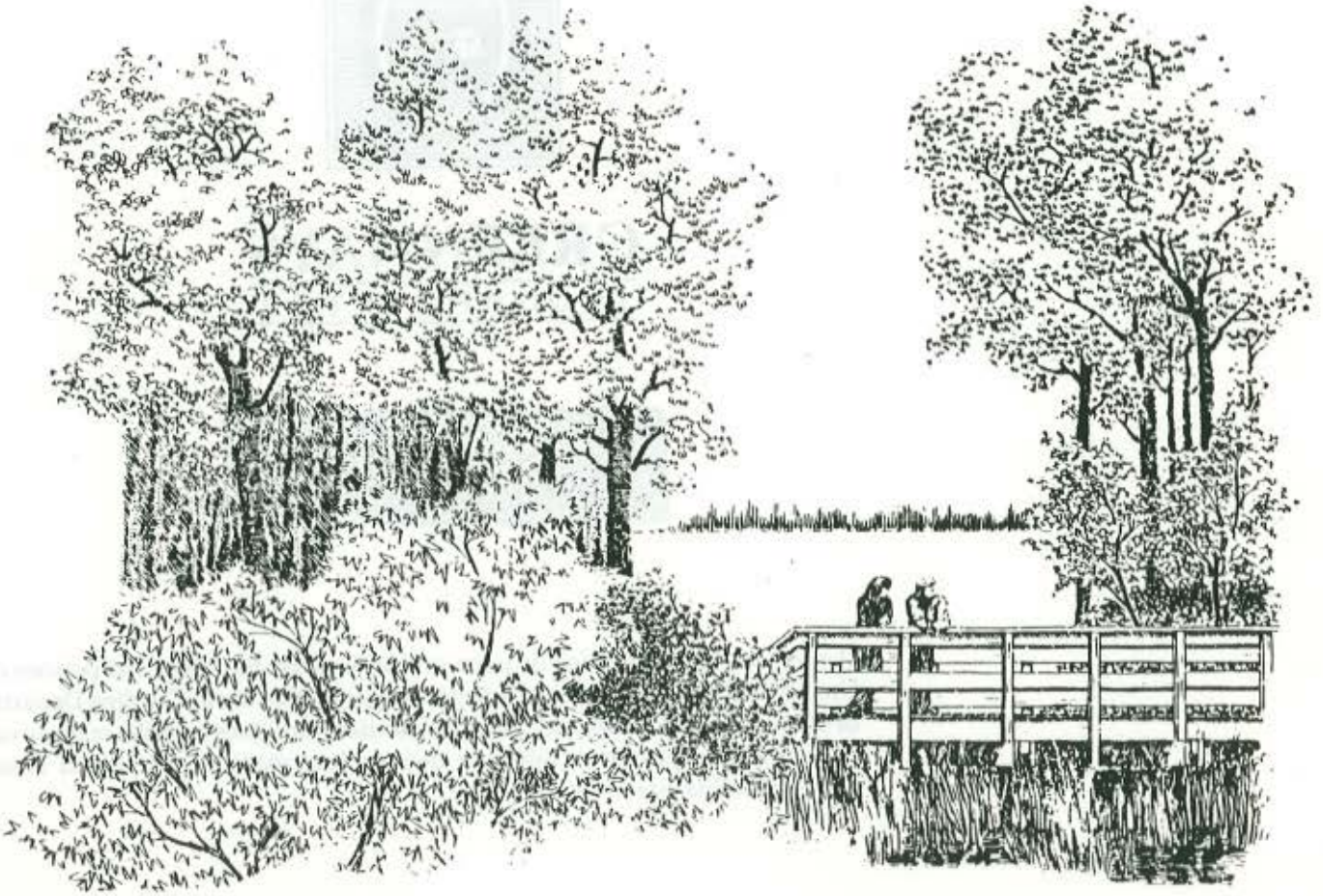
The North Carolina Estuarine Resources Center



A Feasibility Study for Developing an Estuarine Education Center

The Albemarle-Pamlico Estuarine Study #91-07
(the United States Environmental Protection Agency; the North Carolina Department of Environment, Health, and Natural Resources; the National Estuary Program)

GREENWAYS

INCORPORATED

The North Carolina Estuarine Resources Center

September 1991 Feasibility Study

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The Albemarle - Pamlico Estuarine Study

The Bryan Family Foundation

The Mary Flagler Cary Trust

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Introduction

"The ocean environment has for sometime been the target of public attention; however, in recent years, we have experienced a burgeoning interest in the inland coast and in estuarine ecosystems."

Dr. David McNaught, Executive Director
Pamlico - Tar River Foundation
December 7, 1989

Introduction to the Project Planning Process

Executive Summary

THE PAMLICO-TAR RIVER FOUNDATION (PTRF), in conjunction with the Albemarle-Pamlico Estuarine Study (APES), is serving as the lead agency for the examination of the need for an Estuarine Resources Center. The proposed Center would be developed in the northern Coastal Region of the state, and would serve a diverse range of interest groups, providing opportunities for education, research, resource management, advocacy, and support of eastern North Carolina's expansive estuarine systems. With the exception of Alaska and Louisiana, North Carolina has more estuarine acreage than any other state. Alone, the Albemarle-Pamlico estuarine system is the second largest in the United States. (see Map on page 55)

For decades the North Carolina ocean environment, and in particular the Barrier Islands, have been the target of public attention and the recipient of ocean-marine resource centers, museums, interpretive centers, and other environment-oriented cultural attractions. These facilities, and numerous other ocean/beach front facilities collectively promote awareness, understanding, and appreciation for ocean-marine resources. They serve as cultural and educational centers, major tourist attractions, and potentially as sites of significant scientific research.

PTRF and APES recognize the need for an Estuarine Resources Center that would interpret the natural systems of the inland coast; the pocosins, hardwood swamps, marshlands, and estuaries (also referred to as the Tidewater region of North Carolina). The proposed Center would offer education, tourism, and research related services, including exhibits, lectures, guided tours, recreational events, and "hands on" programs, all of which would be tailored to apprise the student, tourist, and scientist of the significance and interrelationships of these ecological systems.

To explore issues related to estuarine education, market conditions in eastern North Carolina, and determine the feasibility of developing the proposed North Carolina Estuarine Resources Center, PTRF has engaged Greenways Incorporated, a Cary, North Carolina based environmental planning and landscape architecture firm to prepare this Feasibility Study. In preparing this Study, Greenways Incorporated addressed four major concerns: 1) Preparation of a Market Analysis for the proposed Center; 2) Preparation of a Design Concept and Storyline describing what the Center would offer; 3) Development of "Location Evaluation Criteria" and "Site Selection Guidelines" to evaluate possible locations for the Center; and 4) Definition of a Plan of Action for the successful development and operation of the Center. A more thorough description of these areas of concern is as follows:

Design Concept: Defines the theme and the physical elements of the NCERC is a primary objective of the Study. The Mission Statement provides the basis for development and programming of the Center. The storyline is based on the interdependence of the region's natural history and its cultural heritage. Also included is the definition for programs and interpretive themes that the Center should provide in order to make visitation to the facility an exciting and enriching experience.

Market Analysis: Greenways Incorporated and its subconsultant, North Carolina State University Department of Parks, Recreation and Tourism Management, devoted a significant amount of its consultation to the exploration and evaluation of factors that would impact the successful implementation of the Center. An analysis of the demographics, economic, tourism, educational curriculum, comparable facilities and other relevant market conditions of eastern North Carolina and Tidewater Virginia has been performed. The results of this analysis established the basis for other components of the Study, and constitute the development strategy for the Center.

Facility Development: Determines the manner in which the Center is developed, operated and managed. The physical structure of the building and grounds, administration and management, and development of funding and operations of the building are also defined as part of this study.

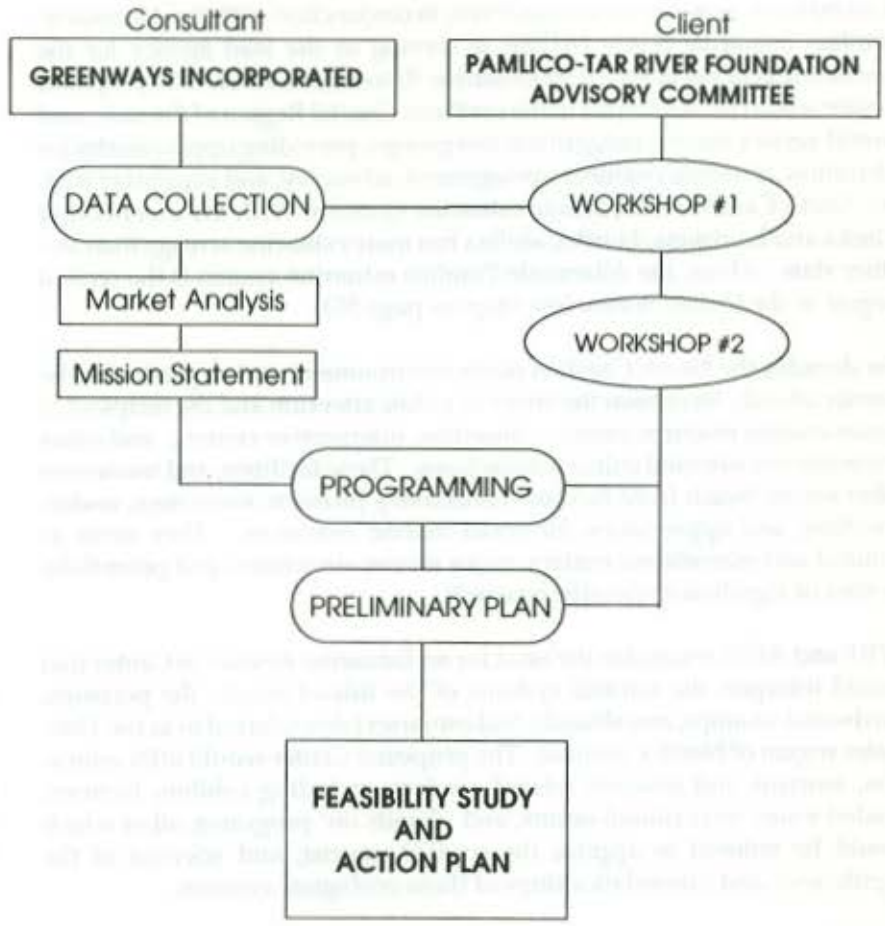
Site Selection Evaluation: Defines the relative merits (criteria) of possible locations for the Center. The facility should have a physical relationship and connection to the environment it is describing, while at the same time providing convenient access to major transportation corridors in order to attract a diverse range of users. Several locations have been identified and a process by which they can be evaluated has been included.

Action Plan: The Action Plan defines a concise program for implementing the full scope and function of the Center. It contains prioritized elements based on fiscal and chronological opportunities and constraints. It also itemizes procedures for obtaining funding and additional support for the facility.

Planning Process

THE CONSULTING TEAM worked with an Advisory Committee, formed by PTRF, to complete the evaluation, definition, and preparation of the four major objectives of this Study. The work of the consultant and Advisory Committee has been completed through a structured Planning Process, containing four major work tasks. This process began with **Collection of Data** regarded as relevant and essential to fully understand the potential of the Center. After the collection of data was completed, the consultant conducted two workshops with members of the Advisory Committee (see Appendix A) to define **Programming** elements for the Center. After the programming task was completed, the consultant prepared the **Preliminary Plan** for the project, defining criteria for site selection, operating structure and fiscal requirements for the facility. After the preliminary plan was reviewed by the Advisory Committee, the consultant made appropriate revisions and prepared the **Final Action Plan**, which defines steps required for full development and operation of the Center. The results of these work tasks constitutes this **Feasibility Study for the proposed North Carolina Estuarine Resources Center.**

Joint Planning Process



Conclusions of this Study

Greenways Incorporated has determined that the development of an educationally based estuarine resources center is a **feasible** proposition based upon the following conclusions:

1) Currently, there are no educational, tourist, or research oriented facilities which focus on the fragile and valuable natural environments of the Albemarle-Pamlico estuarine system in North Carolina.

2) Primary and secondary school teachers throughout the region have the need and desire to utilize and support an educational facility which focuses on the estuarine environments to supplement their natural science curriculums.

3) Tourism has become one of North Carolia's leading industries. North Carolina tourists (resident and non-resident) recognize the unique natural and historic attractions of the region. They can be expected to accept and support a natural resource based attraction and educational facility.

4) Location and development of the Center will be very critical to its short and long-term success. To attract markets which the Center will serve, it should provide dynamic, interesting, and "hands-on" experiences within a wide variety of estuarine environments. The location should be readily accessible from a well traveled roadway to provide good access for all visitors. While visiting the center, all visitors should be able to recognize the care taken in the development of the Center relative to its surrounding environment.

5) Site and building development should be innovative and sensitive to the natural environment. The architecture and engineering should be space and energy efficient. The character and architectural style of all buildings and structures should be indigenous to the inland coastal area of eastern North Carolina.

6) As a non-profit 501C3 (IRS) corporation, the Center will be managed by a Board of Directors. Staffing of the Center will grow from the initial position of an Executive Director, to a full staff of approximately 11 persons. Assisting with the implementation of the mission and programs of the Center will be technical advisors from local universities and colleges, related environmental organizations, the business/corporate community, local, state, and federal agencies, and other related fields. The establishment of a "Friends" group will enable individuals to become more familiar with the daily activities of the Center and serve as docent staff.

7) Development of the Center to its full operational level could take at least four years at a total cost of approximately $2.5 million dollars, not including design and engineering fees and contingencies. Once established, the annual operating budget including staff salaries will range from $335,000 to $380,000. Due to the national and statewide recession, it is difficult to accurately determine exactly where funds will be generated for capital development and operation of the Center. This Study identifies four area of potential funding sources:

1. Federal - the Center might qualify as a National Estuarine Research Reserve (NERR) facility, and therefore could be developed in conjunction with the establishment of a second NERR in North Carolina.

2. State - several state agencies could participate in funding portions of capital development, including the Division of State Parks, the Division of Cultural Resources, and the University of North Carolina system.

3. Private sources - financial support for operating the Center should come from visitors, users, and residents of North Carolina. This would primarily be in the form of user and admission fees. Donations should be strongly encouraged.

4. Foundations - philanthropic and corporate foundations should be sought to assist with initial operational funds and ongoing program funds.

A detailed schedule for development of the Center is provided in the Action Plan of this document.

Design Concept

"The North Carolina Estuarine Resources Center should be the primary facility in the state that informs the public about what estuaries are, their importance to society, as well as their historical and recreational contexts. Programs should include educational classes for schools and the public, plus an array of related issues and activities."

North Carolina Estuarine Resources Center
Advisory Committee Member
May 6, 1991

Introduction

THE STORYLINE for the North Carolina Estuarine Resources Center as presented here should not be construed as a literal description of exhibits. It is, instead, offered as a framework for the Center's interpretive themes.

The Storyline details the interwoven relationship between people and natural resources. The unique characteristics of people and place are what have made eastern North Carolina what it is today. Reflecting the influences that human culture and natural systems have upon one another, the Storyline will have components of both cultural and natural heritage.

The Storyline has three parts: 1) a mission statement; 2) interpretive themes-general concepts that should provide the basis for exhibits and programs to fulfill the mission, and 3) projected facility operations and needs.

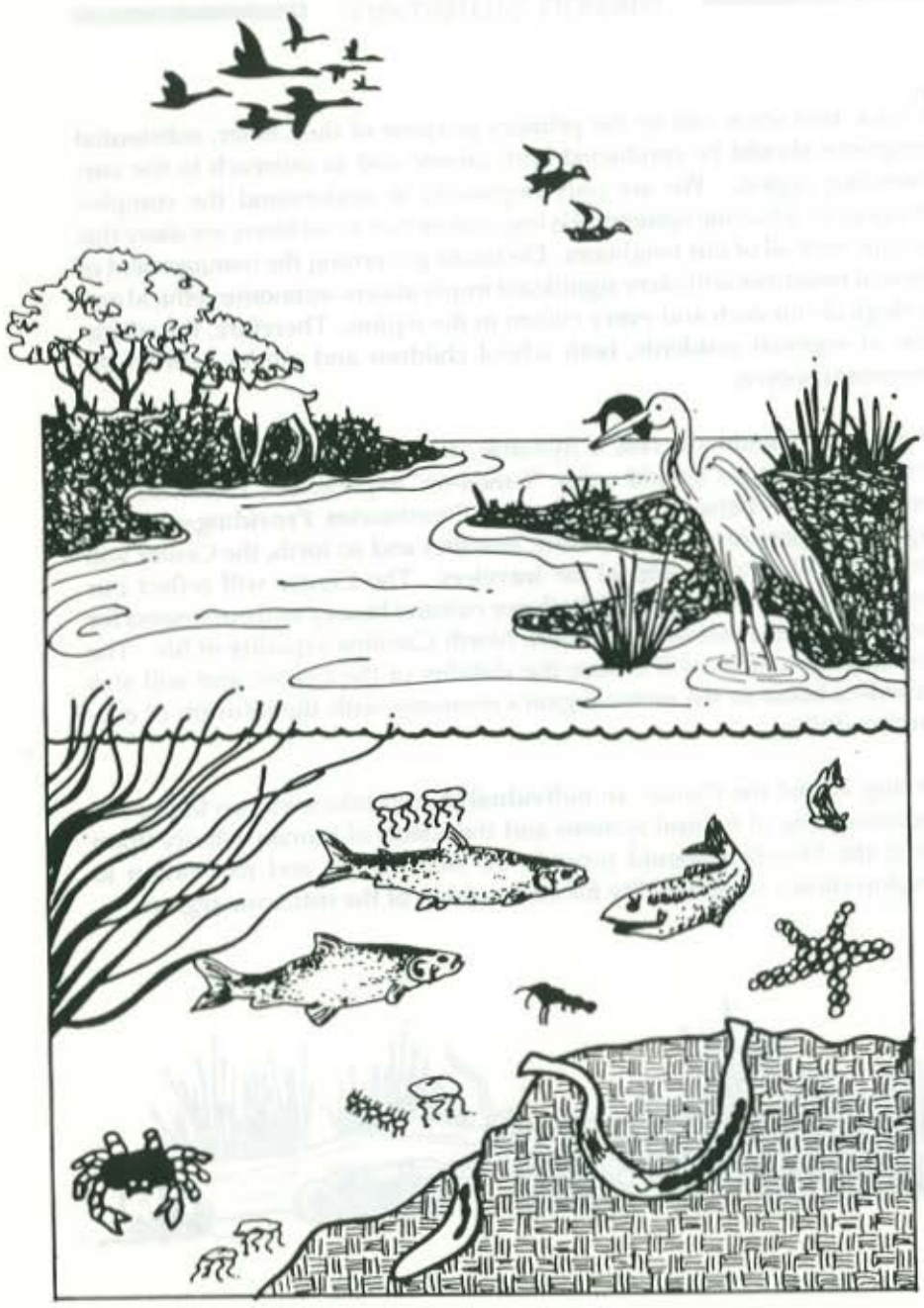
Decisions governing the management of natural resources will carry significant implications--economic, ethical and ecological--for each and every citizen in the region. Therefore, the education of regional residents, both school children and adults, will be the foremost concern.

Mission Statement

PUBLIC EDUCATION will be the primary purpose of the Center; substantial programs should be conducted both on-site and as outreach to the surrounding region. We are only beginning to understand the complex integrity of estuarine systems; it is imperative that as we learn, we share this insight with all of our neighbors. Decisions governing the management of natural resources will carry significant implications--economic, ethical and ecological--for each and every citizen in the region. Therefore, the education of regional residents, both school children and adults, will be the foremost concern.

The Center should provide a dynamic, interesting and fun experience. Visitors of all ages should enjoy "hands-on" experiences, establishing a sense of identity between themselves and the estuaries. Providing such live, "up-close" encounters with wildlife, marshes and so forth, the Center will also have an obvious appeal for travelers. The Center will reflect our region's sense of pride through both our cultural history and our respect for the environment that fosters eastern North Carolina's quality of life. The attraction to tourists will ensure the viability of the Center, and will also provide a boost to the entire region's economy with the infusion of eco-tourism dollars.

Having visited the Center, an individual should take away an improved understanding of natural systems and the effects of human activity upon them; the Storyline should provide the information and motivation to develop citizen responsibility for stewardship of the estuarine region.



Storyline Interpretive Themes

The following outline is the earliest stage in the preparation of the educational programs and displays to accomplish the mission. It is not exhaustive, nor ultimately definitive; this portion of the storyline will continue to evolve well after the facility is established.

Natural Heritage Components

STARTLED BY A SUDDEN sound or splash in the river, have you wondered what sort of creature caused it? Or can you explain the rotten egg smell near a salt marsh? Watching the tide creep slowly over the mud and into the roots of marsh grasses, do you think it may be rising faster or higher than it did last year? Do you wonder about the birds and animals that live in the dark swamps of eastern North Carolina? There are innumerable questions regarding the natural functions of estuarine habitats. The Storyline of the Center will begin to answer these and similar questions.

The Storyline will describe the natural environment of the region. The Albemarle-Pamlico is the second largest estuarine system in the United States. The wide shallow sounds, dark rivers and meandering creeks cover almost 1.9 million acres. Along the edges of the waters lie thousands of acres of marsh and swamp. The Albemarle-Pamlico system is a complex union of several diverse natural systems or habitats.

Estuarine waters are themselves diverse; variations in salinity, temperature, circulation, sediments, and many other parameters influence which species of plant or animal will succeed in a given locale. The lands that make up estuarine watersheds will be displayed in the Storyline. The plants and animals that use or dominate different types of habitat will provide a basis for explaining the functions of various wetland or upland types.

Human Cultural Components

EUROPEAN SETTLEMENT, from the earliest explorations of the region, is well documented. Settlers were drawn by the abundant, fertile resources of the area. However, the unique natural conditions of the estuarine region have both inspired and restricted cultural evolution of the area. Farming, forestry and fishing--the principle industries of eastern North Carolina--have developed unique perspectives and practices in response to the constraints of the environment.

Settlers filtered down from Virginia, following essentially the modern day route of US 17. Those who settled here initially, trapped, hunted and cleared the land. By the early 18th century, settlement had pushed inland along the Pamlico Sound. At this time, however, four-fifths of the North Carolina population still resided in the Albemarle region to the north.

The natural environment and resources were not conducive to easy, massive exploitation; farms were small and self-sustaining. In addition to agriculture, two major industries evolved during the colonial period: the production of naval stores and the cutting of timber and milling of lumber. The small settlements on the estuarine waters--Washington, New Bern, Hertford, Edenton, Williamston and Plymouth-- thrived as export centers. While shipbuilding never became a major industry, the shallow waters and narrow creeks led to local adaptations in ship design.

