with dots	TOP OF ROCK: 46.0' SANDSTONE-gray, coarse grained, some fine rounded gravel, moderately to highly weathered, hard, highly porous, pitted and vuggy with small vugs, slightly calcareous.	REC 100%		Pull-1 From 46.0' to 47.9', Run 1.9', Rec 1.9', Hyd. press.: 125 psi, Water return: 100%, Taped 47.9', Drilling time: 20 min.
	49	Vertical lines with dots	Fragmented: 46.0'-46.3', 46.7'-48.4', 48.6'-50.6'. Clayey seams: 46.7'-48.4', 48.6'-50.6'.	RQD 17%		
				REC 87%	BOX 1	Pull-2 From 47.9' to 51.0', Run 3.1', Rec 2.7', C. L. 0.4', Hyd. press.: 125 psi, Water return: 100%, Taped 39.2', Drilling time: 15 min.
				RQD 0%		
-50.6'	51	X	CORE LOSS.			
-51.0'			BOTTOM OF BORING: 51.0'			
	53					

NOTE: SOILS VISUALLY FIELD CLASSIFIED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

BLOWS PER FOOT: NUMBER REQUIRED TO DRIVE 1 3/8" I. D. SPLITSPOON W/140 LB. HAMMER FALLING 30".

DRILLING LOG	DIVISION SOUTH ATLANTIC	INSTALLATION BRUNSWICK, GA	SHEET 1 OF 1 SHEETS
1. PROJECT BRUNSWICK HARBOR DEEPENING PED		10. SIZE AND TYPE OF BIT 1 1/8" I.D. SPLITSPOON, 3/2" FERTAL, 4 x 3/2" DIAMOND BIT	
2. LOCATION (Coordinates or Station) X-888701.23, Y-406547.04		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW	
3. DRILLING AGENCY SAVANNAH DISTRICT		12. MANUFACTURER'S DESIGNATION OF DRILL FAILING 314	
4. HOLE NO. (As shown on drawing title and file number) 169		13. TOTAL NO. OF SOIL SAMPLES TAKEN	DISTURBED 8 UNDISTURBED 0
5. NAME OF DRILLER P. ROUNTREE		14. TOTAL NUMBER CORE BOXES 1	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. GROUND WATER ELEVATION N/A	
7. THICKNESS OF OVERBURDEN 44.2' (WATER 35.2')		16. DATE HOLE STARTED 19 FEB 99	
8. DEPTH DRILLED INTO ROCK 6.6'		17. ELEVATION TOP OF HOLE 0.0' MLW	
9. TOTAL DEPTH OF HOLE 50.8'		18. TOTAL CORE RECOVERY FOR BORING 44 %	
		19. SIGNATURE OF INSPECTOR J. ARTHUR, P. G.	

ELEVATION (FT)	DEPTH (FT)	SYMBOLS	CLASSIFICATION OF MATERIALS (Description)	PERCENT MOISTURE CONTENT	JAR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
0.0			Water			Scale changes at 35.0' and 50.0'. BLOWS/FT.
-35.2'	35		BOTTOM OF HARBOR: 35.2' (SM) Olive gray fine to medium silty SAND, trace of clay and small shell fragments, calcareous. No clay.		1	Used 6" diameter steel casing and Floridin drilling mud.
					2	
					3	
	40				4	
			No shell fragments, non-calcareous.		5	
			Trace of fine rounded gravel.		6	
-44.2'	45		TOP OF ROCK: 44.2' Limestone-olive gray, sandy with fine to medium sand, soft, plastic, friable.		7	No splitspoon recovery from 47.2' to 47.5' and 48.7' to 49.0'. 100/0.8'
					8	100/0.6'
						100/0.3'
						100/0.3'
-49.0'	50		Sandstone-gray, coarse grained, some fine rounded gravel, moderately to highly weathered, hard, highly porous, pitted and vuggy with small to large vugs, slightly calcareous.	REC 44%		Pull-1 From 49.0' to 50.8', Run 1.8', Rec 0.8', C. L. 1.0', Hyd. press.: weight of tool, Water return: 100% to 50.8', then 0%. Taped 38.7'. Drilling time: 12 min.
-49.8'			49.0'-49.5' badly broken, clayey. CORE LOSS.	RQD 0%	BOX 1	

-50.8'		BOTTOM OF BORING: 50.8'	
		Lab Classification	
		No. Class LL PI Moist.	
		2 SP-SM NL NP 19.3%	
		4 SP-SM NL NP 18.8%	
		C SP-SM - - 17.0%	
		Specific Gravity: No. 2 = 2.67	
		BLOWS PER FOOT: NUMBER REQUIRED TO DRIVE 1 1/8" I. D. SPLITSPOON W/140 LB. HAMMER FALLING 30".	

NOTE: SOILS VISUALLY FIELD CLASSIFIED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.



<b>DRILLING LOG</b>		DIVISION Sout. Atlantic	INSTALLATION Savannah Dist.	SHEET 1 OF 1 SHEETS
1. PROJECT Brunswick Harbor			10. SIZE AND TYPE OF BIT 1 1/2" splitspoon, 2 3/4 x 3 7/8	
2. LOCATION (Coordinates or Station) X - 889099.70 Y - 406735.94			11. DATUM FOR ELEVATION SHOWN (F.M. or M.G.L.) M.L.W.	
3. DRILLING AGENCY Savannah Dist.			12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314	
4. HOLE NO. (As shown on drawing title and file number) 48		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN		DISTURBED 2
5. NAME OF DRILLER King		14. TOTAL NUMBER CORE BOXES 0		UNDISTURBED 0
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER		
7. THICKNESS OF OVERBURDEN		16. DATE HOLE		STARTED 26 April
8. DEPTH DRILLED INTO ROCK		17. ELEVATION TOP OF HOLE 0.0'		COMPLETED 26 April, 1966
9. TOTAL DEPTH OF HOLE 45.1'		18. TOTAL CORE RECOVERY FOR BORING 0.0%		19. SIGNATURE OF INSPECTOR J.A. Ferland

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'	0'	c	d	e	f	g
	30		Water			Blows per Foot: Number required to drive 1 1/2" ID splitspoon w/140 lb hammer falling 30".
- 35.9'	35		SM sand, well graded, silty calcareous, shell fragments grey.		1 46	10 20 40 60 80 100
- 35.2'			SC-SP sand, poorly graded, slightly clayey, poorly graded grey.		2 50/9'	35.9
- 35.9'			Driller reports rock (limestone?) 35.9'-36.2'.	0		Full 1 35.9' - 41.2' Run 5.3' Rec 0.0' Cl 5.3'
- 36.2'	40		SM sand, poorly graded, grey medium grained, shell fragments.			34 20
- 45.1'	45		Bottom of Hole 45.1'			50/9'
						Note: Interval 36.2'-41.2' material classified from wash samples. Note: Soils field classified in accordance with Unified Soil Classification System.

DRILLING LOG		DIVISION SOUTH ATLANTIC	INSTALLATION BRUNSWICK, GA	SHEET 1 OF 1 SHEETS
1. PROJECT BRUNSWICK HARBOR DEEPENING PED			10. SIZE AND TYPE OF BIT 1 3/8" I. D. SPLITSPOON, 5/2" FISHTAIL	
2. LOCATION (Coordinates or Station) X-889664.95, Y-407849.69			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW	
3. DRILLING AGENCY SAVANNAH DISTRICT			12. MANUFACTURER'S DESIGNATION OF DRILL FAILING 314	
4. HOLE NO. (As shown on drawing title and file number) 168		13. TOTAL NO. OF SOIL SAMPLES TAKEN DISTURBED 9      UNDISTURBED 0		
5. NAME OF DRILLER P. ROUNTREE			14. TOTAL NUMBER CORE BOXES 0	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. GROUND WATER ELEVATION N/A	
7. THICKNESS OF OVERBURDEN 50.8' (WATER 34.3')			16. DATE HOLE STARTED 18 FEB 99 COMPLETED 18 FEB 99	
8. DEPTH DRILLED INTO ROCK 0.0'			17. ELEVATION TOP OF HOLE 0.0' MLW	
9. TOTAL DEPTH OF HOLE 50.8'			18. TOTAL CORE RECOVERY FOR BORING N/A %	
			19. SIGNATURE OF INSPECTOR J. ARTHUR, P. G.	

ELEVATION (FT)	DEPTH (FT)	SYMBOLS	CLASSIFICATION OF MATERIALS (Description)	PERCENT MOISTURE CONTENT	JAR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	BLOWS/FT.
0.0	0					Scale change at 30.0'. Used 6" diameter steel casing and Floridin drilling mud.	
	30		Water				
			BOTTOM OF HARBOR: 34.3'				
-34.3'	35	•••••	(SP) Grayish brown medium coarse poorly graded SAND, to trace of silt and small shell fragments, calcareous.	36.6'	1	Note: Had high blow count at start of second drive. Had 50 blows from 35.8' to 50/0.3' 36.3' then 50 blows from 36.3' to 36.6'.  Weight of rods drove splitspoon from 43.3' to 44.8'. Had no recovery but suspect shell bed. Began getting small amount of large shell fragments and fine river gravel as fall-in after 44.8'.	18
		•••••	Grayish brown and light brown.		2		54
		•••••	Light brown, no silt.		3		10
		•••••	Light grayish brown.		4		2
-40.3'	40	X	No recovery.				8
-41.8'		X	(SP) Light grayish brown medium poorly graded SAND, some small shell fragments, trace of silt, calcareous.		5		0
-43.3'		X	No recovery.				9
-44.8'	45	•••••	(SP) Gray fine to medium poorly graded SAND, some small shell fragments, trace of silt, calcareous.		6		67
		•••••	Light gray, fine to medium grained, trace of small shell fragments.		7		56
-49.3'			(SM) Gray coarse silty SAND, large amount of small to large shell fragments, trace of fine rounded gravel.	8	28		
-50.8'	50			9			
			BOTTOM OF BORING: 50.8'				
	55					Lab Classification No. Class LL PI Moist. 1 - - - 16.9% 3 - - - 15.6% C SP-SM - - 16.4%	
	60					Specific Gravity: No. 1 - 2.65	
	65					NOTE: SOILS VISUALLY FIELD CLASSIFIED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.  BLOWS PER FOOT: NUMBER REQUIRED TO DRIVE 1 3/8" I. D. SPLITSPOON W/140 LB. HAMMER FALLING 30".	

