

Final Evaluation Findings

Chesapeake Bay National Estuarine Research Reserve in Virginia

April 2007 to September 2014

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Executive Summary

The Coastal Zone Management Act requires the National Oceanic and Atmospheric Administration's Office for Coastal Management to conduct periodic evaluations of the performance of state programs participating in the National Estuarine Research Reserve System. This evaluation examined the operation and management of the Chesapeake Bay National Estuarine Research Reserve in Virginia by the Virginia Institute of Marine Science in the College of William and Mary, the designated lead agency, for the period from April 2007 to September 2014. The evaluation focused on one target area: sentinel sites.

The findings in this evaluation document will be considered by the NOAA Office for Coastal Management in making future financial award decisions concerning the reserve. The evaluation came to these conclusions:

Accomplishment: The staff members of the Chesapeake Bay Reserve in Virginia are well respected and have provided crucial support to further the efforts of federal programs, including NOAA and the National Estuarine Research Reserve System, the Chesapeake Bay Program, state programs, local governments, and nonprofits.

Accomplishment: The Chesapeake Bay Reserve in Virginia completed its site profile and worked to ensure it reached a wide audience and was used to encourage research that addresses reserve priorities.

Accomplishment: The Chesapeake Bay Reserve in a Virginia has been a leader in the development of the National Estuarine Research Reserve System Sentinel Site Program and NOAA Sentinel Site Program, contributing to our understanding of how changes to the climate are impacting coastal resources.

Accomplishment: The Chesapeake Bay Reserve in Virginia developed a successful new program for local 9th grade students, Climate Education for a Changing Bay, that engages them in learning about climate impacts to the bay through activities that include analysis of sentinel site data.

Necessary Action: The Chesapeake Bay Reserve in Virginia must submit a draft management plan to the NOAA Office for Coastal Management by June 30, 2016.

Recommendation: The NOAA Office for Coastal Management recommends that the Chesapeake Bay Reserve in Virginia facilitate efforts to synthesize and analyze sentinel site and other monitoring data.

Recommendation: The NOAA Office for Coastal Management recommends that the Chesapeake Bay Reserve in Virginia develop coastal trainings and other communication

mechanisms to provide the latest science and sentinel site information in a usable format to coastal decision-makers, managers, and local citizens.

This evaluation concludes that the Virginia Institute of Marine Science in the College of William in Mary is adhering to the programmatic requirements of the National Estuarine Research Reserve System in the operation of the Chesapeake Bay National Estuarine Research Reserve in Virginia.

Program Review Procedures

The NOAA Office for Coastal Management evaluated the Chesapeake Bay National Estuarine Research Reserve in Virginia in fiscal year 2014. The evaluation team consisted of Carrie Hall, evaluation team lead; Chris Kinkade, site liaison; Michael Migliori, site liaison; Randall Schneider Mid-Atlantic lead; and Will Underwood, stewardship coordinator, Grand Bay National Estuarine Research Reserve. The support of the reserve staff was crucial in conducting the evaluation, and this support is most gratefully acknowledged.

NOAA sent a notification of the scheduled evaluation to the director of the Virginia Institute of Marine Science, published a notice of “Intent to Evaluate” in the *Federal Register* on July 25, 2014, and a correction to the date was published in the *Federal Register* on August 28, 2014. NOAA also notified members of Virginia’s congressional delegation. The reserve posted a notice of the public meeting and opportunity to comment in the *Gloucester-Mathews Gazette-Journal* on July 31, 2014, and the Hampton Roads *Daily Press* on August 5, 2014.

The evaluation process included a review of relevant documents and a survey of stakeholders, which helped identify the target area of the evaluation: sentinel sites. In addition, a section on program administration is included in the findings. A site visit was conducted and the evaluation team held meetings with staff members and group discussions with stakeholders and program staff members about target areas. A public meeting was held on Thursday, September 18, 2014, at 5:00 p.m. at the Wilson House at 7581 Spencer Road, Gloucester Point, Virginia, to provide an opportunity for members of the public to express their opinions about the implementation of the reserve. Stakeholders and members of the public were given the opportunity to provide written comment via email or U.S. mail through Friday, September 19, 2014. The comments and the NOAA Office for Coastal Management’s responses are in Appendix A. The Office for Coastal Management then developed draft evaluation findings, which were provided to the reserve for review, and the reserve’s comments were considered in drafting the final evaluation findings.

Final evaluation findings for the national estuarine research reserves highlight each reserve’s accomplishments in the target areas and include recommendations, which are of two types:

Necessary Actions address programmatic requirements of implementing regulations of the Coastal Zone Management Act. These must be carried out by the dates specified. Failure to address necessary actions may result in a future finding of non-adherence and the invoking of interim sanctions, as specified in the Coastal Zone Management Act §312(c).

Recommendations are actions that the office believes would improve the program but which are not mandatory. The state is expected to have considered the recommendations by the time of the next evaluation or dates specified.

