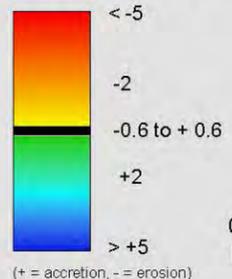
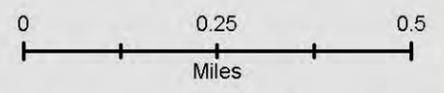


APPENDIX A
HISTORICAL SHORELINE CHANGE RATE
1950 TO 2001

**Historical Shoreline Change Rate
Cohasset Harbor to Mann Hill Beach
(1950 to 2001, in feet/year)**



(+ = accretion, - = erosion)



Length of colored bars illustrates relative magnitude of shoreline change.

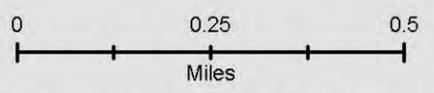
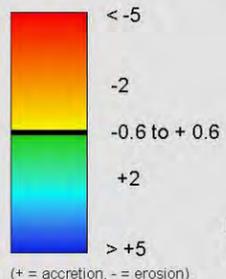
White lines represent town boundaries and dashed black lines show littoral cell boundaries.



This map is from the South Shore Coastal Hazards Characterization Atlas, published by the Massachusetts Office of Coastal Zone Management (CZM). CZM makes no representations or warranties with respect to the definitiveness of the data presented. Prepared by Applied Coastal Research and Engineering, Inc., December 2005.

Mann Hill Beach

Historical Shoreline Change Rate Mann Hill Beach to Rivermoor Marsh (1950/52 to 2001, in feet/year)



Length of colored bars illustrates relative magnitude of shoreline change.

White lines represent town boundaries and dashed black lines show littoral cell boundaries.

Cedar Point

Scituate Harbor

Littoral Cell 4

Littoral Cell 5

Scituate

Atlantic Ocean

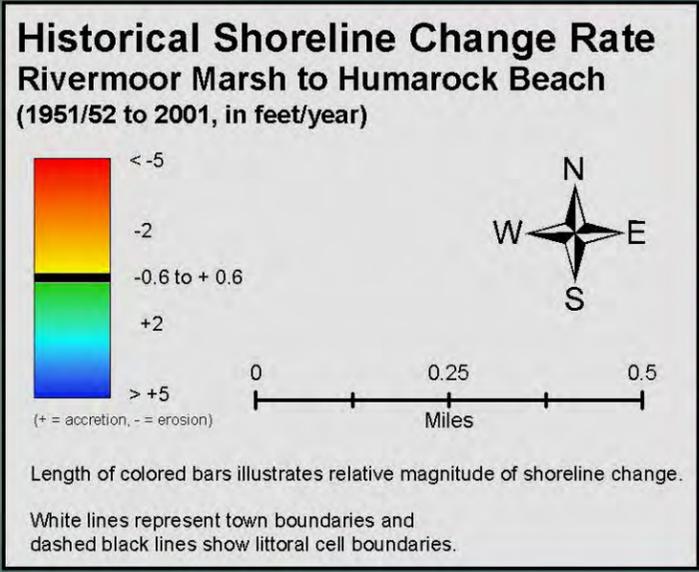
Rivermoor Marsh

Littoral Cell 5

Littoral Cell 6

North River

This map is from the South Shore Coastal Hazards Characterization Atlas, published by the Massachusetts Office of Coastal Zone Management (CZM). CZM makes no representations or warranties with respect to the definitiveness of the data presented. Prepared by Applied Coastal Research and Engineering, Inc., December 2005.



This map is from the South Shore Coastal Hazards Characterization Atlas, published by the Massachusetts Office of Coastal Zone Management (CZM). CZM makes no representations or warranties with respect to the definitiveness of the data presented. Prepared by Applied Coastal Research and Engineering, Inc., December 2005.

APPENDIX B
SELECTED SWAN WAVE MODELING RESULTS

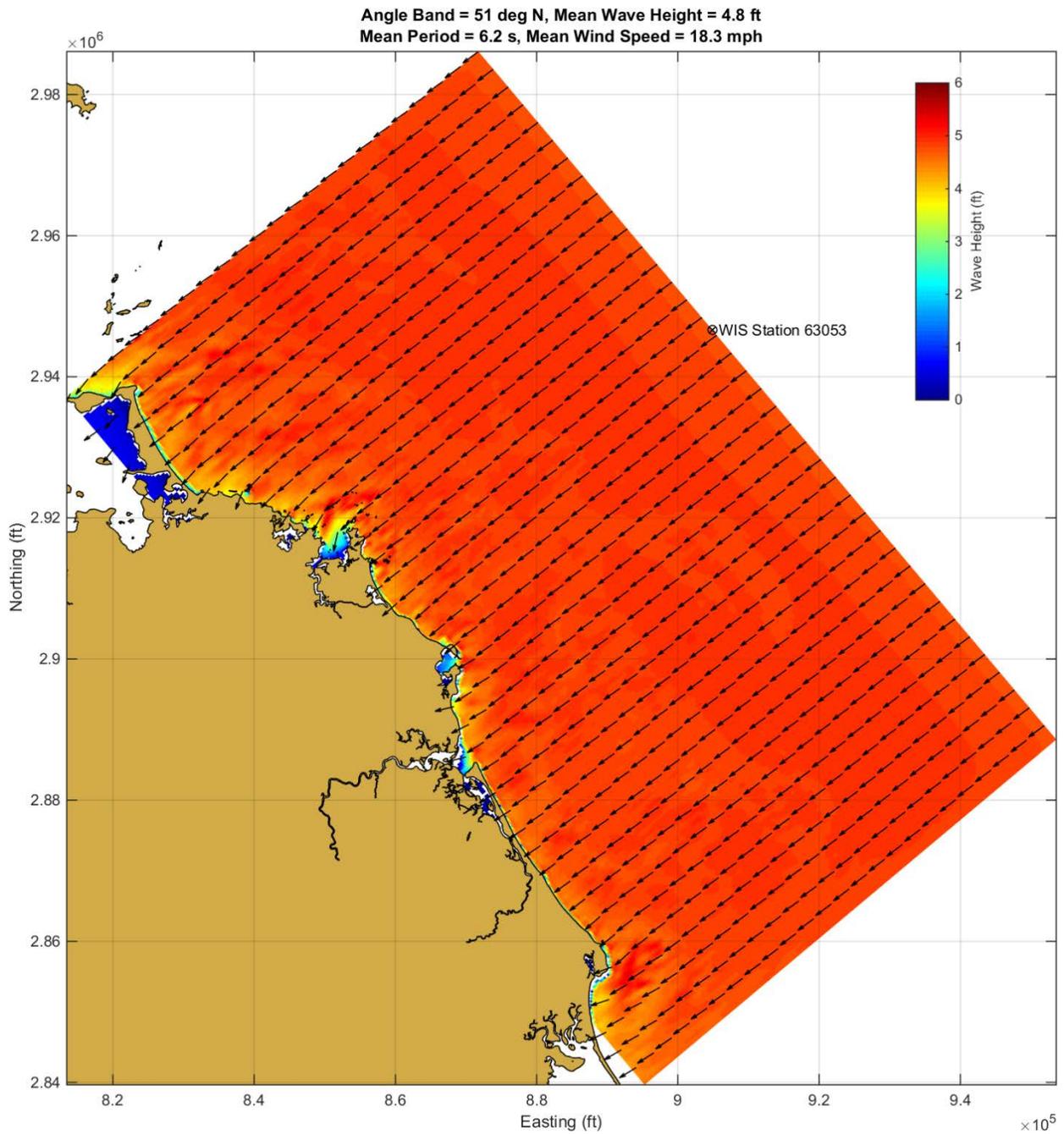


Figure B1. Coarse grid output for case 5 (angle band = 51 deg, mean wave height = 4.8 ft, mean wave period = 6.2 s, mean wind speed = 18.3 mph). Color contours indicate wave heights and vectors show peak wave direction.

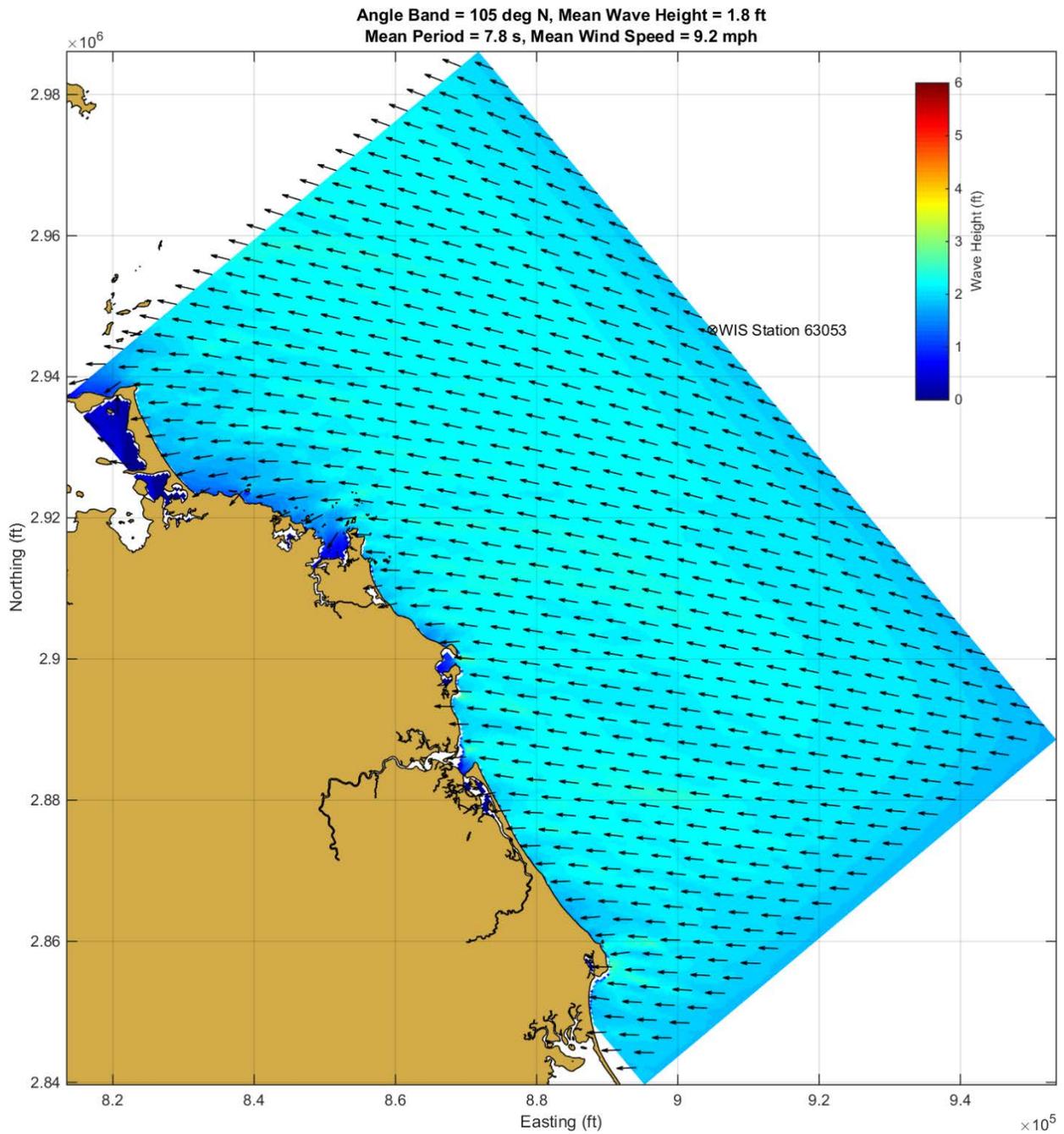


Figure B2. Coarse grid output for case 5 (angle band = 105 deg, mean wave height = 1.8 ft, mean wave period = 7.8 s, mean wind speed = 9.2 mph). Color contours indicate wave heights and vectors show peak wave direction.

