US Army Corps
of Engineers
Philadelphia District

NEW JERSEY SHORE PROTECTION STUDY

BRIGANTINE INLET TO GREAT EGG HARBOR INLET

ABSECON ISLAND INTERIM FEASIBILITY STUDY

VOLUME 3

APPENDICES B, E, AND F

Appendix A: See Volume 2
Appendix B: Economic Analysis
Appendix C: See Volume 1
Appendix D: See Volume 1
Appendix E: Real Estate Plan
Appendix F: Public Access Plan
Appendix G: See Volume 1

August 1996

APPENDIX B

ECONOMIC ANALYSIS

BRIGANTINE INLET TO GREAT EGG HARBOR INLET FEASIBILITY STUDY
ABSECON ISLAND
ECONOMICS APPENDIX

TABLE OF CONTENTS

TABLES

BRIGANTINE INLET TO GREAT EGG HARBOR INLET FEASIBILITY STUDY
ABSECON ISLAND
ECONOMICS APPENDIX

INTRODUCTION

The following section details the economic analysis performed to evaluate the damages for the without projections on Absecon Island. Benefit categories to be evaluated will eventually include reduction in storm, wave & inundation damages, and increases in recreation usage and/or value. The basic underlying assumptions include a discount rate of 7⅝%, March 1994 price level, a 50 year project life, and a base year of 2001. Project benefits were updated to an October 1995 price level for comparison with plan alternative cost estimates.

DESCRIPTION OF THE STUDY AREA

POPULATION AND LAND USE

Absecon Island is comprised of four communities; Atlantic City, Longport, Margate and Ventnor, all of which are located within Atlantic County's 565 square miles. The study area is bordered by Absecon Inlet to the north and Great Egg Harbor Inlet to the south.

Atlantic County is the 6th least populated county within New Jersey with a total population of 224,327 year round residents in 1990, equalling only 2.5% of the state's permanent population. Although Atlantic County covers 565 square miles, approximately three-quarters of the residents live within five miles of the ocean. Early development along these beach front communities are currently causing slow growth trends to occur within the study area's boundaries. Despite these slow growth rates, over 85% of seasonal residents in Atlantic County are concentrated in the island communities of Atlantic City, Brigantine, Longport, Margate, Ventnor and the backbay communities of Absecon, Linwood, Northfield and Sommers Point.

These communities rely heavily on the tourist industry for their economic stability. Although South Jersey is largely responsible for supporting the "Garden State" image, 62.9% of Atlantic County residents depend on service and sale oriented companies while only 0.42% of the work force is employed in farming, fishing or forestry.

Within the county, Atlantic City is the most heavily developed community with a population of 40,199 year-round residents in 1990 and 3,347.71 people per square mile accounting for 2/3 of the study area's population. Between 1980 and 1990 however, Atlantic City experienced a decline of 5.6% lowering the population to 37,986. The population is expected to continue to decline into the year 2000 when it will rise to approximately 40,450.

New development has slowed over recent years. In 1991 only one new privately owned housing unit was authorized by building permits in comparison to the 39 units authorized in 1990. This is largely due to the lack of vacant land as only 6% of the total property was vacant by the year 1993. Unlike the majority of the study area, Atlantic City is heavily commercialized composing 76.8% of the tax base with only 14.28% residential. Atlantic City's beaches are primarily lined with commercial buildings such as hotels, casinos, and shops, while Longport, Margate and Ventnor remain mostly residential.

The casinos have helped make the Atlantic City boardwalk famous while helping to attract a total of 3.2 million visitors in 1993 alone. Not only have the casinos helped the city bring in needed tourist related jobs, but they have also helped to rebuild the neighboring communities by forming an organization called the Casino Reinvestment Development Authority (CRDA). In conjunction with the CRDA, Atlantic City has planned a $42 million housing rehabilitation program, which began construction in October 1993. The program will provide 198 housing units on a 15 acre track of land in the Inlet section of Atlantic City. Construction cost per unit is approximately $170,000, however subsidies from the CRDA will allow qualified residents to purchase the townhouses at a selling price between $70,000 and $80,000 placing it within range of the median value for single homes which was $73,400 in 1990.

This development represents the second phase of a $500 million redevelopment of the North-East inlet which is expected to be complete within approximately 10 years. The program will result in 2,500 new or rehabilitated housing units, commercial space and recreational areas. These renovated homes will be a great help to a city that has one of the highest unemployment rates along the Jersey shore. Atlantic City had a median household income of only $20,309 in 1989 and an unemployment rate of 5.5% with 9,208 people living below the poverty line, accounting for almost 25% of the residents.

The third phase of the CRDA redevelopment plan involves the construction of low-rise (townhouses) and mid-rise (approximately 100-150 units) residential structures in three tax blocks located along the Inlet frontage. CRDA has acquired the necessary property, performed site remediation, and expects construction to begin in 1996. Another major component of the Inlet renewal effort is the development of the Maine Avenue County Park. The park will extend from the waters edge to New Hampshire Avenue, a recently improved major access road. It will include ample landscaping, a pavilion, and parking area with a cove, and passive waterfront park at the waters edge.

The city is also planning to build a new convention center directly off the Atlantic City Expressway, and plan to have a water and amusement ride theme park serve as a gateway corridor between the new convention center and the casinos (Bally's Caesars, and Trump Plaza). While this new development is largely on the bay, it may impact our study area by bringing more visitors to the beach.

To the south of Atlantic City is Ventnor, a resort city with a boardwalk and approximately 1.5

square miles of public beach which nearly 28,000 summer residents came to enjoy in 1993. Ventnor's population has also declined over the past decade by approximately 6% to 11,005 in 1990. It is projected that population will continue to decline by 5% until the year 2000 to a total of 10,418.

Because of the town's proximity to Atlantic City, Ventnor is also very highly developed, with a total of 5,135 residents per square mile. In 1991 there were only three building permits issued for single family units compared to 27 permits authorized in 1989. The community is primarily residential with only 2 industrial complexes and 141 commercial lots within the city's boundaries. Along the boardwalk are several high rise condominium complexes and hotels. However, traveling south away from Atlantic City, the area becomes more residential with single family homes along the beach-front rather than commercial lots. The median value of a single family home was $137,700 in 1990, almost twice the value of residential homes in Atlantic City.

Bordering Ventnor to the south is Margate. Unlike Ventnor and Atlantic City, Margate is more of a residential community. Margate encompasses 1.41 square miles of land. Neither Margate nor Longport own boardwalks, however all of their beaches allow public access. The beach front is almost solely residential with only a few commercial and public buildings, including a senior citizens center and a public library. There are 6,726 total housing units, of which 45% are owner occupied. The median value for single family homes is $176,800 while median rent is $564.

Population has consistently declined over the last 30 years from 10,576 permanent residents in 1970 to only 8,431 in 1990. This trend is expected to continue into the year 2010 when it will fall to 7,315.

Like all of the cities in the study area Margate is a primarily service oriented labor force. Out of 4,563 civilian employees, 53% are service oriented with only .15% in the farming, fishing and forestry industry. The median income per household in 1989 was $40,649 with only 286 residents living below the poverty line.

The last town in the study area is Longport which lies between Margate and Great Egg Harbor Inlet. Longport is a small, quiet, residential community with older residents. The median age is 58.4 years and more than half of the residents are retired. There are no boardwalks or amusement parks to attract the younger crowd, however there are approximately 1.24 square miles of public access beaches which bring in nearly 6,000 summer residents and 1,224 year-round residents.

There are 1,537 housing units with a total of 1,058 single family units and 479 multi-family units. The borough is almost completely developed with only 5% of the land remaining vacant for future development. The study area is primarily zoned for
residential single family units, however there is one commercial lot and one multi-family unit along Beach Avenue. The median value for a single family home was $201,800 in 1993.

Table 1

CURRENT POPULATION		
NAME	SUMMER POPULATION/1	1990 POPULATION/2
Atlantic County	360,132	224,327
Atlantic City	3.2 million visitors (annually)	37,986
Longport	6,000	1,224
Margate	24,000	8,431
Ventnor	28,000	11,005

Notes:
1 Based on interviews with local officials.
2 The New Jersey Municipal Data Book 1994, consistent with the 1990 Census.

The Atlantic County Division of Economic Development projects that Atlantic County population will increase by 9.7% between 1990 and 2000, and by 8.5% between 2000 and 2010. Within Atlantic County Longport, Margate and Ventnor are expected to grow at slow rates, while Atlantic City is expected to experience mild to moderate growth.

Table 2

POPULATION PROJECTIONS					
	1990	1995	2000	2005	2010
Atlantic County	224,327	233,075	246,153	256,617	67,080
Atlantic City	37,986	38,972	40,450	41,696	42,941
Longport	1,224	1,175	1,102	1,084	1,066
Margate	8,431	8,090	7,578	7,447	7,315
Ventnor	11,005	10,770	10,418	10,411	10,404

Table 3

INCOME FOR 1989				
NAME	PER CAPITA INCOME	MEDIAN HOUSEHOLD INCOME	MEDIAN FAMILY INCOME	PERSONS BELOW POVERTY
Atlantic City	12,017	20,309	27,804	9,208
Longport	23,737	34,464	45,288	107
Margate	27,939	40,649	54,949	286
Ventnor	19,038	33,120	43,414	727

Source: The New Jersey Municipal Data Book 1994 published by the U.S. Census

STORM DAMAGE ECONOMIC ANALYSIS

STRUCTURE INVENTORY AND REPLACEMENT COSTS

The study area was delineated into the following three reaches: (1.) the inlet area of Atlantic City, (2.) the oceanfront of Atlantic City, and (3.) Ventnor, Margate and Longport based on the physical setting, hydraulic and economic factors. All analyses were done on a reach by reach basis and used to calculate without project total damages.

A database of approximately 330 ocean block structures in Longport, 330 in Margate, 230 in Ventnor, 310 in Atlantic City on the oceanfront and 45 on the inlet frontage of Atlantic City was compiled containing information described in the following paragraphs. Each structure was specifically inventoried and mapped on aerial photography at a scale of 1"=50'. Information collected includes address, construction and quality type, and number of stories, first floor elevations, ground elevations and foundation type. For multi-family residential and commercial structures the number of units and names of businesses were also gathered. The assimilation of this data was enhanced by using aerial ortho-digital mapping and the geographic information system, MIPS (Micro Imaging Processing System). This information, along with quality and condition of a structure, was entered into the Marshall and Swift Residential and Commercial Software Estimators which calculates depreciated replacement cost value. Only the replacement cost value for the first two floors (vulnerable to storm damage) of high rise buildings and casinos were entered into the database and used to estimate damages. The associated content value of each structure is 40% of the structural replacement cost.

The structure inventory consists of single family homes, multi-family dwellings such as apartment and condominium buildings, and commercial establishments such as hotel-casinos, multi-unit retail structures, arcades, malls and office and public buildings. Local officials, and redevelopment agencies have embarked upon substantial development plans for the Inlet area. Almost 200 townhouses have been constructed recently. Land acquisition and remediation has been conducted to commence construction of two mid-rise multi-unit complexes of similar construction to an existing multi-unit building (Ocean Terrace) in the area, and conceptual plans for a water park have been designed.

In Atlantic City, the inclusion of multi-unit commercial structures may result in higher equivalent annual damages than a database weighted with more residential structures. The database consists of over 30 structures classified as hotels/casinos, a shopping mall, and a convention center. The estimated total replacement cost for all structures is over 600 million dollars and contain 200 million dollars in content replacement cost. The average replacement cost for residential structures included in the database for Atlantic City Inlet, Atlantic City Oceanfront, and Ventnor, Margate, Longport are $196,000, $248,000, and $294,000, respectively. The average replacement cost for commercial structures and contents (hotels/casinos; malls, etc.) included in the database for Atlantic City Inlet, Atlantic City Oceanfront, and Ventnor, Margate, Longport are $3.9, $2.9, and $1.8 million, respectively. The inventory of structures in each area extended approximately one block from the oceanfront or inlet frontage.

The communities of Ventnor, Margate, and Longport were evaluated as one unit due to their similarities. Land-use is primarily residential with relatively few commercial lots in proximity to the ocean. Most commercial activities are located in the resort city of Ventnor. Development is continuous along the oceanfront of Ventnor, Margate, and Longport. As shown in the table below, several hydraulic parameters or shoreline characteristics are also comparable.

Characteristics	**Ventnor**	**Margate**	**Longport**
# of Structures/Mile	137	199	235
Type of Development	residential	residential	residential
Long Term Erosion Rate	0 ft/yr.	0 ft/yr.	0 ft/yr.
Direction of Littoral Transport	southwest	southwest	southwest
Orientation of Shoreline	northeast to southwest	northeast to southwest	northeast to southwest
Seawall/Bulkhead Fails	100 year event	100 year event	100 year event
Primary Damage Mechanism	wave-inundation	wave-inundation	wave-inundation

STORM DAMAGE METHODOLOGY

Damages (for without and with project conditions) were calculated for seven frequency storm events (5, 10, 20, 50, 100, 200, and 500 year events) for erosion, wave and inundation damage to structures, infrastructure and improved property. The calculations were performed using COSTDAM. COSTDAM is a Fortran program originally written by the Wilmington District and updated for the Philadelphia District. COSTDAM reads an ASCII 'Control' file which contains the storm frequency parameters for each cell and an ASCII 'Structure' file which contains the database information of each structure as previously described. A sample of this structure file is below in Table 4. COSTDAM checks if a structure has been damaged by wave attack, based on the relationship between a structure's first floor elevation and the total water elevation that sustains a wave. Then COSTDAM checks for erosion damage at a structure. Finally, COSTDAM calculates inundation damages if the water elevation is higher than the first floor elevation based on FIA depth-damage curves adjusted for increased salt water damageability. To avoid double counting, if damage occurs by more than one mechanism, COSTDAM takes the maximum damage of any given mechanism (wave, erosion, inundation) and drops the rest of the damages from the structure's total damages. (See Figure 1 for illustration.) Average annual damages are calculated for each reach.

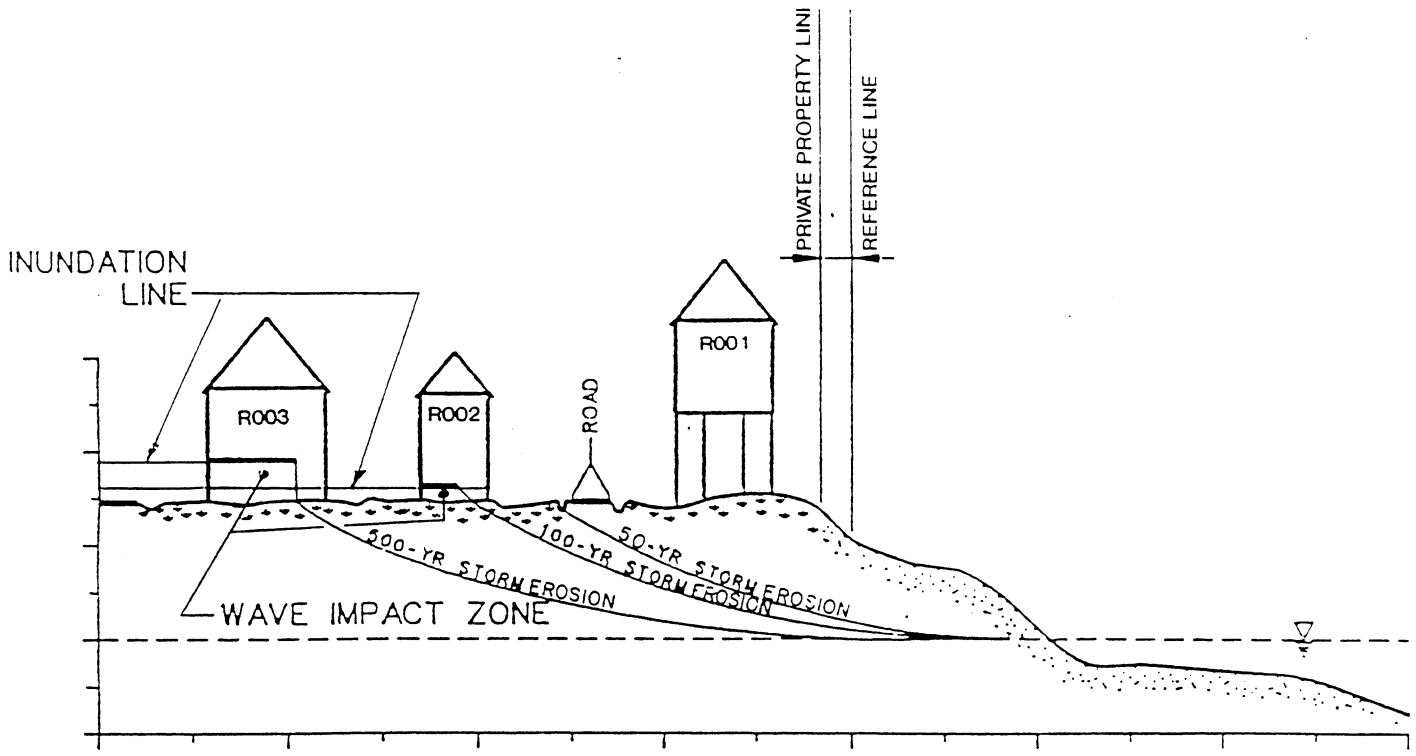
Table 4
STRUCTURE FILE EXCERPT

V152230	271.3	289.2	10.9	4.0	221.	88.S03S04 1-1
V152231	309.6	332.7	10.5	7.0	290.	116.S07S08 1-1
V152232	370.0	389.3	10.4	3.2	293.	117.S03S04 1-1
V152233	416.1	436.7	10.4	3.1	188.	75.S03S04 1-1
M163000	418.8	436.8	9.7	3.9	237.	95.S03S04 1-1
M163001	368.1	386.3	12.4	2.5	250.	100.S03S04 1-1
M163002	307.9	331.4	10.3	0.3	266.	106.S07S08 1-1
M163003	256.3	280.9	10.6	2.7	298.	119.S07S08 1-1
M163004	218.9	235.9	10.4	3.1	273.	109.S03S04 1-1
M163005	212.2	225.2	10.4	2.7	256.	102.S03S04 1-1
M163006	264.5	281.7	10.8	3.6	322.	129.S07S08 1-1

Columns 1-3 contain the Cell ID (format-A3).
Columns 4-9 contain the Structure ID (format-A6).
Columns 10-19 are blank.
Columns 20-27 contain distance to front of structure (format-F8.1)
Columns 28-35 contain distance to middle of structure (format-F8.1)
Columns 36-40 contain the ground elevation (format-F5.1)
Columns 41-44 contain the distance between the first floor and the ground (format-F4.1)
Columns 45-53 contain the structure replacement cost value (format-F9.0)
Columns 54-62 contain content replacement cost value (format-F9.0)
Columns 63-65 contain the structure depth damage curve (format-A3)
Columns 66-68 contain the content depth damage curve (format-A3)
Columns 69-70 contain a code to make structure "active" (format-I2)
Columns 71-72 contain the damage category (format-I2)

FIGURE 1

Without Project Damage Mechanisms



CROSS-SECTION VIEW WITHOUT PROJECT

PERCENT DAMAGED						
HOUSE	50 YEAR STORM		100 YEAR STORM		500 YEAR STORM	
	EROSION	WAVE / INUN.	EROSION	WAVE / INUN.	EROSION	WAVE / INUN.
R001	100%	0	100%	0	100%	0
R002	0	1%	50%*	13%	100%	0
R003	0	1%	0	13%	57%*	28%

* TAKE SINGLE HIGHEST DAMAGE PERCENTAGE ONLY TO PREVENT DOUBLE COUNTING

EROSION DAMAGES

The distance between the reference (profile) line and the oceanfront and back walls were measured in AutoCAD using the georeferenced MIPS mapping of the study area. This technique reduces the amount human error and photographic distortion relative to the technique used in the reconnaissance study. For the structure damage/failure analysis, it was assumed that a structure is destroyed at the point that the land below the structure is eroded halfway through the structure's footprint if the structure is not on a pile foundation. If the structure is on piles, the land below the structure must have eroded through the footprint of the structure before total damage is claimed. Prior to this, for both foundation types, the percent damage claimed is equal to the linear proportion of erosion under the structure's footprint relative to the total damage point. For townhouse/rowhouse structures perpendicular to the ocean, each unit has a unique ocean and back wall distances due to the local building ordinance which mandates that every unit have two hour firewalls. These walls should provide enough stability that townhouse units in a building can remain standing and be utilized after the unit(s) closer to the ocean is/are damaged. This has no bearing on townhouse units parallel to the ocean which would all have the same erosion point, because they are essentially equal distance from the reference line. Other multi-family structures such as apartments and condominiums will not have unique erosion points for each unit, because most of these structures were built before the local ordinance mandating firewalls was in place. Large high rise structures such as apartment buildings, hotels and casinos are not subjected to total erosion damage by undermining because of their deep piled foundations.

In addition to erosion damage to structures, damage to the land the structures are on (hence forth called improved property) was calculated. The improved property value was determined by comparing market value of the improved property to the cost of filling in the eroded land for reutilization and using the least expensive of the two values. The cost of filling/restoring the improved property is based on a typical 100'x50' lot for the different depths, widths and cubic yards of erosion produced by storms. The cost of filling/restoring the eroded improved property was determined to be the cheaper of the two and the cost of fill was prorated for the width of each reach to estimate total damages.

Erosion damages for infrastructure are also calculated. The infrastructure damage category included damage to roads, utilities, the boardwalk, bulkhead, and geotubes. The replacement cost of infrastructure does not necessarily relate to the number of structures in the area. Road and utilities replacement costs consisted of fixed and variable costs based on ranges of feet of replacement/repair. In general, the replacement cost of roads decreased with greater quantities eroded reflecting economies of scale. Distance from a reference line (back of the boardwalk) and feet of erosion per event for each road and associated utilities were used to determine damage susceptibility. Atlantic City alone has over sixty streets which are perpendicular to the boardwalk.

The boardwalk in Atlantic City is approximately 18,000 feet long and ranges in width from 20

feet to 60 feet, for which replacement costs ranged from $315 to $3,925 per linear foot. The following criteria were used to determine boardwalk damage susceptibility: if (1) the reference point for the boardwalk was within the wave zone for an event; (2) the wave zone extended beyond the front of the boardwalk; and (3) the water elevation was greater than or equal to the boardwalk elevation. Bulkhead damage was based on selection by hydraulic engineers of a probable damage/failure event. Costs to replace bulkheads are estimated to be $900 per linear foot. Geotubes were installed on the beach in Atlantic City for erosion protection at an approximate cost of $57 per linear foot. Geotube failure was determined to occur by the 50-year storm event.

Damage to infrastructure and the boardwalk in particular has historically been significant, especially in Atlantic City. Boardwalk damage constituted 40% of the $330,000 in municipal damages caused by the March 1984 storm. The December 1992 storm caused approximately $1.2 million dollars in municipal damage to Atlantic City. Several hundred feet of the boardwalk was destroyed or damaged. These damage estimates represent claims considered eligible by the Federal Emergency Management Agency (FEMA) and not all costs incurred from the storms.

WAVE-INUNDATION DAMAGES

A structure is considered to be damaged by a wave when there is sufficient force in the total water elevation to completely damage a structure. Partial wave damages are not calculated; instead the structure is subjected to inundation damages. Large masonry structures like high rise condominiums are not expected to experience failure by wave damage. Because of the dominance of such structures along the oceanfront in Atlantic City no wave damages are present. On the contrary, the residential communities of Ventnor, Margate, and Longport have typical frame single family beach house along the oceanfront that do experience wave damage.

The percentages of total replacement cost used to calculate damages by the depth-damage function curves for inundation damages reflect various characteristics of a structure. The depth-damage curves display the percent damaged at various depths relative to the first floor. Examples of the depth-damage curves are displayed in Table 5. The depth-damage curves used to estimate the damage to structures were derived from previous studies of saltwater areas and Federal Insurance Administration (FIA) curves. The distinguishing characteristics were construction type (frame, concrete block, or masonry) and number of stories in a structure.

Table 5
DEPTH DAMAGE CURVES

S03 (2 story, no basement, residential structure)
# of Rows (free format)
13
Depth Damage (expressed as a decimal) (free format)

-2	0
-1	.01
0	.10
1	.24
2	.30
3	.36
4	.39
5	.42
6	.47
7	.49
8	.56
9	.64
10	.67

376

S15 (1 story, masonry, no basement, commercial structure)
# of Rows (free format)
13
Depth Damage (expressed as a decimal) (free format)

-2	0
-1	.01
0	.05
1	.21
2	.29
3	.38
4	.46
5	.48
6	.53
7	.55
8	.59
9	.67
10	.73

EMERGENCY/CLEAN-UP COSTS

Clean-up costs for individual structures are based on the time for clean-up and additional meal and travel costs. Travel and meal costs are included as opposed to evacuation costs because the vast majority of residential structures and even many commercial structures are occupied only on a seasonal basis, and even then, not by the structure's owner. Clean-up costs are only applied to those structures affected by a particular storm event.

Emergency and clean-up costs are also calculated for public entities. This includes local, county and state governments and non-profit emergency service organizations. The costs are based on FEMA Damage Survey Reports for the March 1984 and December 1992 storms, which had stage frequencies of approximately 10 and 20 year events. Emergency and clean-up costs for larger events are extrapolated due to limited historical information.

WITHOUT PROJECT CONDITIONS

IMPROVED PROPERTY DAMAGES

Annual damages for without project damages of improved property are in Table 6.

Table 6

Improved Property Without Project Expected Annual Damage (In $000s, Mar. 1994 Price Level)	
Reach	Annual Damages
Atlantic City Inlet	0
Atlantic City Oceanfront	130
Ventnor, Margate, Longport	256
Total Improved Property Damage	386

INFRASTRUCTURE DAMAGES

The without project annual damages for infrastructure (roads, utilities, bulkhead) including boardwalk are in Table 7.

Table 7

Infrastructure Without Project Expected Annual Damage (In $000s, Mar. 1994 Price Level)	
Reach	Annual Damages
Atlantic City Inlet	187
Atlantic City Oceanfront	2,309
Ventnor, Margate, Longport	660
Total Infrastructure Damage	3,156

STRUCTURE DAMAGES

Table 8 displays equivalent annual damages for structures in Atlantic City inlet frontage, Atlantic City oceanfront, and Ventnor, Margate, Longport, respectively. Annual damages for Atlantic City inlet and Atlantic City oceanfront are $422,000 and $2,738,000, respectively. Annual damages for Ventnor, Margate, Longport are $5,159,000.

Table 8

Structures Without Project Expected Annual Damage (In $000s, Mar. 1994 Price Level)	
Reach	Annual Damages
Atlantic City Inlet	422
Atlantic City Oceanfront	2,738
Ventnor, Margate, Longport	5,159
Total Structure Damage	8,319

TOTAL ANNUAL DAMAGES

Total Annual Damages for structures, infrastructure and improved property is displayed by cell in Table 9.

Table 9

Total Damages for All Categories Without Project Expected Annual Damage (In $000s, Mar. 1994 Price Level)	
Reach	Annual Damages
Atlantic City Inlet	609
Atlantic City Oceanfront	5,177
Ventnor, Margate, Longport	6,075
Total Damages	11,861

379

BACK BAY RESIDUAL DAMAGES

COSTDAM was also run for the stages associated with the back bay (still-water) inundation to determine the corresponding damages. The results, listed in Table 10, represent inundation damages that will not be eliminated by a project on the oceanfront of Longport. These back bay induced residual damages total $223,000 in annual damages. This avoids overestimating benefits in the with project condition for those cases where damages are reduced or eliminated for structures once eroded or damaged by wave but may still incur some damages due to inundation from the back bay.

Table 10

Longport Back Bay Still Water Inundation (In $000s, Mar. 1994 Price Level)	
Reach	Annual Damages
Longport	$223

EMERGENCY/CLEAN-UP COSTS

The number of structures affected and the associated emergency costs for each storm event are in Table 11. Average annual damages for (all affected) individuals in Atlantic City inlet, Atlantic City oceanfront, and Ventnor, Margate, Longport are $2,000, $13,000 and $29,000, respectively. Average annual damages for (all affected) public entities are $5,000, $112,000, and $106,000 respectively.

Table 11

Structures Affected and Emergency/Clean-up Costs (in $000s, Mar. 1994 Price Level)							
ATLANTIC CITY INLET	5yr	10yr	20yr	50yr	100yr	200yr	500yr
Structures	11	12	13	15	32	35	41
Individual Clean-up Costs $	4	5	6	11	28	57	117
Municipal Clean-up Costs $	3	6	25	50	103	227	289
ATLANTIC CITY OCEANFRONT	5yr	10yr	20yr	50yr	100yr	200yr	500yr
Structures	31	69	114	174	199	231	254
Individual Clean-up Costs $	12	27	44	111	231	475	959
Municipal Clean-up Costs $	87	174	717	1062	2417	3379	5330
VENTNOR, MARGATE, LONGPORT	5yr	10yr	20yr	50yr	100yr	200yr	500yr
Structures	32	120	242	325	749	851	890
Individual Clean-up Costs $	12	46	93	218	600	1239	2493
Municipal Clean-up Costs $	97	194	518	705	3015	4041	4859

TOTAL AVERAGE ANNUAL CLEANUP COSTS
ATLANTIC CITY INLET:
(all) Individuals: $2,000
Public entities: $5,000

ATLANTIC CITY OCEANFRONT:
(all) Individuals: $13,000
Public entities: $112,000

VENTNOR, MARGATE, LONGPORT:
(all) Individuals: $29,000
Public entities: $106,000

WITH PROJECT ALTERNATIVES

STORM DAMAGE REDUCTION

Damages for eleven with project alternatives are calculated using the same methodologies and databases as previously detailed in the without project conditions. The benefits for any given project are the difference between without project damages and with project damages. The storm damage reduction benefits (including emergency costs) are shown for all eleven alternatives in Table 12.

Table 12

Atlantic City Inlet
Storm Damage Reduction By Alternative
(Mar. 1994 Price Level)

Alt.	Project Type[1]	Without Project Storm Damages	With Project Storm Damages	Storm Damage Reduction Benefits	Percent Reduced
ZA	Jetty Extension	$616,000	$541,220	$74,780	12%
ZB	Bulkheads	$616,000	$184,180	$431,820	70%
ZJ	Wave Breaker	$616,000	$558,050	$57,950	9%

Atlantic City Oceanfront
Storm Damage Reduction By Alternative
(Mar. 1994 Price Level)

Alt.	Berm	Dune	Without Project Storm Damages	With Project Storm Damages	Storm Damage Reduction Benefits	Percent Reduced
CW	150	Existing	$5,302,000	$3,271,850	$2,030,150	38%
CX	150	+14	$5,302,000	$1,615,980	$3,686,020	70%
CY	150	+16	$5,302,000	$1,371,860	$3,930,140	74%
DX	200	+14	$5,302,000	$1,522,420	$3,779,580	71%
DY	200	+16	$5,302,000	$1,072,830	$4,229,170	80%
DZ	200	+18	$5,302,000	$958,310	$4,343,690	82%
EY[2]	250	+16	$5,302,000	$912,040	$4,389,960	83%

[1]It was assumed that: (1.) the jetty extension, Alt. ZA, would totally eliminate wave damages in the Inlet; (2.) the wave breaker, Alt. ZJ, would partially eliminate wave damages; and (3.) inundation and erosion damages would not be reduced under with project conditions.

[2]In order to extrapolate with project storm damages for Alt. EY, it was assumed that: (1) wave-inundation damages for Alt. EY was the same as wave-inundation damages for Alt. DY since the dune height is the same; and (2) erosion damages for Alt. EY were eliminated due to the wider berm width.

Table 12 (cont'd.)

Ventnor, Margate, Longport Storm Damage Reduction By Alternative (Mar. 1994 Price Level)						
Alt.	Berm	Dune	Without Project Storm Damages	With Project Storm Damages	Storm Damage Reduction Benefits	Percent Reduced
AV	75	+12.5	$6,210,000	$2,833,834	$3,376,166	51%
BX	100	+14	$6,210,000	$2,219,820	$3,990,180	61%
CW	150	Existing	$6,210,000	$4,431,060	$1,778,940	25%
CX	150	+14	$6,210,000	$2,157,020	$4,052,980	62%
CY	150	+16	$6,210,000	$1,643,870	$4,566,130	70%
DX	200	+14	$6,210,000	$2,026,430	$4,183,570	64%
DY	200	+16	$6,210,000	$1,542,290	$4,667,710	72%

OPTIMIZATION

Optimization of the alternatives is based on storm damage reduction which is the priority benefit category. Benefits were updated to an October 1995 price level. Initial and nourishment costs for the various project alternatives are annualized for comparison to the average annual benefits for a specific project alternative. Recreation benefits were not used in the optimization procedure. Initial construction, and periodic nourishment costs are annualized over a 50 year project life at 7-⅝%. The average annual costs are subtracted from average annual benefits to calculate net benefits and select the optimal plan which maximizes net benefits. Included in Table 14 are the average annual benefits and costs, the net benefits and benefit-cost ratio for storm damage reduction. Plan ZB with two bulkheads was selected for the inlet area in Atlantic City. Plan DY with a 200' berm and a dune at +16 NGVD is the optimal plan for the Atlantic City oceanfront. Plan BX with a 100' berm and a dune at +14 NGVD is the optimal plan for Ventnor, Margate, Longport.

