

**Impact of Captiva's Beaches  
on Property Values and Taxes**

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**Prepared for:**

**Captiva Erosion Prevention District**

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## Introduction and Summary

This report contains an analysis of the impact of the two Captiva beach restorations on the island's property values. The impact is measured by an analysis of property sales based on data between 1977 and 1991. The second part of the report projects the losses in property values if the Captiva Beach Maintenance Program is not implemented, beginning with the beach renourishment scheduled for 1996. The report concludes with estimates of the impact of the decline in property values resulting from a failure to maintain the beaches on local government revenues.

The study of real estate sales shows that the two beach restoration projects each added about 18 percent to property values, or that failure to maintain the island's beaches would result in a decline in property values of 36.3 percent. Additionally, there would be a further decline of 1.4 percent on an annual basis as erosion continued to damage properties or costs were imposed on property owners to protect their properties.

The principal conclusion of the study is that failure to maintain Captiva's beaches in 1996, as scheduled, will result in a loss of 40 percent of the island's property value. In turn, this will lead to losses in local government revenues, annually, of \$3.2 million in 1992 dollars. Lee County Public Schools would lose \$1.6 million and Lee County would lose \$1.2 million.

Previous analysis of the 1988-89 beach resoration on Captiva property values and local government revenues did not take the South Seas project into account.

## Beach Restorations and Captiva Property Values

This section of the report estimates the effect on Captiva property values of the beach restorations completed on the island in 1982 and 1989. The analysis is based on data obtained from the NAL files of the Lee County Property Appraiser for the years 1986, 1987, 1988, 1989, 1992. Details on the methodology are given in an appendix.

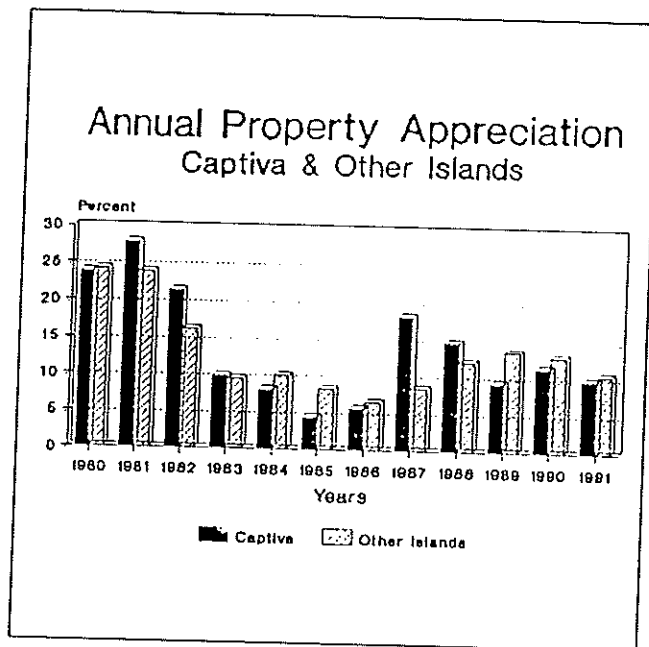
**TABLE 1**  
**Numbers of Pairs of Sales on Captiva and**  
**Other Lee County Barrier Islands and**  
**Estimated Annual Property Appreciation in Percent**  
**1980-91**

Year	Captiva Sales		Sales on Other Islands	
	Number	Appreciation	Number	Appreciation
1980	11	23.9	107	24.1
1981	12	27.9	97	23.9
1982	12	21.3	54	16.1
1983	14	9.9	59	9.5
1984	10	8.1	68	10.0
1985	4	4.4	57	8.3
1986	7	5.7	90	6.6
1987	10	18.3	114	8.4
1988	12	14.7	161	12.2
1989	15	9.3	180	13.6
1990	13	11.4	147	13.0
1991	13	9.8	127	10.6

Average annual property appreciation in Captiva and the other islands for the period 1980 through 1991 is given in TABLE 1. For example, the fifteen available sales pairs on Captiva for 1989 had an average annual rate of appreciation of 9.3 percent, and the 180 sales available for the other barrier islands had an average annual

rate of appreciation of 13.6 percent. A pair of sales for 1989 was a sale for that year and a sale for the same property in 1988, 1987, or 1986.

