

*Evaluation Findings
for the
North Inlet – Winyah Bay National Estuarine Research Reserve
for the period
From December 1999 through January 2005*



Office of Ocean and Coastal Resource Management
National Ocean Service
National Oceanic and Atmospheric Administration
United States Department of Commerce



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I. Introduction

The National Estuarine Research Reserve System (NERRS) was established by the Coastal Zone Management Act (CZMA) of 1972, as amended. Sections 312 and 315 of the CZMA require NOAA's Office of Ocean and Coastal Resource Management (OCRM) to conduct a periodic review of the performance of states and territories with federally-designated NERRs. This document sets forth the evaluation findings of the Director of OCRM, National Ocean Service (NOS), NOAA, with respect to the performance of the State of South Carolina in the operation and management of the North Inlet - Winyah Bay National Estuarine Research Reserve (Reserve or NIWB NERR) for the period of December 1999 through January 2005. This document contains an introduction, review procedures, accomplishments and review findings and recommendations, a conclusion, and appendices.

The recommendations made by this evaluation appear in bold type and follow the section of the findings in which the facts relevant to the recommendation are discussed. The recommendations may be of two types:

Necessary Actions address programmatic requirements of the CZMA, implementing regulations and of the Reserve management plan approved by NOAA, and must be carried out by the date(s) specified.

Program Suggestions denote actions that OCRM believes would improve the management and operation of the Program, but which are not mandatory at this time. If no dates are indicated, the State is expected to have considered these Program Suggestions by the time of the next CZMA Section 312 evaluation.

The findings in this report will be considered by NOAA in making future financial assistance award decisions relative to the Reserve.

II. Program Review Procedures

The Office of Ocean and Coastal Resource Management (OCRM) evaluation staff began review of the NIWB NERR in December 2004. This included an analysis of previous and current award documents and performance reports, approval findings, correspondence relating to the NIWB NERR, and other relevant information. Evaluation staff and Estuarine Reserves Division (ERD) staff coordinated to determine the issues which would become the main focus of the evaluation.

The Evaluation Team determined that the issues listed below would receive particular attention during the site visit:

- ▶ Fiscal management of individual financial assistance awards;
- ▶ Location of the NIWB NERR within the State administrative structure and State support of NIWB NERR activities;
- ▶ The relationship of the NIWB NERR to the education and research communities and the status of research and education grants;
- ▶ The relationship of the NIWB NERR to the relevant public and private interest groups and communities; and,
- ▶ The overall NIWB NERR programmatic goals and administrative direction as a member of the National Estuarine Research Reserve System.

John H. McLeod, Evaluation Team Leader, Susan White, Program Specialist, ERD; and Charlie Moore, Stewardship Coordinator of the ACE Basin National Estuarine Research Reserve, conducted a site visit January 31 through February 4, 2005. The Evaluation Team met with representatives of State and local governments, Federal agencies, interest group representatives, and private citizens during the site visit.

A Public Meeting was held on Tuesday, February 1, 2005, at 5:30 pm, at the Kimbel Lodge. (**Appendix A** lists persons contacted in connection with the evaluation; **Appendix B** lists persons who attended the Public Meeting; **Appendix C** contains NOAA's response to any written comment received.)

The NIWB NERR program staff were instrumental in setting up meetings and arranging transportation. Their support is gratefully acknowledged.

III. Program Accomplishments, Findings and Recommendations

During the review period from December 1999 through January 2005 activities at the NIWB NERR have resulted in many significant accomplishments. These accomplishments are directly attributable to the actions of the core staff members of the NIWB NERR. In addition to the accomplishments listed below, the daily activity of staff requires coordination with a large number of groups and individuals, response to professional queries, interaction with other research reserves, and direct involvement in national studies in support of the overall Research Reserve System. The NIWB NERR core land is owned by the Belle W. Baruch Foundation and is located within the Foundation's Hobcaw Barony lands. The NIWB NERR staff is housed at the Baruch Marine Field Laboratory on Hobcaw, which is the primary facility of the Belle W. Baruch Institute for Marine and Coastal Sciences based at the University of South Carolina. Because of the high degree of integration between the programmatic regimes of the Reserve, roles played by staff have become complimentary and support an overall unity in program delivery. The degree to which the development and maintenance of partnerships with the many resource agencies and local governments which have shared responsibilities within and adjacent to the Reserve is truly impressive. The Reserve Manager and staff are to be congratulated for this exemplary effort. Indeed, the accomplishments detailed below are, in part, due to the extensive coordination practiced in all elements of NIWB NERR management and programming.

A. Research and SWMP Monitoring

The NIWB NERR has a solid record of research activities. More than 70 different research projects were conducted in the NERR annually during the period. Reserve and Baruch Marine Field Lab staff facilitate the use of the site for visiting faculty and students, including sharing data from the NERR System-wide Monitoring Program (SWMP) and other reserve research and monitoring projects. Examples during the review period include:

- Nekton and plankton were sampled biweekly and sampling of benthos was conducted on a quarterly basis. These biological data sets have been maintained over 20 years and provide insights into short and long-term variability and change in the system.
- A National Atmospheric Deposition Program (NADP) station was established (2002) and is maintained in cooperation with South Carolina Department of Environmental Control (DHEC) and the U.S. Environmental Protection Agency. Samples are collected weekly, processed and sent to an NADP lab for analysis.
- A short-term study on the impacts of dredging on water quality was conducted by the NERR. This study used SWMP data from a station near the dredging activity.

