Table 1. Summary of hourly wind readings at Norfolk International Airport from 1960-1990.

Wind Speed (m/s)	Wind Speed (mph)	WIND DIRECTION South	South west	West	North west	North	North east	East	South east	Total
<2	<5	5497* 2.12+	3316 1.28	2156 0.83	1221 0.47	35748 13.78	2050 0.79	3611 1.39	2995 1.15	56594 21.81
2-5	5-11	21083 8.13	15229 5.87	9260 3.57	6432 2.48	11019 4.25	13139 5.06	9957 3.84	9195 3.54	95314 36.74
5-9	11-21	14790 5.70	17834 6.87	10966 4.23	8404 3.24	21816 8.41	16736 6.45	5720 2.20	4306 1.66	100572 38.77
9-14	21-31	594 0.23	994 0.38	896 0.35	751 0.29	1941 0.75	1103 0.43	148 0.06	60 0.02	6487 2.5
14-18	31-41	25 0.01	73 0.03	46 0.02	25 0.01	162 0.06	101 0.04	10 0.00	8 0.00	450 0.17
18-23	41-51	0 0.00	0 0.00	0 0.00	1 0.00	4 0.00	4 0.00	1 0.00	0 0.00	10 0.00
Total		41989 16.19	37446 14.43	23324 8.99	16834 6.49	70690 27.25	33133 12.77	19447 7.50	16564 6.38	259427 100.00

*Number of occurrences +Percent

Table 2. Observed wave height, period and direction during extreme events between 10 October, 1990 and 22 August, 1991 (Boon *et al.*, 1993).

Date	Type*1	Wave Height*2 (ft)	Period*3 (sec)	Direction (°TN)	Bearing
Oct 26, 1990	ETS	5.8	7.76	193.7	SSW
Nov 18, 1990	ETS	4.4	5.95	199.4	SSW
Dec 28, 1990	ETS	4.1	8.83	291.4	WNW
Jan 9, 1991	ETS	4.6	11.13	292.1	WNW
Apr 20, 1991	ETS	4.0	6.24	259.5	W
May 19, 1991	ETS	4.4	6.56	290.2	WNW
Aug 19, 1991	BOB	3.3	5.45	263.3	W

*1 ETS = extratropical storm, BOB = Hurricane Bob
*2 zero-moment wave height
*3 peak spectral wave period

Table 3. Historical Chesapeake Bay storm surges (U.S. COE, 1974) and relatively recent storm events (from NOS website).

Storm	Tidal Elevations (feet above MSL) Norfolk	Mid-Bay
August 1933 Hurricane	8.0	7.3
September 1936 Hurricane	7.5	-
October 1954 "Hazel"	3.3	4.8
August 1955 "Connie"	4.4	4.6
August 1955 "Diane"	4.4	4.5
April 1956 Northeaster	6.5	2.8
March 1962 Northeaster	7.4	6.0
January and February 1998 Twin Northeasters	5.1*1 5.6	3.0*2 3.6
September 1999 "Floyd"	4.8*1	3.0*2

*1 Sewells Point
*2 Windmill Point

Table 4A. Identification of potential and identified dune sites in Accomack County.

Potential Dune Site No.	Location Virginia South State Plane Grid NAD 1927 Easting (Feet)	Northing (Feet)	Visited?	Dune Shore Length (Feet)	Primary Dune Site?	Secondary Dune Site?	*Public Ownership?
1	2,795,000	586,700		200			
2	2,794,850	582,400		180			
3	2,791,700	582,750		480			
4	2,791,400	581,200		240			
5	2,792,300	580,750		300			
6	2,793,750	581,150	Yes	910	Yes		
7	2,811,200	578,800	Yes	180	Yes		
8	2,810,850	569,250		300			
9	2,813,900	566,100		400			
10	2,814,200	562,620		1,080			
11	2,811,150	559,400		450			
12	2,809,250	563,550		250			
13	2,807,350	563,600		550			
14	2,806,450	562,250		450			
15	2,805,650	559,800	Yes	300			
16	2,805,250	559,600	Yes	450	Yes		
17	2,805,600	558,300	Yes	950	Yes		
18	2,802,850	550,150	Yes	1,100	Yes		
19	2,802,050	547,950		200			
20	2,802,650	548,150		500			
21	2,797,300	553,600		1,030			
22	2,796,600	548,950	Yes	590	Yes		
23	2,789,050	546,050		140			
24	2,784,050	547,350		140			
25	2,782,650	547,000		280			
26	2,781,950	546,650		220			
27	2,775,600	541,650	Yes	970	Yes	Yes	
28	2,775,550	540,500	Yes	850	Yes		
29	2,776,900	538,800	Yes	400			
30	2,783,550	528,700		180			
31	2,783,250	528,200		270			
32	2,782,700	527,200		250			
33	2,782,400	526,950		150			
34	2,782,300	526,750		200			
35	2,778,900	525,850		400			
36	2,778,500	525,500		180			
37	2,777,700	526,250		180			
38	2,774,900	524,700		240			
39	2,771,450	519,500	Yes	210	Yes		
40	2,771,500	519,100		220			
41	2,772,600	518,300	Yes	1,380	Yes	Yes	
42	2,777,700	516,750		200			
43	2,775,950	515,650		210			
44	2,773,800	514,850		500			
45	2,772,150	513,100		80			
46	2,770,400	511,550		170			
47	2,768,150	508,050		300			
48	2,766,950	495,950		130			
49	2,761,150	496,100	Yes	380	Yes		
50	2,758,800	493,400	Yes	680	Yes		
51	2,758,250	490,850	Yes	2,850	Yes		
52	2,755,800	490,500		310			
53	2,755,350	489,300		210			
54	2,755,650	487,950		240			
55	2,755,300	487,400		180			
56	2,752,000	480,400		500			
57	2,751,000	480,900	Yes	270	Yes		
58	2,750,550	480,350		100			
59	2,750,050	479,700	Yes	270	Yes		
60	2,749,850	478,550		70			
61	2,748,300	475,000	Yes	3,780	Yes	Yes	
62	2,746,000	470,650	Yes	1,100	Yes	Yes	
63	2,747,850	465,900		300			
64	2,746,600	465,600		270			
65	2,745,750	465,000	Yes	640	Yes	Yes	
66	2,744,350	464,250	Yes	400	Yes	Yes	
67A	2,742,900	461,750	Yes	1,650	Yes		
67B			Yes	1,450	Yes		
68	2,741,700	458,500	Yes	630	Yes		
69A	2,742,100	455,550	Yes	400	Yes	Yes	
69B			Yes	250	Yes	Yes	
70	2,742,550	455,100		170			

*Public ownership includes governmental entities including local, state, and federal; otherwise ownership is by the private individual.

Table 4B. Identification of potential and identified dune sites in Lancaster County.

Potential Dune Site No.	Location Virginia South State Plane Grid NAD 1927 Easting (Feet)	Northing (Feet)	Visited?	Dune Shore Length (Feet)	Primary Dune Site?	Secondary Dune Site?	*Public Ownership?
1	2,550,500	529,800	Yes	80			
2	2,553,500	529,700	Yes	125			
3	2,555,400	525,350	Yes	250	Yes		
4	2,555,750	524,600	Yes	210	Yes		
5	2,557,700	518,400	Yes	130	Yes		
6	2,558,750	515,750	Yes	670	Yes		
7	2,559,900	514,900	Yes	1,025	Yes		
8	2,560,450	514,150	Yes	580	Yes		
9	2,561,200	512,300	Yes	130			
10	2,562,200	509,650	Yes	110	Yes		
11	2,562,800	509,450	Yes	990	Yes	Yes	
12	2,564,500	507,800	Yes	190	Yes		
13	2,565,400	507,250	Yes	300	Yes		
14	2,565,900	507,450	Yes	100			
15	2,566,000	507,200	Yes	150	Yes		
16	2,567,750	503,350	Yes	125	Yes		
17	2,568,300	495,050	Yes	120	Yes		
18	2,568,350	494,750	Yes	310	Yes		
19	2,568,050	492,350	Yes	200	Yes		
20	2,568,150	491,450	Yes	140	Yes		
21	2,568,200	491,200	Yes	160	Yes		
22	2,568,550	490,250	Yes	100	Yes		
23	2,568,950	489,800	Yes	170	Yes		
24	2,569,200	489,150	Yes	240	Yes		
25	2,570,000	488,750	Yes	420	Yes		
26	2,578,650	488,300		240			
27	2,581,950	491,900		360			
28	2,593,600	485,650	Yes	120	Yes		
29	2,596,400	486,600	Yes	150	Yes		
30	2,600,700	482,250	Yes	400			
31	2,603,150	482,150		280			
32	2,604,050	481,450	Yes	900	Yes	Yes	
33	2,606,350	478,900		250			
34	2,608,900	478,650	Yes	1,200	Yes		
35	2,610,350	479,000	Yes	180			Yes
36	2,610,700	479,100	Yes	140	Yes		
37	2,613,350	478,050		450			
38	2,613,700	477,750		120			
39A	2,619,050	471,800	Yes	850	Yes	Yes	
39B	2,619,050	471,800	Yes	600	Yes		
39C	2,623,930	476,750	Yes	320	Yes		
40	2,626,000	474,600		1,680			Yes
41	2,626,050	477,100		280			
42	2,629,400	476,150		290			
43	2,631,650	476,200	Yes	820	Yes		
44	2,632,550	476,800		240			
45	2,633,500	477,550		210			
46	2,635,200	475,850		370			
47	2,636,250	475,750	Yes	360	Yes		
48	2,637,100	475,550		520			
49	2,637,800	475,350		700			
50	2,638,500	474,850	Yes	580	Yes		
51	2,638,750	747,350	Yes	250	Yes		
52	2,639,000	474,150	Yes	100	Yes		
53	2,640,050	473,900		110			
54	2,640,400	474,100		250			
55	2,642,850	474,900		130			
56	2,643,000	475,100		190			
57	2,637,150	482,400		780			
58	2,636,050	483,100		940			
59	2,635,250	483,500		260			
60	2,634,800	483,650		400			
61	2,634,450	483,600		180			
62	2,633,900	483,600		570			
63	2,632,750	483,550		330			
64	2,632,250	483,200		330			
64A	2,626,220	489,950	Yes	200	Yes		
65	2,626,300	490,350	Yes	150	Yes		
66	2,626,100	490,600	Yes	170	Yes		
67	2,625,750	491,250	Yes	140	Yes		
68	2,625,350	491,900	Yes	250	Yes	Yes	
69	2,628,800	494,300	Yes	100	Yes		
70	2,628,550	496,450	Yes	100	Yes		
71	2,628,250	496,850	Yes	300	Yes		
72	2,627,400	497,650	Yes	570	Yes	Yes	
73	2,626,700	498,050	Yes	300	Yes	Yes	

