Hole No. WB010

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1 OF 2 SHEETS

1. PROJECT: VIRGINIA STATE SAND INVENTORY
2. LOCATION (Coordinates or Station): S_1 41286.20 ; S_2 27251.25
3. DRILLING AGENCY: Virginia Institute of Marine Science
4. HOLE NO. (As shown on drawing title and file number): WB010 | Willoughby Bank
5. NAME OF DRILLER: Robert A. Gammisch
6. DIRECTION OF HOLE: ☑ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. Water Depth = 45.0 feet
8. Core Penetration = 20.0 feet
9. Core Recovery = 17.0 feet
10. SIZE AND TYPE OF BIT
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Marine, Inc.
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN | DISTURBED | UNDISTURBED
14. 15. Lat. 36°59.69' Long. 76°17.45'
16. DATE HOLE | STARTED 7-23-80 | COMPLETED 11-19-80
17. ELEVATION TOP OF HOLE
18. TOTAL CORE RECOVERY FOR BORING %
19. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH 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
-45.0	0		TOP			
-46.0	1		WB010-01 SM Medium to coarse sand Some silt along with clay laminations			
-47.0	2		WB010-02 CL-SC Clayey laminations Some silt content			
-48.0	3		WB010-03 SC-SM Silty-clay worms mixed with coarse sand Some oyster shells			
-49.0	4		WB010-04 SM-SP Silty coarse to very coarse sand Some gravel			
A -50.0 / A'	5		WB010-05 SP Mostly coarse sand Very little silt			WB010-CP1 (TOP-A)
-51.0	6		WB010-06 SP Mostly coarse sand No silt Very clean			
-52.0	7		WB010-07 SP Mostly coarse sand 1mm Clay and silt worms			
-53.0	8		WB010-08 CH Highly plastic clay Clay worms Dark grey			
-54.0	9					WB010-CP2
B -55.0	10		WB010-09 SP Mostly coarse sand Clay worms present			

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT) PROJECT HOLE NO.

Hole No. WB010

DRILLING LOG	DIVISION	INSTALLATION	SHEET 2 OF 2 SHEETS

1. PROJECT: VIRGINIA STATE SAND INVENTORY	10. SIZE AND TYPE OF BIT
2. LOCATION (Coordinates or Station): S_1 41286.20 ; S_2 27251.25	11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
3. DRILLING AGENCY: Virginia Institute of Marine Science	12. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Marine, Inc.
4. HOLE NO. (As shown on drawing title and file number): WB010 Willoughby Bank	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED / UNDISTURBED
5. NAME OF DRILLER: Robert A. Gammisch	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE: ☑ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
7. Water Depth = 45.0 feet	16. DATE HOLE: STARTED 7-23-80 / COMPLETED 11-19-80
8. Core Penetration = 20.0 feet	17. ELEVATION TOP OF HOLE
9. Core Recovery = 17.0 feet	18. TOTAL CORE RECOVERY FOR BORING %
	19. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH 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
B'						
			WB010-10 SP Coarse sand mixed with gravel Clay worms present			
-56.0	11					
			WB010-11 SP Mostly very coarse sand mixed with small gravel			
-57.0	12					
			WB010-12 CH Highly plastic clay Clay worm sample			
-58.0	13					WB010-CP3 B' - Bottom)
			WB010-13 SP Very coarse sand Small amounts of gravel			
-59.0	14		BOTTOM			
	15					
	16					
	17					
	18					
	19					
	20					

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT) PROJECT HOLE NO.

Hole No. WB011

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1 OF 2 SHEETS

1. PROJECT: VIRGINIA STATE SAND INVENTORY
2. LOCATION (Coordinates or Station): S1 41287.40; S2 27248.45
3. DRILLING AGENCY: Virginia Institute of Marine Science
4. HOLE NO. (As shown on drawing title and file number): WB011 — Willoughby Banks
5. NAME OF DRILLER: Robert A. Gammisch
6. DIRECTION OF HOLE: [✓] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.
7. Water Depth = 23.0 feet
8. Core Penetration = 16.0 feet
9. Core Recovery = 16.0 feet
10. SIZE AND TYPE OF BIT:
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Marine, Inc.
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED: UNDISTURBED:
14. / 15. Lat. 36°59.69' Long. 76°16.62'
16. DATE HOLE: STARTED 17 Jul 1980 COMPLETED 4 Sep 1980
17. ELEVATION TOP OF HOLE:
18. TOTAL CORE RECOVERY FOR BORING:
19. SIGNATURE OF INSPECTOR: R. Nater