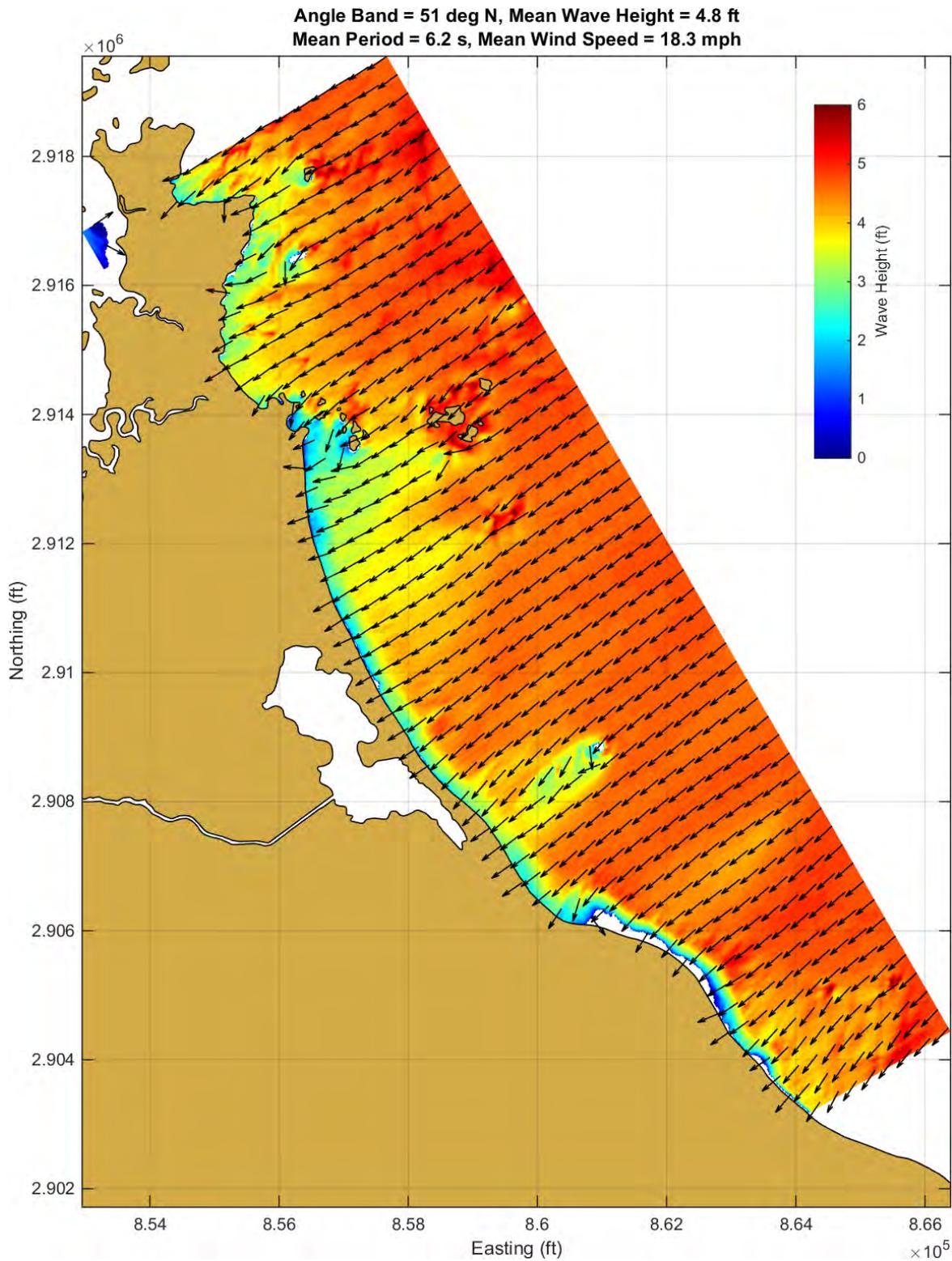


Figure B3. North fine grid output for case 5 (angle band = 51 deg, mean wave height = 4.8 ft, mean wave period = 6.2 s, mean wind speed = 18.3 mph). Color contours indicate wave heights and vectors show peak wave direction.

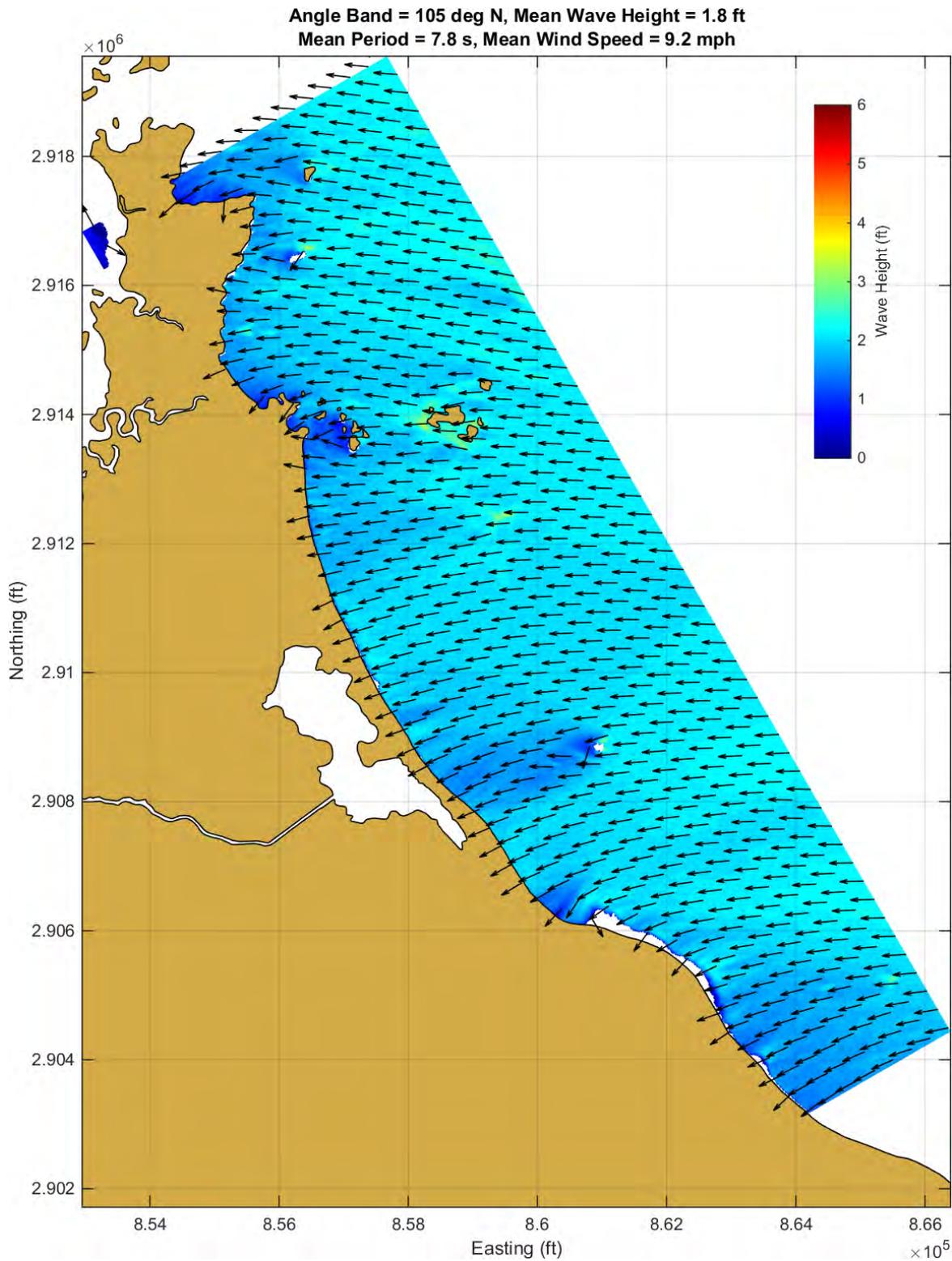


Figure B4. North fine grid output for case 5 (angle band = 105 deg, mean wave height = 1.8 ft, mean wave period = 7.8 s, mean wind speed = 9.2 mph). Color contours indicate wave heights and vectors show peak wave direction.