*Public ownership includes governmental entities including local, state, and federal; otherwise ownership is by the private individual.

Table 4C. Identification of potential and identified dune sites in Mathews County.

Potential Dune Site No.	Location Virginia South State Plane Grid NAD 1927 Easting (Feet)	Northing (Feet)	Visited?	Dune Shore Length (Feet)	Primary Dune Site?	Secondary Dune Site?	*Public Ownership?
1	2,645,910	362,500	Yes	630	Yes		
2	2,646,620	363,300	Yes	1,600	Yes	Yes	
3	2,647,500	368,050	Yes	4,290	Yes	Yes	
4	2,647,100	374,900	Yes	500	Yes		
5	2,646,720	377,500	Yes	165	Yes		
6	2,650,250	381,850		565			
7	2,651,180	382,080		215			
8A	2,654,100	387,100	Yes	3,150	Yes	Yes	
8B			Yes	3,050	Yes	Yes	
9	2,653,780	399,100	Yes	225	Yes		
10	2,653,440	401,900	Yes	485	Yes		
11	2,652,950	404,800	Yes	515	Yes		
12	2,649,180	422,450	Yes	1,540	Yes		
13	2,646,340	427,600	Yes	450	Yes	Yes	
14	2,644,980	431,900	Yes	460	Yes		
15	2,643,340	435,300	Yes	65	Yes		
16	2,640,680	437,720	Yes	105	Yes		
17	2,638,850	435,720	Yes	210			
18	2,633,820	428,300	Yes	525	Yes		
19	2,622,400	433,780	Yes	250	Yes		Yes
20	2,621,180	435,550	Yes	315	Yes		
21	2,620,940	435,900	Yes	430	Yes		
22	2,618,460	439,520	Yes	170			
23	2,615,720	440,840	Yes	250	Yes		
24	2,608,500	441,350	Yes	350	Yes		

*Public ownership includes governmental entities including local, state, and federal; otherwise ownership is by the private individual.

Table 4D. Identification of potential and identified dune sites in Northampton County.

Potential Dune Site No.	Location Virginia South State Plane Grid NAD 1927 Easting (Feet)	Northing (Feet)	Visited?	Dune Shore Length (Feet)	Primary Dune Site?	Secondary Dune Site?	*Public Ownership?
1	2,742,400	450,000	Yes	208			
2	2,742,400	449,500	Yes	130			
3	2,742,350	448,980	Yes	52			
4	2,742,150	447,650	Yes	1,745	Yes		
5	2,740,500	444,330	Yes	440	Yes		
6	2,738,250	438,600	Yes	203			
7	2,737,150	434,650	Yes	385			
8	2,737,000	433,300	Yes	542	Yes	Yes	
9	736,900	432,450	Yes	255			
10	736,750	431,420	Yes	1,407	Yes	Yes	
11	736,600	425,650	Yes	438	Yes		
12	736,120	425,600		297	Yes		
13	736,900	421,150	Yes	1,500	Yes		
14A			Yes	450	Yes	Yes	
14B	736,080	417,800	Yes	175	Yes	Yes	
15	734,420	417,300	Yes	229	Yes	Yes	
16	734,750	416,980		146	Yes		
17	731,580	411,450	Yes	959	Yes		
18A			Yes	800	Yes		
18B	730,980	409,200	Yes	1,540	Yes		
19	730,820	406,940	Yes	907	Yes		
20	731,180	406,700	Yes	375	Yes		
21	731,190	406,200	Yes	323	Yes		
22	731,200	405,650	Yes	156			
23	731,000	404,090	Yes	250	Yes		
24	731,860	399,550		224			
25	731,700	399,320		73			
26	735,350	396,780		271			
27	730,400	391,450	Yes	245	Yes		
28	730,250	390,100	Yes	188	Yes		
29	2,730,500	388,500		125			
30	730,180	386,400	Yes	375	Yes		
31	727,900	381,650	Yes	464			
32	2,724,250	375,580		208			

Potential Dune Site No.	Location Virginia South State Plane Grid NAD 1927 Easting (Feet)	Northing (Feet)	Visited?	Dune Shore Length (Feet)	Primary Dune Site?	Secondary Dune Site?	*Public Ownership?
33A			Yes	2,680	Yes	Yes	Yes
33B			Yes	2,660	Yes		Yes
33C	722,220	370,950	Yes	2,850	Yes		Yes
34	721,140	365,300	Yes	3,272	Yes		
35	720,880	362,700	Yes	1,824	Yes		
36	720,900	361,050	Yes	1,636	Yes		
37	723,880	354,250		979			
38	722,020	352,350		63			
39	721,870	352,180		68			
40	721,120	351,520	Yes	359	Yes		Yes
41A	720,540	349,850	Yes	833	Yes		Yes
41B			Yes	600	Yes	Yes	Yes
42	720,340	344,920	Yes	1,527	Yes	Yes	
43	721,100	343,320	Yes	1,959	Yes	Yes	
44	722,450	340,300		865			
45	723,280	338,620	Yes	479	Yes		
46	723,700	338,020	Yes	208	Yes		
47	724,650	337,800		677			
48	724,730	336,250	Yes	703	Yes	Yes	
49	724,060	331,260	Yes	1,193	Yes		
50	723,880	328,750		745			
51A			Yes	4,900	Yes	Yes	
51B	725,780	323,800	Yes	4,100	Yes		Yes
52	729,680	319,250		300			
53	732,100	314,400	Yes	2,100	Yes	Yes	Yes
54	733,100	312,500	Yes	2,800	Yes	Yes	Yes
55	736,500	302,950	Yes	300			
56	736,750	302,100	Yes	800			
57	737,450	298,900	Yes	3,800	Yes	Yes	
58	738,100	295,420	Yes	300	Yes	Yes	Yes
59	736,920	292,440		1,600			
60	739,400	283,500		2,400			

*Public ownership includes governmental entities including local, state, and federal; otherwise ownership is by the private individual.

Table 4E. Identification of potential and identified dune sites in Northumberland County.