ELEVATION a	DEPTH 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
-23.0	0		TOP			
			WB011-01 SM Silty sands-non plastic fines, medium sand (0.5 mm) mixed with silt (olive-green) 5Y3/2, shell fragments (C. virginica)			
-24.0	1					
-25.0	2					
			WB011-02 SM (unified soil classification) Silty medium sand (0.5 mm - 0.75 mm) Silt is olive-dark grey 5Y3/2			
-26.0	3					
-27.0	4					WB011-CP1
-28.0	5		WB011-03 SM Silty medium-fine sand Silt content decreasing			
A'/A						
-29.0	6		WB011-04 SP Fine-medium sand mixed with clay laminae (0.5 mm - 0.25 mm)			
-30.0	7					
-31.0	8					
			WB011-05 SP Medium-coarse sand (0.5 mm - 1.2 mm) Not much clay mixed			
-32.0	9					WB011-CP2
-33.0	10					

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. PROJECT HOLE NO.

Hole No. WB011

DRILLING LOG	DIVISION	INSTALLATION	SHEET 2 OF 2 SHEETS

1. PROJECT: VIRGINIA STATE SAND INVENTORY
2. LOCATION (Coordinates or Station): S1 41287.40; S2 27248.45
3. DRILLING AGENCY: Virginia Institute of Marine Science
4. HOLE NO. (As shown on drawing title and file number): WB011 — Willoughby Banks
5. NAME OF DRILLER: Robert A. Gammisch
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.
7. Water Depth = 23.0 feet
8. Core Penetration = 16.0 feet
9. Core Recovery = 16.0 feet
10. SIZE AND TYPE OF BIT
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Marine, Inc.
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED ____ UNDISTURBED ____
14. TOTAL NUMBER CORE BOXES
15. ELEVATION GROUND WATER
16. DATE HOLE: STARTED 17 Jul 1980; COMPLETED 4 Sep 1980
17. ELEVATION TOP OF HOLE
18. TOTAL CORE RECOVERY FOR BORING %
19. SIGNATURE OF INSPECTOR: C. Natali

ELEVATION a	DEPTH 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
0' / 0			WB011-06 SP Medium-coarse sand, mostly coarse (0.75 mm - 1.0 mm) Very little clay content Small shell fragments			WB011-CP2
-34.0	11		WB011-07 SP Predominantly medium sand (0.5 mm), clean, no shells No clay, very dry 5Y6/1 - white			
-35.0	12					
-36.0	13		WB011-08 SP Mostly medium sands (0.5 mm - 0.75 mm) Clay laminae present No organics, clay lumps also			
-37.0	14					WB011-CP3
			WB011-09 SP Mostly medium-coarse sand Clay laminae			
-38.0 BOTTOM	15		WB011-10 CH Clay sample from laminae Dark grey clay			
	16					
	17					
	18					
	19					
	20					

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. PROJECT HOLE NO.

Hole No. WB066

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1 OF 4 SHEETS

1. PROJECT: VIRGINIA STATE SAND INVENTORY
2. LOCATION (Coordinates or Station): S1 41289.00; S2 27246.40
3. DRILLING AGENCY: Virginia Institute of Marine Science
4. HOLE NO. (As shown on drawing title and file number): WB066 | Willoughby Banks
5. NAME OF DRILLER: Robert A. Gammisch
6. DIRECTION OF HOLE: ☑ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. Water Depth = 16.0 feet
8. Core Penetration = 40.0 feet
9. Core Recovery = 38.0 feet
10. SIZE AND TYPE OF BIT
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Marine, Inc.
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED | UNDISTURBED
14. 15. Lat. 36°59.70' Long. 76°16.10'
16. DATE HOLE: STARTED 23 Sep 1980 | COMPLETED 25 Feb 1981
17. ELEVATION TOP OF HOLE
18. TOTAL CORE RECOVERY FOR BORING %
19. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH 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
-16.0	0		TOP			
-17.0	1		WB066-01 SP Coarse sand (0.8 mm - 1.5 mm) very clean, 2.5Y6/4 - light yellowish brown			
-18.0	2					
-19.0	3					
-20.0	4		WB066-02 SP Coarse sand (1 mm) Very clean, no silt			WB066-CP1
-21.0	5		Clay laminations (CH) mixed with medium sand			
-22.0	6		WB066-03 SP Medium sand (0.5 mm - 0.7 mm) Very clean, no silt			
-23.0	7					
F' F -24.0	8		WB066-04 SM Coarse sand mixed with medium amounts of silt 2.5Y4/0 - dark grey			
-25.0	9		WB066-05 SM Silty coarse sand High amounts of silt 2.5Y4/0 - dark grey			
-26.0	10					

