PROJECT OVERVIEW

The barrier island plan is authorized by the Coastal Wetlands Planning, Protection, and Restoration Act (CWPPRA). The purpose of this study is to determine whether the Louisiana barrier shoreline provides significant protection to Louisiana's coastal resources. If the study proves that the barrier shoreline provides these significant benefits, then this study will develop the most cost effective method to maximize those benefits.

The three year barrier island feasibility study is divided into three phases based on geographical location. Phase 1 is located between the Atchafalaya and Mississippi Rivers. Phase 2 encompasses the cheniere plain barrier formations in Vermilion and Cameron Parishes. Phase 3 focuses on the Chandeleur Islands. Phase 1 is the area currently being studied.

The project is structured to reach an implementation plan by starting from a broad descriptive analysis and gradually becoming more site-specific and detailed as the steps proceed. Each resource study or island option plan begins with some type of qualitative assessment and progresses to a more detailed quantitative analysis. For example: Step C will qualitatively focus on the status and trends of resources for the broad study area; whereas, Steps E and F will quantitatively assess and inventory the existing environmental and economic resources respectively. Also, Step I is a general evaluation of the needs and problems in the study area and development of management alternatives. Later, Step L will define the preferred plan criteria and chose a recommended implementation plan from the management alternatives developed in Step I, based on the quantitative assessments made in Steps J and K.

The first report completed for the barrier island feasibility study is Step A, which reviews prior studies, reports, and existing projects that pertain to the study's purpose, scope, and area. Step A also identifies and describes existing and potential barrier island and wetland restoration projects that affect the Phase 1 area. Step A is an overall orientation for the team on the project area. The literature review ensures that the team is knowledgeable and familiar with the most current literature available on the barrier islands and is using the most up-to-date information throughout the overall study.

Step B is also completed and contains a conceptual and quantitative framework for the barrier island study. The conceptual framework describes the functions and processes affected by barrier islands and the potential impacts on the significant resources in the study area. The significant resources include economic, cultural, recreational, and land-use resources. Step B also contains a review of the available methods for quantitatively predicting the effects of the barrier islands on environmental and economic resources. This information outlines the general study area for the team and describes the methodology that will be used in Step G to forecast physical and hydrological changes.

Step C provides qualitative assessments of the status and trends of the resources in the project area. A general study area map from Step B defines the area influenced by the barrier islands for the purposes of the Step C general resource assessment. These assessments include economic, social, cultural, water, biological, recreational, and land resources. In addition, the climatology, hydrology, and geological processes are analyzed with regard to their status and trends within the study area. Historical land losses are documented, as well as natural and human contributors to barrier island and wetland change. This information is gathered to demonstrate the characteristics of the study area and to show the resources at risk due to the loss of the barrier shoreline. It also orientates the team to the area and ensures the team will consider these resources in later steps.

Step D is a quantitative inventory of the physical parameters that are used to forecast changes in the economic and environmental resources. Step D involves delineating zones of environmental and economic analysis in the general study area described in Step B. The zones are designated using the Hurricane Andrew storm surge as criteria. The physical process parameters (waves, wind, sea level, sediment transport, etc.) and the geomorphic parameters (surficial sediments, topography, bathymetry) are identified, including data sources, type and quality of data, and any inconsistencies or "gaps" in the data. This information will be used as input for the modeling and forecasting effort in Step G. The results of Step D allow the team to evaluate the proposed modeling effort as outlined in Step B.

Step E provides a quantitative inventory and assessment of existing environmental resource conditions, with an emphasis on those resources considered significant. The team developed the criteria for determining "significant" environmental resources. Wildlife habitats, breeding grounds, and endangered species refuges are among those resources that have been assessed. Step E includes historical habitat/wetland change maps and describes the land loss rates and their associated changes. These data will be used to forecast the impact of the no-action scenario for environmental resources.

Step F is a quantitative inventory and assessment of existing economic resource conditions. This includes all structures, facilities, farmland acreage, and public resources (roads, channels, bridges, etc.) that are susceptible to the consequences of wetland/land loss, shoreline erosion, or hurricane induced flooding. The value of these economic resources and their residual worth will be included in the assessment. Historical damage and losses caused or induced by oil spills, waves, wetland/land loss, and shoreline erosion will also be evaluated. These data will be used to forecast the impact of the no-action scenario on economic resources.

The forecasted trends of physical and hydrological conditions will be discussed in Step G. A 30 year forecast of the present and future physical conditions will be modeled, showing the effects of a no-action scenario. The study will be conducted using the methods described in the Step B report and the data specified in the Step D report. Bathymetry and topography, waves, tides, storm surge, and other factors that affect the economic and environmental resources will be forecasted.

