UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL OCEAN SERVICE
OFFICE OF OCEAN AND COASTAL RESOURCE MANAGEMENT
Silver Spring, Maryland 20910

OCT 28 2008

Dr. Cisco Werner
Director, Institute of Marine and Coastal Sciences
Rutgers University
71 Dudley Road
New Brunswick, New Jersey 08901

Dear Dr. Werner:

Enclosed are the final evaluation findings for the Jacques Cousteau National Estuarine Research Reserve (NERR) for the period from August 2003 through September 2007. The fundamental conclusion of this evaluation is that New Jersey is adhering to the programmatic requirements of the NERR system in its operation of the approved Jacques Cousteau NERR. This document contains six recommendations, none of which are mandatory.

We appreciate your cooperation and assistance and that of your staff during the accomplishment of this evaluation.

Sincerely,

Donna Wieting

(for) David M. Kennedy
Director

Enclosure

cc: Michael De Luca, Manager, Jacques Cousteau NERR
Sally Morehead, Manager, Mission Aransas NERR, Port Aransas, TX
Matt Gove, Coastal Management Specialist, OCRM Coastal Programs Division
Michael Migliori, Program Specialist, OCRM Estuarine Reserves Division
Laurie McGilvray, Chief, OCRM Estuarine Reserves Division

FINAL Evaluation Findings

Jacques Cousteau National Estuarine Research Reserve

August 2003 – September 2007

October 2008

JCNERR Education Center, Tuckerton, New Jersey

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. EXECUTIVE SUMMARY

The Coastal Zone Management Act (CZMA) of 1972, as amended, established the National Estuarine Research Reserve System (NERRS). Sections 312 and 315 of the CZMA require the National Oceanic and Atmospheric Administration (NOAA) to conduct periodic performance reviews or evaluations of all federally approved National Estuarine Research Reserves (NERRs). The review described in this document examined the operation and management of the Jacques Cousteau National Estuarine Research Reserve (JCNERR) during the period of September 2003 through August 2007. The Jacques Cousteau National Estuarine Research Reserve is administered by Rutgers University's Institute of Marine and Coastal Sciences (IMCS).

This document describes the evaluation findings of the Director of NOAA's Office of Ocean and Coastal Resource Management (OCRM) with respect to JCNERR during the review period. These evaluation findings include discussions of major accomplishments as well as recommendations for program improvement. The fundamental conclusion of the findings is that IMCS is successfully implementing and enforcing its federally approved NERR.

The evaluation team documented a number of JCNERR accomplishments during this review period. The Reserve continues to serve as a leader in estuarine research and education, and is highly regarded in both state and national coastal management communities. Partners and stakeholders consistently expressed satisfaction, respect and appreciation for JCNERR programs and staff. Strong institutional support from Rutgers and integrated programming have made JCNERR programs very effective. Reserve programming during this evaluation period included successful efforts such as: outstanding contributions to NJ ecosystem research; expansion of monitoring capability in Barnegat Bay through program partnerships; demonstrated success and expansion of the MARE program through evaluation efforts; highly effective implementation of the Coastal Training Program; outstanding integration of research results and coastal management issues throughout the reserve portfolio of programs; and the continued development of a robust volunteer cadre.

The evaluation team also identified areas where the Reserve and its programming could be strengthened. Recommendations for the JCNERR include seven Program Suggestions. Program Suggestions describe actions that NOAA believes Rutgers should take to improve the program but that are not currently mandatory. Program Suggestions range from: a review of staffing needs; facility operations agreements and strategic planning with partners to ensure the development and implementation of targeted programs with maximum efficiency in satellite regions; the need to enhance specific relationships and collaboration with NOAA partnered programs in the state, including the NJ CMP and NJ Sea Grant; strengthening communications from the JCNERR Advisory Committee to the JCNERR partner community; to clarification of the reserve's definition of stewardship as a matrixed function across the reserve portfolio of activities including research support for partner agency management of upland land holdings in the reserve.

II. PROGRAM REVIEW PROCEDURES

A. OVERVIEW

The National Oceanic and Atmospheric Administration (NOAA) began its review of the Jacques Cousteau National Estuarine Research Reserve (JCNERR) in September 2007. The §312 evaluation processes involves four distinct components:

- An initial document review and identification of specific issues of particular concern;
- A site visit to New Jersey including interviews and public meetings;
- Development of draft evaluation findings; and
- Preparation of the final evaluation findings, partly based on comments from the state regarding the content and timetables of recommendations specified in the draft document.

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

> **Necessary Actions** address programmatic requirements of the CZMA's implementing regulations and of the JCNERR approved by NOAA. These must be carried out by the date(s) specified;
>
> **Program Suggestions** denote actions that the OCRM believes would improve 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 §312 evaluation.

A complete summary of accomplishments and recommendations is outlined in Appendix A.

Failure to address Necessary Actions may result in future finding of non-adherence and the invoking of interim sanctions, as specified in CZMA §312(c). Program Suggestions that are reiterated in consecutive evaluations to address continuing problems may be elevated to Necessary Actions. The findings in this evaluation document will be considered by NOAA in making future financial award decisions relative to the JCNERR.

B. DOCUMENT REVIEW AND ISSUE DEVELOPMENT

The evaluation team reviewed a wide variety of documents prior to the site visit, including: (1) 2003 JCNERR §312 evaluation findings; (2) federally approved Environmental Impact Statement and program documents; (3) financial assistance awards and work products; (4) semi-annual performance reports; (5) official correspondence; (6) web-based reserve resources and outreach; and (7) relevant publications on natural resource management issues in New Jersey.

Based on this review and on discussions with NOAA's Office of Ocean and Coastal Resource Management (OCRM), the evaluation team identified the following priority issues:

- Major accomplishments during the review period;
- Status of the reserve's general administration, including grants, fiscal management and staffing;
- Status and visibility of research, education, and stewardship programs, including local and system-wide initiatives;
- The manner in which JCNERR has addressed the recommendations contained in the §312 evaluation findings released in 2003. JCNERR's assessment of how it has responded to each of the recommendations in 2003 evaluation findings is located in Appendix B.

C. SITE VISIT TO JACQUES COUSTEAU NATIONAL ESTUARINE RESEARCH RESERVE

Notification of the scheduled evaluation was sent to the IMCS, JCNERR, relevant environmental agencies, members of New Jersey's congressional delegation and regional newspapers. In addition, a notice of NOAA's "Intent to Evaluate" was published in the Federal Register on Thursday, May 31, 2007.

The site visit to New Jersey was conducted from September 11-14, 2007. The evaluation team included Kate Barba, Program Manager for NOAA's Estuarine Reserves Division in the Office of Ocean and Coastal Resource Management; Matt Gove, Coastal Program Specialist for NOAA's Coastal Programs Division in the Office of Ocean and Coastal Resource Management; Sally Morehead, Assistant Manager of the Mission Aransas NERR, and Lee Fuiman, Manager of the Mission Aransas NERR in Port Aransas, TX.

During the site visit, the evaluation team met with JCNERR staff and other professionals associated with the Reserve. Appendix C lists people and institutions contacted during this review.

As required by the CZMA, NOAA held an advertised public meeting on September 12, at 7 pm, at the JCNERR Education Center, 130 Great Bay Boulevard, Tuckerton, New Jersey. The public meeting gave members of the general public the opportunity to express their opinions about the overall operation and management of the JCNERR. Appendix D lists individuals who registered at the meeting. NOAA's response to written comments submitted during this review is summarized in Appendix E.

The JCNERR staff members were crucial in setting up meetings and arranging logistics for the evaluation site visit. Their support is most gratefully acknowledged.

III. RESERVE PROGRAM DESCRIPTION

The Jacques Cousteau National Estuarine Research Reserve was designated by NOAA in November, 1997. The Rutgers University Institute of Marine and Coastal Science (IMCS) is responsible for the operation and management of the reserve. The JCNERR operates under an integrated management approach among institutional landholders within the reserve, including the NJ DEP, US Fish and Wildlife Service (USFWS), Richard Stockton College of New Jersey, the Pinelands Commission and the Baymens Museum. Rutgers IMCS, as the lead agency, receives federal financial assistance awards and has overall responsibility for reserve management.

The JCNERR encompasses more than 110,000 acres in southeastern New Jersey, including a great variety of terrestrial, wetland and aquatic habitats within the Mullica River-Great Bay ecosystem. The Reserve is comprised of federal and state lands managed in partnership through a variety of agencies. With little more than 1% of the Reserve subjected to land development, this area is regarded as one of the least disturbed estuaries in the densely populated urban corridor of the northeastern United States. Located just north of Atlantic City, NJ, the Mullica River-Great Bay estuary lies within the New Jersey Pinelands forest ecosystem, which offers high ecological value and special protections for the a large portion of the watershed. Representing the Mid-Atlantic/Virginian biogeographic sub-region, the reserve offers a wide range of different habitats, including upland pine-oak forests, lowland Atlantic white cedar swamps, freshwater marshes, salt and freshwater tidal marshes, barrier islands (including sandy beaches and dune habitats), shallow bays and the coastal ocean. The Reserve encompasses the relatively pristine Mullica River-Great Bay system, a portion of the more developed Barnegat Bay system, and an area that extends beyond Little Egg inlet into the Atlantic Ocean.

