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EROSION CONTROL/PERMIT MONITORING PROGRAM

Beach Erosion Control Project Management System
Beach Nourishment/Inlet Sand Bypass Project Monitoring System

by

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FOREWORD

This work presents a beach erosion control project management system and beach nourishment/inlet sand bypass project monitoring system. The work constitutes partial fulfillment of contractual obligations with the Federal Coastal Zone Management Program (Coastal Zone Management Act of 1972, as amended) through the Florida Office of Coastal Management subject to provisions of contract CM-37 entitled "Erosion Control/Permit Monitoring Program" (DNR contract no. 00035). The work is adopted as a Beaches and Shores Report CZM-84-1.

At the time of submission for contractual compliance, Mark E. Leadon, P.E., was the Project Manager, and Administrator of the West Coast Section, James H. Balsillie was the Contract Manager, and Administrator of the Analysis/Research Section, Ralph R. Clark, P.E., P.L.S., was Chief of the Bureau of Coastal Engineering and Regulation, Deborah E. Flack was Director of the Division of Beaches and Shores, and Dr. Elton J. Gissendanner was Executive Director of the Department of Natural Resources.

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I. INTRODUCTION

It has been reported that more than 25% of Florida's 782 miles of beach is in a critical state of erosion (Cambell, et. al. 1980). These beaches can not support the important tourist industry within the state, nor do they provide protection to valuable upland real estate and natural resources against tropical storms that have a high probability of occurrence along the Florida coast. With the world wide trend in apparent sea level rise combined with the increasing pressure to develop Florida's coast, the need to stabilize the beach against erosion will become more and more important.

Among the many erosion control options available, beach nourishment and inlet sand bypassing has become increasingly popular over the past decade. Since 1975 there have been more erosion control projects in Florida than the rest of the coastal states combined, most utilizing some form of beach nourishment. This represents an investment of more than $100 million in federal, state and local funds (FSBPA 1981).

Walton (1977) states that artificial nourishment has several advantages over "hard" engineering structures (Groins, Jetty, Breakwater, Revetment or Sea Wall). By artificially adding sediment to the coastal sand budget, beach nourishment projects are esthetically pleasing, help to naturally dissipate energy, do not create hazards to beach users and supply sediment to down drift beaches.

The source area for borrow material in Florida is usually sediments dredged from tidal inlets, offshore areas, or occasionally barrier island sands. The two most common placement techniques are hydraulic settling from dredge pipe and trucking from borrow stock pile.

The Florida east coast has some 18 inlets which connect bays, lagoons, rivers and waterways with the Atlantic Ocean. There are many more inlets on the gulf coast shoreline. Tidal inlets which are stabilized with one or two jetties can act as a barrier to the natural littoral drift by interrupting the drift of sand along the coast. Sand accumulates on the updrift side of these structures and results in increased erosion of the downdrift side beach.

Sand bypass projects have been implemented to 1) maintain the navigational channel by periodic dredging of sediment washed into the inlet and 2) place the suitable dredged material on the eroding down drift shoreline. These projects have the same considerations as beach nourishment projects, in that the suitability of the borrow material (i.e. navigation channel sediment) is an important factor in fill stability and that placement of this material as beach fill on adjacent downdrift beaches is for the purpose of renourishment and erosion control.

In the past few years the high cost of project regulation and implementation, dwindling source of public funding and the effectiveness of present beach nourishment technology has lead to the need to develop

guidelines addressing the fiscal accountability and performance monitoring of beach nourishment and sand bypass projects. Earlier work to produce guidelines for DNR was started in 1979 on erosion control and sand bypass projects (Sub Oceanic Consultants; 1979a, 1979b). Additional considerations on this topic are found in Stauble et. al. (1983).

A. PURPOSE

According to Chapter 161 of the Florida Statute, the Department of Natural Resources is responsible for beach and shore preservation. Chapter 161.091 establishes the erosion control fund account (ECA) where funds can be utilized to develop a comprehensive long-range, statewide plan for erosion control, beach preservation and hurricane protection. Emphases of this program has been on funding beach restoration and renourishment, inlet sand bypassing and transfer, borrow sources availability as well as dune construction and preservation.

The usual beach nourishment or sand bypass project on public beaches includes a match with federal and local dollars. Since 1975 approximately $32 million has been spent by the state of Florida for such projects. With this large expenditure of money on project implementation and construction, few of the projects have been adequately documented and monitored. Due to manpower and funding limitations there is, to date, no detailed comprehensive and systematic state program to insure fiscal accountability on performance monitoring of these state funded projects. Without this systematic collection of information on project performance and effectiveness, valuable data has been lost to the regulatory and engineering staff, on those projects that have not required monitoring. Of those projects that have included monitoring data, lack of standardization has limited the usefulness of data interpretation and applicability to new project design and possible environmental effects.

B. OJECTIVES

This study deals with investigations into beach restoration and renourishment and inlet sands bypass and transfer projects, since a large portion of the ECA funding goes toward these activities which includes inhouse technical and regulatory review.

The objectives of this study are to:

1) Develop project management system to include systematic information reporting procedures for fiscal accountability and quality assurance of project implementation and construction. This will facilitate timely and complete conveyance of necessary project information and allow completion of a complete data base on state funded projects.

2) Design performance monitoring standards for preconstruction, construction and post construction project phases. This requirement and standardization of monitoring data collection will improve permitting procedures and develop a data base of state funded project performances.

C. TASKS

The project was divided into two tasks concurrent with the study objectives.

TASK 1: Fiscal Accountability and Quality Assurance

Problems were identified in accounting procedures for permitting and implementation of state funded projects. Once the problems were outlined, a project management system was developed to standardize record management and identify important fiscal information on each project. To insure quality of project construction and monitoring, information was identified on technical and administrative actions from preconstruction to project completion. Formats and time schedules were developed for interim and final report submission. With this management plan the state has a comprehensive package to track progress and readily identify problems in each project utilizing state funds.

TASK 2: Performance Monitoring

In historical perspective, very few beach nourishment and sand bypass projects were available with monitoring data collected as part of the project design. Of the limited monitoring information, no standardization of format content or reporting period was evident. An inventory of these selected projects completed in the state since 1975, was compiled. Using this background, a set of project performance monitoring standards was developed. These standards address the complete project including preconstruction, construction and post construction time periods. Formats and time schedules were developed for interium and final report submission. Type of data collection and mode of analysis was identified under five general project catagories. By requiring this systematic monitoring program, the state will be able to assure project construction is in accordance with project design plans, assess post construction performance and develop a systematic data base. With this monitoring plan, regulatory and engineering staff will be able to obtain an understanding of project design and long-term performance.

II. Fiscal Accountability and Quality Assurance

To accomplish this portion of the study a beach erosion control project management system was developed. A key part of this system is the interactive computer data storage and retrieval program, which allows all aspects of projects to be identified, documented and controlled by DNR personnel. The details are described below:

Beach Erosion Control Project Management System

A. Background

The DNR Bureau of Beaches and Shores is the focal point for coordination of an intergovernmental program to prevent or restore erosion damage to beaches in Florida. The primary DNR responsibility is the allocation and management of funds derived from state and federal sources to projects executed by various units of local government. The allocative role consists of several functions:

(a) Evaluation of project requests from local government units to establish the relative value of each during a project period;

(b) Requesting state participation in the most worthy projects via the Department's budget request;

(c) Programming available Federal resources to projects approved by the appropriations act and the cabinet. The management effort involves a number of tasks, including:

a. Monitoring the local government procedures for expending authorized funds.

b. Tracking and inspecting progress on all projects funded;

c. Authorizing disbursements to local government units to finance ongoing efforts;

d. Certifying project completion;

e. Auditing expenditures made by all parties involved in each project.

f. Maintaining a physical inventory of the results of all efforts made under the beach erosion control program.

Several factors make the job of fulfilling these responsibilities quite demanding. First, DNR must evaluate a large number of proposals for new projects in a given year to establish funding priorites. These selected proposals should integrate with past accomplishments and future plans to form a coherent, progressive erosion control program. Also, in evaluating projects, trade-offs must be made between incommensurable factors to establish a defensible budget program, and the Department must maintain cognizance over each line item request so that DNR priorities are respected through the Legislative and Cabinet approval cycles. Finally, DNR must monitor the performance of units of local government (whose approaches to contract management are primarily characterized by their diversity) engaged in a variety of complex tasks.

Oversight of activities that are so diverse in nature and broad in scope can be greatly facilitated by ready access to all information relevant to key management decision. In order to provide this access, the sequel proposed a design for a data base and data base maintenance

system that will support the routine generation of reports crucial to the whole range DNR functions relating to effective implementation of beach erosion control measures.

B. Design Objectives

The project management system is designed to support the following DNR functions:

(a) Systematic evaluation of project applications;

(b) Guidance of designated project applications through the appropriations/approval cycles;

(c) Assurance of responsible expenditures of appropriated funds;

(d) Maintenance of complete records of official DNR oversight activities;

(e) Development of special studies or reports on the status or achievements of the beach erosion control program.

The overall design presumes that after initial development and installation, the system will be used and maintained by persons uninterested in computer software technology.

C. Basic System Features

The beach erosion control program project management system (PMS) is envisioned to consist of three main components: (1) a computerized data base, (2) a menu-driven data entry and retrieval system, (3) a set of reports configured to support key management decisions and functions.

The data base for the PMS will be developed using the APL data interface available on the DNR IBM 4341. Within this system, definition of the data base requires specification of the record format, i.e., a specific statement as to the contents and character types for each information field that characterizes a project or project application. Initial efforts have defined a total of 157 fields of data that could usefully be associated with a specific project. Each record would contain a maximum of 1400 characters. The record format is laid out in Appendix A in order of the tab settings for data entry and update. Additional fields could be added if necessary to support important management activities. Each record in the data base - whether representing active projects, completed projects, or project proposals - would be keyed to a project number that should be assigned at the point of initial entry of the record.

The data entry and retrieval system will be menu-driven: i.e., at program initiation, the computer will display a set of user choices which can be selected by filling in the appropriate entry on the screen.

The choice taken will then call a screen of options that can be selected to accomplish the desired task. Appendix B sets forth the appropriate screens for data entry and update. Appendix C shows screen formats that could handle data search and retrieval operations.

A number of management reports can be routinely extracted from the proposed data base. Appendix D briefly describes the contents of seven that seem most useful in meeting the design objectives set forth in section IIB. The reports desired could be selected from a sequence of menus that first list the reports and then allow selection of report specific options. Actual report formats should be developed in conjunction with users.

As part of the task of this project, revisions were developed by the Department of Natural Resources, Division of Beach and Shores, to chapter 16B-36 entitled "Beach Erosion Control Assistance Program". The purpose of this chapter is to set forth revised policies and precedures for administration of the program pursuant to section 161.091, F.S. A questionnaire was sent to selected federal, state and local government agencies as well as private coastal engineering consulting firms to solicite comments on the revisions. The list of reviewers and their comments are included as appendix J.

III. Performance Monitoring

To acccomplish this portion of the study an intentory of past beach nourishment and inlet sand bypass projects was compiled. With this background a project monitoring system was developed with interactive computer data storage and retrieval. This system enhances the understanding of the behavior of erosion control projects and their influence on adjacent shorelines. As stated by Suboceanics (1979a, 1979b) the importance of establishing a program such as this is to:

1) Insure that erosion control projects are monitored on a systematic and periodic basis

2) Standardization of content, format and type of analysis to facilitate comparison

3) Provide a data base for future design and regulatory studies.

The details of the inventory and system are as follows:

Beach Nourishment/Inlet Sand Bypass Project Monitoring System

A. Performance Monitoring Inventory

In order to assess the needs and requirements of project monitoring standards, a review of past project monitoring reports was undertaken. The first finding was the general lack of monitoring reports available for recent beach nourishment and sand bypass projects within the state. The following five beach nourishment and inlet sand bypass projects were

chosen because they had sufficient data on file with DNR to permit their use in the case study:

- Captiva Island (South Seas Plantation) - Beach Nourishment
- Del Ray Beach - Beach nourishment
- Hollywood/Hallendale - Beach nourishment
- Indialantic/Melbourne Beach - Beach nourishment
- Cape Canaveral - Inlet transfer
- Jupiter Island - Beach Nourishment
- Boca Raton - Inlet Transfer
- Stump Pass - Inlet Transfer

Two additional projects were selected from the Jacksonville District Corps of Engineers files:

- Duval (Jacksonville Beach) - Beach nourishment
- Miami Beach - Beach nourishment

These two projects had little data in analyzed form. A great deal of effort was required to reduce this data and was beyond the scope of this study. The great majority of other projects examined for inclusion in this study either did not require monitoring or the data was inadequate or insufficient to discribe post-nourishment behavior.

It became evident upon review of the limited data that was available, that there was a great dissimilarity in the type and content of data collection and analysis. All of the methods for describing project performance were valid and used standard engineering practice but due to the nature of analysis or data presentation, cross comparison between data sites was extremely difficult and labor intensive. There were several inconsistancies in catagories of information and quite often omission of important data was found in the monitoring reports.

To organize the inventory of report content, five general headings were selected as follows:

1. Project Description
2. Beach Survey Data
3. Sediment Analysis
4. Supplementary Data
5. Borrow Area Data

Table 1 through 4 summarizes the inventory of projects and shows the wide variability of data presentation. Table 5 summarizes the borrow area monitoring information. Some of the borrow area reports were separate from monitoring reports and correlation of both on the same project were difficult.

The major discrepancies between the projects are summarized in Table 6 for base of comparison with all of the general headings.

TABLE 1

PHYSICAL MONITORING GUIDELINES: Project Description

Nourishment Project	Nourishment Dimensions	Volume of Fill Placed	Nourishment Suitability (Calculated)	Pre-Nourishment Baseline Data	Source and Method of Applying Fill	Addition Information
Captiva 1981 18mo monitoring	10,000 ft. at the north end of Captiva Island	665,500 cu. yds.	Not Calculated	---	Dredged from Gulf Shoal west of Redfish Pass	Bathymetric Surveys done on the borrow area at 100 ft intervals
Hollywood/ Hallendale Completed Nov 1979 1 yr monitoring	Length of Project 27,760 ft.	1,980,685 cu. yds.	1.09 cu. yds borrow needed to replace 1.00 cu. yds. native sand	Shoreline receeding 1 ft./ yr., and 55,600 cu. yds. lost/yr.	Dredged from 7 borrow sites located 5,000 to 10,000 ft. offshore	605,000 cu. yds. borrow needed every 10 years
Indialantic/ Melbourne Beach Dec 1980-Jan 1981 1yr monitoring	Project length 2.1 miles	540,000 cu. yds.	1.12 cu. yds. borrow needed to replace 1.00 cu. yds native sand	Profiles, sediment samples, and aerial photos photos collected	Dumped by truck from turning basin spoil pile at Port Canaveral	---
Port Canaveral Beach Jun 1974 Mar 1975 1yr monitoring	Project length 2.1 miles	2,715,000 cu. yds.	Not Calculated	Shoreline receeding 10 ft./ year	Pumped by pipeline from Port Canaveral turning basin	---
Delray Beach Jul 1973 and again in Feb to May 1978 36mo Monitoring	Length of Project 10,000 ft.	701,266 cu. yds.	Not Calculated	Shoreline receeding 5 ft./ yr., and 133,066 cu. yds. lost/yr.	Dredged from an offshore borrow area	Originally nourished in 1973; 1,634,513 yds^3. 1879 - 2 areas 701,266 yds^3.

TABLE 1

PHYSICAL MONITORING GUIDELINES: Project Description

Nourishment Project	Nourishment Dimensions	Volume of Fill Placed	Nourishment Suitability (Calculated)	Pre-Nourishment Baseline Data	Source and Method of Applying Fill	Additional Information
Stump Pass Dredging 1980 3 yr monitoring	7,000 ft	?	---	?	Sand dredged from channel	?
Jupiter Island 1973/74 #1 1977/78 #2 follow up monitoring 1981	25,000 ft	1973/74 3,137,553 yd^3 1977/78 1,327,289 yd^3	-	Ave. rate of erosion = $\frac{258,029\ yd^3/yr}{\text{Ave loss/linear ft.}}$ = 7.41 yd^3/ft	Sand dredged from an off-shore borrow area	1973/74 3.1mill yd^3 1977/78 1.3 mill yd^3 2nd project has two areas
Boca Raton 1980 wier const. north jetty 2yr monitoring Beach on	5,000 ft	Yearly placed Jan 1980/1981 43,840 yd^3	Fill factor of 4.0	Beach south of inlet receeded 227 ft in 4 yrs after 1975	Sand dredged from inlet	continous dredging of inlet and transfer sand onto South as need basis

TABLE 2

PHYSICAL MONITORING GUIDELINES: Beach Survey Data

Nourishment Project	Beach Profiles				Volume Changes Using Beach Profile Data			
	Time Interval	Along the Beach Coverage	Along the Profile Coverage	Reference Monuments Utilized	Method for Calculating	Time Interval	Along the Beach Coverage	Along the Profile Coverage
Captiva	Profiles taken every 6 months	11 Project 4 S. Controls approx. 300 ft. intervals	Data points every 20 ft.	Internal Project Benchmarks	Project Specific Benchmarks	Calculated every 6 months	Volume Change Between Profiles Calculated	Not Mentioned in Report
Hollywood/ Hallendale	Every 3 months; Offshore profiles every 6 months	Profiles taken every 1,000 ft.	Data point every 20 ft.	Internal Project Benchmarks	Fill volumes calculated using average end area method	Calculated every 6 months	Volume Calc. for whole nour. area	Volume change also calc. between profiles
Indialantic/ Melbourne Beach	Every 3 months	3 Project profiles ½mi. N. & S. Controls 1 mile int.	Data point every 5 meters	Dept. of Natural Resources (DNR) Benchmarks	Formulated by Computer	Calculated every 3 months	Vol. change between profiles calculated	Vol. change every 1 m along the profile calc.
Port Canaveral Beach	Every 6 months	Approx. 30 Project Profiles 100 ft. int.	Data point every 30 ft.	DNR/COE Project Benchmarks	Computer Algorithm Used	Calculated every 4 months	Vol. change calc. for every 1,000 ft. of nour. area	Vol. change from Fill to MLW to -5 ft. to -10 ft. to -20 ft. calc.
Delray Beach	Compared 1981 to 1980 profiles	9 Project 7 Control split project 1,000 ft. int.	Data point every 5 ft.	DNR/ Project Benchmarks	Not Mentioned in Report	1981 compared to 1980	Not Mentioned in Report	Not Mentioned in Report

TABLE 2

PHYSICAL MONITORING GUIDELINES: Beach Survey Data

Nourishment Project	Beach Profiles			Volume Changes Using Beach Profile Data			
	Time Interval	Along the Beach Coverage	Along the Profile Coverage	Reference Monuments Utilized	Method for Calculating	Time Interval	Along the Beach Coverage	Along the Profile Coverage
Stump Pass	1 yr Interval	8 profiles 6 in project 2 south of project	Data point every 20ft, offshore 50ft	Project Specific Benchmarks	Not mentioned in report	Calculated Approximately Every 12mo	Not Mentioned in Report	Not Mentioned in Report
Jupiter Island	8 years	26 profiles 3 south 4 north of project	Data point every 25ft. onshore 75ft intervals offshore	Project Specific Benchmarks	Not Mentioned in Report	Calculated once a year	Vol change calculated on Ave. every 1100ft of	Intervals of cubic yd per linear ft
Boca Raton	Quarterly in 1980 + once in Aug 82	19 total 7 north of inlet	From vegitation line to 30ft Contoure	Project Specific Benchmarks	Area Changes between Profiles	Calculated once a year	Vol change calculated on Ave every 500ft of study area	Not Mentioned in Report