Table 13

Atlantic City Inlet Benefit/Cost Matrix Average Annual Benefits and Costs for With Project Alternatives (Oct. 1995 Price Level)		
		ALT. ZA
JETTY EXTENSION	AVERAGE ANNUAL BENEFITS AVERAGE ANNUAL COSTS BENEFIT-COST RATIO NET BENEFITS	$77,031 $559,161 0.14 ($482,131)
		ALT. ZB
BULKHEADS	AVERAGE ANNUAL BENEFITS AVERAGE ANNUAL COSTS BENEFIT-COST RATIO NET BENEFITS	**$444,816** **$401,357** **1.11** **$43,459**
		ALT. ZJ
WAVE BREAKER	AVERAGE ANNUAL BENEFITS AVERAGE ANNUAL COSTS BENEFIT-COST RATIO NET BENEFITS	$59,694 $484,486 0.12 ($424,792)

Table 14

Atlantic City Oceanfront Benefit/Cost Matrix
Average Annual Benefits and Costs for With Project Alternatives
(Oct. 1995 Price Level)

		150' BERM	200' BERM	250' BERM
		ALT. CW		
NO DUNE	AVERAGE ANNUAL BENEFITS AVERAGE ANNUAL COSTS BENEFIT-COST RATIO NET BENEFITS	$2,091,249 $3,075,593 0.68 ($984,344)		
		ALT. CX	ALT. DX	
+14' NGVD DUNE HEIGHT	AVERAGE ANNUAL BENEFITS AVERAGE ANNUAL COSTS BENEFIT-COST RATIO NET BENEFITS	$3,796,954 $3,127,149 1.21 $669,806	$3,893,330 $3,301,274 1.18 $592,056	
		ALT. CY	**ALT. DY**	ALT. EY
+16' NGVD DUNE HEIGHT	AVERAGE ANNUAL BENEFITS AVERAGE ANNUAL COSTS BENEFIT-COST RATIO NET BENEFITS	$4,048,421 $3,216,410 1.26 $832,011	**$4,356,451** **$3,399,153** **1.28** **$957,298**	$4,522,078 $3,873,690 1.17 $648,388
			ALT. DZ	
+18' NGVD DUNE HEIGHT	AVERAGE ANNUAL BENEFITS AVERAGE ANNUAL COSTS BENEFIT-COST RATIO NET BENEFITS		$4,474,417 $3,541,844 1.26 $932,573	

Table 15

Ventnor, Margate, Longport Benefit/Cost Matrix
Average Annual Benefits and Costs for With Project Alternatives
(Oct. 1995 Price Level)

		75' BERM	100' BERM	150' BERM	200' BERM
				ALT. CW	
NO DUNE	AVERAGE ANNUAL BENEFITS AVERAGE ANNUAL COSTS BENEFIT-COST RATIO NET BENEFITS			$1,832,479 $4,028,980 0.45 ($2,196,501)	
		ALT. AV			
+12.5' NGVD DUNE HEIGHT	AVERAGE ANNUAL BENEFITS AVERAGE ANNUAL COSTS BENEFIT-COST RATIO NET BENEFITS	$3,477,775 $3,271,404 1.06 $206,370			
			ALT. BX	ALT. CX	ALT. DX
+14' NGVD DUNE HEIGHT	AVERAGE ANNUAL BENEFITS AVERAGE ANNUAL COSTS BENEFIT-COST RATIO NET BENEFITS		**$4,110,268** **$3,517,916** **1.17** **$592,352**	$4,174,958 $4,313,241 0.97 ($138,283)	$4,309,478 $4,984,092 0.86 ($674,614)
				ALT. CY	ALT. DY
+16' NGVD DUNE HEIGHT	AVERAGE ANNUAL BENEFITS AVERAGE ANNUAL COSTS BENEFIT-COST RATIO NET BENEFITS			$4,703,552 $4,407,449 1.07 $296,102	$4,808,189 $5,080,370 0.95 ($272,181)

REDUCED MAINTENANCE BENEFITS

Reduced maintenance benefits accrue under with project conditions as well as storm damage reduction benefits. As a result of the beachfill and nourishment components of the proposed plan, it is expected that the cost of maintaining and repairing the geotubes in Atlantic City will decrease by $2,000 per year.

RECREATION ANALYSIS

WITHOUT PROJECT CONDITIONS

New Jersey Beaches are consistently the number one travel destination in New Jersey. Tourist dollars contribute directly and indirectly to the regional economy. In 1992, the New Jersey Travel Research Program reported that travel and tourism generated 346,000 jobs in the state with a total payroll of $7.6 billion. In addition, the number of visitors to Atlantic City has recently experienced a slight increase. In 1994 the total number of visitors was an estimated 31.3 million according to the South Jersey Transportation Authority. This represented a 3.6% increase over the previous year's visitor count.

A contingent valuation method survey was completed by the Rutgers State University for the New Jersey Department of Environmental Protection and Energy and the U.S. Corps of Engineers to determine willingness to pay for the existing beach and an enhanced beach. This is done on a regional basis, encompassing the major beach communities of Atlantic City, Ventnor, Margate, and Longport. It consisted of 1,063 interviews of a random sample of recreational beach users. The interviews were conducted in person on the beach during the summer of 1994.

Beachgoers were asked to indicate how important different factors were in deciding whether to visit a New Jersey beach. Respondents voiced similar desires. The primary factors of consideration were the quality of the beach scenery, how well maintained the beach was, the width of the beach, the number of lifeguards, and how family oriented was the beach.

The survey also used a density measure developed in cooperation with the Corps to determine if crowding was a problem. It was found that over 60% of the time there was at least several yards of space between beach towels or blankets, and only 7% of the time was it very crowded (only 2 feet between towels). Further it was determined that crowding was not considered a very important issue to the majority of beachgoers by asking respondents how important being alone is and how important is it to be with a large number of people. As might be expected, areas with more crowding tended to be frequented by people who like large numbers. People who like to be alone frequented areas that tended to have little crowding.

To estimate the value of the beach as it exists currently, an iterative bidding process was applied. Beachgoers were first asked if a day at the beach would be worth $4.00 to each member of their

household. Based on their answers, they were then asked progressively higher or lower amounts until the amount they value the beach was determined. Using this method it was found that the average value of a day at the beach is $4.22.

WITH PROJECT CONDITIONS

The beachgoers were asked how much more they were willing to pay if the beach were widened. While the majority were unwilling to pay any extra, 16% were willing to pay, on average, $2.92 more per visit. This would be equivalent to an average of $0.47 for all beachgoers.

The number of visitor days was estimated by multiplying the number of beach tag sales by the number of days the tags are usable. This was then multiplied by 1.062 to capture the percentage of people who use the beach without buying a beach tag. Lastly, 30% is subtracted from the number to account for inclement weather. For Atlantic City, which does not sell beach tags, the number was taken from city estimates. The total number of visitor days for beaches within the project area are estimated at 14,816,000.

Benefits were not found to accrue from increased capacity because crowding was found not to be a significant factor. However benefits do arise from an increase in the value of the recreational experience.

Benefits resulting from this increase in recreational experience were calculated by multiplying $0.47 by the number of visitors days within the project area or 14,815,000. This gives total recreational benefits of $6,963,000. A breakdown of benefits for each community are as follows:

Community	Visitor Days	Day Value	Total Value
Atlantic City	9,800,000	$0.47	$4,606,000
Margate	2,093,000	$0.47	$983,710
Ventnor	2,267,000	$0.47	$1,065,490
Longport	655,000	$0.47	$307,850
Total	14,815,000	$0.47	$6,963,050

FINAL NED PLAN

ANNUALIZED COSTS

Table 16 displays the calculations for interest during construction. The duration of construction for the project is estimated at nineteen months. It is assumed the construction costs would be evenly distributed over the nineteen month period. First costs, nourishment costs, and major rehabilitation costs (year 24) are annualized and presented in Table 17, and operation, maintenance and monitoring (OM&M) costs are in Table 18.

Table 16

ABSECON ISLAND INTEREST DURING CONSTRUCTION			
Discount Rate:		7.625%	
Use Date:		Apr-1999	
Start Date:		Nov-2000	
	Monthly	Interest	Total
MONTH	Costs	Factor	Cost
1	$3,948,409	1.123386	$4,435,589
2	$2,677,659	1.116528	$2,989,682
3	$2,677,659	1.109712	$2,971,431
4	$2,677,659	1.102937	$2,953,290
5	$2,677,659	1.096204	$2,935,261
6	$2,677,659	1.089512	$2,917,342
7	$2,677,659	1.082861	$2,899,532
8	$2,677,659	1.076250	$2,881,830
9	$2,677,659	1.069680	$2,864,237
10	$2,677,659	1.063149	$2,846,752
11	$2,677,659	1.056659	$2,829,373
12	$2,677,659	1.050208	$2,812,100
13	$2,677,659	1.043797	$2,794,932
14	$2,677,659	1.037425	$2,777,870
15	$2,677,659	1.031091	$2,760,911
16	$2,677,659	1.024797	$2,744,056
17	$2,677,659	1.018540	$2,727,304
18	$2,677,659	1.012322	$2,710,654
19	$2,677,659	1.006142	$2,694,106
Total First Cost:	$52,146,300		
	Total Investment Cost:		$55,546,300
	Minus First Cost:		52,146,300
	Interest During Construction:		$3,400,000

Table 17

ABSECON ISLAND BEACHFILL & NOURISHMENT PRESENT WORTH ANALYSIS				
Base Year:	2001		Discount Rate:	7.625%
Type	Year	Cost	PW Factor	PW Cost
Initial Cost	0	52,038,300	1.000000	52,038,300
Real Estate	0	108,000	1.000000	108,000
IDC	0	3,400,000	1.000000	3,400,000
Periodic Nourishment	3	12,187,595	0.802159	9,776,390
Periodic Nourishment	6	12,187,595	0.643459	7,842,220
Periodic Nourishment	9	12,187,595	0.516157	6,290,708
Periodic Nourishment	12	12,187,595	0.414040	5,046,149
Periodic Nourishment	15	12,187,595	0.332126	4,047,814
Periodic Nourishment	18	12,187,595	0.266418	3,246,991
Periodic Nourishment	21	12,187,595	0.213709	2,604,603
Periodic Nourishment	24	17,372,450	0.171429	2,978,140
Periodic Nourishment	27	12,187,595	0.137513	1,675,956
Periodic Nourishment	30	12,187,595	0.110308	1,344,383
Periodic Nourishment	33	12,187,595	0.088484	1,078,409
Periodic Nourishment	36	12,187,595	0.070978	865,056
Periodic Nourishment	39	12,187,595	0.056936	693,912
Periodic Nourishment	42	12,187,595	0.045672	556,628
Periodic Nourishment	45	12,187,595	0.036636	446,504
Periodic Nourishment	48	12,187,595	0.029388	358,167
			TOTAL	104,398,331
			Capital Recovery Factor (50 Years @ 7.625%):	0.078235
			AVERAGE ANNUAL COSTS:	**$8,167,600**

Table 18

MONITORING COSTS

PRESENT WORTH COST ANALYSIS

Base Year:	2001			
Discount Rate:	7.625%			
Type	Year	Cost	PW Factor	PW Cost
OM&M	0	0	1.000000	0
OM&M	1	284,000	0.929152	263,879
OM&M	2	251,000	0.863324	216,694
OM&M	3	284,000	0.802159	227,813
OM&M	4	251,000	0.745328	187,077
OM&M	5	284,000	0.692523	196,677
OM&M	6	251,000	0.643459	161,508
OM&M	7	284,000	0.597872	169,796
OM&M	8	251,000	0.555514	139,434
OM&M	9	284,000	0.516157	146,588
OM&M	10	251,000	0.479588	120,377
OM&M	11	284,000	0.445610	126,553
OM&M	12	251,000	0.414040	103,924
OM&M	13	284,000	0.384706	109,256
OM&M	14	251,000	0.357450	89,720
OM&M	15	284,000	0.332126	94,324
OM&M	16	251,000	0.308595	77,457
OM&M	17	284,000	0.286732	81,432
OM&M	18	251,000	0.266418	66,871
OM&M	19	284,000	0.247543	70,302
OM&M	20	251,000	0.230005	57,731
OM&M	21	284,000	0.213709	60,693
OM&M	22	251,000	0.198569	49,841
OM&M	23	284,000	0.184500	52,398
OM&M	24	251,000	0.171429	43,029
OM&M	25	284,000	0.159284	45,237
OM&M	26	251,000	0.147999	37,148
OM&M	27	284,000	0.137513	39,054
OM&M	28	251,000	0.127771	32,070
OM&M	29	284,000	0.118718	33,716
OM&M	30	251,000	0.110308	27,687
OM&M	31	284,000	0.102492	29,108
OM&M	32	251,000	0.095231	23,903
OM&M	33	284,000	0.088484	25,130
OM&M	34	251,000	0.082215	20,636
OM&M	35	284,000	0.076390	21,695
OM&M	36	251,000	0.070978	17,816
OM&M	37	284,000	0.065950	18,730
OM&M	38	251,000	0.061277	15,381
OM&M	39	284,000	0.056936	16,170
OM&M	40	251,000	0.052902	13,278
OM&M	41	284,000	0.049154	13,960
OM&M	42	251,000	0.045672	11,464
OM&M	43	284,000	0.042436	12,052
OM&M	44	251,000	0.039429	9,897
OM&M	45	284,000	0.036636	10,405
OM&M	46	251,000	0.034040	8,544
OM&M	47	284,000	0.031629	8,983
OM&M	48	251,000	0.029388	7,376
OM&M	49	284,000	0.027306	7,755
OM&M	50	0	0.025371	0
			TOTAL	$3,420,567
		Capital Recovery Factor (50 Years @ 7.625%):		0.078235
		AVERAGE ANNUAL OM&M COSTS:		$267,600

BENEFITS DURING CONSTRUCTION

The NED project will be constructed over nineteen months with an additional month before and after construction for mobilization and demobilization. Significant portions of the beach will be fully nourished before the project is completed in its entirety. The portions of the beach nourished early in the construction phase will provide storm damage reduction benefits. Table 19 displays the monthly benefits during construction and the average annual benefits this adds to the overall benefits.

Table 19

ABSECON ISLAND BENEFITS DURING CONSTRUCTION				
	Discount Rate:		0.07625	
	Use Date:		Apr-1999	
	Start Date:		Nov-2000	
Month	Work	Monthly Benefit	Interest Factor	Total Benefit
1	Mob.	0	1.123386	0
7	Atlantic City	400,106	1.082861	433,259
8	Atlantic City	400,106	1.076250	430,614
9	Atlantic City	400,106	1.069680	427,985
10	Atlantic City	400,106	1.063149	425,372
11	Atlantic City	400,106	1.056659	422,776
12	Atlantic City	400,106	1.050208	420,195
13	Atlantic City	400,106	1.043797	417,629
14	Atlantic City	400,106	1.037425	415,080
15	Atlantic City	400,106	1.031091	412,546
16	Atlantic City	400,106	1.024797	410,027
17	Atlantic City	400,106	1.018540	407,524
18	Ventnor-Margate-Longport	742,628	1.012322	751,779
19	Demob	742,628	1.006142	747,189
	TOTAL	$5,886,422		$6,121,976
			Capital Recovery Factor (50 Years @ 7.625%):	0.078235
			Benefits During Construction:	$479,000

BENEFIT-COST RATIO

Total average annual benefits are displayed by category in Table 20, along with annualized costs (rounded), and the resulting benefit-cost ratio. The result is a benefit-cost ratio of 1.9 with $7,870,300 in net benefits.

Table 20
BENEFIT-COST COMPARISON FOR THE NED PLAN

Discount Rate:	7.625%
Project Life:	50 Years
Price Level:	Oct. 1995
Base Year:	2001
BENEFITS:	
Storm Damage Reduction	$8,912,000
Reduced Maintenance	2,000
Recreation	6,963,000
Benefits During Construction	479,000
Total Average Annual Benefits	$16,356,000
COSTS:	
Initial Construction & Real Estate Costs	$52,146,000
Interest During Construction	3,400,000
Periodic Nourishment (per cycle)	12,187,595
Average Annual Construction Costs	$8,167,600
Average Annual O&M and Monitoring Costs	318,100
Total Average Annual Costs (Rounded)	$8,485,700
Benefit-Cost Ratio	**1.9**
Net Benefits	**$7,870,300**
Residual Damages	**$3,535,000**

202

SENSITIVITY ANALYSIS

INTEREST RATE

Project benefits and costs were annualized at higher discount rates of 8% and 10%. The results are displayed below.

SENSITIVITY ANALYSES Discount Rate Change	
8% Discount rate:	
Average Annual Benefits:	
Storm Damage Reduction[3]	$8,914,000
Recreation	$6,963,000
Benefits During Construction	$501,400
Average Annual Benefits:	$16,378,400
Average Annual Costs[4]	$8,679,900
Benefit-Cost Ratio:	1.89
Net Benefits:	$7,698,500
10% Discount rate:	
Average Annual Benefits:	
Storm Damage Reduction	$8,914,000
Recreation	$6,963,000
Benefits During Construction	$624,800
Average Annual Benefits:	$16,501,800
Average Annual Costs:	$9,756,800
Benefit-Cost Ratio:	1.69
Net Benefits:	$6,745,000

[3]Includes reduced maintenance

[4]Includes operation, maintenance, and monitoring

294

REPLACEMENT COST VALUES

The NED plan was also rerun changing the structure and content replacement values +/- 10 percent. The results are displayed below.

SENSITIVITY ANALYSES Replacement Cost Value Change	
+10% Structure Replacement Cost:	
Average Annual Benefits:	
Storm Damage Reduction[3]	$9,622,000
Recreation	$6,963,000
Benefits During Construction	$479,000
Average Annual Benefits:	$17,064,000
Average Annual Costs[4]	$8,485,700
Benefit-Cost Ratio:	2.01
Net Benefits:	$8,578,300
-10% Structure Replacement Cost:	
Average Annual Benefits:	
Storm Damage Reduction	$8,344,000
Recreation	$6,963,000
Benefits During Construction	$479,000
Average Annual Benefits:	$15,786,000
Average Annual Costs:	$8,485,700
Benefit-Cost Ratio:	1.86
Net Benefits:	$7,300,300

[3]Includes reduced maintenance

[4]Includes operation, maintenance, and monitoring

DEPTH-DAMAGE CURVES

The NED plan was also rerun changing the inundation depth-damage +/- 10 percent. The results are displayed below.

SENSITIVITY ANALYSES Depth-Damage Curves Change	
Depth-Damage Curves +10%:	
Average Annual Benefits:	
Storm Damage Reduction[3]	$9,338,000
Recreation	$6,963,000
Benefits During Construction	$479,000
Average Annual Benefits:	$16,780,000
Average Annual Costs[4]	$8,485,700
Benefit-Cost Ratio:	1.98
Net Benefits:	$8,294,300
Depth-Damage Curves -10%:	
Average Annual Benefits:	
Storm Damage Reduction	$8,508,000
Recreation	$6,963,000
Benefits During Construction	$479,000
Average Annual Benefits:	$15,950,000
Average Annual Costs:	$8,485,700
Benefit-Cost Ratio:	1.88
Net Benefits:	$7,464,300

[3]Includes reduced maintenance

[4]Includes operation, maintenance, and monitoring

396

REPORT ON FIVE SURVEYS
FOR THE UNITED STATES ARMY CORPS OF ENGINEERS

ABSECON ISLAND AND SEVEN MILE ISLAND, NEW JERSEY:
STONE HARBOR, AVALON, ATLANTIC CITY, LONGPORT, MARGATE, VENTNOR

SURVEYS OF BEACH USERS, BUSINESSES, AND HOMEOWNERS

The Forum for Policy Research and Public Service
Rutgers University, Camden

Data Analysis and Report: Ross Koppel, Ph.D.

November, 1994

In the summer of 1994, The Forum for Policy Research and Public Service of Rutgers University (Camden) administered three surveys to samples of beach users, of businesses and of homeowners in the New Jersey communities of Stone Harbor, Avalon, Atlantic City, Longport, Margate, Ventnor.

The surveys examine respondents' valuations of the beach, the desired characteristics and facilities of a beach, the perceived impact of the beach on properties and businesses, and a variety of demographic measures.

Survey Administration:

The beach user survey was administered to a random sample of over one thousand people. Interviewers were trained to visually segment the beach into strata starting at the ocean. Strata were sampled according to their density (number of people). In addition, interviewers were trained to seek representative weightings of gender, age, and group size. Review of demographic data, of the beach use pattern data (distance from ocean and distribution of people) and of interviewer codes reveals no significant systematic skew or bias.

The homeowner survey was at first administered face-to-face. The process was laborious because so many residents were not at home (i.e., we met renters instead of owners, or homeowners were in their a non-shore house, at work, or on the beach). In consultation with the Corps, it was decided that we would use telephone interviews.

The business survey was generally administered face-to-face. At off-peak hours, business managers and owners are usually "in" and available.

Pretesting

Each of the research instruments was pretested on its target population. Each survey went through several iterations. Fortunately, because the populations were large, we were able to modify the questionnaires and retest them on new respondents. Each iteration of the three main questionnaires (beach users, homeowners, and businesses) were pretested on samples of 25 to 55 people. As with our other surveys, the sample presented here does not incorporate any of the responses from the pretest questionnaire.

Role of the Corps

We would like to thank the members of the Economics and Social Analysis Branch of the U.S. Army Corps of Engineers (Philadelphia District) for their help in developing the research instruments. They provided several examples of questionnaires used by earlier researchers in addition to useful background papers and methodological guides from previous researchers and from Corps documents. They also maintained a willingness to consider our efforts at survey improvement or enhancement. We appreciated their reviews of the many versions of each of the interview schedules that were eventually approved and administered. More important, we also appreciated their suggestionsand refinements to each document.

Training, Supervision and Additional Research

The interviewers were initially trained by Dr. Ross Koppel. Mr. Stephen Kucharski supervised the interviewers, coordinated their work, and provided additional training. Mr. Kucharski was also responsible for the SPSS data formatting, for supervising data entry, and for collection of additional data from State, Federal and local sources.

Structure of This Report

I. In the first section, we analyze the responses to the Beach Users Survey from respondents at the six communities on Absecon and Seven Mile Island (N = 1063).

Frequency distributions and crosstabulations of every item by several key variables have been calculated and are found in the appendix. They are also presented on disk. The following is a list of the crosstabulations we have calculated. Every variable is crosstabulated by:

Weather (Sunny vs. All Other)
Density of Beach Use (Categories 1 and 2 ["Light Use"] vs. 3, 4, 5 ["Full or More Crowded"])
Community location (Stone Harbor, Avalon, Atlantic City, Longport, Margate, Ventnor)
Yearly Visit Pattern (Visit Every Year; Most or Some Years; First Visit)
Days On Beach (Few -- 1-14; Many -- 15-30; Most -- 31-98)
Own or Rent Property at Shore

Year of Purchase [for owners] ("New" 1985-1994; "Old" 1900 to 1984)
Resident Status (Permanent; Staying for at least a week; Staying less than a week)
Income (Less than $49,999; $50,000 and over)
Education (High School or less vs. Some College or more)
Age (categorized in two formats because the age breakdowns for residents is skewed sharply to the right -- they tend to be over 60 years old)
Age-1 (under 60 vs. 60 and older)
Age-2 (under 40 vs. 40 and older)

As noted, the Appendix presents these crosstabulations for every question in the questionnaire. These data are also provided on disk in SPSS system files.

II. The second section presents the data from the interviews with Business Managers and Owners in the six towns in Absecon and Seven Mile Island. As with the previous findings, the appendix provides a range of crosstabulations in hard copy, and the accompanying disk files (SPSS system files) contain both the crosstabs and a full copy of the data.

The Survey of Businesses is a comparatively small sample (N =156). After review of the data, we have calculated and provide the following two crosstabulations (for every variable):

Business Schedule (Open all year vs. Open summer only)
No. of Employees (0-9 vs. 10-125)

III. The Survey of Homeowners is comprised of two samples:

1. a survey of homeowners from face-to-face interviews and via telephone interviews with residents; and

2. the subset of beach users who owned homes in the shore communities. (This latter group received a separate battery of questions from within the beach users' survey.)

Wherever possible and logical, we combine results from the two instruments. The sample size of the direct survey of homeowners is 251; the sample size of homeowners who were interviewed on the beach is 370. The combined sample size is 621. As with all the data, an SPSS file on disk is also provided.

The following crosstabulations were calculated for the homeowners' data:

Age (under 60 vs. 60 and older)
Education (High School or less vs. Some College or more)
Year of Purchase ("New" 1985-1994; "Old" 1900 to 1984)
Number of Blocks from Beach (1 or less vs more than 1)
Length of Stay (Permanent Resident vs. other)

IV. In the fourth section we use the beach valuation data from the surveys of beach users, businesses and homeowners to calculate a combined valuation figure for the beach and its impact on the communities.

V. The survey of Brigantine Beach users comprises the fifth section. This survey is somewhat shorter than the general beach users survey and addresses issues requested by the Corps. Many of the questions, however, are identical to those used in the other questionnaires.

The sample size is 255, and SPSS files on disk are provided.

VI. A complete copy of all questionnaires is included in section VI.

The Beach Users Survey
The Business Owners/Managers Survey
The Homeowners Survey
The Brigantine Beach Users Survey

Appendix 1 (Book "A") -- Frequency Distributions of:
1.1. The Beach Users Survey
1.2. The Business Owners/Managers Survey
1.3. The Homeowners Survey
1.4. The Brigantine Beach Users Survey

Appendix 2 -- Cross Tabulations (See full listing below)

Appendix 3 -- Digital: SPSS files of all data

APPENDIX TABLE SETS: CROSSTABULATION OF SURVEY DATA

BEACH USERS

APPENDIX
BOOK NO.

1 LOCATION (SIX COMMUNITIES' BEACHES) BY ALL OTHER VARIABLES

1 SHORE VISITING PATTERNS BY ALL OTHER VARIABLES
Recoded: Every year (1); Most or some years (2,3); First visit (4)

2 BEACH USER DENSITY BY ALL OTHER VARIABLES
Recoded: Few (1,2) vs. Crowded

2 WEATHER BY ALL OTHER VARIABLES
Recoded: Sunny (1) vs. All other (2,3,4)

2 DAYS SPENT ON THE BEACH BY ALL OTHER VARIABLES
Recoded: Few (1 to 14); Many (15 to 30); Most (31 to 98)

3 OWN HOME V. RENT BY ALL OTHER VARIABLES

3 YEAR OF HOME PURCHASE BY ALL OTHER VARIABLES
Recoded: "New" -- 1985 to 1994; "Old" -- 1900 to 1984
[for homeowners only]

3 RESIDENT STATUS BY ALL OTHER VARIABLES
Recoded: Permanent (1); All Summer to More than a week (2 to 5); Few days (6,7)

4 EDUCATION BY ALL OTHER VARIABLES
Recoded: High School or less (1,2,3,4) vs. Some College or more (5,6,7)

4 INCOME BY ALL OTHER VARIABLES
Recoded: Income: Less than $49,999 (1); $50,000 and over

5 AGE BY ALL OTHER VARIABLES
Recoded in two formats:

Age-1: under 60 vs. 60 and older

Age-2: under 40 vs. 40 and older

BUSINESS OWNERS AND MANAGERS

6 BUSINESS SCHEDULE BY ALL OTHER VARIABLES
Open all year vs. Open summer only

6 NUMBER OF EMPLOYEES BY ALL OTHER VARIABLES
Recoded: Few (0 to 9) vs. Many (10 to 125)

HOMEOWNERS

7 AGE BY ALL OTHER VARIABLES
Recoded: under 60. vs 60 and older

7 LENGTH OF STAY BY ALL OTHER VARIABLES
Recoded: Permanent Resident vs. All other categories

7 EDUCATION BY ALL OTHER VARIABLES
Recoded: High School or less (1,2,3,4) vs. Some College or more (5,6,7)

7 YEAR OF HOME PURCHASE BY ALL OTHER VARIABLES
Recoded: "New" -- 1985 to 1994;
"Old" -- 1900 to 1984

7 DISTANCE FROM BEACH (No. of Blocks) BY ALL OTHER VARIABLES
Recoded: One or less vs. More than one

I. SURVEY OF BEACH USERS

ON ABSECON ISLAND AND SEVEN MILE ISLAND, NEW JERSEY: STONE HARBOR, AVALON, ATLANTIC CITY, LONGPORT, MARGATE, VENTNOR

Introduction

The analysis in this section generally follows the survey instrument. All of the substantive items in the survey are reviewed except a few concerning homeowners, which are fully discussed inSection III, in the review of homeowner data.

Administration of the Interviews

Month

The Survey was conducted during the summer of 1994. Over two-thirds of the interviews were administered in July. See Table 1.

Table 1
MONTH OF THE INTERVIEW

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
JUNE	6	133	12.5	12.5	12.5
JULY	7	731	68.8	68.8	81.3
AUGUST	8	182	17.1	17.1	98.4
SEPTEMBER	9	17	1.6	1.6	100.0
	Total	1063	100.0	100.0	

Valid cases 1063 Missing cases 0

Day of Week

Intentionally, each day of the week was not equally represented in the sample. That is, if each day of the week were to account for exactly one-seventh of the sample, then the weekend would reflect 28.57% of the sample. Our sampling of the week, however, seeks to reflect the actual beach usage patterns. Thus, as can be seen in Table 2, the weekend accounts for 36.4% of the sample, rather than 28.57% of the sample.

Table 2
DAY OF THE WEEK

Value Label	Value	Frequency	Valid Percent	Cum Percent
SUNDAY	1	159	15.0	15.0
MONDAY	2	61	5.7	20.7
TUESDAY	3	97	9.1	29.8
WEDNESDAY	4	205	19.3	49.1
THURSDAY	5	141	13.3	62.4
FRIDAY	6	172	16.2	78.6
SATURDAY	7	228	21.4	100.0
	Total	1063	100.0	100.0

Time of Interview

Our earliest interview occurred at 09:45; our last interview was at 18:05. Most of the interviews were conducted in the afternoon. A full listing of the interview times is found in the Appendix.

Air Temperature

The median and modal temperature was 85 degrees Fahrenheit. Ninety-eight percent of the days were between 70 and 90 degrees Fahrenheit. (See Appendix for full listing.)

Water Temperature

The median water temperature was 65 degrees Fahrenheit. The low was 54 degrees F, the high was 75 degrees F. Note that the interviewers were instructed to request both air and water temperature readings from the life guards. They were not always exact.

Wind Speed

The median wind speed was 4.5 mph. The low was 0, the high was 15. Undoubtedly, there were days with higher wind speeds. But the beach tends to be less populated at such times. Note that as with temperature readings, the interviewers were also instructed to ask the life guards about wind speeds.

Weather

Almost three-fifths (59.6%) of the sample was collected during sunny weather; and about a quarter (23.8%) was collected on partly cloudy days. Our sampling focus, of course, was beach users, who tend to be on the beach in better weather. (See Table 3.)

Table 3
TYPE OF DAY

Value Label	Value	Frequency	Valid Percent	Cum Percent
SUNNY	1	634	59.6	59.6
PARTLY CLOUDY	2	253	23.8	23.8
CLOUDY	3	149	14.0	14.0
RAINY	4	27	2.5	2.5
	Total	1063	100.0	100.0

Density of People on the Beach

We used a density measure developed for this study in cooperation with the Corps. As seen in Table 4, the beaches were seldom very crowded (about 7% of the time). Our scale and findings are:

Table 4

	Frq	Pct
1. PEOPLE SCATTERED ABOUT BEACH, BEACH MOSTLY EMPTY:	148	13.9
2. ON AVERAGE, SEVERAL YARDS BETWEEN TOWELS/BLANKET:	518	48.7
3. ON AVERAGE, SEVERAL FEET BETWEEN TOWELS/BLANKETS:	317	29.8
4. ON AVERAGE, DENSE, ONLY A FOOT OR TWO BETWEEN TOWELS/BLANKETS:	54	5.1
5. ON AVERAGE, VERY DENSE, LITTLE ROOM TO WALK:	26	2.4
Totals	1063	100.0%

Distribution of People on the Beach

The distribution of beach users reflects a standard bell shape. Table 5 displays the figures.

Table 5

		Frq	Pct
WATER:	1. MOST AT WATER; REST DISTRIBUTED EQUALLY:	41	3.9
	2. MOST AT WATER; REST TENDING UP BEACH:	12	1.1
	3. MOST AT WATER; REST TENDING MID BEACH:	287	27.0
EQUAL:	4. EQUALLY DISTRIBUTED: UP, MID AND WATERSIDE:	452	42.5
MID:	5. MOST IN MIDDLE; REST EQUALLY DISTRIBUTED:	140	13.2
	6. MOST IN MIDDLE; REST TENDING WATERSIDE:	92	8.7
	7. MOST IN MIDDLE; REST TENDING UP BEACH:	12	1.1
UP:	8. MOST UP BEACH; REST EQUALLY DISTRIBUTED:	9	.8
	9. MOST UP BEACH; REST TENDING TO MIDDLE:	14	1.3
	10. MOST UP BEACH; REST TENDING TO WATERSIDE:	4	.4
	Totals	1063	100.0%

Location: Communities

The communities of Stone Harbor and Avalon (Seven Mile Island) are reflected with samples of 293 and 250, respectively. Thus, the island is "represented" via a combined sample of 543 -- or 51% of our total sample. Absecon Island encompasses the communities of Atlantic City, Longport, Margate, and Ventnor. The samples are: 125, 132, 126, and 137, respectively -- or 49% of our total sample.

Table 6 indicates the information in conventional format.

Table 6
LOCATION OF BEACH

Value Label	Value	Frequency	Valid Percent	Cum Percent
STONE HARBOR	1	293	27.6	27.6
AVALON	2	250	23.5	51.1
ATLANTIC CITY	3	125	11.8	62.8
LONGPORT	4	132	12.4	75.3
MARGATE	5	126	11.9	87.1
VENTNOR	6	137	12.9	100.0
	Total	1063	100.0	100.0

SUBSTANTIVE FINDINGS

Visiting Patterns: Yearly Visits

Over three-quarters of the beach users (76.2%) visit the shore every year. Only 2.5% report that it was their first visit.

Table 7
DO YOU VISIT NEW JERSEY BEACHES?

Value Label	Value	Frequency	Valid Percent	Cum Percent	
EVERY YEAR	1	810	76.2	76.2	76.2
MOST YEARS	2	123	11.6	11.6	87.8
SOME YEARS	3	102	9.6	9.6	97.4
FIRST VISIT	4	27	2.5	2.5	99.9
	40	1	.1	.1	100.0
	Total	1063	100.0	100.0	

Days Spent on Beach

The median number of days on the beach during the summer is 18. The minimum is one (presumably, the day of the interview) and the maximum for the "season" is 98. The median, not surprisingly, however, may be deceptive. The data show the expected "lumpiness" of vacation schedules. About one-third spend between 7 and 15 days on the beach. 16% spend less than 7 days on the beach. An additional 10% spend over 70 days on the beach.