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. PROJECT HOLE NO.

Hole No. WB066

DRILLING LOG	DIVISION	INSTALLATION	SHEET 2 OF 4 SHEETS

1. PROJECT: VIRGINIA STATE SAND INVENTORY
2. LOCATION (Coordinates or Station): S1 41289.00; S2 27246.40
3. DRILLING AGENCY: Virginia Institute of Marine Science
4. HOLE NO. (As shown on drawing title and file number): WB066 | Willoughby Banks
5. NAME OF DRILLER: Robert A. Gammisch
6. DIRECTION OF HOLE: ☑ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. Water Depth = 16.0 feet
8. Core Penetration = 40.0 feet
9. Core Recovery = 38.0 feet
10. SIZE AND TYPE OF BIT
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Marine, Inc.
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED | UNDISTURBED
14. TOTAL NUMBER CORE BOXES
15. ELEVATION GROUND WATER
16. DATE HOLE: STARTED 23 Sep 1980 | COMPLETED 25 Feb 1981
17. ELEVATION TOP OF HOLE
18. TOTAL CORE RECOVERY FOR BORING %
19. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH 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
-27.0	11		WB066-06 SM Silty coarse sand High amounts of silt 2.5Y4/0 - dark grey			WB066-CP2
-28.0	12		WB066-07 SM Silty medium sand, some clay worms, 2.5Y5/0 - grey			
E' E -29.0	13					
-30.0	14		WB066-08 SM Silty medium sand (0.5 mm) Low silt content 2.5Y5/4 - light olive brown			
-31.0	15		WB066-09 SM Silty medium sand (0.8 mm) High silt content Shell fragments 2.5Y3/0 - very dark grey			WB066-CP3
-32.0	16					
-33.0	17		WB066-10 SM Silty medium sand (0.8 mm) High silt content Shell fragments 2.5Y3/0 - very dark grey			
D' D -34.0	18					
-35.0	19		WB066-11 SM Silty fine sand (0.25 mm - 0.4 mm) High silt content, high H_2O content, shell fragments 2.5Y3/0 - very dark grey			
-36.0	20					

Hole No. WB066

DRILLING LOG	DIVISION	INSTALLATION	SHEET 3 OF 4 SHEETS

1. PROJECT: VIRGINIA STATE SAND INVENTORY	10. SIZE AND TYPE OF BIT
2. LOCATION (Coordinates or Station): S1 41289.00; S2 27246.40	11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
3. DRILLING AGENCY: Virginia Institute of Marine Science	12. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Marine, Inc.
4. HOLE NO. (As shown on drawing title and file number): WB066 — Willoughby Banks	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED / UNDISTURBED
5. NAME OF DRILLER: Robert A. Gammisch	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE: ☑ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.	15. ELEVATION GROUND WATER
7. Water Depth = 16.0 feet	16. DATE HOLE: STARTED 23 Sep 1980 / COMPLETED 25 Feb 1981
8. Core Penetration = 40.0 feet	17. ELEVATION TOP OF HOLE
9. Core Recovery = 38.0 feet	18. TOTAL CORE RECOVERY FOR BORING %
	19. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH 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
-37.0	21		WB066-12 SM Silty fine sand (0.25 mm - 0.4 mm) High silt content 2.5Y3/0 - very dark grey			NO COMPOSITE
-38.0	22					
C'/C -39.0	23					
-40.0	24		WB066-13 SM Silty medium sand Some clay worms 2.5Y4/0 - Dark grey			
-41.0	25		Large rock, basalt			WB066-CP4
-42.0	26		WB066-14 SM Silty medium sand Some clay worms 2.5Y4/0 - dark grey			
-43.0	27					
B'/B -44.0	28					
-45.0	29		WB066-15 SM Silty medium sand (0.5 mm) High silt content			NO COMPOSITE
-46.0	30					