The years covered by TABLE 1 can be divided into four periods. During the first period, 1980-83, property appreciation on Captiva was boosted due to the South Seas beach restoration project. In the second period, 1984-85, property appreciation on Captiva was depressed by the unwillingness of the voters to approve the CEPD beach restoration project. In the third period, 1986-88, property appreciation on Captiva was boosted due to the CEPD beach restoration project.

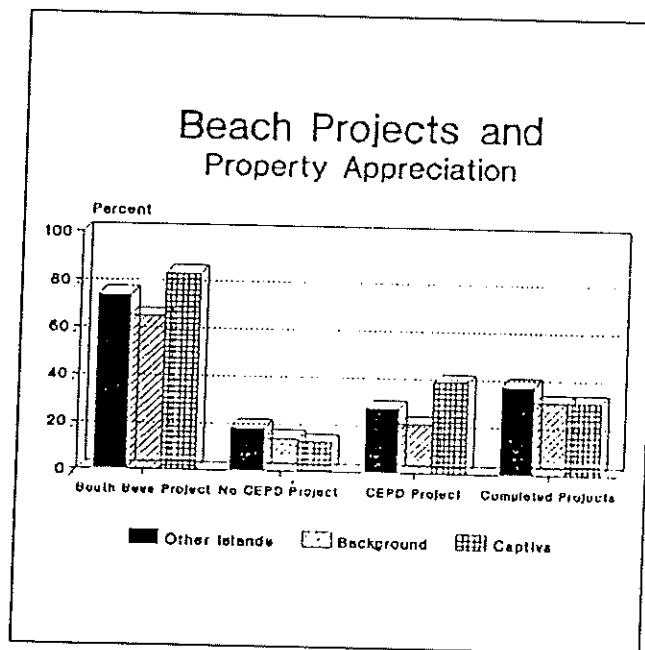


Finally, during 1989-91 the relationship between property appreciation on Captiva and the other islands was normal, in the sense that there were no effects from beach projects or from the failure to undertake such projects. During that period, Captiva properties appreciated average annual rates of 2.2 percent less than the properties on the other islands. This was used to establish the "background" rate of Captiva property appreciation at 2.2 percent less than the recorded rate of appreciation on the other islands.

TABLE 2 Beach Projects and Captiva Property Appreciation 1980-91 Percent				
Period	Property Appreciation on the Other Barrier Islands	Background Rate of Property Appreciation on Captiva	Actual Captiva Property Appreciation	Appreciation or Depreciation Due to Beach Projects
1980-83	+73.6	+64.8	+83.0	+18.2
1984-85	+18.3	+13.9	+12.5	- 1.4
1986-88	+27.2	+20.6	+38.7	+18.1
1989-91	+37.2	+30.6	+30.5	+0.0

TABLE 2 shows the impact of the beach projects on Captiva property appreciation. The data in TABLE 2 show that the two beach restoration projects each added about 18 percent to property values, or that failure to maintain the island's beaches would result in a decline in property values of 36.3 percent.

Additionally, there would be a further decline on an annual basis as erosion continued to damage properties or costs were imposed on property owners to protect their properties.



#### Property Values When a Project is Rejected

The period 1984-85 can be regarded as a period when investors

in Captiva properties were pessimistic about the future of beach restoration on the island because of the defeat of the proposed CEPD project and the election of a Board of Commissioners that were critical of beach restoration.