The reader must keep in mind that the respondents are trying to calculate both their schedules and probable good "beach days" -- See Appendix Table for full distribution.

Residence at the Shore

We asked respondents if they owned a home or rented a property at the shore. About two-thirds (67.5%) owned or rented. Of those with some type of residence at the shore, 51.7% (370) are owners, and 48.3% (346) are renters.

Number of people in Beach Outing

We asked respondents how many people usually accompanied them to the beach. (The question read: "On the average, including yourself, how many people typically go to the beach with you?") Less than 7% went alone, about one-fifth went with one other person (a party of two), another fifth went with two other people, and another fifth went with three other people. The median number was three. Less than 9% went with more than five people (party of six).

Table 8
NUMBER OF PEOPLE GO TO BEACH WITH

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	1	71	6.7	6.7	6.7
	2	236	22.2	22.3	29.0
	3	227	21.4	21.4	50.4
	4	216	20.3	20.4	70.8
	5	121	11.4	11.4	82.2
	6	70	6.6	6.6	88.9
	7	25	2.4	2.4	91.2
	8	24	2.3	2.3	93.5
	9	7	.7	.7	94.1
	10-15	46	4.3	4.3	98.5
	16-50	16	1.5	1.5	100.0
	-1	4	.4	Missing	
	Total	1063	100.0	100.0	

Which Beach?

Almost nine-tenths (87.8%) of the respondents told us the usual beach they visited was the beach on which we conducted the interview. Most of the remaining 12.2% visited nearby New Jersey beaches. Less than 2% listed non-New Jersey beaches.

Table of "other" beaches in Appendix

Beach Tags

Our pretest sensitized us to the number of people who avoid purchasing beach tags. We therefore asked the questions about beach tags in two parts:

To the question: "Do you usually have to buy a beach tag to use this beach? 85.1% responded

"Yes" and 14.9% responded "No."

Table 9
DO YOU USUALLY HAVE TO BUY A BEACH TAG?

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
YES	1	904	85.0	85.1	85.1
NO	2	158	14.9	14.9	100.0
	-1	1	.1	Missing	
	Total	1063	100.0	100.0	

"If yes: We asked, "Do you have a tag, and if so what kind is it?" We received the following:

Table 10
DO YOU HAVE A TAG, WHAT KIND?

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
SEASON	1	675	63.5	74.6	74.6
WEEK	2	150	14.1	16.6	91.2
WEEKEND	3	3	.3	.3	91.5
DAY	4	21	2.0	2.3	93.8
NO PAY/NO TAG	5	56	5.3	6.2	100.0
	.	158	14.9	Missing	
	Total	1063	100.0	100.0	

Note that 6.2% of the sample indicated they were "cheaters." Note also the high proportion of season and weekly pass holders. This is consistent with our other data on length of stay.

Desired Characteristics of a Beach

The next sixteen questions are within a battery of items on desired characteristics of a beach. Respondents were read the following statement:

"There are several reasons why you might choose to visit New Jersey's beaches. Please indicate how important each of the following reasons is to you?" The following answer codes were also read: 1-not at all important; 2-slightly important; 3-moderately important; 4-very important; 5-extremely important; 6- NA

The questions and results are presented below:

a. To be with a large number of people

This was generally not a prominent reason for coming to the beach. Less than 7% called it very important and only about 10% called it extremely important.

Table 11
TO BE WITH A LARGE NUMBER OF PEOPLE

Value Label	Value	Frequency	Valid Percent	Percent	Cum
NOT AT ALL IMPORTANT	1	515	48.4	48.4	48.4
SLIGHTLY IMPORTANT	2	160	15.1	15.1	63.5
MODERATELY IMPORTANT	3	201	18.9	18.9	82.4
VERY IMPORTANT	4	73	6.9	6.9	89.3
EXTREMELY IMPORTANT	5	108	10.2	10.2	99.4
NA	6	6	.6	.6	100.0
	Total	1063	100.0	100.0	

b. To experience the visual qualities of the beach scenery

Respondents report that this is a compelling reason. Over three-quarters said this was very important or extremely important.

Table 12
EXPERIENCE VISUAL QUALITIES OF BEACH?

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
NOT AT ALL IMPORTANT	1	31	2.9	2.9	2.9
SLIGHTLY IMPORTANT	2	35	3.3	3.3	6.2
MODERATELY IMPORTANT	3	191	18.0	18.0	24.2
VERY IMPORTANT	4	308	29.0	29.0	53.2
EXTREMELY IMPORTANT	5	498	46.8	46.8	100.0
	Total	1063	100.0	100.0	

c. To socialize with family, friends and others

This reason was of importance. Almost two-thirds called it very important or extremely important.

Table 13
SOCIALIZE WITH FAMILY, FRIENDS & OTHERS

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
NOT AT ALL IMPORTANT	1	82	7.7	7.7	7.7
SLIGHTLY IMPORTANT	2	67	6.3	6.3	14.0
MODERATELY IMPORTANT	3	228	21.4	21.5	35.5
VERY IMPORTANT	4	299	28.1	28.2	63.7
EXTREMELY IMPORTANT	5	383	36.0	36.1	99.8
NA	6	4	.4	.1	100.0
	Total	1063	100.0	100.0	

d. To relax

Relaxation emerges as a prime reason to visit the beach. Almost nine-tenths list this as very important or extremely important.

Table 14
TO RELAX

Value Label	Value	Frequency	Percent	Valid Percent	Cum
NOT AT ALL IMPORTANT	1	12	1.1	1.1	1.1
SLIGHTLY IMPORTANT	2	9	.8	.8	2.0
MODERATELY IMPORTANT	3	87	8.2	8.2	10.2
VERY IMPORTANT	4	180	16.9	16.9	27.1
EXTREMELY IMPORTANT	5	775	72.9	72.9	100.0
	Total	1063	100.0	100.0	

e. To participate in beach activities (swim, surf, etc)

About 30% are not interested in active beach activities. The remaining 70% divide somewhat equally in defining these activities as moderately- very- or extremely important.

Table 15
TO PARTICIPATE IN BEACH ACTIVITIES?

Value Label	Value	Frequency	Percent	Valid Percent	Cum
NOT AT ALL IMPORTANT	1	195	18.3	18.4	18.4
SLIGHTLY IMPORTANT	2	128	12.0	12.1	30.4
MODERATELY IMPORTANT	3	269	25.3	25.3	55.7
VERY IMPORTANT	4	233	21.9	21.9	77.7
EXTREMELY IMPORTANT	5	237	22.3	22.3	100.0
	-1	1	.1		Missing
	Total	1063		100.0	100.0

f. To enjoy being alone

Solitude is "extremely" desired by a quarter of the sample, and very important to another fifth. Only 18% called solitude "not at all important."

Table 16
TO ENJOY BEING ALONE

Value Label	Value	Frequency	Percent	Valid Percent	Cum
NOT AT ALL IMPORTANT	1	192	18.1	18.1	18.1
SLIGHTLY IMPORTANT	2	120	11.3	11.3	29.4
MODERATELY IMPORTANT	3	292	27.5	27.5	56.8
VERY IMPORTANT	4	197	18.5	18.5	75.4
EXTREMELY IMPORTANT	5	257	24.2	24.2	99.5
NA	6	5	.5	.5	100.0
		---	---	---	
	Total	1063	100.0	100.0	

g. There is little or no cost to enjoy the beach

This is a major factor, noted by over three-quarters of the respondents.

Table 17
LITTLE OR NO COST TO ENJOY BEACH

Value Label	Value	Frequency	Percent	Valid Percent	Cum
NOT AT ALL IMPORTANT	1	154	14.5	14.5	14.5
SLIGHTLY IMPORTANT	2	110	10.3	10.3	24.8
MODERATELY IMPORTANT	3	264	24.8	24.8	49.7
VERY IMPORTANT	4	198	18.6	18.6	68.3
EXTREMELY IMPORTANT	5	328	30.9	30.9	99.2
NA	6	9	.8	.8	100.0
		---	---	---	
	Total	1063	100.0	100.0	

h. It is a wide enough beach to enjoy many activities

Almost 85% said a wide beach was important. Most claim it is very important or extremely important. (Note, this question is also addressed in the comparison photos of replenished beaches vs. non-replenished beaches. Note also that older persons tended not to want wider beaches because of the difficulty of walking across the sand.)

Table 19
IT BEACH WIDE ENOUGH BEACH TO ENJOY MANY ACTIVITIES

Value Label	Value	Frequency	Percent	Valid Percent	Cum
NOT AT ALL IMPORTANT	1	91	8.6	8.6	8.6
SLIGHTLY IMPORTANT	2	73	6.9	6.9	15.4
MODERATELY IMPORTANT	3	222	20.9	20.9	36.3
VERY IMPORTANT	4	299	28.1	28.1	64.4
EXTREMELY IMPORTANT	5	376	35.4	35.4	99.8
NA	6	2	.2	.2	100.0
		---	---	---	
Total		1063	100.0	100.0	

i. It is a nice family-oriented beach

More than 90% find this important. Over half say it is extremely important.

Table 20
IT IS A NICE FAMILY-ORIENTED BEACH

Value Label	Value	Frequency	Percent	Valid Percent	Cum
NOT AT ALL IMPORTANT	1	51	4.8	4.8	4.8
SLIGHTLY IMPORTANT	2	43	4.0	4.1	8.9
MODERATELY IMPORTANT	3	137	12.9	12.9	21.8
VERY IMPORTANT	4	274	25.8	25.8	47.6
EXTREMELY IMPORTANT	5	553	52.0	52.1	99.7
NA	6	3	.3	.3	100.0
	-1	2	.2	Missing	
		---	---	---	
	Total	1063	100.0	100.0	

j. It is well protected by lifeguards

Not surprisingly, protection by lifeguards is a major factor. Almost four-fifths call it very important or extremely important.

Table 21
IT IS WELL PROTECTED BY LIFE GUARDS

Value Label	Value	Frequency	Percent	Valid Percent	Cum
NOT AT ALL IMPORTANT	1	50	4.7	4.7	4.7
SLIGHTLY IMPORTANT	2	44	4.1	4.1	8.9
MODERATELY IMPORTANT	3	130	12.2	12.3	21.1
VERY IMPORTANT	4	218	20.5	20.5	41.7
EXTREMELY IMPORTANT	5	618	58.1	58.2	99.9
NA	6	1	.1	.1	100.0
	-1	2	.2	Missing	
		---	---	---	
	Total	1063	100.0	100.0	

k. It is well maintained

A well maintained beach is viewed as important as one protected by lifeguards. Over 96% call this factor important to extremely important.

Table 22
IT IS WELL MAINTAINED

Value Label	Value	Frequency	Percent	Valid Percent	Cum
NOT AT ALL IMPORTANT	1	21	2.0	2.0	2.0
SLIGHTLY IMPORTANT	2	19	1.8	1.8	3.8
MODERATELY IMPORTANT	3	111	10.4	10.4	14.2
VERY IMPORTANT	4	267	25.1	25.1	39.3
EXTREMELY IMPORTANT	5	645	60.7	60.7	100.0
		---	---	---	
	Total	1063	100.0	100.0	

l. There is good fishing

Fishing does not emerge as important to most of the sample. Less than 30% seem to care about this activity at the beach.

Table 23
THERE IS GOOD FISHING

Value Label	Value	Frequency	Percent	Valid Percent	Cum
NOT AT ALL IMPORTANT	1	620	58.3	58.3	58.3
SLIGHTLY IMPORTANT	2	129	12.1	12.1	70.5
MODERATELY IMPORTANT	3	137	12.9	12.9	83.3
VERY IMPORTANT	4	67	6.3	6.3	89.7
EXTREMELY IMPORTANT	5	78	7.3	7.3	97.0
NA	6	32	3.0	3.0	100.0
	Total	1063	100.0	100.0	

m. It is close to where I am staying at the shore

Proximity is critical. Only 6% fail to call it important.

Table 24
IT IS CLOSE TO WHERE I AM STAYING

Value Label	Value	Frequency	Percent	Valid Percent	Cum
NOT AT ALL IMPORTANT	1	43	4.0	4.0	4.0
SLIGHTLY IMPORTANT	2	21	2.0	2.0	6.0
MODERATELY IMPORTANT	3	131	12.3	12.3	18.3
VERY IMPORTANT	4	270	25.4	25.4	43.7
EXTREMELY IMPORTANT	5	570	53.6	53.6	97.4
NA	6	27	2.5	2.5	99.9
	8	1	.1	.1	100.0
	Total	1063	100.0	100.0	

n. It is close to my permanent residence

Proximity of the beach to permanent residence is significantly less important than proximity of the beach to a temporary shore location.

Table 25
IT IS CLOSE TO MY PERMANENT RESIDENCE

Value Label	Value	Frequency	Percent	Valid Percent	Cum
NOT AT ALL IMPORTANT	1	166	15.6	15.6	15.6
SLIGHTLY IMPORTANT	2	97	9.1	9.1	24.7
MODERATELY IMPORTANT	3	210	19.8	19.8	44.5
VERY IMPORTANT	4	222	20.9	20.9	65.4
EXTREMELY IMPORTANT	5	338	31.8	31.8	97.2
NA	6	30	2.8	2.8	100.0
		---	---	---	
	Total	1063	100.0	100.0	

o. There is enough parking

Parking emerges as a central concern for many beach users. Three-fifths call it very important or extremely important. There is, also, understandably, at least a sixth of the sample who do not drive to the beach and for whom parking is irrelevant.

Table 26
THERE IS ENOUGH PARKING

Value Label	Value	Frequency	Percent	Valid Percent	Cum
NOT AT ALL IMPORTANT	1	166	15.6	15.6	15.6
SLIGHTLY IMPORTANT	2	75	7.1	7.1	22.7
MODERATELY IMPORTANT	3	192	18.1	18.1	40.7
VERY IMPORTANT	4	252	23.7	23.7	64.4
EXTREMELY IMPORTANT	5	364	34.2	34.2	98.7
NA	6	14	1.3	1.3	100.0
		---	---	---	
	Total	1063	100.0	100.0	

p. There are adequate snack bars and shops

Because so many respondents have homes, rental units, or hotel rooms near the beach, the importance of snack bars and shops is often less critical than it would be to a more transient population. Nevertheless, less than 30% say it is "not important at all." It is possible that this question should be separated into two: one for snack bars or restaurants, and one for shops that sell non-food items.

Table 27
THERE ARE ADEQUATE SNACK BARS & SHOPS

Value Label	Value	Frequency	Percent	Valid Percent	Cum
NOT AT ALL IMPORTANT	1	312	29.4	29.4	29.4
SLIGHTLY IMPORTANT	2	141	13.3	13.3	42.6
MODERATELY IMPORTANT	3	239	22.5	22.5	65.1
VERY IMPORTANT	4	173	16.3	16.3	81.4
EXTREMELY IMPORTANT	5	196	18.4	18.4	99.8
NA	6	2	.2	.2	100.0
	Total	1063	100.0	100.0	

Note: The question about snack bars and shops is the last of the battery. The next group of questions comprise the first of the beach valuation series.

PERCEIVED VALUE OF THE BEACH

We employed the Corps' previously tested series of questions to elicit the respondents' perceived dollar value for a day at the beach. The introductory wording is:

> "The next questions will help us measure the value society places on beaches. We do this by asking about the dollar value of enjoyment for a day on the beach. These estimates reflect only personal values and will not influence beach fees. Beach fees are set by towns, our research is for the U.S. Army Corps of Engineers."

Then, the first question is:

> "Previous studies reveal that, on average, people would be willing to pay about $4.00 per

day per person to use a beach in New Jersey. Do you feel that a day using a New Jersey beach would be worth $4.00 to each member of your household?"

If the respondent says "Yes," he/she is asked about higher figures (e.g., $5.00, $6.00, or more). If the respondent says "No," he/she is asked about $3.00, $2.00 or less. If the respondent indicates zero, he/she is asked:

"Which of the following statements best describes the reasons for your response:

Not enough information
Did not want to place a dollar value
Object to the way the question was presented
That is what it is worth to me
(Other)

Analysis of this series of questions requires combining the responses from all of the items within it. When we do that, we find that the mean perceived value is $5.04 -- for those with non-zero responses; and is $4.22 if those with zero responses are included. The frequency distribution (combining all questions in the series) is:

Table 28

Dollar Value Offered	Frequency
0	167
$.05-.50	30
1.00	83
1.50	1
2.00	220
3.00	129
4.00	114
5.00	129
6.00	84
7.00	7
8.00	6
10.00	49
12.50	1
15.00	3
20.00	3
25.00	2
100.00	1
300.00	1

Mean w/ zeros = $4.22; Mean without zeros = $5.04

Those not willing to pay any amount (the zero responses) indicated the following explanations:

Table 29
REASONS FOR NOT ANSWERING

	Pct of Total	Pct Answering This Question
Not enough information	.3%	1.8%
Did not want to place a dollar value	2.0	12.7
Object to the way the question was presented	.2	1.2
That is what it is worth to me	2.5	16.3
(Other, see below)	10.3	65.7
NA	84.8	2.4

Answers to the "other" category were (in order, from most frequent to least frequent):

	Pct of those answering this "other" category
Taxes should pay for beach	45%
Should be free/public land	21
It's natural; cost inappropriate	18
I'm a resident/land owner	7
I refuse	6
Other	3

Impact of Cost on Number of Visits

The next question was built on the final answer to the bidding process above. Respondents were asked:

If an entry fee of____ [the amount respondent indicated in above question] were charged, how would that affect the number of visits you would make to New Jersey's beaches?

More than now__ If more, how many more visits _____
Same as now __
Fewer than now. If fewer, how many fewer visits_____

Not surprisingly, very few respondents (1%) said "more than now." Most said "same as now" (74.1%); and 25% reported "fewer than now."

Of the 1% (10 people) who said "more than now," two people estimated they would make one more visit, two estimated they would make two more visits, and five estimated they would make five more visits.

Of the 25% who said "fewer than now," the median was 9.5 fewer visits. The "low" was one fewer visits, and the "high" was 78 fewer visits (See Table 30)

Table 30
IF FEWER, HOW MANY FEWER VISITS?

Value Label	Value	Frequency	Valid Percent	Percent	Cum
	1	5	.5	2.1	2.1
	2	21	2.0	8.6	10.7
	3	13	1.2	5.3	16.0
	4	7	.7	2.9	18.9
	5	38	3.6	15.6	34.6
	7	18	1.7	7.4	42.0
	8	2	.2	.8	42.8
	9	3	.3	1.2	44.0
	10	36	3.4	14.8	58.8
	11	3	.3	1.2	60.1
	12	7	.7	2.9	63.0
	13	2	.2	.8	63.8
	14	5	.5	2.1	65.8
	15	14	1.3	5.8	71.6
	16	2	.2	.8	72.4
	19	1	.1	.4	72.8
	20	18	1.7	7.4	80.2
	22	2	.2	.8	81.1
	25	5	.5	2.1	83.1
	28	1	.1	.4	83.5
	30	9	.8	3.7	87.2
	32	3	.3	1.2	88.5
	35	3	.3	1.2	89.7
	36	1	.1	.4	90.1
	37	1	.1	.4	90.5
	40	3	.3	1.2	91.8
	42	5	.5	2.1	93.8
	45	3	.3	1.2	95.1
	48	1	.1	.4	95.5
	49	6	.6	2.5	97.9
	50	1	.1	.4	98.4
	56	2	.2	.8	99.2
	68	1	.1	.4	99.6
	78	1	.1	.4	100.0
	.	820	77.1	Missing	
	Total	1063	100.0	100.0	

Perceived Value of Wider Beaches: Response to Photo

The next group of questions seeks to ascertain the perceived value of wider beaches -- an obvious result of beach replenishment. Respondents are shown a photograph of a beach and of a wide beach. They are asked the following:

Interviewer: Show photographs of the two beaches -- "A" with sand replenishment; "B" without sand replenishment. Ask: This survey is part of a study to assess the costs and benefits associated with beach sand replenishment.

Would you be willing to pay: More __ Less __ The Same __ than [amount respondent stated in earlier beach valuation question] if the NJ beach you usually visit were widened like the beach in Photo B [Bottom Photo]?

If more, how much more than [amount stated in earlier question]

If less, how much less than [amount stated in earlier question]

About one-sixth of the sample (16%) were willing to pay more for a wider beach. A small fraction (3.4%) would pay less for a wider beach. And most (80.6%) would pay the same.

Some of these results are associated with the age distribution of the sample. Older people tend to view wide beaches as an obstacle rather than as a benefit. Also, the photograph supplied by the Corps appears to offer a comparison of two rather wide beaches. It is possible that respondents, unaware of the impact of erosion and winter storms, felt the beach without replenishment was sufficient for summeractivities.

Valuation of wider beach: Those willing to pay more suggested a median figure of $1.00 -- with a low of $.50 and a top value of $100.00. (See Table 30 for the distribution.) It must be remembered that the figures here are "added" to the valuations established earlier. In general, one could add the one dollar median to the average $5.04 valuation established above -- to arrive at a "total" average value of $6.04.

Table 30 presents the frequency distribution for the "additional" dollars.

Table 30
IF MORE, HOW MUCH MORE

Value Label	Value	Frequency		Percent	Valid Percent	Cum
	.00	1		.1	.6	.6
	.50	5		.5	3.0	3.6
	1.00	79		7.4	47.9	51.5
	1.50	3		.3	1.8	53.3
	2.00	44		4.1	26.7	80.0
	3.00	11		1.0	6.7	86.7
	4.00	2		.2	1.2	87.9
	5.00	12		1.1	7.3	95.2
	7.00	2		.2	1.2	96.4
	10.00	3		.3	1.8	98.2
	12.00	1		.1	.6	98.8
	50.00	1		.1	.6	99.4
	100.00	1		.1	.6	100.0
	.	898		84.5	Missing	
		---		---	---	
	Total	1063	100.0	100.0		

Of the few people (under 3%) wishing to pay less for a wider beach, the median figure is also $1.00.

Conceptually, these people would like to subtract a dollar from their earlier valuation of a day at the beach. Note that the range varies from fifteen cents to $4.00.

Table 31
IF LESS, HOW MUCH LESS

Value Label	Value	Frequency	Percent	Valid Percent	Cum
	.00	1	.1	3.0	3.0
	.15	1	.1	3.0	6.1
	.25	1	.1	3.0	9.1
	.50	4	.4	12.1	21.2
	1.00	9	.8	27.3	48.5
	2.00	10	.9	30.3	78.8
	3.00	4	.4	12.1	90.9
	4.00	3	.3	9.1	100.0
	.	1030	96.9	Missing	
		---	---	---	
	Total	1063	100.0	100.0	

A Wider Beach, Fees and the Number of Visits

This next question builds on the above question about the value of a wider beach. It was asked of those who indicated that they were willing to pay more (or, for a very few, who wanted to pay less) for wider beaches. The question reads:

If a beach fee of [the amount stated in the question above] were charged, how would that affect the number of visits you would make to New Jersey's beaches?

More than now__ If more, how many more visits _____
Same as now __
Fewer than now. If fewer, how many fewer visits_____

The first tier of responses indicate little change:

Table 32

	N.	Pct.	Adj. Pct.
MORE THAN NOW	4	.4	2.0
SAME AS NOW	153	14.4	77.7
FEWER THAN NOW	40	3.8	20.3
NOT APPLICABLE	866	81.5	--
		100.0	

Because the question only affects less than one-fifth (18.5%) of the sample, results should be approached with some caution.

The very few (three valid responses) who say "more than now" indicate that they would visit the beach one to ten "additional" times.

The 3.8% who say "less than now" indicate that they would visit the beach, on average, 4 fewer times each season. See Appendix for distribution.

Erosion and the Beach

The earlier group of questions concerned wider beaches. This next question addresses the issue of erosion and the role of the beach. The question reads:

> This next question is not about widening beaches, but about maintaining beaches -- stopping them from eroding away. How important is it to you that there be a beach here at all?

The responses indicate that almost all of the sample understand the role of the beach. Less than one percent call the beach not important, and three-quarters call it very- or extremely important (See Table 33).

Table 33
IMPORTANCE OF BEACH AT ALL?

Value Label	Value	Frequency	Valid Percent	Percent	Cum
NOT AT ALL IMPORTANT	1	10	.9	.9	.9
SLIGHTLY IMPORTANT	2	37	3.5	3.5	4.4
MODERATELY IMPORTANT	3	113	10.6	10.7	15.1
VERY IMPORTANT	4	224	21.1	21.1	36.2
EXTREMELY IMPORTANT	5	675	63.5	63.6	99.8
NA	6	1	.1	.1	100.0
	-1	3	.3	Missing	
		---	---	---	
	Total	1063	100.0	100.0	

We then asked if respondents would "stop coming to this area if it did not have a beach"? More than four-fifths (83%) said "yes, they would stop coming.

Establishing an Erosion Protection Fund

Some of the more interesting theoretic debates pertain to the perceived value of a common good, in this case a beach. The question reads:

> Imagine there were a fund established for New Jersey beach protection against erosion. If you were to make a voluntary once-a-year contribution to this fund, even if you did not use the beach, what would be the maximum yearly amount that you would be willing to give?
>
> Keep in mind that this contribution would be in addition to any daily fees that you might pay?

Less than one-fifth (18.6%) indicated that they would contribute nothing. Among those who would contribute some money, the median amount is $50. The range is from less than one dollar to $10,000. Most responses are between $10.00 and $200.00. See appendix for frequency distribution.

Table 34
REASONS FOR NOT CONTRIBUTING

Those who would not contribute (18.6%) suggested that:

	Pct of Total
They did not have enough information	4.2%
They did not want to place a dollar value	2.0
"Zero" was what it is worth to them	2.8

Or a range of reasons, of which the most common were:

Beach fees should pay	3%
Taxes should pay	5%
Other	1%

Cost of Trip to Beach

We asked respondents the perceived relative value of a trip to the beach. The question reads, "All in all, how expensive do you consider a trip to the beach"? Most respondents defined the beach as a very good buy. Table 35 reflects the responses:

Table 35
HOW COSTLY THINK TRIP TO BEACH?

Value Label	Value	Frequency	Valid Percent	Percent	Cum
VERY EXPENSIVE	1	31	2.9	2.9	2.9
SOMEWHAT EXPENSIVE	2	207	19.5	19.5	22.4
SOMEWHAT INEXPENSIVE	3	333	31.3	31.3	53.7
VERY INEXPENSIVE	4	492	46.3	46.3	100.0
	Total	1063	100.0	100.0	

DEMOGRAPHICS

The last set of questions are provided to evaluate the sample and allow crosstabulations. The data reflect a robust representation of the beach users.

Employment Status

Table 36
PRESENT EMPLOYMENT STATUS

Value Label	Value	Frequency	Valid Percent	Percent	Cum
EMPLOYED FULL TIME	1	624	58.7	58.7	58.7
EMPLOYED PART TIME	2	106	10.0	10.0	68.7
NOT EMPLOYED	3	27	2.5	2.5	71.2
RETIRED	4	119	11.2	11.2	82.4
FULL TIME HOMEMAKER	5	113	10.6	10.6	93.0
STUDENT	6	70	6.6	6.6	99.6
OTHER	7	4	.4	.4	100.0
	Total	1063	100.0	100.0	

OTHER (EMPLOYMENT STATUS)

	Frq	Pct
DISABILITY	1	.1%
SELF EMPLOYED	3	.3%

Marital Status

Almost two-thirds (65%) are married. Singles represented 34%.

Keep in mind that the interviewers were instructed to interview people who appeared to be 18 years old or older. (See the "age"question, below.)

Household Income, Before Taxes

Questions about income is one of the more delicate items in any survey. In our surveys, only 10% refused to answer. The data suggest that respondents were reasonably truthful. (The median response is $40,000 through $49,999; higher than the national median but not unexpected for vacationers who can rent or who own shore properties.

Table 37
WHICH BEST DESCRIBES TOTAL INCOME?

Value Label	Value	Frequency	Percent	Valid Percent	Cum
UNDER $10,000	1	54	5.1	5.6	5.6
$10,000 TO $19,999	2	45	4.2	4.7	10.4
$20,000 TO $29,999	3	84	7.9	8.8	19.1
$30,000 TO $39,999	4	128	12.0	13.4	32.5
$40,000 TO $49,999	5	169	15.9	17.7	50.2
$50,000 TO $74,999	6	183	17.2	19.1	69.4
$75,000 TO $99,999	7	127	11.9	13.3	82.6
$100,000 AND OVER	8	166	15.6	17.4	100.0
	-1	107	10.1	Missing	
		---	---	---	
	Total	1063	100.0	100.0	

Number of People in Household this Year

The median number of household members was between two and three.

Table 38
HOW MANY PEOPLE IN YOUR HOUSEHOLD?

Value Label	Value	Frequency	Valid Percent	Percent	Cum
NO. OF PEOPLE IN HOUSEHOLD	1	139	13.1	13.3	13.3
	2	318	29.9	30.4	43.7
	3	213	20.0	20.4	64.1
	4	215	20.2	20.6	84.6
	5	102	9.6	9.8	94.4
	6	32	3.0	3.1	97.4
	7	15	1.4	1.4	98.9
	8	5	.5	.5	99.3
	9	1	.1	.1	99.4
	10	4	.4	.4	99.8
	12	2	.2	.2	100 0
	-1	17	1.6	Missing	
		---	---	---	
	Total	1063	100.0	100.0	

Education

Over half the sample had at least some college.

Table 39
HOW MUCH EDUCATION HAVE YOU COMPLETED?

Value Label	Value	Frequency	Valid Percent	Percent	Cum
NO SCHOOL	1	6	.6	.6	.6
GRADE SCHOOL (6 YRS)	2	8	.8	.8	1.3
SOME HIGH SCHOOL (7-11)	3	20	1.9	1.9	3.2
HIGH SCHOOL GRADUATE	4	201	18.9	18.9	22.1
SOME COLLEGE (13 TO 15)	5	311	29.3	29.3	51.5
COLLEGE GRADUATE (16)	6	330	31.0	31.1	82.6
POST GRADUATE (OVER 16)	7	185	17.4	17.4	100.0
	-1	2	.2	Missing	
		---	---	---	
	Total	1063	100.0	100.0	

Race/Ethnicity

The sample was overwhelmingly white. Whites represented 95.6% of the sample. African Americans represented only 1.9% of the sample, and Latinos comprised only 1%. While these ratios do not reflect the region, they do appear to approximate beach usage in the communities in which we conducted the research.

Table 40
DESCRIPTION OF RACIAL OR ETHNIC BACKGROUND

Value Label	Value	Frequency	Valid Percent	Percent	Cum
WHITE OR CAUCASIAN	1	1015	95.5	95.6	95.6
BLACK/AFRICAN AMERICAN	2	20	1.9	1.9	97.5
LATINO	3	11	1.0	1.0	98.5
ASIAN	4	13	1.2	1.2	99.6
NATIVE AMERICAN	5	2	.2	.2	100.0
	-1	2	.2	Missing	
		---	---	---	
	Total	1063	100.0	100.0	

Age

The model category is age 30 to 39. Over half of the age distribution is under 39. (Compare this to the population of homeowners -- which is significantly older.)

Table 41
WHICH BEST DESCRIBES YOUR AGE GROUP?

Value Label	Value	Frequency	Percent	Valid Percent	Cum
10 TO 19	1	32	3.0	3.0	3.0
20 TO 29	2	237	22.3	22.4	25.4
30 TO 39	3	300	28.2	28.3	53.7
40 TO 49	4	236	22.2	22.3	75.9
50 TO 59	5	131	12.3	12.4	88.3
60 TO 69	6	95	8.9	9.0	97.3
70+	7	29	2.7	2.7	100.0
	.	3	.3	Missing	
	Total	1063	100.0	100.0	

Clarity Question

The last close-ended question asked about the wording in the our survey. Only 0.4% of the sample claimed that the wording was unclear.

Table 42
CLARITY: HOW DID YOU FIND THE WORDING?

Value Label	Value	Frequency	Percent	Valid Percent	Cum
VERY CLEAR	1	367	34.5	41.1	41.1
CLEAR	2	451	42.4	50.5	91.6
MODERATE	3	71	6.7	8.0	99.6
UNCLEAR	4	3	.3	.3	99.9
VERY UNCLEAR	5	1	.1	.1	100.0
	.	170	16.0	Missing	
	Total	1063	100.0	100.0	

General Comments

One-sixth of the respondents offered additional comments or suggestions regarding New Jersey's ocean beaches.

The major themes were:

-- Additional efforts should be made to clean up the beaches.
-- The beach fees are needed
-- The beach fees are resented
-- Beach replenishment is needed
-- Taxes should pay for beach replenishment

The appendix and the SPSS data disks contain a complete listing.

Crosstabulations

Crosstabulations of every item by several key variables have been calculated and are found in the appendix. Every variable iscrosstabulated by:

Weather (Sunny vs. All Other)
Density of Beach Use (Categories 1 and 2 ["Light Use"] vs. 3, 4, 5 ["Full or MoreCrowded"])
Community location (Atlantic City, Longport, Margate, Ventnor)
Yearly Visit Pattern (Visit Every Year; Most or Some Years; First Visit)
Days On Beach (Few -- 1-14; Many -- 15-30; Most -- 31-98)
Own or Rent Property at Shore
Year of Purchase [for owners] ("New" 1985-1994; "Old" 1900 to 1984)
Resident Status (Permanent; Staying for at least a week; Staying less than 8 days)
Income (Less than $49,999; $50,000 and over)
Education (High School or less vs. Some College or more)
Age (categorized in two formats because the age breakdowns for residents is skewed sharply to the right -- they tend to be over 60 years old)
Age-1 (under 60 vs. 60 and older)
Age-2 (under 40 vs. 40 and older)

II. SURVEY OF BUSINESSES

STONE HARBOR, AVALON, ATLANTIC CITY, LONGPORT, MARGATE, AND VENTNOR

In appraising the value of a beach, previous research has generally focused on beach users. In our survey of shore businesses, we seek to extend the analysis to include this population (of business owners and managers) that also benefits from beaches and beach replenishment.