Evaluation Findings

Program Administration

National Contributions

During the evaluation period, the Chesapeake Bay National Estuarine Research Reserve in Virginia made numerous contributions to improve the implementation, and bring visibility to, the national Coastal Zone Management Act programs. The reserve is located close to the Washington D.C. area and often serves as a host to visiting legislators and federal staff members, educating them on the purpose and value of estuarine research reserves. For example, the reserve hosted the 40th Coastal Zone Management Act Anniversary celebration in 2012, an event bringing high-level visibility to the national reserve and coastal management programs. The reserve has contributed greatly to the development and implementation of sentinel site systems as discussed throughout the findings, including hosting NOAA's first sentinel site training. The reserve provided technical support and assistance to a NOAA project to test new equipment measuring water quality, tides, and currents by comparing the results to reserve instruments. Reserve staff members also serve as a liaison between numerous reserves and the Virginia Institute of Marine Science Analytical Lab that analyzes reserves' nutrient samples on a routine and periodic "emergency" basis.

Reserve staff members are well respected by their stakeholders and partners for their expertise and willingness to assist and share their knowledge. The reserve has also benefited significantly from having a talented staff with low turnover.

Reserve staff members serve on many national, regional, and local boards and committees serving in leadership and advisory roles, furthering the Virginia Institute of Marine Science's mission of research, education, and advisory service. The reserve manager has served on the Chesapeake Bay Sentinel Site Cooperative Steering Committee, and the stewardship coordinator has served on the Tidal Datums Workgroup and helped lead the development of the *Accurate Elevations for Sea Level Change Sentinel Sites* draft guidelines. Reserve staff members have also served on the National Estuarine Research Reserve System-wide Monitoring Program Guidance Committee, Sentinel Sites Oversight Committee, and as chair of the Biomonitoring Committee and have taken leadership roles in developing and implementing the programs and associated protocols. In addition to their role in sentinel site development, reserve staff members have also served

- as president of the National Estuarine Research Reserve Association
- as president of the Mid-Atlantic Marine Education Association Board
- on the Integrated Ocean Observing System Workgroup
- on the National Estuarine Research Reserve System Education Workgroup
- on the Virginia Coastal Policy Team

- on the Virginia Nonpoint Source Advisory Committee
- on the state Water Quality Standards Workgroup
- on the Dragon Run Steering Committee
- on the Virginia Resource Use Education Council
- on the Virginia Institute of Marine Science Public Outreach Committee

The NOAA Office for Coastal Management commends the reserve for its many contributions to national Coastal Zone Management Act programs and regional and local coastal management initiatives.

Management Plan

All national estuarine research reserves are required by the Coastal Zone Management Act to have five-year management plans. The current *Virginia Chesapeake Bay Reserve Management Plan 2007-2012* is out of date, and a draft management plan should be submitted to the Office for Coastal Management for review and approval by June 30, 2016.

Site Profile

The reserve successfully addressed a necessary action in the previous evaluation and completed its site profile, *A Site Profile of the Chesapeake Bay National Estuarine Research Reserve in Virginia*, in 2009. The site profile identifies a large number of specific data gaps, and the reserve's sentinel site initiative and supporting studies on critical reserve habitats are helping to fill identified gaps. A large number of other research studies focusing on these gaps have also been conducted since the site profile was published. The reserve's education program also uses chapters in the site profile in educational programs as background information to highlight the ecology of the York River system. The reserve also worked to have the document published in 2009 as a complete, peer-reviewed special issue of the *Journal of Coastal Research* (Special Issue 57, "The Chesapeake Bay NERRS in Virginia: A Profile of the York River Ecosystem"), a widely used scientific journal, enabling broad distribution of the information within the scientific community and bringing high visibility to both the reserve and reserve system.

State Support

The Virginia Institute of Marine Science in the College of William and Mary has increased its support for the reserve over the evaluation period and successfully addressed a program suggestion in the previous evaluation findings to "consider increasing funds provided to the reserve, potentially through the support of one of the Reserve's staff positions." The university is now providing funding for three-quarters of the stewardship coordinator position, created an equipment and maintenance trust fund for the System-wide Monitoring Program, and supports professional development of staff members.

Accomplishment: The staff members of the Chesapeake Bay Reserve in Virginia are well respected and have provided crucial support to further the efforts of federal programs, including NOAA and the National Estuarine Research Reserve System, the Chesapeake Bay Program, state programs, local governments, and nonprofits.

Accomplishment: The Chesapeake Bay Reserve in Virginia completed its site profile and worked to ensure it reached a wide audience and was used to encourage research that addresses reserve priorities.

Necessary Action: The Chesapeake Bay Reserve in Virginia must submit a draft management plan to the NOAA Office for Coastal Management by June 30, 2016.

Sentinel Sites

The reserve has been a national leader in developing and building monitoring and sentinel site programs. The data from the sentinel site programs are already informing coastal management decision-making and will continue to provide much-needed information to better understand the Chesapeake Bay estuarine ecosystem and how it is changing in response to climate change. Although a challenge, the reserve successfully reports data in different formats for each system.