TABLE 3

PHYSICAL MONITORING GUIDELINES: Sediment Analyses

Nourishment Projects	Sediment Sampling			Grain Size Distribution		Additional Information
	Time Interval	Along the Project Coverage	Along the Profile Coverage	Method of Separating Sediment	Statistical Parameters Used to Analyze Sediment	
Captiva	Samples Taken Every 6 Months	3 Sampling Sites in Nour. Area; 1 South of Project	Samples Taken Every 3 ft. Vertically	Standard Sieving; Composite Samples Used	Cumulative Frequency Curves	Analyzed Sediment in Borrow Area Before and After nour.
Hollywood/ Hallendale	Samples Taken Every 6 Months	6 Sampling Sites in Nour. Area	Samples Taken Every 3 ft. Vertically	Standard Sieving; Composite Samples Used	Cumulative Frequency Curves	---
Indialantic/ Melbourne Beach	Samples Taken Every 3 Months	3 Sampling Sites in Nour. Area; 2 Controls Collected	Sampled at Dune Base, Ht, Mt, Swash, and 3 Offshore	Standard Sieving; Composite Samples Used	Cumulative Frequency and Frequency Curves Plotted by Computer and Analyzed	---
Port Canaveral Beach	Samples Taken Every 3 Months	3 Sampling Sites in Nour. Area	Samples Taken Every 4 ft. Vertically	Standard Sieving (?)	Granulometric Procedure; % Shell Material and Median Diameter Determined	---
Delray Beach	Samples from 1980 and 1981 Compared	4 Sampling Sites in Nour. Area	Samples Taken Every 3 ft. Vertically	Standard Sieving (?); Composites Used	Cumulative Wt. % Coarser and composite Curves Drawn and compared to Pre-Nour. and Borrow site	---

TABLE 3

PHYSICAL MONITORING GUIDELINES: Sediment Sampling

Nourishment Project	Time Interval	Along the Project Coverage	Along the Profile	Method of Separating Sediments	Statistical Parameters Used to Analyze Sediments	Additonal Information
Stump Pass		----------No Sediment Analysis Done ----------				
Jupiter Island		----------No Sediment Analysis Mentioned in Report----------				
Boca Raton	Native Beach Sampled once Borrow area cores once	---	---	Total Project Composite	Cumulative Frequency Curves	---

TABLE 4

PHYSICAL MONITORING GUIDELINES: Supplementary Data

Nourishment Project	Construction Activities Before and After Nourishment	Environmental Conditions Before and After Nourishment	Aerial Photo. Coverage of the Nour. Area	Beach Width or Other Qualitative Measurements from the Aerial Photos	Additional Information
Captiva	---	Not Mentioned In Report	Examined Flood Channel Before Nourishment	---	---
Hollywood/ Hallendale	---	None Before; L.E.O. Data Monitored Over a 1 year Period After Nourishment	---	---	---
Indialantic/ Melbourne Beach	---	Baseline Survey Before L.E.O. Data Monitored Every 3 months After Nourishment	Aerial Photos from Before, After, 3 Months After, and 1 Year After Nour.	Beach Width and Area Changes Calculated from Aerial Photos	
Port Canaveral Beach	Jetty Built at inlet-1954 Dredging Maintenance	Monitored Storms Before and After Nourishment	Aerial Photos from Before, After, and 6 Years After Nourishment	Beach Width and Changes Calculated from Aerial Photos	Beach Recession Rates Calculated Every 4 Months
Delray	Rock Revetment Built Before Nour.; Sand Fence Placed at Dune After Nour.	Volume and shore-lines retreat rates	---	---	---

TABLE 4

PHYSICAL MONITORING GUIDELINES: Supplementary Data

Nourishment Project	Construction Activities Before and After Nourishment	Environmental Conditions Before and After Nourishment	Aerial Photo Coverage of the Nourishment Area	Beach Width or other Qualitative Measurements from the Aerial Photos	Additional Information
Stump Pass	Maintenance Dredging	Channel Bathymetric parameters and velocity data showing scour and disposition	Channel location	----	Report of project following storm
Jupiter Island	---	Photographs of Project area	---	----	Retreat Rate Average 13.6 ft/yr
Boca Raton	1975 Inlet jetty added. In 1980 Weir Section added in north jetty	Survey Constructed with observations, photos, sampling and sediment core samples were employed	---	----	Beach Immediately South of Inlet receeding 227 ft in 4 years

TABLE 5

PHYSICAL MONITORING GUIDELINES: Borrow Area

Nourishment Project	Borrow Source	Bathymetric Survey	Sample Pattern	Number of Samples	Sediment Analysis	Sampling Interval
Captiva	Offshore EBB Shoal 2000' x 1500'	Transects 100' Interval, Depths Listed 50' Interval	4 Corners Center, 2 Central	5 Surface Samples	Standard Sieving % Course	Preconstruction Post Construction 6 mo, 12 mo
Hollywood/ Hallendale	Offshore shelf 5000' x 7000' Off Beach	---	---	7 sites	---	---
Indialantic/ Melbourne Beach	Dredge Spoil Stockpile from Port Canaveral Project	---	3 Sites Immediate Post Placement Backshore	Statistical Composite 3 Backshore Samples	Standard Sieving ½ø Int.	At Placement
Port Canaveral Beach	Turning Basin (Barrier Island Sand)	Yes	---	Backbeach and Center of fill	Standard Sieving Statistics	Sediment Chosen During Dredging
Delray Beach	Offshore Borrow Area	---	---	---	---	---

TABLE 5

PHYSICAL MONITORING GUIDELINES: Borrow Area

Nourishement Project	Borrow Source	Bathymetric Survey	Sample Pattern	Number of Samples	Sediment Analysis	Sampling Interval
Stump Pass	Sand dredge from channel	Yes Depths listed in tenth of foot intervals	----------	No Samples Taken	----------	----------
Jupiter Island	Offshore Borrow Area	--	----------	No Samples Taken	----------	----------
Boca Raton	Sand from Inlet	Yes depth intervals in 1 foot	--	11 cores	medn. size 1.71	1 Survey

TABLE 6

DISCREPANCIES

Pre Nourishment

Nourishment Suitability:
Not calculated or not mentioned in five out of eight cases.

Prenourishment Baseline Data:
Usually adequate (Recession Rates Given in Ft/Yr and Cu Yds/Yr) except in two cases.

Borrow Area:

Location of Borrow:
Given in all projects but information dificult to discern in some reports.
Bathymetric Surveys:
Thorough details at Captiva, Boca Raton and Stump Pass (all inlet transfers projects) not mentioned or vague in other cases.
Number of Samples:
Not consistent, range from 2 to 7 sites; not mentioned in four projects.
Pattern of Samples:
Grid pattern at Captiva; Along sediment sampling lines at Port Canaveral; None mentioned for others.
Method of Analysis:
When mentioned, composite samples were used; not mentioned in most cases.
Time of Sampling:
Thorough sampling before, after, 6 mos & 12 mos for Captiva; one sample for Indialantic and Boca Raton; Three pre-fill samples for Port Canaveral; None for others mentioned.
Method of Fill Emplacement:
Hydraulic Dredging and dumping from trucks.

Profiles

Time Between Profiles:
Varies for all, ranging from 3 to 12 month intervals
Distance Between Profiles:
Variable with average at 1000' intervals
Distance Between Data Points (Along Profile):
All inconsistent, (5', 5m, 20', 30', etc...)
Reference Monuments:
D.N.R. monuments used in three studies. Others used project generated local temporary monuments.

TABLE 6 (Cont.)

Volume Changes

Method of Calculation:
All methods are different and not mentioned in the three cases.
Time Between Determinations:
Varying, range of 3 mos. to 1 year.
Along Beach Coverage:
Calculations made for the whole nourishment area, for areas between profiles, or not mentioned.
Along Profile Coverage:
Volume changes along profile either not calculated, at one meter intervals or other various intervals.

Sediment Sampling

Time Interval Between Samples:
Range of 3 to 6 months, not collected on 3 projects.
Sites Along Project:
Varies from four to six sites.
Sites Along Profile:
All at 3' intervals except Indialantic which used dune base, H.T., M.T., swash and offshore (200', 300', 400' from high tide).

Grain Size

Method of Separating Sediment Sizes: used unified soils classif. or PHI interval, used standard sieving and various types of composite samples.
Statistical Parameters Used in Analysis:
Most used cumulative frequency curves, either cumulative weight percent finer or coarser, some frequency curves mean and sorting parameters occasionally given. Only occasional reference to fill factor on renourishment factor suitability models.

Other

Renourishment:
Only considered in Delray.
Environmental Conditions Before and After Nourishment:
L.E.O. Data was used in two cases, storm frequency used in one case, no observations mentioned for two. Significant storm event listed in one.
Aerial Photography:
Used before and after for Captiva, Indialantic and Port Canaveral, beach width and area changes were measured for these; no data for others.

B. Performance Monitoring Standards

The Project Monitoring Standardization System is designed to support the following DNR functions:

a) Systematic evaluation of project applications
b) Assurance of project design compliance at completion
c) Systematic evaluation of project performances
d) Maintenance of monitoring data base of all state funded beach nourishment and inlet sand bypass projects.
e) Development of special studies or reports on status or achievements of the state beach erosion control program.

This system is designed to be a companion to the project management system. While there is overlap in the two systems, it is suggested that they be separate, since different DNR personnel will be responsible and interested in the information of both systems. The monitoring system is in two parts: 1) the computer data base of project data and 2) monitoring standards guidelines of specific tasks, formats, data analysis and presentation that will be required on state funded projects. This second document will contain specific data sheets and procedures to standardize data collection and presentation. It will be supplied to the project contractor prior to initiation of the project. Specific schedules will be included for type and time frame of monitoring activities.

C. Basic System Features

The Beach Nourishment/Inlet Sand Bypass Project Monitoring System is designed to standardize monitoring of both beach restoration and nourishment projects and inlet sand bypass and transfer projects. It is envisioned that additional erosion control project monitoring (structural controls, dune revegitation and construction) could be included in this system at a later date.

The first part of the system consists of a computerized data base with a menu-driven data entry and retrieval system. This system allows for project data storage and generation of special studies on reports on scientific and engineering criteria of future projects. As in the management system, this system will be developed using the APL data interface available on the DNR IBM 4341. Appendix E contains the record format layout, screen views for data entry and update and data search and retrieval operations.

The data base system is divided into five general catagories as follows:

1) Project Description.
2) Borrow area information.
3) Profile standards.
4) Sediment analysis standards.
5) Littoral environmental/supplementary information.

Each record in the data base will be keyed to the project number assigned the project under the management system. Data will include preconstruction, construction and post construction phases of the five general categories.

The second portion of the system contains the standards to be used in organization and content of the monitoring reports used by project contractors. The borrow area monitoring is explained in Appendix F. Profile standards are explained in Appendix G. Sediment analysis specifications and recommendation are contained in Appendix H. Additional littoral environmental data and supplimentary data of importance to project monitoring are included in Appendix I. Data sheet formats and instructions would be made available to the contractor at the start of the project. Compliance with standards would be required before completion of project. Time schedules for submittal of monitoring reports, type of data to be included, mode of collection and analysis and preferred format of data submittal will be identified in the document. This will allow compilation of minimum useful project information and encourage preservation of monitoring data on project performance by simplifying and standardizing required response.

SUMMARY

Clearly a systematic approach of fiscal accountability and project performance is advantagous to effectively manage the important and large scale coastal erosion control program in the state of Florida. This report presents two computer assisted systems to aid the DNR staff in accomplishing that goal.

The Beach Erosion Control Project Management System is designed to provide a systematic approach to the multi-phase planning, implementation and regulation of state funded erosion control projects. While specifically designed for beach restoration and nourishment and inlet sand bypass and transfer projects, it has the capability to handle "hard" structural applicants and "soft" dune management programs. The system will commence with the proposal stage of a project and continue through out the life of the project until its completion. The main task is to track fiscal expenditures and assume quality standards by establishing a time table and content of required reports. All erosion control projects can now be uniformly administered with a standard approach. An added benefit is the capability to generate project accomplishment reports and other management documents.

The Beach Nourishment/Inlet Sand Bypass Project Monitoring System insures a systematic approach to document state funded project performance. By requiring such data collection on every project utilizing state funds, an excellent data base will be generated. This information will document individual project response to coastal processes and the coastal engineer and project planner will have access to heretofore nonexistent systematic data, on which to base future project design and industry standards. In the long run, this will reduce both the high cost and permit delays, by supplying required data to make regulatory and engineering decisions. This system will be unique in that the entire project history from prenourishment background data, borrow area information and long-term project performance will be filed in one standardized record format which will be readily accessible. Within project and cross project comparisons and summary reports are now easily generated. The monitoring system is designed for both beach restoration and nourishment and inlet sand bypass and transfer projects. With this system, it is now possible to provide a better understanding of the behavior of these erosion control projects and their influence on adjacent shorelines. The system can be upgraded to include "hard" engineer structural alternatives as well as "soft" dune contruction and maintenance.

REFERENCES

Campbell, T. J., Spadoni, R., Beachlier, K., and Morgan, J., 1980, Planning For Beach Restoration in South Florida, ASCE, Vol. II. P. 1319-1330.

F.S.B.P.A., 1981. Sunshine State 1st in Erosion Control. Shoreline Newsletter, Fla. Shore and Beach Pres. Assoc., Vol. XXIV, No. 1, P. 5.

Stauble, D. K., M. Hansen, R. Hushla, and L. Parson, 1983. Beach Nourishment Monitoring, Florida East Coast: Physical Engineering Aspects and Management Implications. ASCE, Coastal Zone 83, p. 2512-2526.

Suboceanic Consultants, Inc., 1979a. Erosion Control Project Monitoring Guidelines, Report to Bureau of Beaches and Shores, Florida D.N.R. 11 p.

Suboceanic Consultants, Inc., 1979b. Inlet Project Monitoring Guidelines. Report to Bureau of Beaches and Shores, Florida D.N.R. 10 p.

Walton, T. L., 1977, Beach Nourishment in Florida and on the Lower Atlantic and Gulf Coast. Tech. Paper No. 2, Florida Sea Grant, 64. p.

Monitoring Reports

Captiva Beach Restoration Project

Tackney and Associates, Inc. August 1982, Six Month Monitoring Report, 39 p.

_____, February 1983, One Year Monitoring Report, 41 p.

Hollywood/Hallendale Beach Restoration Project

Suboceanic Consultants, Inc., October 1980, Six Months Monitoring Report, Broward County Erosion Prevention District, 27 p.

_____, No Date, One Year Monitoring Report, Broward County Erosion Prevention District, 34 p.

Indialantic/Melbourne Beach Erosion Control Project

Stauble, D. K. 1981, A Detailed Study of Profile Response and Sediment Textual Changes of the Indialantic/Melbourne Beach Nourishment Project. In Proc., 24th and 25th Annual Meeting of the Florida Shore and Beach Preservation Association, p. 197-216.

Stauble, D. K., M. E. Hansen, R. L. Hushla, and L. E. Parson, 1983. Biological and Physical Monitoring of Beach Erosion Control Project, Indialantic/Melbourne Beach, Florida. Part 2, Physical Monitoring. U.S. Army, Corps of Engineers, Jacksonville District, 72. p.

Port Canaveral Beach Fill Project

Coastal and Oceanographic Engineering Laboratory, July 1976, Report on Monitoring of a Beach Fill South of Canaveral Jetties, Brevard County, Florida, Univ. of Florida, 59 p.

Hushla, F. R. 1982. Evaluating the Performance of Beach Nourishment in Brevard County. Florida Through the use of

Aerial Photography, Tech. Report #GO-82-4, Florida Institute of Technology, Dept. of Oceanography and Ocean Engineering, Melbourne, Fl. 80 p.

City of Delray Beach, Beach Maintenance Nourishment Project

Arthur V. Strock and Assoc. Inc., Feb. 1976, Design Analysis for Maintenance Nourishment Project, City of Delray Beach, Palm Beach County, Florida. Report to U.S. Army, Corps of Engineers Jacksonville District. 52 p. and appendices.

_____, Oct. 1979 City of Delray Beach, Beach Maintenance Nourishment Project, 12 month follow-up study. Report to City of Delray Beach, FL. 17 p. and appendices.

_____, Feb. 1981, City of Delray Beach, Beach maintance Nourishment Project, 24 Month Follow-up Study. Report to City of Delray Beach, FL. 18 p. and Appendices.

_____, Nov. 1981, City of Delray Beach, Beach Maintenance Nourishment Project, 36 Month Follow-up Study. Report to City of Delray Beach, FL., 21 p. and Appendices.

Stump Pass, Sand Bypass Project

Coastal Engineering Consultants, Inc. April, 1983. Stump Pass, 1982 Monitoring Report. Reported to DNR, Division of Beaches and Shores 188p.

Jupiter Island, Beach Nourishment Project

Arthur V. Strock and Assoc. Inc. July, 1981, Town of Jupiter Island follow-up study, Report to town of Jupiter 13p and Appendices.

Boca Raton Inlet, Sand Bypass Project

Arthur V. Strock and Associates, July 1981, Boca Raton Inlet and adjacent beaches, monitoring study report. Report to City of Boca Raton, Palm Beach County, Florida, 30p and appendices.

_____, April, 1983 Boca Raton inlet, dredges and beach monitoring program, final report fiscal year 1981-1982. Report to City of Boca Raton, Palm Beach County, Florida, 14p and appendices.

Appendix A

DNR Beach Erosion Project Management System
Record Layout

Fields	Data Element Description	Format
1	Project number (00010-99990): Use increments of 10 initially to permit insertions	I5
2	City Name: Left justify	A20
3	County Name: Left justify	A15
4	Contact phone number	I10
5-7	Legislative Districts: US Congress (5), State Senate (6), State House (7)	2I2, I3
8	Date of project application: MMDDYY	I6
9-12	Funds requested: Total (9), State (10), Federal (11), Local (12)	4F11.2
13-23	Funds requested: Sand search (13), monitoring (14), other studies (15), beach restoration (16), beach nourishment (17), dune overwalks (18), sand transfer (19), dune construction (23)	11F11.2
24	Date application evaluated	I6
25	Evaluation Score	I3
26-31	Budget request year and amount: first (26,27), second (28,29), third (30,31)	3(I6,F11.2)
32-39	Appropriations dates and amounts: first (32,33), second (34,35), third (36,37), fourth (38,39)	4(I6,F11.2)
40-43	Reappropriations dates and amounts: first (40,41), second (42,43)	2(I6,F11.2)
44-46	Key dates: Completed application received (44); cabinet approval date (45); date contract executed (46)	3I6
47	Corps GDM or Detail Project Study Document location	A24
48	Contract amount	F11.2
49	Contract termination date	I6
50	Amended contract amount	F11.2
51	Additional performance period	I2
52-55	Amended termination date and date of amendment: first (52,53); second (54,55)	4I6
56-69	Progress report due date and date received: first (56,57); second (58,59); third (60,61); fourth (62,63); fifth (64,65); sixth (66,67), seventh (68,69)	14I6
70-79	Site inspection date and result (satisfactory-Y/N): first (70,71); second (72,73); third (74,75); fourth (76,77); fifth (78,79)	5(I6,A1)
80-103	Disbursement dates and amounts: first (80,81); second (82,83); third (84,85); fourth (86,87); fifth (88,89); sixth (90,91); seventh (92,93); eighth (94,95); ninth (96,97); tenth (98,99); eleventh (100,101); twelfth (102,103)	12(I6,F11.2)

104	Date of DNR Cerfificate of Completion	I6
105-106	Date (105) and report number (106) of internal audit review	I6, I5
107	Date of legislative audit report	I6
108-109	Date (108) and amount (109) of project refunds	I6,F11.2
110-112	Total Expenditures: State (110); Federal (111); Local (112)	3F11.2
113-114	Closest bounding marker numbers: Lower (113); Higher (114)	2I5
115-116	Beach restoration: miles restored (115); cubic yards sand placed (116)	F6.2,F10.2
117-118	Beach nourishment: miles nourished (117); cubic yards sand placed (118)	F6.2,F10.2
119	Dune construction: miles	F6.2
120-121	Dune protective structures: Number of overwalks (120); of walkways (121)	2I4
122	Linear feet of beach revegetated	F8.1
123-142	Number and types of plants used: first (123,124) second (125,126); third (127,128); fourth (129,130); fifth (131,132); sixth (133,134); seventh (135,136); eighth (137,138); ninth (139,140); tenth (141,142)	10(I5,A10)
143-145	Breakwaters: structures (143); feet above MSL (144); length (145)	I4,F5.2,F8.1
146-147	Terminal groin: length (146); height (147)	F8.1,F5.2
148	Feet of revetments	F8.1
149-150	Jetties: length (149); height (150)	F8.1,F6.1
151	Other erosion control structures (description)	A100
152-153	Inlet sand transferred: inlet name (152); volume of sand (153)	A15,F10.1
154	Sand search study document	A9
155	Beach monitoring study document	A9
156	Dune monitoring study document	A9
157	Special study description	A100

Appendix B

Data Entry Procedures and Formats

This appendix proposes the proecures and screen formats for an on-line data entry system for PMS. Actual programming of these procedures is hardware (computer and computer terminal) dependent, so no specific programming strategy is suggested. The basic idea for the procedure is to have the on-line system generate and project a formatted screen with blank fields and field prompts. The procedure would operate in two modes--record creation and update. In record creation mode, all fields would be transmitted, with blank numeric fields being transmitted as zeros and all alpha fields being transmitted as 'Z's' or asterisks (or some other appropriate symbol). In update mode, fields would be transmitted only if values were added.