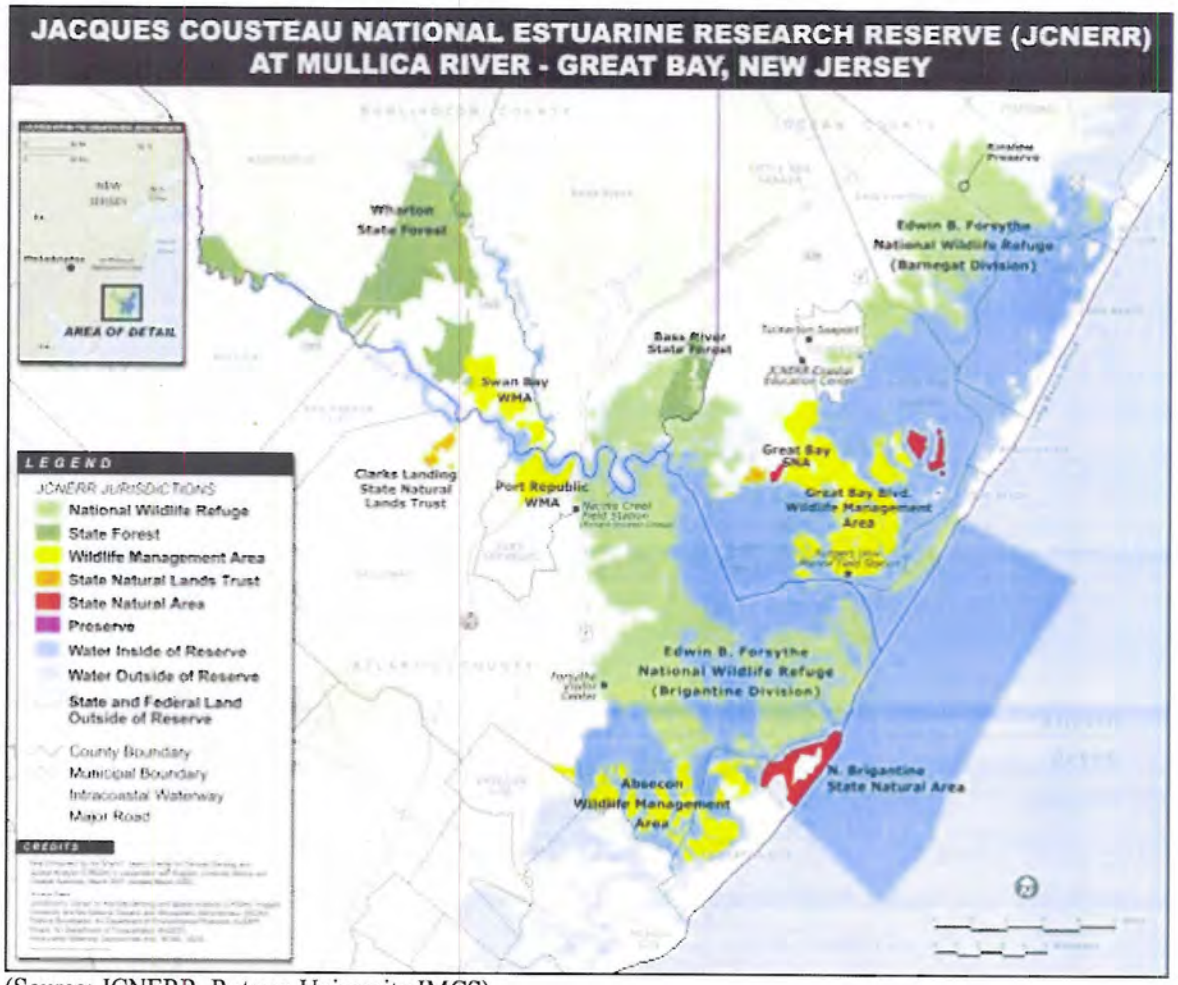
Great Bay/Mullica River: Great Bay is a major migratory stop and wintering area for many waterfowl, shorebirds and raptors. There are at least 44 distinct water bird nesting colonies for fifteen different species. The piping plover, a federally-listed threatened species, nests within the Reserve's boundary, as well as the protected bald eagle and the peregrine falcon. The Mullica River-Great Bay area also supports 61 different species of finfish, including striped bass, alewife, and blueback herring which spawn in tributaries. Shellfish populations are also extensive, including clams and mussels.

Little Egg Harbor/Barnegat Bay: The Reserve includes a portion of Little Egg Harbor at the south end of Barnegat Bay. This area has experienced more development than Great Bay, particularly along the shoreline of Beach Haven West and on Long Beach Island. The north end of Barnegat Bay, adjacent to the New York metropolitan area, is densely developed and is experiencing rapid growth, and has potential to affect the Little Egg Harbor area of the Reserve. A portion of the JCNERR is within the boundary of the Barnegat Bay National Estuary Program.

Atlantic Ocean: JCNERR is the only reserve in the system with boundaries that extend seaward into the Atlantic Ocean. A long-term observation station (LEO-15) sits on the continental shelf

in 15-feet of water, and is designed to record changes in the coastal ocean, such as temperature variability and sediment transport.

The Reserve headquarters office is located at the Rutgers University Cook Campus in New Brunswick, New Jersey. The Jacques Cousteau Coastal Education Center, adjacent to the Reserve in Tuckerton, serves as the hub for the Reserve's education and outreach programs. Reserve staff members maintain a close working relationship with faculty at the Rutgers' Marine Science Field Station in Tuckerton, located within the reserve and close to the Education Center, and frequently utilize RUMFS facilities.



(Source: JCNERR, Rutgers University IMCS)

IV. REVIEW FINDINGS, ACCOMPLISHMENTS, AND RECOMMENDATIONS

A. OPERATIONS AND MANAGEMENT

1. Reserve Administration

The JC Reserve is administered by Rutgers University Institute of Marine and Coastal Science (IMCS), and the Reserve Manager serves a dual role as Senior Associate Director of the Institute. The manager and staff have continued to leverage significant administrative and programmatic services and capabilities within Rutgers University to support reserve programs. Since the last evaluation, the manager has secured additional administrative support from the IMCS. Engagement with Rutgers University Center for Remote Sensing and Spatial Analysis (CRSSA) has increased, with an emphasis on the use of the Center's geographic information databases and spatial analysis, and partnering with Rutgers faculty in the development of projects that focus on monitoring land use change and analysis. The JCNERR continues to strengthen links with the Rutgers University Marine Field Station's (RMFS) faculty and students for research and monitoring activities, and increased access to the Institute of Marine and Coastal Science's (IMCS) administrative services and staff expertise. The partnership with Rutgers' Office of Continuing Education in support of the NERRS Coastal Training Program has grown and matured, providing critical administrative services such as participant registration, participant database support and accreditation of many reserve Coastal Training Programs.

ACCOMPLISHMENT: OCRM commends JCNERR staff for their continued success in the development of partnerships and leveraging of support from Rutgers University programs and administrative services.

a. Staffing

The JCNERR staff shares time between offices at the Rutgers University campus in New Brunswick and the Coastal Education Center in Tuckerton. The Reserve manager, research coordinator, and administrative assistant share time between the two facilities, but are based primarily out of the IMCS headquarters office, which is located at Rutgers University's Cook Campus in New Brunswick. The GIS coordinator, part of Rutgers Center for Remote Sensing and Spatial Analysis (CRSSA), is also located in New Brunswick. The Watershed/Coastal Training and volunteer coordinators are permanently located at the Coastal Education Center in Tuckerton, which serves as the hub for the Reserve's education and outreach programs. The SWMP technician and part-time interpretative docent are also based in Tuckerton, operating out of the Rutgers field station and the Visitor's Center. An Education Coordinator was hired following the evaluation site visit, and is also based in Tuckerton.

The Reserve has experienced relatively little staff turnover during the performance period, thus enabling relationships and partnerships to mature and grow in depth and breadth without the addition of significant numbers of new staff. Periodic review and clarification of staffing roles

and responsibilities has resulted in an increasingly efficient and integrated team, dedicated and committed to working across disciplines towards common goals. Effective integration of research, training and education and emphasis on the use of technology to enhance efficiencies and program impact continue as an impressive hallmark of the program.

The 2003 evaluation findings included a program suggestion to establish a senior management presence in Tuckerton to reduce facilities operations responsibilities on the part of program staff. In response, the manager assigned additional staff to provide oversight and operations support. In the last two years, however, as the program has matured, the Tuckerton-based staff has matrixed responsibilities and management oversight for facility operations so that program staff members do not feel overburdened. The evaluation team noted staff satisfaction with the current management structure that enables smooth and efficient program implementation.

"Stewardship" activities in the JCNERR are integrated across all core program areas including research, coastal training, education and outreach, with the goal of providing science-based information for habitat restoration, resource management and land acquisition. While a role and position for a stewardship coordinator for the reserve has not been established, the responsibilities for stewardship are functionally matrixed across the portfolios of the Research Coordinator, Education Coordinator, GIS Specialist, Volunteer Coordinator, Interpretive Docent, and in part by the Watershed/CTP Coordinator. Direct management of lands and waters within the reserve is accomplished by staff of the respective land holding agencies.