Hole No. WB066

DRILLING LOG	DIVISION	INSTALLATION	SHEET 4 OF 4 SHEETS

1. PROJECT: VIRGINIA STATE SAND INVENTORY
2. LOCATION (Coordinates or Station): S1 41289.00; S2 27246.40
3. DRILLING AGENCY: Virginia Institute of Marine Science
4. HOLE NO. (As shown on drawing title and file number): WB066 | Willoughby Banks
5. NAME OF DRILLER: Robert A. Gammisch
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.
7. Water Depth = 16.0 feet
8. Core Penetration = 40.0 feet
9. Core Recovery = 38.0 feet
10. SIZE AND TYPE OF BIT
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Marine, Inc.
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED | UNDISTURBED
14. TOTAL NUMBER CORE BOXES
15. ELEVATION GROUND WATER
16. DATE HOLE: STARTED 23 Sep 1980 | COMPLETED 25 Feb 1981
17. ELEVATION TOP OF HOLE
18. TOTAL CORE RECOVERY FOR BORING %
19. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH 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
-47.0	31		WB066-16 SM Silty medium sand (0.5 mm) High silt content			
-48.0	32					
A' A -49.0	33					
-50.0	34		WB066-17 SM Silty medium sand (0.5 mm) High silt content 2.5Y3/0 - very dark grey			
-51.0	35					
-52.0	36		WB066-18 SM Silty medium sand (0.5 mm)			
-53.0	37					
-54.0	38		BOTTOM			
	39					
	40					

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. PROJECT | HOLE NO.

Hole No. WB069

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1 OF 4 SHEETS

1. PROJECT: VIRGINIA STATE SAND INVENTORY
2. LOCATION (Coordinates or Station): S1 41290.60; S2 27247.70
3. DRILLING AGENCY: Virginia Institute of Marine Science
4. HOLE NO. (As shown on drawing title and file number): WB069 — Willoughby Banks
5. NAME OF DRILLER: Robert A. Gammisch
6. DIRECTION OF HOLE: [x] VERTICAL [ ] INCLINED _____ DEG. FROM VERT.
7. Water Depth = 40.0 feet
8. Core Penetration = 40.0 feet
9. Core Recovery = 38.0 Feet
10. SIZE AND TYPE OF BIT
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Marine, Inc.
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED ____ UNDISTURBED ____
14.
15. Lat. 36°59.87' Long. 76°16.12'
16. DATE HOLE: STARTED 19 Sep 1980 COMPLETED 24 Feb 1981
17. ELEVATION TOP OF HOLE
18. TOTAL CORE RECOVERY FOR BORING %
19. SIGNATURE OF INSPECTOR: C. Vastola

ELEVATION a	DEPTH 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
-40.0	0		TOP			
			Shell material			
			WB069-01 SP Medium sand (0.7 mm) Medium silt content			
-41.0	1					
-42.0	2		Clay laminations (CL)			
						WB069-CP1
			WB069-02 SP Medium sand (0.7 mm) Medium silt content 2.5Y6/0 - Grey			
-43.0	3					
-44.0	4					
			WB069-03 SP Medium sand (0.5 mm) 2.5Y6/0 - Grey			
F' -45.0 F	5					
-46.0	6		WB069-04 SP Medium sand (0.7 mm) Very clean, no silt 5Y7/1 - Light grey			
-47.0	7					
			WB069-05 SP Medium sand (0.7 mm), clean Some clay worms 5Y7/1 - Light grey			WB069-CP2
-48.0	8					
-49.0	9		Clay laminations (CH)			
			WB069-05 SP Medium sand (0.5 mm) Mixed with some silt			
E' -50.0	10					

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. PROJECT HOLE NO.