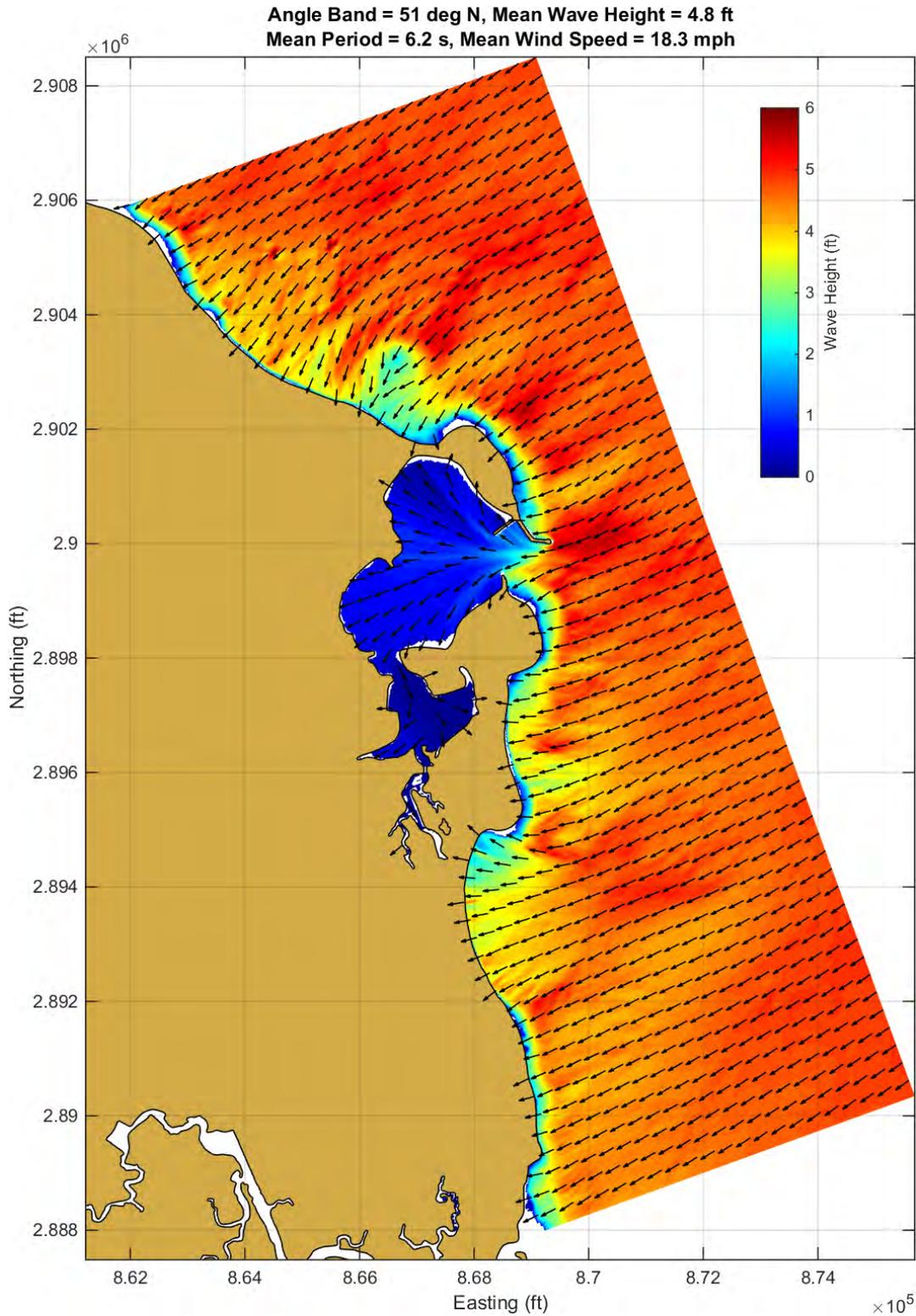


Figure B5. Center fine grid output for case 5 (angle band = 51 deg, mean wave height = 4.8 ft, mean wave period = 6.2 s, mean wind speed = 18.3 mph). Color contours indicate wave heights and vectors show peak wave direction.

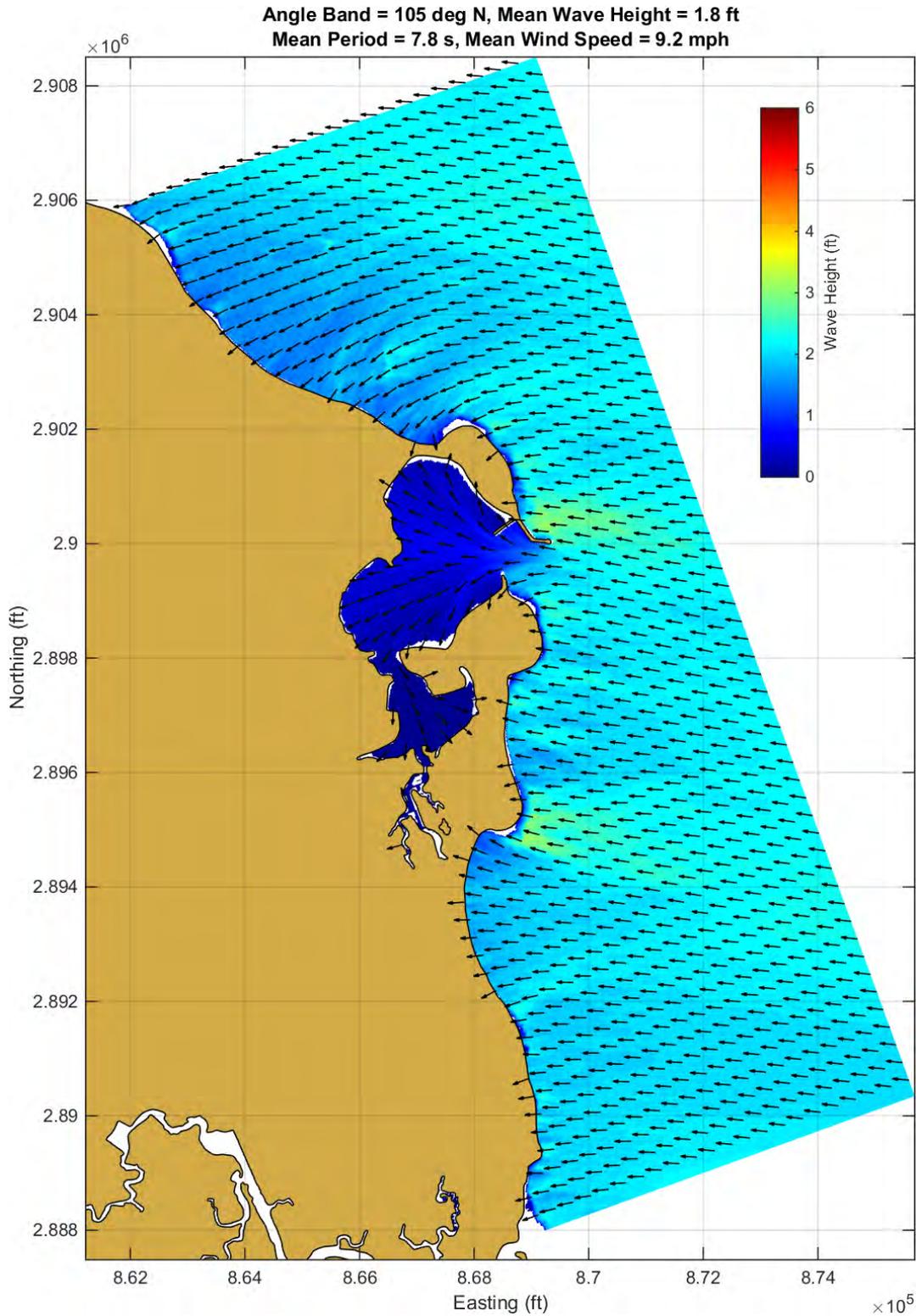


Figure B6. Center fine grid output for case 5 (angle band = 105 deg, mean wave height = 1.8 ft, mean wave period = 7.8 s, mean wind speed = 9.2 mph). Color contours indicate wave heights and vectors show peak wave direction.

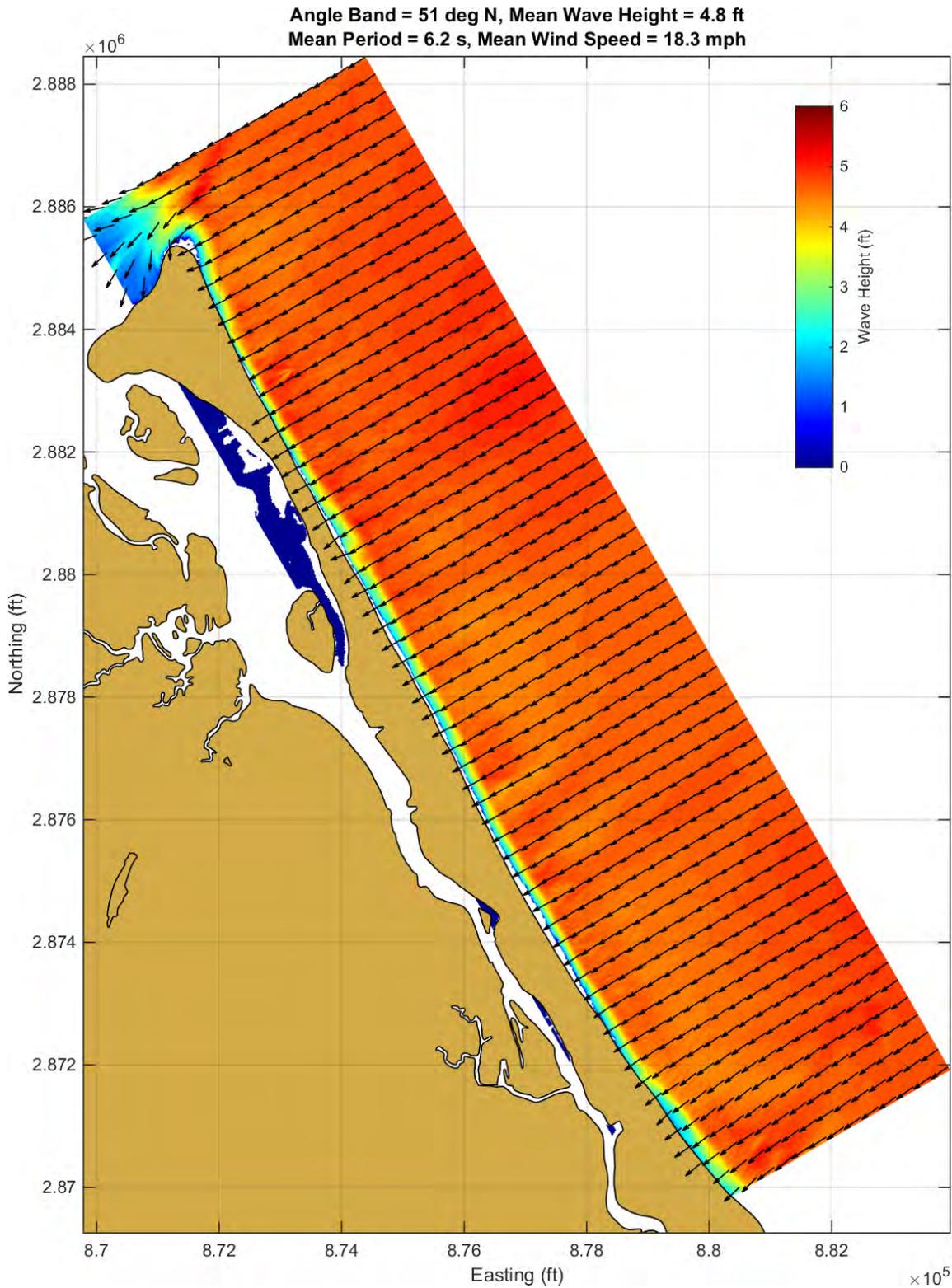


Figure B7. South fine grid output for case 5 (angle band = 51 deg, mean wave height = 4.8 ft, mean wave period = 6.2 s, mean wind speed = 18.3 mph). Color contours indicate wave heights and vectors show peak wave direction.