The primary sequence would be as follows--at program initiation, the user would be asked to enter an 'X' in the appropriate choice from the following list:

DATA ENTRY SYSTEM
__ NEW RECORD CREATION
__ UPDATE MODE

REPORT GENERATION SYSTEM
__ SEARCH MODE
__ FORMATTED REPORTS

If 'NEW RECORD CREATION' mode were selected, the system would display the number of the last project entered, and request the number of the project entered. If 'UPDATE MODE' were selected, the system would request the number of the project to be updated. Entry of the project number would key successive display of screen formats B.1 through B.6. After each field is filled in (or left blank, as appropriate), the cur-

sor will tab to the next field. Any field can be left blank by hitting a tab key. Any page can be skipped by hitting the 'enter' key. Use of the 'enter' key should skip to the next entry form after transmission of the protected fields of the screen is complete. In update mode, the current contents of each field (except the default contents) should be displayed on the formatted screen.

NOTE: All dates entered as MM/DD/YY, i.e., June 3, 1976 is 06/03/76

PROJECT NO: _____
CITY: _____ COUNTY: _____
CONTACT PHONE NUMBER: ___-___-____

CONGRESSIONAL DISTRICT: __ STATE SENATE: __ STATE HOUSE: ___

PROJECT REQUEST DATE: __/__/__

FUNDS REQUESTED

TOTAL: _____.__
STATE: _____.__ FEDERAL: _____.__ LOCAL: _____.__

SAND SEARCH: _____.__	DUNE CONSTRUCTION: _____.__
MONITORING: _____.__	REVEGETATION: _____.__
OTHER STUDIES: _____.__	PROTECTIVE WALKWAYS: _____.__
BEACH RESTORATION: _____.__	BREAKWATERS: _____.__
BEACH NOURISHMENT: _____.__	GROINS: _____.__
DUNE OVERWALKS: _____.__	REVETMENTS: _____.__
SAND TRANSFER: _____.__	JETTIES: _____.__
	OTHER: _____.__

EVALUATION:
DATE: __/__/__
SCORE: ___

DEPARTMENT BUDGET REQUEST:

FY ____	FY ____	FY ____
AMOUNT: _____.__	AMOUNT: _____.__	AMOUNT: _____.__

PROJECT NO: _____

KEY PROJECT DATES

APPROPRIATIONS EFFECTIVE DATE: __/__/__ APPROPRIATION AMOUNT: ________.__
APPROPRIATIONS EFFECTIVE DATE: __/__/__ APPROPRIATION AMOUNT: ________.__
APPROPRIATIONS EFFECTIVE DATE: __/__/__ APPROPRIATION AMOUNT: ________.__
APPROPRIATIONS EFFECTIVE DATE: __/__/__ APPROPRIATION AMOUNT: ________.__
REAPPROPRIATIONS EFFECTIVE DATE: __/__/__ REAPPROPRIATION AMOUNT: ________.__
REAPPROPRIATIONS EFFECTIVE DATE: __/__/__ REAPPROPRIATION AMOUNT: ________.__
COMPLETED APPLICATION RECEIVED: __/__/__
CABINET APPROVAL DATE: __/__/__
CONTRACT EXECUTED: __/__/__
CORPS GDM OR DETAIL PROJECT STUDY DOCUMENT LOCATION: _____

CONTRACT DATA

CONTRACT AMOUNT: ________.__ DATE OF TERMINATION: __/__/__
AMENDED CONTRACT AMOUNT: ________.__
ADDITIONAL PERIOD OF PERFORMANCE: __
AMENDED TERMINATION DATE: __/__/__ DATE OF AMENDMENT: __/__/__
AMENDED TERMINATION DATE: __/__/__ DATE OF AMENDMENT: __/__/__

PROGRESS REPORTS DUE:		PROGRESS REPORTS RECEIVED:	
1. __/__/__	5. __/__/__	1. __/__/__	5. __/__/__
2. __/__/__	6. __/__/__	2. __/__/__	6. __/__/__
3. __/__/__	7. __/__/__	3. __/__/__	7. __/__/__
4. __/__/__		4. __/__/__	

PROJECT NO. ------

PROJECT CONTROL DATA:

SITE INSPECTION DATE	SATISFACTORY (Y/N)
__/__/__	-
__/__/__	-
__/__/__	-
__/__/__	-
__/__/__	-

PROJECT DISBURSEMENTS:

	DATE	AMOUNT
1.	__/__/__	--------.--
2.	__/__/__	--------.--
3.	__/__/__	--------.--
4.	__/__/__	--------.--
5.	__/__/__	--------.--
6.	__/__/__	--------.--
7.	__/__/__	--------.--
8.	__/__/__	--------.--
9.	__/__/__	--------.--
10.	__/__/__	--------.--
11.	__/__/__	--------.--
12.	__/__/__	--------.--

PROJECT COMPLETION STATUS

DNR CERTIFICATE OF COMPLETION
DATE ISSUED: __/__/__

INTERNAL AUDIT REVIEW
DATE REPORTED: __/__/__
AUDIT NUMBER: ------

LEGISLATIVE AUDIT
DATE REPORTED: __/__/__

PROJECT REFUNDS
DATE: __/__/__
AMOUNT: ---------.--

TOTAL EXPENDITURES
STATE: --------.--
FEDERAL: --------.--
LOCAL: --------.--

PROJECT NO: _____

PHYSICAL INVENTORY

CLOSEST BOUNDING MARKER NUMBERS: LOWEST _____ HIGHEST _____

BEACH RESTORATION

MILES RESTORED: ___.__ CUBIC YARDS SAND PLACED: _______.__

BEACH NOURISHMENT

MILES NOURISHED: ___.__ CUBIC YARDS SAND PLACED: _______.__

DUNE CONSTRUCTION

MILES CONSTRUCTED: ___.__

DUNE PROTECTIVE STRUCTURES

NUMBER OF OVERWALKS: ____ NUMBER OF WALKWAYS: ____

PROJECT NO: _____

REVEGETATION

NUMBER OF LINEAR FEET: _____._

	NUMBER	TYPE OF PLANT		NUMBER	TYPE OF PLANT
1.	_____	_____	6.	_____	_____
2.	_____	_____	7.	_____	_____
3.	_____	_____	8.	_____	_____
4.	_____	_____	9.	_____	_____
5.	_____	_____	10.	_____	_____

EROSION CONTROL STRUCTURES

BREAKWATERS: NO. STRUCTURES ____ FEET ABOVE MSL __.__ LENGTH (FT) _____._

TERMINAL GROIN: LENGTH (FT) _____._ HEIGHT (FT) ___.__

REVETMENTS: LENGTH (FT) _____._

JETTIES: LENGTH (FT) _____._ HEIGHT (FT) ____._

OTHER (DESCRIPTION) _____
_____

PROJECT NO: _____

INLET SAND TRANSFER

NAME OF INLET: _____ CUBIC YARDS TRANSFERRED: _____.__

SAND SEARCH

STUDY DOCUMENT: _____

BEACH MONITORING

STUDY DOCUMENT: _____

DUNE MONITORING

STUDY DOCUMENT: _____

SPECIAL STUDIES (DESCRIPTION): _____

_____

DATE PROJECT STUDY COMPLETED: __/__/__

Appendix C

Search and Retrieval Operations

In many cases, it will be of interest to identify projects with specific characteristics. For instance, it may be useful to know which projects were completed between 1979 and 1981 in a specific U.S. Congressional District, or which current applications have received legislative appropriations but which have not been approved by cabinet action. To provide this information, a search procedure should be developed that can readily guide a user through the data base.

A useful scheme for this would be to offer the user a list of search characteristics for which he/she would specify ranges--if no range were specified for a characteristic, all values would be examined (if the specified criteria were met). The output of a search would be a list of project/application numbers which would be printed and/or stored in a file that could be automatically read for producing formatted reports. Also, the output file should generate a header describing the attribute ranges that generated the search list. Formats C.1 and C.2 should identify most of the useful search characteristics.

FORMAT C.1

SEARCH AND RETRIEVAL MODE: PLEASE ENTER APPROPRIATE RANGES
(ENTER DATES AS MM/DD/YY; IF MORE THAN ONE VALUE ENTERED, SEPARATE WITH COMMAS)

CITY NAME (ONE ONLY): _____ COUNTY NAME (ONE ONLY): _____

CONGRESSIONAL DISTRICTS: _____

SENATE DISTRICTS: _____

HOUSE DISTRICTS: _____

BOUNDING BEACH MARKERS (ONE ONLY IN EACH FIELD): LOW _____ HIGH _____

PROJECT REQUEST DATE RANGE: __/__/__ TO __/__/__

EVALUATION REPORT SCORE RANGE: __ TO __

PROJECT TYPE:

__ SAND SEARCH	__ DUNE CONSTRUCTION
__ MONITORING	__ REVEGETATION
__ OTHER STUDIES	__ PROTECTIVE WALKWAYS
__ BEACH RESTORATION	__ BREAK WATERS
__ BEACH NOURISHMENT	__ GROINS
__ DUNE OVERWALKS	__ REVETMENTS
__ SAND TRANSFER	__ JETTIES
	__ OTHERS

BUDGET REQUEST YEAR RANGE: __ TO __

BUDGET REQUEST AMOUNT RANGE: _____ TO _____

TOTAL PROJECT FUNDS REQUIRED: _____ TO _____

HIT ENTER WHEN ALL RANGES ENTERED

FORMAT C.2

SEARCH AND RETRIEVAL MODE: PLEASE ENTER APPROPRIATE RANGES
(ENTER DATES AS MM/DD/YY; IF MORE THAN ONE VALUE ENTERED, SEPARATE WITH COMMAS)

APPROPRIATIONS DATES: __/__/__ TO __/__/__
COMPLETED APPLICATIONS RECEIVED: __/__/__ TO __/__/__
CABINET APPROVAL DATES: __/__/__ TO __/__/__
CONTRACT EXECUTION DATE: __/__/__ TO __/__/__
CONTRACT TERMINATION DATE: __/__/__ TO __/__/__
PROGRESS REPORT DUE RANGE: __/__/__ TO __/__/__
PROGRESS REPORT RECEIVED RANGE: __/__/__ TO __/__/__
SITE INSPECTION PERFORMED: __/__/__ TO __/__/__
CERTIFICATE OF COMPLETION RANGE: __/__/__ TO __/__/__
INTERNAL AUDIT REVIEW RANGE: __/__/__ TO __/__/__
LEGISLATIVE AUDIT REPORTED RANGE: __/__/__ TO __/__/__

PLEASE ENTER SEARCH DISPOSITION (YOU MAY SPECIFY BOTH):

__ PRINT

__ READ FILE NAME (SPECIFY SEVEN ALPHA CHARACTERS): _____

HIT ENTER WHEN ALL RANGES ENTERED

Appendix D

Formatted Reports

For routine project management activities, a number of reports are clearly indicated. This appendix provides an annotated list of suggested reports that could be created. The reports could be set up to read a search list of project numbers created by the search and retrieval mode or could operate on specified project numbers. Initiating the report sequence would call for filling out the following information:

Report Mode

SEARCH LIST FILE NAME (USE 'ALL' IF DESIRED): _____

PROJECT LIST (IF NO SEARCH LIST FILE): _____

REPORT TYPE:

-- INDIVIDUAL PROJECT REPORT

-- DELINQUENT PROGRESS REPORTS SUMMARY

-- DISBURSEMENTS SUMMARY

-- APPLICATIONS STATUS

-- PHYSICAL INVENTORY SUMMARY

-- FUNDING SUMMARY

-- PROJECT COMPLETION SUMMARY

1. Individual Project Summary

For this report, the program takes each project number in the search list and prepares a comprehensive report on all information in the data base for the project or application.

2. Delinquent Reports Summary

For this report, the user specifies 'ALL' in the search list. The report program then searches the data base in field 104 to see that the

project is not yet complete, and then in field 56 to see if a progress report has been scheduled. If a positive result is achieved in both cases, then fields 56, 58, 60, 62, 64, 66, 68 are checked to see if any reports are scheduled prior to the current date. For those, fields 57, 59, 61, 63, 65, 67, 69 are checked to see that reports have been filed. If not, the project number, unsatisfied due dates, responsible local government unit, and contact telephone number are printed.

3. Disbursement Summary

The disbursement summary can be called either with a search list or for current projects. In the case of the search list, the disbursement summary only prints results from those projects on the search list but identifies the characteristics used to generate the list. For the current projects report, the program summarizes all projects with a cabinet approval date entered (field 45), and for which an internal audit has not been performed (field 105). For the affected projects, the report can present project number, the total Federal, State and Local funds committed, the date and amount of each disbursement and refund, and the funds disbursed net of refunds.

4. Application Status

This report summarizes key facts and dates on project applications based on a search list or a default active file. The active file list should include all project numbers for which an application date (field 8) is listed that is less than 12 months old and for which a contract has not yet been executed (field 46). For each project application in this status, a report is printed showing the defining characteristics of the projects selected and:

(a) Project number and requesting unit

(b) Date of application

(c) Funds requested (Federal, State, and Local)

(d) Project type (fields 13-23)

(e) Application evaluation date and score

(f) Budget request years and amounts

(g) Appropriation/reappropriation dates and amounts

(h) Dates completed application received and cabinet approval.

5. Physical Inventory Summary

The Physical Inventory Summary is generated for an explicit file list either directly specified or created in the search mode. The report presents the defining characteristics of the search file (if created in search mode), the list of projects covered, totals from fields 115-122, 143-150, lists of plant types and totals from fields 123-142 and 152-153, and lists of items included under fields 151, 154-157.

6. Funding Summary

The funding summary will address a search list or a list of active projects to obtain the active projects list, the system will search field 26 to determine if the project were budgeted and field 106 to see if an internal audit had been performed. For each budgeted yet unaudited project the report displays the breakdown of funds requested (fields 9-12), budget requests and appropriations data (fields 26-43), the contracted amount (field 48,50), and the sum of all disbursements to date. An additional component of the report can show total amounts of all projects budgeted for Federal, State, and local commitments, the appropriations, contracts, and disbursements.

7. Project Completion Summary

The project completion summary examines all projects for termination dates, certificates of completion, internal audits, and legislative audits. The report can display all projects whose termination dates have passed, but which still have open certification or auditing actions.

Appendix E

DNR Beach Nourishment/Inlet Sand Bypass
Project Monitoring System
General Information

E.1 DNR Beach Nourishment/Inlet Sand Bypass Data Base
Record Format: General Information

Fields	Data Element Description	Format
1	Project Number (Same as in PMS)	I5
2	Project Type (01) Beach Nourishment and Restoration (02) Inlet Sand Bypass and Transfer (Additional project types can be added)	I2
3	Project Name	A80
4-6	Project Location: City or cities (4), County (5), If Sand Bypass: Inlet name (6)	A30 A15 A30
7	Contact Phone Number	I10
8	Corps GDM or Detail Project Document Location	A24
9	Date Contract Executed (MM DD YY)	I6
10-11	Date of Pre-Project Baseline Survey: Borrow area (10) Native Beach (11)	2I6
12-15	Borrow Area Location Description: (ie: Inlet Ebb Tidal Delta) (12), Distance from Shore (13), Area (m^2),(4), Depth of usable sediment (5)	A20 3I4
16-19	Nourishment area location description (ie: Fort Pierce Beach, South Jetty) (16) Project Length(17) Closest project boundary DNR Benchmarks: Lowest # (18) Highest # (19)	A50 I3 I4 I4
20-22	Control site location: Distance up coast (20), DNR Benchmark #(21), Distance down coast (22), DNR Benchmark #(23)	2(I4,I4)
24-43	Associated Structure: Terminal groin: Upcoast (24), Length (25), Height (29) Downcoast (27), Length (28), Height (29)	2(I1,Ir,I3)
	Within Project Groins: Number (30) length (31) Height (32)	I3,I5,I3
	Revetment: Type (34) Length (35) Height (36)	A20,I4,I3
	Other Structures: Type (37) Length (38) Height (39)	A20,I4,I3

E.1 DNR Beach Nourishment/Inlet Sand Bypass Data Base
Record Format: General Information (Cont.)

Fields	Data Element Description	Format
	Dune Construction: Length (40), Height (41)	I4,I3
	Dune Vegetation: Length (42)	I4
	Dune Walkovers: Number (43)	I3
44-45	Date of Construction: Start (44), End (45)	2I6
46	Date of As-Built Survey	I6
47-53	Monitoring Dates: 3 MO (47), 6 MO (48), 9 MO (49), 12 MO (50), 18 MO (51), 24 MO (52), 36 MO (53)	7I6
54-58	Report Dates: Pre-Project Survey Report (51) As Built Report (52) 12 MO Report (53) 24 MO Report (54) 36 MO Report (55)	5I6
59	Special Study Description	A400

Format E.2.1

GENERAL PROJECT INFORMATION

PROJECT NO: _____

PROJECT TYPE: __

(01) BEACH NOURISHMENT AND RESTORATION
(02) INLET SAND BYPASS AND TRANSFER

PROJECT NAME:
PROJECT LOCATION: CITY(IES): _____ COUNTY: _____
INLET NAME (IF SAND BYPASS PROJECT): _____

CONTACT PHONE NUMBER: ___-___-____

CORPS OF ENG. G.D.M. OR DETAIL PROJECT DOCUMENT LOCATION: _____

CONTRACT EXECUTION DATE: __/__/__

PRE-PROJECT BASELINE SURVEY DATES. BORROW AREA __/__/__ NATIVE BEACH AREA __/__/__

BORROW AREA LOCATION: SITE DESCRIPTION: _____
DISTANCE FROM SHORE: _____ METERS AREA: ____ METERS^2
DEPTH OF USABLE SEDIMENT: ____ METERS

NOURISHMENT AREA LOCATION: SITE DISCRIPTION: _____
PROJECT LENGTH: ____ METERS
CLOSEST BOUNDARY DNR BENCHMARKS: LOWEST R____ HIGHEST R____
CONTROL SITE LOCATIONS: DISTANCE UPCOAST ____ METERS DNR BENCHMARK R____
DISTANCE DOWNCOAST ____ METERS DNR BENCHMARK R____

FORMAT E.2.1 (CONT.)