The results were published in an article in *Marine Pollution Bulletin* (Lohrer, A.M. and J.J. Wetz 2003. Dredging-induced nutrient release from sediments to the water column in a southeastern salt marsh tidal creek. *Marine Pollution Bulletin* 46: 1156-1163.)

- An invasive crab monitoring project was conducted with external NOAA funds to test the NERRS as a platform for invasive species monitoring. NIWB NERR coordinated the project on behalf of eight participating NERR sites and prepared a summary report. The Reserve presented project results on its website, an invasive species workshop was conducted and a brochure on estuarine invasive species in South Carolina was developed in cooperation with the ACE Basin NERR.
- A paper summarizing the Reserve's water quality data was accepted for publication in the *Journal of Coastal Research*, scheduled to come out in 2005.
- A proposal to establish a salt marsh vegetation biomonitoring program was developed and submitted to ERD-NOAA for funding consideration in FY05. [This project was subsequently funded.]
- NIWB NERR contributed to a proposal for southeast regional synthesis of SWMP data (submitted to CICEET in November 2004 for funding in 2005.) [This project was subsequently funded.]
- During the evaluation period, the NIWB hosted 8 NERR Graduate Research Fellows whose projects focused on invasive species, phytoplankton community structure, estuarine responses to eutrophication, characterization of channels, regulation of macrobenthos by shrimp, and the use of remote sensing tools within estuarine systems.

SWMP was successfully expanded and maintained during the period. The current SWMP program includes YSI Corporation data loggers deployed at four water quality stations (3 in North Inlet and 1 in Winyah Bay), maintenance of a weather station, and nutrient sampling and analysis. Ongoing monitoring occurs on a bi-weekly basis. Discussions with NIWB staff that focused on looking at future monitoring needs resulted in the suggestion that there could be an expansion of monitoring within Winyah Bay to better characterize the area. Additionally NIWB NERR is working in partnership with the DHEC Office of Coastal Resource Management (SCOCRM) to define other monitoring sites and to capture existing DHEC monitoring data. During the review period the following SWMP accomplishments occurred:

- Near real-time meteorological and YSI data are available on-line via the NIWB NERR website for one sampling station (Oyster Landing).
- A NOAA tide gauge (established in 2001) is also located at the Oyster Landing station.

- YSI data loggers were upgraded to extended deployment systems (YSI 6600EDS units) at all four stations in 2002.
- Nutrient sampling exceeded the minimum requirements of the SWMP. Nutrients are sampled at all four stations with ISCO automated water samplers (versus one station with ISCO equipment) every 20 days (versus every 30 days). Analysis of nutrient parameters beyond what is required by the SWMP is also conducted.
- YSI and weather data for the active storm season in 2004 were provided in a timely fashion to the Centralized Data Management Office (CDMO) upon special request to demonstrate the NERRS capabilities for contributing to Integrated Ocean Observing System (IOOS) models.
- SWMP data were submitted on schedule throughout the period.

A mutually beneficial relationship exists between the Baruch Marine Field Lab and the Reserve. It has improved over the years. At the time of the site visit there were 75 active research projects, many of which are interactive between the Reserve and the Lab. The strong data management associated with the Reserve and housing the CDMO also provides a benefit. There is a shared tie with the various resource management and use groups within the area of the Reserve and the Lab shares programs with Clemson University through their Baruch Institute for Coastal Ecology and Forest Science at the forest-wetland interface.

There is an ongoing effort to develop the site profile and a rough draft has been developed. It is anticipated that the draft will be refined and submitted to NOAA in the near future.

Necessary Action

- 1. NIWB NERR must submit a schedule for the submission of the Reserve Site Profile to NOAA OCRM within three months of the receipt of final findings and complete the site profile within the next review period.**

B. Education

NIWB NERR has developed a robust and diversified education program which makes use of the available resources of the Reserve and its partners. Accomplishments during the review period include:

- An Estuary-Net student volunteer water quality monitoring program was conducted throughout the review period. This program has engaged hundreds of students in studies of local waterways and watersheds.

- NIWB NERR has been an EstuaryLive broadcast site during the celebration of National Estuaries Day. In addition to hosting shows in 2001, 2002, and 2003, the Reserve received private support to produce videotape copies of the 2002 show. The tapes, reserve posters and other materials about watersheds were distributed to 80 local schools and libraries. In 2003, NIWB partnered with the other reserve in South Carolina, ACE Basin, to present information about the differences and similarities of the two reserve watersheds.
- Public events including seminars, short courses, and field trips serve as effective ways to share scientific findings with a variety of public audiences. One short course offered regularly from March through December each year, involves volunteers in an on-going fish survey project.
- Website for the North Inlet-Winyah Bay NERR was created: www.northinlet.sc.edu. In addition to housing information about the NERR and its programmatic areas (Education, Coastal Training Program, Research, Resource Management), it hosts information for the South Carolina Beach Vitex Task Force and Coastal Waccamaw Stormwater Education Consortium, groups in which the reserve is actively involved.
- Coastal Issue Workshops for decision-makers were successfully implemented (at least three each year) during the period with attendance ranging from 35-60 participants per workshop.

Field Code Changed

Despite the strength of the education program, there are current staffing and facility needs which should be addressed. These include: 1) the need for additional staff to support other emerging needs of the program; 2) facilities to provide a “window to the community” for the Reserve, a situation which does not now exist; 3) the need to pursue an ongoing program of volunteer support and community outreach; 4) development of a periodic “newsletter” in support of several projected initiatives. [Subsequent to the site visit, NIWB NERR received a grant for constructing an education facility that will be more accessible to the public.]