Commercial fishing and shellfishing became profitable with improvements in land transportation. By 1860, North Carolina ranked second in the south in commercial fishing. In addition, guiding for hunting and fishing parties would become a significant livelihood for some watermen, and is perhaps the foundation of today's burgeoning tourist industry.

The economic patterns established in the colonial period have remained intact. The lay of the land and waters of the inner coast are such a powerfully limiting constraint that even the advent of rail transport in the mid 1800's did not alter the matrix of traditional livelihoods. With no deep water port to spur development on the northern coast, the primary transportation corridors developed inland, stringing together the manufacturing and marketing centers of Roanoke Rapids, Rocky Mount, Wilson, and Goldsboro. Goods moved north to Richmond or Hampton Roads, or south to Wilmington. Effectively isolating the Tidewater region, this transportation corridor perpetuated old economic patterns rather than introducing new ones.

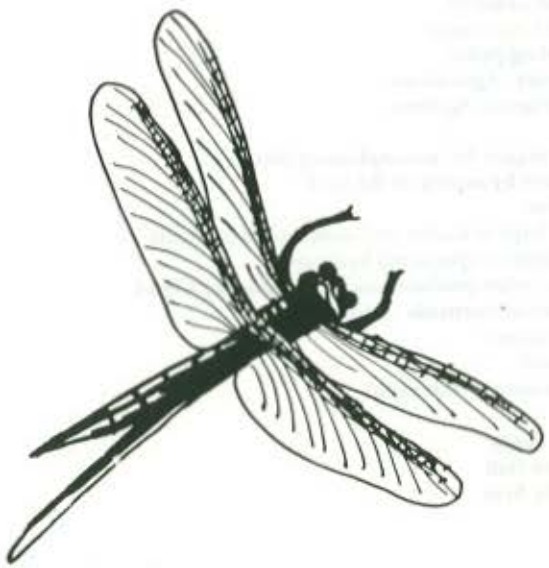
The Conflict of Uses

WHILE HISTORIC development is significant, we suggest that the Center focus on the region's environment and culture as they are today. It is always beneficial to understand how we got to where we are, but the emphasis should be on where we are now, and on how decisions today will influence the region tomorrow.

In the Albemarle-Pamlico region today, we see the continuation of the cultural patterns that have developed over the last 250 years. Agriculture, forestry, and commercial fishing are still key components of the region's economy. Some new industries (textiles, mining, paper production, and tourism) have emerged and been added to the mix.

One seemingly unique aspect of our region's history has been the absence of a "boom and bust" economy. However, we may be embarking on the first real "boom economy" since the original colonization of the region: real estate, residential/resort development, and recreation/tourism. This growing factor in the utilization of land and water resources of the region will have far reaching effects on the natural systems. There are many people who desire the growth and many who resist it; there will be increasing conflicts of interest among the inhabitants of the region. Virtually all human activities will impact the natural resources in different fashions.

The Storyline of the Center will not be a biased advocacy for any perspective; it will educate the visitor to the dimensions and real costs of resource use and development. It will then be the responsibility of the public to decide the future they wish for their environment, homes, friends and families.



Programming

The success of the North Carolina Estuarine Resources Center will partially depend upon the succinct refinement of the facility's target groups, activities and techniques to accomplish its mission, and its physical space needs. To help convey the present and future goals of the physical aspects of the Center to operational providers, funding sources, and future clientele, a visual image should be described by the mission statement, interpretive themes, and physical needs of the facility. The following outline defines facility and operational programming that must be considered:

Education

THE PRIMARY MISSION of the North Carolina Estuarine Resources Center is to describe the interelationships of humans and estuarine systems in a manner comprehensible to all age groups and education levels. There are several potential user groups who will have an interest in this mission and storyline. Which groups are the primary targets and which tools/strategies/techniques are preferred, will determine the physical structure of the exhibits and programming of the Center.

1. **Target Groups:**
   a. School Children
   b. Local Community
   c. Traveling public
   d. Industry/Agriculture
   e. Government Agencies

2. **Activities/Techniques for accomplishing Mission:**
   a. Lectures by experts in the field
   b. Exhibits
   c. Field Trips to Center and components of Center
   d. Conferences sponsored by Center
   e. Films/video produced and distributed by Center
   f. Classroom curricula - all levels
   g. Publications
   h. Research
   i. Commentary/Advising

3. **Physical Space needs**
   a. Lecture Hall
   b. Exhibit Area
   c. Field trip destinations
   d. Self guided/self actuating displays
   e. Laboratory
   f. Mobile unit
   g. Boat
   h. Parking
   i. Boat ramp/camp sites

Resource Management/Networking

THIS PARTICULAR FUNCTION is one of information collection, collation and dissemination. It is a very advanced library function that could involve the use of computer link and data monitoring systems. It is closely tied to the research aspect of the Center, but could be responsible for publications serving educational needs.

1. **Target Groups:**
   a. All users

2. **Activities/Techniques:**
   a. Publishing - in-house desk top
   b. Research assistance
   c. Resource management
   d. Data Storage
   e. Data/Information exchange

3. **Physical Space Needs:**
   a. Computer Lab
   b. Library Space
   c. Desk-top publishing
   d. Mail room
   e. Listening rooms
   f. Map storage/display
   g. Small conference room

Support

THE NORTH CAROLINA Estuarine Resources Center will provide support to local communities and planning agencies on issues of wetland/estuarine alteration. This will entail using the resources acquired by the facility and returning the knowledge base to benefit the very ecological system that sustains the local communities. An important aspect of "support" is to avoid alienating any public sector. The Center should work towards developing "win-win" solutions for inevitable population growth controversies throughout the Albemarle-Pamlico region.

1. **Target Groups:**
    a. Local Communities

2. **Activities/Techniques:**
    a. Resource Mapping
    b. Natural Systems inventory
    c. Species mapping
    d. Computer mapping
    e. Land Planning techniques
    f. Urban/Suburban Development Impact assessment

3. **Physical Space Needs:**
    a. Office
    b. Drafting stations - CADD
    c. Computer mapping

Research

THE AVAILABLE NATURAL laboratory of the Albemarle-Pamlico Estuary and its surrounding coastal plain habitats offer unique opportunities for estuarine research. Research at the Center could lead to support funding from government agencies, private industry and institutions. A research initiative will directly support the other mission/functions of the Center. These could be adjunct facilities or shared space.

1. **Target Groups:**
    a. Related academic disciplines
    b. Planning agencies
    c. Industry/Agriculture
    d. Legislative bodies
    e. Conservation organizations

2. **Activities/Techniques:**
    a. Lectures/forums
    b. Collections
    c. Inventories
    d. Conferences
    e. Applied research
    f. Independent/related studies
    g. Publications
    h. Monitoring
    i. Commentary/Advising

3. **Physical Space Needs**
    a. Lecture Hall/Theater
    b. Aquarium/holding tanks
    c. Field trip destinations
    d. Fully equipped Laboratory
    e. Transportation systems
    f. Research/Collection Vessel
    g. Refrigeration
    h. Photographic Lab
    i. Dormitory
    j. Library
    k. Computer Lab

Advocacy/Protection/Preservation

THE CENTER will take an active role to preserve local estuarine resources. This is an intensive, results-oriented mission of the Center. It draws from other resources, allocated among the other tasks and is less dependent on the physical requirements of space, and more dependent on the manpower capabilities of the Center.

1. **User groups** - not applicable

2. **Activities/Techniques**
    a. Monitoring environmental quality
    b. Lobbying
    c. Enforcement -- violation documentation
    d. Disaster response team -- registered through Center
    e. Resource mapping/inventory
    f. Species mapping/listing
    g. Land/Estuarine Acquisition -- owners to co-operators
    h. Potential acquisition identification
    j. Development rights acquisition/recipient

3. **Physical Space Needs**
    a. Office
    b. Data Management Center
    c. Storage/mapping

Market Analysis

"The benefits and satisfactions derived by all who visit the Center, participate in its programs, and support its activities will contribute to a better understanding of the interconnectedness of human and natural resources. This understanding should lead to an awareness and to action toward maintaining and enhancing the resources which influence the quality of life associated with the inland coastal area."

Dr. Larry Gustke
Department of Parks, Recreation and Tourism Management
North Carolina State University
August 29, 1991

Introduction

THE CONSULTING TEAM has collected market information and analyzed it with members of the Advisory Committee through a series of facilitation workshops. This information has focused primarily on the geographic, economic, and demographic trends of the northern coastal region of North Carolina to identify the potential markets for which the Center and its programs will be targeted. Of primary interest to the Study are the present in-state and out-of-state tourism activities, the elementary and secondary student market potential, and the use of existing educational and museum facilities in the region. Existing "estuarine education centers" which have been developed in conjunction with several National Estuarine Research Reserve Programs throughout the United States were also surveyed to determine their primary marketing strategies, users, and programs. The market analysis has generated information pertaining to several factors including the following:

The market factors have been evaluated by:

1) Conducting an analysis of the economic and demographic characteristics of the counties and communities in northeastern North Carolina.

2) Surveying North Carolina primary and secondary natural science teachers in Region 1 (northeastern NC) and Region 2 (southeastern NC) to identify interest, the current supply and use of similar facilities and resource specialists, and possible future use of the Center facilities and services.

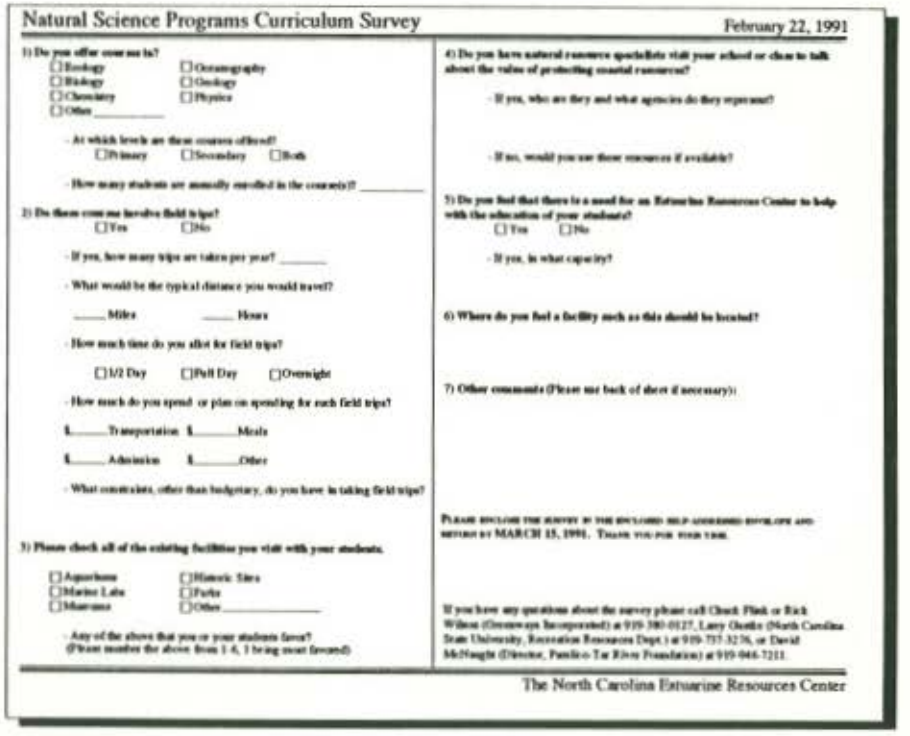
3) Reviewing and analyzing information and data on non-resident and resident tourists who visit and travel through north eastern North Carolina.

4) Conducting a survey of existing facilities throughout North Carolina and Virginia to identify range or programs, visitation users and numbers, and fees charged by such facilities.

5) Conducting a survey of existing National Estuarine Research Reserves throughout the U.S. which have educational facilities focusing on estuarine resources.

6) Identifying the goals and objectives of the Center and integrating them into a recommendation for the kind of facility and programs which will attract and serve the targeted markets of the Center.

The results of the market analysis have lead to the conclusion that an North Carolina Estuarine Resources Center is a viable concept which can be developed and implemented successfully in the Albemarle-Pamlico Region of northeastern, North Carolina. The analysis of survey data from teachers in the region and tourists who have visited the region suggest that the center would attract interest and use. The use of the facility and participation in programs by both visitors to the region and local residents will depend upon establishing credibility, acceptance, and support within the region. This will depend upon the establishment of new relationships and the reinforcement of existing cooperative relationships between the proposed center and local school systems, the North Carolina Agricultural Extension Service, 4-H Programs, state and federal agencies, community and county governments, and private businesses and industries in the region.



Natural Science Programs Curriculum Survey — February 22, 1991

1) Do you offer courses in?
☐Ecology ☐Oceanography
☐Biology ☐Geology
☐Chemistry ☐Physics
☐Other _____

- At which levels are these courses offered?
☐Primary ☐Secondary ☐Both

- How many students are annually enrolled in the course(s)? _____

2) Do these courses involve field trips?
☐Yes ☐No

- If yes, how many trips are taken per year? _____

- What would be the typical distance you would travel?

_____ Miles _____ Hours

- How much time do you allot for field trips?

☐1/2 Day ☐Full Day ☐Overnight

- How much do you spend or plan on spending for each field trip?

$_____ Transportation $_____ Meals

$_____ Admission $_____ Other

- What constraints, other than budgetary, do you have in taking field trips?

3) Please check all of the existing facilities you visit with your students.

☐Aquariums ☐Historic Sites
☐Marine Labs ☐Parks
☐Museums ☐Other _____

- Any of the above that you or your students favor?
(Please number the above from 1-6, 1 being most favored)

4) Do you have natural resource specialists visit your school or class to talk about the value of protecting coastal resources?

- If yes, who are they and what agencies do they represent?

- If no, would you use these resources if available?

5) Do you feel that there is a need for an Estuarine Resources Center to help with the education of your students?
☐Yes ☐No

- If yes, in what capacity?

6) Where do you feel a facility such as this should be located?

7) Other comments (Please use back of sheet if necessary):

PLEASE INCLUDE THE SURVEY IN THE ENCLOSED SELF-ADDRESSED ENVELOPE AND RETURN BY MARCH 15, 1991. THANK YOU FOR YOUR TIME.

If you have any questions about the survey please call Chuck Flink or Rick Wilson (Greenways Incorporated) at 919-380-0127, Larry Gustke (North Carolina State University, Recreation Resources Dept.) at 919-737-3236, or David McNaught (Director, Pamlico-Tar River Foundation) at 919-946-7211.

The North Carolina Estuarine Resources Center

(See Appendix D for full size copy of survey)

Regional Overview

EASTERN NORTH CAROLINA can be geographically divided into three general areas: The Coastal Plains, the Tidewater Region, and the Barrier Islands. Major urban areas, located along the eastern Piedmont and the western edge of the Coastal Plain, including Raleigh, Fayetteville, Wilson, Greenville, and Goldsboro, have been able to maintain a significant amount of economic growth with the development of new industry, educational institutions, and military bases. The Barrier Islands have become a major tourist destination and a much sought after location for second home development for both the residents and non-residents of North Carolina. However, throughout the flat, low lands of the central Coastal Plains and the Tidewater Region, agriculture and sparse rural communities have been the norm for hundreds of years.

The Tidewater Region is the land associated with the estuarine zone. The region consists of smaller towns intimately connected with the rivers, sounds and estuaries. Along the shorelines, communities have always relied upon the natural resources of the estuaries for their livelihood and transportation. Fishing, boating, and shipping ports; small, forest and agriculture related industry; and administrative services are the mainstays of the economic base.

The Barrier Islands, a thin ribbon of sand islands between the sounds to the west and the Atlantic Ocean to the east, are ever changing landforms migrating with changing sea levels and the forces of winds, waves, and currents. Isolated from the mainland, the early settlers of the Barrier Islands respected the natural forces and lived sparsely by carving out small niches in the maritime forests on the sound side of the islands. This is exemplified by the villages of Portsmouth, Hatteras, and Ocracoke. Their livelihoods depended upon the raising of cattle, fishing, and scavenging shipwrecks. In recent history the Barrier Islands have become a playground for tourists and second home owners. The result has been a growing economy.

Although rich in natural resources, culture, and history, the central portion of eastern North Carolina has had a difficult time keeping pace with the economic growth of the rest of the state and the nation. As the state's leading agricultural region, the nationwide trend in loss of employment associated with the farming industry is very evident.

Economic Outlook for the Region

IN 1987 BB&T completed a report entitled: Eastern North Carolina Situation Analysis which pointed to the economic plight of the region through population growth, number of high school graduates, number of new employees, new investment in the region, the unemployment rate, and per capita income. Although some statistics point to a slight growth and increased investment in the region as a whole, already established urban counties and successful tourist and second home regions associated with the coast take the lion's share, while the economic conditions within most of the counties continues to decline. The report concluded that the region is increasingly becoming polarized with a few fortunate areas being sustained economically while the majority of the county's residents are undereducated and becoming poorer. With the agricultural base eroding, many of the younger residents are moving away from the region leaving no place for new investment to flourish with talented workers. Only to exacerbate the problem, the rapid increase of out-of-wedlock births is troubling the future outlook if it means perpetuation of the current trends. (Youngblood, 1987)

Summary

PRESENTLY, THE COASTAL PLAINS and the Tidewater Region are islands of economic stagnation between the industrial growth of the Piedmont and the tourist growth along the Barrier Islands. Blessed with an abundance of natural resources which provide the basis for agriculture, silviculture, fishing and tourist based industries, these regions will once again prosper. However, competition for natural resources continues to jeopardize the stability of the environment and the economy.

Not only may the North Carolina Estuarine Resources Center bring tourist dollars to the region, but through the education and promotion of land and water stewardship it can help to facilitate cooperation between corporate, private, and public interests which rely upon the estuarine resources and the ecosystems by which they are perpetuated. Working together with a conscious land and water use ethic, the people of the region can sustain their natural resources while working towards economic prosperity.

Similar Regional Facilities

As a market evaluation tool, Greenways Incorporated surveyed 11 existing facilities in North Carolina and Virginia that are similar in size, scope, and location to the proposed Center. The facilities were chosen to represent a broad cross-section of the "industry" in this region, and to provide facts on a variety of facility operations from funding sources to parking lot sizes. As a cross-section of the industry, the selected facilities range in size from small-town facilities to large centers in metropolitan areas, and from coastal/seasonal interest facilities to inland/year-round facilities.

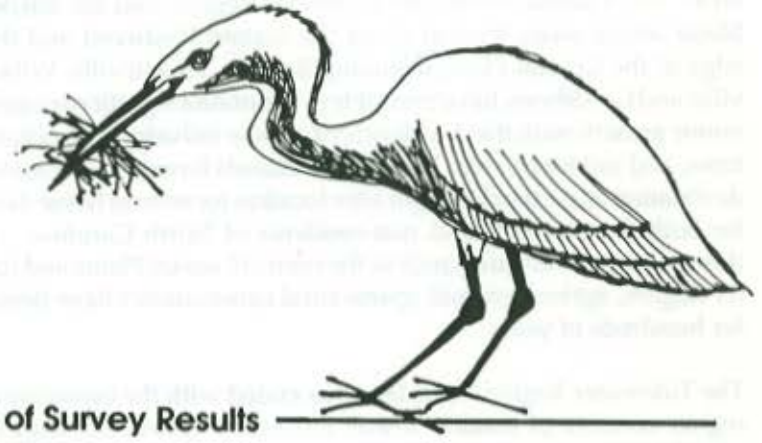
The facilities surveyed are as follows:

Fort Fisher State Historic Site
Fort Raleigh National Historic Site
Life-Saving Museum of Virginia
Lightship Museum
Natural Science Center of Greensboro, Inc.*
Nature Science Center of Winston-Salem*
North Carolina Aquarium - Roanoke Island*
Piedmont Environmental Center*
Portsmouth Naval Shipyard Museum
Virginia Marine Science Museum*
Wright Brothers National Memorial

*denotes nature/science museums

Each cultural facility was provided with an outline of questions regarding their development and operational structure (refer to form in Appendix B) This survey was intended to target specific facilities in the region.

Five nature/science centers responded to the survey, as well as historical museums and memorials. Although there are no estuarine resource centers in this region, important information can be gathered from nearby nature centers of similar scientific and educational focus. Parts of this evaluation will focus on data gathered from these nature centers in order to better understand this growing industry.



Summary of Survey Results

Mission statements
The nature/science centers that were evaluated in the survey had common elements in their described missions. Education is the most important goal for most of these facilities, as evident in the educational outreach programs, lectures, workshops and special services provided to school children. Promoting environmental awareness is a mission of the nature centers which focus on protection of natural resources, wildlife rehabilitation, urban wildlife management, and recycling methods.

Services
A variety of educational and research services are provided by nature/science centers in this region. Educational outreach programs, field trips, and outdoor exhibits are provided to visitors. Interactive computer displays are a more recent service that is being offered by some more "modern" facilities. Library resources are located at some nature/science centers.

Additional facilities
Additional amenities listed in survey responses include: planetariums, labs, classrooms, picnic areas, a handicapped nature trail, a solar observatory, boardwalks, gardens, theaters, boat storage areas, carpentry shops, and a greenway that connects a nature center to parks and neighborhoods. Other facilities mentioned: storage buildings, maintenance buildings, and residences for caretakers/security personnel.

Exhibits
Many facilities house participatory exhibits such as "Discovery Rooms" that enable visitors to have "hands on" experiences. Other listed exhibits at nature centers were: outdoors barnyards and petting zoos, nature trails, aquariums, a tidal pool exhibit, atriums, an endangered species exhibit, and other physical and natural science exhibits.

Facility size
Facility size ranges from 1,900 sq. ft. to 89,257 sq. ft.; the average size being 25,950 sq. ft. Five facilities have less than 10,000 sq. ft. There is a large gap between the size of these facilities in comparison with other museums that were surveyed, which range from 33,000 to 89,250 sq. ft.

Our survey requested separate figures for exhibit space and support space (i.e. lobby, restrooms, office, utility and maintenance, and storage). Exhibit space ranges from none to 28,044 sq. ft., with an average of 12,000 sq. ft. Support space ranges from 1900 sq. ft. to 61,213 sq. ft.; with the average being 15,000 sq. ft. The percentage differences between exhibit and support space fluctuates with each facility. For example, the Natural Science Center of Greensboro has 30% exhibit space and 70% support space, while the Wright Brothers National Memorial devotes 75% of its space to exhibits, and 25% to support facilities.

Parking
Parking facilities vary with each museum. While the Life-Saving Museum of Virginia has only a small asphalt parking lot for employees (4 spaces), the Fort Raleigh National Historic Site has parking for 600 cars and 2 buses. The average parking lot accommodates 270 cars. Several museums have grassed overflow lots.