System-wide Monitoring Program

The reserve is fully implementing the abiotic, weather, and nutrient components of the National Estuarine Research Reserve System's System-wide Monitoring Program. In addition to the base monitoring program requirements, the reserve maintains two additional water quality stations to address an identified need for water quality assessments. The reserve also maintains two additional weather stations. For biological monitoring, the reserve implements approved reserve system-wide protocols for both submerged and emergent wetland communities on a routine basis.

Although the reserve's monitoring program goes above and beyond the requirements of the System-wide Monitoring Program in many areas, the reserve has not completed habitat maps for its properties. Completion of the habitat maps and monitoring change over time will assist the reserve in determining linkages between coastal habitat quality and environmental influences, and provide for a more complete understanding of current conditions and future changes. The Office for Coastal Management encourages the reserve to complete habitat maps for reserve lands.

Other Monitoring

The reserve has participated in the National Atmospheric Deposition Program and Mercury Deposition Network for over five years. Information derived from these atmospheric programs contributed to regional and national evaluations and assessments of mercury, nitrogen, and acid deposition, including a report, *National Acid Precipitation Assessment Program Report to*

Congress 2011: An Integrated Assessment. The report documents a successful reduction of emissions of sulfur dioxide and nitrogen oxides from power generation over 20 years, but also found that emission reductions from power plants achieved under Title IV of the 1990 Clean Air Act are insufficient to achieve full recovery or to prevent further acidification of sensitive forest and aquatic ecosystems.

The reserve is conducting high-spatial-resolution water quality monitoring along vessel tracks in both shallow and channel areas using the DataFlow system. The enhanced shallow water monitoring program has been implemented in the Potomac, Rappahannock, Piankatank, York, and James Rivers, in addition to the Mobjack Bay and other western shore embayments. The data have been used to address a number of water quality issues, including turbidity and oxygen impacts from large-scale storms, water quality assessment of southern Chesapeake Bay and tidal tributary waters, monitoring of harmful algal blooms, and identification of underwater seagrass stressors.

To address management concerns in the Chesapeake Bay, the reserve and Virginia Institute of Marine Science have instituted vertical profiling stations using grant funding from the U.S. Environmental Protection Agency to assess water quality conditions, especially dissolved oxygen levels, in deeper channel areas where bottom water anoxia is of special concern. The goal has been to assess the temporal development of hypoxia and anoxia and to assess the depth and movement of the pycnocline. Multiple stakeholders noted the rarity of these data and importance to understanding the dynamics, particularly of short-term events in the Chesapeake Bay.

Virginia Estuarine and Coastal Observing System

The reserve has played a leading role in the development and continued operation of the Virginia Estuarine and Coastal Observing System, a website designed to provide easy access to water quality data from the Chesapeake Bay and associated tributaries within Virginia. The website provides users with enhanced access to these data through Google maps-enabled navigation to data of interest, fast and simple access to downloadable data sets, and interactive online visualizations. Currently, the research coordinator oversees the project and the reserve provides quality-assured data that is web accessible in real- or near-time. During the evaluation period, the reserve also assumed file maintenance and data management responsibilities for the NOAA Chesapeake Interpretive Buoy System. The observing system website is used by a number of users, including researchers and the Virginia Department of Environmental Quality and Chesapeake Bay Program, to assess tidal water quality.

National Estuarine Research Reserve System Sentinel Site Program

The reserve has also achieved National Estuarine Research Reserve System Climate Change Sentinel Site status. With the assistance from the NOAA National Geodetic Survey and Center for Operational Oceanographic Products and Services, the reserve installed the supporting infrastructure to monitor emergent wetlands. The reserve's infrastructure includes 28 surface

elevation tables, multiple groundwater transects, over 250 vegetation plots along transects, and vertical control networks with data analysis capacity to address short-term episodic impacts and longer-term trends in targeted habitats.

NOAA Sentinel Sites

The Chesapeake Bay Sentinel Site Cooperative was chosen by NOAA to be one of the founding five NOAA sentinel sites along with the Hawaiian Islands, North Carolina, Northern Gulf of Mexico, and San Francisco Bay. The Chesapeake Bay Sentinel Site Cooperative is composed of numerous federal agencies, Maryland and Virginia state agencies, and academic and nongovernmental partners. The Virginia Chesapeake Bay Reserve is a key partner and manages four of the core ecological sites, while the Maryland Chesapeake Bay Reserve manages three sites and Blackwater National Wildlife Refuge, Virginia Coast Long Term Ecological Research Network, and Assateague Island National Seashore each manage one core site.

The Chesapeake Bay area is currently experiencing some of the highest relative sea-level rise rates within the United States, measured at up to .23 inches per year. The Chesapeake Bay Sentinel Site Cooperative's goal is to provide data, information, and visualizations of sea level rise to Chesapeake Bay citizens, city and county elected officials, managers and planners, builders and developers, and natural resource managers.

Staff members played a leading role in the development and implementation of the Chesapeake Bay Sentinel Site Cooperative, and their efforts included supporting the development of initial selection proposals, serving on steering boards, development of the *Chesapeake Bay Sentinel Site Cooperative Implementation Plan FY13-FY18*, and hosting cooperative websites. As part of the sentinel site effort, the reserve routinely monitors emergent wetland sediment elevation, marsh accretion, water table dynamics, and vegetation plots.