GENERAL PROJECT INFORMATION

PROJECT NO: _____

ASSOCIATED EROSION CONTROL STRUCTURES:

TERMINAL GROIN: UPCOAST ___ LENGTH ____ METERS HEIGHT ___ METERS

DOWNCOAST ___ LENGTH ____ METERS HEIGHT ___ METERS

WITHIN PROJECT GROIN: NUMBER ___ AVERAGE LENGTH ____ METERS AVERAGE HEIGHT ___ METERS

REVETMENT (SEA WALL): TYPE _____

LENGTH ____ METERS HEIGHT ___ METERS

OTHER STRUCTURE: TYPE _____

LENGTH ____ METERS HEIGHT ___ METERS

DUNE CONSTRUCTION: LENGTH ____ METERS HEIGHT ___ METERS

DUNE VEGETATION PLANTING: (SEE P.M.S FOR VEGETATION TYPE)

LENGTH ____ METERS

DUNE WALKOVER CONSTRUCTION: NUMBER ___

Format E.2.1. (Cont.)

GENERAL PROJECT INFORMATION

PROJECT NO: _____

PROJECT CONSTRUCTION DATES: START: __/__/__ END: __/__/__

AS-BUILT SURVEY DATE: __/__/__

MONITORING SURVEY DATES:
3 MO __/__/__
6 MO __/__/__
9 MO __/__/__
12 MO __/__/__
18 MO __/__/__
24 MO __/__/__
30 MO __/__/__

MONITORING REPORT SUBMITTAL DATES:
PRE-PROJECT SURVEY __/__/__
AS-BUILT SURVEY __/__/__
12 MO. SURVEY __/__/__
24 MO. SURVEY __/__/__
36 MO. SURVEY __/__/__

SPECIAL STUDY DESCRIPTION: _____

E.2. Data Entry Formats

For data entry procedures see Appendix B.

The following are screen formats for data input into the monitoring system for general project information. This information is important to provide a basic description of the project and to facilitate record keeping and report filing. A specific time table of monitoring surveys is outlined to provide a continuity of data collection on the physical parameters of these erosion control projects. The surveys start with the pre-project base line data collection of both the borrow and project site. Much of this data in past projects was not included in monitoring reports and has been hopefully filed in other records. The inclusion of this data in a systematic fashion will preserve the continuity of the entire project.

As-built or immediate post construction data has also, in the past been filed as separate entities and not been included as an important record of project completion. This data also represents the start point for monitoring project charges as the coastal processes seek to establish an equilibrium with the fill.

Quarterly monitoring the first year after project completion has been recommended as a minimum interval to cover the seasonal and storm related changes that occur. As time progresses less rapid change takes place in the fill, therefore monitoring survey intervals may be extended. The second year bienial surveys are suggested and to assess long-term changes, a third year project anniversary survey is also suggested. An assessment of renourishment needs can be made at that time.

To report this monitoring data in a timely fashion three yearly monitoring reports will be due. The first year report will include the 3, 6, 9 and 12 month monitoring data, the second year report will include the 18 and 24 month data and the third year report covers the 36 month data and total project summary.

Appendix F

Borrow Area Monitoring Specifications

F. Borrow Area Monitoring Specifications

The monitoring of the source area of beach nourishment and inlet sand transfer sediment is important to:

1) Assess the suitability of the proposed borrow material for erosion control purposes as beach fill.

2) Assess the effect of sediment-removal on the borrow area and adjacent area due to changes in the coastal processes brought about by this removal.

3) Assess recovery of the borrow area through time and its suitability and future source of renourishment as needed.

Borrow areas used for past beach renourishment and restoration projects have been offshore shoals, the nearshore shelf, inlet sand bodies and occasionally estuarine areas. These areas in the geological past, have been areas of high energy where suitable grain size sands were deposited. At the present time these regions are, as a generality, under the influence of lower energy regemes, and may have additional non-suitable grain sizes deposited over or mixed with the former beach sands. It is therefore important to identify the location and extent of the useful sediment. Several erosion control projects, particularly in South Florida have used sediment from environmentally sensitive borrow areas. A systematic collection of data on the borrow area will insure suitability of fill material and document changes in bathymetry and littoral environmental conditions on individual projects. In addition, this system will provide a data base of behavior of borrow areas in general.

Section F.1 contains the screne input format for borrow area considerations. This will be a section of the computer data base system. Section F.2 will describe the important specifications to be addressed by the contractor in surveys of the borrow area. It is recommended that borrow area information be required on all projects, to prevent unsuitable fill material being placed in the nourishment area and undue damage to the borrow area or adjacent areas.

The time schedule for surveys includes a pre-nourishment survey of the borrow area and controls outside the borrow area (exact transects determined by DNR personnel for each project).

A survey immediately after project completion of the same data will establish a start point for borrow area behavior. Control areas will indicate natural conditions for comparison. These areas should be chosen to be representative of pre-nourishment conditions within the study area.

A six month and 12 month survey of borrow area bathymetry and sediment grain size distribution will be required to assess borrow area behavior. Long-term monitoring at 24 and 36 months will assess the in filling of the borrow area and suitability of reusing the area for renourishment in the future.

F.1.1 BORROW AREA MONITORING RECORD FORMAT

Fields	Data Element Description	Format
1-4	Location of Borrow Site Corners UTM Coordinants N-S/E-W or Latitude/Longitude of Four Corners	8I7
5-7	Length (5), Width (6), Volume of Usable Sand (7)	3I4
8-10	Pre-Nourishment Survey: Bathymetric Survey Date:	I6
	MM/DD/YY (8); Area of Survey (9),	I4
	Plotted Contour Interval (10)	F5.2
11-20	Sediment Core Samples: Collection Date (11)	I6
	Borrow Area: Number of Cores (12)	I3
	Average Length of Core (13)	I3
	Control Area: Number of Cores (14)	I3
	Average Length of Core (15)	I3
	Average Depth of Suitable Sand (16)	I3
	Borrow Area Composite Mean Grain Size (MM) (17)	F4.3
	(PHI) (18)	F4.2
	Borrow Area Composite Sorting (MM) (19)	F4.3
	(PHI) (20)	F4.2
21-23	Post-Nourishment Survey: Bathymetric Survey Date:	
	MM/DD/YY (21); Area of Survey (22),	I6,I4
	Plotted Contour Interval (23)	F5.2
	Sediment Surface Sample: Collection Date (24)	I6
	Borrow Area: Number of Samples (25)	I3
	Control Area: Number of Samples (26)	I3
	Composite Mean Grain Size: Borrow MM (27)	F4.3
	PHI (28)	F4.2
	Control MM (29)	F4.3
	PHI (30)	F4.2
	Composite Sorting: Borrow MM (31)	F4.3
	PHI (32)	F4.2
	Control MM (33)	F4.3
	PHI (34)	F4.2
	6 Month; 12 Month; 24 Month; 36 Month Borrow Area Data:	
35-38	Bathymetric Survey Dates: 6 Mo. (35), 12 MO (36), 24 MO (37), 36 MO (38)	4I6
39-42	Area of Survey: 6 MO. (39), 12 MO (40), 24 MO (41), 36 MO (42)	4I4
43-46	Plotted Contour Interval: 6 MO (43), 12 MO (44), 24 MO (45), 36 MO (46)	4I4
47-50	Sediment Surface Sample: Collection Dates: 6 MO (47), 12 MO (48), 24 MO (49), 36 MO (50)	4I6

F.1.1 BORROW AREA MONITORING RECORD FORMAT (Cont.)

Fields	Data Element Description	Format
	Number of Samples Collected:	
51-58	Borrow Area: 6 MO (51), 12 MO (52), 24 MO (53), 36 MO (54)	4I3
	Control Area: 6 MO (55), 12 MO (56), 24 MO (57), 36 MO (58)	4I3
	Composite Mean Grain Size:	
54-69	Borrow: In MM Units: 6 MO (54), 12 MO (55), 24 MO (56), 36 MO (57)	4F4.3
	In PHI Units: 6 MO (58), 12 MO (59), 24 MO (60), 36 MO (61)	4F4.2
	Control: In MM Units: 6 MO (62), 12 MO (63), 24 MO (64), 36 MO (65)	4F4.3
	In PHI Units: 6 MO (66), 12 MO (62), 24 MO (68), 36 MO (69)	4F4.2
	Composite Sorting:	
70-85	Borrow: In MM Units: 6 MO (70), 12 MO (71), 24 MO (72), 36 MO (73)	4F4.3
	In PHI Units: 6 MO (74), 12 MO (75), 24 MO (70), 36 MO (76)	4F4.2
	Control: In MM Units: 6 MO (78), 12 MO (79), 24 MO (80), 36 MO (81)	4F4.3
	In PHI Units: 6 MO (82), 12 MO (83), 24 MO (84), 36 MO (85)	4F4.2

Format F.1.2.

BORROW AREA MONITORING DATA

PROJECT NO: _____

LOCATION OF BORROW SITE: CORNNERS (UTM COORDINANTS) 1) _____ _____
2) _____ _____
3) _____ _____
4) _____ _____

LENGTH ____ METERS WIDTH ____ METERS

PRE-NOURISHMENT SURVEY: BATHYMETRIC SURVEY: DATES__/__/__
AREA OF SURVEY ____ METERS^2 PLOTTED CONTOUR INTERVAL _____ METERS

SEDIMENT CORE SAMPLES: COLLECTION DATE __/__/__
BORROW AREA: NUMBER OF CORES ___ AVERAGE LENGTH OF CORE ___ METERS
CONTROL AREAS: NUMBER OF CORES ___ AVERAGE LENGTH OF CORE ___ METERS
AVERAGE DEPTH OF SUITABLE SAND ___ METERS
BORROW COMPOSITE MEAN GRAIN SIZE _.___ MM OR __.__ PHI
BORROW COMPOSITE SORTING _.___ MM OR __.__ PHI

POST-NOURISHMENT SURVEY: BATHYMETRIC SURVEY DATE __/__/__
AREA OF SURVEY ____ METERS^2 PLOTTED CONTOUR INTERVAL _____ METERS
SEDIMENT SURFACE SAMPLES COLLECTION DATE __/__/__
BORROW AREA: NUMBER OF SAMPLES ___
CONTROL AREA: NUMBER OF SAMPLES ___
COMPOSITE MEAN GRAIN SIZE BORROW _.___ MM OR __.__ PHI
CONTROL _.___ MM __.__ PHI
COMPOSITE SORTING BORROW _.___ MM OR __.__ PHI
CONTROL _.___ MM __.__ PHI

Format F.1.2. (Cont.)

BORROW AREA MONITORING DATA

PROJECT NO. _____

	6 MO.	12 MO.	24 MO.	36 MO.	
BATHYMETRIC SURVEY DATES	__/__/__	__/__/__	__/__/__	__/__/__	
AREA OF SURVEY	----	----	----	----	METERS^2
PLOTTED CONTOUR INTERVAL	----	----	----	----	METERS^2
SEDIMENT SURFACE SAMPLES COLLECTION DATES	__/__/__	__/__/__	__/__/__	__/__/__	
NUMBER OF SAMPLES					
BORROW AREA	---	---	---	---	
CONTROL	---	---	---	---	
COMPOSITE MEAN GRAIN SIZE:					
BORROW:	-.---	-.---	-.---	-.---	MM
	--.--	--.--	--.--	--.--	PHI
CONTROL:	-.---	-.---	-.---	-.---	MM
	--.--	--.--	--.--	--.--	PHI
COMPOSITE SORTING:					
BORROW:	-.---	-.---	-.---	-.---	MM
	--.--	--.--	--.--	--.--	PHI
CONTROL:	-.---	-.---	-.---	-.---	MM
	--.--	--.--	--.--	--.--	PHI

F2. Borrow Area Monitoring Specifications

These specifications pertain to details and content that is expected to be included in the monitoring reports to be submitted to D.N.R. The time schedual of surveys and report that the borrow area monitoring information includes are as follows:

1) Pre-nourishment borrow area survey to be included in the pre-project base line study report

2) Post-nourishment borrow area survey to be included in the as-built monitoring report.

3) The 6, 12, 24, and 36 month borrow area surveys to be reported in the respective monitoring report.

Survey and Report Content

A hydrographic survey using fathometer and range locating equipment will be conducted prior to and immediately after the project of the borrow area and surrounding environs. The exact area to be covered will be determined by D.N.R. personnel on a project specific basis. The survey will include a nearby control area to represent as close as possible the bathymetry and sediment of the borrow zone.

The hydrography survey will be used to construct bathymetric maps with a control interval to be determined by D.N.R. personnel, depending on the complexity of the borrow area relief. Specific statistics on size, location and depth of suitable sediment will be included in the pre-nourishment report.

Sediment cores of a length sufficient to penetrate to the depth of dredge scour will be taken as close as possible to the bathymetric survey. The number and location of these cores will be determined by D.N.R. personnel, depending on project specific complexities in variation of sediment distribution and suitability requirements.

Core samples will be analysed using techniques described in Appendix H. The number of separate size analysis to be run on each core will be determined by the complexity of the stratigraphy of the core. Composite grain size statistics will be calculated for within borrow area sediment cores using the technique described in the Shore Protection Manual (S.P.M. 1977) section 5.332 and Hobson (1977).

The post-nourishment survey and specific month monitoring survey bathymetery will be collected and reported in the same manner as in the pre-nourishment survey. More detailed contour intervals may be necessary to identify the actual borrow pit edges.

Surface sediment samples collected with a grab type sampler will be sufficient to identify the change in sediment characteristics through out the monitoring period. Sediment collection dates should correspond as close as possible with bathymetric surveys at the above stated

intervals. The number and location of samples should be the same throughout the monitoring period. Grain size composite statistics of mean and sorting will be included in the specified reports. The analysis procedure is outlined in appendix H.

Appendix G

Profile Specifications

G. Profile Specifications

Beach profile data before, immediately after and at specific intervals throughout the monitoring period are important to understand the behavior of the fill. By collecting a history of elevation changes, the following information can be obtained:

1) The state of the pre-nourished beach
2) The volume of fill placed along the project
3) The areas of erosion and accretion of fill material after placement.
4) Long-term need to renourish the project beach

A standardized profile collection and reporting system will provide an important data base of comparible project beach elevation changes from the immediate project fill behavior to long-term coastal changes. By using the DNR benchmark system, long-term repeatability of profiles can be accomplished. This data base will aid in studies of coastal processes, such as drift rates and direction and the calculation of shoreline recession rates.

Section G.1. contains the screen input format for project beach profile considerations to be included in the computer data base. Section G.2 will describe the important specifications to be used by the contractor in monitoring beach elevation changes.

The time schedule outlined for profiles, includes a pre-nourishment survey of the existing beach. An immediate post-fill profile will be taken to be used as the as-built profile and be the starting project profile for monitoring purposes. Many of the past projects did not include this information in a monitoring report and the data was filed in a separate location, if at all, making additional work to recover and correlate this data. Most monitoring data starts with a 3 month survey, thus important and sometimes major changes in the first 3 months of the project are not documented. By requiring this data to be included in the monitoring format, a complete project record is achieved.

As outlined in Appendix E, general project information monitoring surveys will be required on a quarterly basis for the first year (3, 6, 9, 12 months) and on a bienial basis for the second year (18, 24 months). A 36 month profile will give a long-term profile readjustment information.

Control profiles should be included in the project specifications to study the natural changes in erosion or accretion occurring in the area of the project. Any major longshore transport of fill material will also be documented. The control sites should be far enough updrift and downdrift of beach nourishment projects to be out of the direct influence of fill placement. Drift directions on both coasts of Florida are seasonal with a predominate net yearly direction. At jettied inlets the usual project design is to bypass sediment downdrift by artificial means to sediment starved areas. On inlet sand bypass projects, particulary at jettied inlets, only the downdrift control needs to be studied if fill is placed adjacent to the jetty. If the nourishment

area is a significant distance downdrift from the jetty, a updrift control near the jetty may be required.

G.1.1. Profile Record Format

Fields	Data Element Description	Format
1	Project Number	I5
2	Pre-Nourishment Profiles: Number of profiles used	I4
3	As-Built Profiles: Number of profiles used	I4
5	Averaging spacing between profiles along-shore: meters	I4
6	Monitoring profiles: number of profiles	I4
7	Average spacing of profiles along-shore: meters	I4
8-9	Control profiles: Distance upcoast: Meters	I4
	Distance downcoast: Meters	I4

DNR Profile Format for Individual Profiles to Follow:

(Suggested Format on Table G.1)

FORMAT G.1.2

PROFILE SPECIFICATIONS

PROJECT NO: _____

PRE-NOURISHMENT PROFILES: NUMBER OF PROFILES USED: ____

AS-BUILT PROFILES: NUMBER OF PROFILES USED:
AVERAGE SPACING BETWEEN PROFILES ALONG-SHORE: ____ METERS

MONITORING PROFILES: NUMBER OF PROFILES USED:
AVERAGE SPACING BETWEEN PROFILES ALONG-SHORE: ____ METERS

CONTROL PROFILES: DISTANCE UPCOAST: ____ METERS
DISTANCE DOWNCOAST: ____ METERS

(INDIVIDUAL PROFILES TO FOLLOW DNR FORMAT)

AS FOLLOWS:

G.2. Profile Specifications

All profiles must originate with a DNR monument. Contractors should obtain the location elevation and profile angles of all DNR setback monuments within the control and project area. The number of profiles used will be determined by DNR personnel. For monitoring purposes, a useful rule of thumb, is to use a benchmark closs to every 0.5 miles of project length. Variations on this number could depend on length of project or need to take more detailed measurement, say near existing or proposed structures. Specifications for as-built profiles may require using every DNR monument within the project (monuments are approximately 1,000 ft apart). If additional profile lines are needed, they should be referenced off of these existing monuments.

Pre-nourishment profiles should be taken before construction to document the native sand elevations. The number of these profiles needed should correspond to the number of as-built profiles that are required to assess project specification compliance.

The profiles used to monitor post-fill behavior should be a selected subset as mentioned above, with a 0.5 mile spacing as needed of the same profiles used in this pre-nourishment/as built. Monitoring additional offshore continuation of the profiles is desirable at least twice a year to assess elevation changes out to wave base (36 ft. contour). Onshore/offshore sand transport, bar formation and migration and longshore sand transport information can be constructed from this data base.

Profile specifications should follow DNR profile formats and instruction. All profiles need to be referenced to NGVD (National Geodetic Vertical Datum) via the closest DNR benchmark. Standard transit, rod and tape survey methods are required for profiles from dune crest out to seaward limit of the rodman's abilities to maintain a station. Starting the profile at or landward of the dune crest will document dune elevations and assures measurement of dune retreat if it would occur during storm events. Comparison of control profiles to project profiles after storm events often show larger amounts of dune erosion outside of the fill area. An assessment of storm protection afforded by the project can then be made.

Twice a year (i.e. 6 mo. and 12 mo. survey) offshore profiles using boat, range finding equipment and fathometer should continue the monitoring profiles out to the seaward limit of sand transport. This depth can be calculated using the method developed by Hallermeier (1981). Often fill material will be transported seaward of land survey capabilities and will need to be documented.

Location maps of the project should include profile locations, limits of fill associated structure location and control sites. Borrow areas and inlet sand bypass location maps also should be included where applicable. Profiles should be plotted in accordance with DNR standard scale, comparing the immediate past reports profile with the latest. The verticle exageration and scale factors from DNR setbacking profiles program are shown in Figure G.1. (This section may be done by DNR personnel with X and Y data supplied by the contractor). A suggested

field sheet is shown in Table G.2. After plotting, the profiles will be included in the monitoring report, with the data stored in the computer data base according to project and survey date.