As such this period sheds some light on the annual decline in property values that would result from failure to maintain the island's beaches. During that period, the southern half of the island's beaches were allowed to deteriorate, and property values island-wide declined at a rate of 0.7 percent per annum. This decline occurred as a result of a failure to maintain approximately 50 percent of the island's beaches, so that 1.4 percent (twice the rate of 0.7 percent) is an approximate estimate of the annual decline in property values that would occur after the island's beach restorations were lost due to erosion.

## Impact of the Beach Maintenance Program on Property Values

The CEPD Engineer has proposed a beach renourishment project for 1996 based on the CEPD Beach Maintenance Plan. This section of the report presents projections of the decline in property values that can be anticipated if the maintenance program is not implemented.

Failure to maintain the island's beaches in 1996, as scheduled, can be expected to result in a loss of property values on the island equal to 36.3 percent of the 1996 total plus annual declines of 1.4 percent thereafter.

This is because each of the two restorations undertaken in the 1980s (which would therefore be maintained by the maintenance project) added 18 percent to the property value of the island. Additionally, the previous section of the report estimated the annual loss from failure to undertake a project at 1.4 percent of the island's property value.

TABLE 3 shows the present value of the failure to implement the CEPD Beach Maintenance Plan, based on the assumptions below:

- the 1996 Captiva property values are the same as the 1992 values in 1992 dollars (i.e. that property values would keep up with inflation if the beaches were maintained)
- the two beach restorations would be lost by 2002
- 1.4 percent annual declines in property values after 2002
- losses are discounted over the period up through 2012, ten years after the loss of the two restorations
- interest rate of 3 percent plus inflation

TABLE 3  
Losses in Property Values Due to  
Failure to Maintain Captiva's Beaches  
1996-2012  
Millions of 1992 Dollars

Year	Captiva Property Values Discounted to 1996	Losses Due to Beach Erosion Undiscounted	Cumulative Discounted Losses
1996	\$ 448.3	\$ 27.1	\$ 27.1
1997	\$ 421.2	\$ 27.1	\$ 53.5
1998	\$ 394.8	\$ 27.1	\$ 79.0
1999	\$ 369.3	\$ 27.1	\$ 103.8
2000	\$ 344.5	\$ 27.1	\$ 127.9
2001	\$ 320.4	\$ 27.1	\$ 151.3
2002	\$ 297.0	\$ 4.0	\$ 154.7
2003	\$ 293.6	\$ 3.9	\$ 157.9
2004	\$ 290.4	\$ 3.9	\$ 161.0
2005	\$ 287.3	\$ 3.8	\$ 163.9
2006	\$ 284.4	\$ 3.8	\$ 166.7
2007	\$ 281.6	\$ 3.7	\$ 169.4
2008	\$ 278.9	\$ 3.7	\$ 172.0
2009	\$ 276.3	\$ 3.6	\$ 174.4
2010	\$ 273.9	\$ 3.6	\$ 176.8
2011	\$ 271.5	\$ 3.5	\$ 179.1
2012	\$ 269.2	na	na

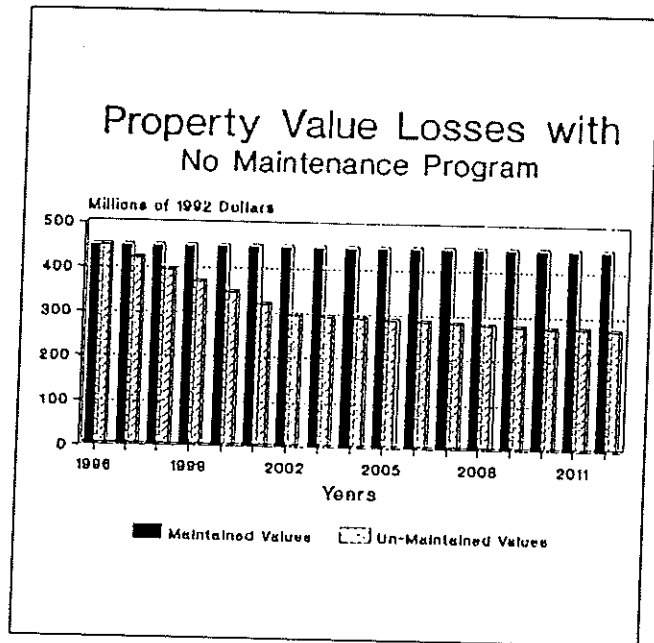
Beginning in 1996 there would be six years of property value declines as the beaches eroded to where they were before the 1982 and 1988-89 restorations were undertaken. This period would see undiscounted reductions in property values of \$162 million in 1992 dollars, which is 36.2 percent of the value of the island's properties at the beginning of 1996. (The 36.2 percent is the addition to the island's values due to the South Seas and CEPD projects).