Program Suggestion

2. NIWB NERR should consider the needs of the programmatic requirements for the growth and development of its education program, particularly as they relate to sufficient staffing and facilities as well as the development of a volunteer program.

C. Outreach

In conjunction with the education program, NIWB NERR has developed a strong program of outreach to the local communities. Accomplishments include:

- 1) provision of training and resources related to stormwater management and watershed planning and protection through partnerships such as:
 - i. work with SCOCRM to provide training on Improving Stormwater Management and Control;
 - ii. ongoing work with the Coastal Waccamaw Stormwater Education Consortium which has developed a web site that documents the meetings of the group;
 - iii. work with Georgetown County where NIWB NERR provided assistance to the County as they selected a stormwater planner;
 - iv. contributions to an EPA project to create a model watershed management plan for the Kingston Lakes watershed of the Waccamaw River;

- 2) addressing regional shoreline and beach management issues such as:
 - i. work with the Beach Vitex Task Force and in beach erosion and renourishment issues;
 - ii. participation in the Integrated Ocean Observation Systems initiatives;
 - iii. focusing on key stakeholder groups in North Inlet (Prince George Residents and Property Owners Association, DeBordieu Community Association and Arcadia East) to provide technical assistance and decisionmaking support.

NIWB NERR Coastal Training Program (CTP) determined that the training needs of municipal and county officials in the two counties closest to the NIWB NERR (Georgetown and Horry counties) were underserved based on a Market Analysis of Coastal Training Providers in South Carolina. As a result, the initial target audience will be local leaders (elected, employed, or volunteer) who make decisions that affect the coastal environment. Because the North Inlet-Winyah Bay CTP will emphasize that functional ecological units (complete watersheds) are the appropriate scale over which to assess resource and land use decisions, officials in the counties to the west of the NERR (Marion, Florence, and Williamsburg Counties) may eventually prove to be priority audiences for the CTP. Feedback collected through a Training Needs Assessment of Municipal and County Officials in Charleston, Georgetown, and Horry Counties narrowed the program's priority training topics to three aspects of Land Use Planning:

1. Stormwater runoff (with an emphasis on contaminants).

2. Beach processes and erosion control (with an emphasis on coastal hazards).
3. Urban/suburban planning.

Predicated on the needs assessment, the NIWB NERR CTP provides practical training using local examples when possible adapted to the particular needs of the audience. Training characteristically involves a diversity of instructors and exhibitions, field activities and round table discussions are incorporated into the format to create an open, supportive learning atmosphere. Because training events appeal to a multiplicity of interests, participants have an opportunity to work with stakeholders from different backgrounds. During the review period the NIWB NERR CTP accomplished the following:

- CTP planning documents (Needs Assessment, Market Analysis, Advisory Committee structure, Marketing Plan, and Strategy Document) were completed and accepted by the CTP Technical Advisory Committee and the program was officially launched in 2003. The CTP Coordinator was actively involved in developing a comprehensive set of performance measures to define program success.
- CTP training events were well attended and addressed key issues identified in the Needs Assessment, particularly stormwater management and watershed planning.
- A CTP website was developed and houses all training events, past and future, with links to presentations and additional resource materials.
- CTP successfully partnered with several organizations and groups, leveraging resources that have resulted in high quality training for targeted audiences.
- CTP and community education program staff members helped form and are contributing to the Coastal Waccamaw Stormwater Education Consortium.
- CTP Coordinator and program, as a result of the successful training events and resource materials, has become a “go-to” resource, particularly for municipal and county staff as well as environmental citizen groups.

D. Resource Management and Stewardship

With a purpose of natural resource protection using internal and external partnerships the NIWB NERR resource management and stewardships program goals are to provide native species and habitat protection, detection and control of invasive species, and restoration. Objectives for the goal to conserve native species and their habitats include development and enhancement of conservation partnerships (SC OCRM, other elements of DHEC, FWS, NOAA, non-profit organizations, commercial and recreational

fishers and others), promotion of land conservation through purchase and easements, support of watershed conservation, the inventory of taxa, identification and preservation of quality habitat, expansion of education efforts, and quantification of resource use. The strategy for land conservation is to identify priority areas, map boundaries, identify potential partners for funding and conservation activities, pursue funding and pursue conservation actions such as purchase and easements. The primary focus is in the northern area of the North Inlet watershed with secondary focus on areas of the Winyah Bay watershed. Other activity highlights include the native species inventory, detection and control of invasive species (particularly beach vitex), and restoration. Accomplishments during the review period include:

- GIS library and mapping capabilities were established with materials posted on the web.
- North Inlet watershed was delineated using LIDAR imagery, providing a foundation for land conservation planning for the NERR.
- Technical assistance was provided for an oyster mapping project supported by a Cooperative Institute for Coastal Estuarine Environmental Technology (CICEET) grant.
- An oyster restoration project in Debidue Creek was conducted in cooperation with members of the DeBordieu Community Association. Preliminary results have been shared in presentations and are posted on the reserve's website.
- The Reserve hosted the first organizational meeting of the South Carolina Beach Vitex Task Force and is represented on the Task Force. NIWB NERR staff members assisted with training workshops, provided GIS mapping of beach vitex (an invasive woody shrub) locations along the coast, and set up and maintain a web site for the task force.
- A Reserve poster featuring a colorful aerial image of the region was developed. It was distributed to all local schools and libraries and copies are available at the Hobcaw Barony Visitor Center at the entrance to the Baruch Foundation property.
- Land conservation priorities for the NERR were identified as part of a study conducted for the NERR system in 2002. Five priority project areas were identified and mapped and form the basis for further land conservation discussions with potential partners.