TABLE G.1

RECORD DESCRIPTION

System:	
Program:	
Language:	

File Number	I/O	File Name	File I. D.	Device Type	File Organization

Record Format: Fixed	Block Size:	Record Length: 80

Record: 1, 2, 3, and 4

Begin. Position	End Position	Length	Format	Comments
1	80	80	20A4	Survey Title
1	8	8	2A4	Range R-1
9	16	8	2A4	Range Date MMM YYYY
17	18	2	I2	Reset Code 1
19	30	12	F12.3	Northing
31	42	12	F12.3	Easting
43	49	7	F7.2	Azimuth
1	8	8	2A4	Dot Date DDMMMYY
9	16	8	2A4	Beach Date DDMMMYY
17	24	8	2A4	Offshore Date DDMMMYY
25	27	3	I3	Total No. Points
28	30	3	I3	No. DOT Points
31	33	3	I3	No. Beach Points
34	36	3	I3	No. Offshore Points
37	43	7	F7.1	Vegetation
1	7	7	F7.1	Erosion (10 year)
8	14	7	F7.1	Uprush (100 year)
15	21	7	F7.1	Erosion (50 year)
22	28	7	F7.1	Uprush
29	35	7	F7.1	Erosion (20 year)
36	42	7	F7.1	Uprush
43	49	7	F7.1	Erosion (10 year)
50	56	7	F7.1	Uprush
57	63	7	F7.1	SBL

TABLE G.1(CONT)

RECORD DESCRIPTION

System:	
Program:	
Language:	

File Number	I/O	File Name	File I. D.	Device Type	File Organization

Record Format: Fixed	Block Size:	Record Length: 80

Record: 5

Begin. Position	End Position	Length	Format	Comments
1	7	7	F7.1	Distance
8	8	1	A1	Code Point 1
9	15	7	F7.2	Elevation
16	22	7	F7.1	Distance
23	23	1	A1	Code Point 2
24	30	7	F7.2	Elevation
31	37	7	F7.1	Distance
38	38	1	A1	Code Point 3
39	45	7	F7.2	Elevation
46	52	7	F7.1	Distance
53	53	1	A1	Code Point 4
54	60	7	F7.2	Elevation
61	67	7	F7.1	Distance
68	68	1	A1	Code Point 5
69	75	7	F7.2	Elevation

BEACH PROFILE DATA SHEET

LOCATION _____ DATE _____

SURVEY CREW: ROD _____

TRANSIT _____ TIME OF PROFILE _____

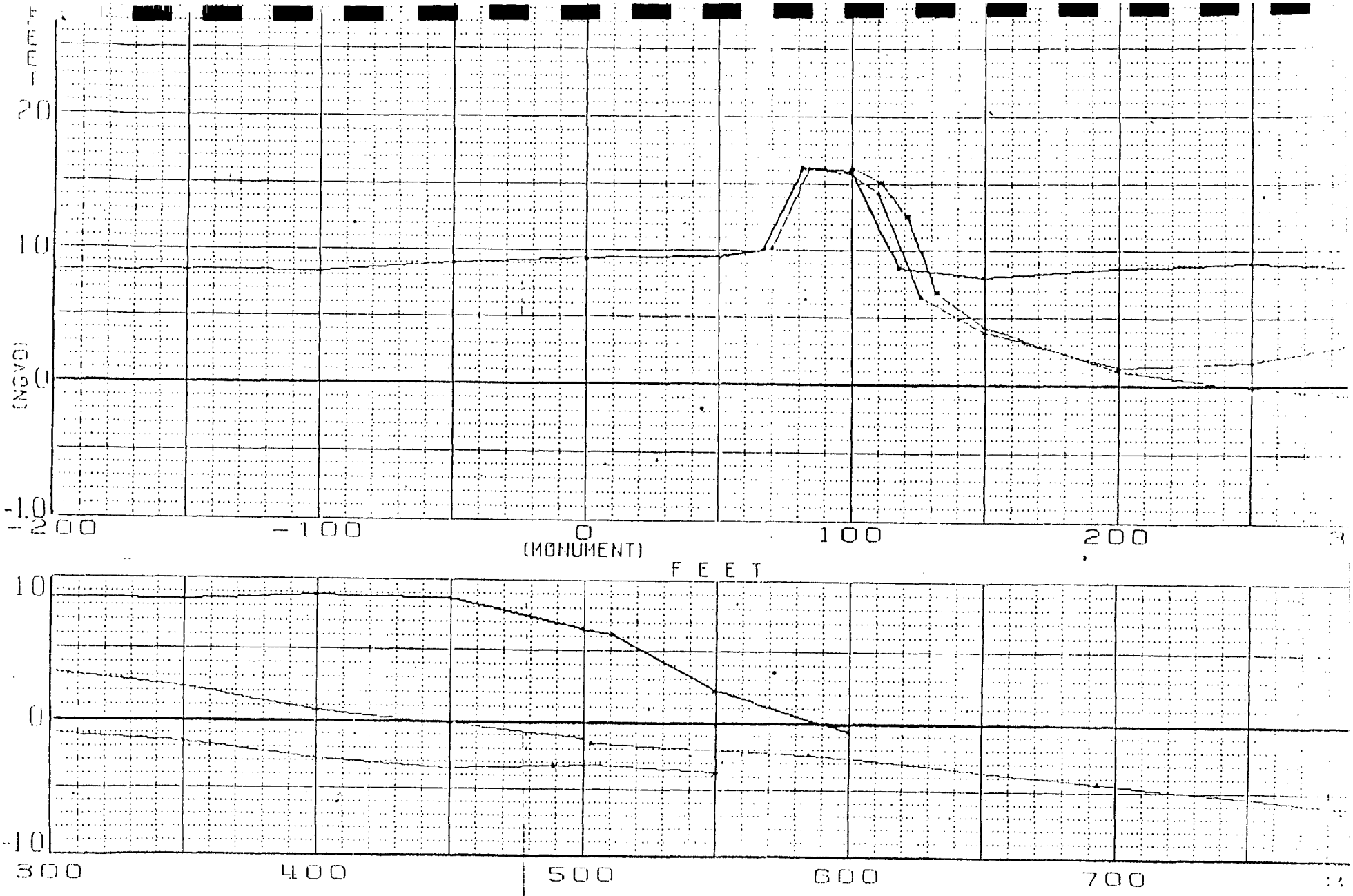
RECORDER _____ TIME OF LOW TIDE _____

ELEVATION OF BENCH-MARK ABOVE MEAN SEA LEVEL SL = _____

INSTRUMENT ELEVATION RELATIVE TO BENCH MARK BM = _____

#	TAPE DISTANCE	STADIA			ANGLE	COMPUTED DISTANCE	COMPUTED ELEVATION	REMARKS
		UPPER	MIDDLE	LOWER				
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								

FIT O & OE



HURRICANES DAVID (SEP79), GILDA (NOV73) & SEP72 PROFILES

LEGEND: BEACH PROFILE,
- 06 SEP79, BEARING DUE EAST (MAG.)
- Nov73
- 13 SEP72

COUNTY: BREVARD
BUREAU OF BEACHES & SHORES, SBLOS
FLA. DEPT. OF NATURAL RESOURCES

R-3

Appendix H

Sediment Analysis Specifications

H. Sediment Analysis Specification

This section explains the collection and analysis of fill area sediment samples for beach nourishment and inlet sand bypass projects. The following information of interest can be obtained:

1) The suitability of borrow area sand for erosion control projects
2) The native beach sand grain size distribution on beaches in need of renourishment
3) The rate and process of resorting of fill material after placement on the project beach
4) Assessment of long-term sediment characteristics and the need for renourishment.

To assess the suitability of the borrow sediment, native beach sand samples need to be collected and analyzed for grain size distribution parameters. The requirements for calculating fill factors and renourishment factors are summarized in the shore protection manual (1977), with more details in Hobson (1977). The required parameters for using these methods are the native beach sand mean grain size and sorting and the borrow area sand mean grain size and sorting. The grain size distribution varies significantly across the beach profile (Bascom, 1959) and in the borrow area with location and depth, so Hobson (1977) suggests the technique of composite samples to give representative sample statistics of both the variable native beach and borrow area sands. To date, no particular method of selecting areas to sample have been identified.

From recent findings (Stauble et. al., 1983) it was found that the foreshore area samples collected at mean high tide, mid tide, and low tide, give a good indication of native beach sediment characteristics and subsequent long-term behavior of beach fill. Offshore sand grain size distributions on several projects showed little change from before fill placement to one year after.

Section H.1 contains the screen input format for sediment collection and analysis information, to be included in the computer data base. Section H.2 describes the specifications to be used by the contractor in collecting native and fill sand and techniques for laboratory analysis. It is suggested that the sediment samples be collected at the same time that the profile monitoring surveys are taken, as outlined in Appendix G.

Sediment sampling of control areas should also be included to assess natural seasonal variation in grain size distributions in the project area and any influence of fill material on down drift control areas.

Fill sediment will resort and reshape itself on the profile due to the coastal processes at work after fill placement. It is important to monitor changes in the grain size distribution as wave activity resorts the fill that is not in equilibrium with its new environment. Characteristically, due to different energy conditions in the borrow area,

fill sediments will usually have excess coarse and fine material, different sorting characteristics and possibly different mineral content. In past projects, excess coarse shell material and fine silt and clay material, not normally found on ocean beaches, have been present in the fill. Little is known at present about sorting and redistribution of these materials through the life of the project.

Techniques to assess long-term needs to renourish a project, need sediment grain size data (S.P.M., 1977). Little actual field information is available to callibrate these theoretical calculations. This data base will supply a systematic source of information for future research.

H.1.1. SEDIMENT ANALYSIS RECORD FORMAT

Fields	Data Element Description	Format
1	Project No.	I5
2-3	Number of sediment collection location profiles project (2) control (3)	 I4 I4
5-11	Description of up to six sediment sample locations (i.e. high tide) on each profile	6A10
12	Method of sediment analysis (Seiving or setteling tube)	A14
13	Method of Statistical collection (i.e. method of moments or graphical method, etc...)	A25
14-26	Native Beach Sediment Sampling: Date (14)	I6
	Composite Mean: Project: mm (15), PHI (16) Updrift Control: mm (17), PHI (18) Downdrift Control: mm (19), PHI (20)	3(F4.3, F4.2)
	Composite Sorting Project: mm (21), PHI (22) Updrift Control: mm (23), PHI (24) Downdrift Control: mm (25), PHI (26)	3(F4.3, F4.2)
27-39	As-built Beach Sediment Sampling: Date (27)	I6
	Composite Mean: Project: mm (28), PHI (29) Updrift Control: mm (30), PHI (31) Downdrift Control: mm (32), PHI (33)	3(F4.3, F4.2)
	Composite Sorting: Project: mm (34), PHI (35) Updrift Control: mm (36), PHI (37) Downdrift Control: mm (38), PHI (39)	3(F4.3, F4.2)
40-67	First Year Monitoring Sample Collection: Date: 3 MO (40), 6 MO (41), 9 MO (42), 12 MO (43)	4I6
	Composite Mean: Project: In mm units: 3 MO (44), 6 MO (45), 9 MO (46), 12 MO (47)	4F4.3
	In PHI units: 3 MO (48), 6 MO (49), 9 MO (50), 12 MO (51)	4F4.2
	Updrift Control: In mm units: 3 MO (52), 6 MO (53), 9 MO (54), 12 MO (55)	4F4.2
	In PHI units: 3 MO (56), 6 MO (57), 9 MO (58), 12 MO (59)	4F4.2
	Downdrift Control: In mm units: 3 MO (60), 6 MO (61), 9 MO (62), 12 MO (63)	4F4.2
	In PHI units: 3 MO (64), 6 MO (65), 9 MO (66), 12 MO (67)	4F4.2

H.1.1. SEDIMENT ANALYSIS RECORD FORMAT (Cont.)

Fields	Data Element Description	Format
68-91	Composite Sorting:	
	Project:	
	In mm Units:	
	3 MO (68), 6 MO (69), 9 MO (70), 12 MO (71)	4F4.3
	In PHI Units:	
	3 MO (72), 6 MO (73), 9 MO (74), 12 MO (75)	4F4.2
	Updrift Control:	
	In mm Units:	
	3 MO (76), 6 MO (77), 9 MO (78), 12 MO (79)	4F4.3
	In PHI Units:	
	3 MO (80), 6 MO (81), 9 MO (82), 12 MO (83)	4F4.2
	Downdrift Control:	
	In mm Units:	
	3 MO (84), 6 MO (85), 9 MO (86), 12 MO (87)	4F4.3
	In PHI Units:	
	3 MO (88), 6 MO (89), 9 MO (90), 12 MO (91)	4F4.2
92-124	Second and Third Year Monitoring Sample Collection:	
	Dates: 18 MO (92), 24 MO (93), 36 MO (94)	
	Composite Mean:	
	Project:	
	In mm Units:	
	18 MO (95), 24 MO (96), 36 MO (97)	3F4.3
	In PHI Units:	
	18 MO (98), 24 MO (99), 36 MO (100)	3F4.2
	Updrift Control:	
	In mm Units:	
	18 MO (101), 24 MO (102), 36 MO (103)	3F4.3
	In PHI Units:	
	18 MO (104), 24 MO (105), 36 MO (106)	3F4.2
	Downdrift Control:	
	In mm Units:	
	18 MO (107), 24 MO (108), 36 MO (109)	3F4.3
	In PHI Units:	
	18 MO (110), 24 MO (111), 37 MO (112)	3F4.2
	Composite Sorting:	
	Project:	
	In mm Units:	
	18 MO (113), 24 MO (114), 36 MO (115)	3F4.3
	In PHI Units:	
	18 MO (116), 24 MO (117), 36 MO (118)	3F4.2
	Updrift Control:	
	In mm Units:	
	18 MO (119), 24 MO (120), 36 MO (121)	3F4.3
	In PHI Units:	
	18 MO (122), 24 MO (123), 36 MO (124)	3F4.2

H.1.1. SEDIMENT ANALYSIS RECORD FORMAT (Cont.)

Fields	Data Element Description	Format
125-130	Downdrift Control:	
	In mm Units:	
	18 MO (125), 24 MO (126), 36 MO (127)	3F4.3
	In PHI Units:	
	18 MO (128), 24 MO (129), 37 MO (130)	3F4.2

Individual Sediment Sample Analysis Data Goes Here Using Format similar to Table H.1.

FORMAT H.1.2

SEDIMENT ANLAYSIS MONITORING DATA

PROJECT NO. _____

NUMBER OF SEDIMENT COLLECTION LOCATIONS (PROFILES): PROJECT SITES ____
CONTROL SITES ____

NUMBER OF SEDIMENTS COLLECTED ALONG BEACH PROFILE: ____
DESCRIPTION OF SEDIMENT SAMPLE LOCATION: _____ _____ _____
_____ _____ _____
METHOD OF SEDIMENT ANALYSIS _____ _____ _____
METHOD OF STATISTICS CALCULATION _____

NATIVE BEACH SEDIMENT SAMPLING: DATE __/__/__
COMPOSITE NATIVE BEACH: MEAN PROJECT _.___ MM or __.__ PHI
CONTROL _.___ MM or __.__ PHI
COMPOSITE SORTING: PROJECT _.___ MM or __.__ PHI
CONTROL _.___ MM or __.__ PHI
_.___ __.__

AS-BUILT SEDIMENT SAMPLING: DATE __/__/__
COMPOSITE MEAN: PROJECT _.___ MM or __.__ PHI
UPDRIFT CONTROL _.___ MM or __.__ PHI
DOWNDRIFT CONTROL _.___ MM or __.__ PHI
COMPOSITE SORTING: PROJECT _.___ MM or __.__ PHI
UPDRIFT CONTROL _.___ MM or __.__ PHI
DOWNDRIFT CONTROL _.___ MM or __.__ PHI
_.___ __.__

FORMAT H.1.2 (Cont.)

SEDIMENT ANLAYSIS MONITORING DATA

PROJECT NO: _____

FIRST YEAR	6 MO.	12 MO.	24 MO.	36 MO.
MONITORING SAMPLE COLLECTION DATE	__/__/__	__/__/__	__/__/__	__/__/__
COMPOSITE MEAN:				
PROJECT:	-.---	-.---	-.---	-.--- MM
	--.--	--.--	--.--	--.-- PHI
UPDRIFT CONTROL:	-.---	-.---	-.---	-.--- MM
	--.--	--.--	--.--	--.-- PHI
DOWNDRIFT CONTROL:	-.---	-.---	-.---	-.--- MM
	--.--	--.--	--.--	--.-- PHI
COMPOSITE SORTING:				
PROJECT:	-.---	-.---	-.---	-.--- MM
	--.--	--.--	--.--	--.-- PHI
UPDRIFT CONTROL:	-.---	-.---	-.---	-.--- MM
	--.--	--.--	--.--	--.-- PHI
DOWNDRIFT CONTROL:	-.---	-.---	-.---	-.--- MM
	--.--	--.--	--.--	--.-- PHI

FORMAT H.1.2 (Cont.)

SEDIMENT ANLAYSIS MONITORING DATA

	SECOND YEAR SAMPLE COLLECTION		THIRD YEAR MONITORING SAMPLE COLLECTION	
	18 MO.	24 MO.	36 MO.	
DATE	__/__/__	__/__/__	__/__/__	
COMPOSITE MEAN:				
PROJECT:	-.---	-.---	-.---	MM
	--.--	--.--	--.--	PHI
UPDRIFT CONTROL:	-.---	-.---	-.---	MM
	--.--	--.--	--.--	PHI
DOWNDRIFT CONTROL:	-.---	-.---	-.---	MM
	--.--	--.--	--.--	PHI
COMPOSITE SORTING:				
PROJECT:	-.---	-.---	-.---	MM
	--.--	--.--	--.--	PHI
UPDRIFT CONTROL:	-.---	-.---	-.---	MM
	--.--	--.--	--.--	PHI
DOWNDRIFT CONTROL:	-.---	-.---	-.---	MM
	--.--	--.--	--.--	PHI

FORMAT H.1.2 (Cont.)

SEDIMENT ANALYSIS MONITORING DATA

PROJECT NO: _____

INDIVIDUAL SEDIMENT ANALYSIS DATA STARTS WITH
1ST NATIVE SAMPLE AND ENDS WITH LAST 36 MONTH SAMPLE

(USE A FORMAT SIMILAR TO TABLE H1)

H.2. Specifications for Sediment Data Collection and Analysis.

Sediment Collection

No general concensus exists on the technique of sampling beach sands. It is generally accepted to sample a thin layer of surface sample at each sample location. The beach can be divided into three general zones: backshore, extending from the dune to berm crest (high tide); Foreshore, extending from high tide to low tide; and offshore, extending seaward of low tide to seaward of the breaker zone. No concensus exists in the number or location of sediment samples accross the beach, from past projects. A review of past-project sediment analysis indicates a rough division of sample grain size distribution landward and seaward of the low tide area.

It is suggested that samples be collected on a dynamic zonation basis of high tide, mid-tide and low tide of the particular sampling date. These samples should be collected on the project profile lines concurrent with the profile survey. High tide is usually identifiable by the detritus line left by wave activity or if none is present, the smooth surface of maximum run-up distance. If at all possible, profiling and sediment sampling should be planned to coincide with time of low tide. This allows for lower water levels, to extend the profile as far seaward as possible and to allow collection of the low tide sample in the area of the low water swash zone. This can be identified on most beaches as the break in slope between the steeper foreshore slope and flatter low tide terrace. The mid tide sample is collected half way between the two above samples. Additional samples can be required by DNR personnel in the offshore area if deamed necessary. It is suggested that these samples be evenly spaced seaward of low tide. (i.e., 100 ft. intervals).