The Survey

The Survey was administered to 157 businesses in the six shore communities identified by the Corps -- Stone Harbor, Avalon, Atlantic City, Longport, Margate and Ventnor. The interviews were conducted in July and August of 1994.

Location

The location of the interviews (the distribution among the six communities) generally reflects the density of businesses in thevarying towns. Thus, for example, there are few business interviews in Longport, but a substantial number in Stone Harbor. Table 1 provides a breakdown of the locations:

Table 1
LOCATION OF INTERVIEW

Value Label	Value	Frequency	Percent	Valid Percent	Cum
Stone Harbor	1	38	24.2	24.4	24.4
Avalon	2	41	26.1	26.3	50.6
Atlantic City	3	24	15.3	15.4	66.0
Longport	4	5	3.2	3.2	69.2
Margate	5	24	15.3	15.4	84.6
Ventnor	6	24	15.3	15.4	100.0
	.	1	.6	Missing	
	Total	157	100.0	100.0	

Proximity to the Beach

Because proximity to the beach is usually desirable for a business and because we ask businesspersons about the value of the beach for their businesses, we recorded the number of blocks to the beach from each business property.

Four businesses (2.6%) were less than one bock from the beach; about a quarter (24.5%) were within one block. Most of the businesses (52.3%) were within two blocks of the beach. (See Table 2 for a full listing.)

Table 2
BLOCKS NUMBER OF BLOCKS TO THE BEACH

Value Label	Value	Frequency	Valid Percent	Percent	Cum
	0	4	2.5	2.6	2.6
	1	33	21.0	21.9	24.5
	2	42	26.8	27.8	52.3
	3	47	29.9	31.1	83.4
	4	16	10.2	10.6	94.0
	5	2	1.3	1.3	95.4
	6	1	.6	.7	96.0
	8	2	1.3	1.3	97.4
	10	1	.6	.7	98.0
	12	1	.6	.7	98.7
	20	1	.6	.7	99.3
	25	1	.6	.7	100.0
	.	6	3.8	Missing	
	-------		-------	-------	
Total	157	100.0	100.0		

Type of Business

The sample consists of the expected range of retail establishments. The sample is:

Clothing, shoes, jewelry, tee shirts	16
Restaurants, bars, fast foods	15
Food Markets	6
Home repair and hardware	5
Hotel and motels	4
Hairdressers, nail shops	4
Realtors	3
Cleaners and tailors	3

ALSO: bait and tackle shop, art gallery, bank, bike store, camera shop, book store, tv repair (2), tv cable dealer, cab service, limo service, car rental agent, baby furniture, furniture (2), liquor store, yarn store, video stores (2), sports supplies (2), pest and bug removal, museum, library, insurance agents (2), law office, pottery shop, surf shop, and drug stores (2).

Seasonal or Year-Round

Two-thirds of the businesses were open all year -- see Table 3.

Table 3
IS BUSINESS OPEN ALL YEAR OR ONLY DURING SUMMER

Value Label	Value	Frequency	Percent	Valid Percent	Cum
ALL YEAR	1	105	66.9	67.3	67.3
SUMMER SEASON	2	51	32.5	32.7	100.0
	.	1	.6	Missing	
	Total	157	100.0	100.0	

Valid cases 156 Missing cases 1

SUBSTANTIVE FINDINGS

Role of Beach

Our first substantive question asked businesspersons to estimate the percentage of customers who were at the shore because of the beach.

The businesspeople recognize the overwhelming role of the beach to their economic existence. The median estimate was that three-quarters of the customers were "due" to the beach. A third of the sample indicated that between 90% to 100% of the customers were attributable to the presence of the beach. Table 4 presents a complete listing. (See next page for Table 4.)

Table 4
WHAT PERCENTAGE OF YOUR CUSTOMERS AT SHORE BECAUSE OF BEACH

Value Label	Value	Frequency	Valid Percent	Percent	Cum
PERCENT OF CUSTOMERS "DUE" TO BEACH	0	1	.6	.7	.7
	1	1	.6	.7	1.3
	4	1	.6	.7	2.0
	5	3	1.9	2.0	3.9
	8	1	.6	.7	4.6
	10	7	4.5	4.6	9.2
	15	1	.6	.7	9.8
	20	9	5.7	5.9	15.7
	25	6	3.8	3.9	19.6
	30	5	3.2	3.3	22.9
	35	2	1.3	1.3	24.2
	40	2	1.3	1.3	25.5
	50	17	10.8	11.1	36.6
	55	1	.6	.7	37.3
	60	2	1.3	1.3	38.6
	65	2	1.3	1.3	39.9
	70	7	4.5	4.6	44.4
	75	11	7.0	7.2	51.6
	80	14	8.9	9.2	60.8
	85	5	3.2	3.3	64.1
	90	23	14.6	15.0	79.1
	95	11	7.0	7.2	86.3
	98	2	1.3	1.3	87.6
	99	2	1.3	1.3	88.9
	100	17	10.8	11.1	100.0
	-1	4	2.5	Missing	
		---	---	---	
	Total	157	100.0	100.0	

Valid cases 153 Missing cases 4

Impact of Erosion

The next question addresses the perceived impact of beach erosion on business income. The question reads:

4-25

If the beach were to erode away completely, how would this affect your business? Would it lose:

1. a quarter of its income
2. a half of its income__
3. three-quarters of its income
4. almost all of its income__
5. all of its income
6. other

The results indicate that the question is almost too threatening to consider. Although the above question reveals that businesspersons are aware of the role of the beach in bringing customers, businesspeople are frequently less willing to examine the consequences of total erosion. Table 5 (frequencies) and Table 6 (responses within the "other" category) reveal the inconsistency. Only 4.5% insist that total erosion with have no affect. But at least one-fifth claim the impact of total beach erosion would be less than 25% of their business income. (Note that about half of the sample report that they would lose at least half of their business income if there were total erosion.)

Table 5
HOW WOULD EROSION AFFECT YOUR BUSINESS?

Value Label	Value	Frequency	Valid Percent	Percent	Cum
A QUARTER OF ITS INCOME	1	28	17.8	18.1	18.1
HALF OF ITS INCOME	2	33	21.0	21.3	39.4
THREE-QUARTERS OF ITS INCOME	3	26	16.6	16.8	56.1
ALMOST ALL OF ITS INCOME	4	25	15.9	16.1	72.3
ALL OF ITS INCOME	5	17	10.8	11.0	83.2
OTHER	6	26	16.6	16.8	100.0
	-1	2	1.2	Missing	
Total			100.0	100.0	

Table 6
"OTHER" RESPONSE TO HOW EROSION AFFECTS BUSINESS

Value Label	Value	Frequency	Valid Percent	Percent	Cum
		134	85.4	85.4	85.4
LOSS PERCENTAGE	10%	2	1.3	1.3	86.6
	15%	2	1.3	1.3	87.9
	2/3	1	.6	.6	88.5
	20%	1	.6	.6	89.2

5%	2	1.3	1.3	90.4
60%	1	.6	.6	91.1
80%	1	.6	.6	91.7
90%	1	.6	.6	92.4
DON'T KNOW	1	.6	.6	93.0
NOT SPECIFIED	2	1.3	1.3	94.3
NO AFFECT	7	4.5	4.5	98.7
UNCERTAIN	2	1.3	1.3	100.0
	---	---	---	
Total	157	100.0	100.0	

Business and the Existence of a Beach

The next question is a follow-up item. It reads: "How important is it to your business that there be a beach here at all?" The results are in line with the earlier question. While over three-quarters call it very- to extremely important, a fifth are less sure.

Table 7
HOW IMPORTANT IS IT TO YOUR BUSINESS THAT THERE BE A BEACH AT ALL

Value Label	Value	Frequency	Valid Percent	Percent	Cum
NOT AT ALL IMPORTANT	1	9	5.7	5.8	5.8
SLIGHTLY IMPORTANT	2	8	5.1	5.1	10.9
MODERATELY IMPORTANT	3	16	10.2	10.3	21.2
VERY IMPORTANT	4	36	22.9	23.1	44.2
EXTREMELY IMPORTANT	5	87	55.4	55.8	100.0
	.	1	.6	Missing	
		---	---	---	
	Total	157	100.0	100.0	

Taxes and Replenishment

Beliefs about tax allocations may influence respondents attitudes toward beach replenishment. We wanted to know if businesspersons believed that local taxes are used in any federal/U.S. Army Corps of Engineer projects. The question reads:

> "Do you know if any of the local taxes go toward replacing the sand lost to storms or waves?" Yes Think so No

The results suggest that most believe that their local taxes are not directed toward beach

replenishment. See Table 8

Table 8
DO YOU KNOW IF ANY OF THE LOCAL TAXES GO TO BEACH REPLENISHMENT

Value Label	Value	Frequency	Percent	Valid Percent	Cum
yes	1	24	15.3	15.4	15.4
think so	2	24	15.3	15.4	30.8
no	3	108	68.8	69.2	100.0
	.	1	.6	Missing	
	Total	157	100.0	100.0	

The reader is cautioned, however, that the question is potentially flawed. It is not absolutely clear how to interpret the responses. "No," for example, could mean that the respondent does not know if local taxes are used for beach replenishment, or "no" could mean he/she does not believe that local taxes are used for beach replenishment.

The pattern of the data suggest that we may be overly cautious. Given the distribution of "think so" vs. "no," it appears that "no" probably does mean "no." Nevertheless, it is important to maintain some doubt.

Paying More Taxes For a Wider Beach

In a format similar to that used with the beach users' study, we contrasted photographs of a beach with sand replenishment with one without send replenishment.

One-quarter (25.3%) reported that they would be willing to pay more taxes for a wider beach. (And three-quarters said they did not want to pay increased taxes for a wider beach.)

4 L C

Table 9
WOULD YOU PAY MORE TAXES FOR WIDER BEACH

Value Label	Value	Frequency	Percent	Valid Percent	Cum
more	1	39	24.8	25.3	25.3
no	2	115	73.2	74.7	100.0
	.	3	1.9	Missing	
	Total	157	100.0	100.0	

Valid cases 154 Missing cases 3

Those who reported they were willing to pay more taxes were asked "how much more."

The "additional" taxes ranged from 1% to 200%. The median increase is 9%. (See Table 10 next page.)

IF MORE, HOW MUCH MORE? Table 10

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
PERCENTAGE INCREASE	1.00	1	.6	4.5	4.5
	2.00	4	2.5	18.2	22.7
	5.00	2	1.3	9.1	31.8
	8.00	1	.6	4.5	36.4
	10.00	6	3.8	27.3	63.6
	17.00	1	.6	4.5	68.2
	20.00	3	1.9	13.6	81.8
	25.00	3	1.9	13.6	95.5
	200.00	1	.6	4.5	100.0
	.	135	86.0	Missing	
		---	---	---	
	Total	157	100.0	100.0	

(No respondents indicated how much less they would like to give.)

An Annual Fund for Erosion Protection

As with the beach users survey, we also asked businesspersons if they would contribute to a fund for N.J. beach erosion protection.

Almost a third (29.2%) offered no additional funds -- the .00 in Table 11. The range of non-zero responses was from $5.00/yr to $10,000/yr. The median of all responses (i.e., with zeros included) is approximately $75/yr. The median of all positive responses is approximately $175/yr.

Table 11
YEARLY CONTRIBUTION TO A GENERAL FUND

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
	.00	35	22.3	29.2	29.2
	5.00	1	.6	.8	30.0
	10.00	1	.6	.8	30.8
	25.00	5	3.2	4.2	35.0
	50.00	8	5.1	6.7	41.7
	100.00	37	23.6	30.8	72.5
	150.00	2	1.3	1.7	74.2
	200.00	11	7.0	9.2	83.3
	250.00	1	.6	.8	84.2

300.00	1	.6	.8	85.0
500.00	6	3.8	5.0	90.0
750.00	1	.6	.8	90.8
1000.00	9	5.7	7.5	98.3
1500.00	1	.6	.8	99.2
10000.00	1	.6	.8	100.0
-1.00	37	23.5	Missing	
Total	157	100.0	100.0	

SAMPLE CHARACTERISTICS

Age of Business

The median age of businesses in our sample was 10 years. The minimum was under one year (first season/year), and the longest running business was 100 years. Table 11 displays the distribution.

Table 11

HOW OLD IS BUSINESS?

Value Label	Value	Frequency	Percent	Valid Percent	Cum
YEARS IN BUSINESS	0	1	.6	.6	.6
	1	6	3.8	3.9	4.5
	2	4	2.5	2.6	7.1
	3	9	5.7	5.8	12.9
	4	10	6.4	6.5	19.4
	5	10	6.4	6.5	25.8
	6	9	5.7	5.8	31.6
	7	10	6.4	6.5	38.1
	8	6	3.8	3.9	41.9
	9	4	2.5	2.6	44.5
	10	12	7.6	7.7	52.3
	11	4	2.5	2.6	54.8
	12	6	3.8	3.9	58.7
	13	2	1.3	1.3	60.0
	14	2	1.3	1.3	61.3
	15	4	2.5	2.6	63.9
	16	1	.6	.6	64.5
	17	4	2.5	2.6	67.1
	18	3	1.9	1.9	69.0
	20	5	3.2	3.2	72.3

22	3	1.9	1.9	74.2
23	2	1.3	1.3	75.5
24	2	1.3	1.3	76.8
25	2	1.3	1.3	78.1
26	2	1.3	1.3	79.4
27	1	.6	.6	80.0
28	2	1.3	1.3	81.3
30	8	5.1	5.2	86.5
36	1	.6	.6	87.1
38	2	1.3	1.3	88.4
40	5	3.2	3.2	91.6
45	2	1.3	1.3	92.9
49	1	.6	.6	93.5
50	6	3.8	3.9	97.4
60	1	.6	.6	98.1
70	1	.6	.6	98.7
73	1	.6	.6	99.4
100	1	.6	.6	100.0
-1	2	1.2	Missing	
Total	157	100.0	100.0	

Number of Employees

The businesses ranged in size from no employees (just owner) to 125 employees. The median was 5 employees -- about half had fewer employees and half had more than 5 employees.

Table 12
HOW MANY PEOPLE EMPLOYED AT THIS BUSINESS

Value Label	Value	Frequency	Percent	Valid Percent	Cum Percent
NUMBER OF EMPLOYEES		0	1	.6	.7 .7
	1	13	8.3	8.6	9.3
	2	15	9.6	9.9	19.2
	3	15	9.6	9.9	29.1
	4	17	10.9	11.3	40.4
	5	17	10.9	11.3	51.7
	6	10	6.4	6.6	58.3
	7	6	3.8	4.0	62.3
	8	8	5.1	5.3	67.5
	9	3	1.9	2.0	69.5

10	4	2.6	2.6	72.2
11	1	.6	.7	72.8
12	6	3.8	4.0	76.8
13	1	.6	.7	77.5
14	2	1.3	1.3	78.8
15	8	5.1	5.3	84.1
20	1	.6	.7	84.8
23	1	.6	.7	85.4
25	7	4.5	4.6	90.1
26	1	.6	.7	90.7
28	2	1.3	1.3	92.1
30	5	3.2	3.3	95.4
35	1	.6	.7	96.0
40	3	1.9	2.0	98.0
50	1	.6	.7	98.7
60	1	.6	.7	99.3
125	1	.6	.7	100.0
-1	5	3.2	Missing	
Total	156	100.0	100.0	

Valid cases 151 Missing cases 5

Education Level of Manager/Owner

Most owners or managers had some college or more schooling. Less than a quarter had a high school education or fewer years of education.

HOW MUCH EDUCATION HAVE YOU COMPLETED?

Value Label	Value	Frequency	Percent	Valid Percent	Cum
GRADE SCHOOL	2	2	1.3	1.3	1.3
SOME HIGH SCHOOL	3	6	3.8	3.9	5.2
HIGH SCHOOL GRADUATE	4	30	19.1	19.6	24.8
SOME COLLEGE	5	46	29.3	30.1	54.9
COLLEGE GRADUATE	6	64	40.8	41.8	96.7
POST GRADUATE	7	5	3.2	3.3	100.0
	-1	4	2.2	Missing	
		---	---	---	
	Total	157	100.0	100.0	

Valid cases 153 Missing cases 4

In the appendix, are crosstabulations of every variable in the businesspersons survey by the following two variables:

Business Schedule (Open all year vs. Open summer only)

No. of Employees (0-9 vs. 10-125)

III. SURVEY OF HOMEOWNERS

We interviewed 251 homeowners in the six shore communities on Absecon and Seven Mile Island. The questionnaire focused on the perceived affects of beach erosion on property values, on perceived tax allocations, on use of the beaches, and on perceptions of sand replenishment efforts.

The primary sample for the homeowners study is comprised of respondents we interviewed in their homes in face-to-face interviews and via phone interviews (N = 251). A second sample is comprised of homeowners we interviewed as part of the beach users survey, i.e., beach users who owned homes in the nearby communities. In the beach user questionnaire we included a series of questions that are identical to questions in the homeowners' survey (N = 370). We present the combined results below.

The Surveys: Comparing the Samples

One task is to compare the two samples -- to contrast the similarities and differences so that the combined results can be better understood.

The 251 homeowners were interviewed in the summer of 1994, the same time as the beach user survey. While there are some systematic differences between the two samples, the similarities predominate. The major difference appears to be age: homeowners interviewed at their homes are, on average, older than homeowners interviewed on the beach.

Because few readers are interested in the methodological concerns of comparing samples, our discussion of the similarities and differences of the two samples is found at the end of this section -- after the review of the substantive findings. The specific data comparing the two samples on demographic and other characteristics are presented in that methodological subsection, in Tables M1 to M11.

FINDINGS

The Cost of Erosion

Our first substantive question seeks to ascertain the homeowners' perceived cost of erosion. The question reads:

> If the beach were to erode away completely, how would this affect the value of your property? Would it lose:
>
> a quarter of its value__ a half of its value__

three-quarters of its value__ almost all of its value__
all of its value__ other

The samples are very consistent. Both homeowners interviewed at their homes (hereafter homeowners) and homeowners interviewed on the beach (hereafter homeowners o-t-b) reported that their properties would lose much of the value in the event of total beach erosion. Review of Table 1 reveals that approximately two-thirds of both samples say their homes would lose at least 75% of the value.

Table 1
HOW WOULD VALUE OF HOUSE CHANGE

	Homeowners	Homeowners O-T-B
	percent	percent
A QUARTER OF ITS VALUE	22.1	25.8
A HALF OF ITS VALUE	5.6	11.1
3/4 OF ITS VALUE	32.1	32.8
ALL OF ITS VALUE	12.9	15.3
ALMOST ALL OF ITS VALUE	4.8	4.2
OTHER	22.5	10.8
	(N=251)	(N=370)

Summary of "Other" Category (Percentages for total samples):

	percent	percent
ABOUT HALF TO THREE-QUARTERS	5.0	3.0
NO AFFECT	7.0	5.0
NO IDEA	9.0	3.O

Allocation of Taxes

We asked respondents if any of their local taxes are allocated toward replacing the sand lost to storms or waves. About three-fifths of the homeowners (both samples) indicated that local taxes were not allocated to beach replenishment. Another quarter said the "think so."

Table 2
TAXES TO REPLENISHMENT?

	Homeowner	
	Homeowner percent	O-T-B percent
YES	17.2	12.8
THINK SO	26.4	26.0
NO	56.4	61.1

Note: As discussed in the first section, the reader is cautioned that the wording of this question is potentially ambiguous. It is possible that respondents are not telling us about the allocation of taxes, but rather about their familiarity with the allocation process.

Taxes/Payments for a Wider Beach

In a question format similar to that discussed in the first section, we asked respondents if they would be willing to pay more taxes for wider beaches.

Less than one-fifth (in either sample) felt that wider beaches were worth the cost of additional taxes or payments. Table 3 presents the results for both the homeowners and the homeowners o-t-b. The similarity in the responses is striking.

Table 3
PAY MORE TAXES/PAYMENTS FOR WIDER BEACH

	Homeowner	
	Homeowner percent	O-T-B percent
WILLING TO PAY MORE	17.5	17.5
NOT WILLING TO PAY MORE	81.2	79.9
WILLING TO PAY LESS	1.3	3.1

Those willing to pay more, were asked "how much more?"

It is difficult to compare the two samples because the follow-up questions were asked somewhat differently for each of the samples. For the homeowners, the question was direct (e.g., "how much more"). But for the homeowners o-t-b, the question was related to an earlier valuation question; respondents were essentially asked "how much more than you were willing to spend in [an earlier question]". Equally significant, the homeowner sample was asked the question in terms of additional taxes, whereas the homeowner o-t-b sample were asked the question in terms of additional payments. (In later economic analysis, we disaggregate the two groups.)

Table 4
"ADDITIONAL" TAXES/PAYMENT FOR WIDER BEACH

	Homeowner percent	Homeowner O-T-B percent
Minimum	0.1%	$0.50
Maximum	200.0%	$100.00
Median	10.0%	$6.72

Keeping Beaches Where They Are

Our next item switches focus to ask not about widening the beach, but rather about the danger of serious erosion. The question reads:

> This next question is not about widening beaches, but about maintaining beaches -- stopping them from eroding away. How important is it to you that there be a beach here at all?
>
> 1-not at all important; 2-slightly important; 3-moderately important; 4-very important; 5-extremely important; 6- NA]

Again, the results for both samples are consistent. Almost four-fifths call it "extremely important." Under 3% call it not important.

Table 5
IMPORTANCE OF BEACH AT ALL?

	Homeowner percent	Homeowner O-T-B percent
NOT AT ALL IMPORTANT	2.4	.3
SLIGHTLY IMPORTANT	.8	.3
MODERATELY IMPORTANT	4.8	2.4
VERY IMPORTANT	23.5	16.7
EXTREMELY IMPORTANT	68.1	79.8
NA	.4	--

Fund Against N.J. Beach Erosion

The last substantive question we examined asks respondents if they would contribute to a general fund for beach protection. The question reads:

> Imagine there were a fund established for New Jersey beach protection against erosion. If you were to make a voluntary once-a-year contribution to this fund, even if you did not use the beach, what would be the maximum yearly amount that you would be willing to give?
>
> Keep in mind that this contribution would be in addition to any taxes and daily fees that you might pay?

The results of this question reflects some divergence between the samples. One possible cause of the differences is the questionnaire structure and length. Given the different contexts, however, we are impressed with the similarities. These are open-ended questions; no guides are offered, and the respondents knew that the questions were hypothetical.

The median offered to the "fund" is $25 to $46.00. The maximum (in each case offered by one person) is $10,000.00 to $20,000.00. The typical high offer is $100 to $300.00. (The full distributions are in the appendix tables.)

Table 6
GIVE MONEY TO A FUND FOR N.J. BEACHES

	Homeowner percent	Homeowner O-T-B percent
Minimum	0.00	0.00
Percent offering $0.00	42.2%	19.4%
Maximum	$20,000.00	$10,100.00
Median with zero offers included	$25.00	$46.00
Median with only non-zero offers included	$380.00	$79.00

Non-Contributors

We asked those who refused to give dollar values why they refused. The responses are:

Table 7
WHAT STATEMENT DESCRIBES YOUR REASON FOR NOT CONTRIBUTING

	Homeowner percent	Homeowner O-T-B percent
NOT ENOUGH INFORMATION	11.6	4.2
NOT WANT TO PLACE $ VALUE	5.2	1.4
OBJECT TO PRESENTATION	.4	0.0
WHAT IT'S WORTH TO ME	6.0	.7
OTHER	22.7	12.7

Reasons in the "other" category include: "can't afford more," "taxes should cover the cost," and "businesses should pay."

Summary

As seen in the previous surveys, homeowners in both samples appear to appreciate the importance of erosion and the need for beach replenishment. While they may not want (nor want to pay for) wider beaches, they certainly do not wish to see the water any closer to their homes than it is currently.

In general, the similarity of the responses between the two samples is striking.

COMPARING THE SAMPLES: HOMEOWNERS AND HOMEOWNERS ON THE BEACH

The data below are provided for those who wish to contrast the two samples.

Age

As noted, homeowners interviewed in their homes were generally older than the homeowners interviewed on the beaches. See Table M1.

Table M1

AGE

	Homeowner Percent	Homeowner O-T-B Percent
10 to 19	3.3	3.0
20 to 29	4.1	14.1
30 to 39	11.0	20.9
40 to 49	16.7	26.4
50 to 59	17.9	16.8
60 to 69	25.6	14.7
70+	21.5	4.7
	(N = 251)	(N = 370)

Homeowners interviewed at home (column on the left) were generally more elderly (and near elderly), i.e., 60 - 69 and those 70 or older.

Visiting Patterns

The homeowners interviewed in their homes and the homeowners interviewed on the beaches (o-t-b) had almost identical visitingpatterns.

Table M2
HOW OFTEN DO YOU COME TO NJ BEACHES?

	Homeowner percent	Homeowner o-t-b percent
EVERY YEAR	95.2	96.7
MOST YEARS	.4	2.7
SOME YEARS	1.6	0.0
FIRST YEAR HERE	0.0	0.5

Days on the Beach

Not all of the homeowners interviewed in their homes visited the beach; 16.8% never went to the beach. In contrast, and by definition, all of the homeowners we interviewed on the beach spent at least one day on the beach. Thus, there is some basic difference in the two samples. On the other hand, if you compare the median days on the beach of the two samples for those who visit the beach at least once, they are very close: 38 days vs. 39 days (see Table M3).

Table M3
MEDIAN NUMBER OF DAYS ON THE BEACH

	Med. no. of days
Homeowners who go to beach	38
Homeowners interviewed on the beach	39

(The median for homeowners interviewed in their homes, when including the 16.8% who never visit the beach, is 22 days.)

Period of Time Spent at the Shore

We asked respondents about the portion of the summer they spent at their N.J. shore residences. Results, overall, are somewhat similar for the two groups. Those interviewed on the beach are less likely (by 5%) to be permanent residents, and are less likely to spend the entire summer at the shore.

Table M4
HOW LONG ARE YOU STAYING AT THE SHORE

	Homeowner percent	Homeowner O-T-B percent
PERMANENT RESIDENT	45.6	40.3
HERE ALL SUMMER, ALL	43.2	34.4
WEEKENDS, ALL SUMMER	4.0	17.4
HERE FOR TWO WEEKS	6.4	4.5
HERE FOR ONE WEEK	.8	1.7
HERE FOR WEEKEND ONLY	--	.3
HERE FOR THE DAY ONLY	--	1.4

Buy House

We asked homeowners when they purchased their houses. The most recent were bought this summer. The least recent was 1900. The median year for home purchases by homeowners was 1978; The median purchase year for homeowners o-t-b was 1983. The difference is consistent with other patterns reflecting the older status of the homeowners interviewed in their homes.

We also asked them if the house was inherited or purchased. No noteworthy difference emerges.

Table M5
INHERITED OR BOUGHT

	Homeowner percent	Homeowner O-T-B percent
INHERITED	9.3%	11.5%
BOUGHT	90.7%	88.5%

Income and Race

The homeowners and homeowners o-t-b appear to be quite similar in income distribution (Table M6) and race/ethnicity (Table M7). The median income is $50,000 to $74,999. The sample is overwhelmingly white.

Table M6

INCOME	Homeowner percent	Homeowner O-T-B percent
UNDER $10,000	4.7	3.2
$10,000 TO $19,999	7.4	2.8
$20,000 TO $29,999	7.4	5.6
$30,000 TO $39,999	9.5	6.9
$40,000 TO $49,999	11.1	10.5
$50,000 TO $74,999	19.5	21.8
$75,000 TO $99,999	12.6	19.0
$100,000 AND OVER	27.2	30.2

Table M7

ETHNIC/RACIAL

	Homeowner percent	Homeowner O-T-B percent
WHITE	94.4	98.9
BLACK	3.9	.3
LATINO	.8	.5
NATIVE AMERICAN	.4	0

Education

Homeowners appear to have a higher percentage of post graduate degrees. Overall, however, the education distributions are similar.

Table M8

EDUCATION

	Homeowners percent	Homeowners O-T-B percent
GRADE SCHOOL (0-6)	.4	.3
SOME HIGH SCHOOL (7-11)	2.4	1.0
HIGH SCHOOL GRADUATE	25.1	1.7
SOME COLLEGE (13-15)	19.0	16.3
COLLEGE GRADUATE (16)	32.0	24.6
POST GRADUATE (16+)	20.6	32.9

Employment Status

Homeowners interviewed at their homes are more than twice as likely to be retired than those interviewed on the beach (44.6% vs. 19%). Correspondingly, those interviewed on the beach are more likely to be employed. These differences are obviously related to the age distribution.

Table M9

EMPLOYMENT STATUS	Homeowner percent	Homeowner O-T-B percent
EMPLOYED FULL TIME	27.6	52.6
EMPLOYED PART TIME	11.6	10.4
NOT EMPLOYED	2.0	4.2
RETIRED	44.6	19.0
FULL-TIME HOMEMAKER	10.4	9.7
STUDENT	3.8	3.8
OTHER	1.2	.3
DISABILITY	--	.3

Location

The samples differ somewhat in the proportions associated with each of the towns.

Table M10

LOCATION ON THE BEACH	Homeowner percent	Homeowner O-T-B percent
STONE HARBOR	31.9	14.5
AVALON	33.9	20.8
ATLANTIC CITY	10.4	12.6
LONGPORT	17.9	9.7
MARGATE	1.6	23.5
VENTNOR	4.4	18.7

The differential is due to several factors:

1. Communities differ in the average age of their residents and the differing age groups had differential use rates for the beach.

2. Some beaches are more popular than others -- they have a net in-flow of residents from other towns.

3. We sampled homeowners on the beach with a different methodology than that used for contacting homeowners in their homes. The beach survey was designed to interview one-half of the sample on each of the two islands -- and it achieved that ratio.

4. Some communities have much higher ratios of homeowners than others during the summer.

Marital Status

About seven-tenths of both samples are married.

Table M11
MARRIED OR SINGLE

	Homeowner percent	Homeowner O-T-B percent
MARRIED	70.3	68.7
SINGLE	29.7	31.3

Number of People in Permanent Residence

Those interviewed in their homes tend to have slightly smaller households than homeowners interviewed on the beach. The median number of people in the household for homeowners (in homes) was 2;

The median number of people in the household for homeowners O-T-B was 2.7.

Comparison of Samples: Summary

While those interviewed at home are, on average, older and less likely to be in the labor force, many issues under analysis in this study -- homeownership and shore visiting patterns -- remain quite similar across a range of comparisons. The similarities include date of purchase, method of acquiring house (inherited or purchased), income, marital status, time spent at the shore, race/ethnicity.

OTHER REFERENCE DATA

Distance from the Beach

We recorded the location of each house in relation to the beach. Typically, wealthier homes are closer to the beach. Most homes were within two blocks of the beach.

A caution is noted, however, that these six communities are on barrier islands; they are typically only a few blocks wide (with some exceptional portions). Thus, the fact that most homes are not far from the beach should not be interpreted as an indication of great wealth.

Table M12

NUMBER OF BLOCKS TO THE BEACH? (Homeowner Survey Only)

Value Label	Value	Frequency	percent	Valid percent	Cum
	1	1	.4	.4	.4
	1	81	32.3	32.8	33.2
	2	88	35.1	35.6	68.8
	3	47	18.7	19.0	87.9
	4	13	5.2	5.3	93.1
	5	7	2.8	2.8	96.0
	6	3	1.2	1.2	97.2
	7	1	.4	.4	97.6
	10	4	1.6	1.6	99.2
	15	1	.4	.4	99.6
	20	1	.4	.4	100.0
	-1	4	1.6	Missing	
		---	---	---	
	Total	251	100.0	100.0	

Total	251	100.0	100.0

Valid cases 244 Missing cases 7

IV. PERCEIVED VALUE AND DOLLARS

In the previous sections we presented the findings from our surveys on the beaches, in homes, and in businesses. In this section we try to link key survey findings on the individual's value of beaches to dollar estimates for the communities.

In this brief review we can only sketch some of the possible analyses. We hope these examples, however, help suggest some directions for economic use of the survey data.

BEACH USERS AND PERCEIVED VALUE OF A DAY AT THE BEACH

A series of questions in the beach user questionnaire engages the respondent in a process to determine the perceived value of a day at the beach. We derived two figures from that process:

1. The mean value of a day at the beach based on all beach users, including those who provided a "zero" value. The mean was $4.22

2. The mean value of a day at the beach based on all beach users who provided values greater than "zero" -- those who indicated a positive value. This mean was $5.04

Which measure to use? Once a perceived value of a day at the beach is determined, the next step is to multiply that value by the number of beach users. But which measure is more appropriate? Those with zero values, or only those with positive values? We argue that the best measure is the lower figure ($4.22) because it incorporates in it the 16% of beach users who assign a zero value in the bidding process. That is, it already reflects those who might have to be "subtracted" from the higher mean of $5.04. Thus, the more conservative figure will be used in the next step.

Important Note on Beach Tags and Beach Fees: Much of the previous research incorporating this valuation procedure did not involve beaches with beach tags or beach fees. It is most probable that without a beach tag fee we would have derived a higher valuation for a day at the beach (and fewer respondents suggesting a zero contribution). Thus, users of these data are urged to consider the downward impact of these beach fees. Five of the six beaches we surveyed had beach tags/beach fees.

Number of Beach Users: Data on the number of beach users at six communities are derived from the several tourism boards and chambers of commerce. For five of our communities, the best usage figures are obtained from the sale of beach tags. Atlantic City, which is the only community without beach tags, reports what it insists are reliable estimates of beach usage.

To derive a common denominator for the data, we convert each of the beach tag sales figures to daily estimates. Thus, weekly tags are multiplied by 7 (days), and season tags are multiplied by 98

(days).

