Appendix F

Borrow Area Characteristics

Borrow Area
2 West

DRILLING LOG

DIVISION:

INSTALLATION:

SHEET 1 of 1

1. PROJECT: FIRE ISLAND SAND STUDY

2. LOCATION (Coordinates or Station): X= 1222994 Y= 169484

3. DRILLING AGENCY: Alpine Ocean Seismic Survey Inc.

4. HOLE NO. (As shown on drawing title and file number): FIVC-01-05

5. NAME OF DRILLER: JAMES COLE

6. DIRECTION OF HOLE: VERTICAL

7. THICKNESS OF BURDEN: 0.0 FT

8. DEPTH DRILLED INTO ROCK: N/A

9. TOTAL DEPTH OF HOLE: 17.9 FT

10. SIZE AND TYPE OF BIT: 3 5/8"

11. DATUM FOR ELEVATION SHOWN (TBM or MSL): NGVD

12. MANUFACTURER'S DESIGNATION OF DRILL: ALPINE PNEUMATIC VIBRACORE

13. TOT NO. OF OVERBURDEN SAMPLES TAKEN: Disturbed: 0 Undisturbed: 0

14. TOTAL NO. OF CORE BOXES:

15. ELEVATION GROUND WATER:

16. DATE HOLE: Started 09/28/01 Completed 16:48

17. ELEVATION TOP OF HOLE: -48.0 ft

18. TOTAL CORE RECOVERY FOR BORING: 100%

19. SIGNATURE OF GEOLOGIST: SK/ML

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS
-48	0					
	1		SAND, medium grained, trace silt, trace clay, trace shell fragments, gray (5Y-5/1), (SW-SM).		1	Sample #1, Depth = 1.0' Mean (mm): 0.63, Phi Sorting: 1.30 Silt: 3.64% (SW)
-50.1	2					
-50.9	3		medium grained, little silt/clay, gray (5Y-5/1), (SW-SM).			
	4		medium grained, small pockets of very dark gray (5Y-3/1) silty clay at 3.1' and 4.5', trace gravel, brownish gray (2.5Y-5/2), (SW).		3	Sample #3, Depth = 3.5' Mean (mm): 0.59, Phi Sorting: 1.16 Silt: 1.35% (SW)
-52.9	5					
	6		medium grained, grayish brown, (2.5Y-5/2), (SP).		4	Sample #4, Depth = 6.0' Mean (mm): 0.44, Phi Sorting: 1.14 Silt: 2.78% (SW)
-55	7					
-55.5			medium grained, trace silt/clay, trace gravel, grayish brown (2.5Y-5/2), (SW).		3	
	8					
	9					
	10		SAND, medium grained, small dark gray (5Y-4/1) pockets of silty clay at 10.7' and 12.8', grayish brown (2.5Y-5/2), (SP).		5	Sample #5, Depth = 10.0' Mean (mm): 0.35, Phi Sorting: 0.61 Silt: 3.08% (SP)
	11					
	12					
	13					
-62.5	14					
	15		SAND, fine grained, trace silt/clay, light brownish gray (2.5Y-6/2), (SP).		6	Sample #6, Depth = 16.0' Mean (mm): 0.18, Phi Sorting: 0.84 Silt: 6.50% (SW-SM)
	16					
	17					
	18					
-67.4	19					
	20		End of Boring			
	21		Expansion from 17.9.			Note: This column contains laboratory data.
	22					
	23		Note: 1) Soils are field visually classified in accordance with the Unified Soil Classification System.			If penetration is less than 20', refusal was met after less than 1' penetration occured in 3 minutes.
	24					

Dredged to -52.0'

Cut Elevation -57.0'

HOLE NO. FIVC-01-12

DRILLING LOG

DIVISION:

INSTALLATION: **SHEET 1 of 1**

1. PROJECT FIRE ISLAND SAND STUDY	**10. SIZE AND TYPE OF BIT** 3 5/8"
2. LOCATION (Coordinates or Station) X= 1224402 Y= 169132	**11. DATUM FOR ELEVATION SHOWN** (TBM or MSL) NGVD
3. DRILLING AGENCY: Alpine Ocean Seismic Survey Inc.	**12. MANUFACTURER'S DESIGNATION OF DRILL** ALPINE PNEUMATIC VIBRACORE
4. HOLE NO. (As shown on drawing title and file number) FIVC-01-12	**13. TOT NO. OF OVERBURDEN SAMPLES TAKEN** Disturbed: 0 Undisturbed: 0
5. NAME OF DRILLER JAMES COLE	**14. TOTAL NO. OF CORE BOXES**
6. DIRECTION OF HOLE VERTICAL	**15. ELEVATION GROUND WATER**
7. THICKNESS OF BURDEN 0.0 FT	**16. DATE HOLE** Started 10/03/01 Completed 12:53
8. DEPTH DRILLED INTO ROCK N/A	**17. ELEVATION TOP OF HOLE** -50.2 ft
9. TOTAL DEPTH OF HOLE 17.9 FT	**18. TOTAL CORE RECOVERY FOR BORING** 84%
	19. SIGNATURE OF GEOLOGIST SK/ML