Samples should be collected at the monitoring profiles (i.e. every 0.5 miles) and the controls, but is not necessary at every pre-nourishment/as-built location. The time interval of collection should corrispond with the profile sampling (outlined in appendix H) as follows:

Sample Collection Interval:	Data Included in Report:
Pre-Nourishment	Pre-Construction
As-Built	Post-Construction
3, 6, 9, 12 Month	1st Year
18, 24 Month	2nd Year
36 Month	3rd Year

Sample Analysis

There are several methods of analyzing grain size distributions of sediment. The two most popular methods are standard sieve analysis or settling tube analysis. The two methods are not compatable since settling tube analysis measures hydraulic equivalance while sieving measures physical size class. Therefore, only one method should be used on any given project. The most commonly used method in past projects is

the standard sieve method. The data between projects can be compared and should be the preferred method, since there is an industry standard established. The settling tube analysis has not, as yet, been standardized, and there is some question of compariability even between different tubes.

Gain size distribution analysis should be done using PHI interval. Table H.2 lists the intervals using ASTM sieve mesh numbers, mm scale and ¼ ø intervals for comparison. Also included are the two most commonly used verbal descriptions according to their size class ranges. It is recommended that ¼ø intervals be used but ½ ø intervals would be acceptable. The usual range of sediment sizes for Florida beaches range from -2.0ø (4 mm) down to 4.5ø (.044 mm). Using the Wentworth classification, this covers the gravel to mid silt size range. All of the common grain size scales used in coastal engineering studies are acceptable but must be identified and tables of comparison need to be included in the monitoring reports.

Since most work on calculation of grain size statistics have used the PHI scale values, it is recommended that these units be used. Folk (1968) and Friedman and Sanders (1978) describe the various ways to calculate the four statistical entities to describe a sediment sample (i.e. mean, standard deviation, a measure of sorting, skewness and kurtosis.) Initial work in these calculations involved hand plotting of weight percent values on probability paper. Graphical methods of calculating the statistical parameters used equations shown on table G1. With the increased use of computers, the moment measures calculations which use the entire data set, have gained in popularity. Different values of the four statistical parameters are obtained, depending on the method of calculation. The sediment mean and sorting should be calculated for each sample, using the method of moments calculation. If another method is used it should be stated and used throughout the study.

To reduce some of the variability and volumes of sediment data, Hobson (1977) explains two techniques to construct a composite sample of each sample site. The preferred method of constructing a composite would be to sieve each sample collected and then mathematically combining them for summary purposes.

Raw weight percent values should be supplied to be added to the computer data base on a field data sheet similar to Table G.1. Graphic distribution curves should be constructed using the probability graph method. To facilitate interpretation, a PHI scale, milimeter scale, a ASTM mean number scale, and a Wentworth classification description name scale should be included on the ordinate scale. The absissia scale of weight % on probability scale should be used (Figure G.1). An acceptable alternative would be to construct a cumulative frequency curve with percent coarser in arithmetic scale on the absissia, and the above mentioned ordinate scales on log axis of semi log paper (Figure G.2). By using these forms with appropriate labeling of the axis and supplying data in computer format, continuity will be preserved and the ability to produce summary reports on DNR erosion control projects will be possible.

SEDIMENT ANALYSIS DATA SHEET

SAMPLE _____ LOCATION _____ DATE _____ NAME _____

INITIAL WT. _____ FINAL WT. _____ % WT. LOSS/GAIN _____

Sieve	Size(mm)	ø	Wt.	Wt. %	Cum. Wt. %	
5	4.0	-2				
6	3.36	-1.75				ø 5 _____
7	2.83	-1.50				
8	2.38	-1.25				ø 16 _____
10	2.00	-1.00				
12	1.68	-0.75				ø 25 _____
14	1.41	-0.50				
16	1.19	-0.25				ø 50 _____
18	1.00	0.00				
20	0.84	0.25				ø 75 _____
25	0.71	0.50				
30	0.59	0.75				ø 84 _____
35	0.50	1.00				
40	0.42	1.25				ø 95 _____
45	0.35	1.50				
50	0.30	1.75				
60	0.25	2.00				
70	0.21	2.25				
80	.177	2.50				
100	.149	2.75				
120	.125	3.00				
140	.105	3.25				
170	.088	3.50				
200	.074	3.75				
230	0625	4.00				
270	.053	4.25				
325	.044	4.50				
PAN	<.044	>4.50				

$Md = \phi 50$

$$Mz_I = \frac{\phi 5 + \phi 16 + \phi 50 + \phi 84 + \phi 95}{5}$$

$$\sigma_I = \frac{\phi 84 - \phi 16}{4} + \frac{\phi 95 - \phi 5}{6.6}$$

$$Sk_I = \frac{\phi 16 + \phi 84 - 2\phi 50}{2(\phi 84 - \phi 16)} + \frac{\phi 5 + \phi 95 - 2\phi 50}{2(\phi 95 - \phi 5)}$$

$$K_G = \frac{\phi 95 - \phi 5}{2.44(\phi 75 - \phi 25)}$$

Md = _____

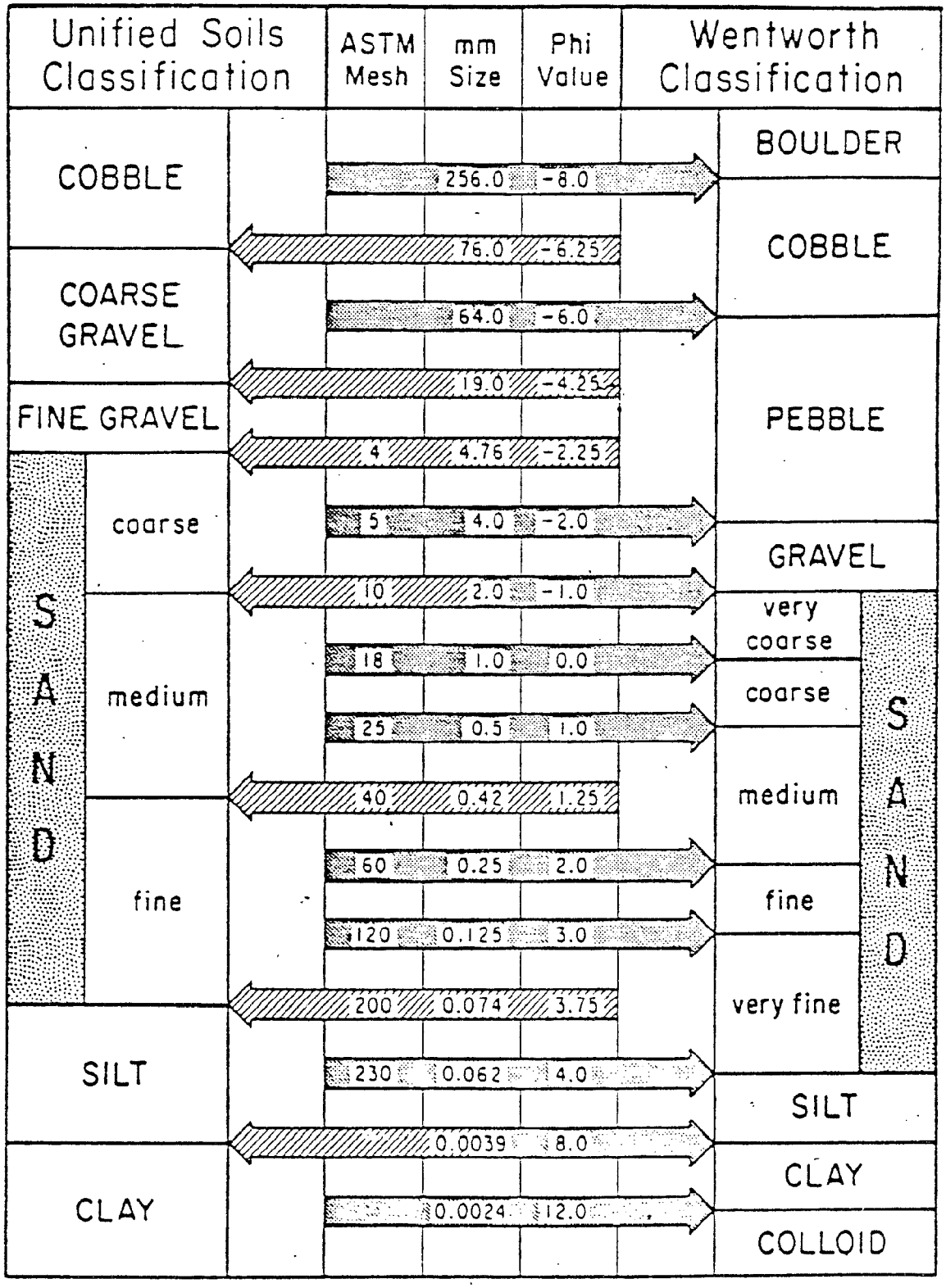
Mz_I = _____

σ_I = _____

Sk_I = _____

K_G = _____

Table 3.2 Grain-size scales--soil classification (modified from U.S. Army, Corps of Engineers, Coastal Engineering Research Center, 1977[4]).

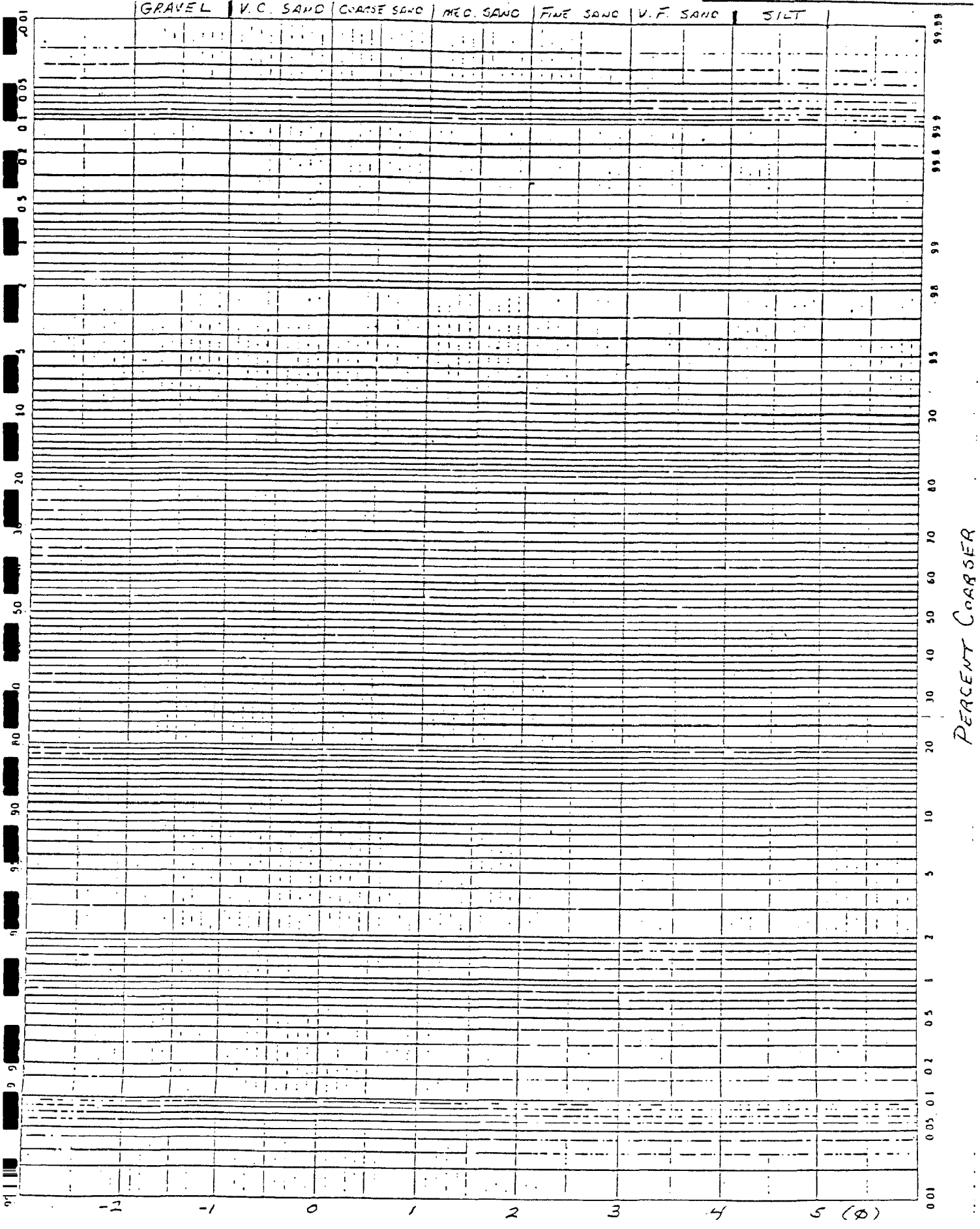


[4]U.S. ARMY, CORPS OF ENGINEERS, COASTAL ENGINEERING RESEARCH CENTER, op. cit., p. 7.

SEDIMENT DATA ANALYSIS

SAMPLE NO. _____ DATE _____

LOCATION _____ ANALYSIS BY _____



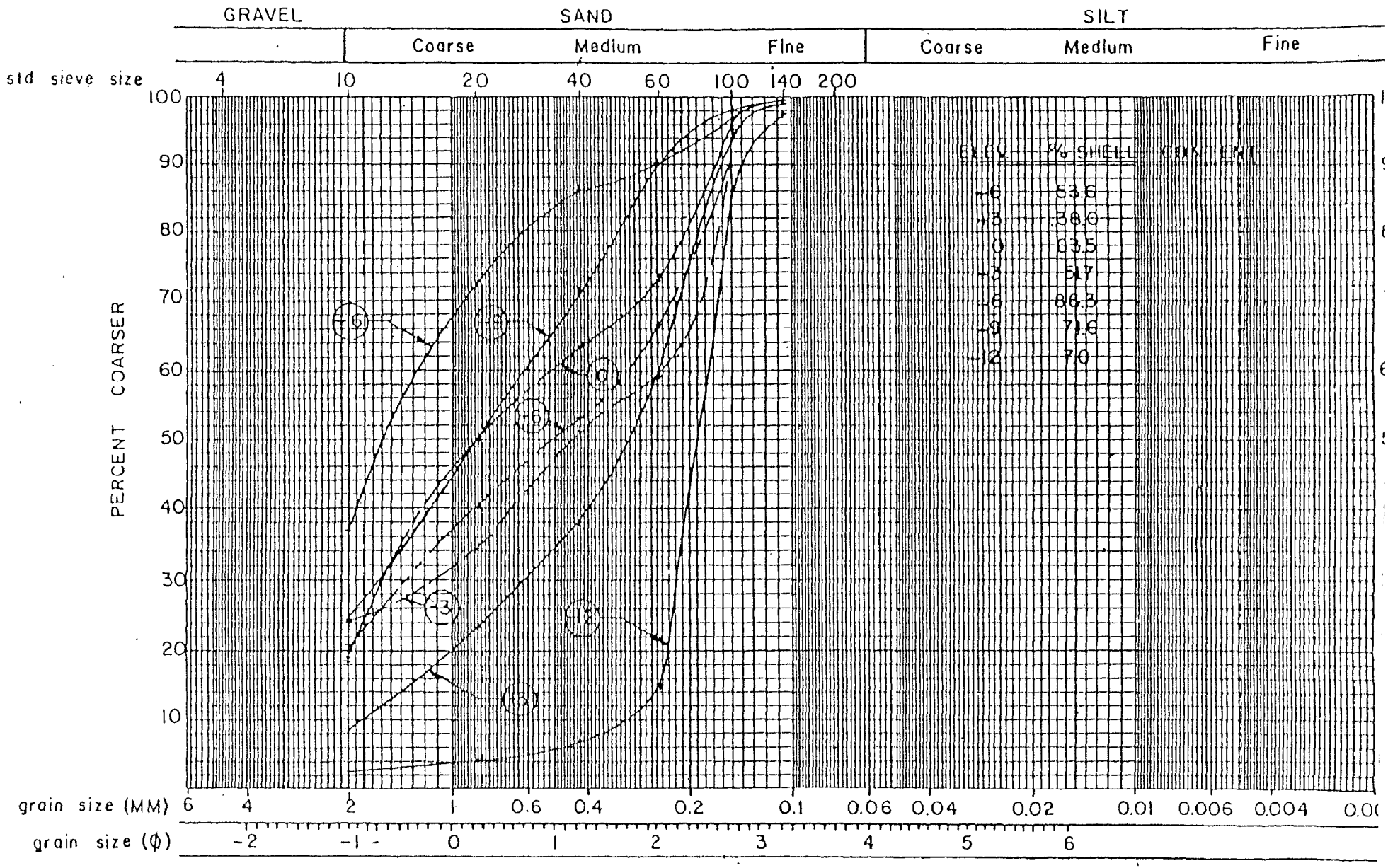


FIGURE – H.2

STA. 3 + 85

6 – MONTH SAMPLES

SAND GRADATION CURVES

From CAPTIVA MONITORING REPORT

By

TACKNEY & ASSOCIATES, IN

Appendix I

Littoral Environmental Monitoring Specifications

I. Littoral Environmental Monitoring Specifications

Supplementary data relating the littoral forces and other environmental parameters should be included to give a better understanding of fill behavior. The first pre-nourishment report of both beach nourishment and inlet sand bypass projects should include:

1) a brief description of the project and if applicable a description of the inlet,
2) a history of previous erosion control projects effecting the present project area,
3) description of historical structural improvements to the shoreline and associated inlet, and
4) Brief summary of coastal processes occurring in the project area including (if data is availalbe) wave period, height; angle of wave approach, tide range, wind direction and velocity, measure of direction and quantity of longshore drift. For inlet projects, information on tidal dynamics and morphology should also be included.

Where available a history of shoreline movement and erosion rates for the project beach and beaches on both sides of the inlet in a sand bypass project should be included. Historical aerial photos of the area could be used for the analysus and be included in the report depending on their availability. A base map, utilizing optically corrected aerial photographs could be useful for basic project location information. The DNR erosion control line base maps would be readily available for this purpose. They contain information on benchmark location and erosion control line position, as well as dune line and high tide line position at time of photograph. The project profile lines and sediment sampling locations could be superimposed.

Figure I.1 is a copy of the corps littoral environmental observations form. It would be advantageous to establish this program on a daily basis during construction and for at least the first year of monitoring. The construction personnel could be trained to record the data during project construction and interested local observers could follow up during the monitoring period. The important physical data are:

1) Wave period, breaker height, breaker angles
2) Wind direction and velocity
3) Longshore current direction and velocity.

The ability to identify storm events during construction and monitoring is enhanced by the L.E.O. program. Storm events should be identified and a frequency of occurance should be included for each monitoring report period even if the L.E.O. program is not used.

The calculation of fill factor and renourishment factor should be done, using the methods reported in the shore protection manuel (S.P.M., 1977) and included in the pre-nourishment report. This data is based on the comparison of native and borrow area sediment parameters.

Aerial photography (if available) and ground photography during construction and monitoring would serve as user documentation of the project. During surveys, ground photography of the profiles area is easily done.

On inlet sand bypass projects, supplementary data on inlet dynamics and morphology should be taken. Tidal range, tidal type, and tidal prism/cross sectional area data would also be useful. Tidal current velocities on both ebb and fluid should be collected during a period of spring tidal range. Tide ranges should be reported, and if not available measured at the inlet by installing a tide guage for a minimum of one month.

If biological monitoring is required by other agencies, a brief summary should be included as to nature and extent in the DNR monitoring report. Normaly biological monitoring of the borrow and fill areas is reported in a separate report (if required) and no record is included with the physical monitoring. While not directly of interest, a record of environmentaly sensative species impacted by the project should be listed (i.e. Turtles).