Research and Monitoring and Stewardship

The data collected as part of the reserve's engagement in the national System-wide Monitoring Program and Sentinel Site Initiative, the Chesapeake Bay Sentinel Site Cooperative, and the broader NOAA Sentinel Site Cooperative Program are valuable for informing research, stewardship, coastal management, and education. The development of the sentinel sites has enabled the reserve and other stakeholders to better address key issues, including assessing the vulnerability of key habitats to climate stressors and assessing management options.

The reserve's monitoring data are well utilized by Virginia Institute of Marine Science students, and professors from two universities noted that they have incorporated the reserve's monitoring data into their graduate student curriculums. The evaluation team heard from researchers that the monitoring system and Virginia Estuarine and Coastal Observing System website were "unbelievable" assets for their studies.

The reserve's sentinel site data are a valuable component of numerous research projects. For example, a maritime forest recruitment study looked to enhance understanding of the inland migration of loblolly pine (a commercial species) and the role of spatial and temporal dynamics and potential stress of water table elevations and associated salinity levels. A graduate student supported by a reserve-specific endowment fellowship conducted a dendroecological assessment to provide additional insight into coastal forest growth patterns, mortality, and regeneration.

The reserve also participated in a three-year partnership with the Wells (Maine), Narragansett (Rhode Island), North Carolina, and South Slough (Oregon) Reserves to evaluate the status of 18 emergent wetland restoration projects funded with Estuary Restoration Act funds. The reserves monitored salt marsh habitats within their boundaries to establish reference conditions and nearby restoration projects. The project built on existing National Estuarine Research Reserve System monitoring protocols and was designed to help the reserve system establish the reserves as sentinel sites. With sentinel site infrastructure, scientists are better able to evaluate current and future restoration projects and assess and predict marsh estuarine ecosystem change, especially in response to climate-driven changes in sea level, storms, precipitation, salinity, water temperature, and invasive species. The project also led to the development of core and optional monitoring parameters for the NOAA Restoration Center to use for evaluating the status of local restoration projects.

The reserve's monitoring system was also cited as particularly valuable by researchers because it spans a wide salinity gradient from upriver to the Chesapeake Bay. They also noted that new federal projects to better monitor and understand climate impacts were potentially getting underway in the region and that the reserve would be seen as a key resource. Stakeholders the evaluation team met with also noted future needs and opportunities including

- installation of a new mid-channel buoy
- improved monitoring of pH
- monitoring ocean acidification in estuaries
- building a sentinel site in at least one local urban area to better understand climate change impacts in an urban environment
- creating new monitoring sites upstream as sea level rises
- more synthesis of monitoring data
- long-term planning for sentinel sites
- for reserve staff to publish papers on sentinel site data
- building a volunteer capacity, particularly to assist with stewardship activities

The reserve's research and monitoring data are being used by a number of its partners to manage coastal resources and areas. Stakeholders the evaluation team met with noted that using reserve data brings credibility. The Virginia Department of Environmental Quality and Chesapeake Bay Program used reserve data to inform setting dissolved oxygen criteria for

listing of impaired waterways. The data also enable the Department of Environmental Quality to measure and demonstrate progress and the value of funding water quality improvement efforts. Stakeholders the evaluation team met with noted that extensive monitoring allows them to better understand bay dynamics and to see things that happen on shorter time frames. A number of partners also mentioned the value of a sea level rise brochure produced by the reserve in assisting them with explaining sea level rise and local impacts to local government officials, staff members, and citizens.

Education and Outreach and Coastal Training Program

The reserve has a very highly regarded education and outreach program with many enthusiastic supporters. The reserve's education program is aligned with state and national standards, and the education program has built and capitalized on strong relationships with its local school districts and teachers. During the evaluation period, the reserve implemented a Chesapeake Studies program that thousands of local (Gloucester, Mathews, and York County) 7th grade students have participated in. The program provides meaningful classroom studies and field experiences and was designed to support a goal in the Chesapeake Bay 2000 resolution stating that every student, starting in the year 2005, should have a meaningful watershed education experience.

To address emerging issues, the reserve's education program created a new program, Climate Education for a Changing Bay, for 9th grade students. The program is supported with a NOAA Bay Watershed Education and Training program grant, and approximately 800 students and 15 teachers participate annually. The program highlights coastal resilience in Gloucester and Mathews County, Virginia. Students work with education staff members to study climate, sea level rise, and marshes using NOAA assets and resources, including sentinel site data. At the time of the site visit, the education coordinator was preparing to showcase the new, innovative program at the reserve system's upcoming national meeting.

The reserve continues to support the Chesapeake Studies program as time allows and has created resource boxes for teachers to check out on their own. In addition, some schools have provided additional financial support to enable their students to continue to participate, since schools highly value the program. Both of these core education programs provide interrelated professional development opportunities for all life science and earth science teachers in the three-county regional area. The reserve has been a leader nationally in implementing the Teachers on the Estuary program and in 2014 conducted a training for the Climate Education for a Changing Bay program. The education program is also a leader nationally in integrating sentinel site data into educational programming, and the Office for Coastal Management encourages and commends the education program in these efforts.