It is assumed that these losses are spread uniformly over the six years following 1996, since failure to undertake the project does not immediately result in the loss of the sand.



After the beach restorations are completely lost in 2002, undiscounted property values would decline 1.4 percent per annum (in 1992 dollars). The TABLE contains estimates of these declines for the ten year period ending in 2012.

TABLE 3 takes discounting into effect, since the expected losses in 1996 do not fully take place until 2012. The figure of \$269.2 million for 2012 is the value of the island's property in that year, discounted back to 1996, and assuming that the beach maintenance program is not implemented. The cumulative discounted loss is \$179.1 million (in 1992 dollars) so that this is the reduction that will take place in the value of Captiva Island in the sixteen years after 1996, provided the beach is not maintained. This will amount to 40 percent in the value of the island at that time. In other words, failure to maintain Captiva's beaches in 1996, as scheduled, will result in a loss of 40 percent of the island's property value.



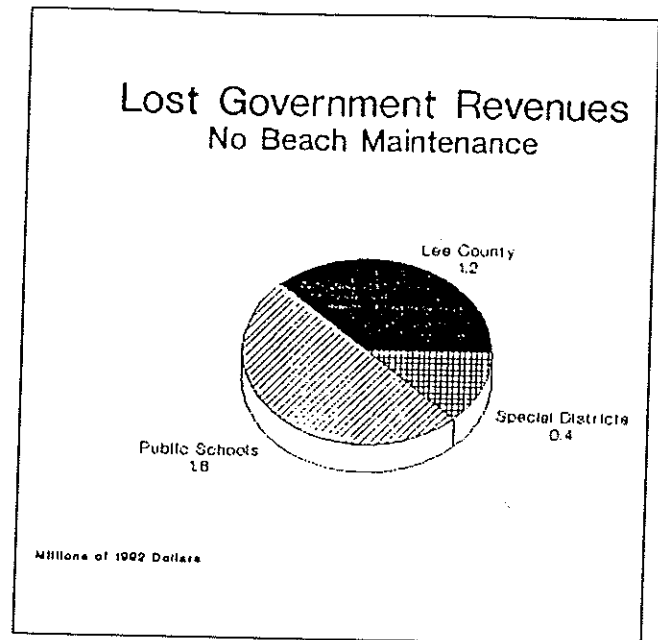
# Impact of the Beach Maintenance Program on Local Government Revenues

The 40 percent decline in the value of property on Captiva if the beach maintenance program is not implemented will result in a decline in the revenues of local governments which tax the island's property. Estimates of these declines were obtained by applying 1992 millages to this estimated decline in value.