Supplementary information on additional structures and dune maintance on construction associated with the project should also be included in the data file and monitoring reports.

I.1.1 LITTORAL ENVIRONMENTAL MONITORING DATA RECORD FORMAT

Fields	Data Element Description	Format
1-6	Pre-nourishment monitoring report environmental data content	
	History of project Y/N (1) shoreline erosion rate Y/N/ (2)	2I1
	Previous projects at the location Y/N (3)	I1
	Report on Coastal Processes Y/N (4)	I1
	Fill factor calculation Y/N/ (5) Renourishment factor calculation (6)	2F4.2
7-18	Littoral environmental observations recorded	
	Wave data Y/N as-built report (7): 1st yr. (8), 2nd year (9), 3rd year (10)	4I1
	Wind data Y/N as-built report (11): 1st yr. (12), 2nd year (13), 3rd year (14)	4I1
	Longshore drift rate Y/N as-built report (15), 1st yr. (16), 2nd year (17), 3rd year (18)	4I1
19-30	Supplementary data:	
	Aerial Photography used Y/N as-built report (19) 1st yr. (20), 2nd yr. (21), 3rd yr. (22)	4I1
	Ground Photography used Y/N as-built report (23) 1st yr. (24), 2nd yr. (25), 3rd yr. (26)	4I1
	Number of storms reported Y/N as-built report (27), 1st yr. (28), 2nd yr. (29), 3rd yr. (30)	4I3
31-42	Inlet characteristics: (Sand bypass projects)	
	Type of tide: diurnal (31), semidiurnal (32), mixed (33)	3I1
	Mean tide range: in meters (34)	F4.2
	Spring tide range: in meters (35)	F4.2
	Minimum inlet throat cross sectional area in meters (36)	F5.2
	Mean tidal prism (37)	F5.2
	Flood tide current: Mean velocity in meters/sec (38)	F5.2
	Duration in hours (39)	F3.1
	Ebb tide current: Mean velocity in meters/sec (40)	F5.2
	In hours (41)	F3.1
	Tidal data collected Y/N (42)	I1
43-49	Biological monitoring: contractor's name (43)	A25
	Borrow area Y/N (44), Fill area Y/N (45)	2I1
	Contents: vegetation Y/N (46)	I1
	Benthic Y/N (47)	I1
	Turtles Y/N (48)	I1
	Other (specify) (49)	A20

FORMAT I1.2

LITTORAL ENVIRONMENTAL MONITORING DATA

PROJECT NO: _____

PRE-NOURISHMENT MONITORING REPORT
ENVIRONMENTAL DATA CONTENT
HISTORY OF PROJECT Y/N _ SHORELINE EROSION RATE Y/N _
PREVIOUS PROJECTS AT THIS LOCATION Y/N _
REPORT ON AVERAGE COASTAL PROCESSES Y/N _
FILL FACTOR CALCULATED __.__ RENOURISHMENT FACTOR __.__

LITTORAL ENVIRONMENTAL OBSERVATION	RECORDED Y/N	AS-BUILT	1ST YR. REPORT	2ND YR. REPORT	3RD YR. REPORT
WAVE DATA Y/N					
WIND DATA Y/N		-	-	-	-
LONG SHORE DRIFT RATES Y/N		-	-	-	-
		-	-	-	-
SUPPLIMENTARY DATA					
AERIAL PHOTOGRAPHS USED Y/N					
GROUND PHOTOGRAPHS USED Y/N		-	-	-	-
STORM OCCURRANCE REPORTED Y/N (NUMBER)		-	-	-	-
		---	---	---	---

FORMAT I1.2 (Cont.)

LITTORAL ENVIRONMENTAL MONITORING DATA

PROJECT NO: _____

INLET CHARACTERISTICS (IF SAND BYPASS PROJECT)
TYPE OF TIDE: DIURNAL SEMIDIURNAL __ MIXED __
MEAN TIDAL RANGE ___ METERS
SPRING TIDE RANGE ___.__ METERS
MINIMUM INLET THROAT CROSS SECTIONAL AREA ___.__ METERS
(REFERRED TO N.G.V.D.)
MEAN TIDAL PRISM
FLOOD TIDE MEAN VELOCITY ___ M/S DURATION ___ HRS
EBB TIDE MEAN VELOCITY ___ M/S DURATION ___ HRS
TIDAL DATA COLLECTED N/Y ___

BIOLOGICAL MONITORING: CONTRACTOR _____
BORROW AREA Y/N __
FILL AREA Y/N
CONTAINS: VEGETATION Y/N __
BENTHIC Y/N __
TURTLES Y/N __
OTHER (SPECIFY) _____

FIGURE I.1

LITTORAL ENVIRONMENT OBSERVATIONS

RECORD ALL DATA CAREFULLY AND LEGIBLY

SITE NUMBERS (1 2 3 4 5) | YEAR (5 7) | MONTH (8 9) | DAY (10 11) | Record time using the 24 hour system — TIME (12 13 14 15)

WAVE PERIOD (16 17 18)

Record the time in seconds for eleven (11) wave crests to pass a stationary point. If calm record 0.

BREAKER HEIGHT (19 20 . 21)

Record the best estimate of the average wave height to the nearest tenth of a foot.

WAVE ANGLE AT BREAKER (22 23 24)

Record to the nearest degree the direction the waves are coming from using the protractor on the reverse side. 0 if calm.

WAVE TYPE (25)

0 – Calm
1 – Spilling
2 – Plunging
3 – Surging
4 – Spill / Plunge

WIND SPEED (26 27)

Record wind speed to the nearest mph. If calm record 0.

WIND DIRECTION (28) – Direction the wind is coming from.

1 – N 3 – E 5 – S 7 – W 0 – Calm
2 – NE 4 – SE 6 – SW 8 – NW

FORESHORE SLOPE (29 30)

Record foreshore slope to the nearest degree.

WIDTH OF SURF ZONE (31 32 33 34)

Estimate in feet the distance from shore to breakers, if calm record 0.

LONGSHORE CURRENT

DYE (36 37 38)

Estimate distance in feet from shoreline to point of dye injection.

CURRENT SPEED (43 44 45)

Measure in feet the distance the dye patch is observed to move during a one (1) minute period; if no longshore movement record 0.

CURRENT DIRECTION (46 47)

0 No longshore movement
+1 Dye moves toward right
−1 Dye moves toward left

RIP CURRENTS (50 51 52)

If rip currents are present, indicate spacing (feet). If spacing is irregular estimate average spacing. If no rips record 0.

BEACH CUSPS (54 55 56)

If cusps are present, indicate spacing (feet). If spacing is irregular estimate average spacing. If no cusps record 0.

PLEASE PRINT:

SITE NAME _____ OBSERVER _____

Please Check The Form For Completeness

REMARKS: _____

CERC 113-72
8 Mar 72

Make any additional remarks, computations or sketches on the reverse side of this form.

APPENDIX J

Review of revisions to:
Beach Erosion Control Assistance Program
Chapter 16B-36

Appendix J contains a copy of a questionnaire that was sent to selected Federal, State, Local Government Agencies and Private Coastal Engineering Firms that are responsible for planning, permitting, designing and implementing erosion control projects within the State of Florida. As part of the study, a compilation of comments on proposed new rules to Chapter 16B-36, called The Beach Erosion Control Assistance Program was undertaken. The recipients of the questionnaire were asked to review the rules and to identify the possible problems, additional concerns and unnecessary sections, so that they can be as complete as possible when they are implemented.

A synopsis of the various specific comments on each question has been included. Responses that deal with specific sections of the rules have been placed in order of appearance in the rules, as well as comments on the rules in general. A list of the fourteen agencies and firms that were chosen for their knowledge of beach erosion control permitting processes is enclosed. The seven agencies and firms that responded are identified and a copy of their responses are included for your review.

QUESTIONNAIRE: BEACH EROSION CONTROL ASSISTANCE PROGRAM

Florida Institute of Technology, under contract to the Division of Beaches and Shores of the Department of Natural Resources is undertaking research leading to the development of erosion control guidelines.

The purpose of this questionnaire is to review proposed new policies and procedures for administration of the Beach Erosion Control Assistance Program.

The Department of Natural Resources, Division of Beaches and Shores is proposing to revise portions of Section 161.091 F.S. in order to assist local governments in alleviating serious beach erosion problems.

A copy of these proposed revisions, as prepared by the Division, is enclosed. We would be most grateful if you could review these materials and provide us with an evaluation, comments and suggestions by responding to the following questions and returning the form by April 30, 1984 to:

Dr. Donald K. Stauble
Department of Oceanography and Ocean Engineering
Florida Institute of Technology
Melbourne, Florida 32901

1. Are the proposed new Rules, taken as a whole, clear, concise and readily understandable?

2. Please identify any Sections which are not clear, or which need improvements; how could they be improved?

3. Do the proposed rules meet the needs; if not, why not?

4. Are there any features of the content which are objectionable, or any which could prove difficult in implementing?

5. Are there any additional features that should be included?

6. Are the forms provided in the Rules suitable, convenient, understandable? Please indicate any improvements you feel are necessary.

7. Any additional comments on the new Rules resulting from previous experience in erosion control projects and their management would be appreciated.

RESPONSE TO FLORIDA INSTITUTE OF TECHNOLOGY QUESTIONNAIRE
BEACH EROSION CONTROL ASSISTANCE PROGRAM

Synopsis of responses from the seven Federal, State, Local Government Agencies and Private Consulting Firms that responded to the survey. Comments are as written on the questionnaire with minor editing for format consistency. No interpretation of comments have been done at this time.

QUESTION:

1. Are the proposed new Rules, taken as a whole, clear, concise and readily understandable?

RESPONSES:

A few minor points are not clear.

In general we found that the proposed rule did not adequately distinguish between local projects and Federal projects with local sponsors. We believe that the rule should clearly make this distinction and that the rule should consider the detailed nature of the Federal project planning and coordination process.

The response to this question seemed to depend upon the reviewer's familiarity with governmental regulations in general. Those who work with regulations had no problem with the rules. Those who do not found them unclear and confusing. The proposed rules would be much easier to use if they were published in booklet form with a "cookbook" format on the steps to be followed to obtain state assistance. It is suggested that a simpler version of the rule be developed for use by local governments.

Yes! However, is an erosion control line to be established for any size project?

Four simply responded - Yes

QUESTION:

2. Please identify any Sections which are not clear, or which need improvements; how could they be improved.

RESPONSES: (In order of Section Number)

Section 16B-32.02 (3) - Under "Authorized Beach Restoration Project", why must a project include a 10 year maintenance program to be considered an "authorized" project?

RESPONSE TO QUESTION 2 CONTINUED:

Section 16B-36.02 (3) and (12) - refers to "projects authorized by Congress". The Chief of Engineers can authorize projects costing up to $1,000,000 under the Continuing Authorities program and Division and District Engineers also have delegated authority to obligate certain funds for beach work. The wording needs to be broadened to include these cases.

Under Section 16B-36.03 (1) - the BECAP is to assist in preventing erosion of sandy beaches. This in contrary to Section 16B-36.04 which provides assistance for revetments, etc.

Section 16B-36.03 (2)(a) - states that sandy beach preservation...must be the primary purpose of a project. The state does participate in other erosion control projects.

Again Section 16B-36.03 (2)(a) - Why isn't hurricane protection an acceptable primary purpose of a project receiving a program grant? It should be noted that the Miami Beach Project was primarily a hurricane protection project and not an erosion control project.

Again Section 16B-36.03 (2)(a) - "... to be in the public interest." Should read "to qualify the project area as a public beach."

Section 16B-36.03 (2)(c) - what is definition of "project area" and "adequate parking"

Section 16B-36.03 (2)(f) - Unless some deadline is given, a specific period in which to complete the project review report, the project sponsor may be held up indefinitely in making final payment to the contractor.

Again Section 16B-36.03 (2)(f) - should read "... the staff has performed an inspection of the physical condition of the project, and reviewed the necessary project records, and a satisfactory project review report prepared."

Section 16B-36.05 (a) and (3) - the word construction should be inserted between project and costs.

Section 16B-36.05 (2) and Section 16B-36.05 (4) - Isn't the project sponsor required to bear full costs for the same items as listed in 16B-36.05(1)(a) thru (e)? If so, shouldn't it be stated?

Section 16B-36.05 (4) - Does the 75% pertain to the total dredging and disposal costs or does it pertain only to the incremental costs involved in beach disposal rather than dumping? If the latter is the case, why shouldn't it be 100% as in Section 16B-36.05 (2)?

RESPONSE TO QUESTION 2 CONTINUED:

Section 16B-36.07 (2) - Since the Governor uses a biannual budget program, applications can only be accepted during even numbered years. Shouldn't this be mentioned in this section?

Section 16B-36.07 (4) - At first reading appears to be part of the original funding Application. Would be more clear if there was a separate section (requirements of project agreement).

Section 16B-36.09 (3)(a) - the word beach is misleading and should be deleted.

Section 16B-36.09 (3)(g) - Parking added after project has met requirements - should be exempt so that it could be restricted for residents only.

No section number provided - What is an "eligible governmental agency"? Would a properly legislated "MSTD" qualify?

QUESTION:

3. Do the proposed rules meet the needs; if not, why not?

RESPONSES:

Two responses - In general, yes.

The rules appear to meet the needs with minor exceptions. Does the Bureau of Beaches and Shores intend to evaluate the technical adequacy of a given proposal? Who will determine the classification points to be assigned under Section 16B-36.08?

Yes, however, the rules appear to be elaborate.

Ranking is a good idea.

Also see answers to question #4.

QUESTION:

4. Are there any features of the content which are objectionable, or any which could prove difficult in implementing?

RESPONSES: (by Section Number)

Section 16B-36.06 (2) - the point system for evaluating project and prioritizing applications does not provide the board with the information

RESPONSE TO QUESTION 4 CONTINUED:

needed to allocate state resources. Priorities should be based on recognized State needs in a manner such as the comprehensive state outdoor recreation plan priorities allocation or resources on the basis of demand and needs. Priorities should also reflect what returns in the way of project benefits will be received in return for the allocation of state resources.

In Section 16B-36.07 (2) - limiting application acceptance to between April 1 and July 1 seems unduly restrictive. In the case of Federal navigation projects from which suitable dredge material may be disposed on beaches, the Corps has the capability to transfer funds from one project to another in order to satisfy navigation needs. Therefore, limiting applications to the April 1 to July 1 timeframe would be a severe handicap to the local sponsor of such a project who desires assistance.

In that same section, (Section 16B-36.07) paragraph (4) lists certain application requirements. Among those requirements is that of obtaining coastal construction permits. There is no basis in Federal law for requiring those permits for a Federal project. Even if it is the intent of the state to have a local sponsor meet those requirements, they are unduly restrictive in the case of a Federal project which is thoroughly coordinated with DNR and other state and Federal agencies during its planning. Designation of a "project engineer" for a Federal project could cause sponsor problems since they have no authority to commit the Government. In addition we do no permit our own projects. We consider that preparing a 404(b) evaluation, an Environmental Impact Statement or Environmental Assessment, state coastal zone consistency and water quality certification and complying with the Fish and Wildlife Coordination Act adequate. It is suggested that this section be rewritten to discuss local projects separately from Federal projects.

Why are projects submitted to the Governor and the Cabinet and the legislature for approval before all permits are obtained? Since the costs of certain studies can be retroactively reimbursed, necessary permits or a favorable commitment in writing from the permitting agency should be required before approval of funding. This procedure is in line with most federal grant procedures. Further, Governor and Cabinet approval and legislative approval before obtaining permits places state agencies in the untenable position of denying a permit for a project that already has been approved by the Governor and Cabinet and the Legislature. We strongly recommend Section 16B-36.07 be revised to include submital of required permits as a part of the initial application for funding.

Section 16B-36.08 (li) - Discriminates against new projects. Fine for places like Delray Beach which can keep up an on-going program, but counts against areas trying to establish new programs.

RESPONSE TO QUESTION 4 CONTINUED:

Section 16B-30.08 (1d) - Tends to "grandfather" in or favor old, continuing long standing projects. Could restrict funding to new problem areas which if addressed promptly could avoid larger future problems.

Section 16B-36.08 (1k) - Puts the DNR staff in a position of doing DER's job. This could cause problems, over lap, and make DNR subject to exposure or criticism for decisions made outside their area of experience.

General comments - For smaller projects under $25,000 construction cost, some of the requirements such as ECL establishment should be waived.

QUESTION:

5. Are there any additional features that should be included?

RESPONSES:

The applicant should demonstrate the economic, environmental and social justification for the use and expenditure of state resources.

General clarification of the Corps of Engineers' role in beach erosion control projects.

Some detail should be given on retroactive funding, particularly relating to environmental studies and monitoring added during review as permit requirements.

Two answered no comment.

QUESTION:

6. Are the forms provided in the Rules suitable, convenient, understandable? Please indicate any improvements you feel are necessary.

RESPONSES:

Section 16B-36-09 (3) h - Is this necessary? How involved is this?

Four answered Yes

Two No comments

QUESTION:

7. Any additional comments on the new Rules resulting from previous experience in erosion control projects and their management would be appreciated.

RESPONSES:

Section 16B-36.08 - the point system given should be deleted entirely as the criteria for evaluating project applications. The criteria does not provide the Board a project priority based on state needs as a basis for allocating state resources.

Evaluation criteria should include as a minimum economic, environmental and social justification; locality compatibility with other state programs, E.O. 81105 and state interests in general locally and regionally.

The division should require receipt of a copy of any studies performed prior to final disbursal of funds. Should also produce a bibliography of such studies. This pool of research may help avoid duplication of efforts.

Research in the field, including experimental projects, should be encouraged and funded under the program..

Shouldn't some reference be made to what happens if a project is delayed after funds have been appropriated?

Shouldn't some reference be made to emergency erosion situations and how they can be funded?

Four answered No comment

QUESTIONNAIRE RECIPIENTS

Those who responded to the questionnaire are marked with an (*).

Private Engineering Consulting Firms

Mr. Thomas Campbell
Arthur V. Strock & Associates
829 S. E. 9th. Street
Deerfield Beach, Fl. 33441

* Mr. David Tackney
Tackney & Associates
P.O. Box 9199
Naples, Fl. 33941

* Dr. Michael Stephen
Coastal Engineering Consultants
P.O. Box 8306
Naples, Fl. 33941

Local Government Agencies

Dr. Mark Benedict
Collier County, Environmentalist
County Government Center
Naples, Fl. 33942

Mr. Andrew Nicholson
City of Clearwater, Ocean. Eng.
P.O. Box 4748
Clearwater, Fl. 33518

Mr. Steven Somerville
Broward County, Erosion Prevention Eng.
500 S.W. 14 th. Court
Ft. Lauderdale, Fl. 33315

* Mr. James Davis
Indian River County, Public Works Dir.
1840 25th. St.
Vero Beach, Fl. 32960

* Mr. John Walker
City of Delray Beach, Engineer
100 N.W. 1st. Ave.
Delray Beach, Fl. 33444

Local Government Agencies (cont.)