Through the funding support of a university donor, the reserve is also able to provide very popular summer camp opportunities for local children. The reserve holds five week long camps for first through eighth graders. Younger children are selected by lottery and older age groups are chosen based on essay applications. The reserve also provides family-friendly Discovery

Labs. The evaluation team heard from a large number of parents and students who commented on how meaningful the summer camp and Discovery Lab experiences were. Some of the children discussed how they were inspired to pursue careers in science. In addition, a college student who attended the public meeting discussed how the reserve education programs led to his choice of pursuing a degree in science. The Office for Coastal Management commends the reserve for developing and implementing excellent hands-on educational programming that is nurturing students' interest in science and the Chesapeake Bay.

The Coastal Training Program provides high-quality training programs for coastal management professionals, usually reaching over 400 professionals a year. Topical areas for trainings are based on user needs and broadly include water quality and stormwater management, natural resource assessment and ecosystem services, shoreline management and green infrastructure for coastal resilience, and tools and observation systems to support decision-making. The Coastal Training Program has served as a resource to state agencies by developing trainings to support new state policies and regulations such as training on stormwater management and wetland delineation. Stakeholders who the evaluation team heard from noted how valuable the training they received had been to their jobs.

The collection and analysis of sentinel site data is relatively new, but the reserve now has several years of data or more for key parameters. Stakeholders who the evaluation team met with noted their keen interest in learning more about the data being collected by the reserve and key research results so that they could use the information to inform their decisions. There is a need to bring this information to local communities to help them prepare for climate change, including sea level rise. A stakeholder also noted that there were opportunities for improved coordination with the Virginia Coastal Management Program regarding climate change and climate adaptation, in particular the impacts of climate change on coastal habitats. The Coastal Training Program is well positioned to begin developing trainings about monitoring and recent research results and bringing the information to coastal decision-makers.

The evaluation team also heard from participants who expressed an interest in developing a stronger relationship with the coastal program. The Office for Coastal Management encourages the reserve to pursue opportunities to build new relationships and strengthen partnerships with organizations, including the Virginia Coastal Management Program and Sea Grant.

Accomplishment: The Chesapeake Bay Reserve in Virginia has been a leader in the development of the National Estuarine Research Reserve System Sentinel Site Program and NOAA Sentinel Site Program, contributing to our understanding of how changes to the climate are impacting coastal resources.

Accomplishment: The Chesapeake Bay Reserve in Virginia developed a successful new program for local 9th grade students, Climate Education for a Changing Bay, that engages them in learning about climate impacts to the bay through activities that include analysis of sentinel site data.

Recommendation: The NOAA Office for Coastal Management recommends that the Chesapeake Bay Reserve in Virginia facilitate efforts to synthesize and analyze sentinel site and other monitoring data.

Recommendation: The NOAA Office for Coastal Management recommends that the Chesapeake Bay Reserve in Virginia develop coastal trainings and other communication mechanisms to provide the latest science and sentinel site information in a usable format to coastal decision-makers, managers, and local citizens.

Evaluation Metrics

Beginning in 2012, national estuarine research reserves began tracking their success in addressing three evaluation metrics specific to their programs. The evaluation metrics include a five-year target and provide a quantitative reference for each program about how well it is meeting the goals and objectives it has identified as important to the program.

The goals and objectives are from the *Chesapeake Bay National Estuarine Research Reserve in Virginia 2008-2012 Management Plan*.

METRIC 1

Goal: Promote the effective management and conservation of natural and cultural coastal resources through informed decision-making.

Objective: By 2017, communicate results of research, environmental monitoring, and best available science-based information to assist in improved coastal resource management.

Strategy: Conduct applied research, with an emphasis on reserve focus areas—ecosystem vulnerability to climate and human-induced stressors, functions and linkages of land-margin ecosystems, and water quality—and disseminate results in appropriate scientific and resource management publications.

Performance Measure: From 2012 to 2017, number of peer-reviewed journal manuscripts authored, or co-authored, by reserve staff members and submitted annually for publication addressing one or more of the reserve's priority research focus areas.

Target: From 2012 to 2017, one (1) peer-reviewed journal manuscript authored or co-authored by reserve staff members annually and submitted for publication addressing one or more of the reserve's priority research focus areas.

First Year Results: One peer-reviewed journal manuscript was submitted for publication on February 1, 2013.

Moore, K.A., E.C. Shields, **D.B. Parrish**. 2013. Impacts of varying estuarine temperature and light conditions on *Zostera marina* (eelgrass) and its interactions with *Ruppia maritima* (widgeongrass). Estuaries and Coasts. DOI 10.1007/s12237-013-9667-3.