While NIWB NERR has a motivated resource management and stewardship staff component, there exists an opportunity for applied research which would have a direct impact on near-by communities. Faced with a severe erosion problem, one community routinely redistributes beach sand to protect coastal residences. This represents an issue which that community shares with the rest of South Carolina's coastal area. A desirable

focus for research would be related to the issue of beach renourishment and the flow of sand from north to south. The idea would be to define where sand was coming from where there was accretion and where it was going when there was erosion. This should also have an educational component. Other areas of applied research could address stormwater runoff in the watershed and the impact of, and alternatives to bulkheading canal walls versus “soft” methods of land protection.

Program Suggestion

3. NIWB NERR should consider support for applied research projects which have implications to and provide recommendations for actions which preserve coastal resources and result in appropriate resource use.

E. Coordination

In each of the accomplishments discussed above and those that follow, coordination is central to the ability of the NIWB NERR to carry out its mission. Mutually beneficial relationships exist with the different organizations sharing the general area of the reserve and with individuals and groups at the local, state and national level. Significant among these are:

Local:

- **Hobcaw Barony Resource Advisory Committee** – The Reserve Manager and Baruch Marine Laboratory Director serve on this committee designed to facilitate communications and cooperation among all of the different entities on Hobcaw Barony including the Belle W. Baruch Foundation, Clemson University’s Baruch Institute for Coastal Ecology and Forest Science, the Baruch Institute of University of South Carolina (USC), and NIWB NERR.
- **International Paper Company** – International Paper (IP) Company, one of the largest industries in Georgetown County, is represented on the Reserve’s Advisory Committee. The NIWB NERR received two grants from IP over the past four years in support of the Estuary-Net program and other environmental education activities. The Reserve Manager serves on the IP Community Advisory Council representing environmental interests and concerns in the community. The NIWB NERR Education Coordinator served on a committee in 2004 designed to explore ways to improve environmental emissions through cost-efficient innovative technologies and then channel cost savings into community improvement projects.
- **Murrells Inlet 2007** – This citizen-based group is dedicated to improving the environmental and economic quality of their community. A representative of Murrells Inlet 2007 serves on the NIWB Advisory Committee. The Reserve has

partnered with this group on coastal issue workshops and serves as a scientific resource.

- **Georgetown County** – The Reserve assisted the County in obtaining a grant from SCOCRM to improve access and safety to an abandoned highway bridge used as a platform for fishing. Staff assisted with site design of the “Winyah Bay Fishing and Observation Pier” project and organized Winyah Bay clean-ups. The NIWB NERR GIS Analyst and the Reserve Manager serve on the Community Advisory Board of the “Georgetown County Disaster Resistant Communities” (Project Impact) group focused on designing a hazard mitigation plan for Georgetown County. Additionally, County officials and staff have been active participants in coastal issues workshops and the CTP training events offered during the review period. The NIWB NERR CTP Coordinator has contributed to the natural resource element of the Georgetown County Land-Use Plan and provides regular technical assistance upon request to County staff involved with stormwater planning.
- **Coastal Waccamaw Stormwater Education Consortium** – The CTP Coordinator helped form this group designed to coordinate and advance stormwater education efforts in Georgetown and Horry Counties. The Reserve hosts information about the stormwater consortium on its website and both the CTP and Education Coordinator are active participants in the group.
- **Winyah Bay Focus Area Task Force Invasive Species Subcommittee** – The NIWB NERR Stewardship Coordinator serves on this subcommittee which is interested in research on and control of invasive species in the Winyah Bay area.

State:

- **Office of Ocean and Coastal Resources Management – South Carolina Department of Health and Environmental Control (SCOCRM)** – The Reserve continues to work closely with the SCOCRM. A SCOCRM staff member serves on the Reserve’s Advisory Committee and also represents SCOCRM during meetings of the CTP Coordinating Committee for South Carolina. SCOCRM is a key partner for CTP training events and provided financial resources to bring experts from the Center for Watershed Protection to two very productive and pivotal training events in 2003.
- **South Carolina Sea Grant Consortium** – The Sea Grant Director serves on the Reserve’s Advisory Committee and is also a member of the CTP Coordinating Committee. SC Sea Grant is a key partner with the Coastal Training Program and has contributed resources to training events. The Reserve Manager serves on the Sea Grant Consortium’s Education Advisory Committee. The Baruch Director is on the SC Sea Grant Program Advisory Board.

- **Southeastern Center for Ocean Science Education Excellence (SECOSEE)** – The Reserve Manager served on the original organizational committee for this Center which received funding to enhance collaboration among educators and marine scientists in North Carolina, South Carolina and Georgia. The Reserve Manager and the Director of the Baruch Institute, USC, and Chair of the Reserve’s Advisory Committee, are members of the SECOSEE Board of Advisors and the Reserve Manager was elected as co-chair of the SECOSEE Board in 2004. The Reserve hosted a meeting of the Board of Advisors in the summer of 2004 and will be the site of a SECOSEE Summer Institute for Teachers in 2005.
- **South Carolina Beach Vitex Task Force** – This group, formed during a workshop hosted by the Reserve in 2003, is involved with assessing the distribution and impacts of beach vitex, a plant introduced to coastal communities that appears to spread rapidly and out-compete native dune plants. The NERR is represented on the Task Force, has been involved with training events about beach vitex, and is hosting the website for the group.