Estimate of Beach Days for Beach Tag Communities

Community	Season Tags	Weekly Tags
Margate	28,400	4,699
Ventnor	28,985	29,900
Stone Harbor	22,700	11,100
Avalon	41,961	17,160
Longport	8,883	1,490
Subtotal	130,929	64,349

To derive the total number of days:

130,929 X 98 = 12,831,042

64,349 X 7 = 450,443

Subtotal 13,281,485

To this we correct by the average number of beach tag cheaters (6.2%) ascertained in the beach users survey (see Table 10, Section I).

13,281,485 x 106.2% = 14,104,937 beach user days.

Atlantic City: To the above figure we must add the beach user figures from Atlantic City, the one community without beach tags. Atlantic City informs us that the average daily number of beach users is 100,000. Multiplied by the 98 days in the official season = 9,800,000 beach user days.

(Note that there is no "cheater" correction for the Atlantic City data because there are no beach tags.)

Combining the two figures yields: 23,904,937 beach user days.

The final product: Multiplying the number of beach user days by the mean value of a beach day ($4.22) generates a figure of $100,878,834.00. That is, the beach users' valuation of the beach is almost $101 million each season. Moreover, this figure only reflects the "official" season. The beach is used much more than the 98 days of our analysis. Also, the $101 million does not

4 6 2

reflect the value of the beach for children, who do not buy beach tags. Arguably, many children value the beach more than many adults.

The Value of A Wider Beach

About one-sixth of the beach users (16%) were willing more to pay for a wider beach. (A few [3.4%] are willing to pay for a narrower beach.) Among those willing to pay for a wider beach, the median additional amount (added to perceived value of a day at the beach) was $1.00. Thus if beach widening were undertaken, one could conceivably add $1.00 for 16% of the beach user-days. (And subtract $1.00 for 3.4% of the beach user' valuations.)

The arithmetic of that calculation is straightforward:

To add money for a wider beach:
No. of beach user-days (from above): 23,904,937 X .16 = 3,824,789 X $1.00 = $3,824,789

To subtract money for an (unwanted) wider beach:
No. of beach user-days (from above): 23,904,937 X .034 = 812,768 X $1.00 = $812,786

The net gain:

$3,824,789 (more for a wider beach) less 812,786 (less for a wider beach)
Net value increase= $3,012,003 for a wider beach.

Note that although few want to pay taxes for wider beaches, the beach user survey reveals that almost all respondents say they want wide beaches.

A Special Fund for New Jersey Beach Erosion Protection

Over four-fifths (81.4%) of the respondents indicated they would contribute on an annual basis (beyond taxes) to a special fund for beach erosion protection, even if they did not use the beach. The median contribution offered was $50.00 (with a low of a few cents and a high of $10,000).

Because the question includes the phrase, "even if you did not use the beach," it is unclear which groups could be included (or excluded) in the analysis. All visitors to New Jersey? All Americans? If we take the $50 figure plus the 81.4% contribution rate as a guide to the number who would contribute, we can theoretically extrapolate to any known population. For example, New Jersey is fifth-ranked state in total tourism dollars. If 81.4% of tourists contributed $50.00 each, the resulting figure would be extraordinary. Alternately, one could limit the population to beach users in the state. Here, again, the dollar values would still be remarkable.

BUSINESSES AND THE VALUE OF THE BEACH

We have two questions/measures in the business survey that reflect the value of the beach to businesses.

The first asks the owners/managers to estimate the percentage of their customers who are in the area because of the beach. The median estimate is 75% of customers.

The second measure represents a different approach. It asks business owners/managers to estimate the affect on business income if the beach were to erode away. The result is very similar to the first: the median loss estimate is 75% of income.

Number of Businesses: The next obvious step is to determine the number of businesses in the 6 communities. This information was obtained from the six chambers of commerce and city offices. The data are:

Community	No. of Businesses
Atlantic City	2,940
Ventnor	627
Margate	539
Longport	215
Stone Harbor	672
Avalon	85
Total	5,078

Value of Business Receipts: U.S. Department of Commerce data indicate that the average retail business's receipts are $2,675,270 (Adjusted from Table 861, Statistical Abstract of the United States. U. S. Bureau of the Census. Washington, D.C. 1991). As a heuristic exercise, we assume that the average beach community business is taking in only one-quarter of that amount; thus the average receipts would be $668,817.

Continuing the example, and assuming that the 5,078 businesses take in the average receipts of $668,175., then the total value of receipts is $3,396,255,265.

If we accept the owners/managers' estimates of the value of the beach for their businesses equals 75%, then one way of deriving the value of the beach is to "earmark" 75% of the receipts:

.75 X $3,396,255,265 = $2,447,191,448.

That is, using a modest set of assumptions, and employing either of the survey-derived estimates of the beaches' importance to local businesses (erosion loss or customers draw), indicates that the value of the beach to businesses could be calculated at almost $2.5 billion. Further analysis would require obtaining business receipt data and/or business tax data.

More Taxes for a Wider Beach

As with beach users, business owners and managers were asked if they would be willing to pay more taxes for a wider beach. One quarter (25.3%) stated that they would be willing to pay more taxes for such enhancement. The median increase in taxes offered was 9%. (The minimum percentage increase was 1%, the maximum percentage increase was 200%.) Obviously, if one-quarter of all shore businesses were willing to pay 9% more in taxes for wider beaches, the impact would be considerable.

Again, further analysis would require obtaining business receipt data and/or business tax data.

A Special Fund for New Jersey Beach Erosion Protection:

As with beach users, business owners and managers were asked if they would be willing to contribute on an annual basis (beyond taxes) to a special fund for beach erosion protection, even if they did not use the beach. Seven-tenths of the businesses claimed they would contribute. The minimum offered was $5.00; the maximum offered was $10,000. The median contribution offered (of those 70% offering contributions) was approximately $175.00

Unlike the example of the beach users, we do know the number of businesses in the six communities. Multiplying the 5,078 businesses by the contribution ratio of 70% = 3,555. Multiplying 3,555 (number of businesses contributing) by the median contribution of $175.00

indicates that the total fund contribution is $622,125.

HOMEOWNERS AND THE VALUE OF THE BEACH

Much of the same methodology used in understanding the value of the beach for businesses can be employed with homeowners. That is, while homeowners do not have receipts, they did estimate the cost of erosion to the value of their homes, and they did indicate their willingness to support wider beaches and erosion prevention funds.

Cost of erosion

Each homeowner was asked to estimate the value of his/her property if the beaches were to suffer major erosion -- were to erode away completely. The median response was "three-quarters of its value." Below, we list the median value of homes and the number of homes in the six target communities.

Community	Median House Price	Total No. of Homes
Atlantic City	$73,400	13,453
Ventnor	137,700	6,645
Margate	176,800	7,904
Longport	201,800	3,300
Stone harbor	285,600	7,266
Avalon	285,700	1,474
	Total	40,042

Multiplying each community's median house price by the number of houses, and summing the figures yields a total home value of almost 6.5 billion dollars ($6,462,126,000).

If, based on the survey's median estimate, three-quarters of the value were to be lost due to total beach erosion, than the loss would equal over 4.8 billion dollars -- $4,846,594,500.

Taxes for a Wider Beach

Homeowners were also asked if they would be willing to pay more taxes for a wider beach. About a sixth (17.5%) indicated that they were willing to pay more taxes for such enhancement. The median of additional taxes offered was 10%. The minimum was 0.1% and the maximum was 200% additional taxes.

A Special Fund for New Jersey Beach Erosion Protection:

Last, homeowners were also asked if they would be willing to contribute on an annual basis to a special fund for beach erosion -- even if they did not directly benefit from it. Seven-tenths said they would contribute to such a fund. The median contribution for those offering a contribution was $229.50

If we do the math, the additional contributions to the fund are:

40,042 homes X .70 (contribution ratio) = 28,029 X $229.50 (themedian contribution) = $6,432,655. Thus, homeowners indicate that they would be willing to contribute an additional $6.4 million for a general fund against beach erosion.

Summary and Linking of Estimates

Many factors (e.g., employment and its multipliers, tourism expenditures, beach fees, and rental income) determine the value of the beach to a community or region. This report has focused on several measures obtained from our surveys. It is clearly beyond the scope of this report to ascertain exact dollar figures for the total value of the beach. We have, however, attempted to sketch some of the possible economic analyses and computations that can be based on the survey data and/or on the survey data in concert with other data.

Below, we combine the figures we have derived to provide partial estimates of the value of the beach -- estimates that would not be possible without the survey data:

Beach Users
The beach users' valuation of the beach (official season days only)..... $100,878,834

Net tax increase for a wider beach..... 3,012,003

Contributions to a beach erosion fund ($50 X 81.4% of sample) Specific value... undetermined

Businesses
Value of beach to businesses (percent of customers or loss if total erosion)..... 2,447,191,448

Businesses willing to pay more taxes for wider beach (25.3% of businesses @ median of 9% increase)..... undetermined

Businesses willing to contribute to a beach erosion fund..... 622,125

Homeowners
Cost of erosion to homeowners (their estimate of loss)..... 4,846,594,500
(Note: Unlike the other figures in this list, this number is not repeated annually.)

Homeowners willing to pay more for a wider beach..... undetermined

Homeowners willing to contribute to a beach erosion fund..... 6,432,655

Total annual value = $2.659 billion
Total one-time value = $4.847 billion

The data indicate that the annual added value of the beach, based only on these survey estimates, is $2.659 billion.

This figure does not include any estimate of: beach users contributions to a beach erosion fund, additional taxes that businesses say they would pay for a wider beach; or additional taxes

that homeowners say they are willing to pay for wider beaches. Note also that our calculations do not include the funds paid to the municipalities for beach fees. The undetermined monies could well dwarf the sums listed above.

Last, the $2.659 billion annual figure does not reflect the $4.8 billion that homeowners estimate as their loss to erosion.

Clearly the importance of the beach -- as perceived by its users and as estimated by businesses and homeowners -- is enormous. The data presented in this report should allow analysts to more fully and accurately estimate the true value of this resource.

5/26/94

NEW JERSEY BEACH USERS SURVEY
(ABSECON AND SEVEN MILE ISLANDS)

1. M__ __ D__ __ Y__ __ 2. Day of Wk (1-7) ____ 3. Tm __ __:__ __

4. Temp__ __ (F) 5. Water Temp__ __ (F) 6. Wind____ MPH 7. S, PC, C, R

8. Dens. (1-5) ___ 9. Distr.(1-10) ___ 10. Intvr: _____

11. Intvr. code number __ __ 12. Location: 1. Stone Harbor 2. Avalon
3. Atlantic City 4. Longport 5. Margate 6. Ventnor ___

INTRODUCTION: GOOD MORNING/AFTERNOON, I'M ____ FROM RUTGERS UNIVERSITY. THIS IS AN ANONYMOUS QUESTIONNAIRE ON BEACH EROSION AND THE IMPORTANCE OF BEACHES. THIS STUDY IS CONDUCTED BY RUTGERS UNIVERSITY FOR THE U.S. ARMY CORPS OF ENGINEERS AND THE NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION. IT WILL ONLY TAKE ABOUT 10 MINUTES.

13. Do you visit New Jersey beaches: **[Intvr: read choices]** Every year__
Most years__ Some years__ Or, is this your first visit here__

14. How many days do you estimate that you <u>will</u> spend on New Jersey beaches <u>this</u> summer, in total? (Beach visits only, do not count trips to the boardwalks, etc) _____

15. Do you own or rent a residence along the N.J. shore? Yes__ No__
[If no, skip to #17; Note: if lives with relatives at shore = yes]

16.**[If yes to #15]** Is that <u>own</u> or <u>rent</u>? Own__ Rent__ **[if "rent" skip to Quest. 17. Note also: if renting with several friends = rent]**

16a. In what town is your shore house?

16b. When did you buy your house? yr:_____ (Inherit/fam.___)

16c. Do you know if any of the local taxes go toward replacing the sand lost to storms or waves? Yes__ Think so__ No___

16d. If the beach were to erode away completely, how would this affect the value of your property? **[INTV: if no immediate quantifiable answer, ask:]** Would it lose:
a quarter of its value__ a half of its value__
three-quarters of its value__ almost all of its value__
all of its value__ other_____

17. For how long are you staying at the N.J. shore this summer:
[Intvr: read choices]
a. Permanent resident (all year)__ e. Here for one week__
b. Here all summer, all week__ f. Here for weekend only__
c. Here mostly on weekends, but all summer__ g. Here for the day only__
d. Here for two weeks__

18. On the average, including yourself, how many people typically go to the beach with you? _____

19. Is it usually <u>this</u> beach? Yes__ **[skip to # 21]** No__

20. **If "No," ask:** To which beach do you usually go? _____

21. Do you usually have to buy a beach tag to use this beach? Y__ N__

22. **If yes:** Do you have a tag, and if so what kind is it:
1. Season 2. Week 3. Weekend 4. Day 5. No pay/no tag ____

23. THERE ARE SEVERAL REASONS WHY YOU MIGHT CHOOSE TO VISIT NEW JERSEY'S BEACHES. PLEASE INDICATE HOW IMPORTANT EACH OF THE FOLLOWING REASONS IS TO YOU? [Codes: 1-not at all important; 2-slightly important; 3-moderately important; 4-very important; 5-extremely important; 6- NA]

a. To be with a large number of people..... 1 2 3 4 5 (6)
b. To experience the visual qualities of the beach scenery.. 1 2 3 4 5 (6)
c. To socialize with family, friends and others..... 1 2 3 4 5 (6)
d. To relax..... 1 2 3 4 5 (6)
e. To participate in beach activities (swim, surf, etc)..... 1 2 3 4 5 (6)
f. To enjoy being alone..... 1 2 3 4 5 (6)
g. There is little or no cost to enjoy the beach..... 1 2 3 4 5 (6)
h. It is a wide enough beach to enjoy many activities..... 1 2 3 4 5 (6)
i. It is a nice family-oriented beach..... 1 2 3 4 5 (6)
j. It is well protected by lifeguards..... 1 2 3 4 5 (6)
k. It is well maintained..... 1 2 3 4 5 (6)
l. There is good fishing..... 1 2 3 4 5 (6)
m. It is close to where I am staying at the shore..... 1 2 3 4 5 (6)
n. It is close to my permanent residence..... 1 2 3 4 5 (6)
o. There is enough parking..... 1 2 3 4 5 (6)
p. There are adequate snack bars and shops 1 2 3 4 5 (6)

THE NEXT QUESTIONS WILL HELP US MEASURE THE VALUE SOCIETY PLACES ON BEACHES. WE DO THIS BY ASKING ABOUT THE DOLLAR VALUE OF ENJOYMENT FOR A DAY ON THE BEACH. THESE ESTIMATES REFLECT ONLY PERSONAL VALUES AND WILL NOT INFLUENCE BEACH FEES. BEACH FEES ARE SET BY TOWNS; OUR RESEARCH IS FOR THE U.S. ARMY CORPS OF ENGINEERS.

24. Previous studies reveal that, on average, people would be willing to pay about $4.00 per day per person to use a beach in New Jersey. Do you feel that a day using a New Jersey beach would be worth $4.00 to each member of your household?

Yes__ OR No___

If yes, do you feel that a beach day would be worth $5.00 to each member of your household?

Yes__ No__

If yes, is it worth $6.00 per day?

Yes__ No__

If yes, how much would you be willing to pay per day to use beach in New Jersey?

$____.____

If no, do you feel that a beach day would be worth $3.00 to each member of your household?

Yes__ No__

If no, is it worth $2.00 per day?

Yes__ No__,

If no, how much would you be willing to pay per day to use a beach in New a Jersey?

$____.____

25. **[If respondent placed a monetary value in question 24, skip this question and go to question 26.. If respondent answered zero or did not state a monetary value to question 24, ask:]** Which of the following statements best describes the reasons for your response:
[Intvr: read choices]
Not enough information__
Did not want to place a dollar value__
Object to the way the question was presented__
That is what it is worth to me__
[don't read] Other (specify)_____ __

47;

[Interviewer: Review for yourself final answer to question 24]

26. If an entry fee of____ **[the amount respondent indicated in question 24]** were charged, how would that affect the number of visits you would make to New Jersey's beaches?

More than now__ If more, how many more visits _____
Same as now __
Fewer than now. If fewer, how many fewer visits_____

27. **Interviewer: Show photographs of the two beaches -- "A" with sand replenishment; "B" without sand replenishment. Ask:]**
THIS SURVEY IS PART OF A STUDY TO ASSESS THE COSTS AND BENEFITS ASSOCIATED WITH BEACH SAND REPLENISHMENT.

Would you be willing to pay: More __ Less __ The Same __ than **[amount respondent stated in question 24]** if the NJ beach you usually visit were widened like the beach in Photo B [Bottom Photo]?

If more, how much more than__ **[amount stated in question 24]** $___.___
If less, how much less than__ **[amount stated in question 24]** $___.___

28. **[Interviewer: if answer to question 27 (directly above) was zero, skip to question 29; if answer to question 27 is greater than 0, ask:]**

If a beach fee of__ **[amount stated in question 27]** were charged, how would that affect the number of visits you would make to New Jersey's beaches?

More than now__ If more, how many more visits _____
Same as now __
Fewer than now. If fewer, how many fewer visits_____

29. This next question is not about widening beaches, but about maintaining beaches -- stopping them from eroding away. How important is it to you that there be a beach here at all?

1-not at all important; 2-slightly important; 3-moderately important; 4-very important; 5-extremely important; 6- NA]

30. Would you stop coming to this area if it did not have a beach?
Yes__ No__

31. Imagine there were a fund established for New Jersey beach protection against erosion. If you were to make a voluntary once-a-year contribution to this fund, even if you did not use the beach, what would be the maximum yearly amount that you would be willing to give?

Keep in mind that this contribution would be <u>in addition</u> to any daily fees that you might pay? $_____.___

32. **[Intvr: If respondent's answer to question 31 is greater than zero, skip to question 33; if respondent's answer to question 31 equals zero, ask:]**

Which of the following statements best describes the reasons for your response: **[Intvr: read choices]**

Not enough information__
Did not want to place a dollar value__
Object to the way the question was presented__
That is what it is worth to me__
[don't read] Other (specify)_____

33. All in all, how expensive do you consider a trip to the beach
[Intvr: read choices]

a. very expensive__ c. somewhat inexpensive
b. somewhat expensive__ d. very inexpensive

LAST SET OF QUESTIONS: WE NEED TO MAKE SURE WE'VE TALKED WITH THE FULL RANGE OF BEACH USERS:

34. Which best describes your present employment status?

Employed full-time__ Full-time homemaker__
Employed part-time__ Student__
Not employed__ Other (specify)_____
Retired__

35. Are you married or single? M S

36. Which best describes your total household income, before taxes?
[Intvr: read list and/or show card; ask only for letter]

a. Under $10,000__ e. $40,000 - $49,999__
b. $10,000 - $19,999__ f. $50,000 - $74,999__
c. $20,000 - $29,999__ g. $75,000 - $99,999__
d. $30,000 - $39,999__ h. $100,000 and over__

37. How many people are in your household this year?____

38. How much education have you completed?
[Intvr: read list and/or show card, ask only for letter]

a. No school (0 yrs) __ e. Some College (13-15 yrs) __
b. Grade school (6 yrs) __ f. College Graduate (16 yrs) __
c. Some High School (7-11 yrs)__ g. Post Graduate (over 16 yrs)__
d. High School Graduate (12 yrs)__

39. How would you describe your racial or ethnic background?

White or Caucasian __ Asian__
Black or African American__ Native American__
Latino__ Other (specify)_____

40. Which best describes your age group?
[Intvr: read list and/or show card, ask only for letter]

a. 10 - 19__ e. 50 - 59__
b. 20 - 29__ f. 60 - 69__
c. 30 - 39__ g. 70+ __
d. 40 - 49__

41. To help the design of future questionnaires, overall how did you find the wording and reasonableness of the questions we have asked?

Very Clear__ Clear__ Moderate__ Unclear__ Very Unclear__

42. Do you have any other comments or suggestions you would like to make regarding New Jersey's ocean beaches?

_____

_____

6/9/94 **NEW JERSEY HOMEOWNERS BEACH SURVEY** -- ABSECON AND SEVEN MILE ISLANDS
For those 18 or older, preferably the homeowner.

1. M__ __ D__ __ Y__ __ 2. Day of Wk (1-7) ____ 3. Tm __ __:__ __
4. Intvr.# __ __ 5. Coder #___ 6. Location: 1-Stone Harbor 2-Avalon
3-Atlantic City 4-Longport 5-Margate 6-Ventnor
6a: Number of blocks to beach_____

INTRODUCTION: GOOD MORNING/AFTERNOON, I'M ____ FROM RUTGERS UNIVERSITY. THIS IS AN ANONYMOUS **4 MINUTE** QUESTIONNAIRE ON BEACH EROSION AND THE IMPORTANCE OF BEACHES. THIS STUDY IS CONDUCTED BY RUTGERS UNIVERSITY FOR THE U.S. ARMY CORPS OF ENGINEERS AND THE NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION.

7. Do you or your family own a residence along the N.J. shore? Yes__ No__
[If YES, continue interview. If NO, end interview: "Thank you but this questionnaire is only for homeowners." NOTE: you might want to ask respondents if they know which nearby houses are owner-occupied.

8. Is it this house? Yes__ No__

9. IF NO, In what community is your house_____ **[INTV: If in our 6 areas, continue interview. If not in our 6 areas, end interview and thank respondent; explain that survey only for our 6 areas.]**

10. Do you come to New Jersey beaches: **[Intvr: read choices]** Every year__
Most years__ Some years__ Or, is this your first year here__

11. For how long are you staying at the N.J. shore this summer:
[Intvr: read choices]
a. Permanent resident (all year)__
b. Here all summer, all week__
c. Here mostly on weekends, but all summer__
d. Here for two weeks__
e. Here for one week__
f. Here for weekend only__
g. Here for the day only__

12. How many days do you estimate that you will spend on New Jersey beaches this summer, in total? (Beach visits only, do not count trips to the boardwalks, etc) _____

13. When did you buy your house? yr:_____ (Inherit/fam.___)

14. If the beach were to erode away completely, how would this affect the value of your property? **[INTV: if no immediate quantifiable answer, ask:]**
Would it lose:
a quarter of its value__ a half of its value__
three-quarters of its value__ almost all of its value__
all of its value__ other_____

15. Do you know if any of the local taxes go toward replacing the sand lost to storms or waves? Yes__ Think so__ No___

16. **Interviewer: Show photographs of the two beaches -- "A" with sand replenishment; "B" without sand replenishment. Ask:]**
THIS SURVEY IS PART OF A STUDY TO ASSESS THE COSTS AND BENEFITS ASSOCIATED WITH BEACH SAND REPLENISHMENT.

Would you be willing to pay: More taxes if the NJ beach you usually visit were widened like the beach in Photo B [Bottom Photo]?

If MORE__, ask how much more than you currently pay _____%
IF NO__
If LESS__, how much less than you currently pay _____%
NA: The beach is already wide, as in photo "A"___

17. This next question is not about widening beaches, but about maintaining beaches -- stopping them from eroding away. How important is it to you that there be a beach here at all?

1-not at all important; 2-slightly important; 3-moderately important; 4-very important; 5-extremely important; 6- NA]

18. Imagine there were a fund established for New Jersey beach protection against erosion. If you were to make a voluntary once-a-year contribution to this fund, even if you did not use the beach, what would be the maximum yearly amount that you would be willing to give?

Keep in mind that this contribution would be in addition to any taxes and daily fees that you might pay? $_____.___

19. **[Intvr: If respondent's answer to question 18 is greater than zero, skip to question 20; if respondent's answer to question 18 equals zero, ask:]** Which of the following statements best describes the reasons for your response: **[Intvr: read choices]**
Not enough information__
Did not want to place a dollar value__
Object to the way the question was presented__
That is what it is worth to me__
[don't read] Other (specify)_____

LAST SET OF QUESTIONS: WE NEED TO MAKE SURE WE'VE TALKED WITH THE FULL RANGE OF BEACH USERS:

20. Which best describes your present employment status?
Employed full-time__ Full-time homemaker__
Employed part-time__ Student__
Not employed__ Other (specify)_____
Retired__

21. Are you married or single? M S

22. Which best describes your total household income, before taxes?
Intvr: read list
a. Under $10,000__ e. $40,000 - $49,999__
b. $10,000 - $19,999__ f. $50,000 - $74,999__
c. $20,000 - $29,999__ g. $75,000 - $99,999__
d. $30,000 - $39,999__ h. $100,000 and over__

23. How many people are in your **[regular]** household this year?____

24. How much education have you completed?
[Intvr: read list
a. No school (0 yrs) __ e. Some College (13-15 yrs) __
b. Grade school (6 yrs) __ f. College Graduate (16 yrs) __
c. Some High School (7-11 yrs)__ g. Post Graduate (over 16 yrs)__
d. High School Graduate (12 yrs)__

25. How would you describe your racial or ethnic background?
White or Caucasian __ Black or African American__ Asian__
Latino__ Native American__ Other _____

26. Which best describes your age group?
a. 10 - 19__ b. 20 - 29__ c. 30 - 39__ d. 40 - 49__
e. 50 - 59__ f. 60 - 69__ g. 70+ __

Thank Respondent

NEW JERSEY BUSINESSPERSONS SURVEY– Absecon and Seven Mile Islands

For business owners or managers.

1. M__ __ D__ __ Y__ __ 2. Day of Wk (1-7)__ 3. TM. __ __:__ __ 4. Intvr.#__

5. Coder #__ 6. Location: 1-Stone Harbor 2-Avalon 3-Atlantic City 4-Longport 5-Margate 6-Ventnor

of blocks to beach___

Type of Business (be specific)_____

INTRODUCTION: *Good Morning/Afternoon, I'm_____ From Rutgers University. This is an anonymous 2 minute questionnaire on beach erosion and the importance of beaches to local businesses. This study is conducted by Rutgers University for the U.S. Army Corps of Engineers and The New Jersey Department of Environmental Protection.*

9. Is this business open all year, or only during the summer season?
   All year(even if closed for a month or so in winter)__ Summer season___

10. What percentage of your customers are at the shore because of the beaches? Your best estimate is fine:____%

11. If the beach were to erode away completely, how would this affect your business?

    1. a quarter of its income___ 2. half of its income__
    3. three-quarter of its income__ 4. almost all of its income__
    4. all of its income 6. other_____

12. How important is it to your business that there be a beach here at all?
    1-not at all important; 2-slightly important; 3-moderately important;
    4-very important; 5-extremely important; (6-na)

13. Do you know if any of the local taxes go toward replacing the sand lost to storms or waves? Yes__ Think so___ No___

14. Interviewer: Show photographs of the two beaches– "A" with sand replenishment; "B" without sand replenishment.
    Ask: This survey is part of a study to assess the costs and benefits associated with beach sand replenishment.

    Would you be willing to pay: More <u>taxes</u> if the NJ beach closest to your business were widened like the beach in Photo "B"

    If more___, ask how much more than you currently pay_____%
    If no___
    If less___, how much less than you currently pay_____%

15. Imagine there were a fund established for New Jersey beach protection against erosion. If you were to make a voluntary once-a-year contribution to this fund, even if you did not use the beach, what would be the maximum yearly amount that you would be willing to give?
    Keep in mind that this contribution would be <u>in addition</u> to any taxes and daily fees that you might pay?
    $_____._____

For the last set of questions: **WE NEED TO MAKE SURE WE'VE TALKED WITH THE FULL RANGE OF BUSINESS PERSONS IN THE AREA:**

16. About how many years has this business existed_____
    {Interviewer: Seek total years –adding previous ownership, if needed. Also, may count any local shore location, not just "this" location.}

17. About how many people are employed here during the summer season___
    {Interviewer: include full and part-time workers, and all local shore locations if multiple-site business}

18. How much education have you completed?
    a. No school (0 yrs)__ e. Some College (13-15 yrs)__
    b. Grade school (6yrs)__ f. College Graduate (16 yrs)__
    c. Some High School (7-11 yrs)__ g. Post Graduate (over 16 yrs)___
    d. High School Graduate (12 yrs)___

THANK RESPONDENT

APPENDIX E

REAL ESTATE PLAN

APPENDIX F

BRIEF REAL ESTATE PLAN

1. This Real Estate Plan is for the Absecon Inlet to Great Egg Harbor Inlet (Absecon Island) portion of the New Jersey Shore Protection Study located in Atlantic County, New Jersey. The Reconnaissance Report for this project was approved by Jimmy F. Bates, Chief, Policy and Planning Division, Directorate of Civil Works on July 8, 1992.

2. The subject area of this report is Absecon Island, New Jersey. Specifically, the area is bounded to the north by Absecon Inlet and to the south by Great Egg Harbor Inlet. There are four municipalities included in the study area; Atlantic City, Ventnor, Margate and Longport. The overall length of the project is 9.2 miles, 8.1 miles along the Atlantic Ocean and 1.1 mile along Absecon Inlet.

The plan for the Absecon Inlet frontage includes construction of an anchored timber sheet-pile bulkhead in two separate sections for a total linear footage of 1,600 feet. The bulkhead will abut the existing boardwalk on the seaward side and will be fronted by a stone revetment. The tie rods and anchor for the bulkhead will extend 10 feet upland of the landward edge of the existing boardwalk. The total acreage required for the bulkheading is approximately 2.67 acres.

In Atlantic City the beachfill will consist of a 200-foot wide berm and a dune, with an average footprint width, including side slopes, of 380 feet, extending 18,282 linear feet, for a total acreage of approximately 117.07 acres. In Ventnor, Margate and Longport the beachfill will consist of a 100-foot wide berm and a dune, with an average footprint width, including side slopes, of 280 feet, extending 24,700 linear feet, for a total acreage of approximately 112.91 acres. The beachfill will be transitioned from a 200-foot berm to a 100-foot berm between Atlantic City and Ventnor for a distance of 1000 feet. Contractor access to the beachfill areas will be via six access ramps across the boardwalk located at the existing street rights-of-way.

3. Four types of easements will be required for the project. Two Temporary Work Area Easements will be required in Atlantic City for a total of 3.61 acres, and one Temporary Work Area Easement will be required in Longport for a total of 1.89 acres. These areas are required for staging areas and for storage of materials and equipment, for a three (3) year period. The three-year duration of the temporary work easements includes time for contracting, mobilization and demobilization, and unanticipated construction delays. Perpetual Beach Nourishment and Perpetual Restrictive Dune Easements will be required for upland beachfront property which is

above the mean high water line where the underlying fee owners have riparian rights or have not executed park deeds with the respective municipalities. The total acreage of the Perpetual Beach Nourishment and Perpetual Restrictive Dune Easements is 229.98 acres. Perpetual Bulkhead Easements (non-standard estates) will be required for areas totaling 2.67 acres for the Absecon Inlet frontage.

4. There are no federally-owned lands in the subject area. The Navigational Servitude applies to this project, and no lands below the mean high water line (MHWL) will need to be acquired. The oceanfront beaches below MHWL are owned in fee by the State of New Jersey, although riparian rights have been granted to some private entities in Atlantic City, which may have to be extinguished. During PED, a title search will be completed for the 21 properties in Atlantic City, because of the complexity of the estates due to the development of casinos and resorts along the oceanfront. The riparian rights granted by the State may vary from parcel to parcel. The Federal government may use any lands below the MHWL under the rights of navigational servitude.

5. There are no relocations of persons, farms or businesses in the subject area as would be required under Public Law 91-646, as amended.

6. The non-federal sponsor is the State of New Jersey, acting through its Department of Environmental Protection. The State of New Jersey will be responsible for the acquisition of all necessary real estate interests required for this project. The State has sufficient experience in land acquisition and has the necessary manpower and resources to complete the real estate actions in a timely manner. The Department of Environmental Protection has condemnation authority under a general statute of the State of New Jersey. However, as part of the State Aid Agreements, all necessary easements, for purposes of this project, will likely be obtained by the local municipalities on behalf of the sponsor.

7. Public access is prerequisite to the project, and will be a condition of the deeds executed by private landowners. The value of the perpetual bulkhead easements, perpetual beach nourishment easements, perpetual restrictive dune easements, and temporary work area easements is expected to be zero due to the offsetting benefits. Staging areas for the project have been identified as belonging to the local municipalities and will be obtained as part of the State Aid Agreements prior to start of the project as a requirement for the municipalities to be eligible for State grants and/or funding associated with any shore protection projects. A Baseline Cost Estimate for Real Estate for the Local Sponsor's administrative costs to accomplish the project's real property requirements and the Corps' administrative costs to assist and monitor the Local Sponsor's real property acquisition program has been prepared. If acquisition is done by the local municipalities, the costs may be reduced from the estimate provided in this report. The real estate cost estimate for each of the four municipalities

is included in Exhibit "D" of the Real Estate Plan. The real estate cost estimates are summarized below:

A. Atlantic City. Atlantic City land records show 21 parcels within the limits of the project that are not owned by the city or have no executed park deeds granting public use of the oceanfront properties east of the boardwalk. The estimated number of privately owned oceanfront parcels affected by this project is 21, consisting of 5 residential and 16 commercial properties, for an estimated value of $0 for land, $65,675 for administrative costs, and $9,851 for contingencies, totaling $75,526.

B. Ventnor. There are no privately owned oceanfront parcels for this municipality; therefore, no costs to the local sponsor should be incurred for the necessary lands and rights-of way needed for the project. Because of offsetting benefits, the estimated value is $0 for land, $0 for administrative costs, and $0 for contingencies, totaling $0.

C. Margate. There are 2 privately-owned parcels in the City of Margate that are seaward of the bulkhead within the project area. All other parcels within the project area are owned in fee simple by the City of Margate. The estimated number of privately owned oceanfront parcels affected by this project is 2, consisting of 2 residential and 0 commercial properties, for an estimated value of $0 for land, $5,450 for administrative costs, and $819 for contingencies, totaling $6,269.

D. Longport. The City of Longport has 8 parcels within the project area that are under private ownership. The other oceanfront properties are owned by the municipality. The estimated number of privately owned oceanfront parcels affected by this project is 8, consisting of 8 residential and 0 commercial properties, for an estimated value of $0 for land, $22,550 for administrative costs, and $3,383 for contingencies, totaling $25,933.