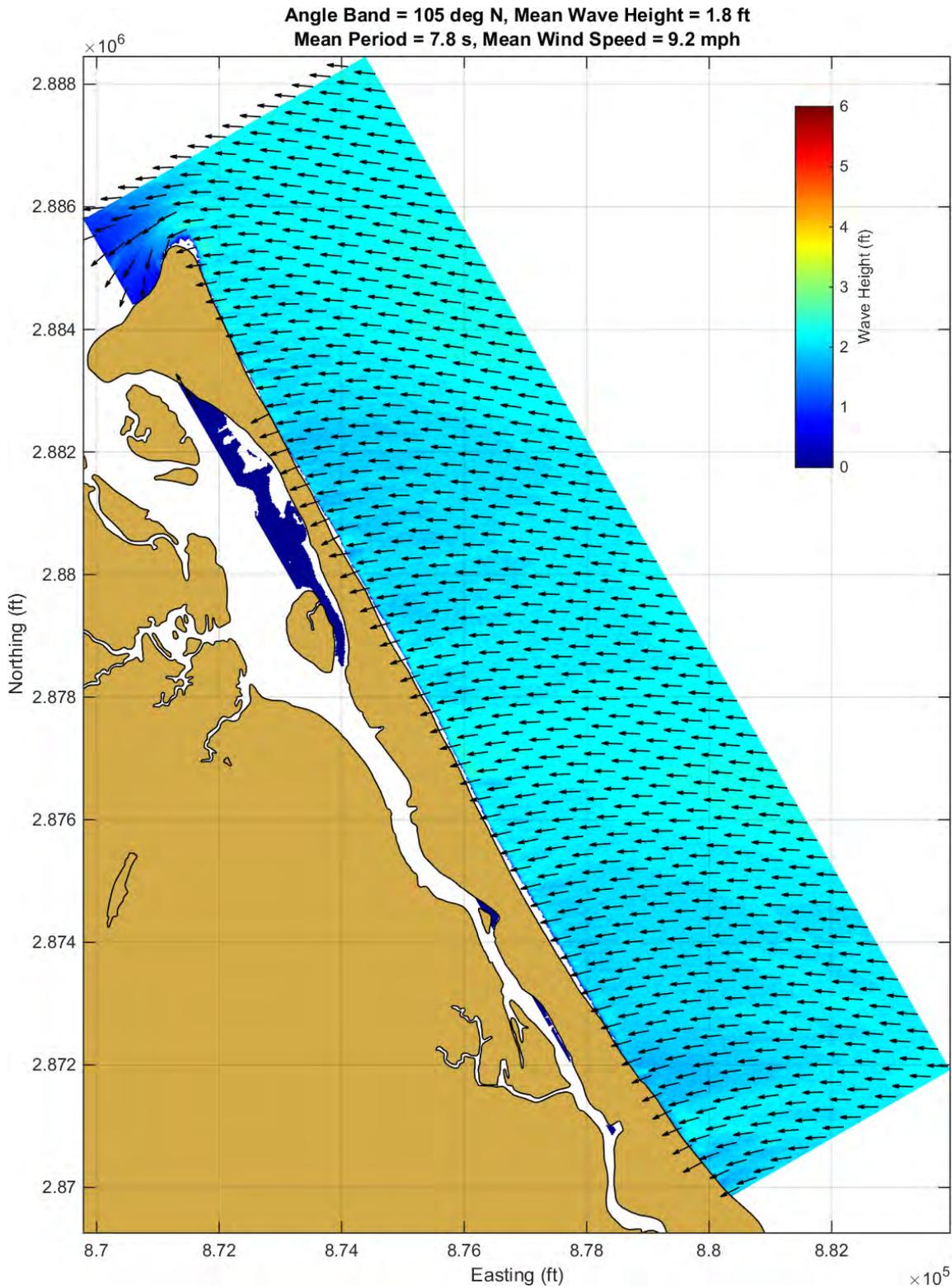


Figure B8. South fine grid output for case 5 (angle band = 105 deg, mean wave height = 1.8 ft, mean wave period = 7.8 s, mean wind speed = 9.2 mph). Color contours indicate wave heights and vectors show peak wave direction.

APPENDIX C
LANDFORM ELEVATION FIGURES



Figure C1. Flooding extents of Minot Beach, North Scituate Beach, and Surfside Road with 10-year and 100-year still water elevations.



Figure C2. Flooding extents of Mann Hill Beach and Egypt Beach with 10-year and 100-year still water elevations.



Figure C3. Flooding extents of Oceanside Drive with 10-year and 100-year still water elevations.



Figure C4. Flooding extents of Cedar Point and First Cliff with 10-year and 100-year still water elevations.



Figure C5. Flooding extents of Edward Foster Road, Second Cliff, and Peggotty Beach with 10-year and 100-year still water elevations.



Figure C6. Flooding extents of Third Cliff with 10-year and 100-year still water elevations.



Figure C7. Flooding extents of Fourth Cliff and Humarock North with 10-year and 100-year still water elevations.

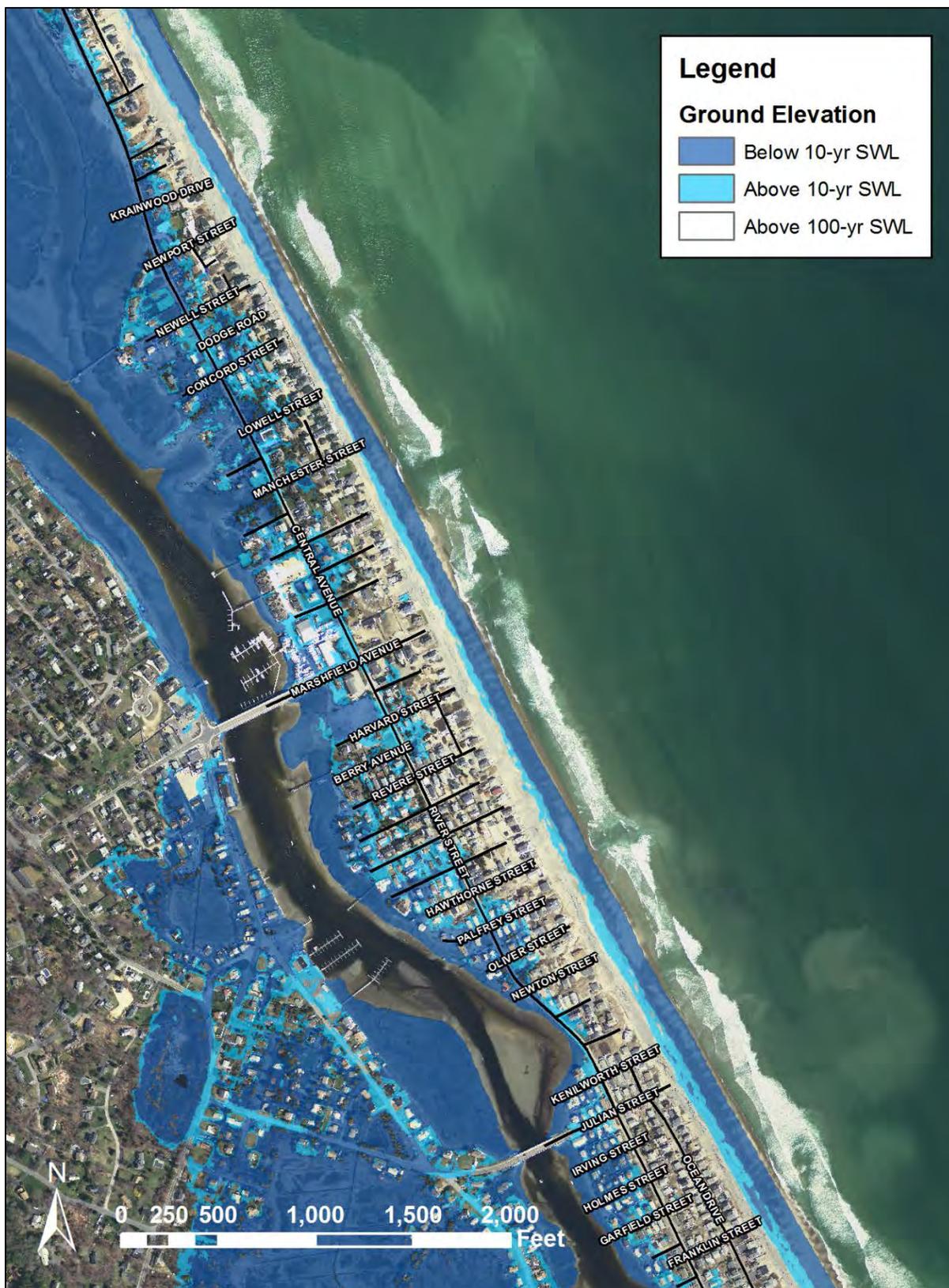


Figure C8. Flooding extents of Humarock South with 10-year and 100-year still water elevations.



Figure C9. Flooding extents of Humarock South with 10-year and 100-year still water elevations.