Acreage
Land areas range from 1.5 acres to 431.4 acres. Several historical museums have high acreages associated with historical events that took place on-site. With the exception of Piedmont Environmental Center (a nature preserve of 375 acres), the nature/science centers have from 9 to 30 acres.

Most museums have nature trails and/or boardwalks. Some of these facilities have trail systems that are quite extensive, in some cases over two miles in length. The Nature Science Center in Winston-Salem has a nature trail that is specially designed for the handicapped.

Visitation
Visitor counts for 1990 ranged from 6000 to 478,535 visitors, with the average count being 192,000 visitors. The most frequently visited facilities are along the coast and in large metropolitan centers of the North Carolina Piedmont. Visitor counts are lower in smaller metropolitan areas such as Winston-Salem and High Point. There are also fewer visitors at museums with narrow missions such as the Portsmouth shipyard museums.

At coastal facilities, higher visitor counts can be attributed to the summer vacationing public. Visitor counts for the summer months of June, July, and August suggest that visitors are mostly beach vacationers. For example, 69,000 people visited Fort Raleigh National Historic Site in Manteo, NC during July of 1990. Only 2,500 people visited this same museum in December. A more steady pattern of visitation exists in the Piedmont region, with seasonal fluctuations that are not as great.

The survey revealed some differences between nature centers and historical museums. Nature/science centers attract more student visitors than historical museums. For example, 53% of the visitors at the Fort Raleigh National Historic Site are adults and 28% are students and youth. The North Carolina Aquarium has 40% adult visitors and 35% students and youth.

Duration of visit
Duration of visit ranges from 15 minutes to 3 hours, with the average time spent at a facility being 1.5 hours.

Admission fees
The admission price for most museums is $3.50 for adults and $2.50 for children and senior citizens. Four out of the five nature/science centers surveyed charge admission fees in this $3.50 - $2.50 range. The North Carolina Aquarium, a state funded facility, has no admission fees. The Greensboro Natural Science Center charges an admission fee of $3.00 for residents of the city, and $4.00 for non-residents.

Operating hours
Almost all coastal facilities surveyed have summer and winter hours that are adjusted to their seasonal visitor counts. Summer hours are longer; some museums stay open until 8:00 or 9:00 p.m. None of the inland facilities surveyed had separate summer and winter hours. The inland facilities usually open between 8:00 and 9:00 a.m., and close at 5:00 p.m. All facilities surveyed are open on Sundays, usually for shorter hours of 1:00 p.m. to 5:00 p.m.

Concessions
Almost all facilities surveyed had gift shops that sell items related to the museum's theme. Nature/science facilities have gift shops that also sell educational items such as kits, books and geology supplies. In some cases, facility concessions are run by cooperative associations. The majority, however, are owned and run by the facility, and provide revenues of up to $180,000 per year. Two of the museums surveyed have gift shop revenues in the $70,000 range.

Volunteer and Support groups
All of the facilities included in this survey are supported in part by community volunteer efforts. In most cases, a museum club or society (sometimes called "Friends of the Center" or "Volunteers in the Park") has been set up to provide these volunteers. Nature/science centers often receive volunteers through the court system; these facilities often serve as work sites for community service hours.

Co-operative/accrediting Associations and Listed Affiliates:
American Association of Museums, National and Mid-Atlantic Marine Education Association, Southeastern Registrar's Association, International Planetarium Society, North Carolina Science Teachers Association, Dare County Tourist Bureau, Historic Albemarle Tour, NC Museums Council, American Association of Zoological Parks and Aquariums, Roanoke Island Historical Association, Smithsonian Institute and the National Association of State and Local History.

Staff
Employee numbers ranged from 4 to 22 workers (full-time); with 14 employees being the average at nature/science centers. Most facilities employ part-time help during peak visitation periods and for maintenance and clerical jobs. Yearly salaries are highly variable, and are included in the Appendix of this report. (The Winston-Salem Nature Center provides a good example, with job descriptions and salary ranges for each employee.)

In addition to regular staff, most science/nature facilities hire several employees to coordinate their educational programs. The Greensboro Natural Science Center has two Education Curators. The Winston-Salem Nature Science Center has an Education Director, four Education Associates, and a School Services Registrar. The North Carolina Aquarium has three education-oriented employees.

Cost of construction: several examples
Virginia Marine Science Museum (1983) - $8.5 million dollars (41,500 sq. ft.)

The Wright Brothers National Memorial (1959) $300,000, and has estimated future renovations at $4.5 million (currently 9,938 sq. ft.).

The Fort Raleigh N.H.S. (1965) $150,000 (6,027 sq. ft.).
Land acquisition costs at Fort Fisher from 1965-1970 totaled $200,000 (currently 260 acres).

The Winston-Salem Nature Science Center has planned renovations that will cost $2.5 million, and will double its exhibit space from 12,500 to 25,000 sq. ft.

Funding
A wide variety of funding sources were listed:
Admission fees, gift shop revenues, membership fees, program fees, education fees, performance fees, publications fees, fundraising events, grants, investment interest, individual donations, Foundation contributions, corporate contributions, National Park Service, cooperative associations, state and local funding. (see the Appendix of this report for more complete descriptions)

The Winston-Salem Nature Science Center (WSNSC) has a highly successful funding program. In 1990, the WSNSC received $100,991 in admission fees, $40,000 in membership fees and $337,000 in state and local support. A great proportion of the WSNSC's funds (almost 50%) came from individual, foundation and corporate contributions, which provided a total of $493,000 in 1990 alone. The WSNSC is currently conducting a capital fundraising campaign to raise $2.5 million for renovation and expansion, and exhibition development. Forsyth County public and private school groups receive free admission to the WSNSC, and in the last year over 24,000 school children from 26 North Carolina counties went for tours and programs.

1990 Budget figures
Nature/science facilities in this evaluation tend to have higher operating expenses than historic museums, largely due to the fact that they offer expanded education and research services. The average annual operating expense for the nature centers in this survey is $700,000.

1990 Budget Figures for Similar Regional Facilities:

Life-Saving Museum of Virginia	$200,000
Piedmont Environmental Center	$214,500*
Fort Fisher State Historic Site	$236,600
Fort Raleigh National Historic Site	$296,000
Wright Brothers National Memorial	$366,000
Natural Science Center of Greensboro, Inc.	$505,936*
North Carolina Aquarium–Roanoke Island	$542,651*
Nature Science Center of Winston-Salem	$1,169,298*
Virginia Marine Science Museum	$1,071,875*

*denotes nature/science facilities

The proposed North Carolina Estuarine Resources Center can make a progressive start by learning from the successes of similar facilities in the region. This inventory describes some important trends in the museum industry in North Carolina and Virginia. The data collected through these surveys will be helpful during the planning and implementation of the Estuarine Resources Center, both as a reference guide and as a starting point to locate more information.

National Estuarine Research Reserve Facilities

ESTABLISHED UNDER the Coastal Zone Management Act of 1972 and administered by the National Oceanic and Atmospheric Administration (NOAA), the National Estuarine Reserve Research (NERR) program was formed to protect designated estuaries throughout the United States and broaden the goals of coastal preservation. The "mission" of the NERRs is cited below:

> " The goal of the National Estuarine Reserve Research program is to establish and manage, through federal-state cooperation, a national system of reserves representing different coastal regions and estuarine types that exist in the United States and its territories. The Reserves serve as field laboratories for studies on natural and human processes occurring within the estuaries."

Approximately twenty Reserves scattered along the west and east coasts, including Hawaii, along with a Reserve on Lake Erie have been established. North Carolina also has a National Estuarine Research Reserve.

Specific objectives of the Reserves throughout the United States include supporting and conducting scientific research within their particular estuarine systems, disseminating research information, educating the public about estuarine processes, and promoting resource protection.

To accomplish the goals outlined by the federal-state program, several Reserves have established visitor centers and specific educational programs to effectively involve the public. The interpretive facilities offer a variety of services to the visiting public along with educational research oriented programs.

Many of the Reserve centers, while following the nationally defined program goals, vary in size and scope of services which they provide. To fully understand the range of the facilities which exist, and to aid in the determination of the optimal size and scope of the proposed "North Carolina Estuarine Resources Center" facility and program needs, the Consultant conducted a survey of the Reserve programs which have developed visitation and educational facilities. (See Appendix C)

The following ten National Estuarine Research Reserves are known to have educational facilities:

1) The South Slough Reserve Interpretive Center, Charleston, OR
2) Padilla Bay National Estuarine Research Reserve, Mt. Vernon, WA
3) Old Woman Creek NERR, Huron, OH
4) Sapelo Island NERR, Sapelo Island, GA
5) Waquoit Bay NERR, Waquoit, MA
6) Wells NERR, Wells, ME *
7) Apalachicola NERR, Apalachicola, FL
8) Rookery Bay NERR, Naples, FL
9) Elkhorn Slough NERR, Watsonville, CA
10) Tijuana River NERR, Imperial Beach, CA

* Survey not received

NERR Educational Facility Survey Results

All of the NERRs with educational facilities were sent a survey; nine out of the ten facilities responded (Appendix). The survey information pertinent to the feasibility and development of the proposed Center includes:

- Staffing of the NERR facilities
- Physical characteristics
- Visitation
- Parking
- Admission Fees
- Concessions
- Construction Cost
- Funding
- Volunteer and Support Groups
- Services
- Budget
- Exhibits
- Duration of visit
- Operating hours
- Funding
- Acreage
- Cooperative Assoc.

Services

Each of the National Estuarine Research Reserves with educational facilities provide a number of services. These have been listed below:

- **Interpretive Facilities:**
  - visitor center
  - boardwalks
  - trails
  - interpretive exhibits
- **Publications:**
  - multi-media presentations
  - field guides
  - scientific research files
  - estuarine education material
  - libraries
  - identification manuals
  - curriculum units
  - interpretive brochures
- **Special Programs:**
  - sponsorship of research forums
  - citizen seminars and lectures
  - educational outreach programs
  - public hearings

Physical Characteristics

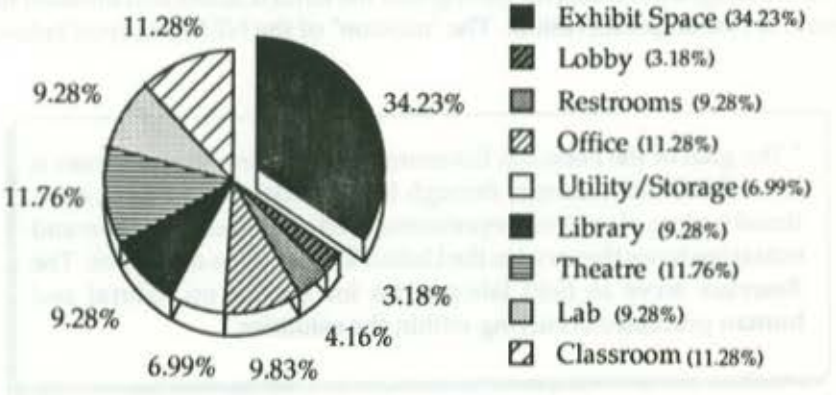
The physical characteristics of the NERR facilities include the amount of building square footage and how this space is used. The type and size of the facility of the NERR educational facilities varied. Many of the facilities have a main building with several secondary buildings for storage, labs, dormitories, etc. For the purpose of this study, we have compared the size and composition of the total square footage of building space for each facility.

Total Square Footage of NERR Facilities

Apalachicola	4356 sq. ft.
Tijuana	6775 sq. ft.
Old Woman	6100 sq. ft.
Padilla	6200 sq. ft.
Elkhorn Slough	2700 sq. ft.
Sapelo	N/A
Waquoit Bay	N/A
Rookery Bay	2000 sq. ft.
South Slough	4000 sq. ft.
Average	**4590 sq. ft.**

From the information received through the survey, the consulting team has estimated the percentage of the total square footage which is alloted for specific uses.

Percent Space Allotments of Average S.F



Exhibits
Most facilities stress the use of exhibits that enable visitors to have "hands on" experiences. Those that were listed include: "touch-feel tanks", aquariums, microscopes, animal skeletons, feathers, archaeological artifacts, and estuarine related plants, shells, soils, and rocks. Wall displays and posters with natural scenes, maps, and flow-charts are also used.

Parking
The number of parking spaces ranges from 20 to 50. Most of the facilities have paved lots for their normal use. Some have grassed overflow lots.

Acreage
Since the facilities are part of a large National Estuarine Research Reserve which ranges from several hundred to several thousand acres, the actual amount of land used for the physical building alone was not listed by those responding to the survey.

Staff
Staffing numbers range from 4 to 12 full and part-time, paid employees; with 7 employees being the average. (Those with adequate funding have full-time and part-time assistants for many of the positions) The various employee positions include:

- Manager
- Education Coordinator
- Maintenance
- Audio Visual
- Administrative Secretary
- Research Coordinator
- Ranger
- Seasonal Interns

The most common positions are: manager, administrative secretary, education coordinator, research coordinator, and maintenance.

Volunteer and Support groups
All of the facilities included in this survey are supported in part by volunteer efforts. The volunteers, organized as non-profit "friends" groups or foundations directly associated with the Reserve, are heavily relied upon for tour guides, concession sales, advocacy, and maintenance. An interesting example is the "Elkhorn Slough Interpretive Guides Association".

Co-operative Associations
Most of the Reserves have cooperative agreements with local and state agencies which share in the management of the Reserve lands. These include state parks, nature preserves, and chambers of commerce. Many of the NERR facilities also have advisory committees/councils and governing boards to help with management and decision making.

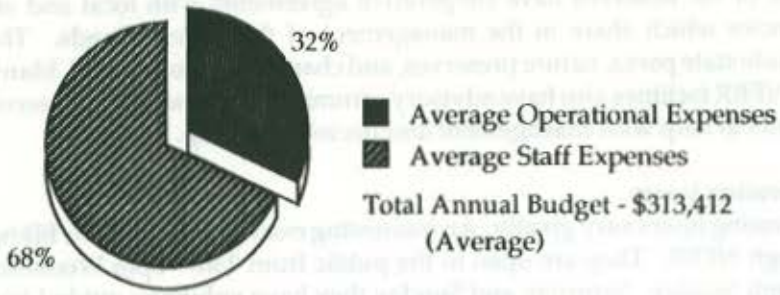
Operating hours
Operating hours vary greatly. An interesting example is that of the Elkhorn Slough NERR. They are open to the public from 9am - 5pm Wednesday though Sunday. Saturday and Sunday they have volunteer guided tours. On Wednesday, Thursday, and Friday they have school tours led by teachers who have undergone a one-day orientation by Reserve staff.

Visitation
Visitor counts range from 2,640 to 42,000 visitors per year. The average count is 14,720 annual visitors. Although requested in the survey, the visitor count by group and age is largely unaccounted for. The types of visitors that patronize the facilities range from K-12 students, college students, and the general public. The Elkhorn Slough NERR, which has a well developed educational program, has the highest visitation per year; 42,000. Those facilities with lower visitation rates, such as the Apalachicola NERR with an annual visitation of 2,640, seem to be more research oriented.

Duration of visit
Duration of visit ranges from 1 hour to 6 days. The most common time frame was from 3 hours to 1 day. The longer visitation period is a result of the Reserve providing camping facilities.

Annual Budget Figures
The annual budget of the National Estuarine Research Reserves from which the study team received information varies from $410,000 to $213,400; a range of $196,600. The average annual budget per year is $313,412. This includes the operational expenses and the staff salaries which average $99,247 and $214,164 respectively. For the purposes of this study, a useful comparison is that of the average operational expenses versus the average staff expenses relative to the total average annual budget as seen in the pie chart on the following page.

Average Expense Percent of Average Annual Budget



Funding

Most of those responding to the survey did not clearly define their funding sources. Those that did, indicated that they receive money from state and federal agencies for operational and staff expenses. Specific federal funding sources listed include the National Oceanic and Atmospheric Association and the Environmental Protection Agency. Money is also received as grants to fund staff, educational programs, and research.

Admission fees

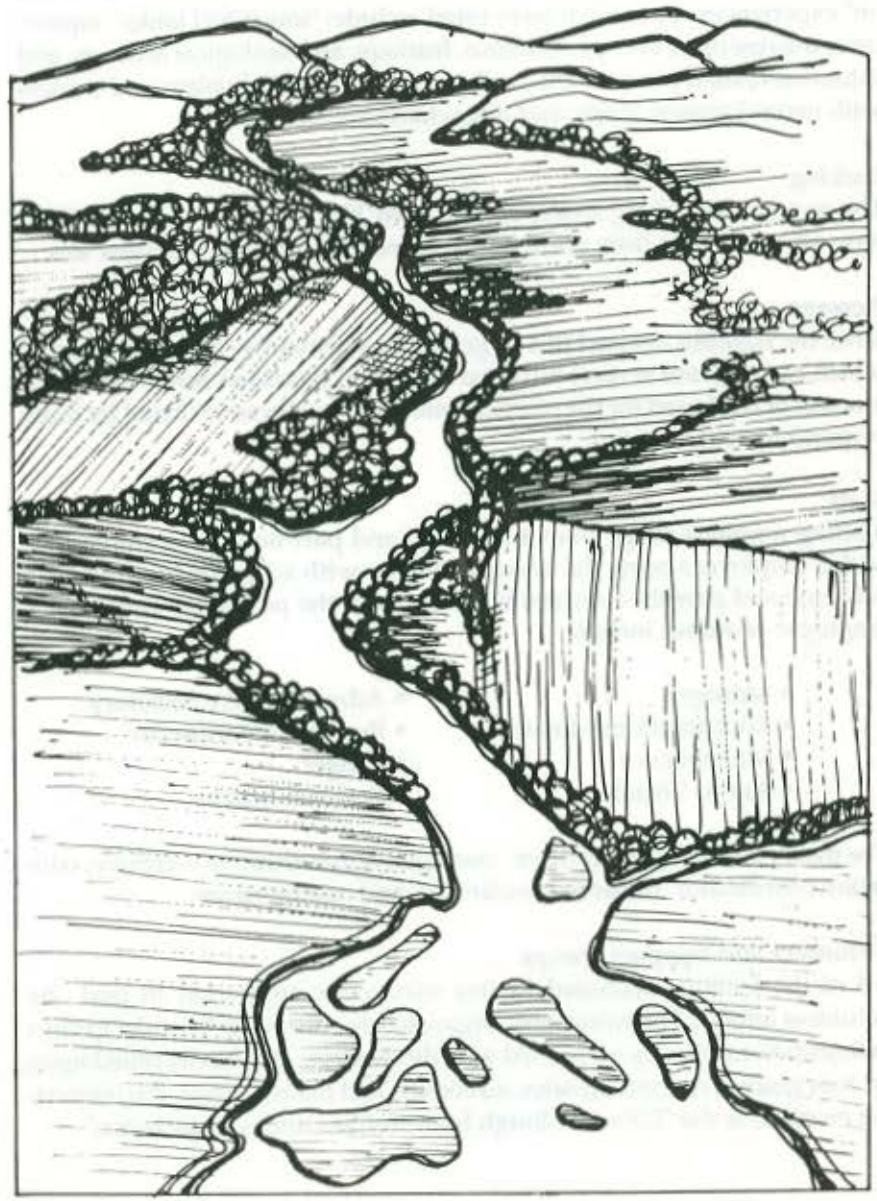
Most of the NERR educational facilities offer free admission. The few that are associated with state parks have daily and seasonal passes.

Concessions

Many of the facilities offer concessions. The concessionaire most often listed is a "friends" group or associated foundation. The types of items sold include T-shirts, books, jewelry, stationary, and field guides. A few of the facilities do not sell concessions. The reasons for this are that they are a part of a state preserve which does not allow sales, or that they do not want to compete with local merchants.

Cost of construction

Only one facility listed the cost of construction for the facility. The Tijuana NERR opened to the public in 1990 and the cost of construction for the main building, without exhibits, cost $1.3 million.



Primary and Secondary Students

SCHOOL CHILDREN and their teachers represent a significant potential market (clientele) for program and facilities of the North Carolina Estuarine Resources Center. To identify existing and potential future demands for an estuarine center and associated programs, a survey of primary and secondary science teachers in Region 1 of the state was conducted. A few teachers from Region 2 were also surveyed. (Those surveyed in Region 2 were associated with schools located within two hours driving time of the Pamlico and Tar River Region.) Teachers' responses to the survey questions indicate that they perceive a need for an estuarine center which will function as a meeting place, as a center for educational programs, a facility which will help create an awareness of estuarine problems, and a place to acquire resource materials and tap resource specialists. (Appendix D)

Such a center would provide support for current teaching efforts in the natural and physical sciences in both the primary an secondary schools within the Albemarle-Pamlico region. In addition, it could provide interpretive and environmental education programs targeted toward informal learners, leisure learners, and local residents. Answers to the survey questions clearly show that there is interest and support from teachers for the development of a center. Identifying this interest and support is an important and necessary step in proposing the development of an estuarine center.

A total of 391 questionnaires were mailed to all science teachers in Region One. An additional 20 were mailed to teachers in Region Two. Forty-six or 12.5% of the questionnaires were returned. Although the response rate was low, the schools and cities represent those teachers and students who would be a market for an estuarine center.

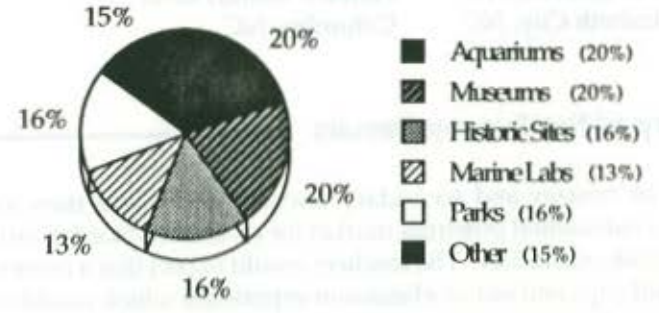
One-half of the responding teachers are responsible for teaching science courses at the secondary level, while 28% teach courses at the primary level and 17% teach at both levels. The courses include ecology, biology, chemistry, oceanography, geology, physics, and general science. Biology was taught by the greatest number of the responding teachers (87%). Enrolled in all of the courses are 9, 510 students who represent potential users of an estuarine center.