Potential Dune Site No.	Location Virginia South State Plane Grid NAD 1927 Easting (Feet)	Northing (Feet)	Visited?	Dune Shore Length (Feet)	Primary Dune Site?	Secondary Dune Site?	*Public Ownership?
1	2,630,850	499,900	Yes	140	Yes		
2	2,634,800	501,100	Yes	210	Yes		
3	2,635,950	503,000	Yes	250	Yes		
4	2,634,300	507,000	Yes	710	Yes	Yes	
4A	2,633,300	509,700	Yes	580	Yes		
5	2,632,100	511,450	Yes	130			
6	2,630,400	511,700	Yes	180	Yes		
7	2,629,500	518,750	Yes	320	Yes		
8	2,632,050	517,350	Yes	270	Yes		
9	2,633,700	518,350	Yes	2,200	Yes		
10	2,631,350	522,300	Yes	1,360	Yes		
11	2,633,300	528,200	Yes	200	Yes		
11A	2,633,500	528,550	Yes	400	Yes		
12	2,632,900	530,200	Yes	450	Yes		
13	2,633,000	532,000	Yes	140			
14	2,634,150	533,150	Yes	510	Yes		
15	2,635,750	535,500	Yes	1,360	Yes		Yes
16	2,633,600	536,550	Yes	270			
17	2,633,200	536,200	Yes	250	Yes		Yes
18	2,632,200	538,900		150			
19	2,632,200	538,900	Yes	1,050	Yes		
20	2,633,400	542,150	Yes	290	Yes		
21	2,632,300	547,300	Yes	170	Yes		
22	2,633,150	548,600	Yes	390	Yes		
22A	2,632,950	548,900	Yes	160	Yes		
23A	2,631,050	552,600	Yes	300	Yes		
23B	2,631,050	552,600	Y	140	Y	N	1
24	2,632,450	553,350	Yes	290			
25	2,636,600	553,300		120			
26	2,637,150	550,000	Yes	120	Yes		
27	2,637,950	549,300	Yes	180	Yes		
28	2,641,050	546,150	Yes	480	Yes		
29	2,643,250	546,550		100			
30	2,647,600	552,200	Yes	250	Yes		
31	2,648,100	552,850	Yes	620	Yes		
32	2,648,700	553,400	Yes	360	Yes		
33	2,649,300	558,000	Yes	180	Yes		
34	2,649,500	558,500	Yes	180	Yes		
35	2,649,600	560,100	Yes	280	Yes		
36	2,650,450	561,600	Yes	120	Yes		
37	2,650,550	562,300	Yes	240	Yes		
38	2,650,800	564,350	Yes	230	Yes		
39	2,650,950	565,150	Yes	370			
40	2,650,900	566,800	Yes	600	Yes		
41	2,651,900	570,200	Yes	420			
42	2,652,500	572,400	Yes	3,690	Yes	Yes	
43	2,651,150	575,100	Yes	2,750	Yes	Yes	
43A	2650000	575950	Yes	870	Yes	Yes	
43B	2649100	576650	Yes	400	Yes		
44	2,648,750	576,900	Yes	150			
45	2,648,100	577,750	Yes	220	Yes		
46	2,647,500	578,750	Yes	650	Yes		
47	2,646,800	579,500	Yes	320	Yes		
48	2,643,500	582,450	Yes	200	Yes		
49	2,642,500	583,000	Yes	470	Yes		
50	2,641,700	583,450	Yes	160	Yes		
51	2,640,850	583,800	Yes	190	Yes		
52	2,640,150	584,150	Yes	300	Yes		
53	2,638,100	585,200	Yes	90			
54	2,637,750	585,400	Yes	240		Yes	
55	2,633,700	587,700	Yes	250	Yes		
56	2,632,800	588,300	Yes	60			
57	2,631,400	589,000	Yes	160			
58	2,630,450	589,550	Yes	900	Yes	Yes	
59	2,629,200	590,300	Yes	1,680	Yes	Yes	
60	2,628,100	591,000	Yes	230			
61	2,626,900	591,750	Yes	400	Yes		
62	2,620,600	594,850	Yes	970	Yes		
63	2,619,800	595,250	Yes	250	Yes		
64	2,617,900	595,900	Yes	200			
65	2,617,350	596,100	Yes	320			
66	2,616,750	596,300	Yes	120			
67	2,615,150	596,750	Yes	90	Yes		
68	2,613,850	597,050	Yes	120			
69	2,611,100	596,600	Yes	350	Yes		
70	2,608,500	598,300	Yes	670	Yes		
71	2,606,250	599,000	Yes	110			
72	2,600,700	601,100		1,250			
73	2,599,600	601,950	Yes	750	Yes		
74	2,593,900	606,350	Yes	170	Yes		
75	2,586,750	607,700	Yes	270	Yes		
76	2,586,350	611,700	Yes	130			
77	2,586,850	611,600	Yes	110			
78	2,586,800	614,250	Yes	540	Yes		
79	2,583,100	618,500		1,220			
80	2,580,850	618,600		550			
81	2,579,550	619,000		500			

*Public ownership includes governmental entities including local, state, and federal; otherwise ownership is by the private individual.

Table 4F. Identification of potential and identified dune sites in City of Hampton.

Potential Dune Site No.	Location Virginia South State Plane Grid NAD 1927 Easting (Feet)	Northing (Feet)	Visited?	Dune Shore Length (Feet)	Primary Dune Site?	Secondary Dune Site?	*Public Ownership?
1	2,625,650	250,900	Yes	130			
2	2,629,850	255,100	Yes	220	Yes		
3	2,642,200	253,550		220			
4	2,643,450	260,450	Yes	550	Yes	Yes	Yes
5	2,643,650	261,550	Yes	270			
6	2,643,950	262,500	Yes	680	Yes		Yes
7	2,645,750	268,050	Yes	1,540	Yes	Yes	
8A	2,647,250	274,750	Yes	2,250	Yes		Yes
8B	2,647,850	276,700	Yes	1,100	Yes		Yes
9	2,648,100	277,150	Yes	250			
10	2,649,250	280,150	Yes	280			
11	2,649,850	281,250	Yes	1,290			
12	2,649,650	282,900	Yes	4,200	Yes	Yes	Yes
13	2,643,750	289,750		1,330			

Table 4G. Identification of potential and identified dune sites in City of Norfolk.

Potential Dune Site No.	Location Virginia South State Plane Grid NAD 1927 Easting (Feet)	Northing (Feet)	Visited?	Dune Shore Length (Feet)	Primary Dune Site?	Secondary Dune Site?	*Public Ownership?
1	2,676,850	225,400		1,020			Yes
2	2,674,000	225,950		230			
3	2,672,300	226,250	Yes	2,750	Yes		
4	2,669,000	227,300	Yes	2,780	Yes		
5	2,663,600	229,300	Yes	7,390	Yes	Yes	
6	2,658,250	233,200	Yes	3,530	Yes		Yes
7	2,655,050	235,550	Yes	680	Yes		Yes
8	2,653,500	236,350	Yes	2,500	Yes	Yes	
9A	2,647,400	238,850	Yes	1,300	Yes	Yes	
9B	2,647,100	238,900	Yes	250	Yes	Yes	
10	2,646,400	238,800		340			
11	2,644,800	238,650	Yes	2,680	Yes	Yes	
12	2,643,300	237,450		150			

Table 4H. Identification of potential and identified dune sites in City of Virginia Beach.

Potential Dune Site No.	Location Virginia South State Plane Grid NAD 1927 Easting (Feet)	Northing (Feet)	Visited?	Dune Shore Length (Feet)	Primary Dune Site?	Secondary Dune Site?	*Public Ownership?
1	2,731,950	223,450		4,450			Yes
2	2,729,700	225,600		950			Yes
3	2,724,700	227,100		1,300			Yes
4A	2,716,250	223,550	Yes	9,300	Yes	Yes	Yes
4B	2,714,950	222,400	Yes	1,850	Yes	Yes	Yes
4C	2,713,200	221,350	Yes	3,750	Yes	Yes	
5	2,706,600	219,550		250			
6	2,705,600	218,750	Yes	2,450	Yes	Yes	
7	2,703,000	218,150		300			Yes
8	2,702,050	218,450		120			
9	2,698,350	219,650	Yes	3,620	Yes		
10	2,695,600	220,550	Yes	2,850	Yes		
11	2,692,150	221,950	Yes	1,020	Yes		
12	2,691,200	222,500	Yes	1,020	Yes		
13	2,690,050	223,050		1,250			Yes
14	2,689,400	223,200		150			Yes
15A	2,685,050	223,900	Yes	1,200	Yes	Yes	Yes
15B	2,685,850	223,800	Yes	1,070	Yes	Yes	Yes
15C	2,687,900	223,450	Yes	2,160	Yes	Yes	Yes
16	2,684,050	224,150		230			Yes
17	2,680,800	225,000		1,300			Yes
18	2,679,500	225,400		460			Yes
19	2,677,550	225,300		280			

*Public ownership includes governmental entities including local, state, and federal; otherwise ownership is by the private individual.

Figure 5A. Jurisdictional dune site parameters and measurements in Accomack County.