National:

- **NOAA Coastal Services Center (CSC)** – The Center is represented on the CTP Coordinating Committee for South Carolina and the Reserve co-sponsored several coastal issue workshops with the CSC, including two that were held at their facility in Charleston.
- **National Marine Educators Association (NMEA)** – The Reserve Manager served as president of NMEA in 2002 and 2003 and was on the NMEA Board from 2001 through 2004. The Manager currently serves as co-chair of the NMEA Long-Range Planning Committee.
- **Other Professional Societies** – Reserve staff and graduate students attended and contributed papers and posters during conferences of the Estuarine Research Federation, Southeastern Estuarine Research Society, the American Fisheries Society, the North American Benthological Society and the American Society of Limnology and Oceanography.

These many interactions at several levels are strengthened through affiliation with the USC-based Baruch Institute for Marine and Coastal Sciences and its programmatic activities and administrative infrastructure

Despite the high degree of coordination which exists, the NIWB NERR struggles to develop a public identity in its own right. Access to the area is poorly signed and is not identified as a National Estuarine Research Reserve. Should one actually depart the highway at the one access point, actually accessing the Reserve facility would prove daunting because it is controlled and restrictive. It is not a place for the casual individual to “drop in” to see what’s there. The Baruch Foundation’s Hobcaw Barony Visitor Center

does serve to provide an access point, but it is preoccupied with its own program and has rooms which serve multi-functional roles. Access beyond the Visitor Center is restricted.

The Baruch Institute, Clemson University and USC do have voluntary groups that nominally support their programming. Such groups do not interact in any coordinated way. NIWB NERR uses volunteers, but its program is in formative stages. USC Baruch has a “Friends” organization, but it is not active, or at least is not aggressive, and there is no major campaign underway at this point. Clemson also has a support group of some sort and the Baruch Foundation has a support group. In all cases it appears that none of the groups are particularly active. It would be timely to discuss some sort of joint support group so long as the individual character of the individual groups is not lost.

There is a need to increase local knowledge of the Reserve (and its associated partners) and what it has to offer the communities which abut and affect its boundaries and associated indirect resources. To this end, there is a need for more facilities to provide for education, outreach and coordination. Concurrently, there is the need to develop an ongoing supportive constituency to provide support to and an external voice for its multiple needs, resource capabilities, and decisionmaking support knowledge and data.

Program Suggestion

4. NIWB NERR should work to develop a singular identity as it works to coordinate its activities within and among the various actors at the Reserve. At a minimum, there should be some signage which articulates the Barony as a Partnership among the NIWB NERR/NOAA, the Baruch Foundation, USC Baruch and Clemson University. Likewise actions which lead to the development of cohesive community support, such as a “Friends Group” should be taken in concert with efforts of the partners within the greater Reserve area. Any such group development should take into account and, to the highest extent possible, coordinate with the existing efforts of the partners.

F. Management

Management of NIWB NERR is built on its solid staffing and on the facilities available on site. The Reserve Headquarters Building was completed and dedicated in 2002. The 4,500 square foot structure includes six offices, a monitoring lab, classroom and library, and is connected to the Baruch Marine Field Laboratory with an enclosed, elevated walkway. Nevertheless, there are several areas which need to be addressed: the NIWB NERR Management Plan needs to be completed; the Reserve boundary and, particularly the “buffers” or protective lands that lie adjacent to the pristine elements of the Reserve, need to be defined; and, space, equipment and facility planning needs to be considered from a long term perspective.

Management Plan Completion

Currently NIWB NERR staff is working on the revision of its Management Plan and has identified issues and primary goals for the Reserve to address. The issues are: impacts of coastal growth in the North Inlet and Winyah Bay watersheds on water habitat quality, ecological communities and species of concern with goals of maintaining water quality in North Inlet and Winyah Bay, maintaining habitat quality, and promoting stewardship of the resources in the Reserve; the impact of naturally occurring short-term, stochastic and long-term, large scale climate events on coastal ecosystems and human communities with goals to enhance understanding of climate variability and its effects on ecosystem processes and resources, and to assist communities and coastal decision makers in planning for long-term and stochastic climatic events; and, habitat alteration and loss and loss of species with goals of conserving native species and their habitats, detection and control of invasive species, and restoration of habitat.

Necessary Action

5. NIWB NERR must provide NOAA OCRM a schedule for the submission of the Reserve Management Plan within one month of the receipt of the final findings and complete the management plan within 18 months.

Boundary Definition

The Reserve does not have much experience in land conservation efforts and the issues surrounding land protection and use. NIWB NERR can be viewed as a “core” of property within an area of land holdings controlled and managed by USC, Clemson and the Baruch Foundation for conservation, research and education purposes. It is being encroached upon by land development to the north. The Atlantic Ocean and Winyah Bay provide the boundary to the east and south, and Route 17 provides a practical boundary to the west.

In attempting to address the need for an education center for the Reserve, there was a planning effort to develop one on the “Prince George site.” It was noted that the Prince George property owned by the USC Development Foundation is not adjacent to the Reserve and is not within the defined area of the Reserve. Since original planning, the decision has been made to develop interpretive nature trails and kiosks which might support educational activities of the Reserve, but would have a wider public appeal. However, this opens the door to consideration of some form of planning for the Reserve site in concert with and in mutual support of the Belle W. Baruch Foundation. Likewise, it would be desirable to tie all USC efforts (including that of the Prince Georges site) to translate the message of regional environments and resources. There was support expressed in meetings with the Reserve partners for an expansion of Reserve boundaries to include adjacent areas in common protective status, and to areas north of the North Inlet to the Prince George site area.