Sidney Lanier Bridge Meeting Area

Boring Logs:

14

201

200

77

15

78

199

16

85

197

17

81

196

18

82

19

195

83

26

<b>DRILLING LOG</b>		DIVISION South Atlantic	INSTALLATION Savannah Dist.	SHEET 1 OF 1 SHEETS
1. PROJECT Brunswick Harbor		10. SIZE AND TYPE OF BIT 1 1/2" splitspoon, 2 3/4 x 3 7/8		
2. LOCATION (Coordinates or Station) X - 860901.29 Y - 410204.62		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) M.L.W.		
3. DRILLING AGENCY Savannah Dist.		12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314		
4. HOLE NO. (As shown on drawing title and file number) 14		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	DISTURBED 1	UNDISTURBED 0
5. NAME OF DRILLER King		14. TOTAL NUMBER CORE BOXES 1		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER		
7. THICKNESS OF OVERBURDEN		16. DATE HOLE	STARTED 22 Mar.	COMPLETED 22 Mar, 1966
8. DEPTH DRILLED INTO ROCK		17. ELEVATION TOP OF HOLE 0.0'		
9. TOTAL DEPTH OF HOLE 45.0'		18. TOTAL CORE RECOVERY FOR BORING 58 %		
		19. SIGNATURE OF INSPECTOR Dale Gobel		

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'	0	c	d	e	f	g
			Water			Blows per Foot: Number required to drive 1 1/2" ID split-spoon w/140 Lb. hammer falling 30".
- 36.4'	35		SM silty, sand, with some limestone fragments.		1	
- 38.3'	40		Limestone, silty, grey, soft interval 42.0'-43.0'	100	1	11 100/.0' Pull 1, 38.3'-41.2' 38.3 Run 2.9', Rec 2.9' CI 0.0
						100/.0' Pull 2, 41.2'-45.0' 41.2 Run 3.8', Rec 1.0' CI 2.8
- 45.0'	45		Bottom of Hole 45.0'	26	1	45.0
						Note: Soils field classified in accordance with Unified Soil Classification System. Depth: Pressure: 38.3'-41.2' 175 psi 41.2'-42.0' " " 42.0'-43.0' 0 " 43.0'-45.0' 175 "

DRILLING LOG		DIVISION SOUTH ATLANTIC	INSTALLATION BRUNSWICK, GA	SHEET 1 OF 2 SHEETS
1. PROJECT BRUNSWICK HARBOR DEEPENING PED			10. SIZE AND TYPE OF BIT 1 3/8" I. D. SPLITSPOON, 4x5/2" DIAMOND BIT	
2. LOCATION (Coordinates or Station) X-862039.81, Y-409944.54			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW	
3. DRILLING AGENCY SAVANNAH DISTRICT			12. MANUFACTURER'S DESIGNATION OF DRILL FAILING 314	
4. HOLE NO. (As shown on drawing title and file number) 201			13. TOTAL NO. OF SOIL SAMPLES TAKEN DISTURBED 0 UNDISTURBED 0	
5. NAME OF DRILLER P. ROUNTREE			14. TOTAL NUMBER CORE BOXES 2	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. GROUND WATER ELEVATION N/A	
7. THICKNESS OF OVERBURDEN 33.8' (WATER 33.5')			16. DATE HOLE STARTED 30 MAR 99 COMPLETED 30 MAR 99	
8. DEPTH DRILLED INTO ROCK 17.0'			17. ELEVATION TOP OF HOLE 0.0' MLW	
9. TOTAL DEPTH OF HOLE 50.8'			18. TOTAL CORE RECOVERY FOR BORING 89 %	
			19. SIGNATURE OF INSPECTOR J. ARTHUR, P. G.	

ELEVATION (FT)	DEPTH (FT)	SYMBOLS	CLASSIFICATION OF MATERIALS (Description)	PERCENT MOISTURE CONTENT	JAR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	BLOWS/FT.
0.0	0					Scale changes at 33.0' and 38.0'. Used 6" diameter steel casing and Floridin drilling mud.	
	33		Water				
			BOTTOM OF HARBOR: 33.5'				
-33.5'		X	No recovery.			Bouncing rods at 33.8'. No splitspoon recovery.	0
-33.8'		X	TOP OF ROCK: 33.8'				
	34	Brick pattern	LIMESTONE -gray, fossiliferous, moderately weathered, pitted and vuggy with small to large vugs, very hard to hard.	REC 89%		Pull-1 From 33.8' To 38.3', Run 4.5', Rec 4.0', C. L. 0.5' Hyd. press.: 80 psi, Water return: 100% first 0.7' then 0%.	
	35	Brick pattern	Light gray, clayey, hard, intensely jointed: 34.2' to 36.3'. Badly broken: 34.2' to 34.4', 36.0' to 36.3'.	RQD 18%		Taped: 36.9', Drilling time: 50 min., RQD=0.8'/4.5'.	
	36	Brick pattern			BOX 1 OF 2		
-36.3'		Diagonal hatching	(CH) Very dark gray fat CLAY, stiff to very stiff, calcareous.				
	37	Diagonal hatching					
-37.8'		X	CORE LOSS.				
-38.0'	38	X					
			CONTINUED ON SHEET #2				
	40						
	42						

NOTE: SOILS VISUALLY FIELD CLASSIFIED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

BLOWS PER FOOT: NUMBER REQUIRED TO DRIVE 1 3/8" I. D. SPLITSPOON W/140 LB. HAMMER FALLING 30".

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No. 201		
PROJECT			INSTALLATION		SHEET 2	
BRUNSWICK HARBOR DEEPENING PED			BRUNSWICK, GA		OF 2 SHEETS	
ELEVATION (FT)	DEPTH (FT)	SYMBOLS	CLASSIFICATION OF MATERIALS (Description)	PERCENT MOISTURE CONTENT	JAR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
a	b	c	d	e	f	g
						BLOWS/FT.
-38.3'		X	CORE LOSS.	REC 68%		Pull-1, continued.
-39.1'		Diagonal lines	(CH) Very dark gray fat CLAY, stiff to very stiff, calcareous.	RQD 20%		Pull-2 From 38.3' To 42.8', Run 4.5', Rec 1.7', C. L. 2.8', CD: 40.8', U.L. 0.8' Hyd. press.: "0" psi, Water return: 100%, Drilling time: 11 min., RQD=0.5'/2.5'
-39.8'	40	Brick pattern	LIMESTONE-fossiliferous, highly weathered, porous, pitted and vuggy with small vugs, moderately hard.	CD=40.8'		
			Cherty, very hard: 39.8' to 40.2'	REC 100%	BOX 1 OF 2	
	42		Light brownish gray: 40.2' to 41.1', 48.8' to 49.3'. Low angle open joints: 40.8', 41.1', 42.1', 42.8', 43.7', 44.1', 44.6', 44.8', 45.0', 45.1', 45.5', 45.7', 46.3', 47.5', 47.8', 47.9', 48.0', 48.2'.	RQD 85%		Pull-3 From 42.8' To 44.8', Run 2.0', Rec 4.0', C.G. 2.0' Hyd. press.: 65 psi, Water return: 0%, Taped: 44.3', Drilling time: 17 min. RQD=3.4'/4.0'
	44		Fine grained, few small vugs: 41.1' to 44.8'. Light gray: 41.1' to 45.1', 47.8' to 48.2', 50.4' to 50.8'. Very hard: 44.8' to 44.9'. Soft: 44.9' to 45.1', 46.3' to 47.5'. Fragmented: 45.0' to 45.1', 47.8' to 48.0'. Gray: 45.1' to 45.7'. Hard: 45.1' to 45.4', 47.5' to 47.8'. Moderately weathered: 45.1' to 46.3', 47.5' to 48.2'.	REC 85%		
	46		Moderately hard: 45.4' to 46.3', 47.8' to 48.2'. Brownish gray: 45.7' to 47.8', 49.3' to 50.4'. Clayey and badly broken: 46.3' to 47.5'.	RQD 23%	BOX 2 OF 2	Pull-4 From 44.8' to 48.8', Run 4.0', Rec 3.4', C. L. 0.6', Hyd. press.: "0" psi, Water return: 100%, Taped: 48.2', Drilling time: 15 min., RQD=0.9'/4.0'.
-48.2'	48	X	CORE LOSS.	REC 100%		Pull-5 From 48.8' To 50.8', Run 2.0', Rec 2.0', Hyd. press.: "0" psi, Water return: 50% first foot then 0%. Taped: 49.8', Drilling time: 6 min. RQD=1.4'/2.0'.
-48.8'		Diagonal lines	CORE LOSS.	RQD 70%		
	50	Brick pattern	LIMESTONE - continued.			
-50.8'			BOTTOM OF BORING: 50.8'			
	52					
	54					
	56					

NOTE: SOILS VISUALLY FIELD CLASSIFIED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

BLOWS PER FOOT:  
NUMBER REQUIRED TO DRIVE 1 3/8" I. D. SPLITSPOON W/140 LB. HAMMER FALLING 30".