APPENDIX D
WASTEWATER COLLECTION SYSTEM MAPS

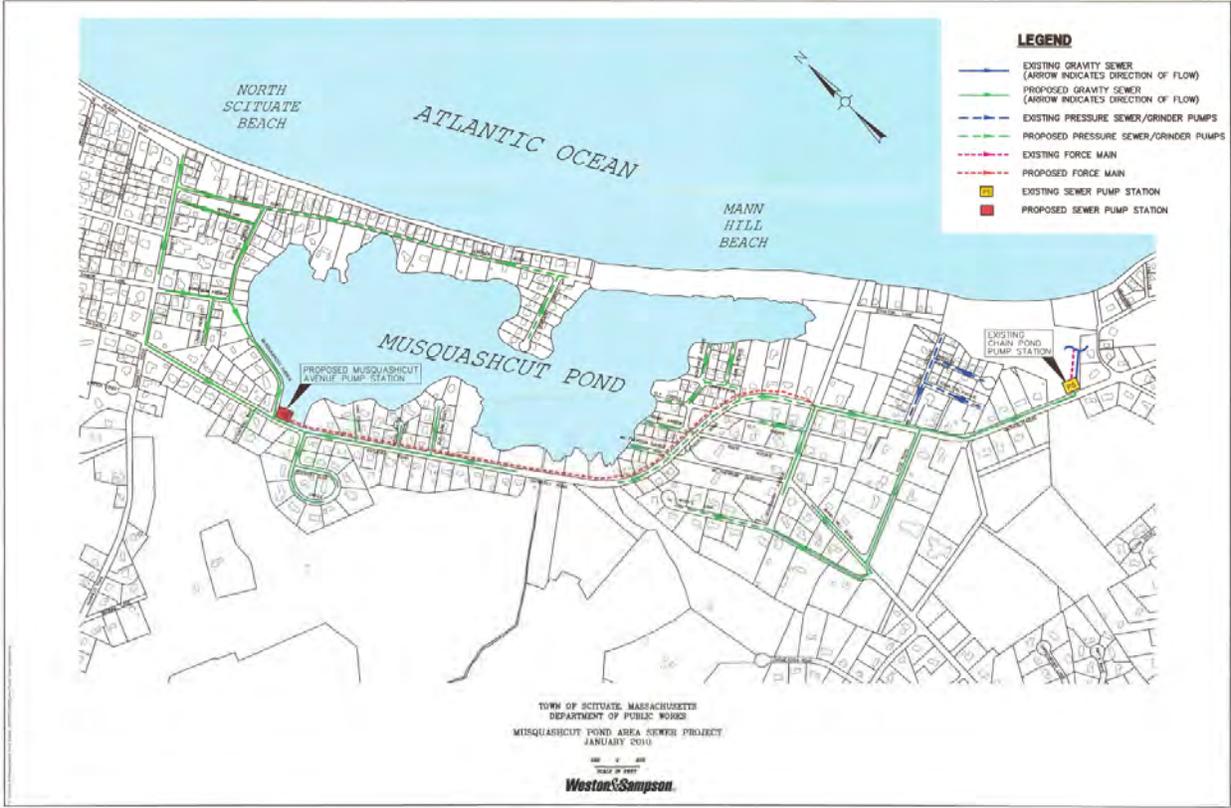


Figure D2. Musquashcut Pond wastewater collection system

APPENDIX E
COASTAL STRUCTURES INSPECTION
COMPLETED BY CLE ENGINEERING IN 2013

Town	No.	Location	Structure ID	Footprint	Longitude	Latitude	Primary Type	Primary Height	Width	Primary Material	2013	2013	2013	2013	2013	2013	
											Primary Length	Second Length	Condition/Priority	Primary Cost/FT	Second Cost/FT	Est. Recon/Repair	
Scituate		Cohasset Harbor	068-004-003-009-100	27	42-14-36.00	70-47-16.66	Jetty	5' to 10'		Stone	590	40	C / IV	\$	157.08	\$ 5,333.00	\$ 305,997.20
Scituate	161	Glades Road	068-005-003-092-100	1	42-14-41.31	70-45-58.54	Revetment	5' to 10'		Stone	67	0	B / II	\$	84.00	\$ -	\$ 5,628.00
Scituate	159	Glades Road	068-005-003-086-100	2	42-14-41.04	70-45-58.35	Seawall	< 5'		Concrete	220	0	B / IV	\$	84.00	\$ -	\$ 18,480.00
Scituate	143	Glades Road	068-005-003-078-100	3	42-14-38.61	70-45-57.23	Seawall	5' to 10'		Concrete	243	243	B / IV	\$	152.00	\$ 120.00	\$ 66,096.00
Scituate	101	Glades Road	068-005-003-040-100	4	42-14-37.76	70-45-56.47	SW/Revetment	> 15'		Conc/Stone	1190	2380	B / IV	\$	396.00	\$ 1,254.00	\$ 3,455,760.00
Scituate	102R	Glades Road	068-005-004-014-100	6	42-14-30.40	70-45-43.40	Revetment	< 5'		Stone	75	0	D / IV	\$	850.00	\$ -	\$ 63,750.00
Scituate	94	Glades Road	068-005-004-016-100	7	42-14-31.00	70-45-42.61	Seawall	5' to 10'		Concrete	140	0	B / IV	\$	152.00	\$ -	\$ 21,280.00
Scituate	90	Glades Road	068-005-004-018-100	8	42-14-30.09	70-45-42.30	Seawall	5' to 10'		Concrete	225	0	B / IV	\$	152.00	\$ -	\$ 34,200.00
Scituate	66	Glades Road	068-005-004-019-100	9	42-14-21.92	70-45-37.84	Seawall	5' to 10'		Concrete	341	0	B / IV	\$	152.00	\$ -	\$ 51,832.00
Scituate	62	Glades Road	068-005-004-033F-100	10	42-14-21.83	70-45-38.73	Seawall	5' to 10'		Concrete	75	75	C / IV	\$	251.00	\$ 333.00	\$ 43,800.00
Scituate	53	Glades Road	068-008-007-006-100	11	42-14-19.70	70-45-39.36	SW/Revetment	> 15'		Conc/Stone	240	240	D / IV	\$	1,980.00	\$ 601.00	\$ 619,440.00
Scituate	49	Glades Road	068-008-007-003-100	12	42-14-16.57	70-45-38.63	SW/Revetment	> 15'		Conc/Stone	772	772	C / IV	\$	1,980.00	\$ 601.00	\$ 1,992,532.00
Scituate	11	Glades Road	068-008-005-001-100	13	42-14-12.03	70-45-38.01	SW/Revetment	> 15'		Conc/Stone	520	520	D / IV	\$	2,468.00	\$ 1,201.00	\$ 1,907,880.00
Scituate	7	Glades Road	068-008-004-014-100	14	42-14-04.95	70-45-35.35	SW/Revetment	> 15'		Conc/Stone	238	238	C / IV	\$	1,980.00	\$ 333.00	\$ 550,494.00
Scituate	7	Surfside Road	068-015-001-006-100	15	42-14-05.93	70-45-34.46	Revetment	5' to 10'		Stone	442	0	D / IV	\$	1,300.00	\$ -	\$ 574,600.00
Scituate	31	Surfside Road	068-015-001-010-100	16	42-13-57.17	70-45-30.79	SW/Revetment	10' to 15'		Conc/Stone	400	400	B / IV	\$	251.00	\$ 601.00	\$ 340,800.00
Scituate	33	Surfside Road	068-015-001-017-100	17	42-13-57.99	70-45-29.34	Revetment	> 15'		Stone	220	0	C / IV	\$	1,980.00	\$ -	\$ 435,600.00
Scituate	35	Surfside Road	068-015-001-019-100	18	42-13-55.77	70-45-29.63	SW/Revetment	10' to 15'	3' to 5'	Conc/Stone	150	150	C / IV	\$	1,254.00	\$ 601.00	\$ 278,250.00
Scituate	44	Surfside Road	068-015-001-002-100	19	42-13-54.29	70-45-28.35	SW/Revetment	10' to 15'	5'	Conc/Stone	118	118	C / IV	\$	1,254.00	\$ 601.00	\$ 218,890.00
Scituate	45	Surfside Road	068-015-001-026-100	20	42-13-53.46	70-45-27.06	SW/Revetment	10' to 15'	3'	Conc/Stone	200	200	C / IV	\$	1,254.00	\$ 601.00	\$ 371,000.00
Scituate	49	North Scituate Beach	068-015-001-026-200	21	42-13-51.70	70-45-26.33	SW/Revetment	10' to 15'	5'	Conc/Stone	0	0	0	\$	-	\$ -	\$ -
Scituate	63	North Scituate Beach	068-015-001-034-100	22	42-13-44.15	70-45-20.71	SW/Revetment	10' to 15'	5'	Conc/Stone	875	875	D / IV	\$	2,508.00	\$ 1,564.00	\$ 3,563,000.00
Scituate	77	North Scituate Beach	068-015-001-038-100	23	42-13-42.99	70-45-20.11	SW/Revetment	> 15'	3'	Conc/Stone	120	120	D / IV	\$	3,960.00	\$ 2,480.00	\$ 772,800.00
Scituate	85	North Scituate Beach	068-015-001-044-100	24	42-13-43.03	70-45-20.19	SW/Revetment	> 15'	3'	Conc/Stone	390	390	D / IV	\$	3,960.00	\$ 1,564.00	\$ 2,154,360.00
Scituate	91	North Scituate Beach	068-015-001-044-200	25	42-13-40.48	70-45-17.58	SW/Revetment	> 15'		Conc/Stone	141	141	C / IV	\$	1,980.00	\$ 1,234.00	\$ 453,174.00
Scituate	150	Mann Hill Road	068-022-008-011F-100	26	42-13-38.87	70-45-17.52	SW/Revetment	10' to 15'		Stone	1900	0	C / II	\$	781.00	\$ -	\$ 1,483,900.00
Scituate	17	Standish Drive	068-028-009-010-100	28	42-13-04.46	70-44-20.78	SW/Revetment	5' to 10'		Conc/Stone	278	278	D / IV	\$	1,518.00	\$ 601.00	\$ 589,082.00
Scituate	11	Standish Drive	068-034-011-011-100	29	42-13-01.10	70-44-14.99	Revetment	5' to 10'		Stone	687	0	C / IV	\$	601.00	\$ -	\$ 412,887.00
Scituate	110	Ocean Side Drive	068-034-001-010-100	30	42-12-51.78	70-44-08.54	Seawall	< 5'		Concrete	975	0	D / IV	\$	850.00	\$ -	\$ 828,750.00
Scituate	94	Ocean Side Drive	068-034-001-017-100	32	42-12-52.55	70-44-09.02	SW/Revetment	5' to 10'		Conc/Stone	531	531	D / IV	\$	1,518.00	\$ 601.00	\$ 1,125,189.00
Scituate	81	Ocean Side Drive	068-034-001-027-100	33	42-12-47.97	70-44-04.02	SW/Revetment	5' to 10'		Conc/Stone	179	179	B / IV	\$	152.00	\$ 664.00	\$ 146,064.00
Scituate	68	Ocean Side Drive	068-034-001-027-200	34	42-12-46.29	70-44-01.60	SW/Revetment	5' to 10'	3.5'	Conc/Stone	398	398	C / III	\$	1,254.00	\$ 601.00	\$ 738,290.00
Scituate	58	Ocean Side Drive	068-040-001-004-100	35	42-12-42.91	70-43-57.78	SW/Revetment	10' to 15'	2' to 3'	Conc/Stone	650	650	D / IV	\$	2,508.00	\$ 601.00	\$ 2,020,850.00
Scituate	48	Ocean Side Drive	068-040-001-000-100	36	42-12-39.53	70-43-50.44	Seawall	10' to 15'	4'	Concrete	218	218	B / III	\$	251.00	\$ 601.00	\$ 185,736.00
Scituate	37	Ocean Side Drive	068-040-001-000-200	37	42-12-38.64	70-43-47.78	SW/Revetment	10' to 15'	4'	Conc/Stone	300	300	B / III	\$	251.00	\$ 157.00	\$ 122,400.00
Scituate	22	Ocean Side Drive	068-040-001-012-100	38	42-12-37.64	70-43-44.32	SW/Revetment	10' to 15'	3'	Conc/Stone	260	260	C / IV	\$	251.00	\$ 601.00	\$ 221,520.00
Scituate	18	Ocean Side Drive	068-040-001-015-100	39	42-12-36.63	70-43-41.06	SW/Revetment	10' to 15'	2.5'	Conc/Stone	200	200	B / IV	\$	251.00	\$ 1,201.00	\$ 290,400.00
Scituate	14	Ocean Side Drive	068-040-001-018-100	40	42-12-35.98	70-43-38.53	SW/Revetment	10' to 15'	2.5'	Conc/Stone	180	230	C / IV	\$	1,254.00	\$ 601.00	\$ 363,950.00
Scituate	6	Ocean Side Drive	068-040-001-032-100	42	42-12-35.47	70-43-36.10	SW/Revetment	10' to 15'	2.4'	Conc/Stone	514	514	B / IV	\$	251.00	\$ 601.00	\$ 437,928.00
Scituate	143	Turner Road	068-040-001-041-100	43	42-12-33.58	70-43-30.20	SW/Revetment	10' to 15'	4'	Conc/Stone	181	181	D / IV	\$	1,254.00	\$ 601.00	\$ 335,755.00
Scituate	149	Turner Road	068-040-001-046-100	44	42-12-31.59	70-43-26.48	Seawall	10' to 15'	2.5'	Concrete	114	114	B / IV	\$	251.00	\$ 333.00	\$ 66,576.00
Scituate	155	Turner Road	068-040-001-053-100	45	42-12-31.69	70-43-26.98	SW/Revetment	10' to 15'	3'	Conc/Stone	1250	1250	C / IV	\$	1,254.00	\$ 333.00	\$ 1,983,750.00
Scituate	14	Rebecca Road	068-046-001-044-100	46	42-12-27.71	70-43-12.86	SW/Revetment	10' to 15'	3'	Conc/Stone	165	165	F / IV	\$	2,970.00	\$ 601.00	\$ 589,215.00
Scituate	61	Rebecca Road	068-046-001-014-100	1	42-12-26.11	70-43-00.54	Seawall	5' to 10'	3.5'	Concrete	282	0	A / IV	\$	-	\$ -	\$ -
Scituate	73	Rebecca Road	068-046-001-000-100	48	42-12-19.60	70-42-56.52	Seawall	5' to 10'	2.5'	Concrete	470	470	C / IV	\$	759.00	\$ 601.00	\$ 639,200.00
Scituate	91	Rebecca Road	068-046-001-000-200	49	42-12-19.64	70-42-56.56	Jetty/Groin	10' to 15'		Stone	906	340	C / IV	\$	782.00	\$ -	\$ 708,492.00
Scituate	91	Rebecca Road	068-046-001-000-300	50	42-12-12.09	70-42-51.52	Jetty/Groin	5' to 10'		Stone	454	0	C / IV	\$	1,201.00	\$ -	\$ 545,254.00
Scituate	9	Lighthouse	068-046-005-015-100	51	42-12-26.19	70-43-20.41	Revetment	5' to 10'		Stone	1697	0	C / IV	\$	781.00	\$ -	\$ 1,325,357.00
Scituate	Ramp	Jericho Road	068-046-006-004-100	52	42-12-03.57	70-43-34.64	SW/Revetment	10' to 15'		Conc/Stone	376	376	B / II	\$	251.00	\$ 157.00	\$ 153,408.00
Scituate	207	Beaver Dam Road	068-050-001-001-100	53	42-11-52.39	70-43-32.25	Bulkhead	10' to 15'		Steel	463	0	D / IV	\$	2,508.00	\$ -	\$ 1,161,204.00
Scituate	207	Beaver Dam Road	068-050-001-041-100	54	42-11-51.06	70-43-31.05	SW/Revetment	10' to 15'		Conc/Stone	116	116	B / IV	\$	120.00	\$ 157.00	\$ 32,132.00
Scituate	100	Cole Parkway	068-050-001-000-100	55	42-11-42.44	70-43-26.11	SW/Revetment	10' to 15'		Conc/Stone	200	200	B / IV	\$	251.00	\$ 157.00	\$ 81,600.00
Scituate	100	Cole Parkway	068-050-001-000-200	56	42-11-41.52	70-43-22.67	SW/Revetment	10' to 15'		Conc/Stone	800	800	C / III	\$	1,254.00	\$ 781.00	\$ 1,628,000.00
Scituate	72	Front Street	068-050-001-000-300	57	42-11-34.00	70-43-33.31	Revetment	5' to 10'		Conc/Stone	396	396	A / III	\$	-	\$ -	\$ -
Scituate	15	Edward Foster Bridge	068-050-007-026-200	58	42-11-32.94	70-43-16.55	Revetment	5' to 10'		Stone	460	0	C / IV	\$	781.00	\$ -	\$ 359,260.00
Scituate	15	Edward Foster Bridge	068-050-007-026-100	59	42-11-32.48	70-43-17.38	Revetment	10' to 15'		Stone	340	0	C / IV	\$	781.00	\$ -	\$ 265,540.00
Scituate	7	Coast Guard Station	068-051-003-020-200	60	42-11-54.36	70-43-09.81	Bulkhead	5' to 10'		Timber	131	0	C / II	\$	632.00	\$ -	\$ 82,792.00
Scituate	23-B	Henry Lane	068-051-003-020-100	62	42-11-57.91	70-43-09.50	Revetment	5' to 10'		Stone	320	0	D / IV	\$	1,201.00	\$ -	\$ 384,320.00
Scituate	196	Edward Foster Road	068-051-001-001-100	63	42-12-02.76	70-42-58.32	Jetty/Groin	10' to 15'		Stone	327	20	C / IV	\$	600.00	\$ 1,564.00	\$ 227,480.00
Scituate	149	Edward Foster Road	068-051-001-008-100	67	42-12-02.65	70-42-58.49	Revetment	10' to 15'		Stone	1774	0	D / IV	\$	1,564.00	\$ -	\$ 2,774,536.00
Scituate	138	Edward Foster Road	068-051-002-004-100	2	42-11-49.97	70-42-56.99	Seawall	5' to 10'	2.5'	Concrete	405	405	C / IV	\$	781.00	\$ 601.00	\$ 559,710.00
Scituate	124	Edward Foster Road	068-051-002-005-100	3	42-11-40.55	70-42-59.90	Seawall	5' to 10'	2' Cap w/ 3'	Concrete	593	0	B / IV	\$	84.00	\$ -	\$ 49,812.00
Scituate	108	Edward Foster Road	068-051-002-005-200	4	42-11-40.80	70-43-00.08	Seawall	< 5'		Concrete	130	0	C / VI	\$	425.00	\$ -	\$ 55,250.00
Scituate	104	Edward Foster Road	068-051-002-008-100	5	42-11-38.18	70-42-59.92	Seawall	< 5'	3.5'	Concrete	115	0	B / IV	\$	84.00	\$ -	\$ 9,660.00
Scituate	56	Pegotty Beach	068-056-005														