Accomack			Dune Site Parameters												Dune Site Measurements									
																Primary Dune				SecondaryDunes				
	Site No.	Dune Shore Length (feet)	Type	Fetch Exposure A	Shoreline Direction of Face B	Nearshore Gradient C		Morphologic Setting D		Relative Stability E	Underlying Substrate F	Structure or Fill G			Juris-diction	Crest Elev (ftMLW) X	Extent from Crest landward (Feet) C	Extent from Crest To MLW (Feet) D	Juris-diction	Crest Elev (ftMLW) V	LandXtnt From PrimCrest (Feet) L	2ndCrest landward (Feet) A	2ndCrest BackBase PrimDune (Feet) B
AC	6	910	1	2	5	3	2	4	2	1	1				Yes	5.73	48	68					
AC	7	180	1	1	6	3	2	1	3	1	1				Yes	5.9	37	73					
AC	16	450	1	2	8	3	1	1	2	3	1				Yes	4.42	47	43					
AC	17	950	1	2	7	3	1	4	3	1	2				Yes	4.45	39	44					
AC	18	1,100	1	1	7	2	1	4	2	1	1				Yes	6.4	9	58					
AC	22	590	1	2	8	3	2	4	2	3	1				Yes	4.73	66	55					
AC	27	970	1	2	8	3	1	4	2	3	1				Yes	6.15	37	64	Yes	5.74	188	130	21
AC	28	850	1	2	6	3	1	4	2	3	1				Yes	6.97	62	42					
AC	39	210	1	2	7	3	1	1	1	3	1				Yes	4.68	43	39					
AC	41	1,380	1	1	4	1	2	4	3	2	1				Yes	5.77	24	53	Yes	4.84	154	44	86
AC	49	380	1	2	8	2	1	1	2	3	1				Yes	5.35	40	59					
AC	50	680	1	2	8	2	1	4	2	3	1				Yes	6.03	62	85					
AC	51	2,850	1	1	1	3	1	4	2	1	1				Yes	6	103	72					
AC	57	270	1	2	1	2	1	1	2	3	1				Yes	4.7	53	118					
AC	59	270	1	2	8	2	1	1	2	3	1				Yes	6.53	40	65					
AC	61	3,780	1	2	8	2	1	4	2	1	1				Yes	9.55	88	86	Yes	6.22	280	130	62
AC	62	1,100	1	2	8	2	1	4	2	2	1				Yes	7.78	36	68	Yes	7.85	250	190	24
AC	65	640	1	2	8	3	1	2		3	1				Yes	6.97	77	72	Yes	3.58	145	39	29
AC	66	400	1	2	8	2	1	2		3	1				Yes	5.21	28	44	Yes	5.9	70	15	27
AC	67A	1,650	1	2	7	2	1	4	2	3	1				Yes	8.31	38	75					
AC	67B	1,450	1	2	7	2	1	4	2	3	2				Yes	6.98	69	67					
AC	68	630	1	2	7	2	1	4	2	3	1				Yes	7.46	44	50					
AC	69A	400	1	2	7	3	1	2		3	1				Yes	6.06	24	53	Yes	7.44	63	25	14
AC	69B	250	1	2	7	3	1	1	3	3	1				Yes	7.76	7	43	Yes	8.81	54	39	8

Figure 5B. Jurisdictional dune site parameters and measurements in Lancaster County.

Lancaster			Dune Site Parameters												Dune Site Measurements								
															Primary Dune				SecondaryDunes				
	Site No.	Dune Shore Length (feet)	Type	Fetch Exposure A	Shoreline Direction of Face B	Nearshore Gradient C		Morphologic Setting D		Relative Stability E	Underlying Substrate F	Structure or Fill G			Jurisdiction	Crest Elev (ftMLW) X	Extent from Crest landward (Feet) C	To MLW (Feet) D	Jurisdiction	Crest Elev (ftMLW) V	LandXtnt From PrimCrest (Feet) L	2ndCrest landward (Feet) A	2ndCrest BackBase PrimDune (Feet) B
LN	3	250	2	3	6	2	2	1	1	1	2	1			Yes	5	18	35					
LN	4	210	1	3	6	2	2	2		3	1				Yes	3.94	21	44					
LN	5	130	1	3	7	2	2	2		1	1				Yes	3.44	32	45					
LN	6	670	1	3	5	1	2	1	3	3	2				Yes	3.67	14	33					
LN	7	1,025	1	3	6	1	2	4	2	1	2				Yes	5	6	53					
LN	8	580	2	3	6	1	2	1	2	1	2	1			Yes	4.81	39	40					
LN	10	110	1	3	7	1	2	1	2	3	2				Yes	4.06	12	32					
LN	11	990	1	3	6	2	2	4	3	1	2				Yes	3.53	3	28	Yes	3.27	29	3	26
LN	12	190	2	3	6	2	2	2		2	1	2			Yes	3.87	9	47					
LN	13	300	2	3	6	1	2	1	2	1	2	1			Yes	4.58	23	28					
LN	15	150	2	3	6	2	2	1	2	3	1	5			Yes	3.75	19	35					
LN	16	125	2	3	7	2	2	2		3	1	2			Yes	2.77	13	23					
LN	17	120	2	3	7	2	2	2		3	1	2			Yes								
LN	18	310	2	3	7	2	2	2		3	1	2			Yes	5.09	18	27					
LN	19	200	2	3	7	2	2	1	2	1	2	1			Yes	5.83	24	54					
LN	20	140	2	3	7	2	2	1	2	3	1	1			Yes								
LN	21	160	1	3	7	2	2	1	2	3	1				Yes								
LN	22	100	1	3	6	1	2	1	1	3	1				Yes								
LN	23	170	1	3	6	1	2	1	2	3	1				Yes								
LN	24	240	2	3	7	1	2	2		2	1	4			Yes								
LN	25	420	2	3	6	2	2	1	2	1	1	5			Yes	4.59	15	50					
LN	28	120	1	3	5	1	2	1	1	1	1				Yes								
LN	29	150	2	3	6	1	2	2		1	2	4			Yes								
LN	32	900	2	3	6	1	2	4	2	1	2	4			Yes	4.52	18	45	Yes	4.41	61	29	43
LN	34	1,200	2	3	5	1	2	2		1	1	1			Yes	5.54	28	60					
LN	36	140	2	3	5	1	2	1	2	1	2	1			Yes								
LN	39A	850	1	3	7	1	2	4	4	2	2				Yes	3.7	32	61	Yes	3.44	143	86	25
LN	39B	600	1	3	5	1	2	4	4	3	2				Yes	5.28	27	65					
LN	39C	320	2	1	4	3	2	1	2	1	2	2			Yes	5.5	20	45					
LN	43	820	1	1	4	2	1	4	2	3	2				Yes	5	20	30					
LN	47	360	2	1	5	2	1	1	2	1	2	1			Yes	5	50	41					
LN	50	580	2	1	6	1	2	4	2	1	2	1			Yes	4.34	15	60					
LN	51	250	2	1	6	1	2	1	2	1	2	1			Yes	5	40	28					
LN	52	100	2	1	5	1	2	1	2	1	2	1			Yes	7.15	32	63					
LN	64A	200	2	2	3	2	1	1	2	3	2	5			Yes	5.84	50	40					
LN	65	150	2	2	3	2	1	1	2	3	2	2			Yes	4.86	44	48					
LN	66	170	1	3	2	3	2	1	2	2	2				Yes	3.74	7	42					
LN	67	140	1	1	3	2	1	1	1	3	1				Yes	5.13	63	50					
LN	68	250	1	1	1	1	2	1	2	2	2				Yes	3.63	18	79	Yes	3.42	60	13	42
LN	69	100	2	1	5	1	1	1	1	3	2	1			Yes	5.41	25	65					
LN	70	100	2	1	2	1	1	1	2	3	1	3			Yes	3.91	50	52					
LN	71	300	2	1	2	1	1	1	2	1	2	1			Yes	5.25	4	44					
LN	72	570	1	1	1	1	2	4	3	1	2				Yes	3.39	18	29	Yes	3.03	40	18	4
LN	73	300	2	1	2	1	2	1	4	1	2	4			Yes	0	25	50	Yes	5.11	104	52	27

Figure 5C. Jurisdictional dune site parameters and measurements in Mathews County.

Mathews			Dune Site Parameters												Dune Site Measurements								
															Primary Dune				SecondaryDunes				
	Site No.	Dune Shore Length (feet)	Type	Fetch Exposure A	Shoreline Direction of Face B	Nearshore Gradient C		Morphologic Setting D		Relative Stability E	Underlying Substrate F	Structure or Fill G			Jurisdiction	Crest Elev (ftMLW) X	Distance from Crest landward (Feet) C	To MLW (Feet) D	Jurisdiction	Crest Elev (ftMLW) V	LandXtnt From PrimCrest (Feet) L	2ndCrest landward (Feet) A	2ndCrest BackBase PrimDune (Feet) B
MA	1	630	1	2	3	2	1	4	2	3	1				Yes	9.59	44	98					
MA	2	1,600	1	2	4	2	1	4	4	3	1				Yes	10.26	12	370	Yes	8.03	180	155	13
MA	3	4,290	2	2	3	3	1	4	2	3	2				Yes	9.98	8.5	65	Yes	8.36	98	20	69.5
MA	4	500	2	2	2	2	1	1	3	1	2	5			Yes	6.85	8	239					
MA	5	165	1	1	2	2	1	1	2	1	2				Yes								
MA	8A	3,150	1	2	4	2	2	2		2	1				Yes	6.9	64	68	Yes	7.95	224	71	89
MA	8B	3,050	1	2	3	2	2	2		2	1				Yes	9.15	82	60	Yes	6.33	340	35	223
MA	9	225	1	2	3	2	2	1	1	3	1				Yes	4.53	15	56					
MA	10	485	2	2	3	2	2	1	2	1	2	1			Yes	6.91	9	50					
MA	11	515	2	2	3	3	2	4	2	3	1	4			Yes	6.26	8	62					
MA	12	1,540	1	2	3	2	1	2		3	1				Yes	7.15	45	96					
MA	13	450	2	2	2	2	1	1	1	3	2	1			Yes	8.03	13	97	Yes	5.68	44	13	18
MA	14	460	2	2	2	2	1	1	2	1	2	1			Yes	6.83	18	63					
MA	15	65	2	2	2	2	1	1	2	1	2	1			Yes								
MA	16	105	2	2	2	2	1	1	2	1	2	1			Yes								
MA	18	525	2	1	1	1	2	4	2	1	2	4			Yes	6.09	64	62					
MA	19	250	1	1	2	1	1	1	2	1	2				Yes	4.49	10	58					
MA	20	315	2	1	2	1	1	1	2	1	1	4	5		Yes	5.21	26	43					
MA	21	430	2	1	2	1	1	1	2	1	2	4			Yes	5.84	24	126					
MA	23	250	1	3	3	1	2	1	2	1	2				Yes								
MA	24	350	1	3	1	1	2	2		1	1				Yes	3.51	31	36					

Figure 5D. Jurisdictional dune site parameters and measurements in Northampton County.