DRILLING LOG		DIVISION SOUTH ATLANTIC	INSTALLATION BRUNSWICK, GA	SHEET 1 OF 2 SHEETS
1. PROJECT BRUNSWICK HARBOR DEEPENING PED			10. SIZE AND TYPE OF BIT 1 3/8" I. D. SPLITSPOON, 4x5 1/2" DIAMOND BIT	
2. LOCATION (Coordinates or Station) X-861964.95, Y-409554.66			11. DATUM FOR ELEVATION SHOWN (TBM or MSU) MLW	
3. DRILLING AGENCY SAVANNAH DISTRICT			12. MANUFACTURER'S DESIGNATION OF DRILL FAILING 314	
4. HOLE NO. (As shown on drawing title and file number) 200		13. TOTAL NO. OF SOIL SAMPLES TAKEN DISTURBED: 0 UNDISTURBED: 0		
5. NAME OF DRILLER P. ROUNTREE			14. TOTAL NUMBER CORE BOXES 1	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. GROUND WATER ELEVATION N/A	
7. THICKNESS OF OVERBURDEN 33.7' (WATER 33.7')			16. DATE HOLE STARTED 25 MAR 99 COMPLETED 25 MAR 99	
8. DEPTH DRILLED INTO ROCK 17.2'			17. ELEVATION TOP OF HOLE 0.0' MLW	
9. TOTAL DEPTH OF HOLE 50.9'			18. TOTAL CORE RECOVERY FOR BORING 79 %	
			19. SIGNATURE OF INSPECTOR J. ARTHUR, P. G.	

ELEVATION (FT)	DEPTH (FT)	SYMBOLS	CLASSIFICATION OF MATERIALS (Description)	PERCENT MOISTURE CONTENT	JAR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
0.0	0					Scale changes at 33.0' and 39.0'. Used 6" diameter steel casing and Floridin drilling mud. Bouncing rods at 33.7'. No splitspoon samples taken.
-33.7'	33		Water			
			BOTTOM OF HARBOR AND TOP OF ROCK: 33.7'			
-33.7'	34		LIMESTONE-gray, moderately to highly weathered, moderately hard, fragmented.	REC 63%		Pull-1 From 33.7' To 36.7', Run 3.0', Rec 1.9', C. L. 1.1', Hyd. press.: "0" psi to 35.0' then 100 psi to 36.7'. Water return: 100%. Taped: 36.6', Drilling time: 27 min., RQD=0%.
	35			RQD 0%		
-35.6'	36		CORE LOSS.		BOX 1 OF 1	
-36.7'	37		LIMESTONE-same as 33.7' to 35.6'. (CH) Mottled gray and olive gray fat CLAY, hard, calcareous.	REC 45%		Pull-2 From 36.7' To 40.7', Run 4.0', Rec 1.8', C. L. 2.2'. Hyd. press.: 60 psi, intermittent hard and soft drilling. Water return: 100%. Taped: 38.8'. Drilling time: 9 min., RQD=0%.
-37.6'	38		LIMESTONE Olive gray, cherty, very hard: 37.6' to 37.7'. Brownish gray, fossiliferous, highly weathered, porous, pitted and vuggy with small to large vugs, soft to moderately hard, fragmented: 37.7' to 38.5'.	RQD 0%		
-38.5'	39		CORE LOSS.			

CONTINUED ON SHEET \*2

NOTE: SOILS VISUALLY FIELD CLASSIFIED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

BLOWS PER FOOT:  
NUMBER REQUIRED TO DRIVE 1 3/8" I. D. SPLITSPOON W/140 LB. HAMMER FALLING 30".


DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE		Hole No. 200		
PROJECT BRUNSWICK HARBOR DEEPENING PED			INSTALLATION BRUNSWICK, GA		SHEET 2 OF 2 SHEETS	
ELEVATION (FT)	DEPTH (FT)	SYMBOLS	CLASSIFICATION OF MATERIALS (Description)	PERCENT MOISTURE CONTENT	JAR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)
-40.7'	39	X	CORE LOSS, continued.			Pull-2, continued.
	41	Brick	LIMESTONE - light gray, fossiliferous, highly weathered and pitted, moderately vuggy with small to large vugs, soft to moderately hard.	REC 100%		Pull-3 From 40.7' To 43.2', Run 2.5', Rec 2.0', C. L. 0.5' Hyd. press.: "0" psi, Water return: 80%, Taped: 40.7', Drilling time: 20 min., RQD=1.6'/2.0'.
	43	Brick	Low angle open joints: 41.1', 42.1', 42.7', 43.8', 44.9', 45.2', 45.8', 48.9', 49.0', 49.7', 50.3'. Highly porous and vuggy: 44.5' to 47.9'. Moderately hard to hard: 45.2' to 45.8'.	80% CD=42.7' REC 100%	BOX 1 OF 1	
	45	Brick	Soft to moderately hard, clayey, fragmented: 45.8' to 47.9'. Sandy: 45.8' to 48.6'. Soft, friable: 47.9' to 49.8'. Moderately hard: 49.8' to 50.6'.	REC 100%		Pull-4 From 43.2' To 45.2', Run 2.0', Rec 2.5', C. G. 0.5' Hyd. press.: "0" psi, Water return: 100%, Taped: 44.1', Drilling time: 20 min., RQD=2.5'/2.5'.
	47	Brick		RQD 22%		Pull-5 From 45.2' To 47.9', Run 2.7', Rec 2.7', Hyd. press.: "0" psi, Water return: 100%, Taped: 47.8', Drilling time: 10 min., RQD=0.6'/2.7'.
	49	Brick		REC 90%		Pull-6 From 47.9' To 50.9', Run 3.0', Rec 2.7', C. L. 0.3', Hyd. press.: "0" psi, Water return: 100%, Taped: 50.5', Drilling time: 11 min., RQD=0.5'/3.0'.
	51	X	CORE LOSS.	RQD 17%		
-50.6'	51		BOTTOM OF BORING: 50.9'			
-50.9'	51					
	53					
	55					
	57					

NOTE: SOILS VISUALLY FIELD CLASSIFIED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

BLOWS PER FOOT:  
NUMBER REQUIRED TO DRIVE 1 3/8" I. D. SPLITSPOON W/140 LB. HAMMER FALLING 30".



<b>DRILLING LOG</b>		DIVISION Sout. Atlantic	INSTALLATION Brunswick Har.	SHEET 1 OF 2 SHEETS
1. PROJECT Lower Turtle River		10. SIZE AND TYPE OF BIT   3/8" ID Splitspoon &		
2. LOCATION (Coordinates or Station) X - 862647.32 Y - 409588.63		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW 4X5 1/2" Carballoy Coring		
3. DRILLING AGENCY Savannah District		12. MANUFACTURER'S DESIGNATION OF DRILL CME-550		
4. HOLE NO. (As shown on drawing title and file number) 77		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED 1	UNDISTURBED 1 (Waxed)
5. NAME OF DRILLER A. Yates		14. TOTAL NUMBER CORE BOXES 1		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER		
7. THICKNESS OF OVERBURDEN 31.3'		16. DATE HOLE	STARTED 11 Sep 85	COMPLETED 11 Sep 85
8. DEPTH DRILLED INTO ROCK 10.3'		17. ELEVATION TOP OF HOLE 0.0		
9. TOTAL DEPTH OF HOLE 41.6'		18. TOTAL CORE RECOVERY FOR BORING 51%		
		19. SIGNATURE OF INSPECTOR J.E. Bolen (Geologist)		

ELEVATION 0.0 a	DEPTH 0 b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Sea Water 0.0-31.3'			NOTES: (1) Set 6" diameter steel casing to 31.5'. (2) Drove sampler to refusal 31.3'-31.5'. (3) Began coring at 31.3' with 4X5 1/2" diameter carballoy. (4) Scale change: 30.0'.
	10					
	20					
	30					
	31					
-31.3						BLOWS
			Limestone Gray, sandy and shelly, moderately hard to hard, badly broken. All core 31.3'-33.7' is in cobble, gravel, and sand size pieces. 1/2' of core loss distributed between 31.3' and 33.7' due to washing action of bit.		JAR 1 BOX 1	100/0.2' Pull #1 From 31.3' To: 36.3' Run 5.0' Rec 2.6' CL 2.4' Drilling Time: 3 Min.
-33.0	33		Continued on sheet #2			
						BLOWS PER FOOT: Number required to drive 3 3/8" ID splitspoon w/140 lb. hammer falling 30".

NOTE: Soils field classified in accordance with the Unified Soil Classification Systems.

**DRILLING LOG (Cont Sheet)**

ELEVATION TOP OF HOLE


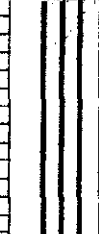



0.0

Hole No. 77

PROJECT Lower Turtle River

INSTALLATION Brunswick Harbor

SHEET 2 OF 2 SHEETS







ELEVATION -33.0	DEPTH 33 <sub>b</sub>	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water lost, depth of weathering, etc., if significant) g
			Limestone- As described.		BOX 1	Pull 1(Continued)
-33.7			MH Dark gray fat clayey silt- with some fine sand.			
	34					
	35		<u>Left in Hole 35.3'-36.3'</u>	35.3'		
-36.3	36		Limestone Gray, shelly, soft, 36.3'-37.5' in gravel, cobble and sand sizes badly broken.		37.8'	Pull #2 From 36.3' To 41.6' Run 5.3' Rec 2.7' CL 2.6' Drilling Time: 12 Min.
	38				W-1 38.4	
-38.5			Moderately hard-sandy. 39.0'-41.6' Core left in hole.	39.0'		
	40					
-41.6			Bottom of boring 41.6'			

Scale change: 36.0'

<b>DRILLING LOG</b>		DIVISION South Atlantic	INSTALLATION Savannah Dist.	SHEET 1 OF 1 SHEETS
1. PROJECT Brunswick Harbor		10. SIZE AND TYPE OF BIT 1 1/2" splitspoon, 2 3/4 x 3 1/8		
2. LOCATION (Coordinates or Station) X - 862886.32 Y - 409379.63		11. DATUM FOR ELEVATION SHOWN (TBM or M.L.W.) M.L.W.		
3. DRILLING AGENCY Savannah Dist.		12. MANUFACTURER'S DESIGNATION OF DRILL Falling 314		
4. HOLE NO. (As shown on drawing title and file number) 15		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	DISTURBED 1	UNDISTURBED 0
5. NAME OF DRILLER King		14. TOTAL NUMBER CORE BOXES 1		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER	16. DATE HOLE	
7. THICKNESS OF OVERBURDEN		17. ELEVATION TOP OF HOLE 0.0'	STARTED	COMPLETED
8. DEPTH DRILLED INTO ROCK		18. TOTAL CORE RECOVERY FOR BORING 31 %		
9. TOTAL DEPTH OF HOLE 45.4'		19. SIGNATURE OF INSPECTOR Dale Gobel		

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'	0'	c	d	e	f	g
	35		Water			Blows per Foot: Number required to drive 1 1/2" ID splitspoon w/140 Lb hammer falling 30".
- 37.4'			GL clay, sandy, with lime- stone fragments.			
- 37.8'	40		Limestone, sandy, induration variable, grey.	31	1	100/.4' Pull 1 37.4' - 45.4' Run 8.0' Rec 2.5' Cl 5.5'
- 45.4'	45		Bottom of Hole 45.4'			Note: Soils field class- ified in accordance with Unified Soil Classific- ation System. Pressure: 37.4' - 45.4' 50 - 200 psi.