Second Year Results: One peer-reviewed journal manuscript was submitted for publication on January 30, 2014

2014 (October). Jarvis, J.C., **K.A. Moore**, W.J. Kenworthy. 2014. Persistence of *Zostera marina* L. (eelgrass) seeds in the sediment seed bank. Journal of Experimental Marine Biology and Ecology 459: 126-136. (Submitted January 2014)

Third Year Results: 1 peer-reviewed journal manuscript was submitted for peer-reviewed publication on October 8, 2014.

Buskey, E., M. Bundy, M. Ferner, D. Porter, **W. Reay**, E. Smith, and D. Trueblood. System-wide monitoring program of the National Estuarine Research Reserve System: Research to address coastal management issues. Coastal Ocean Observing Systems: Advances and Syntheses. Editors Y. Liu, H. Kerkerling and R.H. Weisberg. Elsevier Books.

Discussion: The reserve met its target all three years.

METRIC 2

Goal: Increase public awareness, understanding, and appreciation of coastal environments.

Objective: By 2017, increase student and teacher knowledge and understanding of coastal environments through formal education programs.

Strategy: Provide inquiry- and science-based field, laboratory, and classroom instruction to students that focus on the value and conservation of estuaries.

Performance Measure: From 2012 to 2017, Number of K-12 and college student education programs hosted by the Reserve that focus on the value and conservation of estuaries.

Target: From 2012-2017, 20 K-12 and college student education programs will be hosted by the Reserve that focus on the value and conservation of estuaries.

First Year Results: 64 programs

Second Year Results: 51 programs

Third Year Results: 75 programs

Discussion: The reserve has a well-functioning education program and more than doubled its annual target every year.

METRIC 3

Goal: Promote the effective management and conservation of natural and cultural coastal resources through informed decision-making.

Objective: By 2017, communicate results of research, environmental monitoring, and best available science-based information to assist in improved coastal resource management.

Strategy: Provide the best available science-based information and skill-building opportunities, with an emphasis on reserve focus areas: ecosystem vulnerability to climate and human-induced stressors, functions and linkages of land-margin ecosystems, water quality, and integrated ocean observing systems to coastal resource decision-makers and other appropriate stakeholder groups through a variety of formats, including training workshops, sponsored conferences, and developed information products.

Performance Measure: From 2012 to 2017, number of targeted and requested training workshops held annually to build coastal decision-maker capacity and promote the use of recent research results on reserve focus areas.

Target: From 2012 to 2017, six targeted and requested training workshops held annually to build coastal decision-maker capacity and promote the use of recent research results on reserve focus areas.

First Year Results: Nine targeted workshops were conducted.

Second Year Results: Nine targeted workshops were conducted.

Third Year Results: Eleven targeted workshops were conducted.

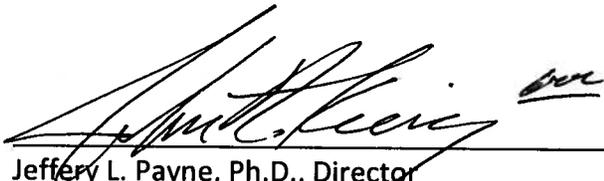
Discussion: The reserve has a well-functioning coastal training program and has met and exceeded its target by 50 percent or more in all three years.

Conclusion

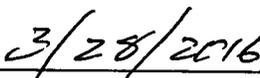
For the reasons stated herein, I find that the Virginia Institute of Marine Science at the College of William and Mary is adhering to the programmatic requirements of the Coastal Zone Management Act and its implementing regulations in the operation of its approved Chesapeake Bay National Estuarine Research Reserve in Virginia.

These evaluation findings contain one necessary action which must be addressed by the date given and two recommendations that must be considered before the next regularly scheduled program evaluation. Program recommendations that must be repeated in subsequent evaluations may be elevated to necessary actions.

This is a programmatic evaluation of the Chesapeake Bay National Estuarine Research Reserve in Virginia that may have implications regarding the state's financial assistance awards. However, it does not make any judgment about or replace any financial audits.



Jeffery L. Payne, Ph.D., Director
NOAA Office for Coastal Management



Date

Appendix A: NOAA Office for Coastal Management's Response to Written Comments

The NOAA Office for Coastal Management received a large number of responses praising and describing the positive impacts of the Chesapeake Bay National Estuarine Research Reserve in Virginia's education and coastal training programs and also positive comments on the reserve's stewardship. NOAA thanks all of the following respondents for taking the time to comment and providing input on the implementation of the reserve's programs.

Carol Hopper Brill, Ph.D.
Marine Education Specialist
Marine Advisory Program, Virginia Sea Grant
Virginia Institute of Marine Science
Gloucester Point, VA

Comments: Thank you for the opportunity to comment on the value of the diverse services that the Chesapeake Bay National Estuarine Research Reserve-Virginia (CBNERR-VA) provides to so many citizens. At the Public Comment Session yesterday, I focused on some of the excellent contributions that CBNERR-VA educators have made to the Virginia Institute of Marine Science (VIMS), our community and region. I am an educator with VIMS Marine Advisory Service and extension staff affiliated with Virginia Sea Grant. I especially appreciate the long history of collaboration that our education team has had with educators from CBNERR-VA.