Hole No. WB069

DRILLING LOG	DIVISION	INSTALLATION	SHEET 2 OF 4 SHEETS

1. PROJECT: VIRGINIA STATE SAND INVENTORY
2. LOCATION (Coordinates or Station): S1 41290.60; S2 27247.70
3. DRILLING AGENCY: Virginia Institute of Marine Science
4. HOLE NO. (As shown on drawing title and file number): WB069 — Willoughby Banks
5. NAME OF DRILLER: Robert A. Gammisch
6. DIRECTION OF HOLE: [✓] VERTICAL [ ] INCLINED _____ DEG. FROM VERT.
7. Water Depth = 40.0 Feet
8. Core Penetration = 40.0 feet
9. Core Recovery = 38.0 feet
10. SIZE AND TYPE OF BIT:
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Marine, Inc.
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED: UNDISTURBED:
14. TOTAL NUMBER CORE BOXES:
15. ELEVATION GROUND WATER:
16. DATE HOLE: STARTED 19 Sep 1980; COMPLETED 24 Feb 1981
17. ELEVATION TOP OF HOLE:
18. TOTAL CORE RECOVERY FOR BORING: %
19. SIGNATURE OF INSPECTOR: Natale

ELEVATION a	DEPTH 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
E						
-51.0	11		WB069-07 SP Medium sand (0.5 mm) Very clean, no silt 5Y7/1 - Light grey			
-52.0	12					
-53.0	13		WB069-08 SP Medium sand (0.5 mm) Very clean 5Y7/1 - Light grey			WB069-CP3
-54.0	14		Clay laminations (CH)			
D'/D -55.0	15		WB069-09 SP (SM) Medium sand mixed with silt Clay laminations 2.5Y5/0 - Grey			
-56.0	16		WB069-10 SP Medium sand (0.5 mm), clean 5Y7/1 - Light grey Clay laminations (CH)			
-57.0	17					
-58.0	18		WB069-11 SP Medium sand (0.7 mm) no silt 5Y7/1 - Light grey			WB069-CP4
-59.0	19					
C'-60.0	20		WB069-12 SP Medium sand (0.5 mm) Low silt content 2.5Y5/0 - Grey			

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. PROJECT HOLE NO.

Hole No. WB069

DRILLING LOG	DIVISION	INSTALLATION	SHEET 3 OF 4 SHEETS

1. PROJECT: VIRGINIA STATE SAND INVENTORY
2. LOCATION (Coordinates or Station): S1 41290.60; S2 27247.70
3. DRILLING AGENCY: Virginia Institute of Marine Science
4. HOLE NO. (As shown on drawing title and file number): WB069 — Willoughby Banks
5. NAME OF DRILLER: Robert A. Gammisch
6. DIRECTION OF HOLE: [x] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.
7. Water Depth = 40.0 feet
8. Core Penetration = 40.0 feet
9. Core Recovery = 38.0
10. SIZE AND TYPE OF BIT
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Marine, Inc.
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED ____ UNDISTURBED ____
14. TOTAL NUMBER CORE BOXES
15. ELEVATION GROUND WATER
16. DATE HOLE: STARTED 19 Sep 1980 COMPLETED 24 Feb 1981
17. ELEVATION TOP OF HOLE
18. TOTAL CORE RECOVERY FOR BORING %
19. SIGNATURE OF INSPECTOR: C. Postale

ELEVATION a	DEPTH 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
C						
-61.0	21		WB069-13 SP Medium sand (0.5 mm) Clean, no silt 5Y7/1 - Light grey			
-62.0	22					
-63.0	23					
			WB069-14 SP Medium sand (0.7 mm) Clean, no silt 5Y7/1 - Light grey			WB069-CP5
-64.0	24		Clay laminations (CH)			
-65.0	25		WB069-15 SP Coarse sand (1 mm), mixed with small amounts of silt 2.5Y6/0 - Grey			
-66.0	26		WB069-16 SP Coarse sand (1 mm) Low silt			
B'/B						
-67.0	27		WB069-17 SP Coarse sand mixed with silt			
-68.0	28		WB069-18 SM Silty coarse sand (0.9 mm - 1.2 mm)			WB069-CP6
-69.0	29					
-70.0	30					

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. PROJECT HOLE NO.