Program Suggestion

6. As NIWB NERR develops its Management Plan it should also consider the implications of an expanded boundary addressing: how best to preserve the integrity of the core reserve site through the use of placing adjacent properties in protected status; whether those adjacent areas should be identified as within the boundary of the Reserve or not; how the integrity of the partnered programs will be maintained if their lands become incorporated within the Reserve boundary.

Space/Equipment/Facility Planning and Needs

There are other considerations which must be dealt with in a practical manner such as more space and equipment for programming. It is recognized that space for programming is limited and more is needed. Areas of consideration include more “bench” space to promote research. Lab space, which is “at a premium” largely because the smaller labs have been converted to office space, needs to be developed. While overnight and short-term lodging space is currently adequate, more family units and housing for the longer term (i.e. summer) are needed. The CDMO will need additional space to accommodate ocean observation needs. They currently occupy 2 offices intended for 2 people but new computer infrastructure needs have restricted this (half of another office is given to one of these staff).

The ability to fully meet the needs of the training program is limited by the size of the support boat, a 21 foot whaler. In addition to the limitation of the size of the boat, the driver has clearance to drive the boat with a maximum of 6 paying program participants (each group pays \$175.00 regardless of group size for use of the boat with an interpreter for a guided marsh experience). While meeting the needs of obtaining a captain’s license for more passengers is only a matter of three days training and satisfactory completion of a test at a relatively small cost, the acquisition of a larger boat represents a greater investment. Currently each program has 15 to 20 participants, which requires several trips from the dock to the beach with a learning experience carried out while on the water en route. Approximately 10 programs are conducted in a year. The acquisition of a larger boat would allow for some program expansion and a greater learning experience for the participants.

It is understood that growth of facilities and purchase of major equipment and support materials will be dependant on Reserve needs, and thus must be identified well in advance by need so that they can be supported. Development for more lab space, office space, and lodging needs to be planned in advance so that once the need is documented and the funding is identified, development can progress when and where it should.

Program Suggestion

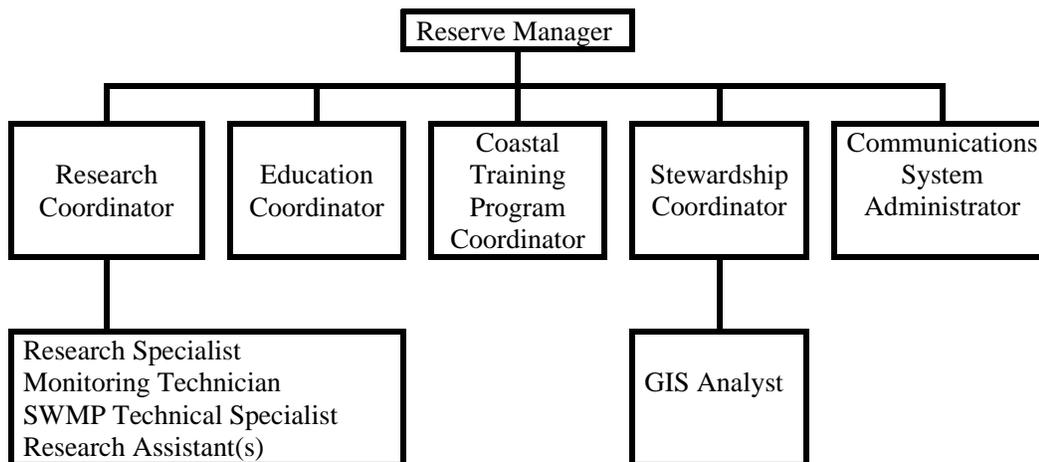
7. As part of the considerations made in development of the Reserve Management Plan, NIWB NERR should define future needs for office, laboratory, and program space, taking into consideration future resources for operation and maintenance. Likewise, major purchases to support Reserve activities and programs should be identified and documented.

G. Grants Management

Overall grants management is provided by the University of South Carolina Research Foundation Management Office, which is involved in the proposal process and assures the data needed for an application is complete and placed within their electronic system for approval of proposals and grants. Grants submission to NOAA is timely and meets the different requirements of the NOAA Grants Office process. Recently the first proposal to “grants.gov” was successfully submitted.

H. Staffing

The NIWB NERR is fully staffed with qualified people and it was clear from comments received during the evaluation site visit and from direct observation that they work well as a team. All core staff positions are filled and are identified below:



I. System-Wide Contributions

NIWB NERR has made, and continues to make, significant contributions to the national research reserve system. The Centralized Data Management Office (CDMO) is

housed at the North Inlet-Winyah Bay NERR in South Carolina. It was established in support of the National Estuarine Research Reserve's (NERR) System-wide Monitoring Program (SWMP) that is currently implemented at 26 reserves in the U.S. and Puerto Rico. The purpose of the CDMO is the management of system-wide monitoring of program data for the NERRS. CDMO staff are provided space in the Reserve Headquarters Building and the Reserve and Baruch Marine Field Laboratory provide facility and administrative support for the program. Other accomplishments during the review period include:

- Host site for Technical Training Workshops provided for all NERR sites by the CDMO (FY01, 02, 03, 04) and also meetings of the NERRS Data Management Committee.
- Testing of Chlorophyll-a probe for the YSI data loggers was coordinated by NIWB NERR on behalf of the system. A summary report of results from several NERR sites was used to determine whether to add this probe to the units used with the SWMP.
- Estuary-Net System-wide Evaluation project was coordinated by the NIWB NERR in collaboration with the Estuarine Reserves Division of NOAA (FY00).
- Co-hosted the NERRS/NERRA Annual Meeting with the ACE Basin NERR in October 2003.
- Southeast regional meeting of Education and CTP Coordinators – Reserve staff participated in this first regional meeting held at the Sapelo NERR that resulted in improved coordination and sharing of ideas and resources to address issues of regional concern.
- NERRS Committees and Workgroup participation - Reserve staff members have served on numerous NERRS committees and workgroups over the past four years including: NERRS Action Plan Workgroup, CTP Technical Advisory Committee, NERRS Annual Meeting Planning Workgroup, NERRS Formal Education Committee, NERRS Habitat Mapping and Change Workgroup, and the NERRS IOOS Integration Workgroup. The Education Coordinator, also served as the education representative to the National Estuarine Research Reserve Association, 2003-2004, and participated in several of the sector meetings during her term.