The effects on environmental resource conditions were forecasted in Step H. Projected wetland/land loss were presented for the 30- and 100-year no-action scenarios. This will help estimate, through the modeling results from Step G and projected trends, the total land loss and the effects on the wildlife that will be experienced within the 30-

year period as present conditions proceed. The team amassed information detailing the projected changes in the barrier shoreline and the anticipated effects of those changes on the environmental resources in the area. The team can then use this information as a baseline to compare project alternatives.

In Step I, the team identified the options to be evaluated. The later steps involve the identification and explanation of the preferred alternative(s). Step I identified the problems, needs, and opportunities of the study area and developing strategic options. Options were considered on an island-chain spatial scale. These options included restoring a historical island configuration, establishing a fall back line, no-action alternative, preserving present-island configurations, strategic retreat, and other possible options. A general assessment of engineering, environmental, economic, and social factors regarding strategic option implementation was considered. An array comparing the different options with these factors was formulated. Those options that cannot be implemented because of cost, long-term effects, or other conditions were no longer considered. The remaining options became management alternatives and are analyzed in greater detail in Step J. Step I provided the necessary island size and inlet locations for the modeling study in Step J.

Step J is the assessment of management alternatives. The most important input for Step J is the identification of the specific management alternatives found in the Step I report. Step J includes qualitative and quantitative assessment of the management alternatives. This step includes a more detailed analysis of the effects of the proposed management alternatives on the environmental and economical resources of the area. For example, if a management alternative being investigated in Step J is a 1930 island configuration, then in Step J the increased flood protection potential from hurricanes by virtue of the size increase of the barrier islands will be described. That protection estimate will be an approximate dollar estimate and not a general assessment as was done in Step I. The output for Step J will be a detailed assessment of the effects of the management alternatives on the resources in the area. Resources include environmental, economical, and social. Where possible, the effects on resources will be quantified. The report should be based on a thirty year projection into the future and compared to the no action scenario.

Step K involved identifying and assessing possible management and engineering techniques for the management alternatives developed in Step I. Step K assessed the engineering techniques that may be used to implement the management alternatives identified in Step I. The long-term impacts will be used to assess the effectiveness of the various engineering and management techniques. This step determined possible use of beach fill, coastal structures, and possible regulatory controls that provide optimal design life and cost effectiveness. Dune crest height and berm and beach slopes were evaluated for limiting wave runup and overtopping. Volumes of beach fill will be calculated after the beach and dune configurations are established. In addition, borrow site identification and assessment were completed. This was used to determine the cost, quantity available, and methodology for using various borrow sites for material if needed. The output for Step K is the general applicability, cost, and impacts of various engineering alternatives.

Step L will be a description of the rationale for selecting a preferred plan. The criteria will be based upon the detailed assessments made in Steps J and K to develop a cost/benefit relationship. Step J will supply the benefits for each management alternative, while Step K details the cost. The selected management alternative and associated engineering and management techniques will be developed to form preliminary plans and cost estimates. Included will be all beach fill and coastal works concepts, sources of material, and cost of maintenance and monitoring.

In Step M, the team will select the preferred plan based on the criteria described in Step L. The team will then describe the methodology for instituting permitting, right-of-way/construction agreements, final engineering design, bidding, construction, mitigation, monitoring and maintenance. The preferred island configuration will be presented with potential structures, beach fill, dune restoration, and protection plans.

Preferred sand sources and the effect of removing the sand will also be detailed. The Step M report will outline time, cost, and regulatory parameters.

Step N is a consolidation of all deliverables into one final report document. This final report will summarize the information provided in all previous documents.

FOREWORD

The purpose of this study is to assess the consequences to the coastal resources in the Phase 1 Study Area if the barrier shoreline is allowed to continue deteriorating. Also, the study team is tasked to develop barrier shoreline alternatives that will protect and enhance coastal resources.

To achieve these goals, the study has completed the following reports:

Phase 1 - Step A	**A Review of Pertinent Literature**
Phase 1 - Step B	**Conceptual and Quantitative System Framework**
Phase 1 - Step C	**Assessment of Resource Status and Trends**
Phase 1 - Step D	**Quantitative Inventory and Assessment of Physical Conditions and Parameters**
Phase 1 - Step E	**Inventory and Assessment of Existing Environmental Resource Conditions**
Phase 1 - Step F	**Inventory and Assessment of Existing Economic Resource Conditions**
Phase 1 - Step G	**Forecasted Trends in Physical and Hydrological Conditions**
Phase 1 - Step H(i)	**Forecasted Trends in Environmental Resource Conditions**
Phase 1 - Step H(ii)	**Forecasted Trends in Economic Resource Conditions**
Phase 1 - Step I	**Forecasted Trends in Formulation and Assessment of Strategic Options**
Phase 1 - Step K	**Identification and Assessment of Management and Engineering Techniques**

The Step J Report is an Assessment of strategic options in the Phase 1 Study Area. The management alternatives, defined and qualitatively assessed in Step I, were numerically modeled for wave and hydrological changes compared to no-action. The results were used to evaluate environmental and economic benefits provided for each alternative.

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