During this period, JCNERR staff leveraged significant financial support through extramural grants to enhance reserve research, monitoring, training and education programs and related activity across the region through a wide range of local, regional and national grant funding opportunities. Successes in leveraging funding and support demonstrate the professionalism, credibility and quality of core staff in their pursuit of program impact.

An area of significant concern to the review team is capacity and staffing to support programming at the new satellite CTP program venues in Sandy Hook and Bridgeton, located at opposite ends of the state. Largely through a congressional earmark, NOAA has invested significant funding in facility renovations based on reserve expectations to develop and operate reserve-directed Coastal Training Programs from each facility. Currently, CTP programming is focused in Ocean and Monmouth Counties in central coastal NJ, with a full-time CTP Coordinator located in Tuckerton. To date, a number of CTP programs have been conducted in Sandy Hook partner facilities, with initial support of a half-time CTP staff person and more recently with part-time support of a Rutgers IMCS employee. With the completion of facility renovations in late 2008, the reserve has plans to establish a half-time equivalent CTP coordinator position in Bridgeton, and continue the current part-time arrangement for the IMCS employee/CTP Coordinator in Sandy Hook.

The evaluation team understands that the Tuckerton-based CTP Coordinator will provide direction and guidance for staff and program development for both satellite sites. With half-time staff and a different complex of partners at each site, strategic planning and partnership development will require significant involvement on the part of the Tuckerton CTP Coordinator to ensure a networked CTP program with reserve ownership and direction. The evaluation team

spoke with core partners at Sandy Hook, including the current part-time IMCS staff, Brookdale Community College, and National Park Service representatives. All the partners are enthusiastic about the potential for quality programming and anticipate a complementary relationship. The group expressed a range of ideas and interests in program development. However, reserve staff will need to provide support and direction to ensure a strategic approach and maintain reserve identity in program implementation.

It is important that CTP planning for the reserve continues to be strategic and systematic for the satellite sites as has been the case for the Tuckerton region, based on reserve and program goals and objectives, issue identification, targeted audience assessments, etc. The evaluation team anticipates the CTP Coordinator may need additional staffing support for central NJ CTP program implementation in order to provide start-up guidance, support and planning for the two satellite sites. Reference to CTP expansion, plans and funding needs for staffing and strategic planning should be included in the reserve's management plan, currently under revision.

PROGRAM SUGGESTION: OCRM encourages the JCNERR to review the level of effort needed to coordinate program development and execution at the satellite sites as well as requisite support and guidance from the Tuckerton-based CTP staff. The revised management plan should reference CTP direction and development at the reserve and satellite facilities and staffing requirements.

b. Program Integration

As the Reserve has built and implemented its programs, the Reserve manager has recruited staff with skills to reach across science, education, stewardship and training disciplines. As a result, the Reserve has done an excellent job of integrating programs to strengthen impact and ensure common themes and messaging across the reserve portfolio of programs. Research staff at JCNERR support CTP staff and programs through the input of data from their various projects and the creation of web-based tools for coastal managers. "The Storm Water Management Information System: Internet-based Geospatial Tools to Plan and Manage Coastal Storm Water Management Systems for Enhanced Environmental Quality" is one outstanding example of a tool used in conjunction with CTP programs that focuses on stormwater management. This tool was developed by reserve and IMCS staff with funding from the Cooperative Institute for Coastal and Estuarine Environmental Technology (CICEET).

Program integration efforts include mentoring of NERRS Graduate Research Fellows and guiding their research to directly support reserve programs. The needs of coastal decision-makers have informed the priorities within the research and monitoring program. For example, based on discussions with the Barnegat Bay National Estuary Program and related stakeholder groups, the reserve has partnered with the NEP to establish water quality monitoring stations within the Barnegat Bay portion of the Reserve. JCNERR scientists work with professional educators in the MARE program to strengthen teacher competencies in marine science. All staff members take part in strategic planning and collaboration in identifying the Reserve's training and education objectives and research priorities. The Reserve is encouraged to continue supporting this multidisciplinary team approach in the design and implementation of its programs.

ACCOMPLISHMENT: OCRM commends JCNERR for their successful and comprehensive integration of programs, contributing to enhanced efficiencies and program impact.

c. Finance and Performance Reporting

The Rutgers IMCS has received annual financial assistance awards during the performance period, for operations, construction and land acquisition. The review team finds that the Reserve has adhered to cooperative agreements during the performance period, has made substantial progress implementing the Reserve's management plan, and that the state has demonstrated its commitment, in terms of personnel and funding, to the program. Findings in the last review recommended increased support for grant tracking and reporting, based on a performance history of delayed submissions and quality in reporting. At the same time, the reserve indicated a need for increased review and monitoring on the part of NOAA's Estuarine Reserves Division. In response, the manager secured additional administrative support and the review team finds that the reserve has made progress in establishing grants tracking and reporting procedures and currently addresses requirements within required timeframes. During this period, NOAA's Estuarine Reserves Division has also taken steps to ensure consistent monitoring and cooperative review of reserve progress and grants management.

d. Cooperative Agreements for Operations

Under its operations grants, the Reserve continued to expand the reach of its K-12 education program (MARE) to more than 40 school districts with additional support from the mid-Atlantic Consortium on Science and Excellence in Education (COSEE); maintained quality and expanded JCNERR SWMP operations; and completed build-out of the Education Center.

Rutgers IMCS has demonstrated its support by ensuring consistent and high quality staffing, and continuing to provide 30% state matching share for the operations grant. As match, Rutgers provides administrative services and staff support to the program, while waiving most of the charges it would collect under the university's negotiated rate for indirect costs. Among these services, Rutgers provides: the salary of the program manager, part time salary support for the education, research, and GIS coordinators, SWMP technician and administrative support. Additionally, IMCS provides facility accommodations at the IMCS building, including staff offices and laboratory space; and boats and laboratory facilities at the Rutgers Marine Field Station. Finally, Rutgers also provides reserve support from the Center for Remote Sensing and Spatial Analysis in the form of staff time, access to data sets, and equipment.

e. Acquisition and Construction Grants

Under its construction grants, the Reserve completed build-out of the Tuckerton Coastal Education Center and completed construction/renovation of a dry lab at the IMCS field station. Through earmarked and competitive funding, JCNERR initiated renovations in partner facilities for program expansion in Bridgeton and Sandy Hook (see Facilities section).

The JCNERR secured an acquisition grant for fee simple purchase of a 72 acre parcel targeted in the reserve management plan; however, the parcel was taken off the market. The reserve re-programmed the grant in August of 2007 to target a purchase of 100 acres of wetland in the center of the Mullica River, and this property was also taken off the market. Since the evaluation visit, the reserve has requested a re-programming of the award to target a 31.5 acre parcel in Washington Township in Burlington County. This request is currently under review by OCRM. The match for construction and acquisition projects was provided in the form of donated land, project management services of Rutgers University's facilities construction office, and in-kind salary support.

f. Advisory Committees

The Reserve's Advisory Committee is currently made up of members representing the New Jersey Department of Environmental Protection; Edwin B. Forsythe National Wildlife Refuge; Rutgers University Center for Remote Sensing and Spatial Analysis; the Pinelands Commission; Ocean County Planning Department; Ocean County Parks; and NJ Parks Commission. The 2003 evaluation findings suggested a restructuring of the committee to better serve the reserve.

The 2003 evaluation findings included a suggestion to consider re-alignment of the Reserve Advisory Committee to review and recommend priorities in strategic planning. The JCNERR Advisory Committee, originally organized with subcommittees for each of the core mission areas, has been restructured and streamlined to provide senior level advice and guidance on reserve priorities to the Reserve manager and staff. The committee will meet twice annually to help develop opportunities for collaboration among reserve partners, define key areas for future investment, and provide advice on programs, products, and services. Committee members are specifically charged with helping to advance the reserve mission of science-based management through partnership, leverage resources, and provide guidance on emerging trends for marine managed areas.

During the site visit, the review team observed that reserve program partners were keen to learn more about the range of JCNERR program activities, program plans, and the results of advisory committee activity. The first meeting of this newly formed group was scheduled for January, 2008, with a primary task to review the draft JCNERR management plan. The review team believes that the Advisory Committee can provide an influential link to JCNERR partners in program implementation and a bridge to new partnerships. The JCNERR partnership network would be strengthened by exposure to the process and results of strategic planning by reserve leadership. The review team suggests that the JCNERR work with the Advisory Committee to identify communication strategies and adopt an official protocol for disseminating Committee information, actions, and ideas to their colleagues. Involving key program partners as periodic advisors to the Committee for program briefs and results discussions would ensure a two-way feedback loop for information exchange and partnership development.

PROGRAM SUGGESTION: OCRM suggests that JCNERR work with the Advisory Committee to identify communication strategies to ensure ongoing exchange of information and the dissemination of the results of Committee meetings across the membership and to the JCNERR partner community.