<b>DRILLING LOG</b>		DIVISION Sout Atlantic	INSTALLATION Brunswick Har. r	SHEET 1 OF 1 SHEETS
1. PROJECT Lower Turtle River		10. SIZE AND TYPE OF BIT 1 3/8" ID Splitspoon		
2. LOCATION (Coordinates, or Station) X - 863036.32 Y - 409396.63		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW		
3. DRILLING AGENCY Savannah District		12. MANUFACTURER'S DESIGNATION OF DRILL CME-550		
4. HOLE NO. (As shown on drawing title and file number) 78		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED 6	UNDISTURBED 0
5. NAME OF DRILLER P. Rountree		14. TOTAL NUMBER CORE BOXES 0		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER		
7. THICKNESS OF OVERBURDEN 41.0'		18. DATE HOLE	STARTED 10 Sep 85	COMPLETED 10 Sep 85
8. DEPTH DRILLED INTO ROCK 0.0'		17. ELEVATION TOP OF HOLE 0.0		
9. TOTAL DEPTH OF HOLE 41.0'		18. TOTAL CORE RECOVERY FOR BORING N/A %		
19. SIGNATURE OF INSPECTOR J.E. Bolen (Geologist)				

ELEVATION 0.0 a	DEPTH 0 b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Sea Water 0.0-31.9'			NOTES: (1) Set 6" diameter steel casing to 33.0'. (2) drove sampler to 33.4' and advanced boring to 33.5' with fishtail. (3) Change of scale at 30.0'. (4) All material from 31.9' to 41.0' are reactive with dilute HCL
						BLOWS
			SC gray clayey coarse-fine sand.		JAR 1	39
					2	59
					3	23
			ML Light green clayey silt-with some rock fragments and fine sand.		4	68
					5	60
			SC Gray clayey coarse-medium sand.		6	57
			Bottom of boring 41.0'			
			NOTE: Soils field classified in accordance with the Unified Soil Classification Systems.			
						BLOWS PER FOOT: Number required to drive 1 3/8" ID splitspoon w/140 lb. hammer falling 30".

<b>DRILLING LOG</b>		DIVISION <b>SOUTH ATLANTIC</b>	INSTALLATION <b>BRUNSWICK, GA</b>	SHEET 1 OF 2 SHEETS
1. PROJECT <b>BRUNSWICK HARBOR DEEPENING PED</b>			10. SIZE AND TYPE OF BIT <b>1 1/2" I. D. SPLITSPOON, 5/8" FISHTAIL, 4x3/8" DIAMOND BIT</b>	
2. LOCATION (Coordinates or Station) <b>X-863249.82, Y-409016.67</b>			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) <b>MLW</b>	
3. DRILLING AGENCY <b>SAVANNAH DISTRICT</b>			12. MANUFACTURER'S DESIGNATION OF DRILL <b>FALLING 314</b>	
4. HOLE NO. (As shown on drawing title and file number) <b>199</b>			13. TOTAL NO. OF SOIL SAMPLES TAKEN DISTURBED: <b>6</b> UNDISTURBED: <b>6</b>	
5. NAME OF DRILLER <b>P. ROUNTREE</b>			14. TOTAL NUMBER CORE BOXES <b>1</b>	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. GROUND WATER ELEVATION <b>N/A</b>	
7. THICKNESS OF OVERBURDEN <b>42.0' (WATER 32.4')</b>			16. DATE HOLE STARTED: <b>24 FEB 99</b> COMPLETED: <b>24 FEB 99</b>	
8. DEPTH DRILLED INTO ROCK <b>9.0'</b>			17. ELEVATION TOP OF HOLE <b>0.0' MLW</b>	
9. TOTAL DEPTH OF HOLE <b>51.0'</b>			18. TOTAL CORE RECOVERY FOR BORING <b>100</b> %	
			19. SIGNATURE OF INSPECTOR <b>J. ARTHUR, P. G.</b>	

ELEVATION (FT)	DEPTH (FT)	SYMBOLS	CLASSIFICATION OF MATERIALS (Description)	PERCENT MOISTURE CONTENT	JAR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	BLOWS/FT.
0.0	0		Water.			Scale changes at 30.0', 40.0' and 46.0'. Used 6" diameter steel casing and Floridin drilling mud.	
-32.4'	30		<b>BOTTOM OF HARBOR: 32.4'</b>				
-32.4'	35		(GC) Light olive gray fine to coarse clayey limestone GRAVEL, some fine to medium sand, calcareous.		1	Weight of rods drove splitspoon from 32.4' to 34.6', cont'd drive to 35.4'.	0
-35.4'			(CL) Light gray lean CLAY, some fine sand, partially indurated, calcareous.		2		18
-36.9'			(SC) Light gray fine to medium clayey SAND, calcareous.		3		43
-38.4'			(CL) Mottled light gray and olive gray lean CLAY, some fine sand, trace of fine limestone gravel, calcareous.		4		44
	40		Little sand.		5		37
	42		Indurated. <b>TOP OF ROCK: 42.0'</b>		6		55
-42.0'	42		LIMESTONE-mottled gray and olive gray, fossiliferous, moderately to highly weathered, highly porous, pitted and vuggy with small to large vugs, moderately hard to hard.	REC 100%		Pull-1 From 42.0' To 46.5', Run 4.5', Rec 4.5', Hyd. press.: 90 psi first 2' then "0" psi, Water return: 100%, Taped: 45.2', Drilling time: 15 min., RQD=3.8'/4.5'.	100/0.7%
	44		Low angle open joints: 42.3', 42.5', 42.6', 42.7', 43.3', 44.8', 45.5', 45.8'. Olive gray: 43.3' to 46.5'. Plastic: 45.8' to 46.2'. Sandy: 45.8' to 46.5'.	RQD 84%	BOX 1 OF 1		
-46.0'	46						

CONTINUED ON SHEET \*2

Lab Classification				
No.	Class	LL	PI	Moist.
3	SC-SM	18	4	16.6%
5	SC	31	17	21.3%

Specific Gravity:  
No. 3 = 2.72

NOTE: SOILS VISUALLY FIELD CLASSIFIED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

BLOWS PER FOOT:  
NUMBER REQUIRED TO DRIVE 1 1/2" I. D. SPLITSPOON W/140 LB. HAMMER FALLING 30".

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE 0.0' MLW		Hole No. 199				
PROJECT BRUNSWICK HARBOR DEEPENING PED			INSTALLATION BRUNSWICK, GA		SHEET 2 OF 2 SHEETS			
ELEVATION (FT) a	DEPTH (FT) b	SYMBOLS c	CLASSIFICATION OF MATERIALS (Description) d	PERCENT MOISTURE CONTENT e	JAR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g		
						BLOWS/FT. h		
	46	[Brick pattern symbol]	LIMESTONE-olive gray, sandy, moderately to highly weathered, moderately to highly porous, pitted and vuggy with small to large vugs.			Pull-1, continued.		
	47		Plastic: 45.8' to 46.2'. Moderately hard: 46.2' to 46.5'. Low angle open joints: 46.2', 47.3', 48.2', 49.3', 49.6', 50.2', 50.4', 50.6'. Soft: 46.5' to 47.4'. Moderately vuggy: 46.5' to 47.4'. Highly weathered, porous, pitted and vuggy: 47.4' to 51.0'. Near vertical break: 49.3' to 51.0'.	REC 100%	BOX 1 OF 1	Pull-2 From 46.5' To 51.0', Run 4.5', Rec 4.5', Hyd. press.: "0" psi, Water return: 100%, Taped: 50.7', Drilling time: 13 min., RQD=1.8'/4.5'.		
	48			RQD 40%				
	49							
	50							
-51.0'	51							
	52		BOTTOM OF BORING: 51.0'					
	53							
	54							
	55							




NOTE: SOILS VISUALLY FIELD CLASSIFIED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

BLOWS PER FOOT:  
NUMBER REQUIRED TO DRIVE 1 3/8" I. D. SPLITSPOON W/140 LB. HAMMER FALLING 30".

