

Miami-Dade COUNTY, FLORIDA

Beach Erosion Control & Hurricane Protection Project

Sunny Isles Segment

Economics Appendix for Limited Reevaluation Report

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1 Background Information and Purpose of Economic Analysis

As noted in the main report, the purpose of this limited reevaluation is to assess the feasibility of an alternative borrow source for the Dade County shore protection project. A map of the project is presented in Figure 1-1. The level of the economic update is a “Level 1 Update” type of economic analysis, as defined in the Director of Civil Works’ Policy Memorandum, CWPM 12-001, Methodology for Updating Benefit-to-Cost Ratios (BCR) for Budget Development (March 8, 2012). The economic evaluation of this appendix focuses on the Sunny Isles portion of the project.

The Sunny Isles portion of the Federal project has 23 remaining years of Federal participation and in need of renourishment to maintain the level of protection for which it was constructed. Currently the project Dade County project template has a 2,000,000 cy deficit. Dade County has depleted traditional offshore borrow sources. In cooperation with Florida DEP and southeast FL counties, the Southeast Florida Sediment Assessment and Needs Determination (SAND) report was finalized in summer 2013 and concluded that 10-million cubic yards of domestic sand may be available offshore of counties in the north of southeast FL. The LRR and EA are focused on potential use of several sources: two sources offshore of Martin Co., one source offshore of St. Lucie Co., upland sources. The purpose of this limited reevaluation report is to assess the feasibility of an alternative borrow source.

Though this document is an economics appendix rather than a Level 1 Economic Update report, the same type of analysis is used. A level 1 type of analysis is prepared for projects wherein the following can be confirmed:

1. No major changes have taken place in hydraulic and hydrologic conditions.
2. No significant reduction has taken place in the number or value of assets to be protected by the project, as confirmed by a field investigation.

Given these conditions, a Level 1 Update is considered adequate assurance that the benefits analysis last used to determine economic feasibility still reasonably reflects the value of the project. A Level 1 analysis includes no new plan formulation or optimization; no new environmental assessment; and no quantitative re-analysis of project benefits. The exception is that an Environmental assessment has been conducted for the LRR. The update is limited to a qualitative assessment of key variables, and the benefit values shown in the last authorized study (Feasibility Study, 1995) are compared with an updated cost estimate to determine continued justification.