APPENDIX F
50-YEAR LIFECYCLE COSTS

Minot Beach - North Seawall

First Cost	\$2,700,000.00		Maintenance Cost		Reconstruction Cost	
Maintenance Cost (5% of First Cost)	\$135,000.00		Year	Annual Cost	Year	Annual Cost
Maintenance Cost Reoccurrence	10	years	10	\$181,428.71	25	\$2,826,600.21
Reconstruction Cost (50% of First Cost)	\$1,350,000.00		20	\$243,825.02		
Reconstruction Cost Reoccurrence	25	years	30	\$327,680.43		
Life Cycle	50	years	40	\$440,375.10		
Inflation Rate	3%					
Money Spent over 50 Years	\$6,719,909.47					

Minot Beach - South Seawall

First Cost	\$9,500,000.00		Maintenance Cost		Reconstruction Cost	
Maintenance Cost (5% of First Cost)	\$475,000.00		Year	Annual Cost	Year	Annual Cost
Maintenance Cost Reoccurrence	10	years	10	\$638,360.28	25	\$9,945,445.17
Reconstruction Cost (50% of First Cost)	\$4,750,000.00		20	\$857,902.84		
Reconstruction Cost Reoccurrence	25	years	30	\$1,152,949.67		
Life Cycle	50	years	40	\$1,549,467.95		
Inflation Rate	3%					
Money Spent over 50 Years	\$23,644,125.91					

Minot Beach - South Seawall

First Cost	\$5,000,000.00		Maintenance Cost		Reconstruction Cost	
Maintenance Cost (5% of First Cost)	\$250,000.00		Year	Annual Cost	Year	Annual Cost
Maintenance Cost Reoccurrence	10	years	10	\$335,979.09	25	\$5,234,444.82
Reconstruction Cost (50% of First Cost)	\$2,500,000.00		20	\$451,527.81		
Reconstruction Cost Reoccurrence	25	years	30	\$606,815.62		
Life Cycle	50	years	40	\$815,509.45		
Inflation Rate	3%					
Money Spent over 50 Years	\$12,444,276.79					

Minot Beach - Beach Nourishment - Perched Beach

First Cost	\$600,000.00	Maintenance Cost	
Maintenance Cost (5% of First Cost)	\$30,000.00	Year	Annual Cost
Maintenance Cost Reoccurrence	2 years	2	\$31,827.00
Life Cycle	50 years	4	\$33,765.26
Inflation Rate	3%	6	\$35,821.57
		8	\$38,003.10
Money Spent over 50 Years	\$2,236,948.78	10	\$40,317.49
		12	\$42,772.83
		14	\$45,377.69
		16	\$48,141.19
		18	\$51,072.99
		20	\$54,183.34
		22	\$57,483.10
		24	\$60,983.82
		26	\$64,697.74
		28	\$68,637.83
		30	\$72,817.87
		32	\$77,252.48
		34	\$81,957.16
		36	\$86,948.35
		38	\$92,243.50
		40	\$97,861.13
		42	\$103,820.88
		44	\$110,143.57
		46	\$116,851.31
		48	\$123,967.56

North Scituate - Seawall and Revetment

First Cost	\$14,800,000.00		Maintenance Cost		Reconstruction Cost	
Maintenance Cost (5% of First Cost)	\$740,000.00		Year	Annual Cost	Year	Annual Cost
Maintenance Cost Reoccurrence	10	years	10	\$994,498.12	25	\$15,493,956.68
Reconstruction Cost (50% of First Cost)	\$7,400,000.00		20	\$1,336,522.31		
Reconstruction Cost Reoccurrence	25	years	30	\$1,796,174.23		
Life Cycle	50	years	40	\$2,413,907.97		
Inflation Rate	3%					
Money Spent over 50 Years	\$36,835,059.31					

North Scituate Beach - Beach Nourishment

First Cost	\$8,200,000.00		Renourishment Cost	
Renourishment Cost (70% of First Cost)	\$5,740,000.00		Year	Annual Cost
Renourishment Cost Reoccurrence	10	years	10	\$7,714,080.02
Life Cycle	50	years	20	\$10,367,078.49
Inflation Rate	3%		30	\$13,932,486.58
			40	\$18,724,096.93
Money Spent over 50 Years	\$58,937,742.02			

Surfside Road - Seawall and Revetment

First Cost	\$21,800,000.00		Maintenance Cost		Reconstruction Cost	
Maintenance Cost (5% of First Cost)	\$1,090,000.00		Year	Annual Cost	Year	Annual Cost
Maintenance Cost Reoccurrence	10	years	10	\$1,464,868.85	25	\$22,822,179.43
Reconstruction Cost (50% of First Cost)	\$10,900,000.00		20	\$1,968,661.25		
Reconstruction Cost Reoccurrence	25	years	30	\$2,645,716.09		
Life Cycle	50	years	40	\$3,555,621.19		
Inflation Rate	3%					
Money Spent over 50 Years	\$54,257,046.82					

Surfside Road - Beach Nourishment

First Cost	\$4,900,000.00	Renourishment Cost	
Renourishment Cost (70% of First Cost)	\$3,430,000.00	Year	Annual Cost
Renourishment Cost Reoccurrence	10 years	10	\$4,609,633.18
Life Cycle	50 years	20	\$6,194,961.53
Inflation Rate	3%	30	\$8,325,510.28
		40	\$11,188,789.63
Money Spent over 50 Years	\$35,218,894.62		