<b>DRILLING LOG</b>		DIVISION Sout. Atlantic	INSTALLATION Savannah Dist.	SHEET 1 OF 1 SHEETS
1. PROJECT Brunswick Harbor		10. SIZE AND TYPE OF BIT 1 1/2" splitspoon, 2 7/8 x 3 7/8		
2. LOCATION (Coordinates or Station) X - 863847.34 Y - 408980.64		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) M.L.W.		
3. DRILLING AGENCY Savannah Dist.		12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314		
4. HOLE NO. (As shown on drawing title and file number) 16		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	DISTURBED 3	UNDISTURBED 0
5. NAME OF DRILLER King		14. TOTAL NUMBER CORE BOXES 1		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER	16. DATE HOLE	
7. THICKNESS OF OVERBURDEN		17. ELEVATION TOP OF HOLE 0.0'	STARTED 29 Mar.	COMPLETED 29 Mar. 1966
8. DEPTH DRILLED INTO ROCK		18. TOTAL CORE RECOVERY FOR BORING 62 %		
9. TOTAL DEPTH OF HOLE 47.5'		19. SIGNATURE OF INSPECTOR Dale Gobeld		

ELEVATION 0.0' a	DEPTH 0' b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Water			Blows per Foot: Number required to drive 1 1/2" ID splitspoon w/140 Lb hammer falling 30".
- 31.2'			SM sand, fine to medium grain		1	
- 32.4'			CL sandy clay, slightly plast.		2	86
- 32.8'			Limestone, fossiliferous,			100/.1' 32.4'
- 33.2'			Marl. interbedded limestone			Pull 1
- 33.8'				24	1	32.4' - 36.6'
			SM sandy silt, with some clay and gravel.			Run 4.2'
- 36.6'			Limestone, fossiliferous, sandy, grey.			Rec 1.0', CL 3.2'
				16	1	100/.1' 36.6'
						Pull 2
- 42.8'			Marl. calcareous, fossiliferous, sandy silt, grey.			36.6' - 42.8'
				92	1	Run 6.2'
						Rec 5.2'
						CL 1.0'
- 47.5'			Bottom of Hole 47.5			65
						Pull 3
						42.8' - 47.5'
						Run 4.7'
						Rec 4.4'
						CL 0.3'
						Note: Soils field classified in accordance with Unified Soil Classification System.
						Depth: Pressure:
						32.4'-36.6' 0 - 50 psi
						36.6'-42.8' 0 - 100 "
						42.8'-47.5' 0 "

<b>DRILLING LOG</b>		DIVISION South Atlantic	INSTALLATION Brunswick Har	SHEET 1 OF 2 SHEETS	
1. PROJECT Lower Turtle River			10. SIZE AND TYPE OF BIT 1 3/8" ID Splitspoon &		
2. LOCATION (Coordinates or Station) X - 864062.34 Y - 408798.64			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW 4X5 1/2" Carballoy		
3. DRILLING AGENCY Savannah District			12. MANUFACTURER'S DESIGNATION OF DRILL CME-550		
4. HOLE NO. (As shown on drawing title and file number) 85		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED 4	UNDISTURBED 0
5. NAME OF DRILLER A. Yates			14. TOTAL NUMBER CORE BOXES 1		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. ELEVATION GROUND WATER		
7. THICKNESS OF OVERBURDEN 37.0'			16. DATE HOLE		STARTED 12 Sep 85 COMPLETED 12 Sep 85
8. DEPTH DRILLED INTO ROCK 3.0'			17. ELEVATION TOP OF HOLE 0.0		
9. TOTAL DEPTH OF HOLE 40.0'			18. TOTAL CORE RECOVERY FOR BORING 50% %		
			19. SIGNATURE OF INSPECTOR J.E. BOLEN (Geologist)		

ELEVATION 0.0 <sub>a</sub>	DEPTH 0 <sub>b</sub>	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Sea Water 0.0-31.0'			NOTES: (1) Set 6" diameter steel casing to 32.6' by pushing (2) Scale change at 30.0'. (3) Scale change at 35.0'. (4) All material from 31.0' to 40.0' are reactive to dilute HCL
	10					
	20					
	30		Bottom of harbor 31.0'			BLOWS
-31.0			SC Gray-black clayey coarse-fine sand-with some organic matter and shells.		JAR 1	10
-34.0			Gray		2	44
	35		ML Gray clayey silt with 15% fine sand.		3	100/0.5'
-35.5			MH Gray fat clayey sand.			
	36					
	37		Continued on sheet #2		4	100/0.9'
-37.0						

NOTE: Soils field classified in accordance with the Unified Soil Classification Systems.

**BLOWS PER FOOT:**  
Number required to drive 1 3/8" ID splitspoon w/140 lb. hammer falling 30"



DRILLING LOG		DIVISION SOUTH ATLANTIC	INSTALLATION BRUNSWICK, GA	SHEET 1 OF 2 SHEETS
1. PROJECT BRUNSWICK HARBOR DEEPENING PED			10. SIZE AND TYPE OF BIT 1 3/8" I.D. SPLITSPOON, 9/16" FISHTAIL, 4-9/16" DIAMOND BIT	
2. LOCATION (Coordinates or Station) X-864370.49, Y-408542.85			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW	
3. DRILLING AGENCY SAVANNAH DISTRICT			12. MANUFACTURER'S DESIGNATION OF DRILL FAILING 314	
4. HOLE NO. (As shown on drawing title and file number) 197		13. TOTAL NO. OF SOIL SAMPLES TAKEN		DISTURBED 4 UNDISTURBED 0
5. NAME OF DRILLER P. ROUNTREE			14. TOTAL NUMBER CORE BOXES 2	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. GROUND WATER ELEVATION N/A	
7. THICKNESS OF OVERBURDEN 34.6' (WATER 28.9')			16. DATE HOLE STARTED 23 MAR 99 COMPLETED 23 MAR 99	
8. DEPTH DRILLED INTO ROCK 16.5'			17. ELEVATION TOP OF HOLE 0.0' MLW	
9. TOTAL DEPTH OF HOLE 51.1'			18. TOTAL CORE RECOVERY FOR BORING 100 %	
			19. SIGNATURE OF INSPECTOR J. ARTHUR, P. G.	




ELEVATION (FT)	DEPTH (FT)	SYMBOLS	CLASSIFICATION OF MATERIALS (Description)	PERCENT MOISTURE CONTENT	JAR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	BLOWS/FT.	
0.0	0					Scale changes at 25.0' and 35.0'. Used 6" diameter steel casing and Floridin drilling mud.		
	25		Water					
			BOTTOM OF HARBOR: 28.9'					
-28.9'			(SC) Light gray fine to medium clayey SAND, trace of small shell fragments, calcareous.		1		2	
-30.4'	30		(CL) Light gray lean CLAY, some fine sand, calcareous.		2		32	
-31.9'			(SC) Light gray medium clayey SAND, some fine limestone gravel, calcareous.		3		44	
			TOP OF ROCK: 34.6'					
-34.6'	35		LIMESTONE-gray, fossiliferous, moderately to highly weathered, moderately hard to hard, highly porous, pitted and vuggy with small to large vugs.	REC 100%		BOX 1 OF 2 Pull-1 From 34.6' To 38.6', Run 4.0', Rec 4.0', Hyd. press.: "0" psi, Water return: 70%, Taped: 38.3', Drilling time: 10 min., RQD=1.4'/4.0'.		
			Low angle open joints: 34.6', 35.1', 35.3', 35.5', 35.9', 36.4'. Fragmented: 36.7' to 37.0'.	RQD 35%				
	37		Sandy, fine grained, highly weathered, highly porous: 36.7' to 38.6'. Soft, friable: 37.0' to 38.6'.					
			Soft to moderately hard: 38.6' to 39.0'.	REC 100%				
	39		Moderately weathered, moderately to highly vuggy: 38.6' to 42.5'.			Pull-2 From 38.6' To 42.5', Run 3.9', Rec 3.9', Hyd. press.: "0" psi, Water return: 70%, Drilling time: 13 min., RQD=3.5'/3.9'.		
			Low angle open joints: 38.6', 39.0', 40.5', 42.0', 42.5'.	RQD 90%				
	41		Hard: 39.0' to 42.5'.					
-42.0'			CONTINUED ON SHEET #2					
	43		NOTE: SOILS VISUALLY FIELD CLASSIFIED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.					
	45							BLOWS PER FOOT: NUMBER REQUIRED TO DRIVE 1 3/8" I. D. SPLITSPOON W/140 LB. HAMMER FALLING 30".

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE 0.0' MLW		Hole No. 197																	
PROJECT BRUNSWICK HARBOR DEEPENING PED			INSTALLATION BRUNSWICK, GA		SHEET 2 OF 2 SHEETS																
ELEVATION (FT)	DEPTH (FT)	SYMBOLS	CLASSIFICATION OF MATERIALS (Description)	PERCENT MOISTURE CONTENT	JAR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) BLOWS/FT.															
	42		LIMESTONE-Gray, fossiliferous, moderately to highly weathered, moderately hard to hard, highly porous, pitted and vuggy with small vugs.	REC 100%		Pull-3 From 42.5' To 47.1', Run 4.6', Rec 4.6', Hyd. press.: 70 psi, Water return: 70%, Taped: 47.1', Drilling time: 20 min., RQD-3.5'/4.6'.															
	44		Light brownish gray, moderately weathered, very hard, moderately pitted, few small vugs: 44.6' to 46.0'.	RQD 76%	BOX 2 OF 2																
	46		Soft, friable, poorly cemented: 46.0' to 47.7'.																		
	46		Light gray, highly weathered: 46.0' to 50.9'.			Pull-4 From 47.1' To 51.1', Run 4.0', Rec 3.8', C. L. 0.2' Hyd. press.: "0" psi, Water return: 70%, Taped: 50.9', RQD-1.8'/3.8'.															
	48		Soft to moderately hard: 47.7' to 50.3'.																		
	48		Low angle open joints: 47.7', 48.5', 48.7', 48.9', 49.2', 50.0', 50.3', 50.7', 50.9'.	REC 95%																	
	48		Friable, poorly cemented: 48.7' to 48.9', 50.3' to 50.7'.																		
	50		Soft, friable: 50.7' to 50.9'.	RQD 47%																	
-50.9'	-51.1'		CORE LOSS-left in hole.																		
			BOTTOM OF BORING: 51.1'																		
	52					<p>Lab Classification</p> <table border="1"> <thead> <tr> <th>No.</th> <th>Class</th> <th>LL</th> <th>PI</th> <th>Moist.</th> </tr> </thead> <tbody> <tr> <td>2</td> <td>CL</td> <td>27</td> <td>13</td> <td>17.3%</td> </tr> <tr> <td>4</td> <td>SC</td> <td>20</td> <td>8</td> <td>17.2%</td> </tr> </tbody> </table> <p>Specific Gravity: No. 2 = 2.72</p>	No.	Class	LL	PI	Moist.	2	CL	27	13	17.3%	4	SC	20	8	17.2%
No.	Class	LL	PI	Moist.																	
2	CL	27	13	17.3%																	
4	SC	20	8	17.2%																	
	54																				
	56																				
	58																				
	60																				
			NOTE: SOILS VISUALLY FIELD CLASSIFIED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.			BLOWS PER FOOT: NUMBER REQUIRED TO DRIVE 1 3/8" I. D. SPLITSPOON W/140 LB. HAMMER FALLING 30".															