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS
-50.2	0					
	1		SAND, medium grained, trace shell hash, pocket of some shell hash from 1.6' to 1.8', very pale brown (10YR-7/3), (SP).		1	Sample #1, Depth = 1.0' Mean (mm): 0.52, Phi Sorting: 0.77 Silt: 2.86% (SP)
-52						Sample #2, Depth = 2.4'
	2		SAND, medium grained, trace gravel, gray (5Y-6/1), (SW).		2	Mean (mm): 0.80, Phi Sorting: 1.84 Silt: 4.37% (SW)
-53.1						
	3		SAND, medium grained, little gravel, little shell fragments, clay pocket at 3.6', trace silt, gray (5Y-6/1), (SW-SM).		3	Sample #3, Depth = 3.3' Mean (mm): 0.54, Phi Sorting: 1.85 Silt: 6.69% (SW-SM)
-54.2	4				4	
			SAND, fine grained, little silt, gray (5Y-5/1), (SM).			Sample #4, Depth = 4.2' Mean (mm): 0.09, Phi Sorting: 0.75 Silt: 40.21% (SM)
-55.2	5				5	
			SAND, medium grained, some gravel, gray (5Y-6/1), (SW).			Sample #5, Depth = 4.6' Mean (mm): 0.87, Phi Sorting: 2.02 Silt: 3.52% (SW)
	6					
	7				6	Sample #6, Depth = 8.0' Mean (mm): 0.25, Phi Sorting: 0.89 Silt: 4.30% (SP)
	8					
	9					
	10		SAND, medium to fine grained, gray (5Y-6/1), (SP).			
	11					
	12				7	Sample #7, Depth = 12.0' Mean (mm): 0.22, Phi Sorting: 0.79 Silt: 2.93% (SP)
	13					
	14					
-65.2	15					
	16		No Recovery			
	17					
-68.1	18					
			End of Boring			
	19					
	20					
	21					Note: This column contains laboratory data.
	22		Note: 1) Soils are field visually classified in accordance with the Unified Soil Classification System.			If penetration is less than 20', refusal was met after less than 1' penetration occured in 3 minutes.
	23					
	24					

Dredged to -52.1'

Cut Elevation -57.0'

HOLE NO. FIVC-01-15

DRILLING LOG

DIVISION:

INSTALLATION: **SHEET 1 of 1**

1. PROJECT FIRE ISLAND SAND STUDY

2. LOCATION (Coordinates or Station) X= 1223533 Y= 168604

3. DRILLING AGENCY: Alpine Ocean Seismic Survey Inc.

4. HOLE NO. (As shown on drawing title and file number) FIVC-01-15

5. NAME OF DRILLER JAMES COLE

6. DIRECTION OF HOLE VERTICAL

7. THICKNESS OF BURDEN 0.0 FT

8. DEPTH DRILLED INTO ROCK N/A

9. TOTAL DEPTH OF HOLE 11.8 FT

10. SIZE AND TYPE OF BIT 3 5/8"

11. DATUM FOR ELEVATION SHOWN (TBM or MSL) NGVD

12. MANUFACTURER'S DESIGNATION OF DRILL ALPINE PNEUMATIC VIBRACORE

13. TOT NO. OF OVERBURDEN SAMPLES TAKEN Disturbed: 0 Undisturbed: 0

14. TOTAL NO. OF CORE BOXES

15. ELEVATION GROUND WATER

16. DATE HOLE Started 10/04/01 Completed 15:33

17. ELEVATION TOP OF HOLE -50.4 ft

18. TOTAL CORE RECOVERY FOR BORING 100%

19. SIGNATURE OF GEOLOGIST SK/ML

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS
-50.4	0					Dredged to -50.1'
	1		SAND, medium grained, trace shell fragments, very pale brown (10YR-7/3), (SP).		1	Sample #1, Depth = 1.2' Mean (mm): 0.40, Phi Sorting: 0.74 Silt: 3.11% (SP)
-52.9	2					
	3		SAND, fine grained, gray (5Y-6/1), (SP).		2	Sample #2, Depth = 3.3' Mean (mm): 0.17, Phi Sorting: 0.81 Silt: 6.91% (SW-SM)
-54.1	4		SAND, fine grained, little silt, gray (5Y-5/1), (SM).		3	Sample #3, Depth = 4.3' Mean (mm): 0.16, Phi Sorting: 1.40 Silt: 17.75% (SM)
-55.1	5		GRAVELLY SAND, medium grained, little whole shell, little shell fragments, clay pocket @ 4.8', gray (5Y-6/1), (SW)		4	Sample #4, Depth = 6.0' Mean (mm): 0.77, Phi Sorting: 1.74 Silt: 2.04% (SW)
	6					Cut Elevation -57.0'
-58.2	7					
	8					
	9				5	Sample #5, Depth = 9.2' Mean (mm): 0.33, Phi Sorting: 0.67 Silt: 1.14% (SP)
	10		SAND, fine grained, trace shell fragments, trace gravel, gray (5Y-6/1), (SP).			
	11					
	12				6	Sample #6, Depth = 11.5' Mean (mm): 0.29, Phi Sorting: 0.69 Silt: 1.33% (SP)
	13					
-64.4	14		End of Boring			
	15					
	16					
	17					
	18					
	19					
	20					
	21		Expansion from 11.8'.			Note: This column contains laboratory data.
	22					
	23		Note: 1) Soils are field visually classified in accordance with the Unified Soil Classification System.			If penetration is less than 20', refusal was met after less than 1' penetration occured in 3 minutes.
	24					