A substantial 74% of the courses taught involve an average of 2.8 field trips per year. The field trips require travelling an average of 88 miles or 2.3 hours from the school. Over one-half of the trips (56%) are full day trips and 31% represent half-day to a full-day field trip. The constraints which limit the trips include:

1. Time to take the trip
2. Limited ability to schedule because of curriculum requirements
3. Funding for the trip
4. Supervision of the students
5. School Board approval for the trip

The cost of the field trip ranges from $50 to $125 per day for transportation and typically $5 per person for admission to a facility or participation in a program. Previous field trips have visited the following kinds of facilities:

Facilities Visited on Field Trips



Other refers to: Planetarium, Outer Banks, Industrial Sites, East Carolina University, Other Schools, and Universities.

In addition to visiting facilities and sites which provide out-of-classroom experiences, almost two-fifths (39%) of the teachers have used natural resources and education specialists to expose their students to estuarine and coastal resource issues. Resource specialists used in the past have been from PTRF, APES, National Marine Fisheries Service, Sea Grant, East Carolina University, the NC Division of Forestry, the National Park Service, and local industries such as Texas Gulf.

The facilities and resource specialists used by the responding teachers would suggest that some of the educational needs are currently being met by existing facilities and resource people. However, 96% of the teachers did indicate that there is a need for additional facilities and programs. For these teachers such a center would:

1. Provide field trip opportunities
2. Provide resource materials and resource specialists
3. Provide a program which could help create an awareness of coastal/estuarine issues among the general population
4. Provide a facility which would focus education on estuarine issues

According to the teachers surveyed, such a center should be located in one of the following locations:

Washington, NC	The Central Coastal Plain
Greenville, NC	Edenton, NC
Swan Quarter, NC	Pamlico Sound/River
Elizabeth City, NC	Columbia, NC

Summary of the Survey Results

TEACHERS OF PRIMARY and secondary science classes and their students represent a substantial potential market for an eastern North Carolina estuarine educational center. The teachers would expect that a center would provide field trips and out-of-classroom experience which would complement and supplement the current science curriculum. The Center can also provide educational materials, resources, and resource specialists to help teachers enrich student experiences. In addition, the teachers suggest that a Center should provide programs and opportunities which stimulate their students to become involved in "after school" programs and to encourage the general public to learn more about the Albemarle-Pamlico estuarine system and the coastal resources of North Carolina. It is extremely important that the Center develop educational programs which are coordinated with state mandated science curriculum requirements.

Science Teacher Survey Results

- 74% of the responding teachers take an average of 2.8 field trips per year.
- 56% of the field trips are for a full day.
- Scheduling and curriculum requirements limit field trips and out-of-classroom learning participation.
- Teachers currently use a number of existing facilities and resource specialists to help with the science curriculum.
- 96% of the survey respondents feel there is a need for an Estuarine Resources Center in eastern North Carolina.
- The 46 teachers who returned the survey represent 9,510 students who could be served by the Center.
- In Region 1 there are a total of 116 schools and 59,415 students who could be served by the Center.
- There are 208 schools in Region 2, which are within 2 hours driving time of the Albemarle-Pamlico region. A total of 117,037 students from these schools are a potential educational market for an estuarine Center.

Tourists

TRAVELERS TO AND THROUGH THE state of North Carolina spent $6.5 billion in 1989, supporting numerous businesses and providing employment for 252,000 North Carolinians. This spending is estimated to have increased to $7 billion in 1990 and to have contributed $375 million in tax revenues, and to have helped pay for government services enjoyed by North Carolina residents. As an industry, travel and tourism has grown steadily since 1980 and is expected to become the number one industry in North Carolina by the year 2000. This expectation is supported by data from the United States Travel Data Center which shows that total travel industry expenditures in the state have grown 144 percent over the last decade. In comparison, total travel expenditures in the United States grew by only 112 per cent during the same period, indicating that North Carolina has out performed the United States in the expansion of its travel industry. The industry is expected to continue to grow and play an ever increasing role in the economy of the state.

National Trends in Travel

The current observable trends in travel reflect a continuation of the major trends observed over the past few years. These trends are important to the development of a marketing strategy for a facility and programs which will be designed to attract tourists.

Trends in travel behavior are closely related to consumer confidence in the economy. Through August of 1990, the observable trends reported in national travel reports indicate that consumer confidence remained strong but was diminished during the Gulf War and the continuing 1990-1991 recession. More recent signs, however, indicate that the recession may be subsiding and most analysts feel that we are recovering from the economic slow down which accompanied the war. Most analysts expect a slow growth period for the future and suggest that travel and tourism will experience growth over the next five years.

It is expected that shorter trips will continue to remain popular. In 1989, total person-trips away from home grew by 6.2 percent, but total person-nights away from home grew by only 2.5 percent. Of all trips taken by US residents in 1989, 52 percent were for one to three nights away from home, up from 50 percent in both 1988 and 1987.

Vacation trips continue to account for 65 to 70 percent of all person-trips taken by U.S. residents, however the definition of a vacation has changed. The average length of stay on a vacation trip is far less than a traditional two-week vacation. Vacation now implies an opportunity to get away from home for a few nights. It is an opportunity which many travelers are using to participate in interesting recreational and educational experiences which entertain and challenge them. These travelers are looking for new experiences and challenges to be pursued during the short vacations which will continue to be a part of their travel repertoire.

Nature Dependent Tourism

Environmentally dependent tourism, commonly called "Ecotourism" has recently been identified as one of the growing aspects of tourism. Ecotourism includes travel and recreational activities that depend directly upon nature dominated settings and involve understanding, appreciating, or viewing natural environments, processes, or components. Examples of such activities include scenery appreciation, sightseeing, backpacking, horse-packing, viewing wildlife, and nature interpretation. Environmentally dependent tourism or recreation such as wildlife viewing are projected to increase about 56% between 1980 and 2000 while consumptive activities like hunting may increase only 9% (or may even decrease) during the same time period (U.S. Forest Service, 1989). It appears that an emphasis on appreciative, non-consumptive activities will increase over the next decade and will require programs and agencies to manage such activities. The proposed Center will compliment this form of non-consumptive, recreation based tourism.

North Carolina Tourism and The Northern Coast

Tourism in coastal North Carolina, especially in the northern coastal region is expected to grow in the future. However, the natural resources which have attracted tourists and travelers will require management and protection. In addition, increased demands for use will necessitate the development of programs and facilities which improve the awareness and knowledge of the value of these resources. Guests to North Carolina and residents of the state represent a substantial market of travelers and tourists who are attracted to the coast. These two market segments can be characterized as Non-Resident Travelers and Tourists and Resident Travelers.

Non-Resident Travelers and Tourists

North Carolina was the primary destination of 53% of all travelers who visited the state in 1989; the remaining 47% were passing through on their way to another destination. An overwhelming 88% have visited the state before, as often as five times within the last five years.

The dominant reasons for travelling to the state were: visiting friends and relatives, sightseeing, and outdoor recreation. The travelers spent an average of 2.3 nights in North Carolina and 59% of them stayed in hotel/motel/resort type accommodations. The typical travel party was a family of 2 to 4 people with an average of 2 children. The average expenditures for the travel party was $320.15 and the greatest percent of visitor room night generated by the visitors were from the northern coastal region of the state (34%), followed by the southwest mountains.

The travelers visited 1 to 2 attractions during their visit. **The ten attractions most likely to be visited included:**

The Biltmore House	Blue Ridge Parkway
Chimney Rock Park	Grandfather Mountain
NC State Aquariums	Wright Brothers Memorial
Ghost Town	Great Smokey Mountains
USS North Carolina	Fort Macon

The activities most often pursued by the travelers during their trips to North Carolina include:

1. Visiting a scenic area
2. Visiting a historic site
3. Visiting a beach
4. Visiting a museum

Visitors to North Carolina came from the middle Atlantic states (PA, NJ, DE, MD, MV, WV, and VA), the Southeast (TN, MS, AL, GA, SC, and FL), and the Great Lakes (MN, WI, IL, MI, In, OH, and KY).

Resident Travelers

The major purpose of trips for North Carolina residents is similar to that of the non-residents. These include: visiting family and friends, business, sightseeing and entertainment, and outdoor recreation. For 42% of the resident travelers, North Carolina is the destination for a family trip which lasted 1 to 3 nights and required the rental of a hotel/motel/resort type of accommodation. The mean expenditure for travel supplies and necessities average $480.96 per travel party per trip. The travelers tend to visit one attraction during each trip and the most popular attractions included:

North Carolina Zoo	NC Aquariums
USS North Carolina	Blue Ridge Parkway
The Biltmore House	Carowinds
Tweetsie Railroad	Fort Fisher
Grandfather Mountain	Chimney Rock Park

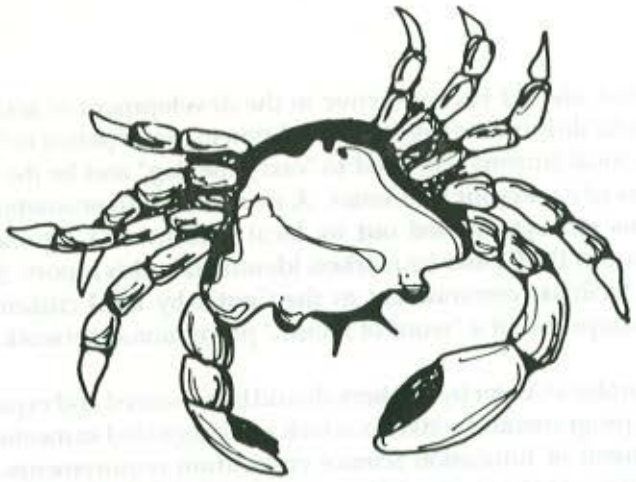
The five activities pursued by the greatest number of resident travelers include:

1. Visiting a beach
2. Visiting an historic site
3. Visiting a scenic area
4. Fishing
5. Visiting a museum

The greatest number of residents who made trips to other parts of the state reside in the Heartland Region (central NC), the northern Foothills, and the southern Foothills.

Summary

TOURISM IS A GROWING industry which contributes to the economic vitality of the state, including the northern coastal region. The region is a "travel to" and "travel through" area which provides recreation and leisure opportunities for non-resident and resident travelers and tourists. Both types of travelers recognize the unique natural and historical attractions of the region. In addition, the planners and developers of new attractions or educational programs, especially those which are natural resource based, can expect to be accepted and supported by travelers who presently patronize similar facilities, participate in similar educational programs, and are part of the growth of eco-tourism.



North-South and East-West Travel

Eastern North Carolina has two distinctive patterns of tourism travel, one that is oriented east-west, from the industrial/urban Piedmont region to the Outer Banks, and the other that is oriented north-south, from Tidewater Virginia and points north to coastal North Carolina, and to a lesser degree from coastal and central South Carolina to coastal North Carolina.

According to Travel and Tourism reports, these travelers possess different characteristics. This could impact the decision regarding the location of the proposed North Carolina Estuarine Resources Center.

Seasonal Clientele

According to Travel and Tourism statistics, travel to, within, and throughout the coastal region of North Carolina has distinctive seasonal variations. These variations can be summarized under two major headings: spring-summer-fall and fall-winter-spring.

The spring-summer-fall season represents the tourism season in the coastal region. The typical clientele of this time period will include in-state tourists, families, out-of-state tourists, and local resident migration. The primary orientation of activities is toward the tourist, and families comprise the major tourist group.

The fall-winter-spring season represents the non-tourism season. The typical clientele would include schools, local resident migration, agri-business and in-state tourism. The primary orientation of activities is toward school/education and agri-business.

Market Analysis Conclusions

Users to be served by the Center

The education survey completed by the consulting team illustrates the need for an Estuarine Resources Center in eastern North Carolina to enhance educational needs at both the primary and secondary level. As a primary mission, providing education services can offer the Center stability and continuous clientele that might be hard to generate from other target clientele.

Primary and secondary school teachers and children will be one of the key markets for the Center. Results of the consultant's education survey indicate that primary and secondary school teachers support the concept of the Center and that they would use the resources of the Center to complement their teaching of natural science. It will be necessary to develop educational programs in conjunction with existing and new natural science curriculums so visitation of the Center by school groups can fit into the annual schedule and requirements of the school systems.

The proposed Center can become an educational and recreational facility which attracts tourists visiting the northern coast of North Carolina. The development of the Center, within the Albemarle-Pamlico region would provide a unique attraction for tourists to visit. The activities, exhibits, and programs of the Center will need to be both educational and recreational in order to attract and maintain the support of the tourist market.

Local residents will be important users of the Center, both in terms of their ability to make use of the Center's resources, and the need to have local users as a basis for advocacy and support of the Center. Successful cultural, historic and marine resource facilities are often times the products of local community support. In determining the physical home for the Center, it will be important to consider the local support that is available within each of the selected communities. This local support extends beyond the interests of educators, professionals and "friends-of" the facility. It will be important to involve other socio-economic components of the local community in the marketing and operation of the Center. This means that local waitresses, barbers, postal clerks, gas station attendants, and shop keepers should be aware of the Center and its importance to the community and region.

The Center's activities and programs should be of a duration which match the amount of time visitors have to spend at the Center. This will undoubtedly be different for different markets (e.g., tourists vs. school groups). A matching of expectations and experiences will be crucial so that the visitors have a positive experience at the Center. The amount of time they plan to spend at the Center and the expectations they have about the kind of experience they will have, are important factors which must be considered in the development of programs and activities.

Marketing/Promotion

The Center must have a title or name which attracts guests, but also clearly indicates its purpose. Naming the Center should be based on two factors: identification with location (i.e. inland coastal area) and the mission of the Center. It should be noted that it will take two to five years before the name of the Center becomes established as an attraction or a place to visit.

The "North Carolina Estuarine Resources Center" as a potential name for the proposed facility represents a marketing problem for the Center. "Estuarine" is difficult to pronounce and may not create an image of the location and purpose of the Center to the layperson. Careful thought and attention should be given to developing a name for the facility that clearly represents it's multi-objective mission, and at the same time appeals to the diverse target clientele that would be served by the Center. The consulting team strongly urges that the Center benamed "The North Carolina Inland Coastal Center", or "Inland Coastal Center" for short.

Local and regional support will be necessary for the success of the Center. In addition to the tourist and education markets, the Center should work to develop interest and commitment by the local citizen market. The residents of the region, and more specifically the community or place where the Center is located, should become active in the development of activities, programs, and facilities of the Center. In addition to participating in Center programs, the local citizens will need to "carry the flag" and be the major public relations advocates for the Center. A word of mouth promotion and public relations strategy carried out by local citizens will significantly influence the use of the Center by markets identified in this report. Such a program will facilitate commitment to the Center by local citizens and insure the development of a "word of mouth" promotional network.

Existing support for a Center by teachers should be enhanced and expanded by developing programs and activities which are recognized as meeting the state's Department of Education science curriculum requirements. The Center staff will need to be aware of the requirements, and will need to work with curriculum developers to insure that activities and programs are consistent with the curriculum requirements.

The proposed Center will have to compete with similar attractions throughout the region (aquariums, museums, wildlife refuges, etc.), however, these facilities support one another as much as compete. Profiles of tourists provide information which suggests that the proposed Center would be visited and supported because it will provide experiences and activities both similar and different from existing attractions and facilities.

Financial Aspects

The funding and resources necessary for the development of the proposed Center must be diverse. Sources of funding should include corporate support, foundation support, grants, federal support, state support, and local support. Funding or donations considered must include land, exhibit and building materials, printing services, etc. as well as direct monetary contributions.

The decision of whether to charge an admission fee for visitation to the proposed Center will have a dramatic impact both on the target clientele and the operating and management structure of the Center. Careful thought and full consideration will be given to establishing a realistic pricing structure for the services provided by the Center. Admission fees define more than "cost-for-services", they also define a permanent image for cultural and educational facilities, which should be established prior to the day the facility is open for public use.

Location

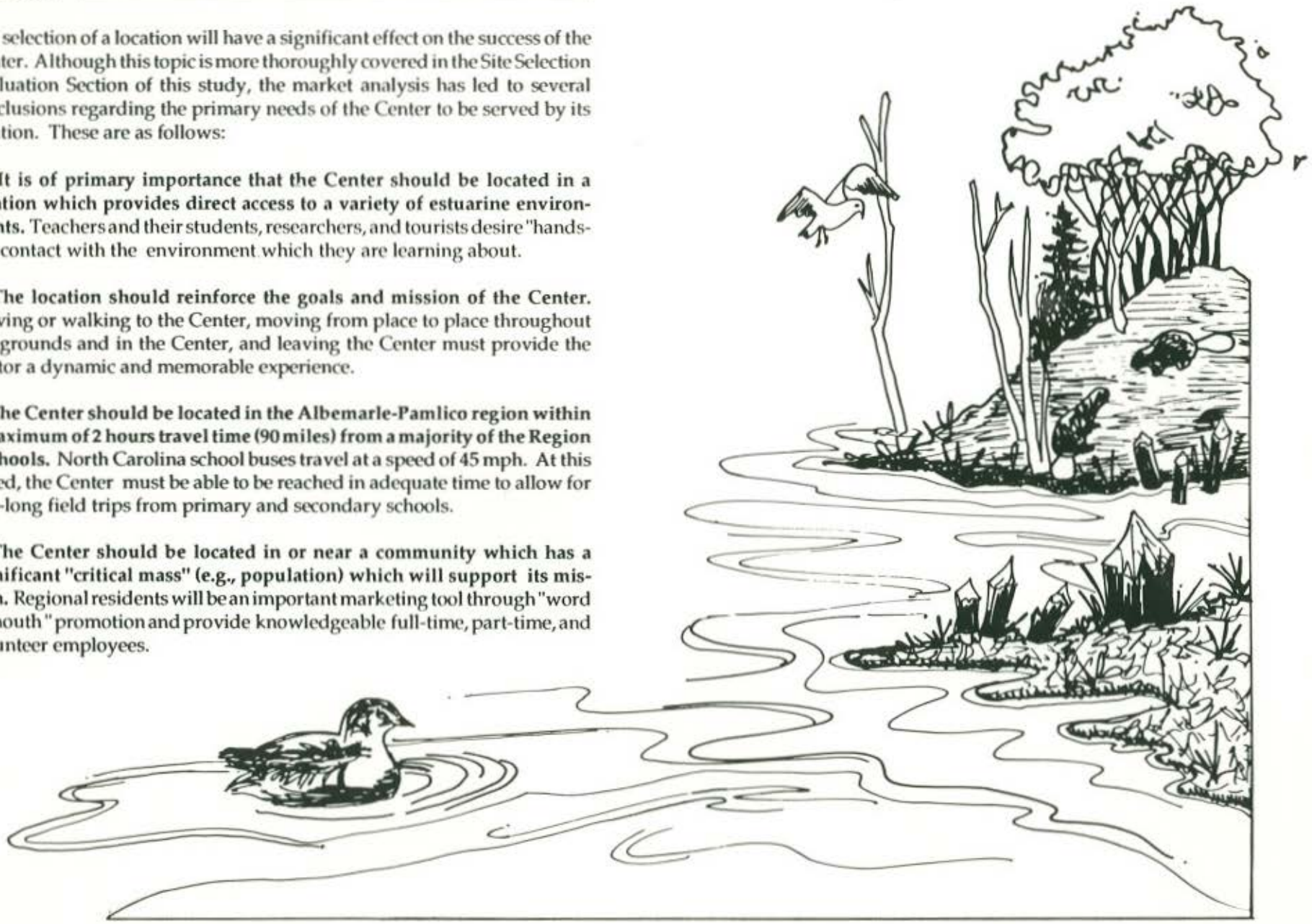
The selection of a location will have a significant effect on the success of the Center. Although this topic is more thoroughly covered in the Site Selection Evaluation Section of this study, the market analysis has led to several conclusions regarding the primary needs of the Center to be served by its location. These are as follows:

1) **It is of primary importance that the Center should be located in a location which provides direct access to a variety of estuarine environments.** Teachers and their students, researchers, and tourists desire "hands-on" contact with the environment which they are learning about.

2) **The location should reinforce the goals and mission of the Center.** Driving or walking to the Center, moving from place to place throughout the grounds and in the Center, and leaving the Center must provide the visitor a dynamic and memorable experience.

3) **The Center should be located in the Albemarle-Pamlico region within a maximum of 2 hours travel time (90 miles) from a majority of the Region 1 schools.** North Carolina school buses travel at a speed of 45 mph. At this speed, the Center must be able to be reached in adequate time to allow for day-long field trips from primary and secondary schools.

4) **The Center should be located in or near a community which has a significant "critical mass" (e.g., population) which will support its mission.** Regional residents will be an important marketing tool through "word of mouth" promotion and provide knowledgeable full-time, part-time, and volunteer employees.



Facility Development

"We need an educational center that interprets the natural systems of the inland coast; the pocosins, the hardwood swamps, marshlands and estuaries. Such a center would serve dual functions of educating the regional residents and attracting and enlightening the tourist."

Pamlico-Tar River Foundation
1989

Facility Building and Grounds
Administration and Management
Funding Development and Operations

Introduction

As an educational center, the design of everything from the road alignment, to stormwater management, to the building materials must communicate the "land use ethics" being taught by the Center. This section of the study provides general design recommendations and guidelines in light of the mission of the Center. In order to select and develop a home for the Center, several physical characteristics of the building and the grounds must be established. These include: 1) Site development; 2) Building development; 3) Infrastructure.

Guidelines for Facility Development

- Site development and facility construction must clearly reflect the purpose and mission of the Center - which is to educate local residents and tourists as to the important relationship between mankind and estuarine ecosystems.
- Site development should be innovative and sensitive and should conform to the natural environment. The most up-to-date techniques for site design, building construction, control of post-development stormwater, and installation of utilities should be incorporated into the construction of the Center.
- The character and architectural style of all buildings and structures should be indigenous to the inland coastal area of eastern North Carolina.
- The architectural engineering of all buildings should be space and energy efficient. The Center should serve as a model for 21st Century public facility development.

In preparing a development program for the North Carolina Estuarine Resources Center the consulting team examined two different facility models: 1) National Estuarine Research Reserve facilities throughout the United States; and 2) similar cultural facilities located throughout the coastal areas of North Carolina and Virginia. By comparing and contrasting these two models, we have defined a building and grounds development program which not only fulfills the mission of the Center, but also satisfies the market objectives of this study.

Site Development

In order to fulfill the primary goal of education, the North Carolina Estuarine Resources Center should be sited and developed in a manner that will serve as a 21st Century model for other inland coastal projects. The construction of the Center must be developed in accordance with local, regional, State and Federal land use development laws. The Center must display, through it's development, a sensitivity and understanding of the critical relationship between mankind and the estuarine environment.

This sensitivity to native ecological systems begins with the way in which the buildings, automobile parking, pedestrian areas, and other site features are arranged and oriented within the site. For example, existing jurisdictional wetlands should be preserved in their natural condition and should be appropriately accommodated into the total development plan. Rare and endangered plant species should be protected and their habitat enhanced through development. Animal nesting and breeding grounds, as well as migratory patterns should be maintained or carefully relocated. When complete, the new physical development should conform to the existing natural conditions of the site.