CBNERR-VA education initiatives have filled an important niche here at VIMS and complement other efforts by addressing audiences, activities and resources that other VIMS educational programs do not. This success is due to the initiative and innovative programming of CBNERR-VA educator Sarah McGuire Nuss, under the direction of Director Willy Reay. Ms. Nuss and her education associates offer high quality programs that are content rich and professionally delivered. They facilitate awareness and appreciation of the Reserve and the larger Chesapeake Bay environment among their audiences, and offer hands-on interactions that make the experiences more substantive and lasting.

The energy, creativity and professionalism of the CBNERR-VA educators have made them valuable partners and contributors in joint initiatives with MAS and in VIMS-wide outreach efforts.

Educators from CBNERR-VA have directly benefitted the MAS programs with which I work. Selected examples include CBNERR-VA direct collaborations in:

- The annual Blue Crab Bowl, a marine science academic challenge for high school students and Virginia's regional competition of the National Ocean Sciences Bowl. CBNERR-VA

educators have volunteered as competition officials since 2004. This role requires a considerable time commitment, with training prior to the Bowl, as well as participation during the weekend event.

- Joint grant-writing to support environmental education professional development for teachers. Together, we've won support for workshops that provide instruction in conducting Meaningful Watershed Educational Experiences in 2010, 2011 and 2014. Shared responsibilities in planning, managing and instruction.
- Team-teaching contributions in 2011 and 2012 for the MAS Virginia Marine Ecosystems Field Course, a week-long residential training for teachers, conducted at the VIMS Eastern Shore laboratory.

CBNERR educators benefit VIMS, offering some of our Institute's most popular public programs, including:

- Monthly Discovery Labs for family audiences.
- Marine science Summer Camps for youngsters.
- Hands-on marine and environmental education activities for VIMS' annual institute-wide open house, Marine Science Day.

In support of CBNERR-VA education CBNERR and its educators have provided invaluable support to science curriculum in local schools through projects supported by NOAA's BWET funding. Local teachers and students have benefited from CBNERR investment and support, including: classroom instruction in Chesapeake Bay and watershed topics; meaningful watershed educational experiences that model field science; and classroom and field scientific equipment.

CBNERR educators also have an impact on the wider education communities of Virginia and the Mid-Atlantic through their active service to state councils and regional associations:

- CBNERR educator Sarah Nuss is one of two VIMS representatives to the Virginia Resource-Use Education Council, a multi-agency body that promotes and implements environmental education initiatives for the state.
- CBNERR educators have been active members of the Mid-Atlantic Marine Education Association, a group working to support marine science in schools, research institutions, aquariums, museums and governmental agencies from North Carolina to Delaware. Sarah Nuss has served on the MAMEA Board since 2010, first as Virginia State Representative, now in the role of President. Jaclyn Beck is incoming State Representative. They have contributed to several committees and helped coordinate both state and regional conferences that provide educators from several states with professional development, networking and recognition opportunities.

In closing, I would like to reiterate the great value and contributions that CBNERR-VA – and in particular its educators—makes to VIMS, local schools, general public, and to the wider body of educators in the Commonwealth and Mid-Atlantic region. CBNERR-VA, through its programs has

contributed to research and environmental monitoring in the Chesapeake region, has raised awareness of estuarine processes, ecology and issues, and has served diverse audiences from scientists to resource managers to families. The benefits that the Reserve delivers to all its audiences demonstrates CBNERR-VA's deep involvement in and value to our region.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Dr. Hopper for her comments. No response required.

Brittany Bowen

Comments: I apologize that I was unable to attend the public meeting held on September 18. I would, however, like to include my thoughts on the Chesapeake Bay National Estuarine Research Reserve (CBNERR) and the wonderful experience I have had with reserve management to date. My name is Brittany Bowen and I am a graduate student seeking my master's degree in Environmental Science at Christopher Newport University. My thesis research is focused on the reserves held by CBNERR on the York River. I am using tree ring analysis to examine stress in Loblolly Pine trees (*Pinus taeda*) at CBNERR sites located along the salinity gradient present on the York River.

I have worked with Dr. William Reay, Alex Demeo, Scott Lerberg, and Sally Lawrence at CBNERR as a result of collaboration on my thesis. I owe a great deal to Dr. Reay for his support of my thesis through the Rouse-Bottom Fellowship as well as for providing the opportunity to carry out valuable cross-training with Alex and Scott. I have been on multiple field experiences with Alex and have experience now not only using Real Time Kinematic (RTK) Global Positioning equipment for determining elevation, but I also now have first-hand experience of putting a boat into and getting a boat out of the water using a boat trailer. I have learned both scientific and practical experience from my involvement with CBNERR. Beyond cross-training, I have also been exposed to the world of marine science. Since working with CBNERR, I have learned about the Chesapeake Bay, the change in salinity gradients along the York River, and I have had exposure to tidal changes and wind advisories.

Beyond what I have learned, I also appreciate the safety measures taken by those I have worked with when I go out with CBNERR. Safety is a first priority for CBNERR and I appreciate how safe I feel when working with anyone from CBNERR.