DRILLING LOG

DIVISION:

INSTALLATION:

SHEET 1 of 1

1. PROJECT FIRE ISLAND SAND STUDY

2. LOCATION (Coordinates or Station) X= 1223517 Y= 168626

3. DRILLING AGENCY: Alpine Ocean Seismic Survey Inc.

4. HOLE NO. (As shown on drawing title and file number) FIVC-01-15A

5. NAME OF DRILLER JAMES COLE

6. DIRECTION OF HOLE VERTICAL

7. THICKNESS OF BURDEN 0.0 FT

8. DEPTH DRILLED INTO ROCK N/A

9. TOTAL DEPTH OF HOLE 17.0 FT

10. SIZE AND TYPE OF BIT 3 5/8"

11. DATUM FOR ELEVATION SHOWN (TBM or MSL) NGVD

12. MANUFACTURER'S DESIGNATION OF DRILL ALPINE PNEUMATIC VIBRACORE

13. TOT NO. OF OVERBURDEN SAMPLES TAKEN Disturbed: 0 Undisturbed: 0

14. TOTAL NO. OF CORE BOXES

15. ELEVATION GROUND WATER

16. DATE HOLE Started 10/04/01 Completed 16:02

17. ELEVATION TOP OF HOLE -50.6 ft

18. TOTAL CORE RECOVERY FOR BORING 100%

19. SIGNATURE OF GEOLOGIST SK/ML

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS
-50.6	0					
	1		JET			
-53	2					
	3		SAND, fine grained, gray (5Y-6/1), (SP).		15#2	
-54.5	4		SAND, medium grained, gray (5Y-6/1), (SP).			
-55.3	5		GRAVELLY SAND, little shell fragments, gray (5Y-5/1), (SW).		15#4	
-57.1	6					
	7		SAND, fine grained, little silt, clay pocket between 13.8' and 14', gray (5Y-5/1), (SW-SM).		10	Sample #10, Depth = 7.2' Mean (mm): 0.45, Phi Sorting: 2.51 Silt: 9.84% (SW-SM)
-58.5	8					
	9		SAND, fine to medium grained, light gray (10YR-7/2), (SP).		11	Sample #11 Depth = 8.9' Mean (mm): 0.36, Phi Sorting: 0.92 Silt: 2.75% (SP)
-60.6	10					
	11		fine grained, gray (5Y-6/1), (SP).		15#6	
	12					
-63.5	13		fine sand, light gray (5Y-7/1), (SP).		13	Sample #13, Depth = 13.2' Mean (mm): 0.26, Phi Sorting: 0.51 Silt: 1.78% (SP)
-64.3	14		SAND, fine grained, trace silt, gray (5Y-6/1), (SW-SM).		14	Sample #14, Depth = 14.2' Mean (mm): 0.18, Phi Sorting: 0.84 Silt: 7.75% (SW-SM)
-65.4	15					
	16		SAND, fine grained, light gray, (5Y-7/1), (SP).		13	
-67.6	17					
	18		End of Boring			
	19					
	20					
	21					Note: This column contains laboratory data.
	22					If penetration is less than 20', refusal was met after less than 1' penetration occured in 3 minutes.
	23		Note: 1) Soils are field visually classified in accordance with the Unified Soil Classification System.			
	24					

HOLE NO. FIVC-01-16

DRILLING LOG

DIVISION:

INSTALLATION: **SHEET 1 of 1**

1. PROJECT FIRE ISLAND SAND STUDY	**10. SIZE AND TYPE OF BIT** 3 5/8"
2. LOCATION (Coordinates or Station) X= 1225494 Y= 169435	**11. DATUM FOR ELEVATION SHOWN** (TBM or MSL) NGVD
3. DRILLING AGENCY: Alpine Ocean Seismic Survey Inc.	**12. MANUFACTURER'S DESIGNATION OF DRILL** ALPINE PNEUMATIC VIBRACORE
4. HOLE NO. (As shown on drawing title and file number) FIVC-01-16	**13. TOT NO. OF OVERBURDEN SAMPLES TAKEN** Disturbed: 0 Undisturbed: 0
5. NAME OF DRILLER JAMES COLE	**14. TOTAL NO. OF CORE BOXES**
6. DIRECTION OF HOLE VERTICAL	**15. ELEVATION GROUND WATER**
7. THICKNESS OF BURDEN 0.0 FT	**16. DATE HOLE** Started 10/04/01 Completed 14:54
8. DEPTH DRILLED INTO ROCK N/A	**17. ELEVATION TOP OF HOLE** -51.5 ft
9. TOTAL DEPTH OF HOLE 19.1 FT	**18. TOTAL CORE RECOVERY FOR BORING** 97%
	19. SIGNATURE OF GEOLOGIST SK/ML