All design and development of new structures should be accomplished so that the entire project is energy efficient: 1) careful attention should be paid to the solar orientation of buildings; 2) existing vegetation should be selectively thinned or preserved to compliment the location and orientation of buildings; 3) the routing and location of utilities should be accomplished to enhance their function; 4) pavement design should provide more than a surface for walking, driving and parking, it should also serve to transfer heat and absorb rainwater; 5) parking areas should be close to entries and exits of the buildings, providing users with easy access to the Center.

Construction activities within the project site should serve as a model for inland coastal development. Innovative soil erosion and sedimentation control practices, known as Best Management Practices, should be employed to minimize stormwater pollution. All disturbed landscapes should be re-vegetated with native species. New plant materials should be installed in a manner that closely resembles natural vegetation habitat.

The entire project site should be designed in accordance with the principles of Universal Design to allow and encourage access for all persons regardless of age and ability. A barrier free environment should be established for all users. Safety of all users must be a high priority when designing both outdoor and indoor facilities.

The educational theme of the Center should be displayed throughout the site, not only in the way that the site is developed, but also in terms of outdoor exhibits, artwork, interpretive systems which describe ecological systems, and outdoor classrooms for small and large group settings.

Building Development

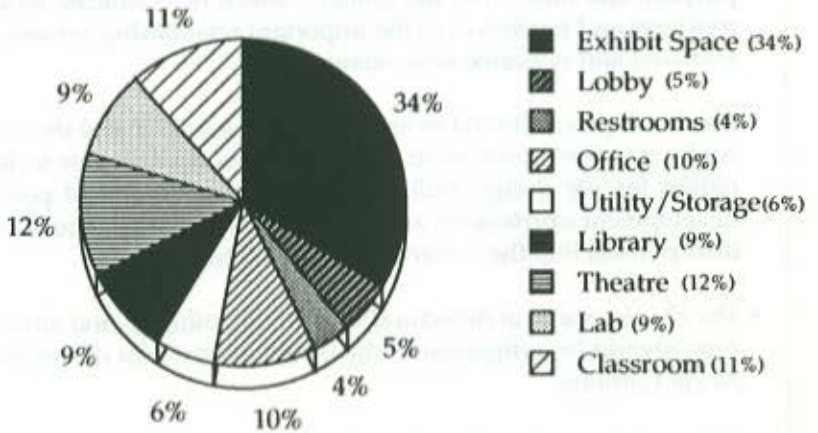
THE BUILDINGS OF THE Center which are either purchased or built, should be designed and developed in harmony with the natural conditions of the site. Native materials, indigenous construction techniques, and architectural principles should serve as the foundation for the development of all structures within the Center. The buildings should be designed so that they are energy efficient, comfortable for a diverse range of user groups, accessible to all persons regardless of age or ability, and of an appropriate size so that they accommodate the mission, goals and objectives of the Center. The main Center building should be designed so that it is capable of being expanded to house future exhibits and increased visitation.

Based on similar cultural facilities in Virginia and North Carolina, and more importantly on other National Estuarine Research Reserve facilities, the Center will most likely evolve to contain a main building and a collection of smaller buildings. The main building should serve the primary functions of the Center (e.g., housing indoor exhibits, administrative offices, an auditorium, classrooms, library and gift shop). Other buildings can be developed for storage, additional classrooms, laboratories, dormitories, or as expansion space.

Recommendations for Main Building Composition

Based on our evaluation of other similar facilities, we recommend that the total square footage of the Center's main building be no larger than 10,000 square feet. Described within the chart below is a recommended composition for this main building, based on the typical and average composition of other National Estuarine Research Reserve main buildings. The composition recommendations for the Center's interior does not represent a final architectural layout, only an allocation of space based on a percentage of use per described activity. An actual floor plan for the main building would be determined at a later date by an architect.

Recommended Space Allotments for Main Building



Description of Each Room

Room Description	S.F. per Room
Entrance/Lobby	500
Exhibit Space	3,400
Office Space	1,000
Library	900
Auditorium/Theater	1,200
Laboratory	900
Classroom	1,100
Storage/Utility	600
Restrooms	400
Total	**10,000 S.F.**

Entrance/Lobby/Gift Shop
The entrance to the main building serves as the transition point for the visitor; from an outdoor to an indoor environment. It should be well designated and be air locked to provide energy efficiency. As visitors progress from the entrance to the lobby, they should be greeted with a means by which they can direct themselves to the various activities of the Center. A gift shop should be included in the Center and designed in such a way as not to interfere with the exhibit spaces or entrance area. The gift shop's merchandise should feature relevant literature, publications, visual aids, and gifts, applicable to the mission and interpretive theme of the Center.

Exhibit Space
The primary activity of the Center will be the display of educational exhibits. Exhibits should contain a mixture of hands-on displays, as well as view-only displays. Different mediums should be used to convey the various educational messages to the visitors, through the use of computers, interactive television monitors that contain touch message display, scale models, living ecosystems and written material. The exhibit area should be designed as a self guiding tour, allowing visitors to learn from different displays at an individual pace.

Administrative Offices
The main building should contain offices for a director, administrative secretary interpreter, education coordinator, technicians, and an employees lounge. These offices should be separated from traffic patterns of the rest of the Center, and should have access to and from the building separate from the main entrance/lobby. An employee lounge should contain enough space for a restroom, conference table and snack area.

Library
A research and resource library should be developed in the Center, containing a collection of books, periodicals and other pertinent resource material. This library should be made available to the Center's staff for research and educational programming, and to the general public for applicable scholarly research.

Auditorium/Theater
An auditorium or theater should be located within the Center, and should be large enough to accommodate approximately 75 people in one seating. The auditorium should be designed for lectures, educational films, and other two-dimensional display. An audio-visual room should be located adjacent to the auditorium.

Laboratory
The Center should contain a small laboratory where small experiments conducted by primary and secondary students, and activities related to the management and care of various exhibits can take place. The laboratory should be fully equipped to accommodate the activities of one scientist and one technician. Design of the building and the grounds should account for the possible addition of more technically equipped laboratory facilities as the Center's mission evolves.

Classroom
Educational classroom space should be designed to be flexible and accommodate approximately 50 students in one seating. The total classroom space can function as one large room, or should be capable of being split into two rooms. Each classroom should be fully equipped with audio visual hook-ups and projection capabilities.

Storage/Utility
Adequate space should be dedicated for storage and building utilities. Storage should be supplied for the gift shop, operational functions, maintenance equipment, and office supplies. Utilities should be installed so that they are easy to access, monitor and maintain.

Public Restrooms
Men's and women's public restrooms should be located near the main entrance of the Center. These facilities should be designed to be accessible to all persons regardless of age or ability.

General
Safety and security is an important issue in the storage and display of exhibits. The educational exhibits of the Center must be protected against theft and environmental degradation. A program of physical security should include the maintenance of operational fire protection, burglar detection and other loss prevention measures. All buildings must be designed to meet State electrical, fire, building, health and safety codes, and should be designed to sustain hurricane winds of at least 100 mph. Manual fire alarms, smoke detection devices, automatic sprinklers and a well marked exit system should be provided within all buildings

Infrastructure

SITE INFRASTRUCTURE INCLUDES those utility and access systems that enable the North Carolina Estuarine Resources Center to function at a basic level of service for the visitors and users of the facility. These infrastructure elements include only those within the limits of the selected site, and not off-site infrastructure elements.

Roads, Driveways and Parking
All roadways and driveways within the project site should be designed for a maximum speed of 15 mph. Roadway cross sections should be a minimum of 24 feet wide with grassed shoulders. The use of curb and gutter should be avoided. Roads and drives should be laid out so that their character and appearance is rural and neat.

Parking lots should be designed to accommodate automobiles, school buses, commercial and recreational vehicles. A minimum of 60 paved parking spaces and 50 grassed, overflow parking spaces should be provided for all vehicles. Spaces should be provided specifically for automobiles, handicapped vehicles, and large buses and motorhomes. The paved parking lot surface should be a porous pavement. Excess stormwater runoff should be directed to a retention basin or other Best Management Practice type system where it can be monitored and treated before being released into the environment.

Electrical Systems
The electrical systems should be brought into the site via underground service. Overhead utility lines of any type should not be permitted within the site. Electrical systems should be designed to commercial standards and should have an emergency backup system, with direct routing provided to specific exhibits that require constant electrical feed. Because power outages can and do occur, a backup generator system should be included that can provide 24-hour emergency services to the Center.

Water and Sewer
Potable water and sanitary sewer systems should be developed for the Center. Depending on the selected location of the Center, these should either be obtained from nearby municipal sources, or specifically created from available wells and septic fields. A minimum of residential grade service is acceptable, although commercial grade service is desirable. Fire protection must be included in the design of the water system.

HVAC
The heating, ventilation and air conditioning systems for the building should be designed to commercial standards. Passive solar technology should be utilized where appropriate. The HVAC system should be designed as energy efficient and self-adjusting to changes in temperature and humidity to provide maximum comfort for the visitors and to assure the longevity of the exhibits.

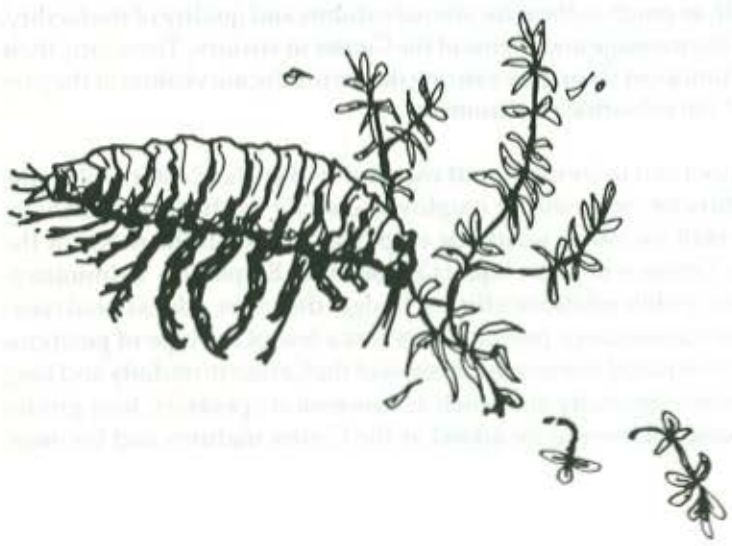
Telephone
A telecommunications system should be installed within the Center, which is capable of providing the most up-to-date telephone, facsimile and voice/tone-activated telecommunication equipment. Underground fiber-optic cables should be considered.

Outdoor Lighting
A system of decorative and security lighting should be installed throughout the grounds of the Center. This lighting should be carefully integrated into the natural landscape to provide necessary illumination for safety and security, while at the same time avoiding conflict with the native habitat of resident plants and animals.

Storm Drainage
All storm drainage from buildings, roads and parking areas should be handled on-site and in conformance with all state and federal laws. The best possible technology and design methods should be utilized to assure that pollutant bearing and excess stormwater from impermeable surfaces does not enter the environment.

Cable TV or Satellite TV
With an increase in environmentally oriented educational programming on several TV networks and video productions, the Center should be provided with access to a modern network of cable television. This can be provided through a nearby cable franchise operator, or by purchasing and installing a satellite receiver dish within the project site.

Pedestrian Systems
All walkways for pedestrians should be carefully integrated into the native landscape so as not to conflict with the native habitat of resident plants and animals. Where necessary, pedestrian walks should be elevated boardwalks or piers. Porous pavement or wooden planking should be used to construct all walks that are developed on grade. All walks should be accessible to all persons regardless of age or ability.



Introduction

THE ADMINISTRATION AND management of the North Carolina Estuarine Resources Center will define the quality and public image of the Center to the surrounding regional community, and patrons. A poorly managed Center will convey a poor image of the mission and it's objectives. A well managed Center will convey a progressive image and operational structure, which is necessary to fulfill the complex mission of the Center. In order to understand the administrative and management requirements for the Center, this section describes a management structure, operations objectives, and listing of staff that will be required to direct the multiple services which the Center will offer to its visitors.

Management Structure

IN ORDER FOR THE Center to become a physical reality, it will need to be promoted, marketed, managed and administered by a group of dedicated and interested volunteers, professionals and related local, state and federal agencies. At this point in the Feasibility Study, it is not clear exactly who will serve as the lead group for developing the Center. The scenario that is recommended by the consulting team for how the Center would be initially structured and managed is as follows:

The North Carolina Estuarine Resources Center, Incorporated
The North Carolina Estuarine Resources Center would become registered as a non-profit 501C3 (IRS) corporation. This corporation would have required by-laws, an operating plan, mission and objectives, and officers. The primary goal of the corporation would be to promote the Center and provide guidance to the employed staff. The corporation would be managed by a Board of Directors. The Board should include representatives from regional communities, industries, school systems, post-high school institutions, environmental advocacy groups, etc.

Staff of the Center
The Board of Directors of the corporation would employ an Executive Director to manage the Center. The Executive Director would be responsible for employing additional staff on an as needed basis, to fulfill the mission and objectives of the Center. Additional staff members would include, by position and order of importance, an Administrative Secretary, Interpreter or Resource Manager, Educational Coordinator, technicians and seasonal employees.

Advisors
The corporation would enlist the support of technical advisors, who would serve as needed to assist with implementing the mission and programs of the Center. These advisors would come from local universities and colleges, related environmental organizations, the business/corporate community, local, state and federal agencies, and other related fields.

Friends of the NCERC
A special arm of the corporation would be established to service the social and interpersonal activities of the Center. This arm would be the "Friends of the North Carolina Estuarine Resources Center." Membership in the Friends organization would enable individuals to become more familiar with the daily activities of the Center and entitle them to special services of the Center. Friends can also serve as docent staff of the Center, providing volunteer labor in areas of concessions and resource management.

There are other management structures that exist and are applicable to the development of the Center. However, the management structure suggested herein closely matches the mission, goals and theme of the Center, as described throughout the Feasibility Study, and enables the Center to be successfully marketed as a component of the social and economic structure of the inland coastal region of eastern North Carolina.

Administration and Management Objectives

THE ADMINISTRATIVE and management objectives for the North Carolina Estuarine Resources Center should conform with traditional free-enterprise models. The corporation would be established as a service organization, whose products or services include educational, recreational and research services for consumption by the general public.

Therefore, the primary administrative objectives for the Center involve the proper selection and management of staff to implement, organize and oversee the Center's day-to-day educational, recreational, research and outreach programs.

The other components of administration are the operating requirements of a 501C3 corporation. The Center will need to fulfill certain duties and responsibilities in order to maintain its nonprofit status. The relationship between the Board of Directors and staff will need to be defined and effectively managed.

The management objectives for the Center should consist of a clearly organized, concise and well documented annual operating plan. The plan should be expressed in written form describing the marketing, programmatic, operational, maintenance, and management functions of the Center. There should be frequent reports and regular evaluations to monitor the Center's ongoing operations. The management plan should be evaluated, approved, and adopted by the Board of Directors of the corporation on an annual basis.

Staffing

THE PROPER STAFFING of the North Carolina Estuarine Resources Center will be important in order to fulfill the objectives and mission of the Center. The Center's staff, as much as the educational exhibits and quality of the facility, will convey the message and theme of the Center to visitors. Therefore, their most important asset should be a strong desire to educate visitors of the preciousness of the estuarine environment.

The most important individual staff member within the Center will be the Executive Director, who will be employed directly by the Board of Directors. Other staff members would be employed based on the needs of the Center. The Center will be an Equal Opportunity Employer. Administrative assistants, public relations officers, budget directors, educational coordinators, and maintenance personnel are just a few of the type of positions which may be required to meet the mission of the Center in its daily and long term operations. Specialty staff such as concession operators, tour guides and other personnel would be added as the Center matures and becomes successful.

The ideal number and type of staff positions which are necessary to effectively operate a Center of the size proposed in this report are defined below. These positions include both full-time and seasonal positions. The Center's personnel must have the appropriate expertise and professional qualifications to fulfill their expected responsibilities. The Center staff must also be aware of the type of community they are to live in and be able to accept the inland coast way of life.

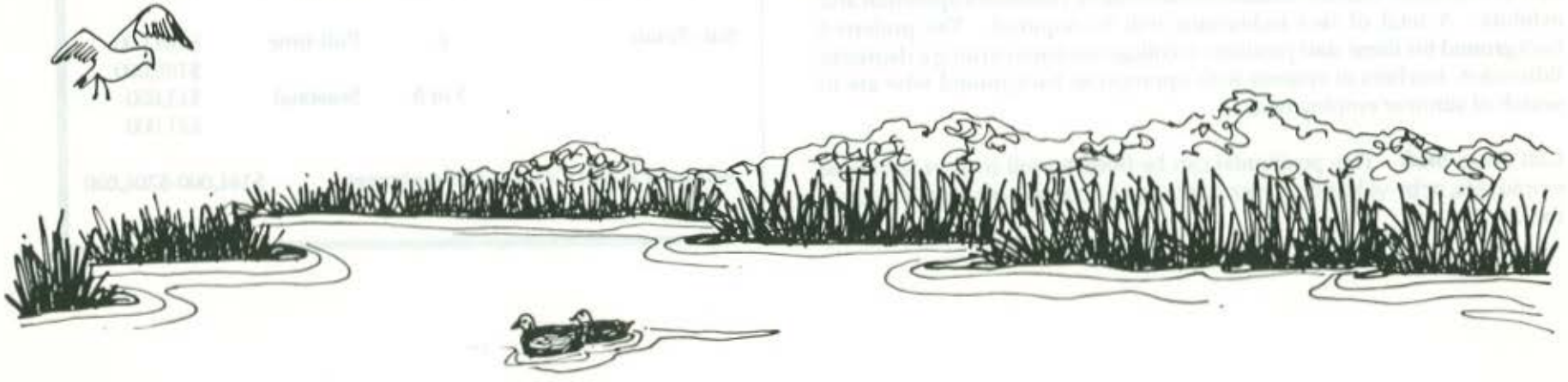
Executive Director
Initially, the most important staff member is the Executive Director. This person should be knowledgeable about all aspects of the Center operations and will report directly to the Board of Directors. This position should be filled before ground is broken for the Center, it will be important that this individual oversee the final design and development stages of the facility. The Executive Director will serve as the primary spokesperson and marketing director for the Center, and will be responsible for the management of all other employees.

Administrative Secretary
This full-time employee will handle the administrative and secretarial functions of the Center, will work with the Secretary of the Board of Directors, provide assistance to the Friends of the Center, and will assist the Executive Director in the daily operation of the Center. This person shall also supervise any additional clerical help which is hired for the Center.

Interpreter/Resource Manager
This person is a full-time manager who specializes in environmental interpretation and visitor services. This individual will work with the Education Coordinator to establish the Center's exhibits, will be responsible for the Center's environmental interpretation program, both on-site and off-site, and will coordinate the operation of the laboratory. The Interpreter will be responsible for guiding scheduled and specialized interpretive programs, and overseeing the work responsibilities of other technicians.

Education Coordinator
Is a full-time manager who specializes in environmental education and visitor services. This individual will prepare and execute the Center's education curriculum, work with the Interpreter to organize the Center's exhibits, and coordinate the operation of the classrooms within the Center. The Education Coordinator will also be responsible for supervising the activities of seasonal technicians and employees involved with the education curriculum.

Facility Technician
This full-time employee will be responsible for the management and maintenance of the interior and exterior of the Center's buildings and grounds. This work includes the care of exhibits, coordinating the repair of electronic displays, general housekeeping, building repair, coordinating construction of new facilities and up-keep of the grounds. This employee will also be responsible for the supervision of seasonal maintenance personnel.



Audio/Visual Manager
This full-time employee will be responsible for the management of the auditorium, library, gift shop and assistance in the management of electronic exhibits and displays. The Audio-Visual Manager will be responsible for ensuring that all electronic equipment is in good operating condition, that the library resources are effectively managed, and that the gift shop is properly stocked and managed. The Audio-Visual Manager will also be responsible for supervision of seasonal employees that are assigned to assist with audio-visual duties.

Clerical Position - An assistant to the Administrative Secretary represents a part-time or seasonal position which may be filled as the existing responsibilities of the Secretary are expanded.

Seasonal Interpretation Technicians/Docent Volunteers - Seasonal interpretation technicians will be brought in to the Center during the peak season of summer visitation and facility use. The scheduling of these positions will depend on the expected visitor use of the facility. A total of two technicians will be required. The preferred people for these staff positions are college students earning a degree in coastal ecology or related field, teachers, or others who are in search of summer employment and have an appropriate educational experience in working with the public. A program to train people for this position may be necessary.

Seasonal Educational Technicians - Seasonal education technicians will be brought in to the Center during the public school year to assist the Education Coordinator with the education curriculum, classroom operation and exhibits. A total of two technicians will be required. The preferred background for these staff positions is college students earning a degree in Education, teachers or retirees with appropriate background who are in search of summer employment.

Gift Shop Staff - This position(s) can be filled by full-time or part-time employees, or by volunteers from a personnel pool set up by the Friends of the Center.

Recommendations for the Center Staff and Salaries
Based on our evaluation of National Estuarine Research Reserve facilities throughout the United States, and similar cultural facilities in North Carolina and Virginia, we have developed an applicable salary range for each staff member described above.

Staff Salary Recommendations

Title of Position	# of Positions	Status	Annual Salary Range
Executive Director	1	Full-time	$35,000-$50,000
Administrative Sec.	1	Full-time	$20,000-$25,000
Interpreter/Manager	1	Full-time	$25,000-$30,000
Education Coordinator	1	Full-time	$30,000-$35,000
Facility Technician	1	Full-time	$20,000-$25,000
Audio-Visual Manager	1	Full-time	$18,000-$20,000
Clerical Assistant	1	Seasonal	$5,000
Interpretation Tech.	1 or 2	Seasonal	$4,000
Education Technician	1 or 2	Seasonal	$4,000
Gift Shop Staff	1 or 2	Volunteer	None
Sub-Totals	6	Full-time	$148,000-$185,000
	3 or 5	Seasonal	$13,000-$21,000
Annual Payroll Costs	**11 Employees**		**$161,000-$206,000**

Volunteers and Cooperative Associations

VOLUNTEERING IS an American tradition. More than one-third of the American public has performed volunteer services for a special interest, activity or event. Volunteers to the North Carolina Estuarine Resources Center can be used for a variety of tasks, including maintenance, interpretation, visitor services, sales and special programs. They can provide an affordable alternative to employing full-time or part-time labor.