Northampton			Dune Site Parameters												Dune Site Measurements								
																Primary Dune				SecondaryDunes			
	Site No.	Dune Shore Length (feet)	Type	Fetch Exposure	Shoreline Direction of Face	Nearshore Gradient		Morphologic Setting		Relative Stability	Underlying Substrate	Structure or Fill			Jurisdiction	Crest Elev (ftMLW)	Extent from Crest landward (Feet)	To MLW (Feet)	Jurisdiction	Crest Elev (ftMLW)	LandXtnt From PrimCrest (Feet)	2ndCrest landward (Feet)	2ndCrest BackBase PrimDune (Feet)
				A	B	C		D		E	F	G				X	C	D		V	L	A	B
NH	4	1745	1	2	8	3	1	4	2	1	2				Yes	8.66	53	62					
NH	5	440	1	2	8	3	1	1	2	3	2				Yes	8.38	28	65					
NH	8	542	1	2	7	2	1	1	2	3	2				Yes	12.59	21	110	Yes				
NH	10	1,407	1	2	7	2	1	4	2	1	2				Yes	9.79	27	82	Yes	14	91	42	15
NH	11	438	2	2	7	2	1	1	2	1	2				Yes								
NH	12	297	1	2	5	1	1	2		3	1				Yes								
NH	13	1,500	1	2	8	2	1	4	2	3	2				Yes	8.67	48	87					
NH	14A	450	1	1	7	2	1	2		1	1				Yes	4.79	28	65	Yes	6.47	70	14	28
NH	14B	175	1	1	7	2	1	2		1	1				Yes	4.6	16	56	Yes	7.56	54	11	27
NH	15	229	1	1	6	2		2		1	1				Yes	3.11	19	60	Yes	4.67	36	10	7
NH	16	146	1	1	1	2	1	2		1	1				Yes								
NH	17	959	1	2	8	2	1	4	2	1	2				Yes	8.26	21	112					
NH	18A	800	1	2	7	2	1	3		2	1				Yes	4.13	37	39					
NH	18B	1,540	1	2	7	2	1	3		2	1				Yes	9.76	11	108					
NH	19	907	1	2	7	3	1	3		2	1				Yes	5.58	108	65					
NH	20	375	1	3	7	3	1	1	2	1	2				Yes	7.47	39	65					
NH	21	323	1	3	7	3	1	1	3	1	2				Yes	6.58	11	75					
NH	23	250	1	2	8	3	1	1	2	1	2				Yes	16.44	10	170					
NH	27	245	2	2	8	2	1	1	2	1	2	1	2		Yes	11.79	31	162					
NH	28	188	2	2	8	2	1	1	2	3	2	2			Yes	11.27	21	85					
NH	30	375	2	2	8	2	1	1	2	1	2	2	1		Yes	9.09	37	121					
NH	33A	2,680	1	2	7	2	1	4	2	1	2				Yes	11.28	42	120	Yes	19.42	176	25	109
NH	33B	2,660	1	2	8	2	1	4	2	3	2				Yes	16.1	26	104					
NH	33C	2,850	1	2	8	1	1	4	2	3	2				Yes	30.67	106	287					
NH	34	3,272	2	2	7	2		4	2	3	2				Yes	11.55	29	82					
NH	35	1,824	2	2	7	3		3		3	2				Yes	11.05	34	80					
NH	36	1,636	1	2	7	3		3		2	1				Yes	6.89	13	80					
NH	40	359	2	2	7			1	2	3	2	1	2		Yes	11.34	3	145					
NH	41A	833	3	2	7			4	2	3	2	2	4	5	Yes	14.52	30	98					
NH	41B	600	3	2	7			4	2	3	2	2	4	5	Yes	13.09	26	295	Yes	8.06	116	56	34
NH	42	1,527	1	2	7	2	1	4	2	3	2				Yes	9.36	15	127	Yes	10.31	47	9	23
NH	43	1,959	1	2	6	2	1	4	2	1	2				Yes	11.83	44	143	Yes	12.74	191	133	14
NH	45	479	1	2	6	2	1	2		3	1				Yes	8.13	35	108					
NH	46	208	1	1	5	3	1	2		3	1				Yes	6.57	21	118					
NH	48	703	2	2	8	3	1	3		1	1	2			Yes	8.39	37	83	Yes	11.48	124	0	87
NH	49	1,193	2	2	7	2	1	2		3	1	2			Yes	8.7	78	50					
NH	51A	4,900	1	2	6	1		4	2	1	2				Yes	10.27	30	96	Yes	11.47	277	212	35
NH	51B	4,100	1	2	7	3	1	4	2	3	2				Yes	14.55	78	110					
NH	53	2,100	2	2	7	1		4	2	1	2	2	3		Yes	17.93	48	200	Yes	13.97	378	312	18
NH	54	2,800	2	2	6	1		4	2	1	2	2	3		Yes	11.43	19	105	Yes	9.78	163	132	12
NH	57	3,800	2	2	7	2		4	2	3	2	2			Yes	8.43	51	80	Yes	5.56	136	61	24
NH	58	300	2	2	7	2		1	4	3	2	2			Yes	8.11	27	103	Yes	9.59	129	71	31

Figure 5E. Jurisdictional dune site parameters and measurements in Northumberland County.