2. Facilities

a. Tuckerton

Expansion of the Coastal Education Center in Tuckerton, NJ, was completed in 2006. Upgrades include: a staff dormitory, conference area, library, and wet lab. The Center already includes a distance learning center, restrooms with showers, office space, and bedrooms. JCNERR also expanded its presence at the Rutgers University Marine Field Station through the creation of a dry lab there. Reserve staff completed these upgrades and expansions despite numerous difficulties working with cumbersome and frustrating Rutgers building regulations, procedures, and protocols.

b. Sandy Hook

Based on the results of the JCNERR state-wide training provider market analysis and needs assessment that characterized the training market and science-based information needs of resource managers across the state, and ongoing discussions with agency representatives in each region, JCNERR proposed extending reserve program operations to opposite ends of the state in cooperation with local partners with existing facilities. JCNERR first looked to the north to expand CTP programs at a satellite facility in the renovated Fort Hancock on Sandy Hook. With congressionally earmarked funds totaling $2,968,432, along with State match, JCNERR was able to offer renovation funding support in 2004 to the Fort Hancock development group to both enhance facilities as well as establish a presence and program reach to the Sandy Hook region, well beyond reserve boundaries.

Construction was due to start in 2005, but changes in the scope of work and delays securing funding for other elements of the Fort Hancock renovation delayed renovation efforts until 2007. Project completion is now scheduled for late 2008. Key partners for this project include the National Park Service (NPS), which has responsibility for overall operations of the complex, and Brookdale Community College, which will operate programs in cooperation with the reserve. The evaluation team met with partner representatives to discuss facility use and program direction. JCNERR space includes two floors of one of the large historic buildings, which will provide for several large meeting/classroom space and some limited office space. The part time JCNERR staff member will focus on developing CTP programs in collaboration with the range of partners that utilize the Fort Hancock complex (see CTP Program review section). Because of the integral relationship with NPS at the facility, the evaluation team recommends the development of an operating agreement with NPS for facility use and management to establish expectations for use, roles, and responsibilities for operations.

c. Bridgeton

Similar to Sandy Hook, and based on the same rationale and review of training provider analysis and needs assessment, JCNERR is expanding programming south to Bridgeton, the county seat for Cumberland County. Using a portion of the congressionally earmarked funds described above ($2,968,432), JCNERR was able to offer renovation funding support in 2004 contribute to the David Shepphard House renovation project in Bridgeton, NJ, in the south of the state, again

to both enhance facilities as well as establish a presence and program reach in the region, well beyond reserve boundaries. The Shepphard House is an historic building located in the center of town, just opposite the Maurice River, a tributary of the Delaware Bay

In 2005, JCNERR was awarded $683,545 in competitive NERRS construction funds to provide additional support for the project based on design adjustments and an increase in materials costs. Here again, the JCNERR application requested funding support based on program opportunities and plans based on the JCNERR CTP assessment and reserve mission goals and objectives, and keen interests on the part of partners to collaborate. As with Sandy Hook, the reserve has experienced significant delays in working with partners in scheduling renovation of the facility. The core partner for the reserve is the City of Bridgeton, represented during the site visit by the Mayor, who is strongly committed to the enhancing regional educational opportunities and understands the importance of watershed management.

The vision is to establish a coastal resource and education center at the Shepphard House. The building is under renovation, and plans include classroom space as well as shared office space for possible coastal and environmental groups to utilize. Reserve staff anticipates project completion by the end of 2008. The Reserve has preliminary plans to initiate its K-12 MARE program in local schools there and has conducted preliminary outreach to local educational officials and schools (see CTP program review). The evaluation team recommends the development of an operating agreement with the City of Bridgeton for facility use and management to establish expectations for use, roles and responsibilities for operations.

PROGRAM SUGGESTION: OCRM strongly recommends the development of facility operations and use agreements with core partners for both the Sandy Hook and Bridgeton facilities.

Future location of JCNERR satellite office, Bridgeton, NJ. (photo Matt Gove)

3. Management Plan

Following the evaluation site visit, the Reserve submitted a draft revision of the reserve's management plan to OCRM in July, 2008. This is a critical time in program growth and expansion for the JCNERR with renovations due to be complete at new partner facilities. This will be the first revision to the management plan that was approved as part of the reserve designation process. The plan revision will address elements as per NERRS plan revision guidance, and include program development strategies and staffing for new satellite sites, including documentation such as partnership and facility operations agreements. Currently under review, OCRM anticipates completion of the revised plan in FY 2009.

4. State Program Coordination

a. Coordination with New Jersey Coastal Management Program

The New Jersey Coastal Management Program, within the NJ Department of Environmental Protection (DEP), oversees coastal land use planning, stormwater management, regulation of flood hazard areas, tidal and freshwater wetlands, and coastal development permitting under New Jersey's Coastal Area Facilities Review Act (CAFRA). The coastal program is networked among several offices within DEP, with overall policy development and coordination housed within the Office of Policy, Planning and Science. The Land Use Regulation office is responsible for regulatory reviews and permitting.

The reserve has increased coordination in some areas with DEP, largely through the JCNERR Coastal Training Program, through collaboration in developing land use regulation training courses. In the area of permitting, the Reserve has very little involvement with DEP's review of proposed developments under CAFRA. The Reserve generally engages these issues from a scientific perspective and through its coastal training work with local governments. The Reserve conducts a great deal of research on coastal issues and has a unique capacity to bring a science-based perspective to management issues. Currently the Reserve is not directly notified of pending permit applications under review near the Reserve, and thus does not provide information on individual projects. Permit applications that directly impact reserve resources are reviewed by JCNERR staff. Inclusion of the NJ DEP into the JCNERR Advisory Committee may contribute to enhanced communication and coordination.

PROGRAM SUGGESTION: OCRM recommends that JCNERR continue to improve communication and enhance coordination between the NJ CMP and JCNERR, Sea Grant program and others providing information to coastal decision-makers, particularly about model ordinances that meet New Jersey's coastal permitting requirements, to increase consistency and efficiency in delivery of this information to decision-makers.

b. Coordination with Other Entities Involved in Coastal Management

The JCNERR is commended for its state-wide and varied interactions with various coastal decision-makers and stakeholders. The staff both opportunistically and strategically has acquired

contacts and partners at all levels of government, the private sector, and non-governmental organizations. Reserve staff work with many offices in the DEP as well as staff from Ocean County offices and divisions. Reserve staff interacts with other entities through service on boards and hiring committees. For example, the reserve manager serves as the Co-Chair of the Science and Technical Committee at the Barnegat Bay National Estuary Program and serves on the Governing Board for the Delaware Estuary Program. The Special Programs Manager serves on various commissions for Stafford Township and as a trustee for the Tuckerton Seaport. The manager frequently assists partnering organizations on recruitment panels for staff.

The Reserve has been particularly involved with the Barnegat Bay National Estuary Program (NEP). The Reserve boundary extends into Barnegat Bay, at Little Egg Harbor, and overlaps with the Barnegat Bay NEP planning area. The Reserve also has an interest in planning efforts around the northern section of the bay because these waters flow into the Reserve. Though it is not in the Reserve's boundary, the Reserve manager, watershed, GIS and research coordinators have been very active in the Scientific and Technical Advisory Committee of the Barnegat Bay NEP. The Reserve has added sampling stations for its System-wide Monitoring Program within the Little Egg Harbor portion of Barnegat Bay.

ACCOMPLISHMENT: OCRM commends JCNERR for cultivating and establishing excellent working relationships with an extensive and diverse group of partners.

Reserve staff has engaged NJ Sea Grant Consortia staff in a number of reserve education and training programs such as the Shore Bowl and periodically as speakers in CTP activities or has worked with Sea Grant staff to identify resources for programs. Sea Grant staff located at Sandy Hook were not referenced during discussions with Sandy Hook partners; however in discussions following the site visit, Sea Grant staff stressed the need to engage in long range, collaborative program planning focusing on the CTP portfolio across all three sites, to maximize partner resources and ensure coordination. This will require the lead, Tuckerton-based CTP coordinator to engage in planning exercises across the state. During separate discussions, Sea Grant and Reserve leadership indicated challenges in working together but that there had been some improvements at the program implementation level, referenced above.

Staff from both programs independently expressed the need to conduct strategic planning at a leadership level for collaborative program development but there has been a lack of initiative to initiate a planning process, based on long-held differences of opinion on program direction and ownership in program implementation and approach. The NJ Sea Grant consortia currently has four extension agent positions located in the state, and joint strategic planning for CTP on a state-wide basis, at a minimum, would be a logical first step in long range planning and collaboration. The evaluation team recommends that the program leadership come together to resolve differences and work towards developing a shared understanding or role and niche, and a plan and direction for collaborative training and extension in the Sandy Hook, Tuckerton and Bridgeton regions. Joint planning and coordination will become particularly important as the Reserve becomes more engaged in coastal training in Sandy Hook and Bridgeton.

PROGRAM SUGGESTION: OCRM strongly suggests that JCNERR go beyond occasional resource expert exchange and engage New Jersey Sea Grant consortia in strategic and collaborative planning to maximize NOAA partner program effectiveness and impact in training and extension.