J. Geographic Information System

NIWB NERR has developed its own geographic information system to support its program components. Specific accomplishments in this area include building a spatial database for use with tracking the invasive beach vitex distributions, marsh edge delineation, land conservation priorities and additional watershed modeling efforts

(including the use of elevation data to create a surface model to better define the watershed area). Having the ability to create spatial maps of the Reserve and its surrounding areas allows for clearer presentations at public meetings, assists the education and outreach elements of the program, and provides the underpinning for land use analysis and planning.

IV. Conclusion

Based on the recent evaluation of the NIWB NERR, I find that the State of South Carolina is adhering to its federally approved management plan and the terms of the NOAA financial assistance awards. A number of significant accomplishments are occurring in Reserve research and education.

These evaluation findings contain 8 recommendations. Two (2) are necessary actions that must be accomplished by the State within the specified time frame. The remainders are program suggestions that the State should address before the next regularly scheduled program evaluation, but which are not mandatory at this time. Program suggestions that OCRM must repeat in subsequent evaluations, however, may be elevated to necessary actions (which must be acted upon within specific time frames or financial assistance may be jeopardized).

This is a programmatic evaluation of the NIWB NERR that may have implications regarding the State's financial assistance award(s). However, it does not make any judgments on, or replace any financial audit(s) related to, the allocability of any costs incurred.

Date

David M. Kennedy, Director

APPENDIX A
North Inlet – Winyah Bay National Estuarine Research Reserve
312 Evaluation

PERSONS CONTACTED DURING THE EVALUATION

Madilyn Fletcher	Director, Belle W. Baruch Institute for Marine and Coastal Sciences (BIMCS)
Margaret Bergin	Office Manager, BIMCS
Dwayne Porter	Director, Centralized Data Management Office, BIMCS

North Inlet – Winyah Bay National Estuarine Research Reserve

Wendy Allen	Reserve Manager
Erik Smith	Research Coordinator
Tracy Buck	Monitoring Technician
Amy Cook	SWMP Technical Specialist
Bill Johnson	Research Specialist
Sarah Foose	Research Assistant
Jennifer Keesee	Research Assistant
Beth Thomas	Education Coordinator
Jeff Pollack	CTP Coordinator
Anna Toline	Stewardship Coordinator
Laura Schmidt	GIS Analyst
Jenni Beseres	NERRS Graduate Research Fellow

Belle W. Baruch Marine Field Laboratory

Dennis Allen	Director
Scott Neubauer	Assistant Director
Paul Kenny	Research Resource Specialist
Ginger Ogburn –Matthews	Data Manager/Analyst

The Belle W. Baruch Foundation

George Chastain	Manager
George Geer	Trustee, Belle W. Baruch Foundation
Richard Camlin	Senior Interpreter, Hobcaw Barony Visitor Center

Baruch Institute of Coastal Ecology and Forest Science, Clemson University

George Askew	Director
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Others

Tom Garigen	Horry County Stormwater Management
Hamp Shuping	Waccamaw River Keeper
Susan Libes	Professor of Marine Science, Coastal Carolina University
Jimmy Chandler	SC Environmental Law Project (SCELP)
Amy Armstrong	SCELP
Nancy Cave	Coastal Conservancy League
Betsy Brabson	Project Coordinator, SC Beach Vitex Task Force
Blanche Brown	General Manager, DeBordieu Community Association (DCA)
Bill Clary	Board Member, DCA
Rick DeVoe	Executive Director, SC Sea Grant Consortium
Mike McKenzie	Manager, ACE Basin NERR
Marianne Page	South Carolina Office of Coastal Resource Management, Department of Health and Environmental Control

APPENDIX B

**North Inlet – Winyah Bay National Estuarine Research Reserve
312 Evaluation**

PERSONS ATTENDING THE PUBLIC MEETING

A Public Meeting was held on Tuesday, February 1 at 5:30 pm, at the Kimbel Lodge.

No one attended.

APPENDIX C

**North Inlet – Winyah Bay National Estuarine Research Reserve
312 Evaluation**

WRITTEN COMMENTS RECEIVED AND RESPONSE

No written comments were received.

APPENDIX D

North Inlet – Winyah Bay National Estuarine Research Reserve 312 EVALUATION

Response to the Previous Evaluation Recommendations

1. NECESSARY ACTION: The NI-WB NERR and University must develop a staff and funding plan to address the long-term needs of a separate Reserve Manager, education and other program staff, thereby increasing the funds available for program activities. This plan must be developed within one year of receipt of final findings. All efforts to address these and other staffing needs must be documented in performance reports.

Response: This action was completed within the requested time frame and the plan was outlined in the Annual Report for 2000-2001. Putting the plan into action, however, has not been fully realized in terms of securing non-federal support for positions. State budgets continue to be dismal and a plan to seek private support for Reserve activities is still the most viable alternative at this time.