Northumberland			Dune Site Parameters													Dune Morphology Parameters								
																Primary Dune				SecondaryDunes				
	Site No.	Dune Shore Length (feet)	Type	Fetch Exposure	Shoreline Direction of Face	Nearshore Gradient		Morphologic Setting		Relative Stability	Underlying Substrate	Structure or Fill			Juris-diction	Crest Elev (ftMLW)	Extent from Crest landward (Feet)	Extent from Crest To MLW (Feet)	Juris-diction	Crest Elev (ftMLW)	LandXtnt From PrimCrest (Feet)	2ndCrest landward (Feet)	2ndCrest BackBase PrimDune (Feet)
				A	B	C		D		E	F	G				X	C	D		V	L	A	B
NL	1	140	1	2	3	3		1	2	2	1				Yes	3.92	25	86					
NL	2	210	1	2	5	3		1	1	1	1				Yes	5.08	45	36					
NL	3	250	1	2	4	3		2		1	1				Yes	4.47	44	71					
NL	4	710	1	2	2	2		2		1	1				Yes	5.61	23	144	Yes	2.57	207	77	107
NL	4A	580	1	2	2	2		3		1	1				Yes	4.35	69	36					
NL	6	180	2	2	2	1		1	3	1	2	2			Yes	5.48	6	71					
NL	7	320	1	3	4	1		3		1	1				Yes	4.21	23	45					
NL	8	270	1	1	5	1		3		2	2				Yes	4.84	19	18					
NL	9	2,200	1	2	3	2		4	2	1	1				Yes	6.29	31	40					
NL	10	1,360	1	2	2	2		4	3	3	1				Yes	5.73	40	52					
NL	11	200	1	2	3	2		1	1	3	1				Yes	3.34	47	39					
NL	11A	400	1	2	3	2		1	1	3	1				Yes	4.25	22	66					
NL	12	450	1	2	3	2		2		1	1				Yes	6.79	17	56					
NL	14	510	1	2	3	3		1	1	1	1				Yes	5.54	37	41					
NL	15	1,360	1	2	2	2		4	3	1	1				Yes	6.07	44	38					
NL	17	250	1	1	8	1		3		3	2				Yes	3.49	81	20					
NL	19	1,050	1	2	3	1		4	2	3	2				Yes	5.42	33	39					
NL	20	290	2	2	3	2		1	2	2	2	2	4		Yes	5.78	50	38					
NL	21	170	1	1	3	1		1	2	1	2				Yes								
NL	22	390	2	1	3	2		2		1	1	1	2	5	Yes	4	35	27					
NL	22A	160	1	3	8	1		3		1	2				Yes	3.5	5	20					
NL	23A	300	1	3	7	1		3		2	2				Yes	4.26	13	52					
NL	23B	140	1	3	4	1		3		2	2				Yes	4.08	16	51					
NL	26	120	2	3	6	2		2		1	1	1			Yes	4.96	16	45					
NL	27	180	1	1	5	3		1	1	1	2				Yes	4.58	14	34					
NL	28	480	2	2	5	2		1	4	2	2	1			Yes	4.5	15	30					
NL	30	250	2	2	4	3		1	1	1	2	1			Yes	5.64	45	85					
NL	31	620	1	2	4	3		2		1	2				Yes	4.54	39	48					
NL	32	360	2	2	4	3		2		1	2	1	2	3	Yes								
NL	33	180	1	2	3	3		1	1	3	2				Yes	4.85	31	63					
NL	34	180	1	2	3	2		1	1	3	2				Yes	5.43	77	61					
NL	35	280	2	2	3	2		1	1	1	2	2			Yes	5.35	38	75					
NL	36	120	1	2	3	2		1	1	3	1				Yes	4.96	14	43					
NL	37	240	2	2	3	2		1	1	2	2	1	2		Yes	6.29	5	66					
NL	38	230	2	2	3	2		2		1	1	1	4		Yes	3.5	45	40					
NL	40	600	1	2	3	2		2		1	1				Yes	4.5	20	65					
NL	42	3,690	2	2	3	2		4	2	3	2	4			Yes	5.59	69	40	Yes	9.82	146	21	56
NL	43	2,750	2	2	2	2	2	4	2	1	1	4			Yes	8.77	23	48	Yes	7.51	97	56	18
NL	43a	870	2	2	2	2		4	2	3	1	4			Yes	8.2	29	34	Yes	6	80	26	25
NL	43b	400	2	2	2	2		2		3	1	5			Yes	2.92	32	28					
NL	45	220	2	2	2	2	1	2		3	1	2			Yes	3.21	36	35					
NL	46	650	2	2	2	2	1	4	3	3	2	2	1	3	Yes	5.46	10	52					
NL	47	320	2	2	2	2	1	1	2	1	1	1			Yes	6.16	60	35					
NL	48	200	2	2	2	2	1	1	2	1	2	1			Yes	9.87	14	58					
NL	49	470	2	2	2	2	1	1	2	1	2	1			Yes	9.57	3	51					
NL	50	160	2	2	2	2	1	1	2	3	2	1			Yes	12.67	4	56					
NL	51	190	2	2	2	2	1	1	2	1	2	1			Yes	6.68	4	44					
NL	52	300	2	2	2	2	1	1	2	1	2	1			Yes	9.68	0	77					
NL	55	250	2	2	2	2	1	2		3	1	2	4		Yes	4.87	7	50					
NL	58	900	2	2	2	2	1	4	2	1	2	1			Yes	6.61	8	49	Yes	9.06	111	92	11
NL	59	1,680	2	2	2	2	1	4	2	1	1	1			Yes	8.22	7	52	Yes	11.3	46	6	33
NL	61	400	2	2	2	2	1	2		1	2	1			Yes	7.51	18	52					
NL	62	970	2	2	2	3	1	2		3	1	1			Yes	6.48	52	49					
NL	63	250	2	2	2	3	1	2		3	1	2			Yes	5.69	19	77					
NL	67	90	2	2	1	2	1	2		3	1	1	2		Yes	7.73	13	62					
NL	69	350	1	3	8	1		3		2	1				Yes								
NL	70	670	2	1	1	2	1	2		3	1	2			Yes	5.86	5	78					
NL	73	750	2	1	2	2	1	3		3	1	2			Yes	6.9	4	75					
NL	74	170	2	1	3	3		2		3	1	2			Yes								
NL	75	270	2	3	8	1	2	3		3	1	3			Yes								
NL	78	540	2	1	3	2	2	1	2	3	1	1	2		Yes	6.5	10	62					

Figure 5F. Jurisdictional dune site parameters and measurements in the City of Hampton.

Hampton			Dune Site Parameters												Dune Site Measurements								
															Primary Dune				Secondary Dunes				
Site No.		Dune Shore Length (feet)	Type	Fetch Exposure	Shoreline Direction of Face	Nearshore Gradient		Morphologic Setting		Relative Stability	Underlying Substrate	Structure or Fill			Jurisdiction	Crest Elev (ftMLW)	Extent from Crest landward (Feet)	Extent from Crest To MLW (Feet)	Jurisdiction	Crest Elev (ftMLW)	LandXtnt From PrimCrest (Feet)	2ndCrest landward (Feet)	2ndCrest BackBase PrimDune (Feet)
				A	B	C		D		E	F	G				X	C	D		V	L	A	B
HP	2	220	2	3	4	1	2	1	1	3	2	1			Yes	6.76	15	51					
HP	4	550	2	2	3	1	2	4	1	3	1	1			Yes	12.53	6	167	Yes	16.97	58	16	36
HP	6	680	2	2	3	1	2	4	2	3	1	1			Yes	11.55	37	179					
HP	7	1,540	2	2	3	1	2	4	2	3	2	1			Yes	9.96	7	166	Yes	9.22	87	44	36
HP	8A	2,250	2	2	3	1	2	4	2	3	1	1	4		Yes	11.59	12	161					
HP	8B	1,100	2	2	3	1	2	4	2	3	1				Yes	10.03	125	135					
HP	12	4,200	1	2	2	2	2	4	2	1	1				Yes	13.81	68	169	Yes	8.35	174	48	58

Figure 5G. Jurisdictional dune site parameters and measurements in the City of Norfolk.

Norfolk			Dune Site Parameters												Dune Morphology Measurements								
															Primary Dune				SecondaryDunes				
Site No.		Dune Shore Length (feet)	Type	Fetch Exposure	Shoreline Direction of Face	Nearshore Gradient		Morphologic Setting		Relative Stability	Underlying Substrate	Structure or Fill			Jurisdiction	Crest Elev (ftMLW)	Extent from Crest landward (Feet)	Extent from Crest To MLW (Feet)	Jurisdiction	Crest Elev (ftMLW)	LandXtnt From PrimCrest (Feet)	2ndCrest landward (Feet)	2ndCrest BackBase PrimDune (Feet)
				A	B	C		D		E	F	G				X	C	D		V	L	A	B
NF	3	2,750	2	2	1	1	1	4	2	3	2				Yes	21.63	46	227					
NF	4	2,780	2	2	1	1	1	4	2	1	2				Yes	20.72	27	166					
NF	5	7,390	2	2	1	1	1	4	2	1	2				Yes	14.74	35	156	Yes	11.26	72	19	18
NF	6	3,530	2	2	2	1	1	4	2	3	2	1			Yes	13.87	32	97					
NF	7	680	2	2	2	1	2	4	2	3	2	1			Yes	17.8	81	166					
NF	8	2,500	2	2	2	1	2	4	2	3	2	1	3		Yes	11.68	24	85	Yes	11.69	76	23	29
NF	9A	1,300	2	2	1	1	2	4	1	3	2	1			Yes	9.64	20	82	Yes	10.47	66	22	24
NF	9B	250	2	2	1	1	2	1	1	3	2	1			Yes	12.12	27	132	Yes	10.93	84	46	11
NF	11	2,680	3	2	1	2	2	4	2	1	2	1	3	5	Yes	9.67	30	144	Yes	11.6	315	198	87

Figure 5H. Jurisdictional dune site parameters and measurements in the City of Virginia Beach.

Virginia Beach			Dune Site Parameters												Dune Site Measurements								
															Primary Dune				Secondary Dunes				
Site No.		Dune Shore Length (feet)	Type	Fetch Exposure	Shoreline Direction of Face	Nearshore Gradient		Morphologic Setting		Relative Stability	Underlying Substrate	Structure or Fill			Jurisdiction	Crest Elev (ftMLW)	Extent from Crest landward (Feet)	Extent from Crest To MLW (Feet)	Jurisdiction	Crest Elev (ftMLW)	LandXtnt From PrimCrest (Feet)	2ndCrest landward (Feet)	2ndCrest BackBase PrimDune (Feet)
				A	B	C		D		E	F	G				X	C	D		V	L	A	B
VB	4A	9,300	1	2	8	1	1	4	2	1	2				Yes	11.24	14	109	Yes	12.77	399	340	45
VB	4B	1,850	1	2	8	1	1	4	3	1	2				Yes	10.84	40	138	Yes	13.84	252	180	32
VB	4C	3,750	1	2	8	1	1	4	2	1	2				Yes	16.6	40	182	Yes	18.22	150	59	51
VB	6	2,450	2	2	8	2	1	4	2	1	2				Yes	12.16	113	228	Yes	19.28			64
VB	9	3,620	2	2	1	2	1	4	2	1	2	5			Yes	19.5	55	108					
VB	10	2,850	2	2	1	1	1	4	2	3	2				Yes	18.95	62	278					
VB	11	1,020	2	2	2	1	2	4	2	3	2				Yes	16.69	18	210					
VB	12	1,020	2	2	2	1	2	1	2	3	2				Yes	18.78	29	207					
VB	15A	1,200	1	2	1	1	1	4	2	3	2	2			Yes	20.51	50	227	Yes	17.87	128	45	33
VB	15B	1,070	1	2	1	1	1	4	2	3	2				Yes	15.55	45	107	Yes	19.23	79		34
VB	15C	2,160	1	2	1	1	1	4	2	3	2				Yes	20.79	48	111	Yes	16.72	192		144

Table 6. Number and length of potential and identified dune sites by locality.