Hole No. WB069

DRILLING LOG	DIVISION	INSTALLATION	SHEET 4 OF 4 SHEETS

1. PROJECT: VIRGINIA STATE SAND INVENTORY
2. LOCATION (Coordinates or Station): S1 41290.60; S2 27247.70
3. DRILLING AGENCY: Virginia Institute of Marine Science
4. HOLE NO. (As shown on drawing title and file number): WB069 — Willoughby Banks
5. NAME OF DRILLER: Robert A. Gammisch
6. DIRECTION OF HOLE: ☑ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. Water Depth = 40.0 feet
8. Core Penetration = 40.0 feet
9. Core Recovery = 38.0 Feet
10. SIZE AND TYPE OF BIT
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Marine, Inc.
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED ____ UNDISTURBED ____
14. TOTAL NUMBER CORE BOXES
15. ELEVATION GROUND WATER
16. DATE HOLE: STARTED 19 Sep 1980 COMPLETED 24 Feb 1981
17. ELEVATION TOP OF HOLE
18. TOTAL CORE RECOVERY FOR BORING %
19. SIGNATURE OF INSPECTOR: [signature]

ELEVATION a	DEPTH 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
-71.0	31		WB069-19 SM Silty coarse sand (0.9 mm - 1.2 mm)			WB069-CP6
A'/A						
-72.0	32		WB069-20 SM Silty coarse sand (0.7 mm - 1 mm)			
-73.0	33					WB069-CP7
			WB069-21 SM Silty coarse sand			
-74.0	34					
-75.0	35					NO COMPOSITE
-76.0	36		WB069-22 SM Silty medium sand High water content			
			BOTTOM			

ENG FORM 1836 PREVIOUS EDITIONS ARE OBSOLETE. PROJECT HOLE NO.

Hole No. WB076

DRILLING LOG	DIVISION	INSTALLATION	SHEET 1 OF 5 SHEETS

1. PROJECT: VIRGINIA STATE SAND INVENTORY
2. LOCATION (Coordinates or Station): S_1 41289.00 ; S_2 27250.00
3. DRILLING AGENCY: Virginia Institute of Marine Science
4. HOLE NO. (As shown on drawing title and file number): WB076 ; Willoughby Bank
5. NAME OF DRILLER: Robert A. Gammisch
6. DIRECTION OF HOLE: ☑ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. Water Depth = 34.0 ft.
8. Core Penetration = 40.0 feet
9. Core Recovery = 34.9 ft.
10. SIZE AND TYPE OF BIT
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Marine, Inc.
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN | DISTURBED | UNDISTURBED
14. & 15. Lat. 36°59.77' Long. 76°17.20'
16. DATE HOLE | STARTED: 10-6-81 | COMPLETED: 2-82
17. ELEVATION TOP OF HOLE
18. TOTAL CORE RECOVERY FOR BORING %
19. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH 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
TOP-34.0	0		WB076-01 SW 5Y5/2 Well graded sand, some silt Shell fragments			
-35.0	1					
-36.0	2		WB076-02 SM 5Y4/2 Silty clayey sand, medium grain Shell fragments Small pieces of wood H_2S			WB076 CP1 Does not include clay balls
-37.0	3					
-38.0	4		WB076-03 SP 5Y6/1 Coarse to medium grain sand Small pieces of wood Large clay balls and clay stringers			
-39.0	5					
-40.0	6					
-41.0	7		WB076-04 SW 5Y6/1 Well graded coarse sand, some silt Small pieces of wood Clay balls and clay stringers			WB076 CP2 Does not include clay balls
-42.0	8					
-43.0	9					
-44.0	10					

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE. (TRANSLUCENT)

PROJECT | HOLE NO.