Cooperative associations with other organizations with the same or similar agendas may offer opportunities for cost sharing of personnel, operating expenses, scientific or educational curriculums and specialized programs. The following information offers recommendations and examples in ways that volunteers and cooperative associations can be structured to positively impact the mission and objectives of the Center.

Friends of the North Carolina Estuarine Resources Center

A "Friends of the North Carolina Estuarine Resources Center" program should be established to support the operation and future development of the Center. A "Friends" program is an innovative way to initiate and maintain long term public support for the Center. The Friends of the Center Program provides public service, expands existing programs and projects of the facility, increases opportunities for the general public, creates partnerships between the Center and general public, broadens support of facility, and promotes public health and welfare.

Cooperative Associations

A cooperative agreement between the non-profit corporation and surrounding business/corporate community; university; local, state or federal government would be extremely beneficial for the Center. Through cooperative associations, the parties could share the responsibilities of educational curriculum, operations and management of the facility, special projects, programming, exhibition of limited resources, research, advocacy- and other specially defined relationships. Cooperative associations may be established with:

1) **Schools, universities and continuing education programs**
2) **Corporations and the business community**
3) **Local, state or federal government agencies**

Introduction

PERHAPS THE MOST critical issue facing the proposed North Carolina Estuarine Resources Center is how the project is to be funded. In order to fully understand the issue of funding the physical development and operation of the Center, this section of the report is divided into two broad categories: Projected Expenditures for the Center and potential Funding Sources. Expenditures will examine the cost items that are associated with the construction of the Center's buildings and infrastructure, and define annual budgets for operations, programs and research. Funding sources will identify a variety of income or revenue generating sources which the Center would access or develop to pay for the projected expenditures.

For the purpose of this study, the Center would be constituted as a **501C3 non-profit organization**, not tied or linked to one source of financial assistance.

Projected Expenditures

PROJECTED EXPENDITURES include those facility, infrastructure or operational components of the North Carolina Estuarine Resources Center that need to be funded and developed. Expenditures are divided into four specific areas: Capital Development, Operating Budget, Programming Budget, and Research Budget.

Capital Development

Capital development, also regarded as facility construction, is defined as the amount of funds required for the proper physical construction of the Center's buildings and grounds. This construction includes all necessary site work, building construction, interior up-fit, and the furnishing of exhibit space.

Based on similar National Estuarine Research Reserve facilities and cultural facilities in North Carolina and Virginia, the consulting team has determined that the estimated construction costs for the proposed North Carolina Estuarine Resources Center would include:

1) Cost of Constructing the Main Building - As previously defined, we project that the main building should be at least 10,000 square feet in total size. The estimated cost for constructing the shell, interior and exterior walls, internal utilities, doors and windows, roofing, flooring and ceiling is equal to approximately $100.00 per square foot. This means that the main building is estimated to cost approximately $1,000,000 to construct.

2) Cost of Interior Furnishings - The interior furnishings for the Center would include furniture, fixtures and equipment for administrative offices, classrooms, library, auditorium, entrance/lobby, restrooms, storage and utility areas. The projected total cost for interior fit-up would equal $25.00 per square foot, or $250,000 for the entire Center.

3) Cost of Exhibits Fabrication/Installation - Exhibit design, fabrication, acquisition, and installation is highly specialized and difficult to estimate as a projected budget. Exhibits for the Center will include both hands-on and view-only displays. Hands-on displays include living ecosystems, interactive computer and television monitors, and scale models. View-only displays include written materials, static scale models, protected living ecosystems and audio-visual resources. For the purpose of preparing a budget, we are allocating $100.00 per square foot, or $500,000 for the development of exhibits (total exhibit space equals 5,000 sf).

4) Cost of General Site Work - Based on a disturbed site area of 10 total acres, which would include the construction of roads and parking lots, installation of utilities, construction of the main building, pedestrian walkway systems, site furnishings, and landscaping, the cost of site work is estimated at $50,000.00 per acre, or $500,000 for all site work.

The total projected development costs for construction of the main building, interior fit-up, exhibit fabrication and installation, and site work is equal to approximately $2.25 million. This is an initial estimate, and does not include architectural, landscape architectural, and engineering fees, permitting, provisions for unsuitable construction conditions, or contingencies. This estimate represents a beginning point, rather than a point of conclusion.

Operating Budget

Operations include administration, management and miscellaneous items that don't fit into any other budget category. Based on our research of National Estuarine Research Reserve facilities and similar cultural facilities in North Carolina and Virginia, the consulting team has defined a typical annual operating budget for the proposed North Carolina Estuarine Resources Center. There are several different categories of the operating budget that need to be examined in detail.

Administration/Staffing - Salaries

As previously defined, the total annual salaries for an 11 person staff would equal between $161,000 and $206,000. Add to this the payroll taxes, insurance and benefits, and the range is adjusted to between $185,000 to $230,000.

Typical Operating Budget (Salaries not included)

A typical operating budget would include all of the operational components of the Center, exclusive of salaries. For a 10,000 square foot facility, the typical operational costs would be equal to approximately $150,000 per year. This total would be divided among the individual components of the facility as follows:

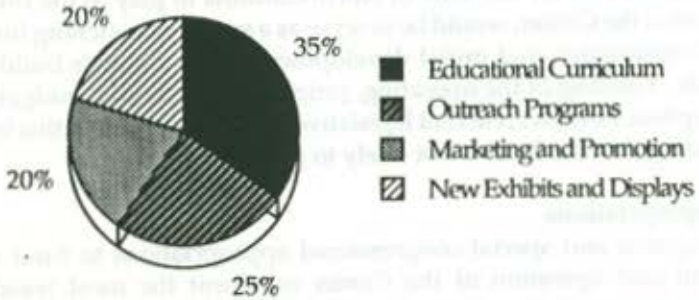
Appropriations of Operating Budget

Operational Component	Percentage of Total
Maintenance (Grounds, Building)	20%
Repairs (Public use, unexpected)	15%
Utilities (Phone, W&S, Electrical, TV)	15%
Fuels (For autos and boats)	10%
Office Supplies	11%
Printing (In-house and contract)	7%
Insurance (Liability, Employee)	7%
Library (Accessions, Curatorial)	5%
Miscellaneous	4%
Data Processing (Public relations)	2%
Travel (Per Diem and Overnights)	2%
Furniture Equipment	2%
Total	**100%**

Program Budget

Programming includes the implementation of the storyline for the Center through educational curriculum; design, fabrication and installation of exhibits (in addition to those already developed and installed); implementation of on-site and off-site programs; and marketing and promotion of the Center. As with the Operating Budget, it is difficult to prepare an estimate for programming without having an accurate knowledge of the types of exhibits, programs and educational offerings. Based on our review of other similar facilities we believe that the Center should allocate approximately $75,000 for an annual program budget. This budget would be divided among several different program components:

Estimated Annual Program Budget Components



Research Budget

Research that takes place at the Center will be in conjunction or cooperative association with other local, regional, state or federal agencies. Therefore, the activities that are included within the research budget (laboratory work, field operations, scientific research and other related issues) do not have a defined dollar amount or estimated budget. This budget is totally dependent on the award of specific grants, gifts, or cooperative funds from agencies or organizations that the Center determines it will participate with for applied research.

Total Annual Expenditures

Administration/staffing	$185,000 - $230,000
Operating Budget	$150,000
Program Budget	$75,000
Total	**$410,000 - $455,000**

Funding Sources

GIVEN THE CURRENT recession and general uncertainty regarding local, state, national and international economics, reliable funding sources are difficult to pin-point. The consulting team is furnishing a list of both traditional and innovative sources of funding, some or all of which may be able to be used for the successful development and operation of the North Carolina Estuarine Resources Center. These funding sources are divided into Grants and Gifts, Local Government, State and Federal Appropriations, Friends of the NCERC Program, User Fees, and Concessions Sales. A more detailed description of each funding source follows.

Grants and Gifts

One of the most popular forms of funding cultural facilities in the United States is through grants or gifts that are made on a one-time or annual basis. The North Carolina Estuarine Resources Center will have numerous in-state resources to call upon to request necessary financial support for full development and operation. Sources of grants and gifts are too numerous to name, however, one particular source, charitable foundations and trusts, offers the most reliable source for grants.

Listing of Charitable Foundations and Trusts

There are numerous charitable foundations and trusts within North Carolina that fund various activities and programs, from health care to environmental protection. The consulting team has selected the following 20 foundations from the Foundation Directory on the basis of the types of activities that they typically support. The amount of grant money that each awarded annually is also listed.

Foundation	Activity Support	Grant
Maye Morrison Abernethy Trust	Education	$150,000
Mary Reynolds Babcock Fnd.	Enviro./Education	$2 million
Belk Foundation	Cultural/Education	$700,000
Clifton Benson Foundation	Education	$175,000
Blumenthal Foundation	Education/Arts	$900,000
Price/Bryan Family Foundation	Cultural/Education	$1.6 million
Burlington Industries Foundation	Cultural/Education	$950,000
Josephus Daniels Foundation	Education/Arts	$500,000
Champion McDowell Davis Fund	Conservation	$100,000
Duke Power Co. Foundation	Conservation/Educ.	$4 million
Elizabeth City Foundation	Educ./Civic Imprvmt	$80,000

A. E. Finley Foundation	Education	$200,000
First Union Foundation	Education/Enviro.	$1.3 million
Foundation for the Carolinas	Education/Enviro.	$5 million
Glaxo Foundation	Child Education	$125,000
Hanes Memorial Fund	Conservation/Educ.	$1 million
Z. Smith Reynolds Foundation	Education/Enviro.	$7 million
Grace Richardson Fund	Education/Conser.	$50,000
Wachovia Foundation	Education	$900,000

These charitable foundations and trusts are capable of providing seed money, capital funds and operating money for the development and operation of the Center.

Local Government Appropriations

Depending on the final selected location and site of the Center, nearby communities and county governments must be considered as a source of financial assistance for project development. However, as has been noted from the outset of this Study, rural communities in eastern North Carolina are struggling to achieve a balance between the current operating costs for existing services and revenue that is generated from a rural-oriented tax base. It will be very difficult for the Center to plan on receiving any financial contributions from any eastern North Carolina community or county. Most of the communities may hope that the Center will generate revenues for the local government.

The best possible use of local government funds would involve a return of a portion of tax dollars paid by the Center back to the facility for use in balancing the annual operating budget.

State of North Carolina Appropriations

The State of North Carolina has for many years been a reliable source of revenue for the development and operation of public cultural, environmental education, and historical facilities. With the recent recession, and the fiscal 1991 budget shortfall, some of these funded facilities have been closed or have had their operating budgets severely curtailed. These recent economic events present a significant obstacle to the participation of the State in funding the development of the North Carolina Estuarine Resources Center.

Generally speaking, there are two types of appropriations that the State can offer in support of the Center. One would be a specific lump sum appropriation made by the General Assembly directly to the Center. The other would be to appropriate an amount of money to a department within State government, who in turn would supply the funds to the project on a pre-agreed contract basis. State agencies that are most likely to become involved with the funding and development of the Center include:

Department of Environment, Health and Natural Resources
Department of Administration
Department of Cultural Resources
Department of Education
Department of Commerce
Department of Agriculture
Department of Transportation
Department of Economic and Community Development

The most feasible role for the State of North Carolina to play in the future development of the Center, would be to serve as a source of matching funds for capital construction and initial development of the Center's building and grounds. Funding of the operating, program and research budgets is always an option, however, current legislative trends suggest that this is an area of funding that the State is not likely to participate in.

Federal Appropriations

Federal programs and special congressional appropriations to fund the development and operation of the Center represent the most feasible government source of financial assistance. The Center can apply for consideration as a National Estuarine Research Reserve, which is operated by the National Oceanic and Atmospheric Administration(NOAA). Under this program, the Center would be supported financially in both initial development and long term operation by federal dollars, if it can satisfy NOAA criteria.

The Federal government is also a good source of grants. For example, NOAA operates the Coastal Resources Grant program, and the U.S. Fish and Wildlife Service and National Park Service both provide grant programs that could aid in the initial development of the Center. Other grant programs are available through the U.S. Department of Agriculture and

U.S. Environmental Protection Agency. Those federal agencies, and the various divisions that are most likely to become involved with the financial development of the Center include:

National Oceanic and Atmospheric Administration
Small Community and Rural Development
Natural Resource and Environment
National Park Service
U.S. Fish and Wildlife Service
U.S. Environmental Protection Agency
Soil Conservation Service

The Federal government offers the most feasible source of public funds for capital construction and initial development of the Center's building and grounds. Funding of the operating, program and research budgets is also an option, if the Center meets applicable federal guidelines.

Friends Program

A Friends of the Center Program should be developed to support the Center's annual operating, program and research budgets. A Friends of the Center Program would operate similarly to receiving gifts from donors. With membership the supporter would receive special recognition, would have access privileges to the Center, and would be invited to exclusive events at the Center. Listed below is a recommended fees structure for a Friends program. Membership is based on the level of giving. Benefits of membership can be tailored to fit the Center's operations and curriculum.

Friends Program - Fee Structure

Type of Membership	Membership Fee
Annual Membership/Affiliate	$ 25.00
Bi-annual Membership/Associate	$ 50.00
Five Year Membership/Member	$ 100.00
Ten Year Membership	$ 175.00
Life Time Membership	$1500.00

User Fees

The North Carolina Estuarine Resources Center must develop and implement a comprehensive users fee program to balance the operating costs of the facility. Establishing an appropriate users fee is a difficult task. Fees and charges rarely match the operating costs involved in providing the public service. The primary objective of user fees is to recover a portion of the operating costs, to insure a fair return on public investment, and to transfer a fair share of the cost for services to the visitors who enjoy the services directly. With the increase in operational expenses realized by so many public facilities, user fees are a must in the development of new facilities.

Recommended Admission Fees

Standard Fees		Discount Admissions	
Children Ages 0 - 4	Free	School Groups	$2.00/child
Children Ages 5 -15	$3.00	Tour Groups	$1.50/person
Adults Ages 16 - 62	$5.00	Local Residents	$2.50/person
Seniors Ages 63 -	$3.00		

Based on an estimated annual attendance of 100,000 visitors, tourists and school children, and with visitation being estimated at 35% adults, 40% children and 25% senior citizens, the Center should generate revenues equal to $370,000 annually. These revenues can help to offset the annual operating budget and salaries for the Center.

Concessions Sales

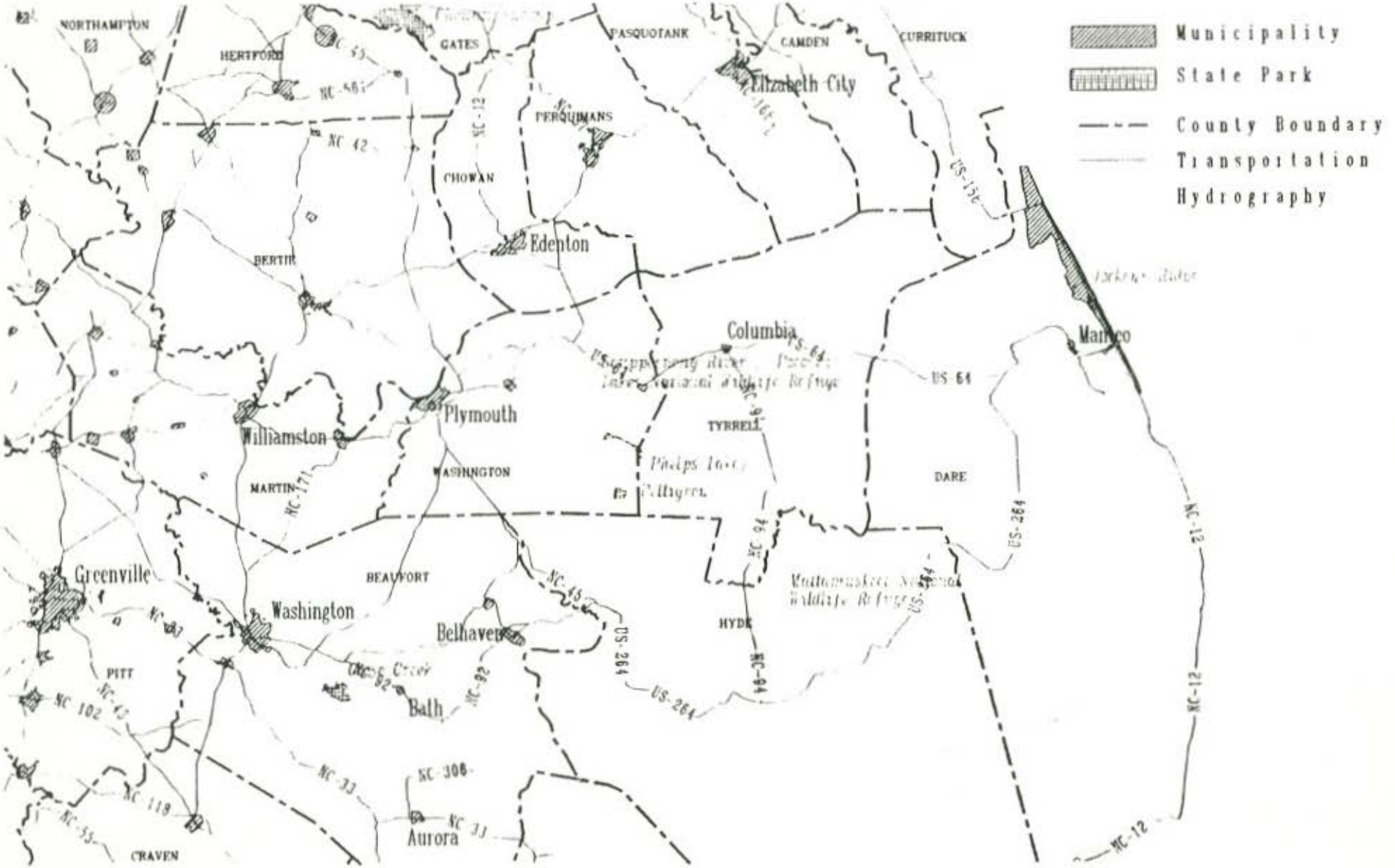
One of the methods for balancing operating and program costs of the Center would be through the operation of an in-house concession, like a Gift Shop. The Friends Program should be encouraged to establish and man the concession, with all profits from sales being directed toward the Center's operating budget. Concessions sales is not a panacea, however, good products can produce enough profit to offset other operational functions of the Center.

Site Selection

"Hands - on interaction with the estuarine environment is critical to the educational mission of the Center. This means that the location should be on, or within a short distance of an estuary and its associated aquatic and terrestrial ecosystems."

Greenways Incorporated
June, 1991

Northeastern North Carolina



Prepared by:
Center for Geographic Information & Analysis
Office of State Planning

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September 1991

Introduction

THE PROPER DEVELOPMENT of the proposed Center will depend on the application of an equitable systematic location evaluation process and subsequent site selection. The eventual location of the Center must support the physical and environmental aspects of the Center's mission. The consulting team has not selected a specific location for the proposed North Carolina Estuarine Resources Center. Rather, a process has been developed by which each of the **identified locations** can be evaluated as a potential home for the Center. The process includes: 1)"**Location Evaluation Criteria**", objective characteristics of the communities and remote locations that have been preselected as possible locations for the Center, and 2) "**Guidelines for Specific Site Selection**", characteristics that specific property sites should have in order to accomodate the full development of the Center.

Identified Locations

EIGHT COMMUNITIES and 3 remote sites have been selected as potential locations for the North Carolina Estuarine Resources Center. All of the identified locations are in the study region, specified as the Northern Coastal Plain/Tidewater Region of eastern North Carolina or the "Albemarle-Pamlico study region". These locations are found on the map on page 55 and are listed below:

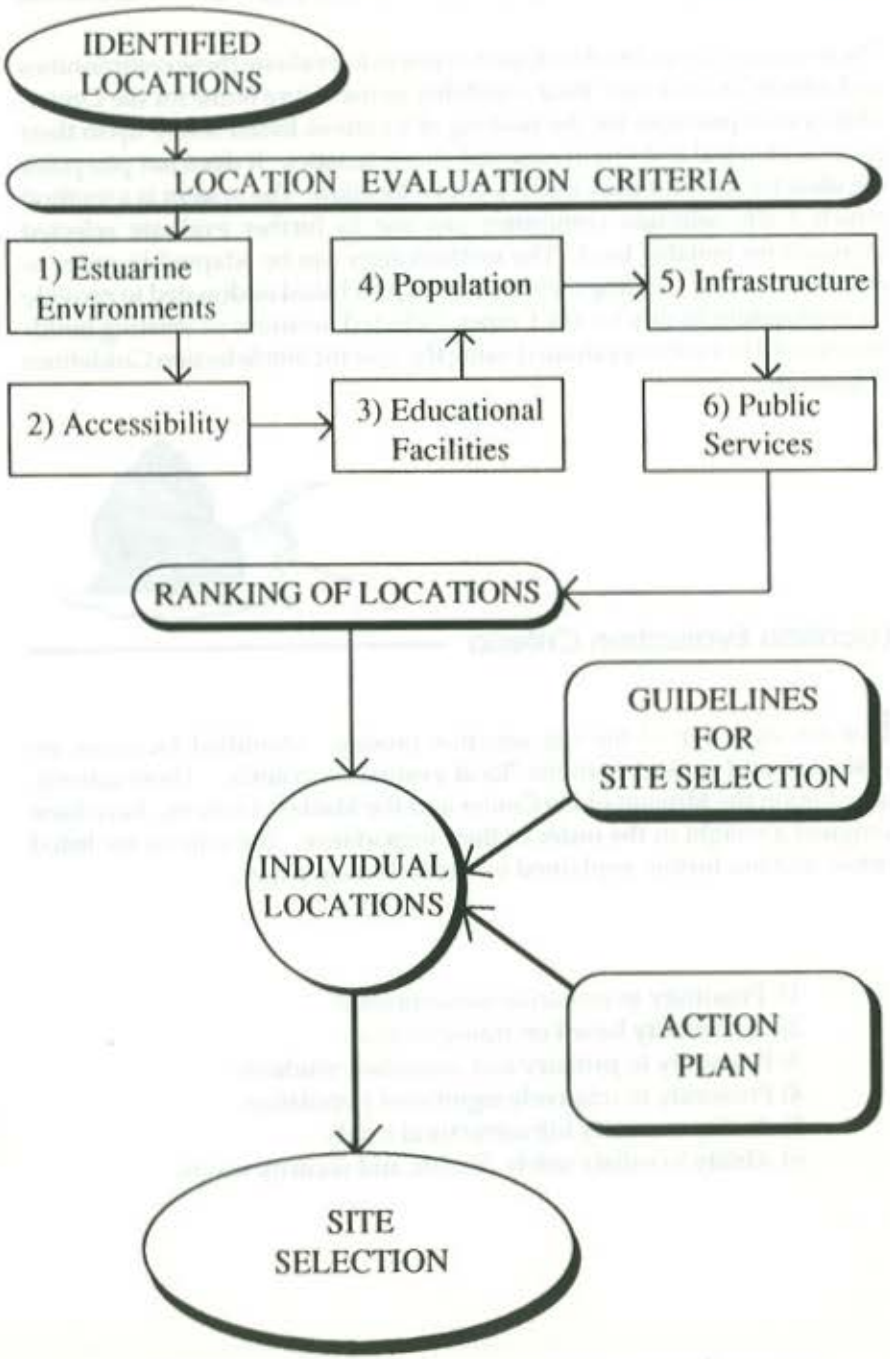
Identified Locations for Site Selection

Communities:

- Belhaven
- Greenville
- Bath
- Columbia
- Plymouth
- Elizabeth City
- Edenton
- Washington

Remote Locations:

- Mattamuskeet Lodge and National Wildlife Refuge
- Goose Creek State Park
- Pettigrew State Park



Site Selection Process

The consulting team has developed a system to evaluate these communities and remote locations for their suitability as the future home for the Center. This system provides for the ranking of locations based solely upon their general physical and environmental characteristics. It does not pin-point the ideal location for the Center within a location. The system is a method which a site selection committee can use to further evaluate selected locations for suitable land. The methodology can be adapted in order to evaluate existing buildings which may be purchased or donated to provide an appropriate facility for the Center. Selected locations or existing buildings should be further evaluated using the Specific Site Selection Guidelines (Figure 2).