Locality	Potential Dune Sites		Dune Sites Visited		Percent	Jurisdictional Dune Sites	
	Number	Total Length (feet)	Number	Total Length (feet)	Dune Site Length Visited	Number	Total Length (feet)
Accomack	72	36,640	26	23,040	63%	24	22,340
Lancaster	76	26,735	50	16,275	61%	44	15,260
Mathews	25	20,510	23	19,730	96%	21	19,350
Northampton	66	65,665	50	56,624	86%	42	54,114
Northumberland	87	40,790	80	36,900	90%	61	33,240
Hampton	14	14,310	12	12,760	89%	7	10,540
Norfolk	13	25,600	9	23,860	93%	9	23,860
Virginia Beach	23	41,330	11	30,290	73%	11	30,290
Total	376	271,580	261	219,479	81%	219	208,994

Table 7. Jurisdictional primary and secondary dune number of sites and length.

Locality	Total No. Sites	Total Site Length (ft)	Primary Dune Only				Primary/Secondary Dune Sites			
			No. Sites	Total Length (ft)	Total Length (%)	Avg. Site Length (ft)	No. Sites	Total Length (ft)	Total Length (%)	Avg. Site Length (ft)
Accomack	24	22,340	16	13,420	60%	839	8	8,920	40%	1,115
Lancaster	44	15,260	38	11,400	75%	300	6	3,860	25%	643
Mathews	21	19,350	16	6,810	35%	426	5	12,540	65%	2,508
Northampton	42	54,114	28	30,484	56%	1,089	14	23,630	44%	1,688
Northumberland	61	33,240	55	22,640	68%	411	6	10,600	32%	1,767
Hampton	7	10,540	4	4,250	40%	1,063	3	6,290	60%	2,097
Norfolk	9	23,860	4	9,740	41%	2,435	5	14,120	59%	2,824
Virginia Beach	11	30,290	4	8,510	28%	2,128	7	21,780	72%	3,111
Total	219	208,99	165	107,25	51%	650*	54	101,74	49%	1,884*

*average site length mean-weighed by number of sites

Table 8. Percentage of natural, man-influenced and man-made dune sites by locality.

Locality	No. Sites	Total Dune Length (ft)	Percent of Total Length		
			Natural	Man-Influenced	Man-Made
Accomack	24	22,340	100%	0%	0%
Lancaster	44	15,260	46%	54%	0%
Mathews	21	19,350	58%	42%	0%
Northampton	42	54,114	65%	32%	3%
Northumberland	61	33,240	40%	60%	0%
Hampton	7	10,540	40%	60%	0%
Norfolk	9	23,860	0%	89%	11%
Virginia Beach	11	30,290	64%	36%	0%
Total	219	208,994	54%	44%	2%

Table 9A. Stability categorization by locality.

Locality	No.*1 Sites	Total*2 Length	Avg.*3	Std.*4 Dev.	Stability											
					Stable				Accretion				Erosion			
					No.	T.L.	Avg.	S.D.	No.	T.L.	Avg.	S.D.	No.	T.L.	Avg.	S.D.
Accomack	24	22,340	931	853	6	9,770	1,628	1,377	2	2,480	1,240	198	16	10,090	631	436
Lancaster	44	15,260	347	293	21	9,185	437	331	5	1,700	340	287	18	4,375	243	218
Mathew	21	19,350	926	1,166	12	3,900	325	159	2	6,200	3,100	71	7	9,250	1,321	1,416
Northhampton	42	54,114	1,288	1,211	19	22,259	1,172	1,262	4	4,883	1,221	428	19	26,972	1,420	1,299
Northumberland	61	33,240	545	643	30	17,340	578	626	8	2,210	276	111	23	13,690	595	758
Hampton	7	10,540	1,506	1,368	1	4,200			0	0			6	6,340	1,057	743
Norfolk	9	23,860	2,651	2,084	3	12,850	4,283	2,691	0	0			6	11,010	1,835	1,287
Virginia Beach	11	30,290	2,754	2,390	5	20,970	4,194	2,964	0	0			6	9,320	1,553	772
Total	**219**	**208,994**			**97**	**100,474**			**21**	**17,473**			**101**	**91,047**		
Percent					**48%**				**8%**				**44%**			

County	Stability*5		
	Stable	Accrete	Eros.
Accomack	44%	11%	45%
Lancaster	60%	11%	29%
Mathew	20%	32%	48%
Northhampton	41%	9%	50%
Northumberland	52%	7%	41%
Hampton	40%	0%	60%
Norfolk	54%	0%	46%
Virginia Beach	69%	0%	31%

Table 9B. Morphologic Setting categorization by locality.

Locality	No.*1 Sites	Total*2 Length	Avg.*3	Std.*4 Dev.	Morphologic Setting															
					Isolated				Creek Mouth				Spit				Dune Field			
					No.	T.L.	Avg.	S.D.	No.	T.L.	Avg.	S.D.	No.	T.L.	Avg.	S.D.	No.	T.L.	Avg.	S.D.
Accomack	24	22,340	931	853	7	2,010	287	95	3	1,440	480	139	0	0			14	18,890	1,349	906
Lancaster	44	15,260	347	293	27	6,250	231	144	9	2,675	297	344	0	0			8	6,335	792	185
Mathew	21	19,350	926	1,166	12	3,700	308	154	4	8,090	2,023	1,336	0	0			5	7,560	1,512	1,618
Northhampton	42	54,114	1,288	1,211	11	3,835	349	102	8	3,177	397	344	6	7,410	1,235	486	17	39,692	2,335	1,208
Northumberland	61	33,240	545	643	23	6,190	269	126	18	7,150	397	235	10	3,390	339	188	10	16,510	1,651	965
Hampton	7	10,540	1,506	1,368	1	220			0	0			0	0			6	10,320	1,720	1,364
Norfolk	9	23,860	2,651	2,084	1	250			0	0			0	0			8	23,610	2,951	2,010
Virginia Beach	11	30,290	2,754	2,390	1	1,020			0	0			0	0			10	29,270	2,927	2,445
Total	**219**	**208,994**			**83**	**23,475**			**42**	**22,532**			**16**	**10,800**			**78**	**152,187**		
Percent					**11%**				**11%**				**5%**				**73%**			

County	Morphologic Setting *5			
	Isolated	Ck Mouth	Spit	Field
Accomack	9%	6%	0%	85%
Lancaster	41%	18%	0%	42%
Mathew	19%	42%	0%	39%
Northhampton	7%	6%	14%	73%
Northumberland	19%	22%	10%	50%
Hampton	2%	0%	0%	98%
Norfolk	1%	0%	0%	99%
Virginia Beach	3%	0%	0%	97%

*1. Number of sites (No.)
*2. Total dune environment length in feet (T.L.)
*3. Average individual dune site length in feet (Avg.)
*4. Standard deviation in feet (S.D.)
*5. Percent of total length

Table 9C. Exposure categorization by locality.

Locality	No.*1 Sites	Total*2 Length	Avg.*3	Std.*4 Dev.	Exposure: Riverine-Bay Influenced No.	T.L.	Avg.	S.D.	OpenBay No.	T.L.	Avg.	S.D.	Riverine No.	T.L.	Avg.	S.D.
Accomack	24	22,340	931	853	4	5,510	1,378	1,107	20	16,830	842	798	0	0		
Lancaster	44	15,260	347	293	13	4,190	322	218	2	350	175	35	29	10,720	370	329
Mathew	21	19,350	926	1,166	5	1,685	337	143	14	17,065	1,219	1,341	2	600	300	71
Northhampton	42	54,114	1,288	1,211	5	1,208	242	121	35	52,208	1,492	1,230	2	698	349	37
Northumberland	61	33,240	545	643	9	3,390	377	225	45	28,190	1,172	725	7	1,660	237	95
Hampton	7	10,540	1,506	1,368	0	0			6	10,320	1,720	1,364	1	220		
Norfolk	9	23,860	2,651	2,084	0	0			9	23,860	2,651	2,084	0	0		
Virginia Beach	11	30,290	2,754	2,390	0	0			11	30,290	2,754	2,390	0	0		
Total	219	208,994			36	15,983			142	179,113			41	13,898		
Percent					8%				86%				7%			

County	Exposure*5 Riv-Bay	Bay	River
Accomack	25%	75%	0%
Lancaster	27%	2%	70%
Mathew	9%	88%	3%
Northhampton	2%	96%	1%
Northumberland	10%	85%	5%
Hampton	0%	98%	2%
Norfolk	0%	100%	0%
Virginia Beach	0%	100%	0%

Table 9D. Underlying Substrate categorization by locality.