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS
-51.5	0					
	1		SAND, medium grained, clay pocket from 0.6' to 0.8', light gray (10YR-7/2), (SP).		1	Sample #1, Depth = 1.0' Mean (mm): 0.25, Phi Sorting: 1.85 Silt:11.75 % (SW-SM)
-52.7			SAND, fine grained, gray, (5Y-5/1), (SP).			
	2		CLAY, dark gray (5Y-4/1), (CL).		6	
-53.9			GRAVELLY SAND, medium grained, gray, (5Y-6/1), (SW).			
	3		SAND, medium to fine grained, grayish brown (10YR-5/2), (SP).		4	Sample #4, Depth = 3.0' Mean (mm): 0.50, Phi Sorting: 0.64 Silt: 1.21% (SP)
-55.8	4					
	5		fine to medium grained, grayish brown (10YR-5/2), (SP).		5	Sample #5, Depth = 5.5' Mean (mm): 0.26, Phi Sorting: 0.53 Silt: 2.29% (SP)
-58.2	6					
	7		medium grained, grayish brown, (10YR-5/2), (SP).		6	Sample #6, Depth = 7.5' Mean (mm): 0.55, Phi Sorting: 1.00 Silt: 2.80% (SP)
-60	8					Dredged to -59.5' Cut Elevation -59.8'
	9		fine grained, light brownish gray, (10YR-6/2), (SP).			
-61.5	10					
	11					
	12					
	13				7	Sample #7, Depth = 9.0' Mean (mm): 0.18, Phi Sorting: 0.79 Silt: 4.86% (SP)
	14		fine grained, trace organics from 16.6' to 17.3', gray (5Y-6/1), (SP).			
	15					
	16					
	17					
	18					
-70.2						
-70.6	19		NO RECOVERY			
			End of Boring			
	20					Note: This column contains laboratory data.
	21					
	22		Note: 1) Soils are field visually classified in accordance with the Unified Soil Classification System.			If penetration is less than 20', refusal was met after less than 1' penetration occured in 3 minutes.
	23					
	24					

Borrow Area
2 East

HOLE NO. FIVC-01-08

DRILLING LOG

DIVISION:

INSTALLATION: **SHEET 1 of 1**

1. PROJECT FIRE ISLAND SAND STUDY

2. LOCATION (Coordinates or Station) X= 1245975 Y= 177717

3. DRILLING AGENCY: Alpine Ocean Seismic Survey Inc.

4. HOLE NO. (As shown on drawing title and file number) FIVC-01-08

5. NAME OF DRILLER JAMES COLE

6. DIRECTION OF HOLE VERTICAL

7. THICKNESS OF BURDEN 0.0 FT

8. DEPTH DRILLED INTO ROCK N/A

9. TOTAL DEPTH OF HOLE 14.7 FT

10. SIZE AND TYPE OF BIT 3 5/8"

11. DATUM FOR ELEVATION SHOWN (TBM or MSL) NGVD

12. MANUFACTURER'S DESIGNATION OF DRILL ALPINE PNEUMATIC VIBRACORE

13. TOT NO. OF OVERBURDEN SAMPLES TAKEN Disturbed: 0 Undisturbed: 0

14. TOTAL NO. OF CORE BOXES

15. ELEVATION GROUND WATER

16. DATE HOLE Started 10/02/01 Completed 14:31

17. ELEVATION TOP OF HOLE -40.5 ft

18. TOTAL CORE RECOVERY FOR BORING 100%

19. SIGNATURE OF GEOLOGIST SK/ML

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS
-40.5	0					
	1		SAND, medium grained, very pale brown (10YR-8/3), (SP).		1	Sample #1, Depth = 1.0' Mean (mm): 0.48, Phi Sorting: 0.63 Silt: 0.84% (SP)
-42.8	2					
	3		medium to fine grained, light gray (5Y-7/2), (SP).		2	Sample #2, Depth = 3.5' Mean (mm): 0.35, Phi Sorting: 0.50 Silt: 1.14% (SP)
-45.7	4					
	5		fine grained, trace shell fragments, light gray (5Y-7/2), (SP).		3	Sample #3, Depth = 5.8' Mean (mm): 0.26, Phi Sorting: 1.04 Silt: 5.95% (SW-SM)
-47.1	6					
	7		fine grained, little silt, light gray (5Y-7/2), (SM).		4	Sample #4, Depth = 8.0' Mean (mm): 0.10, Phi Sorting: 0.61 Silt: 19.66% (SM)
-49.2	8					
-49.7	9		SILTY CLAY, gray (5Y-5/1), (ML-CL).			
	10		SAND, medium to fine grained sand, little silt, trace gravel, trace shell fragments, gray (5Y-5/1), (SM).		6	Sample #6, Depth = 9.7' Mean (mm): 0.31, Phi Sorting: 1.91 Silt: 8.70% (SW-SM)
-51.1	11					
	12					
	13		SAND, medium grained, trace shell fragments, light gray (5Y-5/1), (SP).		8	Sample #8, Depth = 15.0' Mean (mm): 0.44, Phi Sorting: 0.82 Silt: 0.86% (SP)
	14					
	15					
-56.6	16					
	17		medium to fine grained, light gray (5Y-7/1), (SP).		9	Sample #9, Depth = 17.5' Mean (mm): 0.40, Phi Sorting: 0.89 Silt: 1.46% (SP)
-58.8	18					
	19		End of Boring			
	20					
	21		Expansion from 14.7'.			Note: This column contains laboratory data.
	22		Note: 1) Soils are field visually classified in accordance with the Unified Soil Classification System.			If penetration is less than 20', refusal was met after less than 1' penetration occurred in 3 minutes.
	23					
	24					