<b>DRILLING LOG</b>		DIVISION South Atlantic	INSTALLATION Savannah Dist.	SHEET 1 OF 1 SHEETS
1. PROJECT Brunswick Harbor		10. SIZE AND TYPE OF BIT 1 1/2" splitspoon, 2 3/4 x 3 7/8		
2. LOCATION (Coordinates or Station) X - 864862.36 Y - 408558.64		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) M.L.W.		
3. DRILLING AGENCY Savannah Dist.		12. MANUFACTURER'S DESIGNATION OF DRILL Failing 314		
4. HOLE NO. (As shown on drawing title and file number) 17		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN		DISTURBED 2 UNDISTURBED 0
5. NAME OF DRILLER King		14. TOTAL NUMBER CORE BOXES 2		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER		
7. THICKNESS OF OVERBURDEN		16. DATE HOLE		STARTED 30 Mar. COMPLETED 30 Mar. 1966
8. DEPTH DRILLED INTO ROCK		17. ELEVATION TOP OF HOLE 0.0'		
9. TOTAL DEPTH OF HOLE 47.2'		18. TOTAL CORE RECOVERY FOR BORING 84 %		
		19. SIGNATURE OF INSPECTOR Dale Gobel		

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'	0'	c	d	e	f	g
			Water			Blows per Foot: Number required to drive 1 1/2" ID splitspoon w/140 lb hammer falling 30".
	30		SM sand, silty, fine to medium grained, tan .		1	
- 32.5'			CL clay, tan .			85 Pull 1
- 33.4'			Limestone, fossiliferous .	84		31.5'-35.9' Run 4.4' Rec 3.7' CL 0.7'
	35		Marl silt, clayey, with limestone fragments .		1	
				150		24 Pull 2 35.9'-36.5' Run 0.6', Rec 0.9', Cl 0.3'
- 40.1'	40		MH silt, fossiliferous, sandy, silt.	91		Full 3, 36.5'-40.1' Run 3.6', Rec 3.5', Cl 0.1'
- 42.2'			Limestone	85	2	33 Pull 4, 40.1'-42.7' Run 2.6', Rec 2.2' CL 0.4'
- 42.4'			MH silt, fossiliferous, sandy, grey .		2	
	45			67		Full 5 42.7'-47.2' Run 4.5' Rec 3.0' Cl 1.5'
- 47.2			Bottom of Hole 47.2'			
						Note: Soils field classified in accordance with Unified Soil Classification System .

<b>DRILLING LOG</b>		DIVISION South Atlantic	INSTALLATION Brunswick Harbor	SHEET 1 OF 1 SHEETS
1. PROJECT Lower Turtle River		10. SIZE AND TYPE OF BIT, 1 3/8" ID Splitspoon		
2. LOCATION (Coordinates or Station) X - 865283.37 Y - 408308.64		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW		
3. DRILLING AGENCY Savannah District		12. MANUFACTURER'S DESIGNATION OF DRILL CME-550		
4. HOLE NO. (As shown on drawing title and file number) 81	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED 7	UNDISTURBED 0
5. NAME OF DRILLER R.A. Yates		14. TOTAL NUMBER CORE BOXES 0		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER		
7. THICKNESS OF OVERBURDEN 41.0'		16. DATE HOLE STARTED 11 Sep 85 COMPLETED 11 Sep 85		
8. DEPTH DRILLED INTO ROCK 0.0'		17. ELEVATION TOP OF HOLE 0.0		
9. TOTAL DEPTH OF HOLE 41.0'		18. TOTAL CORE RECOVERY FOR BORING N/A %		
		19. SIGNATURE OF INSPECTOR J.E. Bolen (Geologist)		

ELEVATION 0.0 a	DEPTH 0 b	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g	BLOWS
			Sea Water 0.0'-30.6'			NOTES: (1) Set 6" diameter casing to 31.0'. (2) Drove sampler to 32.1'-cleaned out boring to 32.0'. (3) Change of scale at 30.0'.	
-30.6	30		Top of harbor 30.6'				
			SC Gray calcareous clayey fine sand. (Very high clay content). Calcareous clayey coarse fine sand-very high clay content.		JARI 2 3 4		62 37 58 90
-38.0			With mod. hard small rock fragments. 38.0'		5		38
			ML green calcareous silt-with 30% fine sand.		6 7		17 83
-41.0	40		Bottom of boring 41.0'				

NOTE: Soils field classified in accordance with the Unified Soil Classification Systems.

BLOWS PER FOOT:  
Number required to drive 1 3/8" ID Splitspoon w/140 lb. hammer falling 50".

<b>DRILLING LOG</b>		<b>DIVISION</b> SOUTH ATLANTIC	<b>INSTALLATION</b> BRUNSWICK, GA		<b>SHEET 1</b> OF 2 SHEETS
1. PROJECT BRUNSWICK HARBOR DEEPENING PED			10. SIZE AND TYPE OF BIT 1 1/8" I.D. SPLITSPOON, 5/8" PHYSICAL, 4x5/2" DIAMOND BIT		
2. LOCATION (Coordinates or Station) X-865639.47, Y-408463.45			11. DATUM FOR ELEVATION SHOWN (TBM or MSU) MLW		
3. DRILLING AGENCY SAVANNAH DISTRICT			12. MANUFACTURER'S DESIGNATION OF DRILL FAILING 314		
4. HOLE NO. (As shown on drawing title and file number) 196			13. TOTAL NO. OF SOIL SAMPLES TAKEN		DISTURBED 8 UNDISTURBED 0
5. NAME OF DRILLER P. ROUNTREE			14. TOTAL NUMBER CORE BOXES 2		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. GROUND WATER ELEVATION N/A		
7. THICKNESS OF OVERBURDEN 37.2' (WATER 26.5')			16. DATE HOLE STARTED 22 MAR 99		COMPLETED 22 MAR 99
8. DEPTH DRILLED INTO ROCK 13.0'			17. ELEVATION TOP OF HOLE 0.0' MLW		
9. TOTAL DEPTH OF HOLE 50.2'			18. TOTAL CORE RECOVERY FOR BORING 100 %		
			19. SIGNATURE OF INSPECTOR J. ARTHUR, P. G.		

ELEVATION (FT)	DEPTH (FT)	SYMBOLS	CLASSIFICATION OF MATERIALS (Description)	PERCENT MOISTURE CONTENT	JAR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	BLOWS/FT.
0.0			Water BOTTOM OF HARBOR: 26.5'			Scale changes at 25.0' and 35.0'. Used 6" diameter steel casing and Floridin drilling mud.	
-26.5'	25		(CH) Dark gray fat CLAY, little medium to coarse sand and fine to coarse limestone gravel, calcareous. No sand or gravel.		1		13
-29.9'	30		(SM) Light gray fine to medium silty SAND, some clay and fine to coarse limestone gravel, calcareous.		2		0
-33.4'			Medium to coarse grained, trace of clay.		3		23
-33.4'			Fine to medium grained, trace of small shell fragments, no clay or gravel.		4		24
-34.4'			(ML) Light gray lean SILT, some fine sand, calcareous.		5		35
-34.4'	35		(SC) Mottled gray and light gray fine to medium clayey SAND, some silt, trace of fine limestone gravel, calcareous.		6		
-35.9'			(CL) Olive gray lean CLAY, some silt, fine sand and fine limestone gravel, calcareous.		7		34
-37.2'	37		TOP OF ROCK: 37.2'		8		100/0.8'
	39		LIMESTONE-gray, fossiliferous, some fine sand, highly weathered, pitted and vuggy with small to large vugs, moderately hard. Low angle open joints: 32.6', 38.8', 39.2', 41.1', 41.5', 43.0'. Fragmented: 38.8' to 39.2', 40.1' to 41.1'. Olive gray: 38.8' to 45.2'.	REC 100% ROD 71%	BOX 1 OF 2	Pull-1 From 37.2' To 40.7', Run 3.5', Rec 3.5', Hyd. press.: 70 psi, Water return: 80%, Taped: 40.7', Drilling time: 21 min., RQD=2.5'/3.5'.	
	41			REC 100% ROD 78%		Pull-2 From 40.7' To 45.2', Run 4.5', Rec 4.5', Hyd. press.: "0" psi, Water return: 80%, Taped: 45.1', Drilling time: 10 min., RQD=3.5'/4.5'.	
-43.0'	43						

CONTINUED ON SHEET \*2

NOTE: SOILS VISUALLY FIELD CLASSIFIED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

BLOWS PER FOOT:  
NUMBER REQUIRED TO DRIVE 1 1/8" I. D. SPLITSPOON W/140 LB. HAMMER FALLING 30".