Location Evaluation Criteria

For the first step of the site selection process, identified locations are evaluated and ranked with the "local evaluation criteria". These criteria, based upon the Mission of the Center and the Market Analysis, have been assigned a weight in the order of their importance. The criteria are listed below and are further explained on the following pages.

1) Proximity to estuarine environments
2) Accessiblity based on transportation
3) Proximity to primary and secondary students
4) Proximity to relatively significant population
5) Ability to satisfy infrastructural needs
6) Ability to satisfy safety, health, and security needs.

1) Proximity to Estuarine and Wetland Environments (weighted value = 6)

The physical relationship of the Center relative to a variety of estuarine and wetland environments unique to the Albemarle-Pamlico region is the most essential criteria for locating the Center. Hands-on interaction with the estuarine environment is critical to the educational mission of the Center. This means that the identified location should be on, or within a short distance of an estuary and its associated aquatic and terrestrial environments. The greater the variety of estuarine environments that are accessible in or near the identified location, the higher the ranking it receives for this criteria.

To evaluate each of the identified locations, relative to their proximity to a variety of estuarine and wetland environments, the consulting team utilized National Wetland Inventory maps produced by the U.S. Fish and Wildlife Service. Each identified location was evaluated for the occurrence within 5 miles of: A) estuarine and sub-tidal environments; B) estuarine intertidal environments; and C) non-tidal freshwater wetlands. The occurrence of these environments relative to each identified locations can be found in Appendix E , Figure 1.

If the location has significant occurrences of one of either A, B, or C it receives a value of 1. If it has significant occurrences of two estuarine environments, it receives a value of 2. If it has significant occurrences of all three it receives a value of 3. The value received by each of the identified locations is multiplied by the weighted value (6) and the total is placed into the matrix. (Figure 1)

2) Accessibility (weighted value = 5)

The second most important criteria of the identified location is its ease of accessibility. The location needs to be accessible by automobiles and school buses. It must be near enough to a well traveled major interstate, state, city, or paved county road that local residents, tourists, and school groups can find and use to access the Center. Ideally, the Center should be relatively near a highly traveled road, while not sacrificing the proximity or quality of the surrounding estuarine environment.

A great deal of data pertaining to the quality and quantity of the primary roadways in and near each of the identified locations has been collected by the consulting team (See Appendix E, Figure 2). To rank accessibility for each of the identified locations, we have chosen to evaluate them based on the estimated 24 hour traffic volumes on the nearest major roadways.

If the traffic volume is greater than 20,000 vehicles in a 24 hour period, the location receives a value of 3. Between 10,000 and 20,000, it receives a value of 2. A location with a traffic volume of less than 10,000 vehicles per day receives a value of 1. The value received by each of the identified locations is multiplied by the weighted value (5) and the total is placed into the matrix. (Figure 1)

3) Education - Potential Students Served in Identified Location (weighted value =4)

As stated in the Market Analysis of this Study, the location of the Center must be within a reasonable travel distance from primary and secondary students and teachers. The Center must be in a location where schools and/or school systems can be actively involved in its education curricula and programming. Most of the schools throughout the Albemarle-Pamlico Region can access all of the identified locations within two-hours (90 miles at the state mandated school bus travel speed of 45 mph). However, the ideal location of the Center should be where most students of all ages can utilize the facilities and programs without having to drive four hours within a single day. The primary goal of the Center is to educate regional residents.

To rank the identified locations for their potential to provide students, teachers, and programming support to the Center, the consulting team has evaluated each of the identified locations based on the number of residents enrolled in grades K thru 12, and enrollment in the local universities and/or community colleges. The collected data can be found in Appendix E, Figure 3.

If there are greater than 6,000 students (all levels) currently enrolled, the location receives a value of 3. Between 3,000 and 6,000 enrolled students receives a value of 2. If there are less than 3,000 students enrolled, then the location receives a value of 1. The value received by each of the identified locations is multiplied by the weighted value (4) and the total is placed into the matrix. (Figure 1)

4) Population (weighted value = 3)

One of the primary factors that will affect the success of the Center is community support. In the Market Analysis conclusions, the consulting team stressed the importance of local resident's ability and need to market the Center by "word-of-mouth". Also, as is true with the surveyed National Estuarine Research Reserve educational facilities, the Center will rely upon regional residents as volunteers for many important duties. The Center must be located where it will be supported and visited by a significant number of regional residents.

Population, or critical mass, is a difficult criteria to define and evaluate for particular locations. Political boundaries, such as county lines, do not obstruct visitation. However, the consulting team has used county populations to evaluate each of the identified locations to most efficiently determine population density throughout the Albemarle-Pamlico region. The collected data is contained in Appendix E, Figure 4.

If the identified location is in a county with a population greater than 30,000, it receives a value of 3. If the county population is between 10,000 and 30,000, then the location receives a value of 2. If the population of the county is under 10,000, then the location receives a value of 1. The value received by each of the identified locations is multiplied by the weighted value (3) and the total is placed into the matrix (Figure 1).

5) Infrastructure (weighted value = 2)

The location of the Center must already have, or potentially have, the capacity to accommodate and sustain the necessary infrastructure of the Center as a commercial facility with the potential for 100,000 or more visitors per year. This includes electricity, sewage treatment, water supply, and solid waste disposal. Data collected for each identified location is in Appendix E, Figure 5.

All of the identified communities presently have the necessary water, sewage treatment capacity, and solid waste disposal to accomodate the Center, and therefore receive a value of 2. The remote locations have limited facilities, which may have to be upgraded if the Center were located at any one of them. Therefore, the remote locations receive a value of 1. The value received by each of the identified locations is multiplied by the weighted value (2) and the total is placed into the matrix (Figure 1).

6) Safety, Security, and Health Services (weighted value = 1)

Each location must have the necessary police, fire, and medical services to assure the safety and security of the facility, its grounds, and staff, along with the visiting public. The more immediate these services are to the identified location, the higher the value it receives. Data collected for this criteria can be found in Appendix E, Figure 6.

Those identified locations where police services are offered by the city and the county, the fire department has a full-time staff, and there is a hospital in the community, receive a value of 3. A location where police services are offered by the city and the county, the fire department is volunteer, and there is a hospital in the community receive a value of 2. If police services are only offered by the county, the fire department is volunteer, and there is no hospital in the community, then the location receives a value of 1. The value received by each of the identified locations is multiplied by the weighted value (1), and the total is placed into the matrix (Figure 1).

Example:

Location X has a wide variety of estuarine and wetland ecosystems within 5 miles. It therefore receives a sub-category value of 3 (High) for the location evaluation criteria "estuarine environments". This value (3) is multiplied by the criteria's weighted value (6) for a total of 18. The same process is continued for each of the location evaluation criteria for Location X. The sum of all of the resulting criteria values equals the Grand Total.

A comparison of the grand totals results in the ranking of each location as a potential community or remote location for the Center. The matrix below containing the ranking of the identified communities, as was completed by the consulting team. (Figure 1 below)

Once it has been decided which locations should be further evaluated, specific parcels of land, or existing buildings which may be purchased or donated for the home of the Center, must be rigorously tested against the **Guidelines for Specific Site Selection** found on the following pages.

Location Evaluation Criteria Matrix

(Figure 1)

			Location	Evaluation	Criteria			
	Environment	Accessibility	Education	Population	Infrastructure	Public Service	Total	Ranking
	6	5	3	4	2	1		
	(1,2,3)	(1,2,3)	(1,2,3)	(1,2,3)	(1,2)	(1,2,3)		
Plymouth	12	15	6	8	4	2	47	5
Washington	12	15	9	12	4	3	55	1
Edenton	12	15	3	8	4	3	45	6
Columbia	12	15	3	4	4	1	39	8
Belhaven	18	10	6	12	4	2	52	2
Bath	18	10	3	12	4	1	48	4
Greenville	6	15	9	12	4	3	49	3
Elizabeth City	6	15	9	12	4	3	49	3
Goose Creek SP	18	5	6	12	2	1	44	7
Pettigrew SP	6	5	3	4	2	1	21	10
Mattamuskeet WR	18	5	3	4	2	1	33	9

Guidelines for Site Selection

USING THE LOCATION evaluation criteria , the identified communities and remote locations which best accommodate the Center are ranked. However, as the site selection process becomes more refined, and the locations are evaluated with guidelines for site selection, those locations that rank the highest initially may not remain the ideal location for the Center. The location must not only fulfill the goals and objectives of the proposed Center at a regional and local level, but must also be able to sustain its physical and environmental attributes at the site specific level. The guidelines for site selection are to be used to evaluate specific sites within and near identified locations which have been ranked as desirable for the future home of the Center. (Numbering does not represent order of importance)

Specific Site Selection Guidelines

1) The site must be at least 10 acres in size to accommodate the specified building size, infrastructure, parking, and outdoor exhibits.

2) The site should allow a variety of hands-on experiences in estuarine and related natural environments. Adjacent private and public land, water, and man-made resources should provide improved access to the estuary.

3) The site should be in or near significant cultural and historic resources related to human use and interaction with the estuarine environment.

4) The site must have sufficient carrying capacity to support the development and construction of a center and allow visitors to experience the environment without having a detrimental impact. A location or site in a pristine area may be appropriate if the site is designed to handle the impact and limits established for access and use.

5) A central location within the region which allows reasonable driving time to the Center is critical. The site should be within a reasonable travel time and distance (1 hour or 50 miles) from similar facilities such as aquariums, museums, nature centers, parks and wildlife refuges.

6) The site should be located within reasonable travel distance of overnight accommodations. This may facilitate access to the Center and participation in Center programs by overnight visitors to the region.

7) The site should be in or near a community which is supportive of activities which will compliment and enhance the programs of the Center. The site and the program of the Center should provide opportunities for the formation of partnerships and cooperative marketing, promotional, and educational programs with existing groups, agencies, and associations.

8) The site should be representative of the Albemarle-Pamlico region. The selected site should reinforce and effectively communicate the importance and value of the objectives for which the Center is developed.

(Figure 2)

Action Plan

"The Action Plan defines a series of tasks which must be addressed and successfully resolved in order to realize the full development and function of the proposed estuarine education Center. The Action Plan proposes a phased development strategy and realistic time frame for completing the required tasks based on available human resources, fiscal budgets, and governing laws."

Greenways Incorporated
September 1991

Introduction

THE FOLLOWING Action Plan defines a series of tasks which must be addressed and successfully resolved in order to realize the full development of the proposed estuarine education Center. The tasks outlined on the following pages are described first as individual components, and then summarized and ordered along a timeline, so that the Center can be developed in a progressive manner.

While at first glance the Action Plan may appear to recommend a linear progression of issue identification and resolution, in fact the process is cyclical. The Action Plan is an "if - then" process. For example, if funds can be raised to employ an interim executive director, then a more efficient execution of the marketing plan will take place. Likewise, if an executive director can be employed, then additional funds can more easily be raised for development of the Center.

The most effective way for the Center to progress toward reality is to have the Pamlico-Tar River Foundation (PTRF) continue to serve in a leadership capacity. The consulting team recommends that PTRF and the Albemarle-Pamlico Estuarine Study establish a new subcommittee of its organization to carry out the Phase I objectives of this Action Plan. This sub-committee would be named the "Center Development Subcommittee," and should include representatives from the following organizations and agencies:

Center Development Subcommittee

Representatives of Environmental Organizations
Albemarle-Pamlico Estuarine Study Program staff
Corporations and businesses located in eastern North Carolina
East Carolina University representatives
State of North Carolina Department of Education
State of North Carolina Department of Cultural Resources
National Estuarine Research Reserve Program
United States Fish and Wildlife Representatives
North Carolina Division of State Parks
Elected Officials/Legislators

So that the decision making process is not compromised for personal gain, this subcommittee should not contain members who would officially represent any community currently under consideration as the future home for the proposed Center.

The major components of this Action Plan are Marketing, Operations, Funding, Selecting the Project Site and Facility Design/Development. These components are further described on the following pages.

Marketing the Center

The successful development of the Center will depend, to a large extent, on how the project is marketed to potential users of the Center, otherwise known as the "audience." As identified within this Study, the primary audiences of the Center are: local residents, tourists, and primary and secondary schools throughout Eastern North Carolina. The other important audience, in the initial marketing of the Center, will be those funding and approval organizations/agencies that will be expected to review, accept, and support the conclusions of this Study.

Task I: Define Promotional Tools

THE FIRST STEP in marketing the proposed Center will be to develop the necessary promotional tools that properly define its mission and image. First and foremost is the selection of a name for the Center. The consulting team recommends that the Center be named "The North Carolina Inland Coastal Center," or "The Albemarle-Pamlico Inland Coastal Center," or "The Inland Coastal Center." We feel that one of these names appropriately defines two important aspects of the Center: 1) location - clearly defining the Center as being inland versus on the outer banks or beaches; and 2) purpose - the name offers a broadly defined yet easy to understand description of the Center's mission, focusing on inland coastal issues.

After a name has been selected by the Subcommittee, graphic images in the form of logos, illustrations and other art work, will need to be produced and widely distributed through promotional materials to the general public. This work can be generated through a regional contest sponsored by PTRF, or more formally produced by employing the services of a graphic artist. This graphic imagery should be appropriately packaged, in the form of brochures, public displays and other promotional means, so that both the name and image of the Center becomes widely known throughout the region, state and nation.

Task II: Refine Mission Statement/Storyline

THE CURRENT Mission Statement and Storyline are well defined for the purpose of this Feasibility Study, however, once physical development of the Center begins, these issues will require additional review and refinement.

The Mission Statement and Storyline will need to be refined in such a way so that they are easily understood by a wide variety of potential funding sources and users of the Center. Ideally, these descriptive elements would be contained within promotional brochures and other public display materials. They need to be clear and concise. They also should be further defined to not only reflect the purpose of the Center, but more importantly the way in which the Center will relate to, or have a positive impact on the lives of those who support and utilize it.

Task III: Define and Implement Marketing Objectives

ONCE THE PROMOTIONAL tools and refined mission statement have been completed, a full scale marketing plan should be implemented by the Center consistent with the objectives and recommendations described in this Study, and the following:

Implementation of Marketing Plan

a) Multi-media advertising and promotion of the Center to regional, state and national markets.

b) In-person marketing to specific regional user groups, such as schools, civic organizations, local communities, business groups and travel and tourist agencies.

c) Sponsorship of events that promote the purpose and activities of the Center, which could be held at different sites throughout the region until the facility and site have been fully developed.

Implementing the Operating Structure

In order for the Center to function and fulfill its mission, the operational structure as defined within this Study will need to be implemented. The most realistic approach for developing and operating the Center will be to establish a non-profit corporation, and if possible, joint venture the development of the Center with the National Oceanic and Atmospheric Administration's (NOAA) National Estuarine Research Reserve (NERR) Program. NOAA currently is studying plans for the development of a second NERR on the Albemarle and Pamlico Sounds. The proposed Center would resolve NOAA's need for a facility on this reserve, similar to other NERR facilities, and will also satisfy the objectives and recommendations of this Study. In order to implement the operating structure for the Center, the following Tasks will need to be completed:

Task I: Employ an Executive Director

In order to effectively market and manage the beginning stages of development of the Center, it will be absolutely necessary to employ an interim or full-time Executive Director. The initial duties of the Executive Director shall include:

Initial Duties of Executive Director

- Serve as spokesperson for the Center.
- Establish the 501C3 operating structure for the Center.
- Work with the Center Development Subcommittee to market and manage the Center through Phase I development.
- Establish a "Friends of the Center" organization.
- Work with the NERR program.
- Work with the subcommittee to establish a Permanent Board of Directors for the Center.
- Establish, operate and manage a Trust Fund and Capital Campaign for the Center.

Once the Center is established, the Executive Director would assume the duties and responsibilities described within this Study. One of the primary responsibilities will involve the employment of additional staff for the Center. The consulting team recommends that additional staff positions be filled in the order listed below.

Additional Staff Positions

Title of Position	Phase in Project	Need
Executive Director	Phase 1	Immediate
Administrative Secretary	Phase 2	Short Term
Education Coordinator	Phase 2	Short Term
Facility Technician	Phase 3	Mid Term
Interpreter/Manager	Phase 3	Mid Term
Audio-Visual Manager	Phase 3	Mid Term
Clerical Assistant	Phase 4	Long Term
Education Technicians	Phase 4	Long Term
Interpretation Technicians	Phase 4	Long Term

Task II: Secure 501C3 Status for the Center

In order for the Center to operate in an economically viable manner, the Executive Director shall work to establish the Center as a non-profit corporation. The Executive Director shall be responsible for filing all necessary forms with the Internal Revenue Service and the State of North Carolina to secure this status, and shall secure pro-bono legal services necessary to obtain the non-profit status.

Task III: Establish a Friends of the Center Organization

In accordance with the recommendations contained within this Study, the Executive Director should work with the Center Development Subcommittee to establish a Friends of the Center organization. The Friends group can solicit memberships throughout the region and state, and would be encouraged to implement the following immediate or short term activities:

- Raise funds for the Center's Capital Campaign and meet operating expenses associated with the employment of an Executive Director and Administrative Secretary.
- Sponsor promotional events and coordinate other marketing efforts.
- Assist the Executive Director with operational functions associated with the Center.

Task IV: Define Cooperative Relationships/Roles

The Subcommittee and Executive Director shall define cooperative relationships that would be beneficial to the initial development of the Center, and shall work with appropriate local organizations and agencies to execute the terms and conditions of these relationships. Within the Phase I development, the consulting team recommends that the Center pursue cooperative education, research and programming relationships with the following:

Cooperative Associations

- East Carolina University
- University of North Carolina System, especially those departments and programs that focus on estuarine education.
- United States Fish and Wildlife Service
- Division of State Parks through the Governor's Coastal Initiative
- Texas Gulf, Weyerhauser, Union Camp and/or other interested corporations

Funding

Based on the premise that the Center would be developed and operated as a non-profit corporation in conjunction with NOAA's National Estuarine Research Reserve Program, the following funding tasks need to be completed.

Task I: Secure Initial Funding to Employ Executive Director

The Center Development Subcommittee will need to obtain an initial grant for two fiscal years equal to $50,000, or $25,000 per year, to fund the position of Executive Director. This funding should be viewed as seed money, not indicative of a full annual compensation package for the Executive Director. When this grant expires, the Executive Director should have secured a permanent source for funding for his/her position.

Task II: Fund the Capital Campaign

The Executive Director, working with the Center Development Subcommittee and Friends of the Center Program, should initiate a Capital Campaign to fund the design and development of the Center. The funding goal of the Capital Campaign should be set at $2.5 million. Solicitations should be encouraged for three years.

Task III: Secure Operations Funding for the Center

The Executive Director should work with national, regional and local foundations, businesses, civic groups and local residents to secure a two year operating fund for the Center in an amount equal to $500,000. This fund would cover the cost of salaries, expenses and maintenance for the staff, grounds and buildings of the Center for its first two years of operation, at which point in time revenue from programs and events should begin to support the operating expenses of the Center.

Selecting the Project Site

The Center Development Subcommittee should work with the Executive Director to select the proper location and physical site of the Center. This should be accomplished by following the Location Evaluation Criteria and Site Selection Guidelines defined within this Study, and by completing the Tasks itemized below.

Task I: Determine Top Ranked Locations

The Subcommittee and Executive Director should define the three top ranked communities and highest ranked remote site based on the Location Evaluation Criteria, as well as other subjective factors that might influence the evaluation of each community. This will involve a personal visit to each community and remote site identified within this Study to more closely evaluate the criteria defined in this Study.

Task II: Examine Sources of Land for the Center

The Subcommittee and Executive Director should examine undeveloped and developed land, urban, suburban and rural locations, and land that contains structures that might be adapted for re-use, as the permanent site and buildings for the Center. Four different types of landowners and land management agencies should be contacted in the process of determining sites suitable for the development of the Center, these include:

Land Owners and Agencies with Possible Sites

- Private landowners who are interested in selling or donating as a tax deductible gift, the necessary real property for development of the Center.
- Non-profit organizations, such as The Nature Conservancy, who have landholdings that could be transferred to the non-profit Center.
- The State of North Carolina and its political subdivisions.
- Federal government land management agencies.

Task III: Select the Site

Based on the specific criteria contained within the Site Selection Guidelines described within this Study, the Executive Director should narrow the list of applicable sites and choose the final location for the Center. The selected site should be forwarded to the Board of Directors of the Corporation for final approval.

Facility Design and Development

Future development of the Center will require the preparation of design development documents and the construction of required buildings, infrastructure and site development. In order to complete facility design and development, the following tasks will need to be accomplished.

Task I: Employ Design/Development Team

The Executive Director should prepare and advertise a Request for Qualifications and negotiate a contract for the design of the Center's site, buildings and infrastructure. The selected design firm should be composed of a landscape architect, architect, civil engineer and environmental scientist.

Task II: Complete Design and Development Documents

The Executive Director should work with the design firm to ensure that the design development documents meet the goals, objectives and recommendations contained within this Study, and satisfy all applicable local, state and federal laws governing land development in eastern North Carolina.