Mann Hill Beach - Constructed Dunes

First Cost	\$2,000,000.00	Maintenance Cost		Reconstruction Cost	
Maintenance Cost (5% of First Cost)	\$100,000.00	Year	Annual Cost	Year	Annual Cost
Maintenance Cost Reoccurrence	2 years	2	\$106,090.00	10	\$1,343,916.38
Reconstruction Cost (50% of First Cost)	\$1,000,000.00	4	\$112,550.88	20	\$1,806,111.23
Reconstruction Cost Reoccurrence	10 years	6	\$119,405.23	30	\$2,427,262.47
Life Cycle	50 years	8	\$126,677.01	40	\$3,262,037.79
Inflation Rate	3%	10	\$134,391.64		
		12	\$142,576.09		
Money Spent over 50 Years	\$16,295,823.80	14	\$151,258.97		
		16	\$160,470.64		
		18	\$170,243.31		
		20	\$180,611.12		
		22	\$191,610.34		
		24	\$203,279.41		
		26	\$215,659.13		
		28	\$228,792.77		
		30	\$242,726.25		
		32	\$257,508.28		
		34	\$273,190.53		
		36	\$289,827.83		
		38	\$307,478.35		
		40	\$326,203.78		
		42	\$346,069.59		
		44	\$367,145.23		
		46	\$389,504.37		
		48	\$413,225.19		

Egypt Beach - Constructed Dunes

		Maintenance Cost		Reconstruction Cost	
		Year	Annual Cost	Year	Annual Cost
First Cost	\$782,000.00				
Maintenance Cost (5% of First Cost)	\$39,100.00				
Maintenance Cost Reoccurrence	2 years	2	\$41,481.19	10	\$525,471.30
Reconstruction Cost (50% of First Cost)	\$391,000.00	4	\$44,007.39	20	\$706,189.49
Reconstruction Cost Reoccurrence	10 years	6	\$46,687.44	30	\$949,059.63
Life Cycle	50 years	8	\$49,530.71	40	\$1,275,456.78
Inflation Rate	3%	10	\$52,547.13		
		12	\$55,747.25		
Money Spent over 50 Years	\$6,371,667.11	14	\$59,142.26		
		16	\$62,744.02		
		18	\$66,565.13		
		20	\$70,618.95		
		22	\$74,919.64		
		24	\$79,482.25		
		26	\$84,322.72		
		28	\$89,457.97		
		30	\$94,905.96		
		32	\$100,685.74		
		34	\$106,817.50		
		36	\$113,322.68		
		38	\$120,224.03		
		40	\$127,545.68		
		42	\$135,313.21		
		44	\$143,553.78		
		46	\$152,296.21		
		48	\$161,571.05		

Oceanside Drive - Beach Nourishment - 50 foot Berm

First Cost	\$7,200,000.00		Renourishment Cost	
Renourishment Cost (70% of First Cost)	\$5,040,000.00		Year	Annual Cost
Renourishment Cost Reoccurrence	6.5	years	6.5	\$6,107,626.87
Life Cycle	50	years	13	\$7,401,409.92
Inflation Rate	3%		19.5	\$8,969,255.97
			26	\$10,869,219.99
Money Spent over 50 Years	\$89,024,002.60		32.5	\$13,171,654.77
			39	\$15,961,815.99
			45.5	\$19,343,019.09

Oceanside Drive - Beach Nourishment - 100 foot Berm

First Cost	\$10,300,000.00		Renourishment Cost	
Renourishment Cost (70% of First Cost)	\$7,210,000.00		Year	Annual Cost
Renourishment Cost Reoccurrence	10	years	10	\$9,689,637.10
Life Cycle	50	years	20	\$13,022,062.00
Inflation Rate	3%		30	\$17,500,562.42
			40	\$23,519,292.48
Money Spent over 50 Years	\$74,031,553.99			

Oceanside Drive - Seawall and Revetment

First Cost	\$80,200,000.00		Maintenance Cost		Reconstruction Cost	
Maintenance Cost (5% of First Cost)	\$4,010,000.00		Year	Annual Cost	Year	Annual Cost
Maintenance Cost Reoccurrence	10	years	10	\$5,389,104.68	25	\$83,960,494.98
Reconstruction Cost (50% of First Cost)	\$40,100,000.00		20	\$7,242,506.05		
Reconstruction Cost Reoccurrence	25	years	30	\$9,733,322.51		
Life Cycle	50	years	40	\$13,080,771.55		
Inflation Rate	3%					
Money Spent over 50 Years	\$199,606,199.77					

Cedar Point - Beach Nourishment - Cobble Berm

First Cost	\$4,600,000.00	Maintenance Cost	
Maintenance Cost (5% of First Cost)	\$230,000.00	Year	Annual Cost
Maintenance Cost Reoccurrence	2 years	2	\$244,007.00
Life Cycle	50 years	4	\$258,867.03
Inflation Rate	3%	6	\$274,632.03
		8	\$291,357.12
Money Spent over 50 Years	\$17,149,940.63	10	\$309,100.77
		12	\$327,925.00
		14	\$347,895.64
		16	\$369,082.48
		18	\$391,559.60
		20	\$415,405.58
		22	\$440,703.78
		24	\$467,542.64
		26	\$496,015.99
		28	\$526,223.37
		30	\$558,270.37
		32	\$592,269.03
		34	\$628,338.22
		36	\$666,604.02
		38	\$707,200.20
		40	\$750,268.69
		42	\$795,960.06
		44	\$844,434.02
		46	\$895,860.05
		48	\$950,417.93

Cedar Point - Seawall and Revetment

First Cost	\$10,400,000.00		Maintenance Cost		Reconstruction Cost	
Maintenance Cost (5% of First Cost)	\$520,000.00		Year	Annual Cost	Year	Annual Cost
Maintenance Cost Reoccurrence	10	years	10	\$698,836.52	25	\$10,887,645.23
Reconstruction Cost (50% of First Cost)	\$5,200,000.00		20	\$939,177.84		
Reconstruction Cost Reoccurrence	25	years	30	\$1,262,176.49		
Life Cycle	50	years	40	\$1,696,259.65		
Inflation Rate	3%					
Money Spent over 50 Years	\$25,884,095.73					

First Cliff - Revetment

First Cost (not counted towards total)	\$6,900,000.00		Maintenance Cost		Reconstruction Cost	
Maintenance Cost (5% of First Cost)	\$345,000.00		Year	Annual Cost	Year	Annual Cost
Maintenance Cost Reoccurrence	10	years	10	\$463,651.15	25	\$7,223,533.86
Reconstruction Cost (50% of First Cost)	\$3,450,000.00		20	\$623,108.38		
Reconstruction Cost Reoccurrence	25	years	30	\$837,405.55		
Life Cycle	50	years	40	\$1,125,403.04		
Inflation Rate	3%					
Money Spent over 50 Years	\$10,273,101.97					

Edward Foster Road - Seawall and Revetment

First Cost	\$7,800,000.00		Maintenance Cost		Reconstruction Cost	
Maintenance Cost (5% of First Cost)	\$390,000.00		Year	Annual Cost	Year	Annual Cost
Maintenance Cost Reoccurrence	10	years	10	\$524,127.39	25	\$8,165,733.93
Reconstruction Cost (50% of First Cost)	\$3,900,000.00		20	\$704,383.38		
Reconstruction Cost Reoccurrence	25	years	30	\$946,632.36		
Life Cycle	50	years	40	\$1,272,194.74		
Inflation Rate	3%					
Money Spent over 50 Years	\$19,413,071.80					

Second Cliff - Revetment

First Cost	\$8,900,000.00			
Maintenance Cost (5% of First Cost)	\$445,000.00			
Maintenance Cost Reoccurrence	10	years	10	\$598,042.79
Reconstruction Cost (50% of First Cost)	\$4,450,000.00		20	\$803,719.50
Reconstruction Cost Reoccurrence	25	years	30	\$1,080,131.80
Life Cycle	50	years	40	\$1,451,606.82
Inflation Rate	3%			
Money Spent over 50 Years	\$22,150,812.69			

Peggotty Beach - Beach Nourishment - Northern Portion - 50 foot Berm

First Cost	\$1,600,000.00	Renourishment Cost	
Renourishment Cost (70% of First Cost)	\$1,120,000.00	Year	Annual Cost
Renourishment Cost Reoccurrence	2 years	2	\$1,188,208.00
Life Cycle	50 years	4	\$1,260,569.87
Inflation Rate	3%	6	\$1,337,338.57
		8	\$1,418,782.49
Money Spent over 50 Years	\$62,712,754.37	10	\$1,505,186.34
		12	\$1,596,852.19
		14	\$1,694,100.49
		16	\$1,797,271.21
		18	\$1,906,725.03
		20	\$2,022,844.58
		22	\$2,146,035.82
		24	\$2,276,729.40
		26	\$2,415,382.22
		28	\$2,562,479.00
		30	\$2,718,533.97
		32	\$2,884,092.69
		34	\$3,059,733.93
		36	\$3,246,071.73
		38	\$3,443,757.50
		40	\$3,653,482.33
		42	\$3,875,979.40
		44	\$4,112,026.55
		46	\$4,362,448.96
		48	\$4,628,122.10

Peggotty Beach - Beach Nourishment - Northern Portion - 100 foot Berm

First Cost	\$3,000,000.00	Renourishment Cost	
Renourishment Cost (70% of First Cost)	\$2,100,000.00	Year	Annual Cost
Renourishment Cost Reoccurrence	4 years	4	\$2,363,568.50
Life Cycle	50 years	8	\$2,660,217.17
Inflation Rate	3%	12	\$2,994,097.86
		16	\$3,369,883.52
Money Spent over 50 Years	\$61,986,232.75	20	\$3,792,833.59
		24	\$4,268,867.62
		28	\$4,804,648.12
		32	\$5,407,673.79
		36	\$6,086,384.49
		40	\$6,850,279.36
		44	\$7,710,049.77
		48	\$8,677,728.95

Peggotty Beach - Beach Nourishment - Entire Beach - 50 foot Berm

First Cost	\$5,800,000.00	Renourishment Cost	
Renourishment Cost (70% of First Cost)	\$4,060,000.00	Year	Annual Cost
Renourishment Cost Reoccurrence	9 years	9	\$5,297,379.13
Life Cycle	50 years	18	\$6,911,878.23
Inflation Rate	3%	27	\$9,018,433.36
		36	\$11,767,010.01
Money Spent over 50 Years	\$54,147,979.85	45	\$15,353,279.12

Peggotty Beach - Beach Nourishment - Entire Beach - 100 foot Berm

First Cost	\$2,900,000.00		
Renourishment Cost (70% of First Cost)	\$2,030,000.00		
Renourishment Cost Reoccurrence	4.5	years	
Life Cycle	50	years	
Inflation Rate	3%		
Money Spent over 50 Years	\$57,005,934.67		
			Renourishment Cost
			Year
			Annual Cost
			4.5
			\$2,318,801.37
			9
			\$2,648,689.56
			13.5
			\$3,025,509.85
			18
			\$3,455,939.11
			22.5
			\$3,947,604.12
			27
			\$4,509,216.68
			31.5
			\$5,150,728.00
			36
			\$5,883,505.01
			40.5
			\$6,720,531.77
			45
			\$7,676,639.56
			49.5
			\$8,768,769.63