Hole No. WB076

DRILLING LOG	DIVISION	INSTALLATION	SHEET 2 OF 5 SHEETS

1. PROJECT: VIRGINIA STATE SAND INVENTORY
2. LOCATION (Coordinates or Station): S_1 41289.00 ; S_2 27250.00
3. DRILLING AGENCY: Virginia Institute of Marine Science
4. HOLE NO. (As shown on drawing title and file number): WB076 | Willoughby Bank
5. NAME OF DRILLER: Robert A. Gammisch
6. DIRECTION OF HOLE: ☑ VERTICAL ☐ INCLINED _____ DEG. FROM VERT.
7. Water Depth = 34.0 ft.
8. Core Penetration = 40.0 feet
9. Core Recovery = 34.9 ft.
10. SIZE AND TYPE OF BIT:
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Marine, Inc.
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED | UNDISTURBED
14. TOTAL NUMBER CORE BOXES:
15. ELEVATION GROUND WATER:
16. DATE HOLE: STARTED 10-6-81 | COMPLETED 2-82
17. ELEVATION TOP OF HOLE:
18. TOTAL CORE RECOVERY FOR BORING %
19. SIGNATURE OF INSPECTOR:

ELEVATION a	DEPTH 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
E'			WB076-04 SW 5Y6/1			
E						
-45.0	11					
-46.0	12		WB076-05 SW 5Y5/1 Well graded coarse sand Some silt, increasing silt with depth Clay balls and clay stringers			WB076 CP3 Does not include clay balls
-47.0	13		Band of clay			
-48.0	14					
			WB076-06 SM 5Y4/1 Medium to fine grain silty sand			
D' -49.0	15					
D			WB076-07 ML 5Y3/1 Clayey sandy silt Plant material (wood) Micaceous			
-50.0	16					
			WB076-08 SP 5Y4/2 Medium grain silty sand Shell fragments Clay stringers H_2S			WB076 CP4 Does not include ML Layers
-51.0	17					
			ML 5Y3/1 Clayey sandy silt Medium grain sand Micaceous			
-52.0	18					
-53.0	19		WB076-09 SW 5Y6/1 Well graded sand Clay stringers thruout H_2S			
-54.0	20					

Hole No. WB076

DRILLING LOG	DIVISION	INSTALLATION	SHEET 3 OF 5 SHEETS

1. PROJECT: VIRGINIA STATE SAND INVENTORY
2. LOCATION (Coordinates or Station): S_1 41289.00 ; S_2 27250.00
3. DRILLING AGENCY: Virginia Institute of Marine Science
4. HOLE NO. (As shown on drawing title and file number): WB076 | Willoughby Bank
5. NAME OF DRILLER: Robert A. Gammisch
6. DIRECTION OF HOLE: [X] VERTICAL [ ] INCLINED ____ DEG. FROM VERT.
7. Water Depth = 34.0 feet
8. Core Penetration = 40.0 feet
9. Core Recovery = 34.9 feet
10. SIZE AND TYPE OF BIT
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Marine, Inc.
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED | UNDISTURBED
14. TOTAL NUMBER CORE BOXES
15. ELEVATION GROUND WATER
16. DATE HOLE: STARTED 10-6-81 | COMPLETED 2-82
17. ELEVATION TOP OF HOLE
18. TOTAL CORE RECOVERY FOR BORING %
19. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH 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
CF / C			NOTE: SCALE IS EXPANDED			
			WB076-09 SW 5Y6/1			
			WB076-10 SP 5Y5/1 Medium grain sand, some silt H_2S			
			WB076-11 CL 5Y4/1 Silty clay Plant material Micaceous			
-55.0	21		SP Medium to fine grain sand			
			CL 5Y4/1 Silty clay			
			SP 5Y5/1 Medium grain silty sand Shell fragments H_2S			
			CL 5Y4/1 Silty clay Plant material H_2S			
-56.0	22		WB076-12 SW 5Y5/1 Well graded coarse sand			
			CL Silty clay			
			SP Medium grain sand			WB076 CPS Does not include CL Layers
			CL 5Y3/1 Silty clay Plant material H_2S			
-57.0	23		SP Medium grain sand			
			CL Silty clay Plant material H_2S			
			WB076-13 SW 5Y6/1 Well graded sand, some silt Clay stringers			
-58.0	24					
			Band of clay Plant material			
-59.0	25					

ENG FORM 1836 MAR 71 PREVIOUS EDITIONS ARE OBSOLETE

PAGE 1 HOLE NO.