5. Contributions to System-wide Planning

The review team acknowledges the Reserve's contributions to system-wide planning and program development for the NERRS nation-wide through its continued participation on numerous workgroups and committees within the system. The Reserve manager contributes to the System through his service as the past Chair of the IOOS Workgroup, the past Chair of the Strategic Planning Committee, the Chair of the Ad Hoc Caucus on Community Resiliency, and participation on the Land Acquisition, Telemetry, and Expansion Workgroups. Additionally, other staff members collectively serve on the NERRS Climate Change Workgroup, Strategic Committee, Co-Chair CTP Oversight Committee, Chair Performance Measurement Workgroup, CTP External Evaluation Workgroup, KEEP Market Analysis and Needs Assessment Workgroup, SWMP-IOOS, Biological Monitoring Workgroup, Benthos Sub-Workgroup, SAV Emergent Mapping Sub-Workgroup, Graduate Research Fellowship Committee, and the Research Matrix Workgroup.

ACCOMPLISHMENT: JCNERR is to be commended for significant contributions to NERRS system-wide program planning and development.

B. RESEARCH AND MONITORING

The JCNERR conducts research and monitoring on the physical, chemical and biological components of the site estuaries and neighboring watersheds. The program is focused on several areas: nutrients, benthic habitat studies (including sediment composition and aquatic vegetation), and fishery productivity. The goal of this research and monitoring is to improve scientific understanding of the processes and functions of estuarine ecosystems, and to provide a long-term record of changes in environmental conditions throughout the Reserve. This data is intended to inform coastal decision-makers in addressing resource management challenges in the Mullica River/Great Bay and Barnegat Bay-Little Egg Harbor estuaries and in other estuarine systems around the country.

1. System-wide Monitoring Program (SWMP)

The JCNERR has four SWMP monitoring stations within the Mullica River/Great Bay and the Barnegat Bay/Little Egg Harbor estuary systems, three of which have operated since 1996. Together, these stations record temperature, conductivity, salinity, DO concentration, DO percent saturation, depth, pH, turbidity, nutrient levels, humidity, atmospheric pressure, wind speed, solar radiation, and precipitation. Three of these stations have additionally been outfitted with telemetry equipment to enable data to be sent to the NERRS Central Data Management

Office (CDMO) and subsequently placed on the internet. Archival data from these stations is also available on the NERRS CDMO website.

The data collected is used by different partner agencies and organizations and by researchers. The reserve works directly with the Richard Stockton College (RSC) Marine Field Station. This cooperative effort will improve the understanding of the Mullica River/Great Bay and the Barnegat Bay estuary systems, especially on the effect that urbanization is having throughout these areas. It will also provide valuable data for coastal decision-makers to inform their efforts.

The Reserve has provided the staff resources needed to ensure the quality of data generated at the monitoring stations and timeliness in submitting data to the NERRS Centralized Data Management Office. Increased staffing has allowed the Research Coordinator, who continues to oversee the implementation of SWMP, to focus on a broader range of research and monitoring priorities. The Reserve now has a full-time SWMP technician, half-time SWMP technical assistant, and support from Graduate Research Fellows. Reserve staff collects the water quality and nutrient data monthly from the data loggers and perform standard grab samples at the monitoring stations. The Reserve's SWMP technician also periodically performs equipment maintenance, calibrates the data loggers to ensure that the data are accurate, and analyzes the data.

2. Research Activities

JCNERR research and monitoring has concentrated on characterizing the environmental conditions and ecological processes within the Mullica River/Great Bay watershed. They have also expanded into Barnegat Bay/Little Egg Harbor Estuary to capture changes in that ecosystem due to intense land-based development. A major component of this effort is a submerged aquatic vegetation study which spanned from 2004-2006. The Reserve used cutting-edge, underwater videographic imaging to assess the distribution of seagrasses and macroalgae within the estuary. Working with CRSSA researchers, the Reserve then created a SAV website in which users can obtain GIS maps of current seagrass extent in the Bay.

Many other research projects are occurring within the Reserve boundaries by various Rutgers and JCNERR scientists and students. The JCNERR continues support and mentoring of NERRS Graduate Research Fellows and their research to support coastal resources management activities. The current JC Fellow is conducting a study to assess frameworks and approaches to the development and execution of fisheries management plans across the region. This effort will provide an important feedback loop to resource managers. Other projects include: benthic habitat surveys; sediment analysis; biofouling monitoring; shellfish and seagrass critical habitat requirement determinations; eutrophication impacts; and nitrogen loading index creation.

The Rutgers Marine Field Station implements a great deal of the research occurring within the wetland, marsh and open water areas of the Reserve. Among other activities, Rutgers conducts fisheries population studies within the Reserve, including habitat utilization of clams and movements of finfish. They track the movements of striped bass in the estuarine system through an online database called StriperTracker.org. StriperTracker is a unique partnership that incorporates an outreach component to encourage members of the community to sponsor a fish,

which covers the research cost of implanting a tag, and engages the community in the Reserve's research efforts by enabling them to track the fish's movements.

The Reserve's Research Coordinator organized and edited the publication of a special issue of Ecological Applications (Volume 17, No.5) entitled "Eutrophication of Estuarine and Shallow Coastal Marine Systems." This special science journal volume, published by the Ecological Society of America, is devoted to nutrient enrichment and estuarine eutrophication and highlights research conducted in the Barnegat Bay-Little Egg Harbor Estuary. The publication was an outgrowth of a joint science and management symposium held at Rutgers University in April 2004, which was organized by the JCNERR.

The review team noted the prolific research published by the Reserve's Research Coordinator, including a compilation of System-wide Monitoring data at many of the Reserves around the nation. The Reserve is commended for its quality and extent of research and publication activity. The evaluation team was impressed by the whole-coast focus and the direct link from research to management stressed by the research staff.

ACCOMPLISHMENT: JCNERR is to be commended for their extensive and invaluable contributions to coastal New Jersey ecosystem research and significant efforts to reach out and inform the management community.

3. Site Profile

The Reserve System's implementing regulations require each reserve to develop an environmental monitoring program capable of detecting significant changes in reserve resources and ecosystems. Development of the program is comprised of three parts: (1) conducting baseline studies, (2) preparing a comprehensive site profile; and (3) implementing a long-term standardized monitoring program. The JCNERR began conducting its baseline characterization during the site designation process. The Reserve was able to draw upon spatial data and GIS capabilities within Rutgers University for this characterization. An initial draft was submitted by the JCNERR research coordinator to NOAA for comment in late 2006. The Coordinator did not receive comments from the Estuarine Reserves Division until May of 2007, which coincided with the summer field research and monitoring season. [After the site visit, the JCNERR submitted a final draft to OCRM in September, 2008. OCRM anticipates the document will be printed and disseminated in FY 2009.]

4. Geographic Information Systems (GIS) and Remote Sensing

The JCNERR has very successfully integrated Geographic Information Systems (GIS) technology in its research and coastal training programs. With support from the Rutgers University's Grant F. Walton Center for Remote Sensing and Spatial Analysis (CRSSA), the Reserve created a build-out analysis of the Mullica River watershed and the Barnegat Bay watershed; analysis of land cover in New Jersey using satellite data; and mapping submerged aquatic vegetation and Brown Tide in Little Egg Harbor. CRSSA developed a website to

highlight produced maps, interactive mapping capabilities, and the JCNERR "Coastal Resource Repository," which incorporates data from various sources that coastal decision-makers can use to identify and analyze trends in spatial patterns.

The repository provides access to boundary data for political jurisdictions and watersheds, topographic data, rivers and streams, land use and land cover data, satellite imagery, zoning, and transportation and sewer infrastructure, among other information. This Repository is accessible via the reserves' website, providing a unique and valuable service to a range of user groups. This tool has been recognized across the NERRS as an important example of reserve-based products with great potential for use and extension to impact decision-making in the region. The evaluation team recommends that reserve staff consider implementation of evaluation, assessment and extended user identification activity to enhance dissemination strategies and the use of this outstanding resource.

C. EDUCATION AND OUTREACH

The evaluation team finds that the Reserve has been extremely involved and proactive in formal education, training for coastal decision-makers, and outreach during the performance period. The manager has continued a commitment to consistent support, vision, and resources to sustain excellent staff in the development and implementation of outstanding education and training programs. Reserve staff recognizes the importance of developing its education, training, and outreach programs around the science behind specific coastal issues in the region. Consistent messaging is reinforced in public and formal education programs, coastal training and public events. The reserve currently has plans to enhance partnerships with non-profit institutions such as NJ Audubon and others across the state to provide science-based educational materials. The Reserve bases its programming on audience assessments, so that it can appropriately structure education and training activities, and regularly evaluates activities to receive feedback on a program's impact, results and to guide program improvements.

As an example, the Reserve has incorporated the issue of polluted runoff throughout its education, training and outreach programs. The Reserve, through the coastal training program, brought together scientists and municipal planners to assess the state of scientific knowledge about stormwater runoff, water quality monitoring data and alternative management practices that might be applied in a local area. In professional teacher development programs, the Reserve includes water quality investigations as part of its studies of coastal ocean, rocky shore and wetland habitats, and the teachers, in turn, involve students in water quality studies in the classroom. Finally, water quality is presented as a key theme in the Reserve's outreach exhibits, enabling visitors, whether student or general public, to relate land use patterns to the condition of water quality in coastal habitats, using the results of research studies and water quality monitoring.