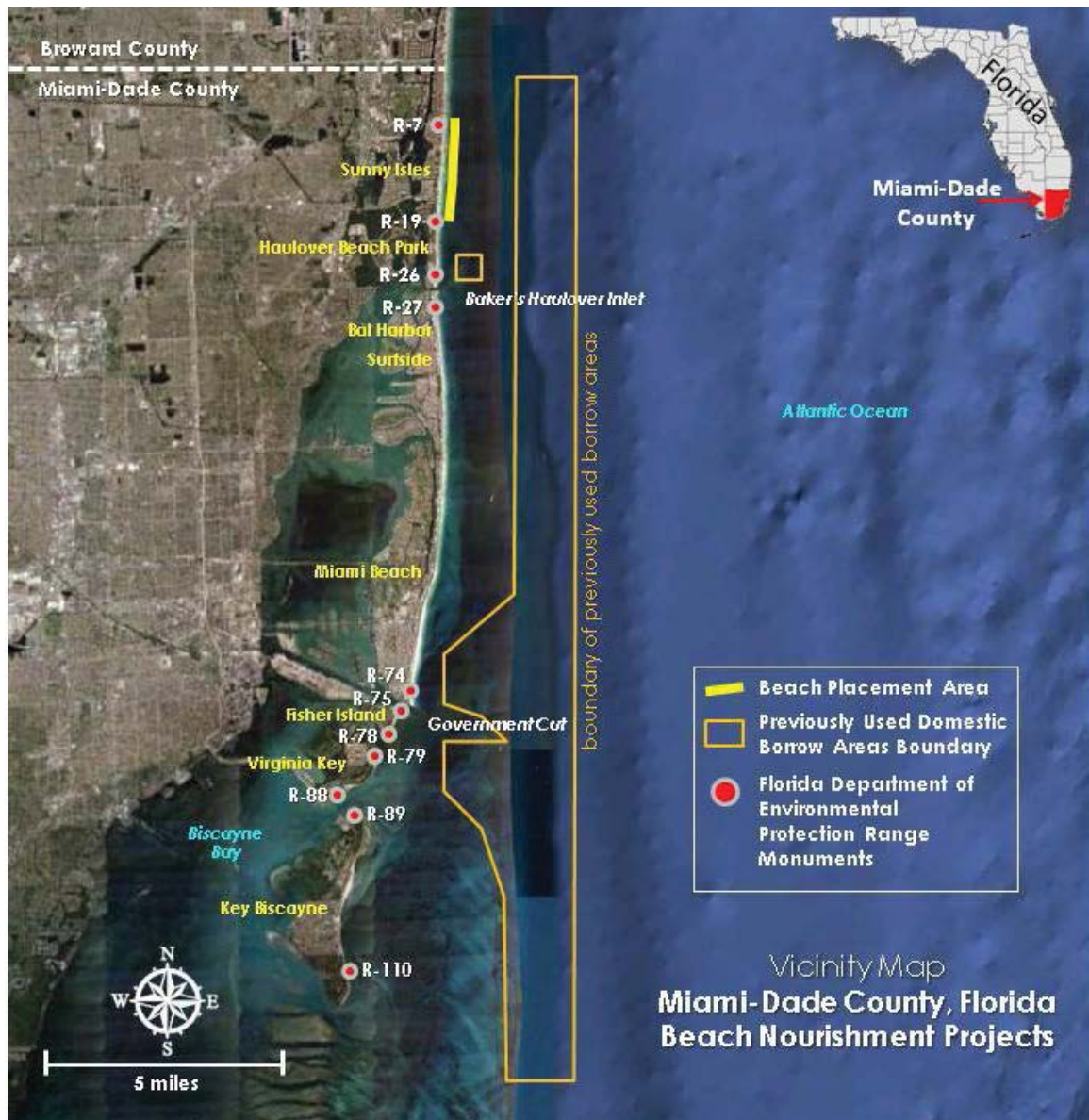


Figure 1-1: Dade County BEC&HP Project – Main Segment (Government Cut to Baker’s Haulover Inlet and Haulover Beach Park) Vicinity Map

1.1 Construction Activity Expenditures to Date

Initial construction was begun in May 1988, and resulted in the placement of 1,320,000 cubic yards of fill along the entire 2.5-mile length of Sunny Isles. Initial project cost was approximately \$12 million. New cost estimates were prepared for this update using current information from construction activities. Table 1-1 displays the construction expenditures to date and projected expenditures for projected construction events.

Table 1-1: Previous Construction Events and Projected Construction Events

Segment	Renourishment Cycle	Year	Proposed Volume (CY)	Actual Volume (CY)	Total Cost
Sunny Isles Segment (R-7 to R-19)	Initial	1988	1,320,000		\$12,477,255
Sunny Isles (R-7 to R-10)	Renourishment	1997	87,000	80,130	\$1,546,419
Sunny Isles (R-7 to R-19)	Renourishment	2000		737,152	\$17,228,435
Sunny Isles	Renourishment	2016	547,330	---	\$35,073,838
Sunny Isles	Renourishment	2026	500,000	---	\$31,860,674
Sunny Isles	Renourishment	2036	100,000	---	\$7,751,143

2 Verification of Existing Conditions

2.1 Scope of Project

The Sunny Isles segment of the Dade County BEC&HP Project extends along the 2.5-mile length of the city of Sunny Isles. The authority includes construction of a protective beach along a reach of shore extending 2.5 miles through Sunny Isles, and for periodic nourishment of this area. The period of Federal participation is for 50 years from the date of initial construction, 1988.

2.2 Economic Benefit Assumptions

2.2.1 Inventory of Structures

The primary National Economic Development (NED) benefits come in the form of storm damage reduction benefits which are based on the number and value of structures within the project area located close to the shoreline.