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE 0.0' MLW		Hole No. 196																																
PROJECT BRUNSWICK HARBOR DEEPENING PED			INSTALLATION BRUNSWICK, GA		SHEET 2 OF 2 SHEETS																															
ELEVATION (FT) a	DEPTH (FT) b	SYMBOLS c	CLASSIFICATION OF MATERIALS (Description) d	PERCENT MOISTURE CONTENT e	JAR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g BLOWS/FT. h																														
	43		LIMESTONE-Gray, fossiliferous, some fine sand, highly weathered, pitted and vuggy with small to large vugs, moderately hard.		BOX 1 CONT.	Pull-2, continued.																														
	45		Low angle open joints: 44.0', 45.2', 45.8', 46.0', 47.0', 47.7'. Olive gray: 45.2' to 46.0'. Light gray: 46.0' to 47.7'. Soft, clayey: 47.0' to 47.7'.	REC 100%		Pull-3 From 45.2' To 50.2', Run 5.0', Rec 5.0', Hyd. press.: "0" psi, Water return: 80%, Taped: 50.1', Drilling time: 27 min. RQD-3.7'/5.0'.																														
	47		Grayish brown, slightly to moderately weathered, very hard: 47.7' to 50.2'.	RQD 74%	BOX 2 OF 2																															
	49																																			
	-50.2'		BOTTOM OF BORING: 50.2'																																	
	51					<table border="1"> <thead> <tr> <th colspan="6">Lab Classification</th> </tr> <tr> <th>No.</th> <th>Class</th> <th>LL</th> <th>PI</th> <th colspan="2">Moist.</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>CL</td> <td>35</td> <td>17</td> <td colspan="2">19.2%</td> </tr> <tr> <td>4</td> <td>SM</td> <td>NL</td> <td>NP</td> <td colspan="2">28.5%</td> </tr> <tr> <td>7</td> <td>SC</td> <td>30</td> <td>15</td> <td colspan="2">23.2%</td> </tr> </tbody> </table> <p>Specific Gravity: No. 7 = 2.72</p>	Lab Classification						No.	Class	LL	PI	Moist.		1	CL	35	17	19.2%		4	SM	NL	NP	28.5%		7	SC	30	15	23.2%	
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	59																																			
	61																																			

NOTE: SOILS VISUALLY FIELD CLASSIFIED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.

BLOWS PER FOOT: NUMBER REQUIRED TO DRIVE 1 3/8" I. D. SPLITSPOON W/140 LB. HAMMER FALLING 30".

<b>DRILLING LOG</b>		DIVISION <b>Sout. Atlantic</b>	INSTALLATION <b>Savannah Dist.</b>	SHEET <b>1</b> OF <b>1</b> SHEETS
1. PROJECT <b>Brunswick Harbor</b>		10. SIZE AND TYPE OF BIT <b>1 1/2" splitspoon, 2 3/4 x 3 7/8</b>		
2. LOCATION (Coordinates or Station) <b>X - 865786.37 Y - 408174.65</b>		11. DATUM FOR ELEVATION SHOWN ( <i>FROM or TO</i> ) <b>M.L.W.</b>		
3. DRILLING AGENCY <b>Savannah Dist.</b>		12. MANUFACTURER'S DESIGNATION OF DRILL <b>Falling 314</b>		
4. HOLE NO. (As shown on drawing title and file number) <b>18</b>		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	DISTURBED <b>1</b>	UNDISTURBED <b>0</b>
5. NAME OF DRILLER <b>King</b>		14. TOTAL NUMBER CORE BOXES <b>1</b>		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER		
7. THICKNESS OF OVERBURDEN		16. DATE HOLE STARTED _____ COMPLETED _____		
8. DEPTH DRILLED INTO ROCK		17. ELEVATION TOP OF HOLE <b>0.0'</b>		
9. TOTAL DEPTH OF HOLE <b>42.4'</b>		18. TOTAL CORE RECOVERY FOR BORING <b>74 %</b>		
		19. SIGNATURE OF INSPECTOR <b>Dale Gobel</b>		

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'	0'	c	d	e	f	g
			Water			Blows per Foot: Number required to drive 1 1/2" ID splitspoon w/140 lb hammer falling 30".
- 31.6'	30					
- 32.8'			SC sand, clayey, with limestone fragments.			100% .7'
- 35.4'	35		Limestone	87	1	Full 1 32.8' - 37.4' Run 4.6' Rec 4.0' Cl 0.6'
- 35.8'			Marl, sandy clay with limestone fragments.			
- 38.0'			SM silty sand, with limestone fragments.	62		Full 2 37.4' - 42.4' Run 5.0' Rec 3.1' Cl 1.9'
- 42.4'	40		Bottom of Hole 42.4'		1	
	45					Note: Soils field classified in accordance with Unified Soil Classification System. Depth:                      Pressure: 32.8' - 35.8'              75 psi 35.8' - 36.6'              150 psi 36.6' - 37.4'              75 psi

<b>DRILLING LOG</b>		DIVISION South Atlantic	INSTALLATION Brunswick Harbor	SHEET 1 OF 1 SHEETS
1. PROJECT Lower Turtle River			10. SIZE AND TYPE OF BIT 1 3/8" ID Splitspoon	
2. LOCATION (Coordinates of Station) X - 866084.38 Y - 408008.65			11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW	
3. DRILLING AGENCY Savannah District			12. MANUFACTURER'S DESIGNATION OF DRILL CME-550	
4. HOLE NO. (As shown on drawing title and file number) 82		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN		DISTURBED 6
5. NAME OF DRILLER P. Rountree		14. TOTAL NUMBER CORE BOXES 0		UNDISTURBED 0
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. ELEVATION GROUND WATER	
7. THICKNESS OF OVERBURDEN 41.0'			16. DATE HOLE STARTED 4 Sep 85 COMPLETED 4 Sep 85	
8. DEPTH DRILLED INTO ROCK 0.0'			17. ELEVATION TOP OF HOLE 0.0'	
9. TOTAL DEPTH OF HOLE 41.0'			18. TOTAL CORE RECOVERY FOR BORING %	
19. SIGNATURE OF INSPECTOR J.E. Bolen, (Geologist)				

ELEVATION 0.0 <sub>a</sub>	DEPTH 0 <sub>b</sub>	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Sea Water 0.0-31.8'			NOTES: (1) Set 6" diameter steel casing to 31.9' (2) Began splitspoon sampling at 31.8' (3) Drove sampler to 33.3' and advanced boring to 33.5'. (4) Sampled continuously from 33.5' to 41.0'. (5) Scale change at 30.0'.  w/140 lb. BLWS
-31.8			SC Gray-green calcareous clayey coarse-fine sand. With some fine and coarse gravel.		JAR 1	36
			Medium-fine grained high clay content, with a trace of fine gravel. Calcareous-shelly		2	26
					3	60
					4	77
					5	165
-41.0			NOTE: in accord with bottom of boring 41.0'		166	42

NOTE: Soils field classified in accordance with the Unified Soil Classification System.

**BLOWS PER FOOT:**  
Number required to drive 1 3/8" ID splitspoon w/140 lb. hammer falling 30".



<b>DRILLING LOG</b>		DIVISION <b>Southeast Atlantic</b>	INSTALLATION <b>Savannah Dist.</b>	SHEET 1 OF 1 SHEETS
1. PROJECT <b>Brunswick Harbor</b>			10. SIZE AND TYPE OF BIT <b>1 1/2" splitspoon, 2 3/4 x 3 7/8</b>	
2. LOCATION (Canal-water or Station) X - 866151.38 Y - 408022.65			11. DATUM FOR ELEVATION SHOWN (FROM or TO) <b>M.L.W.</b>	
3. DRILLING AGENCY <b>Savannah Dist.</b>			12. MANUFACTURER'S DESIGNATION OF DRILL <b>Failing 314</b>	
4. HOLE NO. (As shown on drawing title and file number) <b>19</b>			13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN	DISTURBED <b>2</b>
5. NAME OF DRILLER <b>King</b>			14. TOTAL NUMBER CORE BOXES <b>1</b>	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. ELEVATION GROUND WATER	
7. THICKNESS OF OVERBURDEN			16. DATE HOLE STARTED _____ COMPLETED _____	
8. DEPTH DRILLED INTO ROCK			17. ELEVATION TOP OF HOLE <b>0.0'</b>	
9. TOTAL DEPTH OF HOLE <b>48.2'</b>			18. TOTAL CORE RECOVERY FOR BORING <b>75%</b>	
			19. SIGNATURE OF INSPECTOR <b>Dale Gabel</b>	

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'	0'	c	d	e	f	g
			Water			Blows per Foot: Number required to drive 1 1/2" ID splitspoon w/140 LB hammer falling 30".
- 30.6'	30		SP sand, medium grained, with shells.		1	
- 30.8'			SM sand, fine grained, silty			100/.8'
- 33.4'	35		Limestone, silty, grey, badly broken.	70	1	pull 1 32.0' - 39.9' Run 7.9' Rec 5.6' Cl 2.3'
- 39.0'	40		SM silty sand, with limestone fragments.			39.9'
- 40.9'			CL silty clay, sandy with limestone fragments.			65
- 42.6'			Fossiliferous Limestone gravelly, grey.	96		pull 2 41.4' - 48.2' Run 6.8' Rec 6.6' Cl 0.2'
- 45.6'	45		GM gravel, sandy with limestone fragments.			
- 48.2'			Bottom of Hole 48.2'			48.2'
						Note: Interval 39.9' - 41.4' penetrated 1 1/2" splitspoon. Note: Soils field classified in accordance with Unified Soil Classification System.


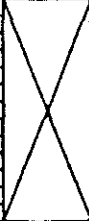
DRILLING LOG		DIVISION SOUTH ATLANTIC	INSTALLATION BRUNSWICK, GA	SHEET 1 OF 2 SHEETS
1. PROJECT BRUNSWICK HARBOR DEEPENING PED			10. SIZE AND TYPE OF BIT 1 3/8" I.D. SPLITSPOON, 5/2" FEHITAL, 4.2 1/2" DIAMOND BIT	
2. LOCATION (Coordinates or Station) X-866474.60, Y-407685.59			11. DATUM FOR ELEVATION SHOWN (TBM or MSJ) MLW	
3. DRILLING AGENCY SAVANNAH DISTRICT			12. MANUFACTURER'S DESIGNATION OF DRILL FALLING 314	
4. HOLE NO. (As shown on drawing title and file number) 195			13. TOTAL NO. OF SOIL SAMPLES TAKEN DISTURBED 10 UNDISTURBED 0	
5. NAME OF DRILLER P. ROUNTREE			14. TOTAL NUMBER CORE BOXES 1	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.			15. GROUND WATER ELEVATION N/A	
7. THICKNESS OF OVERBURDEN 44.9' (WATER 26.6')			16. DATE HOLE STARTED 21 MAR 99 COMPLETED 21 MAR 99	
8. DEPTH DRILLED INTO ROCK 6.5'			17. ELEVATION TOP OF HOLE 0.0' MLW	
9. TOTAL DEPTH OF HOLE 51.4'			18. TOTAL CORE RECOVERY FOR BORING 85 %	
			19. SIGNATURE OF INSPECTOR J. ARTHUR, P. G.	