1. Formal Education Programs

a. Marine Activities, Resources and Education Program (MARE)

In 1995 the JCNERR partnered with the Lawrence Hall of Science at the University of California Berkeley to implement the MARE program in pilot schools in New Jersey. MARE provides in-service training for teachers and school administrators, enabling them to integrate marine-based activities into existing curricula (including reading and math classes) at the Kindergarten through 8th grade levels. The program engages the whole school in learning about coastal and marine resources, especially during "Ocean Week," a whole school and community immersion event for participating schools or school districts.

To date, the Reserve has helped establish the MARE program in approximately 50 schools across the state—significantly increasing the capacity of these schools to independently continue the MARE program. The program has even spread beyond the states borders and seems to be increasing through the Reserve's continued help and under its own inertia. Through intensive summer institutes, the Reserve conducts teacher training, leads teachers on field trips with hands-on research opportunities, and provides materials for a 10 week curricula. In 2005 and 2007 teachers spent three days at the Education Center learning the MARE program. In 2006, the group additionally produced a MARE Best Practices Guide to be used in future teacher trainings.

According to evaluation data, 85 percent of MARE teachers polled are using other non-text book methods, such as hands-on experiments or other activities, for teaching science, and 70 percent report a significant increase in student interest in science. The Reserve has also measured MARE's educational impacts to children using a technique called "concept mapping." Results have been positive. The MARE schools scored higher on average on standard science tests and students exhibited more complex thinking regarding oceans than non-MARE schools. Additionally, evaluation results suggest that MARE enhances teacher competence and confidence in facilitating science learning.

The reserve has current plans to expand MARE programming to Cumberland County, and utilize the JCNERR satellite facility at the Shepphard House (currently under renovation) as a support facility for this effort. The 2003 JCNERR needs assessment highlighted the need for coastal programs and services in this region, which is part of a region designated as an "Empowerment Zone" for the state. In program discussions with partners, the reserve identified the MARE program as the most appropriate program to initiate with Bridgeton partners. While initial grant applications referenced a broad range of potential programming for the site, the evaluation team recommends that the reserve conduct a more local, targeted assessment of issues, training providers and target audiences to focus program development efforts and collaborations with partners.

ACCOMPLISHMENT: JCNERR is to be commended for fully operational and stable MARE program they have fostered in New Jersey.

b. Shore Bowl

For the last seven years, the Reserve education staff has taken a lead role in conducting the Shore Bowl, one of 23 regional academic competitions leading to the National Ocean Sciences Bowl. The Shore Bowl engages high school students in studying coastal and marine sciences and raises awareness of the importance of ocean science education among communities and school administrations. Up to 16 student teams in the region compete in a quiz on ocean science and related geography, history, and literature. Winning teams earn the right to compete in the national competition, sponsored by the Consortium for Oceanographic Research and Education.

c. Real-Time Data in K-12 Classrooms

JCNERR staff collaborated on a study to evaluate how K-12 teachers can effectively use real-time System-wide Monitoring Program (SWMP) data in the classroom to convey environmental messages. Exhibiting their abilities to partner with other organizations, the Reserve implemented this study with the National Marine Sanctuary Program, National Sea Grant College Program, and the Centers for Ocean Science Excellence in Education (COSEE). The interactive and exciting website for students and teachers, Coastal Ocean Observation Laboratory (COOL) Classroom is also a part of this program. Results from this evaluation are on the JCNERR website (http://marine.rutgers.edu/pt/).

2. Training for Coastal Decision-Makers

The JCNERR recognizes local officials and municipal staff as a key audience for training on how to apply coastal research, information tools, and state-of-the-art knowledge on management techniques to coastal management decisions. The Reserve has built a coastal training program that draws on its scientific expertise, assessment of the information needs of state and local decision-makers, and ability to deliver data through information technology (such as GIS) and workshops. Most of the Reserve's coastal training and professional teacher development programs operate out of the Coastal Education Center in Tuckerton.

a. Coastal Training Program

In 2003, the Reserve launched the Coastal Training Program, a NERRS system-wide program that enables Reserves to systematically assess the information needs of coastal decision-makers and support activities that inform decision-making around priority issues. The Reserve has completed a number of audience assessments. These include an overall needs assessment, a stormwater management assessment, and a construction code official assessment. Various workshops grew out of these assessments, including "Goose Management," "Stormwater Mitigation," and "Introduction to Wetlands." Co-sponsoring with Rutgers University's Office of Continuing Professional Education, JCNERR offered six workshops in 2003, eight in 2004, 10 in 2005 and 15 in 2006. Leaders and staff of local governments expressed enthusiasm and gratitude for the Reserve's technical services and consistent follow-up, which has fostered a sense of credibility and trust over time.

The Reserve identified land use regulations as a desired topic for a training course. In conjunction with the NJ Department of Community Affairs, JCNERR developed and placed on

their website "Understanding Land Use Regulations," a five week course aimed at local construction code officials. Due to its popularity, this course has been offered four times since March 2006. In March 2007, the Reserve offered another online course for construction code officials and state floodplain managers entitled "Flooding Hazards and Floodplain Management" for the first time.

JCNERR chairs the Barnegat Bay Phase II Steering Committee, which has offered ten technical assistance education programs to municipal staff and elected officials located mostly within the Barnegat Bay watershed. The programs focused on NJ state law concerning Phase II Stormwater regulations. The Reserve evaluated these workshops for their effectiveness, the full evaluation report can be found on the JCNERR website.

In partnership with the NJ State Police, Office of Emergency Management Services, Federal Emergency Management Agency (FEMA), and the NJ Department of Environmental Protection, the Reserve offered a workshop on developing hazard mitigation plans for coastal municipalities. With the help of a FEMA official, the workshop included a follow-up technical session using FEMA computer software at JCNERR's Coastal Education Center. A direct outcome from this workshop was an agreement between all the municipalities in Ocean County to create a multi-jurisdictional hazard mitigation plan.

Interacting with a new target group, the Reserve held a workshop for local realtors and past wetland regulation violators in conjunction with New York Aquarium and the NJ DEP. The workshop, called "Protecting Our Wetlands through Education and Regulations" (PROJECT POWER), focused on the ecological and functional importance of wetlands, there associated regulations, and enforcement issues.

JCNERR has offered various workshops and symposiums. Partnering with the Barnegat Bay-Little Egg Harbor National Estuary Program, JCNERR held a symposium entitled "Impacts to Coastal Systems" in April of 2004. The symposium aimed to evaluate existing knowledge and data gaps on nutrient dynamics in Barnegat Bay. Regional scientists and managers participated in the two-day program. In May 2005, the Reserve brought speakers from NJDEP, USACE, Rutgers University, and Stevens Institute of Technology to Monmouth County for a workshop focused on "Bay and River Shoreline Stabilization." Another symposium entitled "The Changing Landscape of Barnegat Bay," facilitated by the JCNERR Research Coordinator and scientists from CRSSA, examined the land use alterations in the watershed and how they have affected runoff into the Bay. The "Effects of Climate Change on Our Local Estuaries" workshop was hosted by JCNERR staff in June 2007 and focused on local and global information concerning estuaries.

ACCOMPLISHMENT: JCNERR is to be commended for their innovative and highly effective Coastal Training Program in Monmouth and Ocean Counties.

With the expansion of a reserve presence to Sandy Hook and Bridgeton, the reserve has begun to expand the geographic extent of outreach to decision-makers through the Coastal Training Program, and continued expansion of the MARE program. While the initial plans for Bridgeton discussed a CTP focus, the reserve manager indicated that the Bridgeton partnership would focus

on extension of the MARE program. Based on discussions with the mayor around the need for service and outreach to underserved schools in a relatively rural county, interaction with schools seems appropriate. The evaluation team recommends a careful assessment of issues and audiences and the development of a long range plan in coordination with state partners for program delivery in the area.

The satellite facilities in both Bridgeton and Sandy Hook offer an opportunity to extend JCNERR programming to more communities through outreach, training and education. Programming for these areas needs to be strategic and collaborative, based on planning and the identification of key partners to ensure efficiencies and shared responsibilities. Staffing issues and concerns that directly impact program planning and development needs for these sites are discussed in those sections of these findings. Current staff in Tuckerton and New Brunswick are fully committed in their current responsibilities, and the reserve will need to re-evaluate staffing and support for program development in the new facilities and regions so as not to diminish quality programming already underway in the immediate reserve region. The primary responsibility of reserve management is to protect reserve resources and support research, education and stewardship of reserve lands and waters. Program development for satellite programs should not in any way compromise the quality and scope of programming within the reserve. The evaluation team recommends that satellite programming be developed in cooperation with key partners as well as with input from the CTP Advisory and Reserve Advisory Committees.

PROGRAM SUGGESTION: OCRM strongly encourages the JCNERR to initiate strategic planning activities with program partners at each satellite site in the development of an integrated plan for CTP and education program implementation. This plan should address reserve goals and objectives, based on an updated review of issues and audience assessment in satellite regions.