2. NECESSARY ACTION: The NI-WB NERR must prepare and submit a revised Draft Management Plan to NOAA for review and approval within three years of receipt of final findings.

Response: The lack of a full complement of core staff for most of the summer and into the fall of 2004 made it difficult to make significant progress on management plan revisions until late fall. Critical gaps in positions (Research Coordinator and Stewardship Coordinator) were filled in October 2004. With new people in place, it is once again possible to address the future of the reserve program in a strategic fashion. The new team of core staff members participated in several meetings in November and December designed to frame goals, objectives and strategies around agreed upon resource issues of critical importance to the reserve. These planning sessions resulted in a new integrative approach for the plan that focuses on issues rather than traditional programmatic areas of research, education and resource management. A revised outline for the management plan and a draft of this key chapter that includes goals, objectives and strategies for major resource issues was shared with the Estuarine Reserves Division in December 2004 for comment and reaction to the cross-program approach. Once feedback on the approach is received, the Reserve staff anticipates being able to move forward in completing the plan in a timely fashion.

3. PROGRAM SUGGESTION: Depending on the availability of funding, the NI-WB NERR must make every effort to complete the site profile document before the

next evaluation. All activities related to its development must be documented in performance reports.

Response: Since June 2004, coordinators for the project have completed several chapters of the document. They have also identified reserve staff members and others to complete particular sections of the site profile based on their areas of expertise. As is the case with the Revised Management Plan, the plan is to complete and publish the Site Profile this year as a task under the current operations grant.

4. PROGRAM SUGGESTION: NI-WB NERR and the University of South Carolina are encouraged to develop an equipment needs assessment and funding plan to purchase equipment needed to support the Reserve's activities.

Response: The Reserve was able to address most of the identified equipment needs in a timely fashion. Interest remains in securing a larger boat for use primarily with educational groups. There are several issues associated with such a venture including added maintenance and operational expenses, Coast Guard certification of staff to operate a boat for groups, and liability issues.

5. PROGRAM SUGGESTION: The NI-WB NERR and the University are encouraged to pursue the development and establishment of a volunteer program, including hiring appropriate staff support necessary to operate an effective volunteer program.

Response: The Reserve continues to enlist volunteers in specific projects (Estuary-Net, fish sampling program, marsh clean-up, oyster restoration project) from time to time and anticipates some expansion of these kinds of activities as the stewardship program matures. However, without a more publicly accessible facility there is currently no major need for volunteers on a day-to-day basis. This may change in the future should programs and facilities expand.

6. PROGRAM SUGGESTION: The Reserve, the University of South Carolina and SC OCRM should work together to develop clear guidance on the role of the Reserve in the permit process and to ensure that the Reserve's role is carried out effectively.

Response: The Reserve has a very positive working relationship with its state coastal zone program partner. SC-OCRM is represented on the Reserve Advisory Committee and participates in every meeting. They are also key partners in the Coastal Training Program and actively engaged the Reserve in the development of a Coastal and Estuarine Lands Conservation Program (CELCP) plan for South Carolina. The regulatory branch of SC-OCRM has also been forthcoming in alerting the NIWB NERR to projects within or close to its boundaries and the Reserve has provided responses as deemed appropriate.

APPENDIX E

**North Inlet – Winyah Bay National Estuarine Research Reserve
312 EVALUATION**

TABLE OF RECOMMENDATIONS

Evaluation Recommendations For: South Carolina

Evaluation Findings Issued: _____ (Date)

Number/Type of Recommendation		Recommendation Text	Required Date
Number	1	NIWB NERR must submit a schedule for the submission of the Reserve Site Profile to NOAA OCRM within three months of the receipt of final findings and complete the site profile within the next review period.	
Necessary Action	X		
Program Suggestion			
Number	2	NIWB NERR should consider the needs of the programmatic requirements for the growth and development of its education program, particularly as they relate to sufficient staffing and facilities as well as the development of a volunteer program.	
Necessary Action			
Program Suggestion	X		
Number	3	NIWB NERR should consider support for applied research projects which have implications to and provide recommendations for actions which preserve coastal resources and result in appropriate resource use.	
Necessary Action			
Program Suggestion	X		
Number	4	NIWB NERR should work to develop a singular identity as it works to coordinate its activities within and among the various actors at the Reserve. At a minimum, there should be some signage which articulates the Barony as a Partnership among the NIWB NERR/NOAA, the Baruch Foundation, USC Baruch and Clemson University. Likewise actions which lead to the development of cohesive community support, such as a "Friends Group" should be taken in concert with efforts of the partners within the greater Reserve area. Any such group development should take into account and, to the highest extent possible, coordinate with the existing efforts of the partners.	
Necessary Action			
Program Suggestion	X		
Number	5	NIWB NERR must provide NOAA OCRM a schedule for	

Necessary Action	X	the submission of the Reserve Management Plan within one month of the receipt of the final findings and complete the management plan within 18 months.	
Program Suggestion			
Number	6	As NIWB NERR develops its Management Plan it should also consider the implications of an expanded boundary addressing: how best to preserve the integrity of the core reserve site through the use of placing adjacent properties in protected status; whether those adjacent areas should be identified as within the boundary of the Reserve or not; how the integrity of the partnered programs will be maintained if their lands become incorporated within the Reserve boundary.	
Necessary Action			
Program Suggestion	X		
Number	7	As part of the considerations made in development of the Reserve Management Plan, NIWB NERR should define future needs for office, laboratory, and program space, taking into consideration future resources for operation and maintenance. Likewise, major purchases to support Reserve activities and programs should be identified and documented.	
Necessary Action			
Program Suggestion	X		