The total estimated costs for the project lands is $0 for land, $93,675 for administrative costs, and $14,053 for contingencies, totaling $107,728. These costs are reported in the 01 account entitled Lands and Damages. A listing of private ownerships is attached in Exhibit "A". Public access to all project lands will be guaranteed by the non-federal sponsor as a prerequisite of this project.

8. Maps delineating the lands required for the beachfill, bulkheading and the temporary work areas are included as Exhibit "B" to this Real Estate Plan. The limits of work, as shown on the mapping, include some areas below the mean high water line, which need not be acquired, as discussed in paragraph 4 above.

9. There are no known mineral activities in the project area which would jeopardize the construction of the bulkheads or the beachfill operations.

10. Copies of the four easement estates required for the project are included as Exhibit "C" of this Real Estate Plan.

11. A schedule of the real estate acquisition activities is not provided in this Real Estate Plan as the future of the project is uncertain as of the date of this report. State Aid Agreements between each municipality and the State of New Jersey will be executed within 60-90 days of the signing of the PCA, prior to the expenditure of public funds by the State for this project. Land acquisition will commence soon afterward. Detailed coordination among the Corps, the State, and the municipalities will take place during PED to finalize acquisition schedules.

12. There are no anticipated relocations of buildings, roads, railroads, pipelines, bridges or cemeteries in the subject area. There are 23 storm drain outfalls that extend the width of the existing beach to drain into the Atlantic Ocean on Absecon Island. Outfalls that do not extend past the construction template will require extensions to remain functional. Reference the Engineering Technical Appendix "D" for the costs of the outfall extensions. These costs are reported in the 02 account entitled Relocations. During PED, an Attorney's Opinion of Compensability will be completed and if it is determined that the storm drain outfalls are items of relocation, these costs will be credited to the local sponsor as utility relocation costs.

13. There are no known HTRW or other environmental contaminates on lands within the project area. There is a known old underground storage tank leakage, approximately 1.5 blocks outside the bulkhead construction area, located at 101 New Hampshire Avenue, Atlantic City, New Jersey. Construction techniques will be employed, if necessary, to minimize or eliminate any disturbance to ground water.

LIST OF PROPERTY OWNERS ALONG BEACHFRONT IN LONGPORT, NEW JERSEY

NAME AND ADDRESS	PROPERTY IDENTIFICATION
1. Borough of Longport Longport, NJ 08403	15-00001-0000-00013 Map 2 Block 1 Lot 13 15-00008-0000-00001 Map 3 Block 8 Lot 1 15-00010-0000-00001 Map 3 Block 10 Lot 1 15-00021-0000-00001 Map 5 Block 21 Lot 1 15-00024-0000-00001 Map 6 Block 24 Lot 1 15-00027-0000-00001 Map 6 Block 27 Lot 1 15-00035-0000-00001 Map 6 Block 35 Lot 1 15-00127-0000-00001 Map 8 Block 127 Lot 1
2. Cynthia Katz 2307 Beach Avenue Longport, NJ 08403	15-00020-0000-00001-0001 Map 5 Block 20 Lot 1.01
3. Harvey E. Kroiz 2305 Beach Avenue Longport, NJ 08403	15-00020-0000-00001-0002 Map 5 Block 20 Lot 1.02
4. Irene S. Crane 2303 Beach Avenue Longport, NJ 08403	15-00020-0000-00002 Map 5 Block 20 Lot 2
5. Robert A. Johnson 2301 Beach Avenue Longport, NJ 08403	15-00020-0000-00003 Map 5 Block 20 Lot 3
6. Mary Cordelia Renner 424 Flourtown Road Lafayette Hill, PA 19444	15-00125-0000-00002-0001 Map 5 Block 125 Lot 2.01 15-00125-0000-00001-0001 Map 5 Block 125 Lot 1.01
7. Ocean Plaza Condo's Attn: Ms. Debra Carrieri 2700 Atlantic Avenue Longport, NJ 08403	15-00031-0000-00001 Map 6 Block 31 Lots 1&1.01 Units 201 through 721
8. Gospel Hall Home For The Aged Longport, NJ 08403	15-00035-0000-00001 Map 6 Block 35 Lot 1 Shows PUBLIC USE OF LAND
9. Anthony D. Parzanese 113 S. 29th Avenue Longport, NJ 08403	15-00039-0000-00001 Map 8 Block 39 Lot 1

EXHIBIT A

LIST OF PROPERTY ALONG OCEANFRONT IN ATLANTIC CITY, NEW JERSEY BEGINNING AT SOUTHWEST SIDE OF ABSECON INLET AT INTERSECTION WITH ATLANTIC AVENUE

	BLOCK	LOT	PARK DEED	DEED BOOK/PAGE	DATE
1.	OO3	1	YES		8/4/10
2.	003	2	YES	253/491	2/4/01
3.	001	25	RIPARIAN TO AC	265/328	11/29/01
4.	001	26	RIPARIAN TO AC	266/184	11/29/01
5.	001	27	YES	383/124	5/16/08
6.	001	28	YES	383/117	5/16/08
7.	001	29	CITY OF AC	383/117 & 124	5/5/08
8.	01	28	YES	383/117	5/5/08
9.	01	29	YES	380/237	5/5/08
10.	1	31	YES	259/196	
11.	1	32	YES	259/196	
12.	1	33	NO HORACE G. MYERS (TRUSTEE) FROM SARATOGA CORP	1134/149	6/10/42
13.	2	31	YES	383/117 & 124	5/5/08
14.	2	32	YES	381/286	5/15/08
15.	6	29	YES	425/443	4/27/10
16.	7	50	CITY OF AC	FINAL DECREE	4/14/44
17.	7	66	NO ALLEN B. & CLARA R. ENDICOTT, JR	1148/383	9/22/43
18.	7	67	YES HOUSING AUTHORITY	DECREE OF TAKING 2706/259 (COPY ENCL)	1/30/73
19.	7	68	YES HOUSING AUTHORITY	DECREE OF TAKING 2706/259 (COPY ENCL)	1/30/73
20.	7	82	YES HOUSING AUTHORITY	DECREE OF TAKING 2706/259 (COPY ENCL)	1/30/73
21.	7	120	CITY OF AC	FINAL DECREE	4/14/44

22.	NEW 13	36	YES	HOUSING AUTHORITY	8/6/10
23.	NEW 13	37	YES	408/475	9/29/09
24.	NEW 13	38	YES	411/486	
25.	NEW 13	39	YES	256/176	
26.	NEW 13	131	CITY OF AC	FORMERLY MARYLAND AVENUE	
27.	NEW 13	132	CONT FROM BLK 12 LOT 46 YES	255/398	2/9/01
28.	NEW 13	133	CITY OF AC	FORMERLY STATES AVENUE	
29.	NEW 13	134	CONT FROM BLK 12 LOT 47 YES	416/177	11/10/09
30.	NEW 13	135	CITY OF AC	FORMERLY DELAWARE AVENUE	
31.	NEW 13	136	HOUSING AUTHORITY CONT FROM BLK 8 LOT 57		
32.	NEW 13	137	CITY OF AC	FORMERLY ST CHARLES STREET	
33.	NEW 13	138	HOUSING AUTHORITY CONT FROM BLK 8 LOT 101		
34.	14	28	NO RIPARIAN GRANT FROM NJ TO AC TRUMP TAJ MAHAL REALTY CORP	STEEL PIER STEEL PIER 1093/110 4796/97	(COPY ENCL) 6/13/39 11/17/88
35.	14	29	YES RIPARIAN TO AC TRUMP TAJ MAHAL ASSOC. LTD PTRNSHP	248/221 354/91	8/8/00 2/4/07
36.	18	31	YES RESORTS INTERNATIONAL HOTEL, INC	248/221	7/8/00
37.	18	32	NO NEW PIER OPERATING COMPANY	STEEPLE CHASE PIER 3931/296	(COPY ENCL) 6/19/84
38.	19	59	YES	423/283	2/24/10
39.	19	60	NO EDWARD A. & IRENE DEVLIN	3035/119	6/23/76
40.	19	61	YES		
41.	19	62	YES		
42.	19	63	YES		

43.	19	64	YES		
44.	20	94	YES	409/406	9/23/09
45.	20	95	YES	414/220	11/3/09
46.	20	98	YES	428/16	
47.	20	100	CITY OF AC	2221/149	5/21/64
48.	24	62	YES	417/240	12/2/09
49.	24	63	YES	411/486	11/4/09
50.	24	64	YES	411/486	11/6/09
51.	24	65	CITY OF AC	1492/178	6/29/50
52.	24	66	NO	CENTRAL PIER SCHIFF ENTERPRISES 3917/321	5/17/84
53.	25	72	CITY OF AC	423/159	2/7/10
54.	25	73	YES	415/215	11/8/09
55.	25	74	YES	415/186	11/18/10
56.	25	76	CITY OF AC		
57.	25	83	YES	425/128	3/4/10
58.	25	84	YES	423/1	1/19/10
59.	26	42	YES	247/342	8/8/00
60.	26	43	YES	420/71	12/29/09
61.	26	44	YES	602/377 (COPY ENCL)	5/7/19
62.	30	11	YES	248/221	8/8/00
63.	30	12	NO	TISCH HETOLS, INC 2720/251	3/19/73
64.	31	11	CITY OF AC	686/270	7/21/22
65.	31	12	NO	MARLBOROUGH BLENHEIM, CO 734/376	3/4/24
66.	32	16	YES	252/42	12/27/00
67.	32	17	YES	248/221	8/8/00

68.	32	18	NO	T/A SCHIFF ENTERPRISES ABRAHAM M. SCHIFF & ROBERT SCHIFF 3327/207		3/22/79
69.	36	25	YES	248/221		8/7/00
70.	36	26	YES	421/403	2/10/10	
71.	37	57	NO	OCEAN ONE PIER MARTIN SHAMBERG, SAMUEL KATZ, & NATHAN HEYMAN 2418/58		3/28/68
72.	37	58	NO	SEE LOT 57 ABOVE		
73.	37	59	NO	EQUITABLE LIFE ASSURANCE SOCIETY OF US 5744/283	12/22/94	
74.	37	62	YES	423/136		2/4/10
75.	37	63	YES	423/136		2/4/10
76.	38	23	YES	423/136		2/4/10
77.	38	24	YES	423/136		2/4/10
78.	38	25	NO	ROSE L. NEMCOT 1588/498		5/15/52
79.	42	11	CITY OF AC	856/219		1/26/27
80.	42	12	YES	411/480		11/6/09
81.	42	13	YES	411/480		11/6/09
82.	42	14	CITY OF AC	1564/307	11/21/51	
83.	42	15	YES	399/401		4/26/09
84.	43	23	YES	418/187		
85.	43	24	YES	423/144		
86.	43	25	YES			
87.	43	26	YES			
88.	43	27	YES			
89.	43	28	YES			
90.	43	29	YES BLK 43 LOTS 23 THRU 29 SHOW PLAYBOY ENTERPRISES OBTAINED THIS LAND FROM STATE OF NJ (DB 3337/248 ON 4/25/79) UPLAND LOT			

			157 TRANSFERRED TO TRUMP TO ACFH, INC (DB 5365/253 ON 6/3/92) REFERENCE NEXT BLOCK 44 LOT 55 BELONGING TO PLAYBOY		
91.	44	55	NO	269/83	2/7/02
			RIPARIAN GRANT FROM NJ TO WILLIAM BURKARD PLAYBOY ENTERPRISES 3337/248		4/25/79
92.	44	56	YES	270/294	4/14/02
93.	44	57	YES	386/213	2/28/02
94.	48	27	YES	422/139	
95.	48	38	RIPARIAN STATE OF NJ TO CITY OF AC	354/91	2/4/07
96.	48	39	RIPARIAN STATE OF NJ TO CITY OF AC	354/91	2/4/07
97.	49	24	YES	421/1	12/9/09
98.	49	25	YES	421/1	12/9/09
99.	49	26	YES	414/226	11/3/09
100.	C14	11	YES	248/221	8/8/00
101.	C14	12	YES	248/221	8/8/00
102.	C14	13	YES	248/221	8/8/00
103.	C13	2	YES	251/444	12/1/00
104.	C12	12	CITY OF AC	1153/253	12/16/43
105.	C11	7	CITY OF AC	1081/394	10/10/38
106.	C10	8	YES	416/338	12/7/09
107.	C10	9	CITY OF AC	354/91	2/4/07
108.	C26	11	CITY OF AC	411/214	8/30/09
109.	BC01	2	NO GNOC CORP (NOW BALLEY'S GRAND)	3941/174	7/12/84
110.	BC01	6	CITY OF AC	354/91	2/4/07
111.	BC04	6	YES	304/36	5/26/04
112.	BC07	2	CITY OF AC	354/91	12/27/06
113.	BC010	9	CITY OF AC	253/53	11/21/1900

114.	BC011	7	YES	253/58	12/4/00
115.	BC012	15	YES	253/58	12/4/00
116.	BC014	18	YES	253/58	12/4/00
117.	BC016	2	YES	253/58	12/4/00
118.	BC018	2	YES	252/420	12/27/00
119.	BC020	3	CITY OF AC	1147/262	8/27/43
120.	BC020	4	CITY OF AC	1147/262	8/27/43
121.	BC022	2	YES	300/8	2/4/04
122.	BC024	12	CITY OF AC	354/91	2/4/07
123.	BC024	13	CITY OF AC	354/91	2/4/07
124.	BC026	18	CITY OF AC	354/94	
125.	BC026	19	CITY OF AC		
126.	BC028	3	CITY OF AC		
127.	BC028	4	CITY OF AC		
128.	BC030	2	CITY OF AC		
129.	89	1	CITY OF AC		
130.	89	3	CITY OF AC		
131.	89	4	CITY OF AC		
132.	89	9	NO ROBERT HESS 10% JENNETTE SPRINGER 10% KENNETH SPRINGER 10%		12/30/90 ALAN SPRINGER 10% SYD SPRINGER 10% CARMEN RICCI 50%
133.	89	10	CITY OF AC		
134.	89	11	CITY OF AC		
135.	89	20	NO SAME OWNERS AND PRECENTAGE AS BLOCK 89 LOT 9 AS SHOWN ABOVE		12/30/90
136.	89	21	CITY OF AC		
137.	90	2	CITY OF AC		
138.	90	4	CITY OF AC		

139. 95	12	CITY OF AC FINAL JUDGEMENT	1584/176	4/10/52
140. 95	13	CITY OF AC		
141. 95	14	CITY OF AC		
142. 95	15	RIPARIAN STATE OF NJ TO AUGUSTA McALEER	372/349	3/1/1900
143. 95	16	CITY OF AC		
144. 95	17	CITY OF AC		
145. 95	18	NO HACKNEY'S RESTAURANT INC	1114/377	1/3/41
146. 95	19	RIPARIAN	CITY OF AC	
147. 95	20	RIPARIAN	CITY OF AC	
148. 95	21	RIPARIAN	CITY OF AC	
149. 95	22	NO HACKNEY'S RESTAURANT INC	1106/74	7/24/35
150. 95	23	SAME AS BLOCK 95 LOT 22		
151. 95	31	SEE NOTE NOTE: THIS IS THE SITE OF THE FORMER HACKNEY'S RESTAURANT INC. CURRENTLY SHOWN AS TRUPAS & MARAKAS, ACQUIRED FROM DELAWARE VALLEY INVESTMENT COMPANY	5428/313	4/2/93

PROPERTY OWNERS IN CITY OF MARGATE ALONG OCEANFRONT

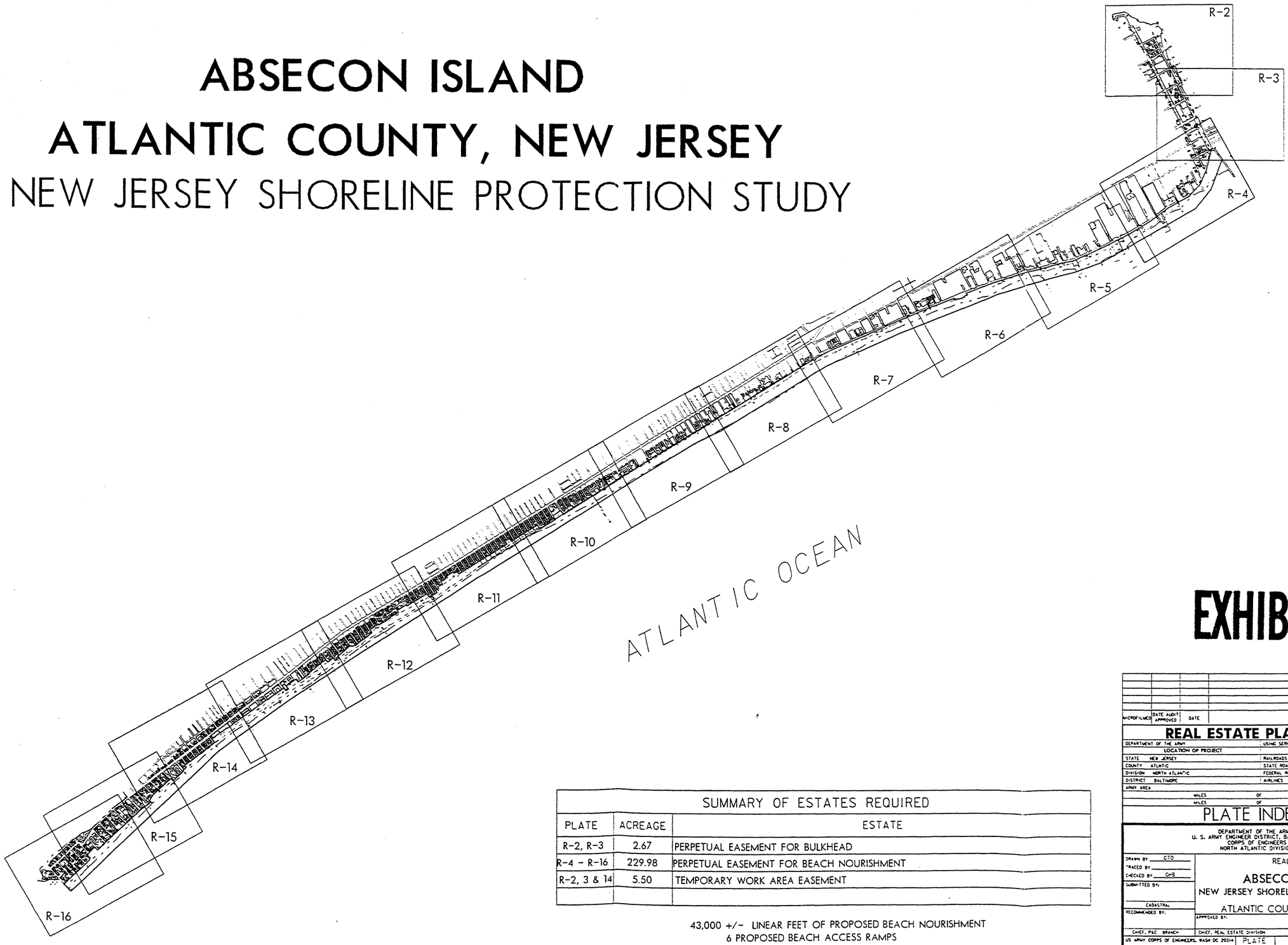
	OWNER	BLOCK	LOT
1.	OSBORNE BEACH CLUB C/O THOMAS OWEN MUNYAN DOROTHY JOHNSTON 8606 VENTNOR AVENUE MARGATE, NEW JERSEY 08402	15 7802 ATLANTIC AVENUE MARGATE, NJ	9
2.	SHELDON AND CONNIE BLANK 64 BOUCHER DRIVE HUNTINGTON VALLEY, PA 19006	15 120 S. NASSAU AVENUE MARGATE, NJ	19

3. ALL OTHER PROPERTIES OCEANSIDE OF THE BULKHEAD ARE OWNED IN FEE SIMPLE TITLE BY THE CITY OF MARGATE ACCORDING TO CITY ATTORNEY - DAVID FITZSIMONS (609)641-7559

CORPS OF ENGINEERS

U. S. ARMY

ABSECON ISLAND
ATLANTIC COUNTY, NEW JERSEY
NEW JERSEY SHORELINE PROTECTION STUDY



SUMMARY OF ESTATES REQUIRED		
PLATE	ACREAGE	ESTATE
R-2, R-3	2.67	PERPETUAL EASEMENT FOR BULKHEAD
R-4 - R-16	229.98	PERPETUAL EASEMENT FOR BEACH NOURISHMENT
R-2, 3 & 14	5.50	TEMPORARY WORK AREA EASEMENT

43,000 +/- LINEAR FEET OF PROPOSED BEACH NOURISHMENT
6 PROPOSED BEACH ACCESS RAMPS

EXHIBIT B

MICROFILMED | DATE AUDIT APPROVED | DATE | REVISIONS (READ UP) | BY

REAL ESTATE PLANNING MAP

DEPARTMENT OF THE ARMY | USING SERVICE

LOCATION OF PROJECT | TRANSPORTATION FACILITIES

STATE NEW JERSEY | RAILROADS

COUNTY ATLANTIC | STATE ROADS

DIVISION NORTH ATLANTIC | FEDERAL ROADS

DISTRICT BALTIMORE | AIRLINES

ARMY AREA

MILES OF

MILES OF

PLATE INDEX

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, BALTIMORE
CORPS OF ENGINEERS
NORTH ATLANTIC DIVISION

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RECOMMENDED BY:
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REAL ESTATE

ABSECON ISLAND
NEW JERSEY SHORELINE PROTECTION STUDY

ATLANTIC COUNTY, NEW JERSEY

APPROVED BY:
CHIEF, REAL ESTATE DIVISION
DATE 4 DEC. 1995

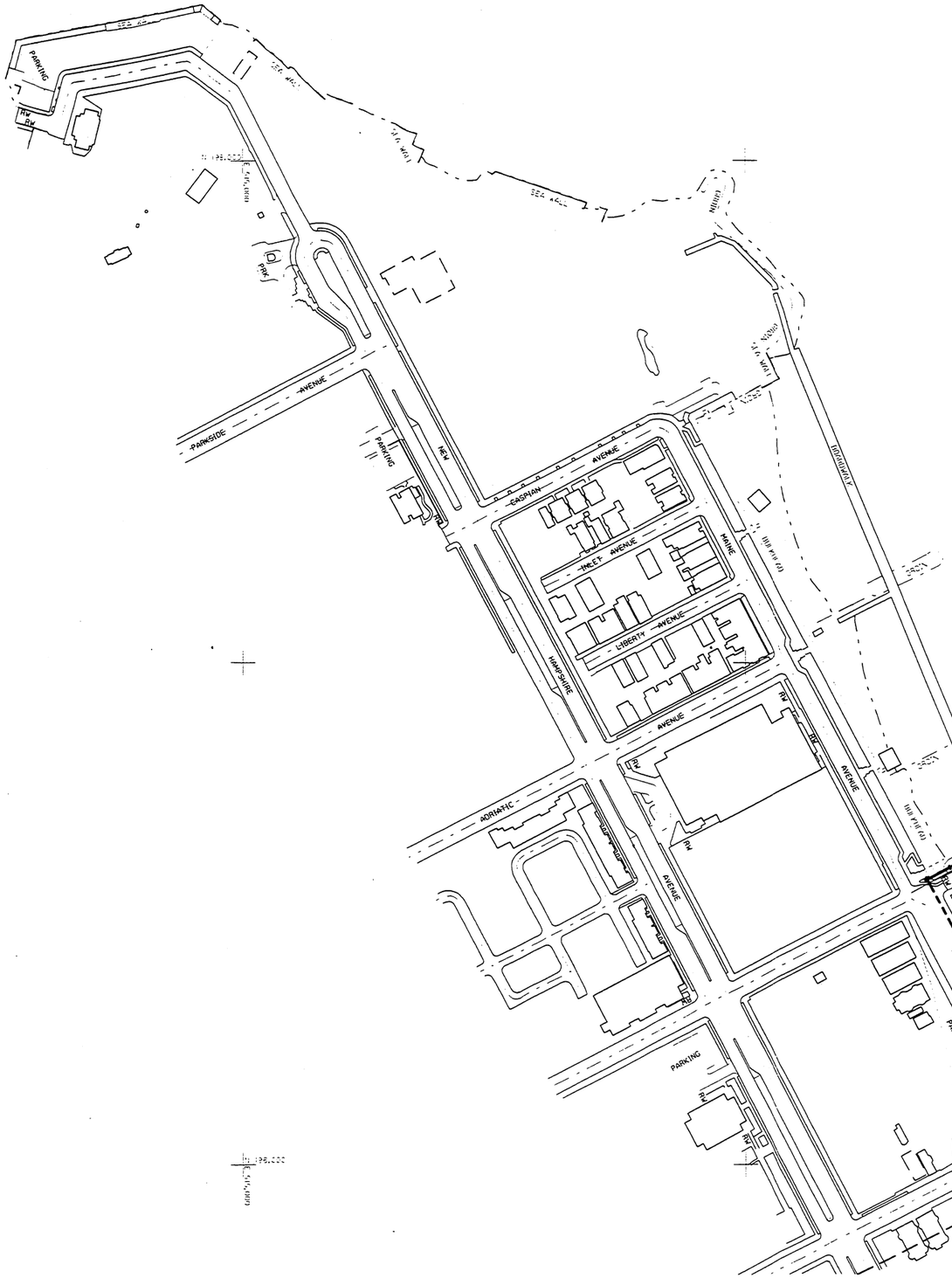
US ARMY CORPS OF ENGINEERS, WASH DC 20314

INSTALLATION OR PROJECT NO.

PLATE R-1

SCALE IN FEET
NOT TO SCALE

SHEET 1 OF 16 | DRAWING NO.



LEGEND

0.67 AC. PERPETUAL EASEMENT BULKHEAD

1.16 AC. TEMPORARY WORK AREA EASEMENT

MICROFILMED	DATE AUDIT APPROVED	DATE	REVISIONS (READ UP)	BY

REAL ESTATE PLANNING MAP

DEPARTMENT OF THE ARMY	USING SERVICE
LOCATION OF PROJECT	TRANSPORTATION FACILITIES
STATE NEW JERSEY	RAILROADS
COUNTY ATLNTIC	STATE ROADS
DIVISION NORTH ATLANTIC	FEDERAL ROADS
DISTRICT BALTIMORE	AIRLINES
ARMY AREA	
MILES	OF
MILES	OF

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, BALTIMORE
CORPS OF ENGINEERS
NORTH ATLANTIC DIVISION

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ABSECON ISLAND
NEW JERSEY SHORELINE PROTECTION STUDY

ATLANTIC COUNTY, NEW JERSEY

APPROVED BY:
DATE 4 DEC. 1995
CHIEF, REAL ESTATE DIVISION

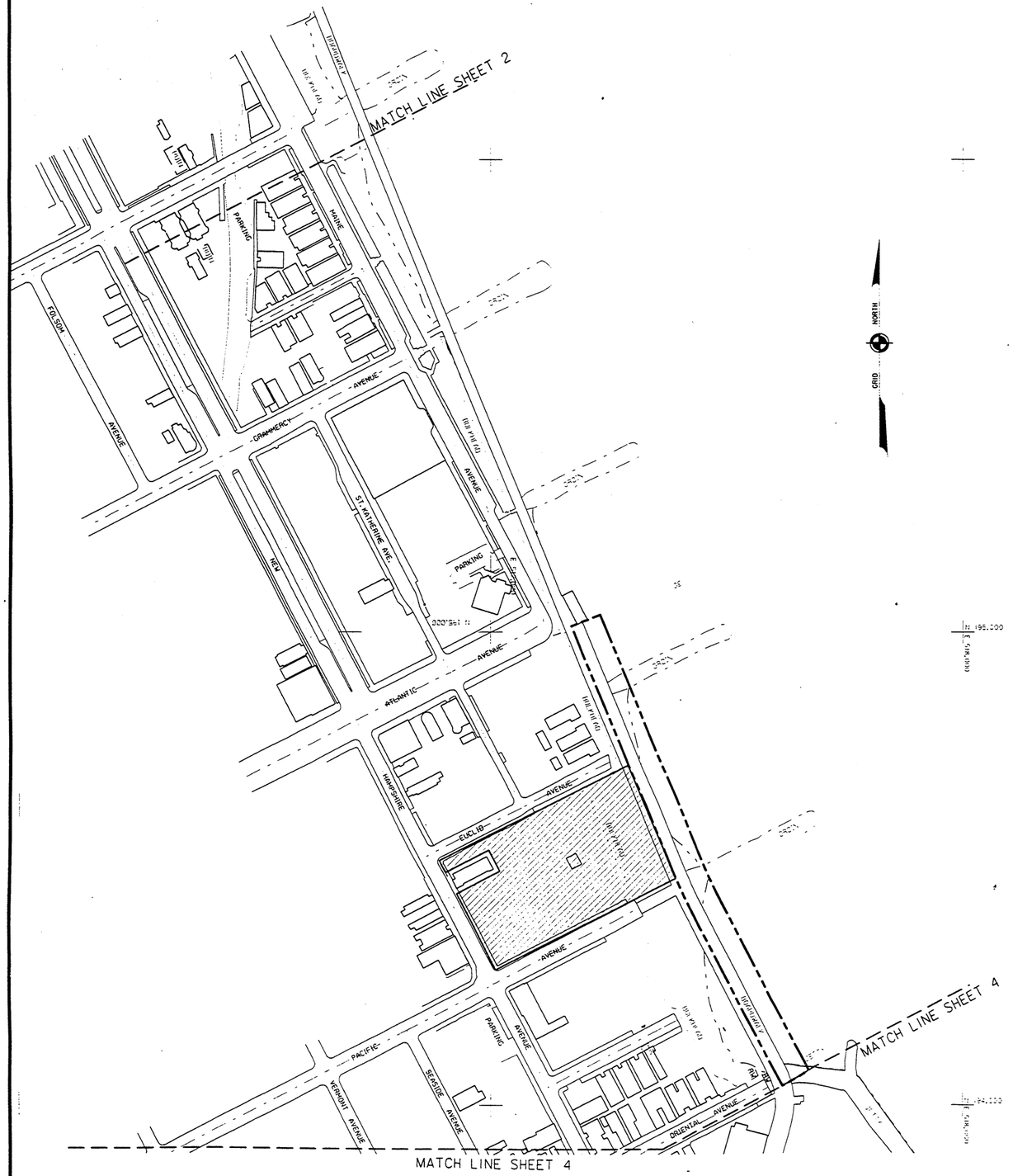
US ARMY CORPS OF ENGINEERS, WASH DC 20314

PLATE R-2

SCALE IN FEET 100 50 0 100 200

INSTALLATION OR PROJECT NO.

SHEET 2 OF 16 DRAWING NO.



LEGEND

2.00 AC. PERPETUAL EASEMENT BULKHEAD

2.45 AC. TEMPORARY WORK AREA EASEMENT

MICROFILMED	DATE AUDIT APPROVED	DATE	REVISIONS (READ UP)	BY

REAL ESTATE PLANNING MAP

DEPARTMENT OF THE ARMY	USING SERVICE
LOCATION OF PROJECT	TRANSPORTATION FACILITIES
STATE NEW JERSEY	RAILROADS
COUNTY ATLNTIC	STATE ROADS
DIVISION NORTH ATLANTIC	FEDERAL ROADS
DISTRICT BALTIMORE	AIRLINES
ARMY AREA	
MILES OF	
MILES OF	

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, BALTIMORE
CORPS OF ENGINEERS
NORTH ATLANTIC DIVISION

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NEW JERSEY SHORELINE PROTECTION STUDY

ATLANTIC COUNTY, NEW JERSEY

APPROVED BY:
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US ARMY CORPS OF ENGINEERS, WASH DC 20314

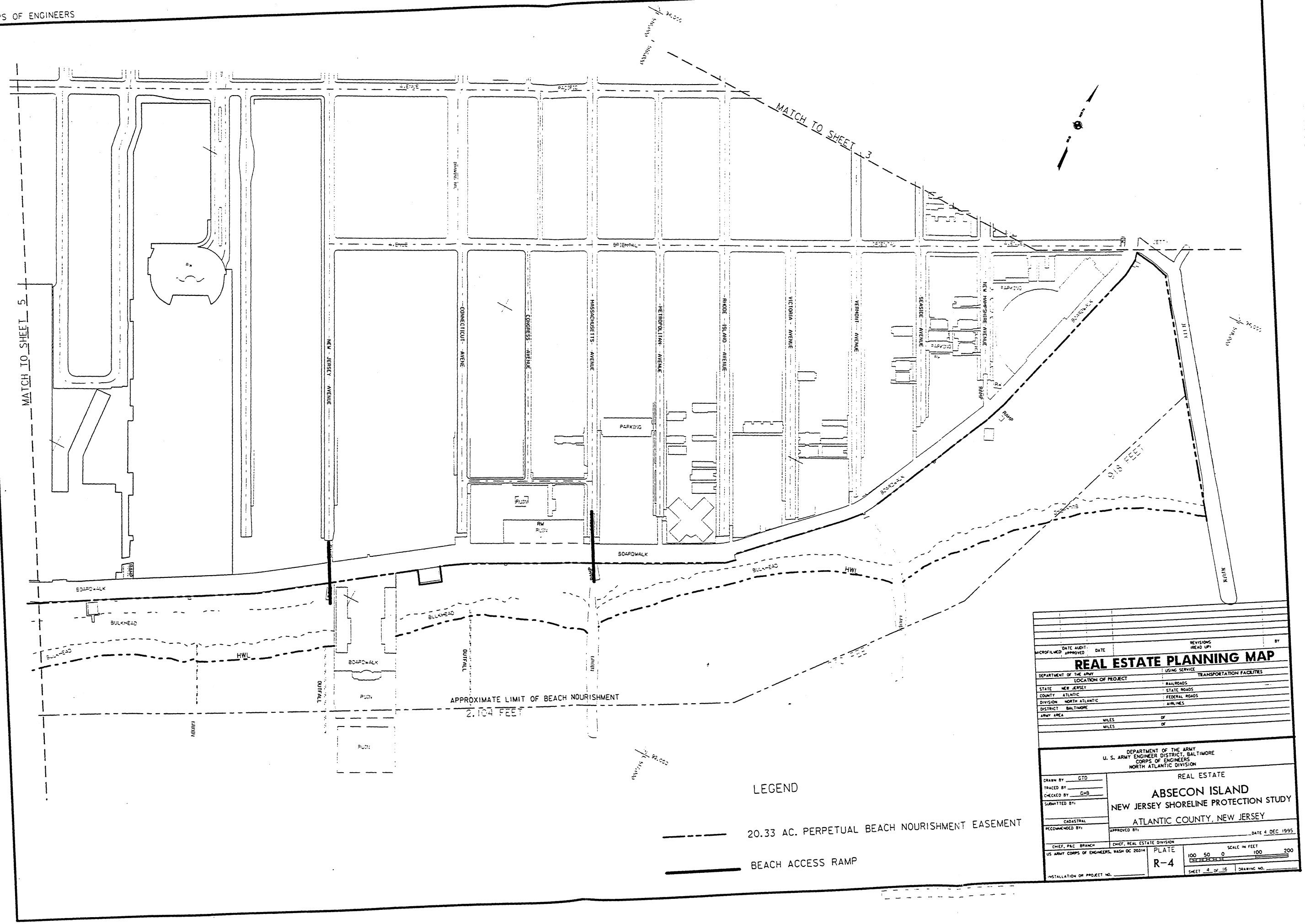
PLATE R-3

SCALE IN FEET
100 50 0 100 200

INSTALLATION OR PROJECT NO.