Dredged to -41.2'

Cut Elevation -44.9'

HOLE NO. FIVC-01-10

DRILLING LOG

DIVISION:

INSTALLATION: **SHEET 1 of 1**

1. PROJECT FIRE ISLAND SAND STUDY	**10. SIZE AND TYPE OF BIT** 3 5/8"
2. LOCATION (Coordinates or Station) X= 1247714 Y= 177425	**11. DATUM FOR ELEVATION SHOWN** (TBM or MSL) NGVD
3. DRILLING AGENCY: Alpine Ocean Seismic Survey Inc.	**12. MANUFACTURER'S DESIGNATION OF DRILL** ALPINE PNEUMATIC VIBRACORE
4. HOLE NO. (As shown on drawing title and file number) FIVC-01-10	**13. TOT NO. OF OVERBURDEN SAMPLES TAKEN** Disturbed: 0 Undisturbed: 0
5. NAME OF DRILLER JAMES COLE	**14. TOTAL NO. OF CORE BOXES**
6. DIRECTION OF HOLE VERTICAL	**15. ELEVATION GROUND WATER**
	16. DATE HOLE Started 10/02/01 Completed 10:49
7. THICKNESS OF BURDEN 0.0 FT	**17. ELEVATION TOP OF HOLE** -40.4 ft
8. DEPTH DRILLED INTO ROCK N/A	**18. TOTAL CORE RECOVERY FOR BORING** 100%
9. TOTAL DEPTH OF HOLE 14.6 FT	**19. SIGNATURE OF GEOLOGIST** SK/ML

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS
-40.4	0					
	1		SAND, fine to medium grained, light gray (10YR-7/2), (SP).		1	Sample #1, Depth = 1.0' Mean (mm): 0.44, Phi Sorting: 0.47 Silt: 0.59% (SP)
-42.4	2					
	3		SAND, medium grained, trace shell fragments, light gray (10YR-7/2), (SW).		2	Sample #2, Depth = 3.5' Mean (mm): 0.65, Phi Sorting: 1.14 Silt: 1.20% (SW)
-45.6	4					
	5					
	6					
	7					Dredged to -48.0'
	8		SAND, fine to medium grained, light gray (10YR-7/2), (SP).		4	Sample #4, Depth = 9.5' Mean (mm): 0.30, Phi Sorting: 0.58 Silt: 2.10% (SP)
	9					Cut Elevation -49.0'
	10					
-51.8	11					
	12		SAND, fine grained, trace shell fragments, little silt, 1" clay pockets at 13.4' and 14.1', gray (5Y-6/1), (SM).		5	Sample #5, Depth = 13.2' Mean (mm): 0.16, Phi Sorting: 1.23 Silt: 14.49% (SM)
-54.5	13					
	14		SAND, medium grained, little gravel up to 1", trace shell fragments, clay pocket at 14.7', gray (5Y-6/1), (SW).		6	Sample #6, Depth = 14.6' Mean (mm): 0.95, Phi Sorting: 2.20 Silt: 3.84% (SW)
-56.1	15					
	16		SAND, fine grained, light gray (5Y-7/1), (SP).		7	Sample #7, Depth = 16.3' Mean (mm): 0.29, Phi Sorting: 1.05 Silt: 2.37% (SP)
-57.6	17					
	18		End of Boring			
	19					
	20					
	21					
	22		Expansion from 14.6'.			Note: This column contains laboratory data.
	23		Note: 1) Soils are field visually classified in accordance with the Unified Soil Classification System.			If penetration is less than 20', refusal was met after less than 1' penetration occurred in 3 minutes.
	24					

DRILLING LOG

DIVISION:

INSTALLATION:

SHEET 1 of 1

1. PROJECT: FIRE ISLAND SAND STUDY

2. LOCATION (Coordinates or Station): X= 1246778 Y= 177030

3. DRILLING AGENCY: Alpine Ocean Seismic Survey Inc.

4. HOLE NO. (As shown on drawing title and file number): FIVC-01-13

5. NAME OF DRILLER: JAMES COLE

6. DIRECTION OF HOLE: VERTICAL

7. THICKNESS OF BURDEN: 0.0 FT

8. DEPTH DRILLED INTO ROCK: N/A

9. TOTAL DEPTH OF HOLE: 13.2 FT

10. SIZE AND TYPE OF BIT: 3 5/8"

11. DATUM FOR ELEVATION SHOWN (TBM or MSL): NGVD

12. MANUFACTURER'S DESIGNATION OF DRILL: ALPINE PNEUMATIC VIBRACORE

13. TOT NO. OF OVERBURDEN SAMPLES TAKEN: Disturbed: 0 Undisturbed: 0

14. TOTAL NO. OF CORE BOXES

15. ELEVATION GROUND WATER

16. DATE HOLE: Started 10/04/01 Completed 9:46

17. ELEVATION TOP OF HOLE: -42.6 ft

18. TOTAL CORE RECOVERY FOR BORING: 100%

19. SIGNATURE OF GEOLOGIST: SK/ML

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS
-42.6	0					
	4		SAND, medium grained, gray (5Y 6/1), (SP).		2	Sample #2, Depth = 6.0' Mean (mm): 0.44, Phi Sorting: 0.69 Silt: 1.97% (SP)
	6					Dredged to -46.7'
	7					Cut Elevation -49.4'
-51.4	8					
	9		SAND, fine grained, pockets of silt and clay common throughout, gray (5Y-5/1), (SM).		3	Sample #3, Depth = 10.4' Mean (mm): 0.10, Phi Sorting: 0.87 Silt: 37.74% (SM)
-53.9	11					
	12		CLAYEY SAND, alternating layers of relatively same thickness of medium grained sand and clay, (SC).		4	Sample #4, Depth = 11.5' Mean (mm): 0.23, Phi Sorting: 1.72 Silt: 20.34% (SM)
-55.2	13		SAND, medium grained, trace gravel, trace whole shell, gray (5Y-6/1), (SP).		2	
-56.5	14		SAND, coarse grained, some gravel, trace shell fragments, gray (5Y-6/1), (SW).		6	Sample #6, Depth = 14.3' Mean (mm): 1.57, Phi Sorting: 1.99 Silt: 2.11% (SW)
-58.1	15					
	16		End of Boring			
	20		Expansion from 13.2'.			Note: This column contains laboratory data.
	22		Note: 1) Soils are field visually classified in accordance with the Unified Soil Classification System.			If penetration is less than 20', refusal was met after less than 1' penetration occurred in 3 minutes.
	24					

DRILLING LOG

DIVISION:

INSTALLATION:

SHEET 1 of 1

1. PROJECT: FIRE ISLAND SAND STUDY

2. LOCATION (Coordinates or Station): X= 1246786 Y= 177014

3. DRILLING AGENCY: Alpine Ocean Seismic Survey Inc.

4. HOLE NO. (As shown on drawing title and file number): FIVC-01-13A

5. NAME OF DRILLER: JAMES COLE

6. DIRECTION OF HOLE: VERTICAL

7. THICKNESS OF BURDEN: 0.0 FT

8. DEPTH DRILLED INTO ROCK: N/A

9. TOTAL DEPTH OF HOLE: 17.3 FT

10. SIZE AND TYPE OF BIT: 3 5/8"

11. DATUM FOR ELEVATION SHOWN (TBM or MSL): NGVD

12. MANUFACTURER'S DESIGNATION OF DRILL: ALPINE PNEUMATIC VIBRACORE

13. TOT NO. OF OVERBURDEN SAMPLES TAKEN: Disturbed: 0 Undisturbed: 0

14. TOTAL NO. OF CORE BOXES

15. ELEVATION GROUND WATER

16. DATE HOLE: Started 10/04/01 Completed 10:12

17. ELEVATION TOP OF HOLE: -41.1 ft

18. TOTAL CORE RECOVERY FOR BORING: 100%

19. SIGNATURE OF GEOLOGIST: SK/ML

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS
-41.1	0					
	1					
	2					
	3					
	4					
	5		JET			
	6					
	7					
	8					
	9					
	10					
-52.1	11					
			SAND, medium to coarse grained, trace gravel, gray (5Y-6/1), (SW).		13#6	
-53.3	12					
	13					
	14					
	15					
	16		SAND, medium grained, trace shell fragments, gray (5Y-6/1), (SP).		9	Sample #9, Depth = 18.0' Mean (mm): 0.41, Phi Sorting: 0.93 Silt: 4.22% (SP)
	17					
	18					
	19					
-61.4	20					
	21		End of Boring Expansion from 17.3'.			Note: This column contains laboratory data. If penetration is less than 20', refusal was met after less than 1' penetration occurred in 3 minutes.
	22					
	23		Note: 1) Soils are field visually classified in accordance with the Unified Soil Classification System.			
	24					

HOLE NO. FIVC-01-14

DRILLING LOG

DIVISION:

INSTALLATION: **SHEET 1 of 1**

1. PROJECT FIRE ISLAND SAND STUDY

2. LOCATION (Coordinates or Station) X= 1248789 Y= 177521

3. DRILLING AGENCY: Alpine Ocean Seismic Survey Inc.

4. HOLE NO. (As shown on drawing title and file number) FIVC-01-14

5. NAME OF DRILLER JAMES COLE

6. DIRECTION OF HOLE VERTICAL

7. THICKNESS OF BURDEN 0.0 FT

8. DEPTH DRILLED INTO ROCK N/A

9. TOTAL DEPTH OF HOLE 17.3 FT

10. SIZE AND TYPE OF BIT 3 5/8"

11. DATUM FOR ELEVATION SHOWN (TBM or MSL) NGVD

12. MANUFACTURER'S DESIGNATION OF DRILL ALPINE PNEUMATIC VIBRACORE

13. TOT NO. OF OVERBURDEN SAMPLES TAKEN Disturbed: 0 Undisturbed: 0

14. TOTAL NO. OF CORE BOXES

15. ELEVATION GROUND WATER

16. DATE HOLE Started 10/04/01 Completed 10:51

17. ELEVATION TOP OF HOLE -40.4 ft

18. TOTAL CORE RECOVERY FOR BORING 100%

19. SIGNATURE OF GEOLOGIST SK/ML

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS
-40.4	0					
	1		SAND, medium grained, trace shell fragments, light gray (10YR 7/2), (SP).		1	Sample #1, Depth = 1.0' Mean (mm): 0.76, Phi Sorting: 1.26 Silt: 2.64% (SW)
-42.5	2		SAND, fine to medium grained, gray (5Y-6/1), (SP).		2	Sample #2, Depth = 2.6' Mean (mm): 0.33, Phi Sorting: 0.71 Silt: 4.31% (SP)
-43.4	3		medium to fine grained, trace shell fragments, gray (5Y-5/1), (SP).			
	4				4	Sample #4, Depth = 5.5' Mean (mm): 0.41, Phi Sorting: 0.85 Silt: 2.23% (SP)
-45.4	5					Cut Elevation --45.2'
-46.4	6		medium to fine, light gray (10YR-7/2), (SP).			
	7		fine grained, gray (5Y-6/1), (SP).		5	Sample #5, Depth = 7.6' Mean (mm): 0.24, Phi Sorting: 0.59 Silt: 1.97% (SP)
-49.4	8					
	9					
	10		SAND, fine grained, little silt, trace shell fragments, clay pockets common, gray (5Y-5/1), (SM).		6	Sample #6, Depth = 11.0' Mean (mm): 0.14, Phi Sorting: 1.06 Silt: 18.05% (SM)
	11					
	12					
-53						
-53.6	13		CLAY, dark gray (5Y-4/1), (CL).			
-54.6	14		GRAVELLY SAND, medium grained, trace silt, little shell fragments, gray, (5Y-5/1), (SW).			
	15		SAND, fine grained, gray (5Y-6/1), (SP).		5	
	16					
-57.6	17					
-58.8	18		SAND, medium grained, little whole shell, little shell fragments, gray (5Y-6/1), (SW).		10	Sample #10, Depth = 17.7' Mean (mm): 0.66, Phi Sorting: 1.23 Silt: 1.70% (SW)
	19		End of Boring			
	20					
	21		Expansion from 17.3'.			Note: This column contains laboratory data.
	22					
	23		Note: 1) Soils are field visually classified in accordance with the Unified Soil Classification System.			If penetration is less than 20', refusal was met after less than 1' penetration occurred in 3 minutes.
	24					

Dredged to -41.6'

PROJECT: Fire Island | HOLE NUMBER: FIVC-01-14

HOLE NO. FIVC-01-17

DRILLING LOG

DIVISION:

INSTALLATION: **SHEET 1 of 1**

1. PROJECT FIRE ISLAND SAND STUDY

2. LOCATION (Coordinates or Station) X= 1249676 Y= 177186

3. DRILLING AGENCY: Alpine Ocean Seismic Survey Inc.

4. HOLE NO. (As shown on drawing title and file number) FIVC-01-17

5. NAME OF DRILLER JAMES COLE

6. DIRECTION OF HOLE VERTICAL

7. THICKNESS OF BURDEN 0.0 FT

8. DEPTH DRILLED INTO ROCK N/A

9. TOTAL DEPTH OF HOLE 15.8 FT

10. SIZE AND TYPE OF BIT 3 5/8"

11. DATUM FOR ELEVATION SHOWN (TBM or MSL) NGVD

12. MANUFACTURER'S DESIGNATION OF DRILL ALPINE PNEUMATIC VIBRACORE

13. TOT NO. OF OVERBURDEN SAMPLES TAKEN Disturbed: 0 Undisturbed: 0

14. TOTAL NO. OF CORE BOXES

15. ELEVATION GROUND WATER

16. DATE HOLE Started 10/04/01 Completed 11:40

17. ELEVATION TOP OF HOLE -42.3 ft

18. TOTAL CORE RECOVERY FOR BORING 100%

19. SIGNATURE OF GEOLOGIST SK/ML

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS
-42.3	0					
-43.2	1		SAND, medium to fine grained, light gray (10YR-7/2), (SP).		1	Sample #1, Depth = 0.5' Mean (mm): 0.35, Phi Sorting: 0.55 Silt: 1.39% (SP)
	2					
	3		medium grained, trace shell fragments, gray (5Y-6/1), (SP).		2	Sample #2, Depth = 2.5' Mean (mm): 0.45, Phi Sorting:0.56 Silt: 1.08% (SP)
	4					Dredged to -45.3'
-47.3	5					
	6		medium grained, light gray (5Y-7/1), (SP).		2	
-48.9	7					
	8		SAND, medium to fine grained, gray (5Y-5/1), (SP).		4	Sample #4, Depth = 7.5' Mean (mm): 0.29, Phi Sorting: 1.11 Silt: 5.28% (SW-SM)
-51	9					Cut Elevation -51.4'
	10		SAND, medium grained, very pale brown (10YR-7/3), (SP).		5	Sample #5, Depth = 9.5' Mean (mm): 0.43, Phi Sorting: 0.75 Silt: 1.15% (SP)
-53.3	11					
			fine to medium grained, gray (5Y-6/1), (SP).		6	Sample #6, Depth = 11.5' Mean (mm): 0.30, Phi Sorting: 0.58 Silt: 1.42% (SP)
-54.3	12					
-54.8			SAND, fine grained, little silt, gray (5Y-5/1), (SW-SM).		7	
	13					Sample #7, Depth = 12.3' Mean (mm): 0.17, Phi Sorting: 1.35 Silt: 21.81% (SM)
-55.8			SAND, medium to fine grained, gray (5Y-6/1), (SP).		2	
-56.6	14					
			SILTY SAND, fine grained, gray (5Y-5/1), (SM).		9	Sample #9, Depth = 13.7' Mean (mm): 0.26, Phi Sorting: 1.34 Silt: 9.84% (SW-SM)
-57.8	15		SAND, fine grained, trace silt, gray (5Y-5/1), (SP).		10	Sample #10, Depth = 14.5' Mean (mm): 0.24, Phi Sorting: 0.51 Silt: 3.58% (SP)
-58.8	16		fine grained, trace gravel, light gray (5Y-7/1), (SP).		6	
	17		End of Boring			
	18					
	19					
	20					
	21					Note: This column contains laboratory data.
	22		Expansion from 15.8'.			
	23		Note: 1) Soils are field visually classified in accordance with the Unified Soil Classification System.			If penetration is less than 20', refusal was met after less than 1' penetration occurred in 3 minutes.
	24					

HOLE NO. FIVC-01-18

DRILLING LOG

DIVISION:

INSTALLATION:

SHEET 1 of 1

1. PROJECT FIRE ISLAND SAND STUDY

2. LOCATION (Coordinates or Station) X= 1250549 Y= 177644

3. DRILLING AGENCY: Alpine Ocean Seismic Survey Inc.

4. HOLE NO. (As shown on drawing title and file number) FIVC-01-18

5. NAME OF DRILLER JAMES COLE

6. DIRECTION OF HOLE VERTICAL

7. THICKNESS OF BURDEN 0.0 FT

8. DEPTH DRILLED INTO ROCK N/A

9. TOTAL DEPTH OF HOLE 15.8 FT

10. SIZE AND TYPE OF BIT 3 5/8"

11. DATUM FOR ELEVATION SHOWN (TBM or MSL) NGVD

12. MANUFACTURER'S DESIGNATION OF DRILL ALPINE PNEUMATIC VIBRACORE

13. TOT NO. OF OVERBURDEN SAMPLES TAKEN Disturbed: 0 Undisturbed: 0

14. TOTAL NO. OF CORE BOXES

15. ELEVATION GROUND WATER

16. DATE HOLE Started 10/04/01 Completed 12:51

17. ELEVATION TOP OF HOLE -41.5 ft

18. TOTAL CORE RECOVERY FOR BORING 100%

19. SIGNATURE OF GEOLOGIST SK/ML

ELEV.	DEPTH	LEGEND	CLASSIFICATION OF MATERIALS (Description)	CORE REC %	SAMPLE NUMBER	REMARKS
-41.5	0					
	1		SAND, medium grained, trace shell fragments, light gray (10YR-7/2), (SP).		1	Sample #1, Depth = 2.5' Mean (mm): 0.54, Phi Sorting: 0.78 Silt: 1.88% (SP)
	2					
	3					
	4					
-46.8	5					
	6					Dredged to -47.8'
	7		fine to medium grained, gray (5Y-6/1), (SP).		2	Sample #2, Depth = 7.5' Mean (mm): 0.35, Phi Sorting: 0.58 Silt: 1.47% (SP)
	8					
	9					
	10					
-52.9	11					
	12		SAND, medium grained, little whole shell, little shell fragments, gray (5Y-6/1), (SP).		3	Sample #3, Depth = 12.5' Mean (mm): 0.56, Phi Sorting: 1.12 Silt: 1.96% (SW) Cut Elevation -53.8'
-55	13					
	14		SAND, fine grained, trace silt, 1" clay pocket at 13.9', gray (5Y-5/1), (SW-SM).		4	Sample #4, Depth = 14.2' Mean (mm): 0.15, Phi Sorting: 1.22 Silt: 17.88% (SM)
-56.2	15		SAND, medium grained, trace silt, some gravel (up to 1.5"), trace shell fragments, gray (5Y-6/1), (SW).		6	
-57.4	16					
	17		medium grained, trace shell fragments, trace gravel, light gray (5Y-7/1), (SW).		6	Sample #6, Depth = 17.5' Mean (mm): 0.67, Phi Sorting: 1.20 Silt: 2.12% (SW)
	18					
-60.3	19		SAND, fine grained, trace silt, gray (5Y-6/1), (SW-SM).		4	
-61.1	20		End of Boring			
	21		Expansion from 15.8'.			Note: This column contains laboratory data.
	22					
	23		Note: 1) Soils are field visually classified in accordance with the Unified Soil Classification System.			If penetration is less than 20', refusal was met after less than 1' penetration occurred in 3 minutes.
	24					