The structure inventory from the 1995 Design Memorandum (DM), Addendum III was compared to current conditions by using a combination of GIS data sets, Miami-Dade County Property Appraiser parcel information, current and historic aerial photos, and a site visit. There was a site visit to the project area was conducted in November 2011, and a structure value evaluation was done in March 2014 based on depreciated structure value. Table 2-1 displays the structure value (depreciated replacement cost) by category for Sunny Isles Beach project area. The commercial structures include hotel and resorts. For the purposes of this economic update it is assumed that the damages prevented by the construction would be at least that documented in the 1995 report.

Table 2-1: Sunny Isles Total Structure Value

Type	Value	Number of Structures
Condos	\$5,710,221,000	34
Commercial	\$5,288,000	4
Single Family Homes	\$0	0
Totals:	\$5,715,509,000	38

2.2.2 Recreation

As noted in the main report, public access to the Dade County BEC&HP Project, Sunny Isles segment has been maintained or improved since the last authorizing document. The 2013 beach count was 2,057,170 (Source: Sunny Isles Beach Rescue). Though the last approved report provided projections for with-project beach use, it did not claim recreation benefits.

For 2013 it was estimated that about 14.2 million visitors spent at least one night in Greater Miami and the beaches. Table 2-2 displays where they spent the night. North Dade/Sunny Isles Beach captured about 11% of the share of visitors.

Table 2-2: Overnight Visitors to Greater Miami and the Beaches Area of Lodging

Miami-Dade County Area	Percentage Visitation for 2013
Miami Beach	43.6%
Downtown Miami	18.1%
Airport Area	16.5%
North Dade/ Sunny Isles	10.8%
South Miami Dade	4.7%
Coral Gables	4.2%
Key Biscayne	1.3%
Coconut Grove	0.5%
Doral	0.9%

Source: Greater Miami and the Beaches 2013 Visitor Industry Overview.

2.3 Engineering: Hydraulics and Hydrology

An engineering assessment by Jacksonville District (SAJ) coastal engineering staff has confirmed that there are no significant changes in hydraulic and hydrologic conditions from the time that benefits were last calculated.

3 Benefit-Cost Ratio Update

3.1 Previously-Approved Benefits

Storm damage reduction benefits, which are considered primary benefits make up the total benefits for the project.

Table 3-1 displays the benefits from the 1995 Design Memorandum (DM), Addendum III at 7.75% and 1994 price levels. Although the Sunny Isles segment has considerable recreation benefits, no recreation benefits were included in the computation of benefits to cost ratio in the 1995 DM.

Table 3-1: Summary of Average Annual Benefits from 1995 Design Memorandum

Benefit Category	Average Annual Benefits at 7.75% 1994 price levels
Storm Damage Reduction	\$4,487,100
Loss of Land Benefits	\$4,685,500
Recreation Benefits	<u>\$0</u>
Total Annual Benefits	\$4,955,600
Total Annual Costs	\$2,325,800
Total Annual Net Benefits	\$2,629,800
Benefit Cost Ratio	2.1

3.2 Project Cost Summary

Project costs were developed for total project since initial construction, and remaining project, for time frame FY1988 through FY2038. The current cost estimate for total project was developed using data from historic PB3 costs from FY1988 through FY2015 and the remaining project cost from FY2016 through FY2038, a remaining period of 23 years. The total remaining cost for the remaining period of Federal participation, FY2016 through FY2038, for the Sunny Isles Segment, including contingencies (rounded to nearest thousand), is \$83,727,000; the average annual cost is \$2,344,000 at a 3.125% discount rate. The undiscounted total project cost (that includes cost-throughs documented in PB3 reports) is \$118,694,000, with average annual cost of \$1,804,000 for the 50 year period of federal participation. The project cost summaries for amortization of total project cost and remaining project costs are to be found in sub-appendix A of this appendix.

3.3 Updated BCR and RBRCR

A total current benefit to cost ratio was computed at the FY16 discount rate of 3.125%. The benefits are based on the last approved report, the 1995 Design Memorandum (DM) Addendum III. The costs are based on total project costs (per PB3 historic costs and MCACES level for remaining costs) for 50 years from start of initial construction, 1988, and last year of federal participation, 2038. Table 3-2 displays the summary of the amortized cost for the BCR computation. The Total Project BCR is 2.77.