**TABLE 4**  
**Local Government Lost Tax Revenues**  
**With No Beach Maintenance Plan**  
**Annually 1996-2012**  
**Millis and Millions of 1992 Dollars**

	Millage Rate 1992	Lost Tax Revenues With No Beach Maintenance
Lee Co. General Revenue	4.6850	\$ 0.8
Capital Outlay	.5320	\$ 0.1
Lee Co. Unincorporated MSTU	.6704	\$ 0.1
Lee Co. Library	.4766	\$ 0.1
Lee Co. Hyacinth	.0398	\$ 0.0
Lee County Mosquito	.3982	\$ 0.1
Lee County Sub-Total	6.8020	\$ 1.2
Public School by State Law	6.6910	\$ 1.2
Public School by Local Board	2.5100	\$ 0.4
Public Schools Sub-Total	9.2010	\$ 1.6
West Coast Inland Navigation	0.0220	\$ 0.0
South Florida Water Mgmt.	0.5470	\$ 0.1
Special Districts Sub-Total	0.5690	\$ 0.1
Captiva Erosion General Fund	0.7857	\$ 0.1
Captiva Fire	0.9162	\$ 0.2
Captiva Districts Sub-Total	1.8744	\$ 0.3
<b>Total</b>	<b>18.4464</b>	<b>\$ 3.2</b>

The data in TABLE 4 show that Captiva Island Beach Maintenance Plan will prevent \$3.2 million per year in local government lost revenues during the period 1996-2012. Lee County and its agencies will avoid losing \$1.2 million in revenues per year; the public schools will avoid \$1.6 million in lost revenues per year, the regional inland navigation and water management districts will avoid \$0.1 million in lost revenues, and the two Captiva districts will avoid \$0.3 million in lost revenues.



## Appendix: Methodology

Parcels for Captiva, and the coastal sections of the other Barrier Islands in Lee County, namely, Boca Grande, Bonita Beach, Fort Myers Beach and Sanibel Island, were drawn from these files provided they existed on all five files, had the same land use throughout the period, had a land use classified as either residential or commercial, and had two recorded qualified sales amounting to more than \$100 in value. The resulting data set contained sales information on 4,442 parcels.

Property Appraisers' NAL files contain the "most recent sale" and the "second most recent sale" for individual parcels. Because these data are updated as new sales occur, the annual data for this study diminishes in size as sales are examined for a few years prior to 1986, the earliest NAL file available to the researcher. Additionally, the number of sales fluctuates on an annual basis with the strength of housing demand and with the completion of major condominium complexes.

TABLE A shows the number of sales available for analysis by year for the period 1970 through 1991. On the basis of the number of sales identified, it was decided to undertake the analysis using data from 1977 through 1991. From the total sales in TABLE A, pairs of sales involving the same property were used as a basis for calculating annual rates of property appreciation. It was decided to omit pairs of sales that were separated by more than three years or less than one year. This was designed to control for

improvements in the property and for failure to maintain properties which would affect property appreciation.

TABLE A  
Numbers of Sales on Captiva and  
Other Lee County Barrier Islands  
1970-91

Year	Captiva Sales	Other Island Sales	Total Sales
1970	0	27	27
1971	0	49	49
1972	0	58	58
1973	0	94	94
1974	6	160	166
1975	23	151	174
1976	10	274	284
1977	62	533	595
1978	81	692	773
1979	116	893	1009
1980	48	526	574
1981	69	516	585
1982	46	418	464
1983	54	534	588
1984	48	475	523
1985	48	391	439
1986	72	615	687
1987	71	668	739
1988	52	694	746
1989	64	682	746
1990	70	535	605
1991	49	441	490

There were insufficient numbers of pairs of sales to confine attention to sales less than two years apart, and it was decided that distortions due to property changes would be too great for sales more than two years apart. The decision to use sales that were three years apart limited the data on property value appreciation to the period 1980 through 1991. The number of pairs of sales was previously given in TABLE 1 of the report.

The NAL files contain the year and month of the two most recent sales. Standard compound interest formulas were used to compute the monthly rate of appreciation for each pair of sales, and to annualize the monthly rates of appreciation.

Averages were computed over pairs of sales which indicated property appreciation greater than -25.0 percent per annum and less than 50 percent per annum. This resulted in omitting extreme values from the average which more than likely reflected special circumstances, and to which the averages were unduly sensitive, particularly for Captiva, because of the small sample size.