Locality	No.*1 Sites	Total*2 Length	Avg.*3	Std.*4 Dev.	Underlying Substrate: Marsh No.	T.L.	Avg.	S.D.	Upland No.	T.L.	Avg.	S.D.
Accomack	24	22,340	931	853	22	19,940	906	885	2	2,400	1,200	354
Lancaster	44	15,260	347	293	17	4,025	237	262	27	11,235	416	295
Mathew	21	19,350	926	1,166	9	11,375	1,264	1,157	12	7,995	665	1,153
Northhampton	42	54,114	1,288	1,211	13	8,776	674	516	29	45,380	1,564	1,334
Northumberland	61	33,240	545	643	34	20,700	609	611	27	12,540	464	684
Hampton	7	10,540	1,506	1,368	5	8,780	1,756	1,521	2	1,760	880	933
Norfolk	9	23,860	2,651	2,084	0	0			9	23,860	2,651	2,084
Virginia Beach	11	30,290	2,754	2,390	0	0			11	30,290	2,754	2,390
Total	219	208,994			100	73,596			119	135,460		
Percent					35%				65%			

County	Underlying Substrate*5 Marsh	River
Accomack	89%	11%
Lancaster	26%	74%
Mathew	59%	41%
Northhampton	16%	84%
Northumberland	62%	38%
Hampton	83%	17%
Norfolk	0%	100%
Virginia Beach	0%	100%

*1. Number of sites (No.)
*2. Total dune environment length in feet (T.L.)
*3. Average individual dune site length in feet (Avg.)
*4. Standard deviation in feet (S.D.)
*5. Percent of total length

Table 10. Classification of dune sites by Natural, Man-Influenced, and Man Made.

A. Natural

	No.	Total	Stability			Morphology				Exposure			Substrate	
County	Sites	Length	Stable	Accrete	Eros.	Isol.	Ck Mouth	Spit	Field	Riv-Bay	Bay	River	Marsh	Upland
Accomack	24	22,340	44%	11%	45%	9%	6%	0%	85%	25%	75%	0%	89%	11%
Lancaster	17	7,085	40%	18%	42%	27%	5%	0%	69%	25%	0%	75%	15%	85%
Mathew	10	11,210	9%	55%	36%	8%	72%	0%	20%	4%	91%	5%	94%	6%
Northhampton	27	35,084	44%	14%	42%	6%	6%	14%	75%	3%	95%	2%	20%	80%
Northumberland	27	13,260	63%	9%	28%	17%	20%	18%	45%	7%	84%	10%	74%	26%
Hampton	1	4,200	100%	0%	0%	0%	0%	0%	100%	0%	100%	0%	100%	0%
Norfolk	0	0												
Virginia Beach	6	19,330	77%	0%	23%	100%	0%	0%	0%	0%	100%	0%	0%	100%

B. Man-Influenced

	No.	Total	Stability			Morphology				Exposure			Substrate	
County	Sites	Length	Stable	Accrete	Eros.	Isol.	Ck Mouth	Spit	Field	Riv-Bay	Bay	River	Marsh	Upland
Accomack	0													
Lancaster	27	8,175	78%	5%	17%	53%	29%	0%	18%	29%	4%	66%	37%	63%
Mathew	11	8,140	35%	0%	65%	35%	0%	0%	65%	16%	25%	59%	10%	90%
Northhampton	13	17,597	38%	0%	62%	11%	7%	14%	68%	0%	100%	0%	11%	89%
Northumberland	34	19,980	45%	5%	50%	45%	5%	50%	0%	13%	85%	2%	55%	45%
Hampton	6	6,340	0%	0%	100%	3%	0%	0%	97%	0%	97%	3%	72%	28%
Norfolk	8	21,180	48%	0%	52%	1%	0%	0%	99%	0%	100%	0%	0%	100%
Virginia Beach	5	10,960	55%	0%	45%	9%	0%	0%	91%	0%	100%	0%	0%	100%

C. Man Made

	No.	Total	Stability			Morphology				Exposure			Substrate	
County	Sites	Length	Stable	Accrete	Eros.	Isol.	Ck Mouth	Spit	Field	Riv-Bay	Bay	River	Marsh	Upland
Accomack	0	0												
Lancaster	0	0												
Mathew	0	0												
Northhampton	2	1,433	0%	0%	100%	0%	0%	0%	100%	0%	100%	0%	0%	100%
Northumberland	0	0												
Hampton	0	0												
Norfolk	1	2,680	100%	0%	0%	0%	0%	0%	100%	0%	100%	0%	0%	100%
Virginia Beach	0	0												

Table 11. Analysis of duneprofile components Distance and elevation units in feet.

All	Total No. of Sites		Elevation of Primary Dune (X)						Distance from Crest to Dune Back (C)					
	Primary	Secondary	All Sites		Primary Only		Secondary		All Sites		Primary Only		Secondary	
Locality	OnlySites	Sites	Avg.^	S.D."	Avg.	S.D.	Avg.	S.D.	Avg.	S.D.	Avg.	S.D.	Avg.	S.D.
Accomack	16	8	6.25	1.31	5.92	1.16	6.91	1.41	47	23	50	20	40	28
Lancaster	29	6	4.6	0.9	4.74	0.9	3.92	0.57	24	14	25	15	19	10
Mathew	12	5	6.92	1.97	6.11	1.59	8.86	1.4	28	23	25	18	36	35
Northampton	25	14	10.29	4.76	10.75	5.24	9.46	3.81	35	23	37	25	31	12
Northumberland	50	6	5.73	1.88	5.56	1.87	7.17	1.41	27	20	27	20	27	23
Hampton	4	3	10.89	2.27	9.98	2.27	12.1	1.96	39	44	47	53	27	36
Norfolk	4	5	14.65	4.49	18.51	3.5	11.57	2.1	36	19	47	24	27	6
Virginia Beach	4	7	16.51	3.66	18.48	1.23	15.38	4.19	47	27	41	21	50	30

All	Total No. of Sites		Distance Primary Dune Crest to MLW (D)						Width of Primary Dune & Beach (C+D)					
	Primary	Secondary	All Sites		Primary Only		Secondary		All Sites		Primary Only		Secondary	
Locality	OnlySites	Sites	Avg.	S.D.	Avg.	S.D.	Avg.	S.D.	Avg.	S.D.	Avg.	S.D.	Avg.	S.D.
Accomack	16	8	62	18	63	20	60	15	109	34	113	31	101	42
Lancaster	29	6	45	13	44	12	49	20	69	21	70	21	68	26
Mathew	12	5	97	85	82	56	132	134	125	82	108	56	168	123
Northampton	25	14	108	55	104	50	115	64	143	63	141	61	146	67
Northumberland	50	6	52	21	51	17	61	41	79	25	78	22	88	43
Hampton	4	3	147	44	132	57	167	2	185	63	179	83	194	37
Norfolk	4	5	139	47	164	53	120	34	175	59	211	64	147	40
Virginia Beach	4	7	173	61	201	70	157	55	220	74	242	73	207	78

All	Secondary Sites											
	V		L (A + B + C)		A		B		A + B		A + B + C + D	
Locality	Avg.	S.D.	Avg.	S.D.	Avg.	S.D.	Avg.	S.D.	Avg.	S.D.	Avg.	S.D.
Accomack	6.3	1.69	151	86	77	64	34	26	110	71	211	99
Lancaster	3.78	0.8	73	43	34	31	28	14	61	33	129	55
Mathew	7.27	1.19	177	115	59	58	83	85	141	86	309	170
Northampton	10.36	3.93	142	94	78	91	33	29	111	87	257	133
Northumberland	7.71	3.11	115	56	46	34	42	36	88	52	176	92
Hampton	11.51	4.75	106	60	36	17	43	13	79	27	274	62
Norfolk	11.19	0.5	123	108	62	77	34	30	95	106	242	126
Virginia Beach	16.85	2.59	200	114	156*	137*	58	40	196*	138*	360*	93*

^ Average

" Standard Deviation

*only 4 of the 7 secondary dune site surveys reached the back of the secondary dune (A).

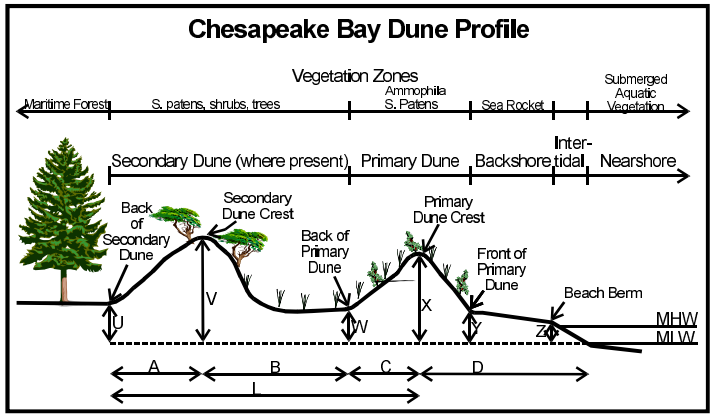

Figure 7. For Reference.