Table 3-2: Total Project BCR at 3.125 % Discount Rate

Total Present Value of Cost:	\$44,878,537
Amortized Cost:	\$1,785,850
AAEQ Benefits	\$4,955,600
Total BCR	2.77

The remaining benefits remaining cost ratio (RBRCR) was also computed at the FY16 discount rate of 3.125 % starting at 2016 and extending through the end of Federal participation, 2038, for a remaining (amortization) period of 23 years. The benefits from the last approved report was sunk for 27 years, and the remaining benefits for 23 years (of the remaining 50 years of federal participation) was used to compute the RBRCR. Table 3-3 displays the RBRCR. The RBRCR is 2.15(rounded to two significant figures).

Table 3-3: Remaining Benefits Remaining Cost Ratio at 3.125 % Discount Rate

Total Present Value of Cost:	\$37,415,468
Amortized Cost:	\$2,305,055
AAEQ Benefits	\$4,955,600
RBRCR	2.15

4 Sub-Appendix A: Discounting and Price Level Adjustment Tables

The following tables demonstrate the computations necessary to calculate the discounted average annual total project cost and average annual remaining cost for the BCR and RBRCR. The annual costs presented here are deflated to the price level of the approved benefits (FY74).

Table 4-1: Discounting and price level adjustments for total project cost at 3.125% discount rate

DADE COUNTY – Sunny Isles Segment Total Project Cost

Discount Rate	3.125 %
Project Life	50 yrs
Capital Recovery Factor	0.03979

Price Level FY for Costs	FY	Costs	Price Level Adj. Factor	3.125 % Present Worth Adj. Factor	Present Worth Adj. Costs to FY94 @3.125%
FY87	1987	\$427,685	1.2351	1.031	\$ 544,723
FY88	1988	\$12,077,315	1.2028	1.000	\$ 14,526,025
FY89	1989	\$0	1.1598	0.970	\$ -
FY90	1990	\$0	1.1199	0.940	\$ -
FY91	1991	\$0	1.0844	0.912	\$ -
FY92	1992	\$0	1.0602	0.884	\$ -
FY93	1993	\$0	1.0246	0.857	\$ -
FY94	1994	\$3,700,486	1.0000	0.831	\$ 3,076,628
FY95	1995	\$0	0.9811	0.806	\$ -
FY96	1996	\$175,986	0.9471	0.782	\$ 130,306
FY97	1997	\$1,603,117	0.9278	0.758	\$ 1,127,516
FY98	1998	\$0	0.9077	0.735	\$ -
FY99	1999	\$0	0.8879	0.713	\$ -
FY00	2000	\$1,395,382	0.8658	0.691	\$ 835,087
FY01	2001	\$15,587,672	0.8452	0.670	\$ 8,830,859
FY02	2002	\$0	0.8299	0.650	\$ -
FY03	2003	\$0	0.7877	0.630	\$ -
FY04	2004	\$0	0.7703	0.611	\$ -
FY05	2005	\$0	0.7372	0.593	\$ -
FY06	2006	\$0	0.7024	0.575	\$ -
FY07	2007	\$0	0.6752	0.557	\$ -
FY08	2008	\$0	0.6523	0.540	\$ -
FY09	2009	\$0	0.6286	0.524	\$ -