3. Interpretation and Outreach

a. Life on the Edge Exhibit

The Reserve's primary vehicle for interpretation and public outreach is the Life on the Edge Exhibit at the Tuckerton Seaport. The Tuckerton Seaport is a local tourist-focused development which strives to "preserve, present and protect maritime history, heritage and the environment of the Jersey Shore along with the contribution of its Baymen." Close to the core area of the reserve, the Seaport is an ideal location to reach a high volume of visitors with information and interactive exhibits to promote knowledge of key habitats within the Reserve.

The exhibit serves as a gateway to the JCNERR. It incorporates a series of interactive elements designed to promote knowledge of habitats within the Reserve, communicate estuarine research findings, and engage visitors in decision-making and stewardship of coastal communities. The path through the exhibit immerses visitors visually in the various Reserve habitats, complemented with text, models of objects and creatures found in coastal habitats, and recorded sounds of the coastal environment. Throughout the exhibits, scientists narrate stories of their

research investigations, the tools of the scientist, and ways that visitors can get involved as stewards of the coast.

The exhibit promotes literacy through interactive displays, including a section on community involvement, role-playing as various community stakeholders with a stake in coastal resource management decisions, and interactive decision-making activities. The reserve employs a part-time docent to manage the exhibits, provide additional interpretation, answer questions, and distribute materials about the Reserve and program opportunities for teachers. Reserve staff indicated a need to refresh various sections of the exhibit, as some elements are wearing with time.

b. Other Public Programs

In partnership with the Tuckerton Seaport, JCNERR staff has developed Mullica River/Great Bay-focused public educational programs. Their "Lunch n' Learn" series features expert speakers for a presentation and question and answer session. JCNERR held three of these sessions in 2005 and eight in 2006. Additionally, they offer Outdoor Educational Programs, including photography, painting, and birding classes all held in the field.

By collaborating with the Nature Center of Cape May, administered by the NJ Audubon Society, JCNERR staff has developed an effort to address coastal education and stewardship needs of the Cape May region as a component of a regional revitalization initiative. This partnership links research data to education and training programs to prepare Cape May managers, residents, and visitors to be informed decision-makers. To date, the JCNERR has provided interpretive materials and program development support to the Center, as well as funding for program development compatible with JCNERR education program objectives. The evaluation team suggests that evaluation of use of these materials would help validate JCNERR investment in the initiative.

4. Volunteer Program

The JCNERR has an ever-expanding group of volunteers. The number of volunteer hours at the Reserve tripled from 200 hours in 1999 to 600 hours in 2002, and tripled again to 1805 hours in 2006. Based out of the Reserve's Coastal Education Center in Tuckerton, the volunteers support many of the education, research, and stewardship programs at the Reserve. The volunteer and regional demographic is predominantly senior retirees. The Volunteer Coordinator coordinates with all sectors of the reserve, finding ways to fit volunteers into varied activities and tasks. Additionally, volunteers participate in the "backburner program," where they take home various projects such as updating education and CTP databases, transcribing lectures, and more. The Volunteer Coordinator, who recently received a prestigious NOAA Environmental Hero award, actively reaches out to recruit volunteers from the local community, particularly among new residents and retired citizens. The Reserve hosts an annual Volunteer Recognition/Reward dinner to honor volunteers and to present a "Volunteer of the Year" award.

ACCOMPLISHMENT: JCNERR is to be commended for their innovative and robust volunteer program.

D. STEWARDSHIP PROGRAM

During the evaluation site visit, "Stewardship" in the JCNERR was largely defined by reserve staff as educating and communicating concepts of habitat conservation and resource protection, and estuarine science to the public in the watershed. Direct management of lands and waters within the reserve is accomplished by staff of the respective land holding agencies. Through follow-up discussions, reserve staff clarified that in fact, stewardship activities are integrated across all core program areas, and that direct support for land holding agencies was provided through GIS information and findings on land use in the watershed, furthering the science of restoration relating to performance measures, identification of best management strategies to address stormwater management, and ongoing mapping, habitat classification and change monitoring efforts to support local land use planning, etc

The evaluation team finds that "stewardship" needs to be better conceptualized, defined and described in the revised management plan, with clear supporting links to reserve-based land management agencies. JCNERR core staff, as Rutgers University employees, relies entirely on the outstanding management capacity, expertise and leadership of its State and Federal land management partners for stewardship of land components of the reserve. During the performance period, one of the JCNERR GRFs conducted research on fire management in the upland portions of the reserve and adjacent Pine Barrens. The evaluation team observed that there may be additional and important opportunities for JC NERR staff to engage in supporting management of reserve uplands, perhaps best as a convener and coordinator for sharing of best practices, but also to support research activity in land-based components of the reserve.

Across the NERRS, increasingly stewardship is focused on restoration, land management, habitat classification and land use mapping to monitor change. The JCNERR is making important and ongoing contributions in this arena, driven from the research and monitoring portfolio of the JCNERR, with outstanding linkages to the Coastal Training Program through the repository and web-based portal. The evaluation team suggests that the reserve articulate this matrixed approach in defining stewardship to include its habitat and land use mapping capabilities and applications. Additionally, JCNERR staff may identify opportunities to: coordinate and foster sharing of best upland protected area management practices across region; leverage Rutgers support for enhanced research activity in reserve upland components; and support and influence research agendas focusing on priority resource management problems faced by land holding partner agencies in the JCNERR.

Lastly, evaluation team members suggested that while not required, the reserve should consider participation in NERRS stewardship sector meetings as the group increasingly focuses on land use mapping and monitoring of change. Through participation in this professional group, the reserve would have the opportunity to both contribute to and learn from national efforts in this arena.

PROGRAM SUGGESTION: OCRM suggests that JCNERR develop a consensus and definition of stewardship as a matrixed function across the reserve portfolio of programs to include capabilities in land use mapping and change and the extension of this data, as well as enhancing science-based support for land holding partners in the identification of best management practices.

1. Coordination with Landholding Agencies

The Jacques Cousteau National Estuarine Research Reserve encompasses more than 110,000 acres of land and water, primarily consisting of land owned and managed by various Federal and state resource management agencies. The New Jersey DEP, the Pinelands Commission and the U.S. Fish and Wildlife Service are the principal land managers in the Reserve. The evaluation team finds that the lands within the Reserve boundary are effectively protected through the ongoing oversight and enforcement of regulations governing each of the management units. The evaluation team finds that ongoing coordination with landholding agencies is important for ensuring effective stewardship of the Reserve, and views the Advisory Committee as a critical forum to foster this coordination. There may be excellent opportunities to strengthen support for research in upland areas through enhanced leveraging of Rutgers University research interests in these areas.

2. Acquisition Planning

JCNERR's Mullica River Conservation Initiative strives to conserve "a contiguous greenway of ecologically and recreationally valuable land within the Mullica and Wading River watersheds." Through competitive NERRS land acquisition and construction funding, JCNERR received $50,000 to further this plan (see acquisition grants section). The plan also identified the pocket marsh adjacent to the JCNERR Coastal Education Center as a priority for acquisition due to its significant natural value, however the property owner is not willing to sell the parcel at this time. While the reserve is currently in negotiation for an alternate parcel in Washington Township, the evaluation team recommends careful review and update of the acquisition plan for inclusion in the revision of the management plan.

V. CONCLUSION

For the reasons stated herein, I find that New Jersey is adhering to the programmatic requirements of the Coastal Zone Management Act and the regulations of the National Estuarine Research Reserve System in the operation of its approved Jacques Cousteau National Estuarine Research Reserve (JCNERR).

JCNERR has made notable progress in the following areas: strengthening institutional and external partnerships for program implementation; integration of research, education and stewardship elements in program delivery; expansion of the Marine Resources Education program in New Jersey; exemplary contributions to NJ ecosystem research; a successful launch of the JC NERR Coastal Training Program; and innovations in volunteer programs.

These evaluation findings also contain seven (7) recommendations in the form of Program Suggestions. The Program Suggestions should be addressed before the next regularly-scheduled program evaluation, but they are not mandatory at this time. Program Suggestions that must be repeated in subsequent evaluations may be elevated to Necessary Actions. Summary tables of program accomplishments and recommendations are provided in section VI.

This is a programmatic evaluation of JCNERR that may have implications regarding the state's financial assistance awards. However, it does not make any judgment on or replace any financial audits.

(for) Donna Whiting

David Kennedy
Director, Office of Ocean and Coastal
Resource Management

OCT 28 2008

Date

VI. APPENDICES

Appendix A. Summary of Accomplishments and Recommendations

The evaluation team documented a number of the JCNERR's accomplishments during the review period. These include:

Issue Area	Accomplishment
Administration	OCRM commends JCNERR staff for their continued success in the development of partnerships and leveraging of support from Rutgers University programs and administrative services.
Administration	OCRM commends JCNERR for their successful and comprehensive integration of programs, contributing to enhanced efficiencies and program impact.
Administration	OCRM commends JCNERR for cultivating and establishing excellent working relationships with an extensive and diverse group of partners.
Administration	JCNERR is to be commended for significant contributions to NERRS system-wide program planning and development.
Research	JCNERR is to be commended for their extensive and invaluable contributions to coastal New Jersey ecosystem research and significant efforts to reach out and inform the management community.
Education	JCNERR is to be commended for fully operational and stable MARE program they have fostered in New Jersey.
Education	JCNERR is to be commended for their innovative and highly effective Coastal Training Program in Monmouth and Ocean Counties.
Education	JCNERR is to be commended for their innovative and robust volunteer program.