Mr. Frank Aymonin
City of Miami Beach, Public Works Dir.
1700 Convention Center Drive
Miami Beach, Fl. 33119

Mr. R. W. Clinger
Palm Beach County, Beach Erosion Coord.
P.O. Box 2429
West Palm Beach, Fl. 33402

Mr. Steve Pfieffer
Brevard County, Environ. Planner
2575 N. Courtney Pkwy.
Merret Island, Fl. 32952

State and Federal Agencies

* Mr. William K. Hennesssey
Deputy Director, Div. of Environmental Permitting
Department of Environmental Regulation
2600 Blair Stone Rd.
Tallahassee, Fl. 32301

* Mr. A. J. Salem
Chief, Planning Division
Jacksonville District, U.S. Army Corps of Eng.
P.O. Box 4970
Jacksonville, Fl. 32232

* Mr. Laurence R. Green
Chief, Planning Division
Mobile District, U.S. Army Corps of Eng.
P.O. Box 2288
Mobile, Al. 36628

INDIVIDUAL RESPONSES TO QUESTIONNAIRE

TACKNEY & ASSOCIATES, INC.
COASTAL ENGINEERING

1053 5th AVENUE, NO.
P. O. BOX 9199
NAPLES, FLORIDA 33941-9199
813 / 261-8221

P. O. BOX 10464
TALLAHASSEE, FLORIDA 32302-10464
904 / 877-4315

April 18, 1984

Donald K. Stauble, Ph.D.
Associate Professor
Department of Oceanography
and Ocean Engineering
Florida Institute of Technology
Melbourne, Florida 32901

Re: Proposed Chapter 16B-36, F.A.C.

Dear Don:

As requested, I have reviewed the proposed Chapter 16B-36, and I have filled out the questionnaire enclosed with your recent letter.

In reviewing the chapter, however, a number of questions arose. The following is a listing of those questions.

1. Section 16B-32.02 (3) - Under "Authorized Beach Restoration Project", why must a project include a 10 year maintenance program to be considered an "authorized" project?

2. Section 16B-36.03 (2)(a) - Why isn't hurricane protection an acceptable primary purpose of a project receiving a program grant? It should be noted that the Miami Beach Project was primarily a hurricane protection project and not an erosion control project.

3. Section 16B-36.03 (2)(f) - Unless some deadline is given, a specific period in which to complete the project review report, the project sponsor may be held up indefinitely in making final payment to the contractor.

4. Section 16B-36.05 (2) - Isn't the project sponsor required to bear full costs for the same items as listed in 16B-36.05(1)(a) thru (e)? If so, shouldn't it be stated?

5. Section 16B-36.05 (4) - Same as question 4.

6. Section 16B-36.05 (4) - Does the 75% pertain to the total dredging and disposal costs or does it pertain only to the incremental costs involved in beach disposal rather than dumping? If the latter is the case, why shouldn't it be 100% as in Section 16B-36.05(2)?

7. Section 16B-36.07 (2) - Since the Governor uses a biannual budget program, applications can only be accepted during even numbered years. Shouldn't this be mentioned in this section?

8. Shouldn't some reference be made to what happens if a project is delayed after funds have been appropriated?

9. Shouldn't some reference be made to emergency erosion situations and how they can be funded?

I hope that my review has been helpful. Should you have any questions, please let me know.

Very truly yours,

TACKNEY AND ASSOCIATES, INC.

D. T. Tackney, P. E.
President

DTT/pf

Enc.

QUESTIONNAIRE: BEACH EROSION CONTROL ASSISTANCE PROGRAM

Florida Institute of Technology, under contract to the Division of Beaches and Shores of the Department of Natural Resources is undertaking research leading to the development of erosion control guidelines.

The purpose of this questionnaire is to review proposed new policies and procedures for administration of the Beach Erosion Control Assistance Program.

The Department of Natural Resources, Division of Beaches and Shores is proposing to revise portions of Section 161.091 F.S. in order to assist local governments in alleviating serious beach erosion problems.

A copy of these proposed revisions, as prepared by the Division, is enclosed. We would be most grateful if you could review these materials and provide us with an evaluation, comments and suggestions by responding to the following questions and returning the form by April 30, 1984 to:

Dr. Donald K. Stauble
Department of Oceanography and Ocean Engineering
Florida Institute of Technology
Melbourne, Florida 32901

1. Are the proposed new Rules, taken as a whole, clear, concise and readily understandable?

   Yes.

2. Please identify any Sections which are not clear, or which need improvements; how could they be improved?

   see attached letter

3. Do the proposed rules meet the needs; if not, why not?

   See attached letter

4. Are there any features of the content which are objectionable, or any which could prove difficult in implementing?

   see attached letter

5. Are there any additional features that should be included?

See attached letter

6. Are the forms provided in the Rules suitable, convenient, understandable? Please indicate any improvements you feel are necessary.

None

7. Any additional comments on the new Rules resulting from previous experience in erosion control projects and their management would be appreciated.

See attached letter

COASTAL ENGINEERING
CONSULTANTS, INC.
Development Consultants • Coastal Engineers • Marine Scientists
Civil Engineers • Surveyors
3883 Davis Blvd. • P. O. Box 8306 • Naples, Florida 33941 • (813) 774-4402

QUESTIONNAIRE: BEACH EROSION CONTROL ASSISTANCE PROGRAM

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Department of Oceanography and Ocean Engineering
Florida Institute of Technology
Melbourne, Florida 32901

1. Are the proposed new Rules, taken as a whole, clear, concise and readily understandable? yes

2. Please identify any Sections which are not clear, or which need improvements; how could they be improved?
what is an "eligible governmental agency"?
would a properly legislated "MSTD" qualify?

3. Do the proposed rules meet the needs; if not, why not?
RANKING is good idea

4. Are there any features of the content which are objectionable, or any which could prove difficult in implementing?

16B-36.08 (1) d - Tends to "grandfather" in or favor old, continuing long-running projects. Could ~~STIFLE~~ RESTRICT funding to new problem areas which if addressed promptly could avoid larger, future problems.

16B-36.08 (1) K - Puts the DNR staff in a position of doing DER's job. ~~That could~~ This could cause problems, overlap, and time

5. Are there any additional features that should be included?

6. Are the forms provided in the Rules suitable, convenient, understandable? Please indicate any improvements you feel are necessary.

16B-36.09 (3) h
Is this necessary?
How involved is this?

7. Any additional comments on the new Rules resulting from previous experience in erosion control projects and their management would be appreciated.

BOARD OF COUNTY COMMISSIONERS
1840 25th Street
Vero Beach, Florida 32960

QUESTIONNAIRE: BEACH EROSION CONTROL ASSISTANCE PROGRAM

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Dr. Donald K. Stauble
Department of Oceanography and Ocean Engineering
Florida Institute of Technology
Melbourne, Florida 32901

1. Are the proposed new Rules, taken as a whole, clear, concise and readily understandable?

YES! However, is an Erosion Control line to be established for any size project?

2. Please identify any Sections which are not clear, or which need improvements; how could they be improved?

Section 16B-36.03 Policy 2(c) what is definition of "project area" and "adequate parking"

3. Do the proposed rules meet the needs; if not, why not?

YES, however, the Rules appear to be elaborate.

4. Are there any features of the content which are objectionable, or any which could prove difficult in implementing?

For smaller projects under $25,000. Construction cost, some of the requirements such as ECL Establishment should be waived.

5. Are there any additional features that should be included?

No!

6. Are the forms provided in the Rules suitable, convenient, understandable? Please indicate any improvements you feel are necessary.

Yes!

7. Any additional comments on the new Rules resulting from previous experience in erosion control projects and their management would be appreciated.

JOHN P. WALKER
COASTAL & LAND DEVELOPMENT ENGINEER

ENGINEERING DEPARTMENT
100 N.W. 1ST AVENUE
CITY OF DELRAY BEACH, FLORIDA 33444
305/278-2841

QUESTIONNAIRE: BEACH EROSION CONTROL ASSISTANCE PROGRAM

Florida Institute of Technology, under contract to the Division of Beaches and Shores of the Department of Natural Resources is undertaking research leading to the development of erosion control guidelines.

The purpose of this questionnaire is to review proposed new policies and procedures for administration of the Beach Erosion Control Assistance Program.

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Dr. Donald K. Stauble
Department of Oceanography and Ocean Engineering
Florida Institute of Technology
Melbourne, Florida 32901

1. Are the proposed new Rules, taken as a whole, clear, concise and readily understandable?

   YES

2. Please identify any Sections which are not clear, or which need improvements; how could they be improved?

   16B-36.07 (4) At first reading appears to be part of the original funding Application. Would be more clear if there was a separate section (requirements of project agreement).

   16B-36.09 (3G) Parking added after project has met requirements - should be exempt so that it could be restricted for residents only.

3. Do the proposed rules meet the needs; if not, why not?

   YES

4. Are there any features of the content which are objectionable, or any which could prove difficult in implementing?

   16B-36.08 (1i) Discriminates against new projects. Fine for places like Delray Beach which can keep up an on-going program, but counts against areas trying to establish new programs.

5. Are there any additional features that should be included?

Some detail should be given on retroactive funding, particularly relating to environmental studies and monitoring added during review as permit requirements.

6. Are the forms provided in the Rules suitable, convenient, understandable? Please indicate any improvements you feel are necessary.

YES

7. Any additional comments on the new Rules resulting from previous experience in erosion control projects and their management would be appreciated.

The division should require receipt of a copy of any studies performed prior to final disbursal of funds. Should also produce a bibliography of such studies. This pool of research may help avoid duplication of efforts.

Research in the field, including experimental projects, should be encouraged and funded under the program.

STATE OF FLORIDA

DEPARTMENT OF ENVIRONMENTAL REGULATION

TWIN TOWERS OFFICE BUILDING
2600 BLAIR STONE ROAD
TALLAHASSEE, FLORIDA 32301-8241

BOB GRAHAM
GOVERNOR

VICTORIA J. TSCHINKEL
SECRETARY

April 6, 1984

Dr. Donald K. Stauble
Department of Oceanography
and Ocean Engineering
Florida Institute of Technology
Melbourne, Florida 32901

Dear Dr. Stauble:

Enclosed is the questionnaire you submitted to Suzanne Walker of this agency. We have responded to the questions as requested. If we can be of further service, please call us.

Sincerely,

William K. Hennessey
Deputy Director
Division of Environmental Permitting

WKH/hss

Attachment

QUESTIONNAIRE: BEACH EROSION CONTROL ASSISTANCE PROGRAM

Florida Institute of Technology, under contract to the Division of Beaches and Shores of the Department of Natural Resources is undertaking research leading to the development of erosion control guidelines.

The purpose of this questionnaire is to review proposed new policies and procedures for administration of the Beach Erosion Control Assistance Program.

The Department of Natural Resources, Division of Beaches and Shores is proposing to revise portions of Section 161.091 F.S. in order to assist local governments in alleviating serious beach erosion problems.

A copy of these proposed revisions, as prepared by the Division, is enclosed. We would be most grateful if you could review these materials and provide us with an evaluation, comments and suggestions by responding to the following questions and returning the form by April 30, 1984 to:

Dr. Donald K. Stauble
Department of Oceanography and Ocean Engineering
Florida Institute of Technology
Melbourne, Florida 32901

1. Are the proposed new Rules, taken as a whole, clear, concise and readily understandable? Yes

2. Please identify any Sections which are not clear, or which need improvements; how could they be improved?

See No. 4

3. Do the proposed rules meet the needs; if not, why not?

See No. 4

4. Are there any features of the content which are objectionable, or any which could prove difficult in implementing?

Why are projects submitted to the Governor and the Cabinet and the legislature for approval before all permits are obtained? Since the costs of certain studies can be retroactively reimbursed, necessary permits or a favorable commitment in writing from the permitting agency should be required before approval of funding. This procedure is in line with most federal grant procedures. Further, Governor and Cabinet approval and legislative approval before obtaining permits places state agencies in the untenable position of denying a permit for a project that already has been approved by the Governor and Cabinet and the Legislature. We strongly recommend Section 168-36.07 be revised to include submittal of required permits as a part of the initial

5. Are there any additional features that should be included?

No comment

6. Are the forms provided in the Rules suitable, convenient, understandable? Please indicate any improvements you feel are necessary.

Yes

7. Any additional comments on the new Rules resulting from previous experience in erosion control projects and their management would be appreciated.

No comment

DEPARTMENT OF THE ARMY
JACKSONVILLE DISTRICT. CORPS OF ENGINEERS
P. O. BOX 4970
JACKSONVILLE. FLORIDA 32232

March 20, 1984

Planning Division
Coastal Branch

Dr. Donald K. Stauble
Department of Oceanography and
Ocean Engineering
Florida Institute of Technology
Melbourne, Florida 32901

Dear Dr. Stauble:

The completed questionnaire on the State Beach Erosion Control Assistance Program is enclosed, as requested in your letter of March 7, 1984.

It is noted that the use of the word "beach" in the program title is misleading as it could imply that the program applies only to sandy beach areas.

Sincerely,

A. J. Salem
Chief, Planning Division

Enclosure

QUESTIONNAIRE: BEACH EROSION CONTROL ASSISTANCE PROGRAM

Florida Institute of Technology, under contract to the Division of Beaches and Shores of the Department of Natural Resources is undertaking research leading to the development of erosion control guidelines.

The purpose of this questionnaire is to review proposed new policies and procedures for administration of the Beach Erosion Control Assistance Program.

The Department of Natural Resources, Division of Beaches and Shores is proposing to revise portions of Section 161.091 F.S. in order to assist local governments in alleviating serious beach erosion problems.

A copy of these proposed revisions, as prepared by the Division, is enclosed. We would be most grateful if you could review these materials and provide us with an evaluation, comments and suggestions by responding to the following questions and returning the form by April 30, 1984 to:

Dr. Donald K. Stauble
Department of Oceanography and Ocean Engineering
Florida Institute of Technology
Melbourne, Florida 32901

1. Are the proposed new Rules, taken as a whole, clear, concise and readily understandable?

A few minor points are not clear.

2. Please identify any Sections which are not clear, or which need improvements; how could they be improved? (continued on back of page)

a. Under Sec. 36.03 (1) the BECAP is to assist in preventing erosion of sandy beaches. This is contrary to Sec. 36.04 which provides assistance for revetments, etc.

b. Sec. 36.03 (2)(a) states that sandy beach preservation...must be the primary purpose of a project. The state does participate in other erosion control projects.

c. Sec. 36.03 (2)(a) "...to be in the public interest." Should read "to qualify the

3. Do the proposed rules meet the needs; if not, why not?

In general, yes.

4. Are there any features of the content which are objectionable, or any which could prove difficult in implementing?

Sec. 36.06(2) the point system for evaluating project and prioritizing applications does not provide the board with the information needed to allocate state resources. Priorities should be based on recognized State needs in a manner such as the comprehensive state outdoor recreation plan priorities allocation or resources on the basis of demand and needs. Priorities should also reflect what returns in the way of project benefits will be received in return for the allocation of state resources.

5. Are there any additional features that should be included?

The applicant should demonstrate the economic, environmental and social justification for the use and expenditure of state resources.

6. Are the forms provided in the Rules suitable, convenient, understandable? Please indicate any improvements you feel are necessary.

No comment.

7. Any additional comments on the new Rules resulting from previous experience in erosion control projects and their management would be appreciated.

Sec 36.08 the point system given should be deleted entirely as the criteria for evaluating project applications. The criteria does not provide the Board a project priority based on state needs as a basis for allocating state resources.

Evaluation criteria should include as a minimum economic, environmental and social justification; locality compatibility with other state programs, E.O. 84105 and state interests in general locally and regionally.

---

2. (continued)

project area as a public beach."

d. Sec. 36.03 (2)(f) should read "...the staff has performed an inspection of the physical condition of the project, and reviewed the necessary ~~and~~ project records, and a satisfactory project review report prepared."

e. Sec. 36.05 (a) and (3) the word construction should be inserted between project and costs.

f. Sec. 36.09 (3)(a) the word beach is misleading and should be deleted.

DEPARTMENT OF THE ARMY
MOBILE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 2288
MOBILE, ALABAMA 36628

REPLY TO
ATTENTION OF:
Coastal Branch

May 29, 1984

Dr. Donald K. Stauble
Department of Oceanography and Ocean Engineering
Florida Institute of Technology
Melbourne, Florida 32901

Dear Dr. Stauble:

This is in response to your letter of March 7, 1981, which requested comments on rules for the new Beach Erosion Control Assistance Program. I regret that we were unable to furnish comments by April 30 as you requested but additional time was required to prepare a coordinated reply. However, I understand that Mr. Walter W. Burdin of my staff discussed this with you by telephone and that our belated response will cause no problem.

In general we found that the proposed rule did not adequately distinguish between local projects and Federal projects with local sponsors. We believe that the rule should clearly make this distinction and that the rule should consider the detailed nature of the Federal project planning and coordination process. The enclosed comments are numbered corresponding to your questionnaire.

Sincerely,

Lawrence R. Green

Lawrence R. Green
Chief, Planning Division

Enclosure

RESPONSE TO FLORIDA INSTITUTE OF TECHNOLOGY QUESTIONNAIRE
BEACH EROSION CONTROL ASSISTANCE PROGRAM

1. The response to this question seemed to depend upon the reviewer's familarity with governmental regulations in general. Those who work with regulations had no problem with the rules. Those who do not found them unclear and confusing. The proposed rules would be much easier to use if they were published in booklet form with a "cookbook" format on the steps to be followed to obtain state assistance. It is suggested that a simpler version of the rule be developed for use by local governments.

2. Section 16B-36.02 (3) and (12) refers to "projects authorized by Congress". The Chief of Engineers can authorize projects costing up to $1,000,000 under the Continuing Authorities program and Division and District Engineers also have delegated authority to obligate certain funds for beach work. The wording needs to be broadened to include these cases.

3. The rules appear to meet the needs with minor exceptions. Does the Bureau of Beaches and Shores intend to evaluate the technical adequacy of a given proposal? Who will determine the classification points to be assigned under Section 16B-36.08?

4. a. In section 16B-36.07 (2), limiting application acceptance to between April 1 and July 1 seems unduly restrictive. In the case of Federal naviagation projects from which suitable dredged material may be disposed on beaches, the Corps has the capability to transfer funds from one project to another in order to satisfy navigation needs. Therefore, limiting applications to the April 1 to July 1 timeframe would be a severe handicap to the local sponsor of such a project who desires assistance.

b. In that same section, paragraph (4) lists certain application requirements. Among those requirements is that of obtaining coastal construction permits. There is no basis in Federal law for requiring those permits for a Federal project. Even if it is the intent of the state to have a local sponsor meet those requirements, they are unduly restrictive in the case of a Federal project which is thoroughly coordinated with DNR and other state and Federal agencies during its planning. Designation of a "project engineer" for a Federal project could cause a sponsor problems since they have no authority to commit the Government. In addition we do not permit our own projects. We consider that preparing a 404(b) evaluation, an Environmental Impact Statement or Environmental Assessment, state coastal zone consistency and water quality certification and complying with the Fish and Wildlife Coordination

Act adequate. It is suggested that this section be rewritten to discuss local projects separately from Federal projects.

5. General clarification of the Corps of Engineers' role in beach erosion control projects.

6. Yes

7. No further comment.

APPENDIX LITERATURE CITED

Bascom, W. N. 1959. The relationship between sand size and beach face slope. Am. Geophysical Union Trans. V. 32, No. 6, P. 866-874.

Folk, R. L. 1968. Petrology of Sedimentary Rocks, Hemphill's, Austin, Texas, 170 pp.

Friedman and Sanders. 1978. Principles of Sedimentology, Wiley Pub. Co., New York, N.Y., 792 pp.

Hallermeier, R. J. 1981. A profile zonation for seasonal sand beaches from wave climate. Coastal Eng., Vol. 4, p. 253-277.

Hobson, R. D., 1977. Review of design elements for beach-fill evaluation. TM-77-6, U.S. Army Corps of Eng., Coastal Eng. Research Center, Fort Belvoin, VA, 51 p.

S. P. M., 1977. Shore Protection Manuel. U.S. Army Corps of Eng., Coastal Eng. Research Center, Fort Belvoiu, VA, 3 Vols.

Stauble, D. K., M. Hansen, R. Hushla, and L. Parson, 1983. Beach Nourishment Monitoring, Florida East Coast: Physical Engineering Aspects and Management Implications. ASCE, Coastal Zone 83, p. 2512-2526.

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