Hole No. WB076

DRILLING LOG	DIVISION	INSTALLATION	SHEET 4 OF 5 SHEETS

1. PROJECT: VIRGINIA STATE SAND INVENTORY	10. SIZE AND TYPE OF BIT
2. LOCATION (Coordinates or Station): S_1 41289.00 ; S_2 27250.00	11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
3. DRILLING AGENCY: Virginia Institute of Marine Science	12. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Marine, Inc.
4. HOLE NO. (As shown on drawing title and file number): WB076 Willoughby Bank	13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED / UNDISTURBED
5. NAME OF DRILLER: Robert A. Gammisch	14. TOTAL NUMBER CORE BOXES
6. DIRECTION OF HOLE: ☑ VERTICAL ☐ INCLINED ___ DEG. FROM VERT.	15. ELEVATION GROUND WATER
7. Water Depth = 34.0 feet	16. DATE HOLE: STARTED 10-6-81 COMPLETED 2-82
8. Core Penetration = 40.0 feet	17. ELEVATION TOP OF HOLE
9. Core Recovery = 34.9 feet	18. TOTAL CORE RECOVERY FOR BORING %
	19. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH 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
B' / B			NOTE: SCALE IS EXPANDED			
			SW Well graded sand Clay stringers			
			WB076-14 SW 5Y6/1 Well graded sand, some silt Shell fragments Clay stringers			
-60.0	26					
			WB076-15 CL 5Y4/1 Silty clay Micaceous Plant material H_2S			
			SP Medium grain sand CL			
-61.0	27		WB076-16 SW 5Y6/1 Well graded sand Some silt			WB076 CP6 Does not include CL Layers
			CL 5Y4/1 Clay Plant material H_2S			
			SP Medium grain sand			
			CL Clay Plant material H_2S			
-62.0	28		SW Well graded sand Some silt			
			CL 5Y4/1 Clay Plant material H_2S			
			SW 5Y6/1 Well graded silty sand			
			CL 5Y4/1 Clay Plant material H_2S			
-63.0	29					
			WB076-17 SW 5Y6/1 Well graded silty sand Clay stringers			
-64.0	30					

Hole No. WB076

DRILLING LOG	DIVISION	INSTALLATION	SHEET 5 OF 5 SHEETS

1. PROJECT: VIRGINIA STATE SAND INVENTORY
2. LOCATION (Coordinates or Station): S_1 41289.00 ; S_2 27250.00
3. DRILLING AGENCY: Virginia Institute of Marine Science
4. HOLE NO. (As shown on drawing title and file number): WB076 — Willoughby Bank
5. NAME OF DRILLER: Robert A. Gammisch
6. DIRECTION OF HOLE: ☑ VERTICAL ☐ INCLINED ____ DEG. FROM VERT.
7. Water Depth = 34.0 ft.
8. Core Penetration = 40.0 feet
9. Core Recovery = 34.9 ft.
10. SIZE AND TYPE OF BIT
11. DATUM FOR ELEVATION SHOWN (TBM or MSL): MSL
12. MANUFACTURER'S DESIGNATION OF DRILL: Alpine Marine, Inc.
13. TOTAL NO. OF OVER-BURDEN SAMPLES TAKEN: DISTURBED ____ UNDISTURBED ____
14. TOTAL NUMBER CORE BOXES
15. ELEVATION GROUND WATER
16. DATE HOLE: STARTED 10-6-81 COMPLETED 2-82
17. ELEVATION TOP OF HOLE
18. TOTAL CORE RECOVERY FOR BORING %
19. SIGNATURE OF INSPECTOR

ELEVATION a	DEPTH 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
A'			WB076-17 SW 5Y6/1			
A			SW			
			Well graded sand			
			CL			
			Clay			
-65.0	31		Plant material			
			Micaceous			
			SW			
			Well graded sand			
			CL			
			Clay			
-66.0	32		Plant material			
			WB076-18 SW 5Y5/1			
			Well graded silty sand			
			Very small bands of clay thru-out			WB076-CP7 Does not include CL layers
			WB076-19 CL 5Y4/2			
-67.0	33		Clay			
			Wood chip			
			Plant material			
			SM 5Y4/1			
			Silty sand			
			Bands of clay thru-out			
-68.0	34		CL			
			Clay			
			Wood chip			
			Plant material			
			WB076-20 SM 5Y4/2			
			Silty sand			
-69.0	35		Shell hash			
			Wood chip			
			Plant material			
			Clay bands thru-out			
			BOTTOM			
	36					
	37					
	38					
	39					
	40					