Peggotty Beach - Constructed Dunes - South

		Maintenance Cost		Reconstruction Cost	
		Year	Annual Cost	Year	Annual Cost
First Cost	\$2,700,000.00				
Maintenance Cost (5% of First Cost)	\$135,000.00				
Maintenance Cost Reoccurrence	2 years	2	\$143,221.50	10	\$1,814,287.11
Reconstruction Cost (50% of First Cost)	\$1,350,000.00	4	\$151,943.69	20	\$2,438,250.17
Reconstruction Cost Reoccurrence	10 years	6	\$161,197.06	30	\$3,276,804.34
Life Cycle	50 years	8	\$171,013.96	40	\$4,403,751.02
Inflation Rate	3%	10	\$181,428.71		
		12	\$192,477.72		
Money Spent over 50 Years	\$21,999,362.13	14	\$204,199.61		
		16	\$216,635.37		
		18	\$229,828.46		
		20	\$243,825.02		
		22	\$258,673.96		
		24	\$274,427.20		
		26	\$291,139.82		
		28	\$308,870.24		
		30	\$327,680.43		
		32	\$347,636.17		
		34	\$368,807.21		
		36	\$391,267.57		
		38	\$415,095.77		
		40	\$440,375.10		
		42	\$467,193.95		
		44	\$495,646.06		
		46	\$525,830.90		
		48	\$557,854.00		

Peggotty Beach - Constructed Dunes - North

		Maintenance Cost		Reconstruction Cost	
		Year	Annual Cost	Year	Annual Cost
First Cost	\$918,000.00				
Maintenance Cost (5% of First Cost)	\$45,900.00				
Maintenance Cost Reoccurrence	2 years	2	\$48,695.31	10	\$616,857.62
Reconstruction Cost (50% of First Cost)	\$459,000.00	4	\$51,660.85	20	\$829,005.06
Reconstruction Cost Reoccurrence	10 years	6	\$54,807.00	30	\$1,114,113.47
Life Cycle	50 years	8	\$58,144.75	40	\$1,497,275.35
Inflation Rate	3%	10	\$61,685.76		
		12	\$65,442.42		
Money Spent over 50 Years	\$7,479,783.13	14	\$69,427.87		
		16	\$73,656.03		
		18	\$78,141.68		
		20	\$82,900.51		
		22	\$87,949.15		
		24	\$93,305.25		
		26	\$98,987.54		
		28	\$105,015.88		
		30	\$111,411.35		
		32	\$118,196.30		
		34	\$125,394.45		
		36	\$133,030.98		
		38	\$141,132.56		
		40	\$149,727.53		
		42	\$158,845.94		
		44	\$168,519.66		
		46	\$178,782.51		
		48	\$189,670.36		

Third Cliff - Revetment

First Cost	\$19,200,000.00		Maintenance Cost		Reconstruction Cost	
Maintenance Cost (5% of First Cost)	\$960,000.00		Year	Annual Cost	Year	Annual Cost
Maintenance Cost Reoccurrence	10	years	10	\$1,290,159.72	25	\$20,100,268.12
Reconstruction Cost (50% of First Cost)	\$9,600,000.00		20	\$1,733,866.79		
Reconstruction Cost Reoccurrence	25	years	30	\$2,330,171.97		
Life Cycle	50	years	40	\$3,131,556.28		
Inflation Rate	3%					
Money Spent over 50 Years	\$47,786,022.89					

Fourth Cliff - Revetment

First Cost	\$2,900,000.00		Maintenance Cost		Reconstruction Cost	
Maintenance Cost (5% of First Cost)	\$145,000.00		Year	Annual Cost	Year	Annual Cost
Maintenance Cost Reoccurrence	10	years	10	\$194,867.88	25	\$3,035,978.00
Reconstruction Cost (50% of First Cost)	\$1,450,000.00		20	\$261,886.13		
Reconstruction Cost Reoccurrence	25	years	30	\$351,953.06		
Life Cycle	50	years	40	\$472,995.48		
Inflation Rate	3%					
Money Spent over 50 Years	\$7,217,680.54					

Humarock North - Seawall and Revetment

First Cost	\$38,000,000.00		Maintenance Cost		Reconstruction Cost	
Maintenance Cost (5% of First Cost)	\$1,900,000.00		Year	Annual Cost	Year	Annual Cost
Maintenance Cost Reoccurrence	10	years	10	\$2,553,441.12	25	\$39,781,780.66
Reconstruction Cost (50% of First Cost)	\$19,000,000.00		20	\$3,431,611.35		
Reconstruction Cost Reoccurrence	25	years	30	\$4,611,798.70		
Life Cycle	50	years	40	\$6,197,871.80		
Inflation Rate	3%					
Money Spent over 50 Years	\$94,576,503.63					

Humarock North - Beach Nourishment - 50 foot Berm

First Cost	\$4,100,000.00	Renourishment Cost	
Renourishment Cost (70% of First Cost)	\$2,870,000.00	Year	Annual Cost
Renourishment Cost Reoccurrence	2 years	2	\$3,044,783.00
Life Cycle	50 years	4	\$3,230,210.28
Inflation Rate	3%	6	\$3,426,930.09
		8	\$3,635,630.13
Money Spent over 50 Years	\$160,701,433.07	10	\$3,857,040.01
		12	\$4,091,933.75
		14	\$4,341,132.51
		16	\$4,605,507.48
		18	\$4,885,982.89
		20	\$5,183,539.24
		22	\$5,499,216.78
		24	\$5,834,119.09
		26	\$6,189,416.94
		28	\$6,566,352.43
		30	\$6,966,243.29
		32	\$7,390,487.51
		34	\$7,840,568.20
		36	\$8,318,058.80
		38	\$8,824,628.58
		40	\$9,362,048.46
		42	\$9,932,197.21
		44	\$10,537,068.02
		46	\$11,178,775.47
		48	\$11,859,562.89

Humarock North - Beach Nourishment - 100 foot Berm

First Cost	\$6,300,000.00	Renourishment Cost	
Renourishment Cost (70% of First Cost)	\$4,410,000.00	Year	Annual Cost
Renourishment Cost Reoccurrence	4 years	4	\$4,963,493.85
Life Cycle	50 years	8	\$5,586,456.06
Inflation Rate	3%	12	\$6,287,605.51
		16	\$7,076,755.40
Money Spent over 50 Years	\$130,171,088.78	20	\$7,964,950.54
		24	\$8,964,622.01
		28	\$10,089,761.05
		32	\$11,356,114.95
		36	\$12,781,407.43
		40	\$14,385,586.66
		44	\$16,191,104.53
		48	\$18,223,230.79

Humarock North - Constructed Dunes

		Maintenance Cost		Reconstruction Cost	
		Year	Annual Cost	Year	Annual Cost
First Cost	\$9,600,000.00				
Maintenance Cost (5% of First Cost)	\$480,000.00				
Maintenance Cost Reoccurrence	2 years	2	\$509,232.00	10	\$6,450,798.62
Reconstruction Cost (50% of First Cost)	\$4,800,000.00	4	\$540,244.23	20	\$8,669,333.93
Reconstruction Cost Reoccurrence	10 years	6	\$573,145.10	30	\$11,650,859.86
Life Cycle	50 years	8	\$608,049.64	40	\$15,657,781.40
Inflation Rate	3%	10	\$645,079.86		
		12	\$684,365.23		
Money Spent over 50 Years	\$78,219,954.25	14	\$726,043.07		
		16	\$770,259.09		
		18	\$817,167.87		
		20	\$866,933.39		
		22	\$919,729.64		
		24	\$975,741.17		
		26	\$1,035,163.81		
		28	\$1,098,205.28		
		30	\$1,165,085.99		
		32	\$1,236,039.72		
		34	\$1,311,314.54		
		36	\$1,391,173.60		
		38	\$1,475,896.07		
		40	\$1,565,778.14		
		42	\$1,661,134.03		
		44	\$1,762,297.09		
		46	\$1,869,620.98		
		48	\$1,983,480.90		

Humarock South - Seawall

First Cost	\$66,400,000.00		Maintenance Cost		Reconstruction Cost	
Maintenance Cost (5% of First Cost)	\$3,320,000.00		Year	Annual Cost	Year	Annual Cost
Maintenance Cost Reoccurrence	10	years	10	\$4,461,802.38	25	\$69,513,427.26
Reconstruction Cost (50% of First Cost)	\$33,200,000.00		20	\$5,996,289.30		
Reconstruction Cost Reoccurrence	25	years	30	\$8,058,511.40		
Life Cycle	50	years	40	\$10,829,965.47		
Inflation Rate	3%					
Money Spent over 50 Years	\$165,259,995.82					

Humarock South - Beach Nourishment - 50 foot Berm

First Cost	\$12,300,000.00		Renourishment Cost	
Renourishment Cost (70% of First Cost)	\$8,610,000.00		Year	Annual Cost
Renourishment Cost Reoccurrence	13	years	13	\$12,644,075.27
Life Cycle	50	years	26	\$18,568,250.81
Inflation Rate	3%		39	\$27,268,102.32
Money Spent over 50 Years	\$70,780,428.41			

Humarock South - Beach Nourishment - 100 foot Berm

First Cost	\$26,400,000.00		Renourishment Cost	
Renourishment Cost (70% of First Cost)	\$18,480,000.00		Year	Annual Cost
Renourishment Cost Reoccurrence	20	years	20	\$33,376,935.62
Life Cycle	50	years	40	\$60,282,458.40
Inflation Rate	3%			
Money Spent over 50 Years	\$120,059,394.01			

Humarock South - Constructed Dunes

		Maintenance Cost		Reconstruction Cost	
		Year	Annual Cost	Year	Annual Cost
First Cost	\$10,700,000.00				
Maintenance Cost (5% of First Cost)	\$535,000.00				
Maintenance Cost Reoccurrence	2 years	2	\$567,581.50	10	\$7,189,952.63
Reconstruction Cost (50% of First Cost)	\$5,350,000.00	4	\$602,147.21	20	\$9,662,695.11
Reconstruction Cost Reoccurrence	10 years	6	\$638,817.98	30	\$12,985,854.22
Life Cycle	50 years	8	\$677,721.99	40	\$17,451,902.19
Inflation Rate	3%	10	\$718,995.26		
		12	\$762,782.07		
Money Spent over 50 Years	\$87,182,657.35	14	\$809,235.50		
		16	\$858,517.94		
		18	\$910,801.69		
		20	\$966,269.51		
		22	\$1,025,115.32		
		24	\$1,087,544.85		
		26	\$1,153,776.33		
		28	\$1,224,041.31		
		30	\$1,298,585.42		
		32	\$1,377,669.27		
		34	\$1,461,569.33		
		36	\$1,550,578.91		
		38	\$1,645,009.16		
		40	\$1,745,190.22		
		42	\$1,851,472.30		
		44	\$1,964,226.97		
		46	\$2,083,848.39		
		48	\$2,210,754.76		