FY10	2010	\$0	0.6112	0.508	\$ -
FY11	2011	\$0	0.5925	0.493	\$ -
FY12	2012	\$0	0.5748	0.478	\$ -
FY13	2013	\$0	0.5622	0.463	\$ -
FY14	2014	\$0	0.5479	0.449	\$ -
FY15	2015	\$0	0.5399	0.436	\$ -
FY15	2016	\$36,430,227	0.5399	0.422	\$ 8,309,481
FY15	2017	\$253,700	0.5399	0.410	\$ 56,114
FY15	2018	\$135,700	0.5399	0.397	\$ 29,105
FY15	2019	\$135,700	0.5399	0.385	\$ 28,223
FY15	2020	\$135,700	0.5399	0.374	\$ 27,368
FY15	2021	\$135,700	0.5399	0.362	\$ 26,538
FY15	2022	\$135,700	0.5399	0.351	\$ 25,734
FY15	2023	\$135,700	0.5399	0.341	\$ 24,954
FY15	2024	\$135,700	0.5399	0.330	\$ 24,198
FY15	2025	\$979,400	0.5399	0.320	\$ 169,354
FY15	2026	\$33,095,069	0.5399	0.311	\$ 5,549,268
FY15	2027	\$389,400	0.5399	0.301	\$ 63,315
FY15	2028	\$271,400	0.5399	0.292	\$ 42,791
FY15	2029	\$271,400	0.5399	0.283	\$ 41,494
FY15	2030	\$271,400	0.5399	0.275	\$ 40,237
FY15	2031	\$271,400	0.5399	0.266	\$ 39,018
FY15	2032	\$271,400	0.5399	0.258	\$ 37,835
FY15	2033	\$271,400	0.5399	0.250	\$ 36,689
FY15	2034	\$271,400	0.5399	0.243	\$ 35,577
FY15	2035	\$1,115,100	0.5399	0.235	\$ 141,746
FY15	2036	\$7,953,347	0.5399	0.228	\$ 980,353
FY15	2037	\$389,400	0.5399	0.221	\$ 46,544
FY15	2038	\$271,400	0.5399	0.215	\$ 31,457
					\$ 44,878,537
	Total Project Cost	\$118,694,386			
1987-2014	per PB3 Costs	34,967,643			
2015-2038	per MCACES/Cost Schedule	\$83,726,743			
Average Annual Cost (n=50, i=3.125%)	\$1,785,850				

Table 4-2: Discounting and price level adjustments for remaining project cost at 3.125% discount rate

DADE COUNTY – Sunny Isles Segment Remaining Project Cost Discounting

Discount Rate 3.125 %
 Remaining Project Life 23
 Capital Recovery Factor 0.06161

Price Level FY for Costs	FY	Costs	Price Level Adj. Factor	3.125 % Present Worth Adj. Factor	Price Level & Present Worth Adj. Costs to FY00 @3.125%
FY15	2016	\$36,430,227	0.5399	1.000	\$ 19,668,209
FY15	2017	\$253,700	0.5399	0.970	\$ 132,819
FY15	2018	\$135,700	0.5399	0.940	\$ 68,890
FY15	2019	\$135,700	0.5399	0.912	\$ 66,802
FY15	2020	\$135,700	0.5399	0.884	\$ 64,778
FY15	2021	\$135,700	0.5399	0.857	\$ 62,815
FY15	2022	\$135,700	0.5399	0.831	\$ 60,911
FY15	2023	\$135,700	0.5399	0.806	\$ 59,066
FY15	2024	\$135,700	0.5399	0.782	\$ 57,276
FY15	2025	\$135,700	0.5399	0.758	\$ 400,855
FY15	2026	\$33,095,069	0.5399	0.735	\$ 13,134,895
FY15	2027	\$389,400	0.5399	0.713	\$ 149,863
FY15	2028	\$271,400	0.5399	0.691	\$ 101,285

FY15	2029	\$271,400	0.5399	0.670	\$ 98,216
FY15	2030	\$271,400	0.5399	0.650	\$ 95,240
FY15	2031	\$271,400	0.5399	0.630	\$ 92,353
FY15	2032	\$271,400	0.5399	0.611	\$ 89,555
FY15	2033	\$271,400	0.5399	0.593	\$ 86,841
FY15	2034	\$271,400	0.5399	0.575	\$ 84,210
FY15	2035	\$1,115,100	0.5399	0.557	\$ 335,507
FY15	2036	\$7,953,347	0.5399	0.540	\$ 2,320,457
FY15	2037	\$389,400	0.5399	0.524	\$ 110,168
FY15	2038	\$271,400	0.5399	0.508	\$ 74,457
	Total Remaining Cost	\$83,726,743			\$ 37,415,468
Average Annual Cost (n=23, i=3.125%)		\$2,305,055			