SHEET 3 OF 16 DRAWING NO.

CORPS OF ENGINEERS



LEGEND

20.33 AC. PERPETUAL BEACH NOURISHMENT EASEMENT

BEACH ACCESS RAMP

DATE AUDIT: MICROFILMED APPROVED DATE

REVISIONS (READ UP) BY

REAL ESTATE PLANNING MAP

DEPARTMENT OF THE ARMY
LOCATION OF PROJECT
STATE NEW JERSEY
COUNTY ATLANTIC
DIVISION NORTH ATLANTIC
DISTRICT BALTIMORE
ARMY AREA
MILES OF
MILES OF

USING SERVICE — TRANSPORTATION FACILITIES
RAILROADS
STATE ROADS
FEDERAL ROADS
AIRLINES

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U. S. ARMY ENGINEER DISTRICT, BALTIMORE
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NEW JERSEY SHORELINE PROTECTION STUDY

ATLANTIC COUNTY, NEW JERSEY

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PLATE R-4

SCALE IN FEET 100 50 0 100 200

SHEET 4 OF 16 DRAWING NO.

LEGEND

24.49 AC. PERPETUAL BEACH NOURISHMENT EASEMENT

BEACH ACCESS RAMP

MICROFILMED	DATE AUDIT APPROVED	DATE	REVISIONS (READ UP)	BY

REAL ESTATE PLANNING MAP

DEPARTMENT OF THE ARMY	USING SERVICE
LOCATION OF PROJECT	TRANSPORTATION FACILITIES
STATE NEW JERSEY	RAILROADS
COUNTY ATLANTIC	STATE ROADS
DIVISION NORTH ATLANTIC	FEDERAL ROADS
DISTRICT BALTIMORE	AIRLINES
ARMY AREA	
MILES	OF
MILES	OF

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, BALTIMORE
CORPS OF ENGINEERS
NORTH ATLANTIC DIVISION

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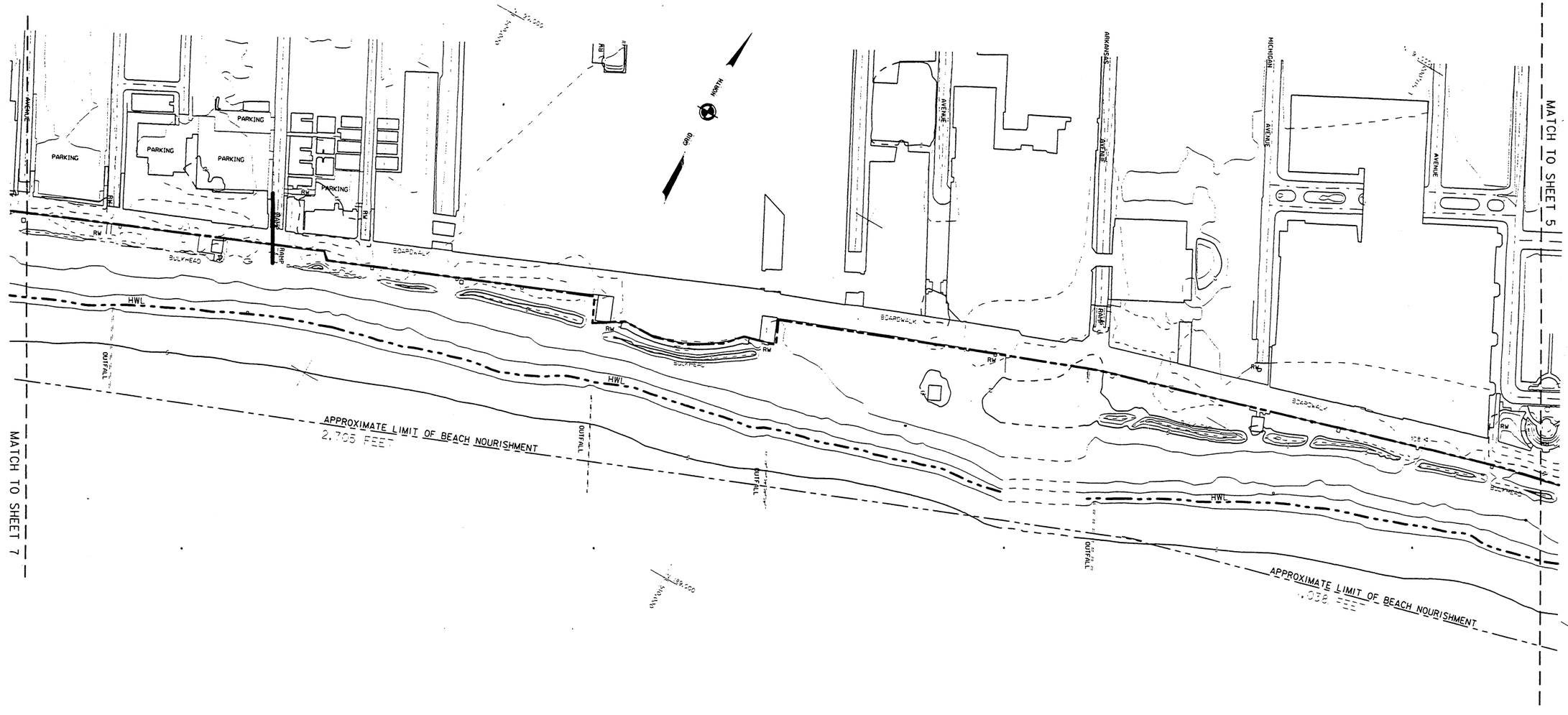
US ARMY CORPS OF ENGINEERS, WASH DC 20314
INSTALLATION OR PROJECT NO.

PLATE R-5

SCALE IN FEET
100 50 0 100 200

SHEET 5 OF 16 DRAWING NO.



LEGEND

18.84 AC. PERPETUAL BEACH NOURISHMENT EASEMENT

BEACH ACCESS RAMP

MICROFILMED	DATE AUDIT APPROVED	DATE	REVISIONS (READ UP)	BY

REAL ESTATE PLANNING MAP

DEPARTMENT OF THE ARMY	USING SERVICE
LOCATION OF PROJECT	TRANSPORTATION FACILITIES
STATE NEW JERSEY	RAILROADS
COUNTY ATLANTIC	STATE ROADS
DIVISION NORTH ATLANTIC	FEDERAL ROADS
DISTRICT BALTIMORE	AIRLINES
ARMY AREA	
MILES	OF
MILES	OF

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U. S. ARMY ENGINEER DISTRICT, BALTIMORE
CORPS OF ENGINEERS
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ATLANTIC COUNTY, NEW JERSEY

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DATE 4 DEC. 1995
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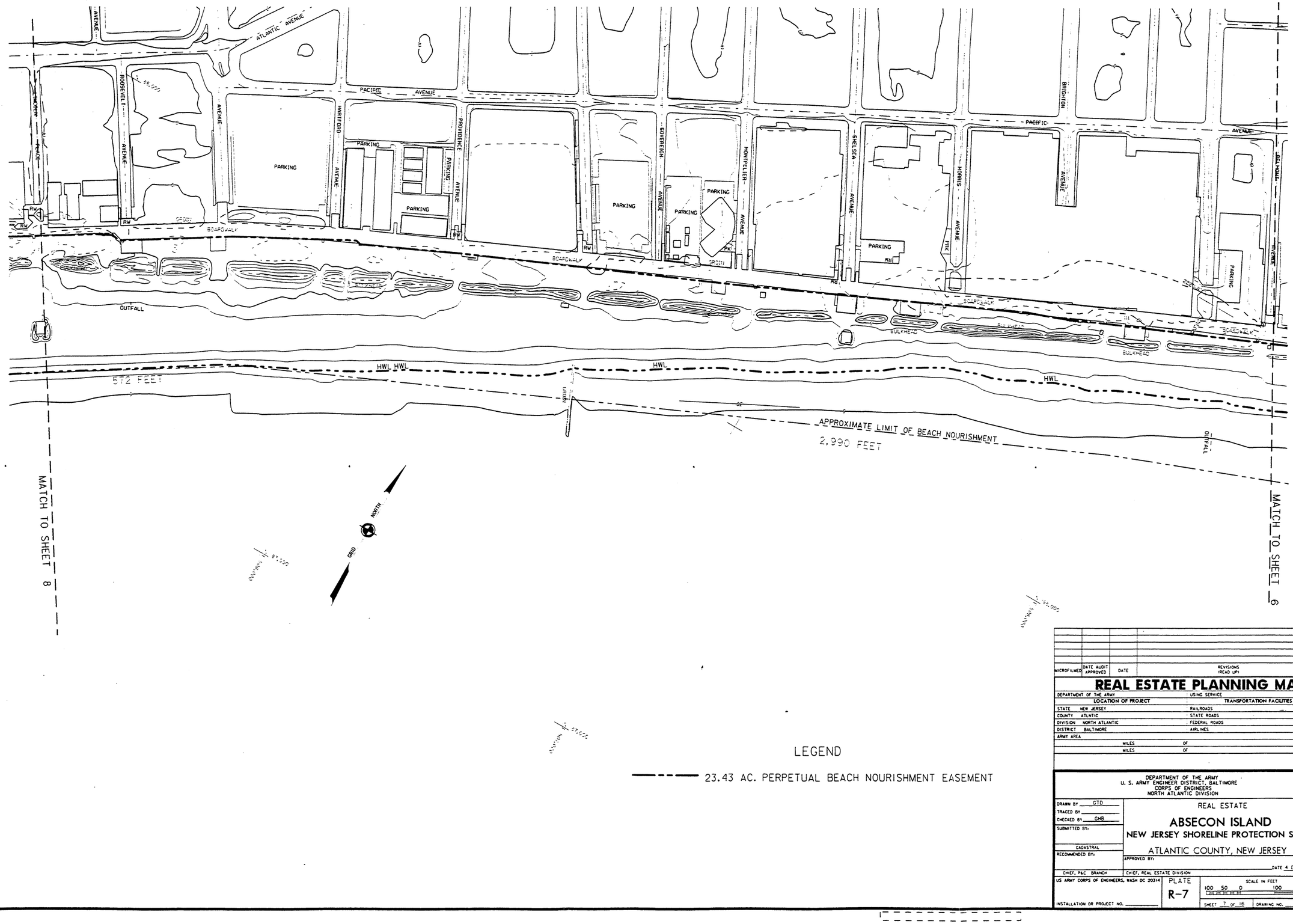
US ARMY CORPS OF ENGINEERS, WASH DC 20314

PLATE R-6

SCALE IN FEET
100 50 0 100 200

INSTALLATION OR PROJECT NO.

SHEET 6 OF 16 DRAWING NO.



LEGEND

23.43 AC. PERPETUAL BEACH NOURISHMENT EASEMENT

MICROFILMED	DATE AUDIT APPROVED	DATE	REVISIONS (READ UP)	BY

REAL ESTATE PLANNING MAP

DEPARTMENT OF THE ARMY	USING SERVICE
LOCATION OF PROJECT	TRANSPORTATION FACILITIES
STATE NEW JERSEY	RAILROADS
COUNTY ATLANTIC	STATE ROADS
DIVISION NORTH ATLANTIC	FEDERAL ROADS
DISTRICT BALTIMORE	AIRLINES
ARMY AREA	
MILES	OF
MILES	OF

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, BALTIMORE
CORPS OF ENGINEERS
NORTH ATLANTIC DIVISION

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US ARMY CORPS OF ENGINEERS, WASH DC 20314

PLATE R-7

SCALE IN FEET 100 50 0 100 200

INSTALLATION OR PROJECT NO.

SHEET 7 OF 16 DRAWING NO.

MICROFILMED	DATE AUDIT APPROVED	DATE	REVISIONS (READ UP)	BY

REAL ESTATE PLANNING MAP

DEPARTMENT OF THE ARMY
USING SERVICE

LOCATION OF PROJECT
STATE NEW JERSEY
COUNTY ATLNTIC
DIVISION NORTH ATLANTIC
DISTRICT BALTIMORE
ARMY AREA

TRANSPORTATION FACILITIES
RAILROADS
STATE ROADS
FEDERAL ROADS
AIRLINES

MILES OF
MILES OF

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, BALTIMORE
CORPS OF ENGINEERS
NORTH ATLANTIC DIVISION

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NEW JERSEY SHORELINE PROTECTION STUDY
ATLANTIC COUNTY, NEW JERSEY

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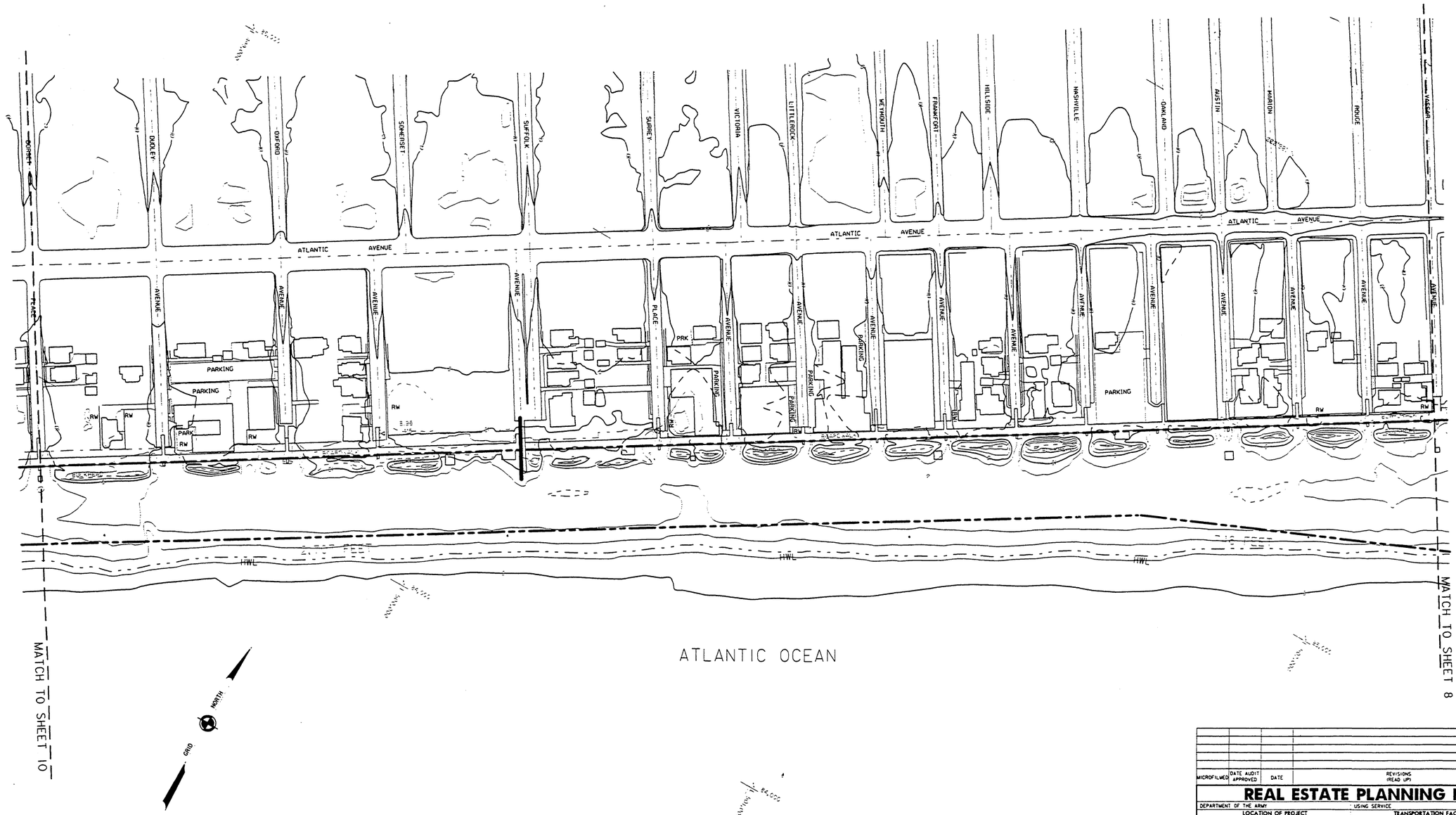
DATE 4 DEC. 1995

US ARMY CORPS OF ENGINEERS, WASH DC 20314
INSTALLATION OR PROJECT NO.

PLATE R-8

SCALE IN FEET
100 50 0 100 200

SHEET 8 OF 16 DRAWING NO.



LEGEND

17.28 AC. PERPETUAL BEACH NOURISHMENT EASEMENT

BEACH ACCESS RAMP

MICROFILMED	DATE AUDIT APPROVED	DATE	REVISIONS (READ UP)	BY

REAL ESTATE PLANNING MAP

DEPARTMENT OF THE ARMY	USING SERVICE
LOCATION OF PROJECT	TRANSPORTATION FACILITIES
STATE NEW JERSEY	RAILROADS
COUNTY ATLNTIC	STATE ROADS
DIVISION NORTH ATLANTIC	FEDERAL ROADS
DISTRICT BALTIMORE	AIRLINES
ARMY AREA	
MILES	OF
MILES	OF

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, BALTIMORE
CORPS OF ENGINEERS
NORTH ATLANTIC DIVISION

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TRACED BY
CHECKED BY GMB
SUBMITTED BY:
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ABSECON ISLAND
NEW JERSEY SHORELINE PROTECTION STUDY

ATLANTIC COUNTY, NEW JERSEY

APPROVED BY:
DATE 4 DEC 1995
CHIEF, REAL ESTATE DIVISION

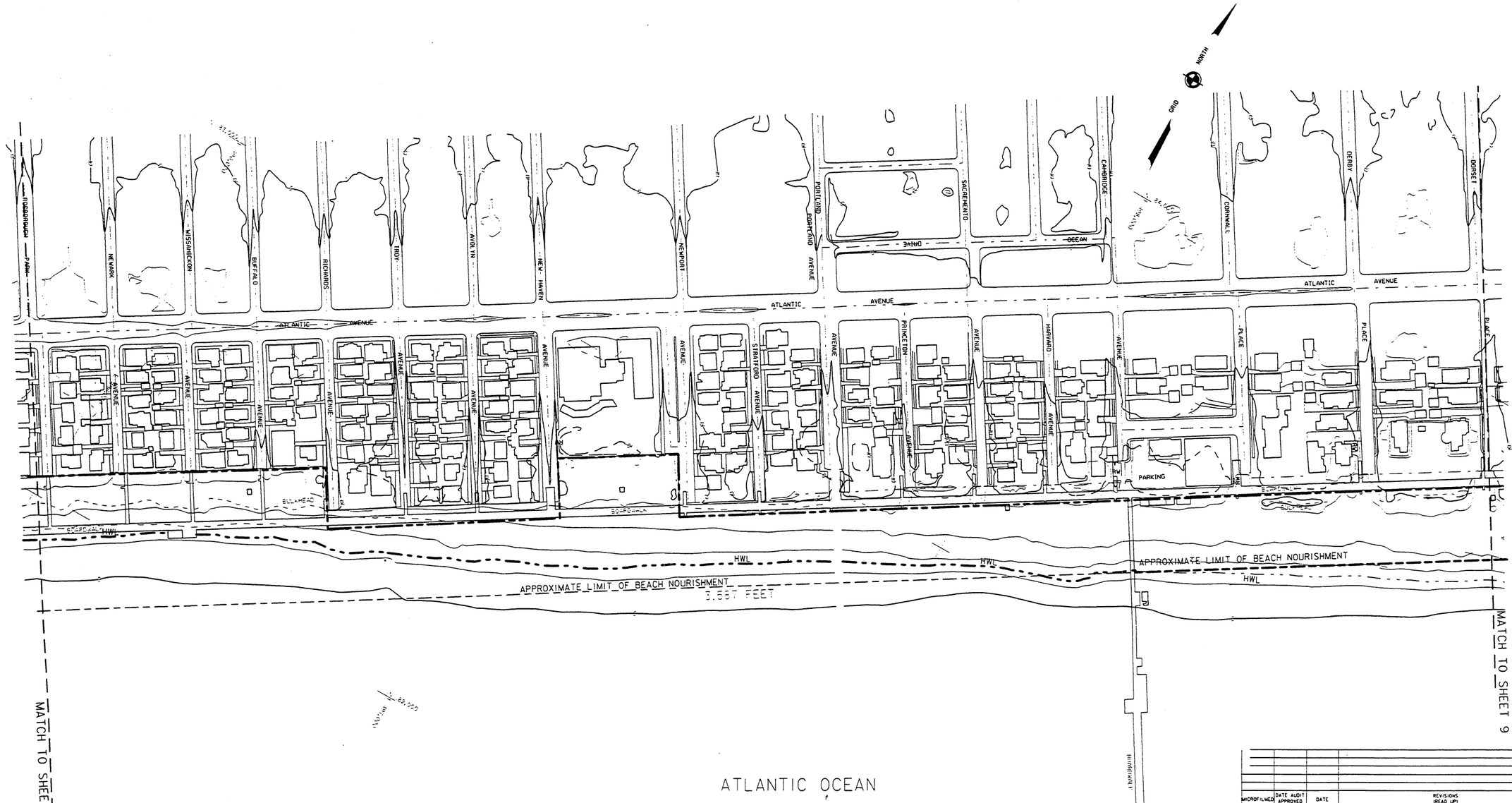
US ARMY CORPS OF ENGINEERS, WASH DC 20314

PLATE R-9

SCALE IN FEET
100 50 0 100 200

INSTALLATION OR PROJECT NO.

SHEET 9 OF 16 DRAWING NO.



MICROFILMED	DATE AUDIT APPROVED	DATE	REVISIONS (READ UP)	BY

REAL ESTATE PLANNING MAP

DEPARTMENT OF THE ARMY	USING SERVICE
LOCATION OF PROJECT	TRANSPORTATION FACILITIES
STATE NEW JERSEY	RAILROADS
COUNTY ATLNTIC	STATE ROADS
DIVISION NORTH ATLANTIC	FEDERAL ROADS
DISTRICT BALTIMORE	AIRLINES
ARMY AREA	
MILES	OF
MILES	OF

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, BALTIMORE
CORPS OF ENGINEERS
NORTH ATLANTIC DIVISION

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NEW JERSEY SHORELINE PROTECTION STUDY

ATLANTIC COUNTY, NEW JERSEY

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CHIEF, REAL ESTATE DIVISION

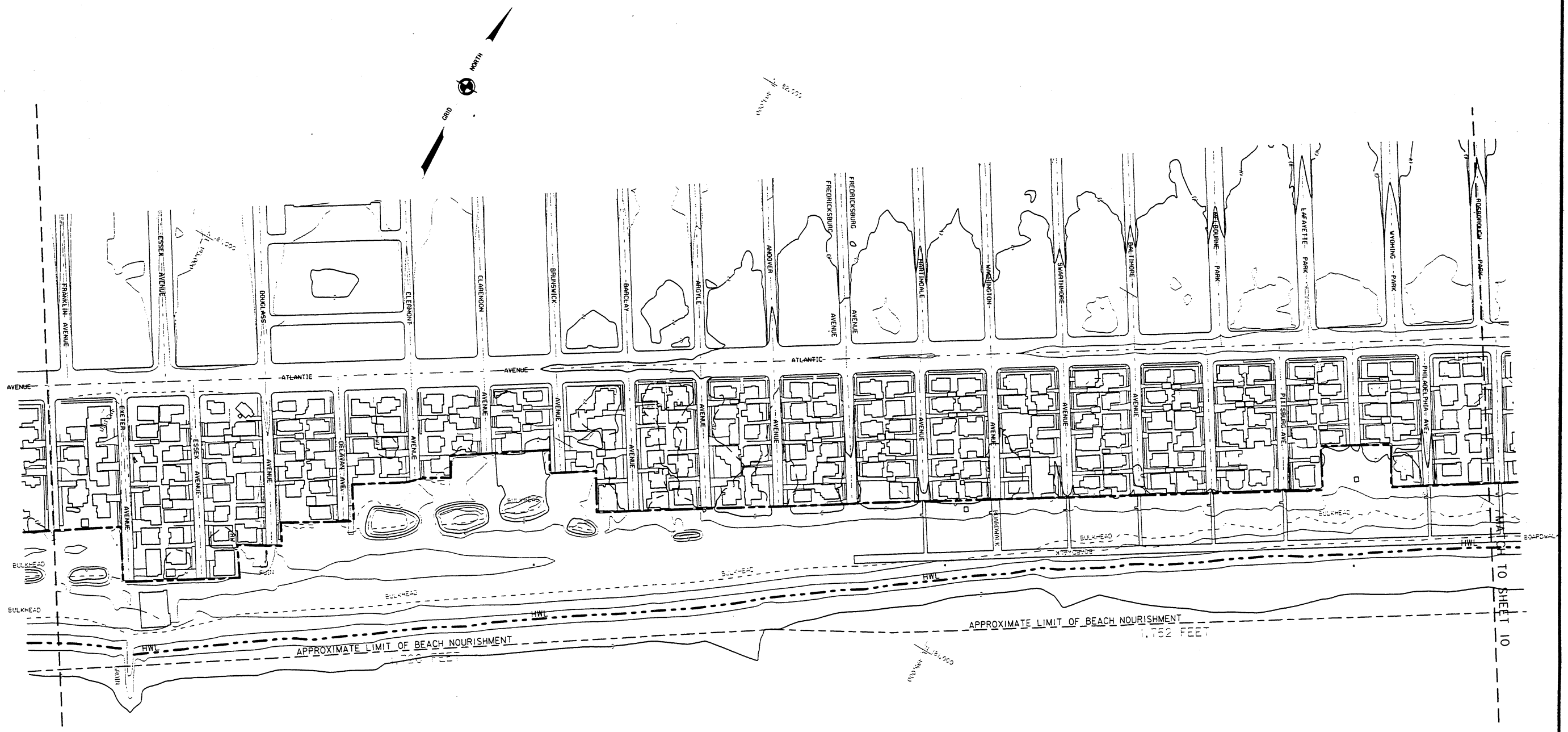
US ARMY CORPS OF ENGINEERS, WASH DC 20314

PLATE R-10

SCALE IN FEET
100 50 0 100 200

INSTALLATION OR PROJECT NO.

SHEET 10 OF 18 DRAWING NO.



LEGEND

18.65 AC. PERPETUAL BEACH NOURISHMENT EASEMENT

MICROFILMED	DATE AUDIT APPROVED	DATE	REVISIONS (READ UP)	BY

REAL ESTATE PLANNING MAP

DEPARTMENT OF THE ARMY	USING SERVICE
LOCATION OF PROJECT	TRANSPORTATION FACILITIES
STATE NEW JERSEY	RAILROADS
COUNTY ATLNTIC	STATE ROADS
DIVISION NORTH ATLANTIC	FEDERAL ROADS
DISTRICT BALTIMORE	AIRLINES
ARMY AREA	
MILES	OF
MILES	OF

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, BALTIMORE
CORPS OF ENGINEERS
NORTH ATLANTIC DIVISION

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RECOMMENDED BY:
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ABSECON ISLAND
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ATLANTIC COUNTY, NEW JERSEY

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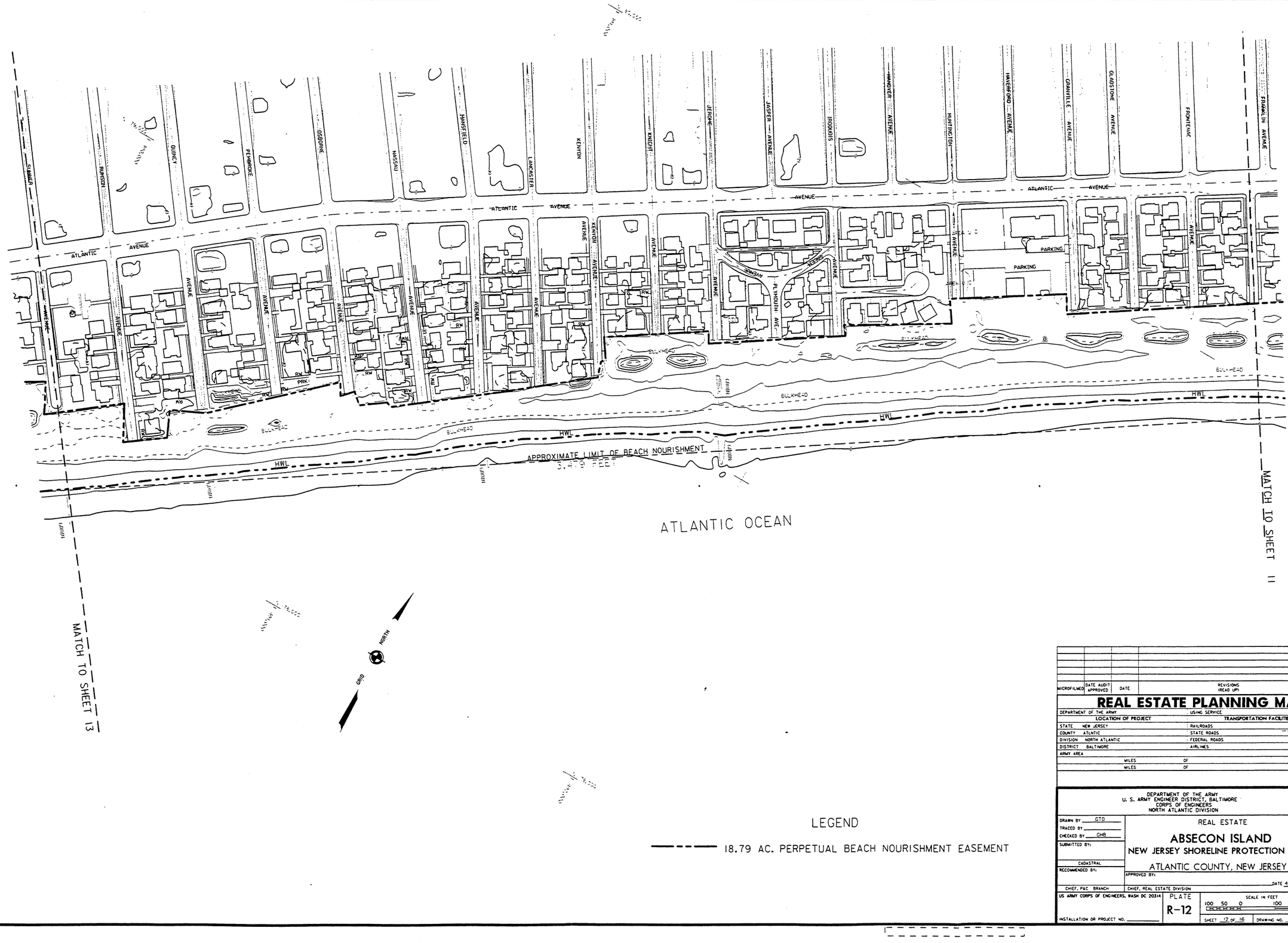
DATE 4 DEC. 1995
CHIEF, REAL ESTATE DIVISION

US ARMY CORPS OF ENGINEERS, WASH DC 20314
INSTALLATION OR PROJECT NO.

PLATE R-11

SCALE IN FEET: 100 50 0 100 200

SHEET 11 OF 16 DRAWING NO.