ELEVATION (FT)	DEPTH (FT)	SYMBOLS	CLASSIFICATION OF MATERIALS (Description)	PERCENT MOISTURE CONTENT	JAR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant)	BLOWS/FT.
0.0	0		Water			Scale changes at 25.0' and 45.0'. Used 6" diameter steel casing and Floridin drilling mud.	
-26.6'	25		BOTTOM OF HARBOR: 26.6'				
-26.6'			(GC) Light olive gray fine to coarse clayey limestone GRAVEL, some fine to medium sand and small shell fragments, calcareous.		1	Weight of rods drove splitspoon from 26.6' to 28.7', cont'd drive to 29.6'.	0
-29.6'			(SC) Light olive gray fine to medium clayey SAND, some small shell fragments, calcareous.		2	Weight of rods drove splitspoon from 31.1' to 34.8'.	7
-31.1'	30		(SP) Gray fine to medium poorly graded SAND, trace of silt, calcareous.		3		13
-34.8'			(SC) Light olive gray fine clayey SAND, some fine to coarse limestone gravel, trace of small shell fragments.		4		0
			Some small shell fragments and limestone gravel.		5		13
			Medium to coarse grained.		6		31
-40.8'	35		(GC) Light olive gray fine to coarse clayey limestone GRAVEL, some medium to coarse sand, calcareous.		7		72
-42.3'			(SC) Mottled light olive gray and light gray fine to medium clayey SAND, trace of fine to coarse limestone gravel, calcareous.		8		80
-44.9'	40		TOP OF ROCK: 44.9'		9		96
			LIMESTONE-Light gray, sandy with fine to medium sand, moderately weathered, hard, moderately porous and pitted, few small vugs.	REC 100%	10	Pull-1 From 44.9' To 49.4', Run 4.5', Rec 4.5', Hyd. press.: 70 psi to 48.0' then "0" psi to 49.4'. Water return: 80%, Taped: 49.4', Drilling time: 39 min., RQD=3.8'/4.5'.	22
	45			RQD 84%	BOX 1 OF 1		100/0.6'
-47.0'	46						
	47						

CONTINUED ON SHEET #2

NOTE: SOILS VISUALLY FIELD CLASSIFIED IN ACCORDANCE WITH THE UNIFIED SOIL CLASSIFICATION SYSTEM.







BLOWS PER FOOT: NUMBER REQUIRED TO DRIVE 1 3/8" I. D. SPLITSPOON W/140 LB. HAMMER FALLING 30".

DRILLING LOG (Cont Sheet)		ELEVATION TOP OF HOLE 0.0' MLW		Hole No. 195		
PROJECT BRUNSWICK HARBOR DEEPENING PED			INSTALLATION BRUNSWICK, GA		SHEET 2 OF 2 SHEETS	
ELEVATION (FT)	DEPTH (FT)	SYMBOLS	CLASSIFICATION OF MATERIALS (Description)	PERCENT MOISTURE CONTENT	JAR SAMPLE NO.	REMARKS (Drilling time, water loss, depth of weathering, etc. if significant)
	47		LIMESTONE-light gray, sandy with fine to medium sand, moderately weathered, hard, moderately porous and pitted, few small vugs.  Highly weathered, porous, pitted and vuggy with small to large vugs, some fine rounded gravel: 47.7' to 49.4'.  Soft, plastic: 47.7' to 47.9', 48.7' to 49.4'.  Soft to moderately hard: 47.9' to 48.7'.			Pull-1, continued.
	48				BOX 1 OF 1	
	49					
-49.4'			(SC) Olive gray fine to medium clayey SAND, dense, very stiff to hard, calcareous.	REC 35%		Pull-2 From 49.4' To 51.4', Run 2.0', Rec 0.7', C. L. 1.3', Hyd. press.: "0" psi to 50.4', then 65 psi to 51.4'. Water return: 80%, Taped: 50.1', Drilling time: 16 min. RQD=0%.
-50.1'	50		CORE LOSS.	RQD 0%		
	51					
			BOTTOM OF BORING: 51.4'			
	52					
	53					
	54					
	55					
	56					

NOTE: SOILS VISUALLY  
FIELD CLASSIFIED IN  
ACCORDANCE WITH THE  
UNIFIED SOIL CLASS-  
IFICATION SYSTEM.

BLOWS PER FOOT:  
NUMBER REQUIRED TO  
DRIVE 1 3/8" I. D. SPLITSPOON  
W/140 LB. HAMMER FALLING  
30".

<b>DRILLING LOG</b>		DIVISION South Atlantic	INSTALLATION Brunswick Har. Jr	SHEET 1 OF 1 SHEETS
1. PROJECT Lower Turtle River		10. SIZE AND TYPE OF BIT 1 3/8" ID Splitspoon		
2. LOCATION (Coordinates or Station) X - 866581.39 Y - 407753.65		11. DATUM FOR ELEVATION SHOWN (TBM or MSL) MLW		
3. DRILLING AGENCY Savannah District		12. MANUFACTURER'S DESIGNATION OF DRILL CME-550		
4. HOLE NO. (As shown on drawing title and file number) 83		13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN	DISTURBED 6	UNDISTURBED 0
5. NAME OF DRILLER P. Rountree		14. TOTAL NUMBER CORE BOXES 0		
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.		15. ELEVATION GROUND WATER		
7. THICKNESS OF OVERBURDEN 40.0'		16. DATE HOLE	STARTED 8 Sep 85	COMPLETED 8 Sep 85
8. DEPTH DRILLED INTO ROCK 0.0'		17. ELEVATION TOP OF HOLE 0.0		
9. TOTAL DEPTH OF HOLE 40.0'		18. TOTAL CORE RECOVERY FOR BORING N/A x		
		19. SIGNATURE OF INSPECTOR J.E. Bolen (geologist)		

ELEVATION 0.0 <sub>a</sub>	DEPTH 0 <sub>b</sub>	LEGEND c	CLASSIFICATION OF MATERIALS (Description) d	% CORE RECOVERY e	BOX OR SAMPLE NO. f	REMARKS (Drilling time, water loss, depth of weathering, etc., if significant) g
			Sea Water 0.0-30.8			NOTES: (1) Set 6" diameter steel casing, with saw-tooth bit, to 30.8', rotated it to 31.0'.  (2) Drove sampler to 31.5'. Cleaned out boring to 32.5' with fishtail and resumed splitspoon sampling.  (3) Change of scale at 30.0'
-30.8	30		Bottom of Harbor 30.8'			BLOWS
-32.5			ML Light gray calcareous clayey silt with 20% fine sand.		JAR 1	100/0.7'
			SC Gray calcareous clayey coarse-fine sand-very high clay content.		2	60
	35		Gray-green calcareous clayey fine sand-with some silt		3	40
					4	21
					5	38
-40.0	40		Bottom of boring 40.0'		6	70

**BLOWS PER FOOT:**

Number required to drive 1 3/8" ID splitspoon w/140 lb. hammer falling 30".

NOTE: Soils field classified in accordance with the Unified Soil Classification Systems.

DRILLING LOG		DIVISION (South Atlantic)		INSTALLATION (Savannah Dist.)		SHEET 1 OF 1 SHEETS	
1. PROJECT <b>Brunswick Harbor</b>				10. SIZE AND TYPE OF BIT <b>1 1/2" I.D. splitspoon 2 3/4 x 3 7/8</b>		11. DATUM FOR ELEVATION SHOWN (FROM or TO) <b>M.L.W.</b>	
2. LOCATION (Coordinates or Station) X - 867112.40 Y - 407574.66				12. MANUFACTURER'S DESIGNATION OF DRILL <b>Falling 314</b>		13. TOTAL NO. OF OVERBURDEN SAMPLES TAKEN DISTURBED: <b>2</b> UNDISTURBED: <b>0</b>	
3. DRILLING AGENCY <b>Savannah Dist.</b>				14. TOTAL NUMBER CORE BOXES <b>1</b>		15. ELEVATION GROUND WATER	
4. HOLE NO. (As shown on drawing title and file number) <b>20</b>				16. DATE HOLE STARTED: <b>11 April</b> COMPLETED: <b>11 April, 1966</b>		17. ELEVATION TOP OF HOLE <b>0.0'</b>	
5. NAME OF DRILLER <b>King</b>				18. TOTAL CORE RECOVERY FOR BORING <b>46 %</b>		19. SIGNATURE OF INSPECTOR <b>J.A. Farland</b>	
6. DIRECTION OF HOLE <input checked="" type="checkbox"/> VERTICAL <input type="checkbox"/> INCLINED _____ DEG. FROM VERT.				7. THICKNESS OF OVERBURDEN		8. DEPTH DRILLED INTO ROCK	
9. TOTAL DEPTH OF HOLE <b>45.1'</b>				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'		0'					
-30.4'		30		Water		Blows per Foot: Number required to drive 1 1/2" ID splitspoon w/140 Lb hammer falling 30".	
-30.8'		30		CH clay, sandy, with rounded feldspar pebbles, calcareous, grey.		60	
		35		SM sand, silty, medium grained shell fragments, grey.		53	
-36.2'		35		Limestone, arenaceous, porous may be broken in hand, may not be easily penetrated with knife blade.		2	
-37.2'		37.2		SM sand, medium grained, silty, slightly plastic grey.		45	
		40		Limestone, arenaceous, porous may be broken in hand, may not be penetrated.		1	
-44.0'		40					
-45.1'		45		Bottom of Hole 45.1'		45.1	
						Note: soils field classified in accordance with Unified Soil Classification System.	