In addition to the accomplishments listed above, the evaluation team identified several areas where the program could be strengthened. Recommendations are in the forms of Program Suggestions and Necessary Actions, although there are no Necessary Actions from this evaluation. Areas for improvement include:

Issue Area	Recommendation
Administration	PROGRAM SUGGESTION: OCRM encourages the JCNERR to review the level of effort needed to coordinate program development and execution at the satellite sites as well as requisite support and guidance from the Tuckerton-based CTP staff. The revised management plan should reference CTP direction and development at the reserve and satellite facilities and staffing requirements.
Administration	PROGRAM SUGGESTION: OCRM suggests that JCNERR work with the Advisory Committee to identify communication strategies to ensure ongoing exchange of information and the dissemination of the results of Committee meetings across the membership and to the JCNERR partner community.
Administration	PROGRAM SUGGESTION: OCRM strongly recommends the development of facility operations and use agreements with core partners for both the Sandy Hook and Bridgeton facilities.
Administration	PROGRAM SUGGESTION: OCRM recommends that JCNERR continue to improve communication and enhance coordination between the NJ CMP and JCNERR, Sea Grant program and others providing information to coastal decision-makers, particularly about model ordinances that meet New Jersey's coastal permitting requirements, to increase consistency and efficiency in delivery of this information to decision-makers.
Administration	PROGRAM SUGGESTION: OCRM strongly suggests that JCNERR go beyond occasional resource expert exchange and engage New Jersey Sea Grant consortia in strategic and collaborative planning to maximize NOAA partner program effectiveness and impact in training and extension.
Education	PROGRAM SUGGESTION: OCRM strongly encourages the JCNERR to initiate strategic planning activities with program partners at each satellite site in the development of an integrated plan for CTP and education program implementation. This plan should address reserve goals and objectives, based on an updated review of issues and audience assessment in satellite regions.
Stewardship	PROGRAM SUGGESTION: OCRM suggests that JCNERR develop a consensus and definition of stewardship as a matrixed function across the reserve portfolio of programs to include capabilities in land use mapping and change and the extension of this data, as well as enhancing science-based support for land holding partners in the identification of best management practices.

Appendix B. Response to Previous (2003) Evaluation Findings

Program Suggestion: The Reserve is encouraged to have a senior management presence in Tuckerton at the Coastal Education Center on a full-time or rotational basis to oversee day-to-day operations at the field location.

Response: An Assistant manager (Sharon McKenna) was hired to provide a senior management presence in Tuckerton. Recently, recognizing the maturity and experience developed by JC NERR staff over the past 4 years, Sharon's responsibilities were changed to manage special programs, and the staff is ably equipped to work with modest supervision from the manager. Mike De Luca regularly spends time in Tuckerton and uses a senior management council to ensure conduct of reserve business (Mike Kennish, Lisa Auermuller and Mike De Luca).

Program Suggestion: The program should improve the timeliness of its performance reports and work with NOAA to clarify expectations regarding the level of detail to be provided within the reports.

Response: JC NERR established a point person to prepare progress reports (Madeline Gazzale). Madeline has ensured that all progress and performance reports are submitted in a timely manner. Part of this issue had to do with the lack of response on the part of ERD in reviewing progress and performance reports. This has changed and the JC NERR staff is extremely pleased with the level of attention given these reports by the program specialist.

Program Suggestion: NOAA encourages the JCNERR to 1) engage the Reserve Advisory Committee in planning, particularly in the review and update of the 5-year management plan and to provide an ongoing forum for coordination among Reserve partners, and 2) to explore the need for changes to the structure (to formalize operational changes that have taken place) and schedule of the advisory committees as part of the 5-year management plan update.

Response: The Reserve Advisory Committee was large with many subcommittees. This was necessary for program start-up. However, we have recently redesigned this committee to include senior managers from key partner agencies. This group will begin to meet in Fall 2007 to review and provide advice and guidance on program direction, leveraging opportunities, collaborative activities.

Program Suggestion: In updating its management plan, which is due this year, the Reserve is encouraged to engage the Reserve Advisory Committee in long-term planning for Reserve's program priorities, facilities needs, and watershed protection efforts, to clarify the structure of advisory committees, and to set realistic milestones for progress in these areas over the next 5 years.

Response: The newly re-established Advisory Committee will meet in Fall 2007. One of the first orders of business will be to review the draft revision of the JC NERR management plan.

Program Suggestion: The Reserve is encouraged to help facilitate improved communication and collaboration among the New Jersey coastal program, Sea Grant program, and the Reserve on issues of mutual concern, particularly regarding delivery of training and technical assistance for county and municipal officials on coastal issues, such as stormwater runoff and other land-based sources of pollution.

Response: This program suggestion was developed at the request of the JC NERR staff. Since the last 312 review, collaboration with these two organizations has increased, and is expected to get stronger in 2008. Recent collaborations have occurred in the areas of stormwater management, management of Barnegat Bay, participation in Coast Day activities, and co-sponsoring of the Shore Bowl.

Program Suggestion: In light of growing demand for education, interpretive and training programs and limited staff resources, NOAA encourages the Reserve to remain focused and strategic in expanding these programs. It will be critical to ensure the level of capacity and infrastructure needed to support expansion of the geographic scope and the range of target audiences for education, training, interpretation and outreach.

Response: JC NERR staff conducted a strategic planning effort in 2005-2006 to address this and other issue associated with future direction. Criteria were developed to focus investment in program areas. as a result, a commitment was made to advance public programs in partnership with NGOs (such as the Nature Center of Cape May), hire a full-time education Coordinator, develop a training program for coastal stewards (volunteers) to assist with delivery of education programs, and advancing the partnership with Rutgers to continue delivery of K-12 education programs.

Program Suggestion: NOAA encourages the Reserve to work with the NJ coastal program and local governments to evaluate the effects of proposed developments in the Great Bay/Mullica River and Barnegat Bay watersheds on the JCNERR. The Reserve is encouraged to work with DEP to develop a formal mechanism by which the Reserve is notified of, and has an opportunity to comment on, permit applications for activities in the Great Bay/Mullica River watershed.

Response: As a university-based NERR, efforts are focused on providing science-based information to partners and coastal decision-makers. JC NERR staff are careful not to advocate for or against specific projects, but to identify consequences of proposed activities on habitat and water quality. As such, this review role is best conducted informally, rather than a regular review mechanism to support regulatory efforts.

Appendix C. Persons and Institutions Contacted

Jacques Cousteau National Estuarine Research Reserve
Mike De Luca
Lisa Auermuller
Scott Haag
Fred Grassle
Norb Psuty
Josephine Kozic
Ken Able
Mike Kennish
Janice McDonnell
Gregg Sakowicz
Ida Louise Scott
Gina Petruzzelli
Mark Wuenschel
Madeline Gazzale
Sharon McKenna

JCNERR Volunteers
Helen E. Zaengle
Ruth Koenig
Betty Graybush
Rose M. Faiss

New Jersey Sea Grant Consortia
Pete Rowe
Michael Weinstein

Wharton State Forest
Rob Auermuller

Richard Stockton College
Steve Evert

Rutgers University Center for Remote Sensing and Spatial Analysis
Rick Lathrop
Inga La Puma

New Jersey Department of Environmental Protection
Bob Mancini
Ruth Ehinger
Helen Owens
Susan McLaughlin

U.S. National Park Service- Sandy Hook
Richard Wells

Sandy Hook Renovation and Development
Jim Wassel

Brookdale Community College
Linda Milstein

Ocean County
Jeanine Cava
Stan Hales
Mike Mangum
German Georgieff

Consultant
Chris Gulics

Lacey Middle School
Rosemarie Bond
Anne Dezendorf

New Jersey Audubon
Gretchen Ferrante

Tuckerton Seaport
Tim Hart

U. S. Fish and Wildlife Service
Steve Atzert
Brian Braudis
Art Webster

City of Bridgeton
James Begley

Individuals Identified but Not Associated With an Organization
Steve Carnahan
Sandy Condit
Jeff Sagnip Hollendoller
Bill Packer
Paul Hart
Cynthia Coritz
Dan Campbell
Steven Gray

Appendix D. Persons Attending the Public Meeting

Margrit Meissner-Jackson
Ida H. Scott

Appendix E: NOAA's Response to Written Comments

NOAA received one written comment regarding the Jacques Cousteau National Estuarine Research Reserve. The letter is part of the official record of the evaluation and is briefly summarized below, followed by NOAA's response.

Margit Meissner-Jackson
Conservation Chair, Sierra Club Ocean County

Comment: As a concerned citizen living in the area, Ms. Meissner-Jackson lauded the services of the JCNERR in working with environmental commissions of various townships in providing information. Ms. Meissner-Jackson noted impacts of extensive development in the region and the importance of the reserve and its outreach to inform decisions and educate key audiences.

OCRM Response: OCRM concurs with Ms. Meissner-Jackson's comments that a key accomplishment during this period is the impact of coastal training programs and outreach to key audiences through the JCNERR Coastal Training Program and education activities for local audiences.