Task III: Construct the Center

The Executive Director should work with the consulting team and a selected general contractor to ensure that the buildings, infrastructure and site work are completed in accordance with the design/development documents and the goals, objectives and recommendations of this Study.

Phased Development Strategy

Described below is a listing of each separate task, described previously, according to the time in which the task should be completed. This phased development strategy provides a realistic schedule for completing the tasks given workload, staffing, time of preparation, processing and approval time, current fiscal budgets, and available financial resources.

Phase I: 1992

Marketing
Define Promotional Tools
Refine Mission Statement/Storyline
Define Graphic Images for the Center
Implement Marketing Objectives

Operations
Employ Executive Director
Secure 501C3 status
Define Cooperative Relationships
Establish Friends of the Center

Funding
Secure Funding for Executive Director
Begin Capital Campaign

Select the Project Site
Determine Top Ranked Locations
Examine Sources of Land

Phase II: 1993-1994

Marketing
Implement Marketing Objectives

Operations
Employ Administrative Secretary and Education Coordinator
Define Cooperative Relationships
Develop Educational Curriculum and Programs

Funding
Continue Capital Campaign
Secure Two-Year Operations Budget

Select the Project Site
Examine Sources of Land
Select the Site

Facility Design/Development
Employ Design/Development Team
Complete Design/Development Documents

Phase III: 1994-1995

Marketing
Implement Marketing Objectives

Operations
Employ Interpreter, Facility Technician and Audio Visual Manager

Facility Design/Development
Construct the Center (outfit purchased building)

Phase IV: 1995-1996

Marketing
Implement Marketing Objectives

Operations
Center is at full employment

Facility Design/Development
Complete construction of the Center

Appendices

A - Workshop Summaries
B - Regional Similar Facilities
C - NERR Facilities
D - Teachers Survey
E - Site Selection Data
F - References

Introduction

In fulfilling the obligations of the first two tasks of the Feasibility Study for the North Carolina Estuarine Center, Greenways Incorporated has conducted a series of meetings/workshops with the Advisory Committee. In conjunction with the presentation of the data collected by the study Team, the three sessions were designed to collaborate the thoughts and ideas of all of those involved with the present and future development of the Center. The study Team remained unbiased and our conclusions, while still in their infant stages, were not directly presented at the facilitation workshops.

Collection of Data Review Meeting

Date: April 24,1991

Location: Mike Orbach's home in Greenville

Attendees:
David McNaught
Mike Orbach
Jennifer Steele
Charlie Adams
(Study Team - Rick Wilson, Chuck Flink, Larry Gustke)

The first meeting was a section by section review of Task I: "Collection of Data".

Discussion focused onthe following:

• Relationship of the ERC toexisting facilities. Comments were made concerning competition versus support.

• Evaluation of the tourism market.

• The relatively new markets of Green Consumerism and Eco-Tourism occurring throughout the world.

• The storyline focused on how the goals of the ERC are to be conveyed to the reader so they can understand what is going to take place at the center, i.e what they are going to learn and/or what they are going to be funding.

• The operational provider of the ERC was addressed. Representatives of the organization indicated that PTRF is soley the entrepreneur of the idea, and will not have the capacity (or the desire) to be the operational provider.

Facilitation Workshop #1

Date: May 6, 1991

Location: PTRF Office- Washington, NC

Attendees:
Carolyn Hess
Linda Boyer
John Taggert
Mary Walter Rumley
David McNaught
Joe Stutts
Diane Megs
Tom Howard

(Study Team - Rick Wilson, Chuck Flink, Glen Morris, Larry Gustke)

The first of the two facilitation workshops was designed to orient the Advisory Committee with the data collected during Task I and to allow comments and open discussion to occur between the members of the committee and the Study Team. The format of the workshop was developed in order to: 1) define the goals of the project; 2) determine the target audience; 3) generate ideas on who will own and operate the ERC. Once the material was presented, we asked the members of the committee to individually write on a 3"x5" card, their perception of: What do you want the ERC to be/do?

The following comments were rendered (not edited):

1.) "Ideally, I would like the ERC to help people understand the value of estuaries and how individuals can be stewards of estuaries. This would involve an education program that goes beyond the walls of the facility and is brought directly to the community via presentations, outings. Practically, it should be a place where people have fun and come away with the feeling- what a great place to visit! "I have got to take my friends here"! The two are not incompatible but can be difficult to achieve except for zoos and aquariums

2.) "I hope that the ERC will educate people (all ages who do and will make decisions impacting the estuarine area) about the vital importance of the estuarine area of the state. To do this it must be attractive, comfortable, diverse, accessible, and dynamic."

3.) "- educate regional residents to importance and dimensions of resource protection/allocation strategies.
- underscore interrelationship of various resources and why they are important to the quality of life that they enjoy.
- allow them to first-hand (personally) experience the natural wonders of the region (make swamps accessible)
- foster research with direct applications to resource mgmnt. decisions."

4.) "Should be a place where individuals or groups would go for hands on experience in learning about the importance of the estuary. As such, the location along a major thoroughfare is not as important as one where additional sites/facilities are available (lower coast as well possibly). Also a facility to be used by higher (college) level education with interns serving as guides/teachers etc."

5.) "The ERC should be the primary facility in the state that informs the public about what estuaries are, their importance to society, as well as their historical and recreational contexts. Programs sold include educational programs for schools and the public, plus an array of related issues and activities (e.g., discussions of local or regional land use development, seafood festivals, historical exhibits, etc.). An important point will be to make the message of this facility clear and distinct from the aquariums, maritime museum and other existing facilities."

6.) "Should be hands-on a la Boston Science Museum or Discovery Place in Charlotte
- Needs a library resources or environmental staff
- Could have a mobile unit for use at schools, public groups
- Sponsor seminars of interest to participation groups- bird watchers, schools kids, etc.
- Estuarine research facility
- sponsor teacher workshops
- Eco-watch programs - people have walks through the woods with a scientist"

7.) "I want the ERC to be a place where children and adults become aware of the treasure that we have in our estuarine systems. I want local people to learn about our area. I want them to feel that they are directly responsible for the environmental health of the region. I want them to feel the beauty and unique habitat of this area. So often, those close to an area ignore it completely. I want our center to open eyes-open minds-open hearts. I want the kids to be able to touch a crab or catch a fish and know that the crabs and fish will disappear if we don't take care of our region. Wonder and magic are all around us- the ERC's job is to sow this. School kids, primarily adults are important too."

8.) "Become an educational site to teach young children about estuaries. Must include activities that children can do-touch, feel, experiment.
- provide a center where teachers (educators) can attend staff development activities to become more knowledgeable about estuaries/environment.
- offer a site where the public can learn and become aware of their role in estuarine preservation.
- Become a community attraction that the citizens can brag about (Pride for Community)
- Provide a site where research can take place through cooperation with a major university."

Comments from the cards were summarized and put on a larger chart for everyone to respond to and generate any new or modified thoughts that may occur. The following list are the comments in summary form:

What do you (committee members) want the ERC to be/do?

- Hands-on learning (all levels)/ near/in estuary
- Cultural way of life
- Regional Education
- Fostering research - applied- relevant to regional, cultural, historical and natural resources.
- Resource center - personnel, library
- Community attraction
- Stewardship
- Fun Experience
- Exciting and dynamic
- Mobile education and outreach
- Eco-watch

The second part of the workshop was a series of "brainstorming" exercises oriented towards developing information concerning the following:

1) Scale of the facility relative to the magnitude of geographic area throughout which the center would focus its services. The following comments were recorded:

- Mid-Atlantic.
- Albemarle-Pamlico Region.
- Theme Focus on Regional Level.
- Scale tempered by funding (What may impress legislature?) (may eventually be funded by state).
- If regional education is focus then ERC should be Regional Scale.
- Start small and plan for future growth.
- May depend upon the interest of the community where the ERC is located.

2) Services that the ERC may provide to the clientele:

- Library
- Cafeteria
- Auditorium
- Access to Boat (Local Fisherman)
- Proximity to diversity of estuarine environments
- Lab
- Elderly Facility access
- Ancillary concessions
- Overnight Accommodations (location/siting of ERC)
- Aquariums/touch-tanks
- Interactive computer displays-direct link that can be used in schools
- Living History - commercial fisherman, artists, literature, other cultural.

3) Users of the ERC:

- Residents
- Farmers
- Urbanites
- Industrial workers
- Blue collar workers
- Lay persons
- Comm./recreational fisherman
- People who make living from estuary
- Tourists
- Retirees
- Students
- Scholars
- Scientists
- Rural/isolated citizens

4) Suggestions for the operational providers for the ERC:

- Non-profit coalition
- State
- University
- Volunteers
- "Spin-off" for profit

Facilitation Workshop #2

Date: May 20, 1991

Location: PTRF Office- Washington, NC

Attendees:

Carolyn Hess
Linda Boyer
John Taggert
Mary Walter Rumley
David McNaught
Joe Stutts
Tom Howard

(Study Team - Rick Wilson, Chuck Flink, Glen Morris, Larry Gustke)

The second facilitation workshop focused upon the adoption of goals and objectives for the NCERC and the review of the Market Analysis and the Storyline/Mission Statement summaries.

Location, Marketing and Promotion, and Financial Aspects were all discussed throughout the meeting.

It was agreeable that the ERC needs to personalize the estuarine environments and relate the fragility and finitude of their ecology to the livelihoods of the regional residents. It must touch people in both their hearts and minds. Interdependence is a key to the educational element of the center.

Similar Regional Facilities

Facility Addresses

Mr. C. Mac Rawls, Director
Virginia Marine Science Museum
717 General Booth Blvd.
Virginia Beach, Virginia 23451
(804) 425-3476

Mr. Gehrig Spencer, Site Manager
Fort Fisher State Historic Site
P.O. Box 68
Kure Beach, N.C. 28449

Mr. Robert Woody
Chief of Intrepretation
Cape Hatteras National Seashore
Route One, Box 675
Manteo, North Carolina 27954

Mr. Rhett White, Director
North Carolina Aquarium/Roanoke Island
P.O. Box 967
Manteo, N.C. 27954
(919) 473-3494

Ms. Julie Pouliot
Va. Beach Maritime Museum, Inc.
t/a Life-saving Museum of Virginia
P.O. Box 24
Virginia Beach, Virginia 23458
(804) 422-1587

Ms. Alice C. Haines, Curator
Portsmouth Naval Shipyard Museum
P.O. Box 248
Portsmouth, Virginia 23705
(804) 393-8591

Mr. Zach Allen, Director
Western North Carolina Nature Center
75 Gashes Creek Road
Asheville, North Carolina 28805
(704) 298-5600

Mr. Rob Russ, Assistant Director
Winston Salem Nature Science Center
Museum Drive
Winston Salem, North Carolina 27105
(919) 767-6730

Mr. Ed Vonderlippe, Director
Greensboro Natural Science Center
4301 Lawndale Drive
Greensboro, North Carolina 27408
(919) 288-3769

Mr. Dick Thomas
Piedmont Environmental Center of High Point, Inc.
1228 Penny Road
High Point, North Carolina 27260
(919) 454-4214

I. VISITATION

a) Visitor count by month and year
b) Visitor count by group and age
c) Vehicle counts
d) Duration of visit
e) Cost of operation per visitor

II. OPERATIONS

a) Concessions:
- Concessionaire
- Type of merchandise

b) Volunteers and Support Groups
c) Co-operative associations
d) Operational Expenses:
- Physical Plant
- Visitor services
- Research and programming

e) Funding of facility and percentage break-down
f) Media and advertising costs

III. THE FACILITY'S MISSION

a) Goals and objectives
b) Services

IV. THE FACILITY

a) Date first opened to the general public
b) Building size by square footage:
- Exhibit space
- Lobby, restrooms, office, utility, and storage space

c) Parking
d) Acreage
e) Additional facilities

f) Type of exhibits:
- Artifacts
- Visual

g) Operational schedule

V. STAFF

a) Positions--type and description
b) Salaries
c) Term of duty as seasonal, permanent, etc.

Facility Addresses:

The South Slough Reserve Interpretive Center
Contact: Mary Enstrom
P.O Box 5417
Charleston, OR 97420
(503) 888-5558

Padilla Bay National Estuarine Research Reserve
Contact: Terry Stephens
1043 Bayview-Edison Rd.
Mt. Vernon, WA 98273
(206) 428-1558

Old Woman Creek NERR
Contact: Eugene Wright, Manager
2514 Cleveland Road, East
Huron, OH 44939
(419) 433-4601

Sapelo Island NERR
Contact: Bob Monroe, Manager
Department of Natural Resources
P.O. Box 19
Sapelo Island, GA 31327
(912) 485-2251

Waquoit Bay NERR
Contact: Christine Gault, manager
Department of Environmental Management
P.O. Box 92W
Waquoit, MA 02536
(508) 457-0495

Wells NERR
Contact: Jim List, Manager
RR #2, Box 806
Wells, ME 04090
(207) 646-1555

Apalachicola NERR
Contact: Woodward Miley, Manager
261 7th St.
Apalachicola, FL 32320
(904) 653-806

Rookery Bay NERR
Contact: Gary Lytton, Manager
10 Shell Island Rd.
Naples, FL 33942
(813)775-8845

Elkhorn Slough NERR
Contact: Steven B. Kimple
1700 Elkhorn Rd.
Watsonville, CA 95076
(408) 728-0560 or 2822

Tijuana River NERR
Contact: Paul Jorgensen, Manager
301 Caspian Way
Imperial Beach, CA 92032
(619) 575-3613

I. VISITATION

a) Visitor count: per month/per year
b) Visitor count by group and age:
c) Vehicle counts:
d) Duration of visit:
e) Cost of operation per visitor:
f) Admission Fee:

II. OPERATIONS

a) Concessions:
- Concessionaire
- Type of merchandise

b) Volunteers and Support Groups:
c) Co-operative associations:
d) Operational Expenses:
- Physical Plant
- Visitor services
- Research and programming

e) Funding of facility and percentage break-down
f) Media and advertising costs

III. THE FACILITY'S MISSION

a) Goals and objectives:
b) Services provided:

IV. THE FACILITY

a) Date first opened to the general public:
b) Building size (square footage):

- Exhibit space
- Lobby
- Restrooms
- Office
- Utility
- Storage space

c) Parking (number of spaces and surface type):
d) Acreage:
e) Additional facilities:
f) Type of exhibits:
- Artifacts
- Visual displays
- "Hands-On"/Experiential
- Interpretive Trails/Field Trips

g) Operational schedule:

V. STAFF

a) Positions--type and description:
b) Salaries:
c) Term of duty as seasonal, permanent, etc.:

VI. OTHER COMMENTS (Educational Programs, Research, Future expansion plans/dreams, etc.):

Natural Science Programs Curriculum Survey

February 22, 1991

1) Do you offer courses in?

☐ Ecology ☐ Oceanography
☐ Biology ☐ Geology
☐ Chemistry ☐ Physics
☐ Other_____

- At which levels are these courses offered?
☐ Primary ☐ Secondary ☐ Both

- How many students are annually enrolled in the course(s)? _____

2) Do these courses involve field trips?

☐ Yes ☐ No

- If yes, how many trips are taken per year? _____

- What would be the typical distance you would travel?

_____ Miles _____ Hours

- How much time do you allot for field trips?

☐ 1/2 Day ☐ Full Day ☐ Overnight

- How much do you spend or plan on spending for such field trips?

$_____ Transportation $_____ Meals

$_____ Admission $_____ Other

- What constraints, other than budgetary, do you have in taking field trips?

3) Please check all of the existing facilities you visit with your students.

☐ Aquariums ☐ Historic Sites
☐ Marine Labs ☐ Parks
☐ Museums ☐ Other_____

- Any of the above that you or your students favor?
(Please number the above from 1-6, 1 being most favored)

4) Do you have natural resource specialists visit your school or class to talk about the value of protecting coastal resources?

- If yes, who are they and what agencies do they represent?

- If no, would you use these resources if available?

5) Do you feel that there is a need for an Estuarine Resources Center to help with the education of your students?

☐ Yes ☐ No

- If yes, in what capacity?

6) Where do you feel a facility such as this should be located?

7) Other comments (Please use back of sheet if necessary):

PLEASE ENCLOSE THE SURVEY IN THE ENCLOSED SELF-ADDRESSED ENVELOPE AND RETURN BY **MARCH 15, 1991.** THANK YOU FOR YOUR TIME.

If you have any questions about the survey please call Chuck Flink or Rick Wilson (Greenways Incorporated) at 919-380-0127, Larry Gustke (North Carolina State University, Recreation Resources Dept.) at 919-737-3276, or David McNaught (Director, Pamlico-Tar River Foundation) at 919-946-7211.

The North Carolina Estuarine Resources Center

1) Proximity to Estuarine and Wetland Environments Data

	estuarine sub-tidal	estuarine intertidal	non-tidal freshwater
Plymouth	YES	NO	YES
Washington	YES	NO	YES
Edenton	YES	NO	YES
Columbia	YES	NO	YES
Belhaven	YES	YES	YES
Bath	YES	YES	YES
Greenville	NO	NO	YES
Eliz. City	YES	NO	YES
Goose Creek SP	YES	YES	YES
Pettigrew SP	NO	NO	YES
Mattamuskeet WR	YES	YES	YES

2) Accessibility Data

Community	U.S. Highway	State Highway/Road	Interstate Interchange	Navigable Waterway	Traffic Vol. (24 hrs.)
Plymouth	US-64	NC-32, NC 45	I-95 (80 miles)	Albemarle Sd./Roanoke R.	19,700
Washington	US-17, US-64	NC 33	I-95 (57 miles)	Pamlico River	54,300
Edenton	US-17	NC 32, NC 37	I-95 (90 miles)	Albemarle Sd./Chowan R.	22,000
Columbia	US-64	NC-94	I-95 (110 miles)	Intracoastal Waterway	11,600
Belhaven	US-264	NC-92, NC-99	I-95 (110 miles)	Pungo River	10,800
Bath		NC-92		Pamlico River	2,500
Greenville	US-264, US-13	NC-43, NC-33, NC-11	I-95 (35 miles)	Tar River	84,500
Eliz. City	US-17, US-158/168		I-95 (115 miles)	Intracoastal Waterway	43,600
Goose Creek SP	US-264 (2 miles)	SR-1334	I-95 (67 miles)	Pamlico River	3,000
Pettigrew SP	US-64 (7 miles)	SR-1142,1160,1166	I-95 (135 miles)	Scuppernong River/canal	3,600
Mattamuskeet WR	US-264 (.5 miles)	NC-94	I-95 (125 miles)	Pamlico Sound (5-miles)	1,000

3) Education Data

	Plymouth	Washington	Edenton	Columbia	Belhaven	Bath	Greenville	Eliz. City
Elementary	2-County	3-City, 6-Cty.	2-County	1-County	6-County	1 (K-8)	19-County	6-County
enrollment	2,010	4,432	1,350	420	2,040	490	9,031	3,198
# of Teachers	117	167	78	20	125	35	508	194
Junior High	0	1-City, 1 Cty.	1-County	0	1-County		6-County	1-County
enrollment	0	1,565	428	0	719		3,460	755
# of Teachers	0	76	32	0	43		238	55
High School	2-County	1-City, 4Cty.	1-County	1-County	3-County		6-County	1-County
enrollment	924	2,161	728	334	1,196		4,496	1,330
# of Teachers	66	164	52	27	88		326	97
Private	0	0	1 (K-12)	1 (K-12)	0		6 (K-12)	2 (K-12)
enrollment	0	0	100	90	0		941	248
# of Teachers	0	0	9	10	0		76	22
Post High School	Not Local	Beaufort C.C.	Not Local	Not Local	Not Local	Not Local	Pitt C.C.	College of Alb.
							ECU	ECSU
								Roanoke BC
resident enrollment	588	1,698	232	31	1,698	# N/A	4,263	920
Total Enrollment	3,522	8,291	2,310	785	4,934	490	17,790	5,448
Total # Teachers	183	407	171	57	256	35	1,148	368
County Enrollment K-12 (1990)								
	Washington	Beaufort	Chowan	Tyrell	Pitt	Pasquotank	Hyde	
Total Enrollment	2,867	4,056	2,615	778	17,778	5,733	937	

4) Population Data

Community Populations								
	Plymouth	Washington	Edenton	Columbia	Belhaven	Elizabeth City	Greenville	Bath
1980	4,571	8,418	5,357	758	2,430	14,004	35,740	N/A
1988 (est.)	4,905	9,573	5,833	810	2,416	14,632	44,748	157
% Change	7.3%	13.7%	8.9%	6.9%	-0.6%	4.5%	25.2%	N/A
County Populations								
	Washington	Beaufort	Tyrrell	Chowan	Pitt	Pasquotank	Hyde	
1980	14,801	40,355	3,975	12,558	90,146	28,462	N/A	
1988 (est.)	14,639	42,432	4,095	13,695	102,006	30,675	5,411	
% Change	-1.10%	5.10%	3.00%	9.10%	13.20%	7.8%	N/A	

5) Infrastructure Data

Community	Water	Sewer (type)	Solid Waste	Nat. Gas
Plymouth	YES	YES (aeration)	YES (county)	NO
Washington	YES	YES (trick. filter)	YES (county)	YES
Edenton	YES	YES (land app.)	YES (city)	NO
Columbia	YES	YES (ox. ditch)	YES (city)	NO
Belhaven	YES	YES (aeration)	YES (city)	NO
Bath	YES	YES	YES	NO
Greenville	YES	YES (Schreiber)	YES (city)	YES
Elizabeth City	YES	YES (trick. filter)	YES (city)	NO
Goose Creek SP	limited	limited	County	NO
Pettigrew SP	limited	limited	County	NO
Mattamuskeet NWR	limited	limited	County	NO

6) Safety, Security, and Health Services Data

	Police	Fire	Medical
Plymouth	Yes	Yes/Vol.*	hospital, rescue (city)
Washington	Yes	Yes/ FT & Vol.*	hospital, rescue (city)
Edenton	Yes	Yes/ FT & Vol.*	hospital, rescue (city)
Columbia	Yes/County	Yes/Vol.*	rescue/ambul.
Belhaven	Yes	Yes/Vol.*	hospital, rescue (city)
Bath	Yes/County	Yes/Vol.*	rescue/ambul.
Greenville	Yes	Yes/ FT & Vol.*	hospital, rescue (city)
Elizabeth City	Yes	Yes/ FT & Vol.*	hospital, rescue (city)
Goose Creek SP	County	County	County
Pettigrew SP	County	County	County
Mattamuskeet NWR	County	County	County
* = service available beyond corporate limits			

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