LEGEND

——— 18.79 AC. PERPETUAL BEACH NOURISHMENT EASEMENT

MICROFILMED	DATE AUDIT APPROVED	DATE	REVISIONS (READ UP)	BY

REAL ESTATE PLANNING MAP

DEPARTMENT OF THE ARMY

LOCATION OF PROJECT

STATE NEW JERSEY
COUNTY ATLNTIC
DIVISION NORTH ATLANTIC
DISTRICT BALTIMORE
ARMY AREA
MILES OF
MILES OF

USING SERVICE

TRANSPORTATION FACILITIES

RAILROADS
STATE ROADS
FEDERAL ROADS
AIRLINES

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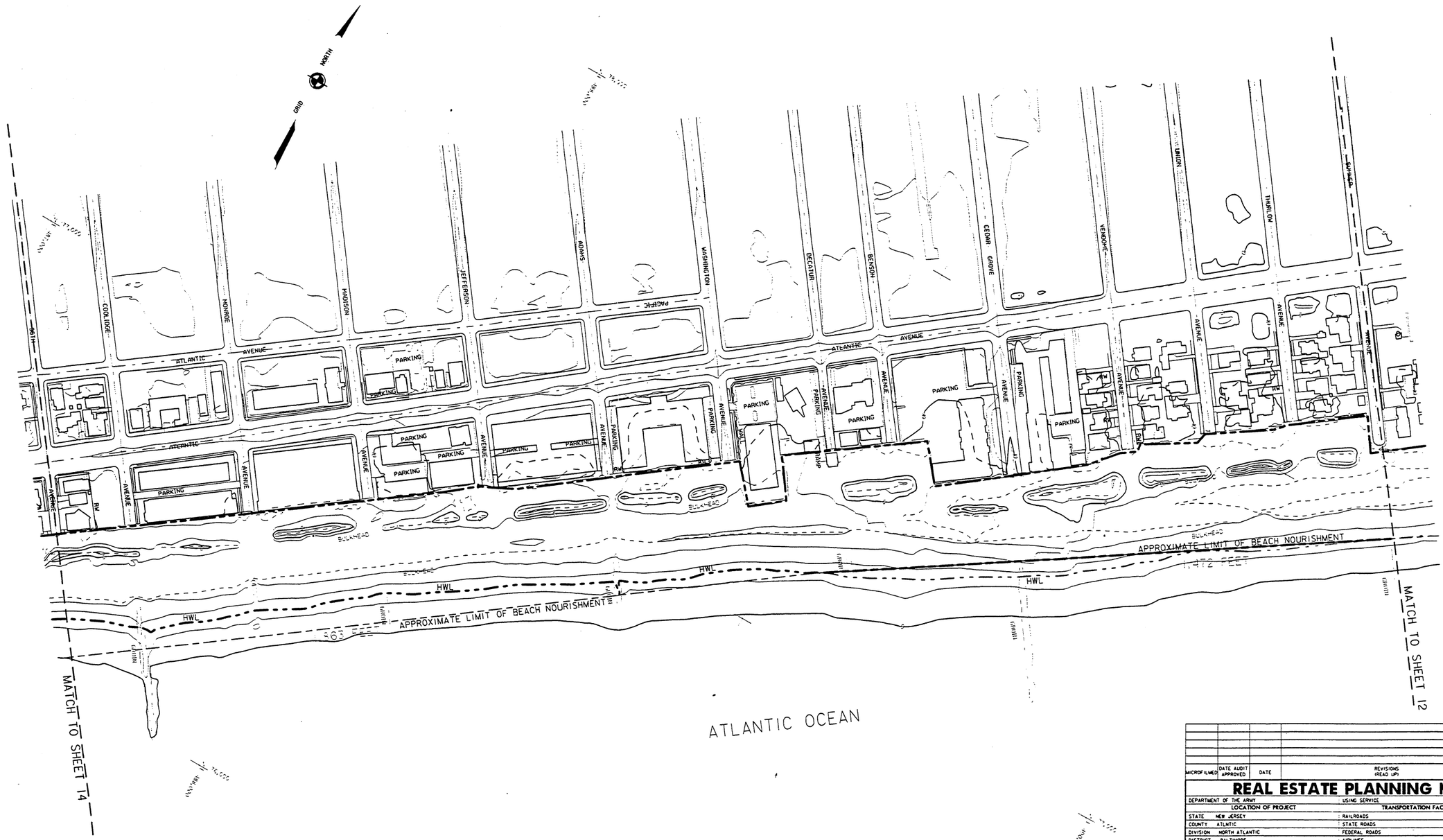
US ARMY CORPS OF ENGINEERS, WASH DC 20314

INSTALLATION OR PROJECT NO.

PLATE R-12

SCALE IN FEET
100 50 0 100 200

SHEET 12 OF 16 DRAWING NO.



LEGEND

19.93 AC. PERPETUAL BEACH NOURISHMENT EASEMENT

MICROFILMED	DATE AUDIT APPROVED	DATE	REVISIONS (READ UP)	BY

REAL ESTATE PLANNING MAP

DEPARTMENT OF THE ARMY	USING SERVICE
LOCATION OF PROJECT	TRANSPORTATION FACILITIES
STATE NEW JERSEY	RAILROADS
COUNTY ATLNTIC	STATE ROADS
DIVISION NORTH ATLANTIC	FEDERAL ROADS
DISTRICT BALTIMORE	AIRLINES
ARMY AREA	
MILES	OF
MILES	OF

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, BALTIMORE
CORPS OF ENGINEERS
NORTH ATLANTIC DIVISION

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NEW JERSEY SHORELINE PROTECTION STUDY

ATLANTIC COUNTY, NEW JERSEY

APPROVED BY:
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US ARMY CORPS OF ENGINEERS, WASH DC 20314

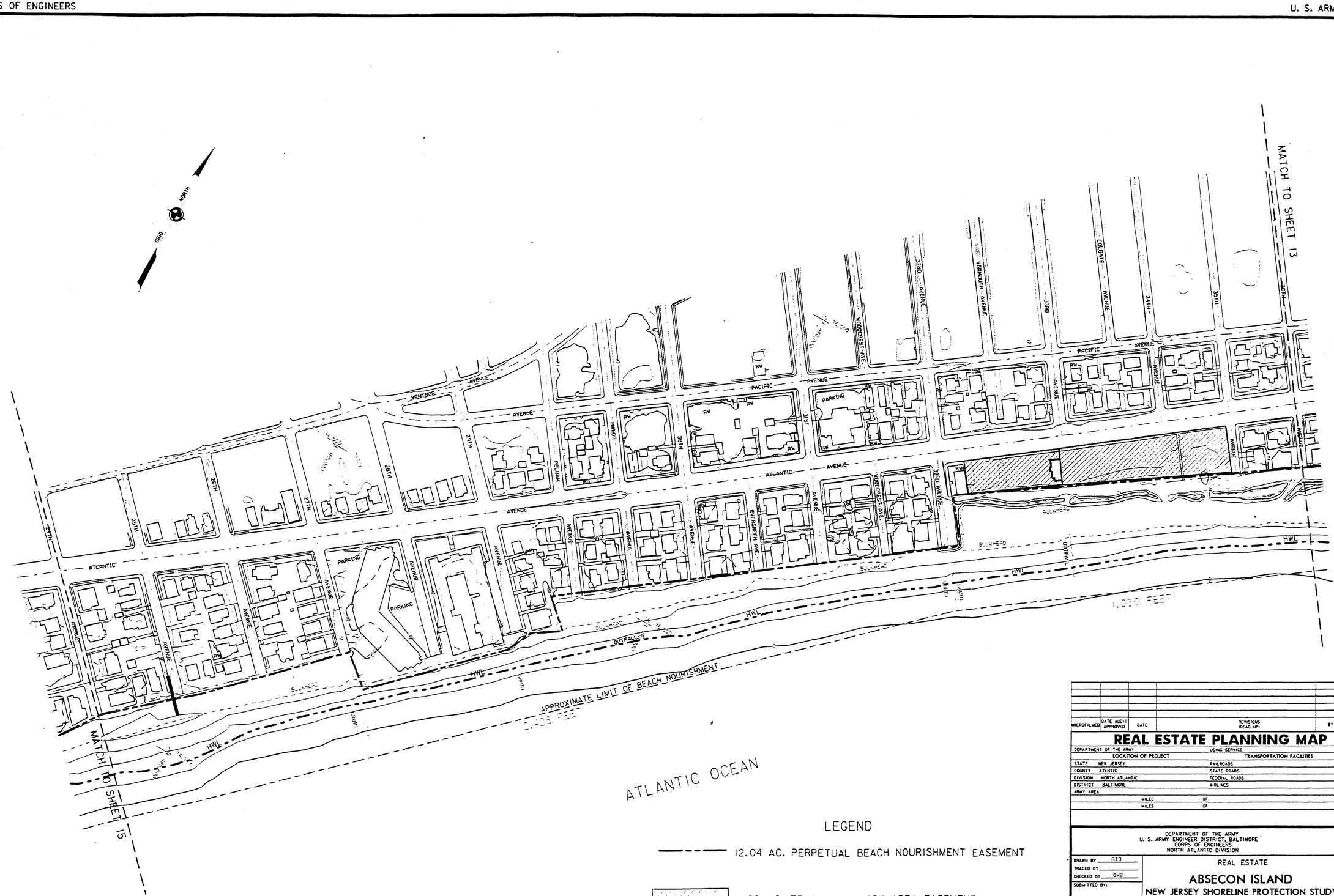
PLATE R-13

SCALE IN FEET
100 50 0 100 200

SHEET 13 OF 16

INSTALLATION OR PROJECT NO.

DRAWING NO.



LEGEND

12.04 AC. PERPETUAL BEACH NOURISHMENT EASEMENT

1.89 AC. TEMPORARY WORK AREA EASEMENT

BEACH ACCESS RAMP

MICROFILMED	DATE AUDIT APPROVED	DATE	REVISIONS (READ UP)	BY

REAL ESTATE PLANNING MAP

DEPARTMENT OF THE ARMY — USING SERVICE

LOCATION OF PROJECT — TRANSPORTATION FACILITIES

STATE	NEW JERSEY	RAILROADS
COUNTY	ATLNTIC	STATE ROADS
DIVISION	NORTH ATLANTIC	FEDERAL ROADS
DISTRICT	BALTIMORE	AIRLINES
ARMY AREA		
	MILES	OF
	MILES	OF

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U. S. ARMY ENGINEER DISTRICT, BALTIMORE
CORPS OF ENGINEERS
NORTH ATLANTIC DIVISION

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NEW JERSEY SHORELINE PROTECTION STUDY
ATLANTIC COUNTY, NEW JERSEY

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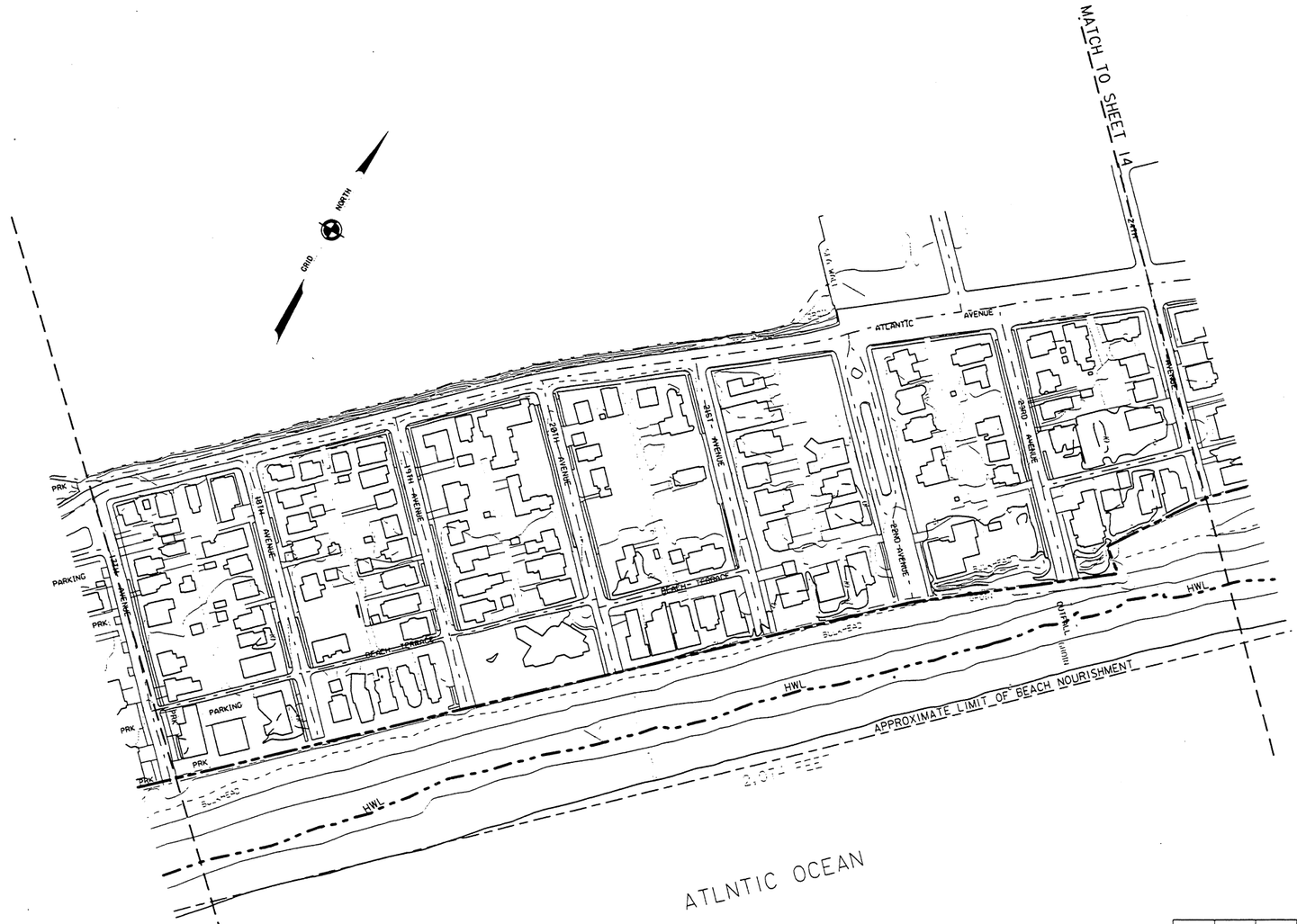
DATE 8 DEC. 1995

US ARMY CORPS OF ENGINEERS, WASH DC 20314
INSTALLATION OR PROJECT NO.

PLATE R-14

SCALE IN FEET
100 50 0 100 200

SHEET 14 OF 16 DRAWING NO.



LEGEND

5.94 AC. PERPETUAL BEACH NOURISHMENT EASEMENT

MICROFILMED	DATE AUDIT APPROVED	DATE	REVISIONS (READ UP)	BY

REAL ESTATE PLANNING MAP

DEPARTMENT OF THE ARMY
LOCATION OF PROJECT
STATE NEW JERSEY
COUNTY ATLANTIC
DIVISION NORTH ATLANTIC
DISTRICT BALTIMORE
ARMY AREA
MILES OF
MILES OF

USING SERVICE
TRANSPORTATION FACILITIES
RAILROADS —
STATE ROADS
FEDERAL ROADS
AIRLINES

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U. S. ARMY ENGINEER DISTRICT, BALTIMORE
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NORTH ATLANTIC DIVISION

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CHECKED BY CHB
SUBMITTED BY:
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RECOMMENDED BY:
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NEW JERSEY SHORELINE PROTECTION STUDY

ATLANTIC COUNTY, NEW JERSEY

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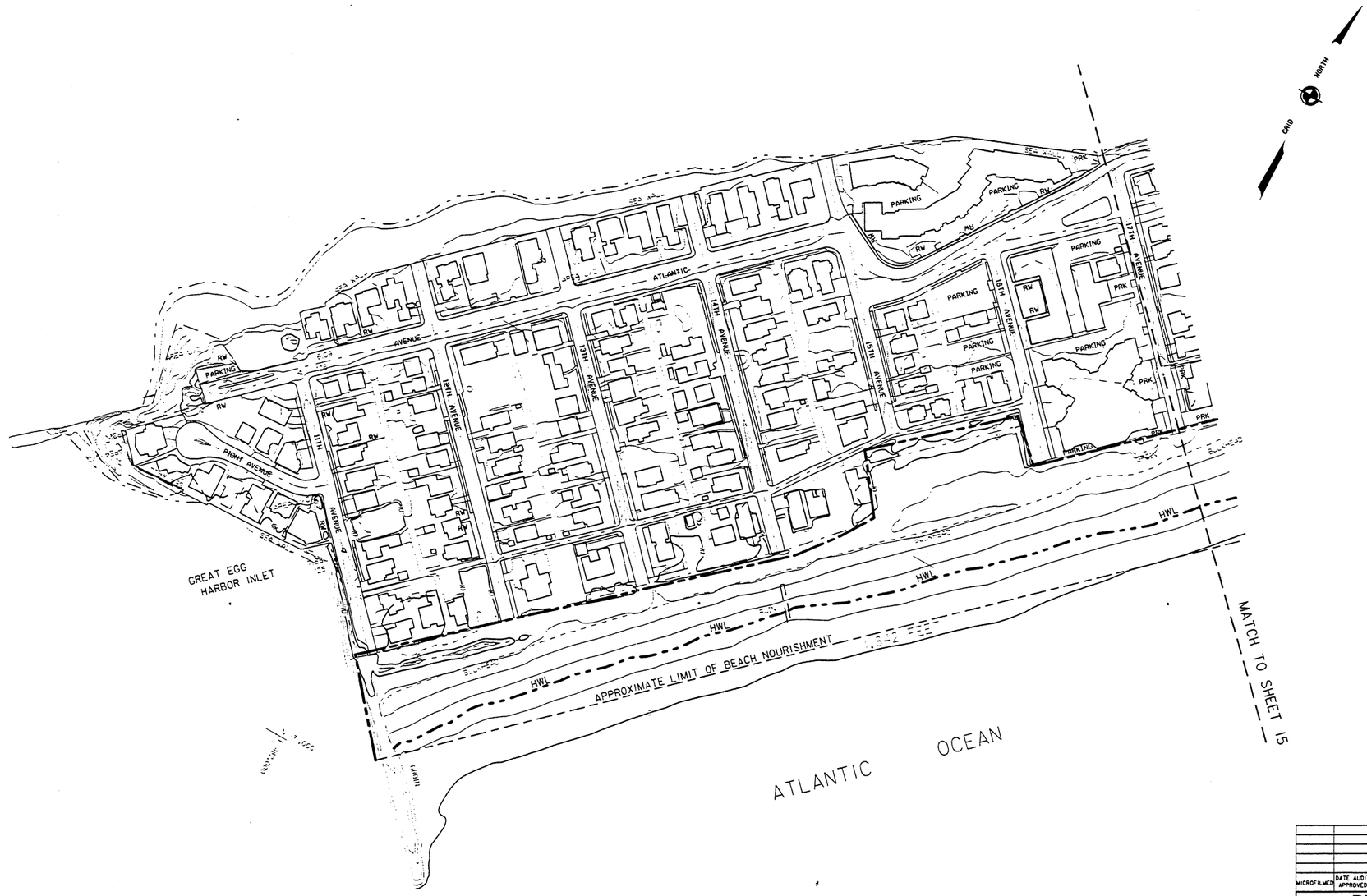
US ARMY CORPS OF ENGINEERS, WASH DC 20314
INSTALLATION OR PROJECT NO.

PLATE R-15

SCALE IN FEET
100 50 0 100 200

SHEET 15 OF 16 DRAWING NO.



LEGEND

7.56 AC. PERPETUAL BEACH NOURISHMENT EASEMENT

MICROFILMED	DATE AUDIT APPROVED	DATE	REVISIONS (READ UP)	BY

REAL ESTATE PLANNING MAP

DEPARTMENT OF THE ARMY
LOCATION OF PROJECT
STATE NEW JERSEY
COUNTY ATLNTIC
DIVISION NORTH ATLANTIC
DISTRICT BALTIMORE
ARMY AREA
MILES OF
MILES OF

USING SERVICE
TRANSPORTATION FACILITIES
RAILROADS
STATE ROADS
FEDERAL ROADS
AIRLINES

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, BALTIMORE
CORPS OF ENGINEERS
NORTH ATLANTIC DIVISION

DRAWN BY CTD
TRACED BY
CHECKED BY CHB
SUBMITTED BY:
CADASTRAL
RECOMMENDED BY:
CHIEF, P&C BRANCH

REAL ESTATE

ABSECON ISLAND
NEW JERSEY SHORELINE PROTECTION STUDY

ATLANTIC COUNTY, NEW JERSEY

APPROVED BY:
DATE 4 DEC 1995
CHIEF, REAL ESTATE DIVISION

US ARMY CORPS OF ENGINEERS, WASH DC 20314

PLATE R-16

SCALE IN FEET
100 50 0 100 200

INSTALLATION OR PROJECT NO.

SHEET 16 OF 16 DRAWING NO.

PERPETUAL BULKHEAD EASEMENT. A perpetual and assignable right and easement to construct, operate, and maintain an anchored timber sheet-pile bulkhead, with king piles, pile anchors and steel tie rods together with a revetment consisting of rough quarrystone on, over and across the lands described in Exhibit A (Tract No. _____), including the right to clear, cut, fell, remove and dispose all trees, underbrush, vegetation, structures, improvements and/or other obstructions within the limits of the easement; reserving, however, to the grantor(s), their heirs and assigns, all such rights and privileges, as may be used without interfering with or abridging the rights and easement hereby acquired; subject, however, to existing easements for public roads and highways, public utilities, railroads and pipelines.

PERPETUAL BEACH NOURISHMENT EASEMENT. A pertetual and assignable easement and right-of-way in, on, over and across the land described in Exhibit A (Tract No. _____) to construct, operate, maintain, patrol, repair, renourish, and replace the beach berm and appurtenances thereto, including the right to borrow and/or deposit fill, together with the right to trim, cut, fell and remove therefrom all trees, underbrush, obstructions, and any other vegetation, structures, or obstacles within the limits of the easement; reserving, however, to the grantor(s), their heirs, successors and assigns, all such rights and privileges as may used without interfering with or abridging the rights and easement hereby acquired; subject, however, to existing easements for public roads and highways, public utilities, railroads and pipelines.

PERPETUAL RESTRICTIVE DUNE EASEMENT. A perpetual and assignable easement and right-of-way in, on, over and across the land described in Exhibit A (Tract No. ____) to construct, operate, maintain, patrol, repair, rehabilitate, and replace a dune system and appurtenances thereto, together with the right to post signs, plant vegetation and prohibit the grantor(s), (his) (her) (its) (their) (heirs) successors, assigns and all others from entering upon or crossing over said dunes easement; reserving, however, to the grantor(s), (his) (her) (its) (their) (heirs) successors and assigns, the right to construct dune overwalk structures in accordance with any applicable Federal, State or local laws or regulations, provided that such structures shall not violate the integrity of the dune in shape or dimension and prior approval of the plans and specifications for such structures shall have been obtained from the District Engineer, U. S. Army Engineer District, Philadelphia, and all other rights and privileges as may be used without interfering with or abridging the rights and easement hereby acquired; subject, however, to existing easements for public roads and highways, public utilities, railroads and pipelines.

TEMPORARY WORK AREA EASEMENT. A temporary easement and right-of-way in, on over and across the land described in Exhibit A (Tract No. _____)for a period not to exceed three years, beginning with date possession of the land is granted to the United States, for use by the United States, its representatives, agents, and contractors as a work area, including the right to move, store and

EXHIBIT C

remove equipment and supplies, and erect and remove temporary structures on the land and to perform any other work necessary and incident to the construction of the Absecon Inlet to Great Egg Harbor Inlet Portion of the New Jersey Shore Protection Project, together with the right to trim, cut, fell and remove therefrom all trees, underbrush, obstructions, and any other vegetation, structures, or obstacles within the limits of the right-of-way; reserving, however, to the landowners, their heirs and assigns, all such rights and privileges as may be used without interfering with or abridging the rights and easement hereby acquired; subject, however, to existing easements for public roads and highways, public utilities, railroads and pipelines.

REAL ESTATE COST ESTIMATES
NEW JERSEY SHORE PROTECTION STUDY
ABSECON INLET TO GREAT EGG HARBOR INLET
FEASIBILITY STUDY
ATLANTIC CITY

ESTIMATED TAKINGS

(R) Residential Property 5
(C) Commercial Property 16

			AMOUNT	CONTINGENCY	SUBTOTAL
01010401	Real Estate Acquisition Documents (Cadastral prep. of R. E. Requirements Mapping)				
0102----	**ACQUISITIONS**				
010201--	By Gov't				
010202--	By Local Sponsor (LS)				
01020201	Survey & Legals		$ 10,500	1,575	12,075
01020202	Title Evidence		10,500	1,575	12,075
01020203	Negotiations		24,200	3,630	27,830
010203--	By Gov't on behalf of LS				
010204--	Review of LS				
01020401	Survey & Legals		$ 1,575	236	1,811
01020402	Title Evidence		1,575	236	1,811
01020403	Negotiations		1,575	236	1,811
		SUBTOTAL	$ 49,925	7,488	57,413
103----	**CONDEMNATIONS**				
010301--	By Gov't				
010302--	By Local Sponsor (LS)		$ 9,000	1,350	10,350
010303--	By Gov't on behalf of LS				
010304--	Review of LS		750	113	863
		SUBTOTAL	$ 9,750	1,463	11,213
0105----	**APPRAISALS**				
010501--	By Gov't				
010502--	By Local Sponsor (LS)	Job	5,000	750	5,750
010503--	By Gov't on behalf of LS				
010504--	Review of LS Job	Job	1,000	150	1,150
		SUBTOTAL	$ 6,000	900	6,900
0106----	**PL 91-646 ASSISTANCE**		N/A		
010601--	By Gov't				
010602--	By Local Sponsor (LS)				
010603--	By Gov't on behalf of LS				
010604--	Review of LS				
0107----	**TEMPORARY PERMITS/LICENSES/RIGHTS-OF-WAY**		N/A		
010701--	By Gov't				
010702--	By Local Sponsor (LS)				
010703--	By Gov't on behalf of LS				
010704--	Review of LS				

EXHIBIT D

REAL ESTATE COST ESTIMATES
NEW JERSEY SHORE PROTECTION STUDY
ABSECON INLET TO GREAT EGG HARBOR INLET
FEASIBILITY STUDY
ATLANTIC CITY

		AMOUNT	CONTINGENCY	SUBTOTAL
0115----	**REAL ESTATE PAYMENTS**	**N/A**		
011501--	Land Payments			
01150101	By Gov't			
01150102	By Local Sponsor (LS)			
01150103	By Gov't on behalf of LS			
01150104	Review of LS			
011502--	PL 91-646 Assistance Payments			
01150201	By Gov't			
01150202	By Local Sponsor (LS)			
01150203	By Gov't on behalf of LS			
01150204	Review of LS			
011503--	Damage Payments			
01150301	By Gov't			
01150302	By Local Sponsor (LS)			
01150303	By Gov't on behalf of LS			
01150304	Review of LS			
	TOTAL LERRD	$65,675	9,851	75,526

REAL ESTATE COST ESTIMATES
NEW JERSEY SHORE PROTECTION STUDY
ABSECON INLET TO GREAT EGG HARBOR INLET
FEASIBILITY STUDY
MARGATE

ESTIMATED TAKINGS

(R) Residential Property 2
(C) Commercial Property 0

			AMOUNT	CONTINGENCY	SUBTOTAL
01010401	Real Estate Acquisition Documents (Cadastral prep. of R. E. Requirements Mapping)				
0102----	**ACQUISITIONS**				
010201--	By Gov't				
010202--	By Local Sponsor (LS)				
01020201	Survey & Legals		$ 1,000	150	1,150
01020202	Title Evidence		1,000	150	1,150
01020203	Negotiations		2,000	300	2,300
010203--	By Gov't on behalf of LS				
010204--	Review of LS				
01020401	Survey & Legals		$ 150	23	173
01020402	Title Evidence		150	23	173
01020403	Negotiations		150	23	173
	SUBTOTAL		$ 4,450	669	5,119
0103----	**CONDEMNATIONS**	**NA**			
10301--	By Gov't				
010302--	By Local Sponsor (LS)				
010303--	By Gov't on behalf of LS				
010304--	Review of LS				
	SUBTOTAL				
0105----	**APPRAISALS**				
010501--	By Gov't				
010502--	By Local Sponsor (LS)	Job	$ 500	75	575
010503--	By Gov't on behalf of LS				
010504--	Review of LS	Job	500	75	575
	SUBTOTAL		$ 1,000	150	1,150
0106----	**PL 91-646 ASSISTANCE**		**N/A**		
010601--	By Gov't				
010602--	By Local Sponsor (LS)				
010603--	By Gov't on behalf of LS				
010604--	Review of LS				
0107----	**TEMPORARY PERMITS/LICENSES/RIGHTS-OF-WAY**	**N/A**			
010701--	By Gov't				
010702--	By Local Sponsor (LS)				
010703--	By Gov't on behalf of LS				
010704--	Review of LS				

REAL ESTATE COST ESTIMATES
NEW JERSEY SHORE PROTECTION STUDY
ABSECON INLET TO GREAT EGG HARBOR INLET
FEASIBILITY STUDY
MARGATE

			AMOUNT	CONTINGENCY	SUBTOTAL
0115----	**REAL ESTATE PAYMENTS**		**N/A**		
011501--	Land Payments				
01150101	By Gov't				
01150102	By Local Sponsor (LS)				
01150103	By Gov't on behalf of LS				
01150104	Review of LS				
011502--	PL 91-646 Assistance Payments				
01150201	By Gov't				
01150202	By Local Sponsor (LS)				
01150203	By Gov't on behalf of LS				
01150204	Review of LS				
011503--	Damage Payments				
01150301	By Gov't				
01150302	By Local Sponsor (LS)				
01150303	By Gov't on behalf of LS				
01150304	Review of LS				
		TOTAL LERRD	$ 5,450	819	6,269

REAL ESTATE COST ESTIMATES
NEW JERSEY SHORE PROTECTION STUDY
ABSECON INLET TO GREAT EGG HARBOR INLET
FEASIBILITY STUDY
LONGPORT

ESTIMATED TAKINGS

(R) Residential Property 8
(C) Commercial Property 0

			AMOUNT	CONTINGENCY	SUBTOTAL
01010401	Real Estate Acquisition Documents (Cadastral prep. of R. E. Requirements Mapping)				
0102----	**ACQUISITIONS**				
010201--	By Gov't				
010202--	By Local Sponsor (LS)				
01020201	Survey & Legals		$ 4,000	600	4,600
01020202	Title Evidence		4,000	600	4,600
01020203	Negotiations		8,000	1,200	9,200
010203--	By Gov't on behalf of LS				
010204--	Review of LS				
01020401	Survey & Legals		$ 600	90	690
01020402	Title Evidence		600	90	690
01020403	Negotiations		600	90	690
		SUBTOTAL	$ 17,800	2,670	20,470
0103----	**CONDEMNATIONS**				
J10301--	By Gov't				
010302--	By Local Sponsor (LS)		$ 3,000	450	3,450
010303--	By Gov't on behalf of LS				
010304--	Review of LS		250	38	288
		SUBTOTAL	$ 3,250	488	3,738
0105----	**APPRAISALS**				
010501--	By Gov't				
010502--	By Local Sponsor (LS)	Job	$ 1,000	150	1,150
010503--	By Gov't on behalf of LS				
010504--	Review of LS	Job	500	75	575
	SUBTOTAL		$ 1,500	225	1,725
0106----	**PL 91-646 ASSISTANCE**		N/A		
010601--	By Gov't				
010602--	By Local Sponsor (LS)				
010603--	By Gov't on behalf of LS				
010604--	Review of LS				
0107----	**TEMPORARY PERMITS/LICENSES/RIGHTS-OF-WAY**		N/A		
010701--	By Gov't				
010702--	By Local Sponsor (LS)				
010703--	By Gov't on behalf of LS				
010704--	Review of LS				

REAL ESTATE COST ESTIMATES
NEW JERSEY SHORE PROTECTION STUDY
ABSECON INLET TO GREAT EGG HARBOR INLET
FEASIBILITY STUDY
LONGPORT

			AMOUNT	CONTINGENCY	SUBTOTAL
0115----	**REAL ESTATE PAYMENTS**		N/A		
011501--	Land Payments				
01150101	By Gov't				
01150102	By Local Sponsor (LS)				
01150103	By Gov't on behalf of LS				
01150104	Review of LS				
011502--	PL 91-646 Assistance Payments				
01150201	By Gov't				
01150202	By Local Sponsor (LS)				
01150203	By Gov't on behalf of LS				
01150204	Review of LS				
011503--	Damage Payments				
01150301	By Gov't				
01150302	By Local Sponsor (LS)				
01150303	By Gov't on behalf of LS				
01150304	Review of LS				
		TOTAL LERRD	$ 22,550	3,383	25,933

APPENDIX F

PUBLIC ACCESS PLAN

DRAFT

ABSECON ISLAND PUBLIC ACCESS PLAN

1. Background

a. Purpose

The purpose of the public access plan is to describe public accessibility to the proposed dune and beach area that will be created as a result of the U.S. Army Corps of Engineer's Absecon Island Hurricane and Storm Damage Reduction Project. In order for the project to be consistent with Federal and State policies regarding shore protection projects, public access is required.

b. Scope

The geographical scope of this public access plan extends for the entire 42,825 linear feet of the oceanfront project in Atlantic City, Ventnor, Margate and Longport.

2. Property Ownership

The State of New Jersey, as the non-Federal sponsor for the project, is responsible for acquisition of all necessary real estate interests. The oceanfront beaches below the mean high water (MHW) line are owned in fee by the State unless riparian rights have been granted. The Federal Government may use these lands below MHW under the rights of navigational servitude. There are some privately owned parcels above MHW, over which permanent easements must be acquired by the State in accordance with the Real Estate Plan (Appendix E). Public access to all project lands is guaranteed by the State as a prerequisite of commitment of public funding for the project.

3. Public Use

Full public use is available for the general public along the project area. There are no operative restrictions to public use in place within the project area between the northern terminus of the project at Oriental Avenue, Atlantic City and the southern municipal boundary of Longport. Local ordinances related to the preservation of dunes may prohibit trampling of dunes and therefore require the use of walkovers.

4. Accessways and Dune Walkover Structures

a. Location of Accessways

As noted above, this plan affirms the right of access to the restored beach by all members of the public at all public accessways. All accessways are located at existing street-ends. All accessways are located on public property.

b. Ownership and Use of Accessways

Ownership of all accessways will rest with municipalities of Atlantic City, Ventnor, Margate & Longport. The use of the accessways shall be in accordance with regulations of the State of New Jersey.

c. Dune Walkovers

Dune walkovers will be located at public accessways and oriented over the dune to protect and maintain the integrity and stability of the dune. The design of the respective walkover will reflect the anticipated pedestrian traffic of the area in which it is located.

5. Parking Accommodations

Vehicle parking is available on all municipal thoroughfares. No residency restrictions for parking exist within the four communities. The amount of available parking is adequate to accommodate current and anticipated usage of the beachfront area by the general public.