The Chesapeake Bay National Estuarine Research Reserve has been an invaluable component to my graduate education and I am so thankful that I have had the ability to work with a kind, educated, and professional group of people. I look forward to continuing to learn through collaboration with CBNERR.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Bowen for her comments. No response required.

Alina Marston

Comments: I am writing to you to express how profoundly grateful I am for the education my children receive because of the VIMS CBNERR facility and educational outreach programs. Two of my children (rising first and third graders) were fortunate to be selected this past summer for the VIMS Summer Sea Squirts and Bay Buddies programs. I cannot recommend both the program and the educators involved in both camps. The games, hands-on activities, and actual field research experience really have ignited a passionate love of science and a deep concern for the condition and welfare of the Chesapeake Bay watershed area. So often, children learn about the impact of global warming on far away Amazonian rain forests or the condition of melting polar ice caps in an environment so remote from their actual daily routines that it makes environmental issues feel as remote and seemingly insurmountable or inaccessible as those same rain forests or tundras. This experience was different. It was immediate, it was personal. It introduced them to the creatures and plants that surround them each day as they move about their lives. It connected them profoundly with the world around them, the world in their backyards, the world in the beaches they splash in every summer. They learned that their own decisions had implications for the world around them and have become very interested in environmental conservation as a result.

As a homeschooling parent, I can also say there is a wide community around here that greatly appreciates all the programs VIMS provides for the Hampton Roads area. Many of us bring our children to their outstanding Discovery Labs each month so that they might learn from real scientists doing real and relevant scientific research. I hope that CBNERR will be able to continue to provide these educational opportunities to our area.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Marston for her comments. No response required.

Beth Brauner

Comments: Our family has taken part in several Discovery Labs and Marine Science Days at VIMS and our 9 year old son, Jacob, has been fortunate enough to have attended summer camp there - twice. From our perspective, it is an amazing learning resource and, hands down, one of our favorite experiences of living in the Hampton Roads area. Jacob learned so much at VIMS summer camp and was eager to share it all with us - from important topics like overfishing, pollution, marine debris and habitat loss to fun activities like seining, crabbing and fishing. He was enthralled by the marine life in the VIMS area and absolutely loves seining now. He taught me and my husband about seining, since neither one of us had heard of it, and he gave my husband a seining net for his birthday (and is always anxious to use it!). He was so excited to learn about and see firsthand the animals that live in the bay. His favorites are the periwinkle snail, puffer fish, sea horse, hogchoker and mummichog, just to name a few. My husband, daughter and myself have all learned a great deal from his camp experience, as well as the Discovery Labs (and Inside to Seaside events). They are excellent hands on opportunities for

children (and adults) to learn about the life that surrounds them in the Chesapeake Bay - life that they would otherwise pass by without even noticing. Our kids LOVE the hands on learning environment that VIMS provides, and for that reason they remember the things they learn there. Jacob now has an appreciation of the Chesapeake Bay watershed and how important it is to take care of not only the bay, but all of the waterways that lead to the bay. I can truly say that the learning environment provided at VIMS has opened up a new world to both of our kids and sparked an interest in the environment that might not otherwise have happened. I am immensely grateful for their programs and it's been a joy watching the kids learn from all they have to offer.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms Brauner for her comments. No response required.

**Jerry Ligon, 7th Grade Life Science Teacher
Thomas Hunter Middle School
Mathews, Virginia**

Comments: I am a Seventh Grade Life Science Teacher in Mathews, Virginia. For the past six years, I have had the opportunity and pleasure to work closely with Sarah McGuire Nuss and her associates at VIMS. Sarah's Group has provided many hours of quality instruction for our students. On many occasions over the years, they have come to our school and taught lessons appropriate to our grade level science curriculum. They have provided lessons plans for teaching the Chesapeake Watershed and related topics. They have provided workshops for our teachers to include the collection of marine life for our classroom aquariums. In addition, they have been an excellent source of information, in very short notice, via email or the telephone. Perhaps the most enjoyable feature of our relationship with Sarah and her associates, is their offering of a MWEE at the VIMS at Gloucester Point. Our students gain much from this hands on, life time experience and their experience is always noted as a highlight of the year.

I know from your investigation, you will discover that Sarah, and all those who work with her, provide our region with a valuable resource that is integral to our student's education. I hope that in your final briefing with Sarah's group, you will convey our deepest appreciation and emphasize that we look forward to many more years.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Mr. Ligon for his comments. No response required.

John R. Gresham, Jr., Education Support Specialist I
York River State Park
Williamsburg, VA

Comments: I have had the pleasure of working with CBNERRS educators Sarah Nuss, Jaclyn Beck, and Dr. Willie Ray as the Education Support Specialist at York River State Park this year. Dr. Ray was kind enough to secure funds for some much needed aquarium equipment for our live displays. My Park Manager, Jon Tustin, and I find him to be very knowledgeable and helpful in our efforts to promote awareness of our estuary system to park guest.

Sarah and Jaclyn have been terrific in helping us to plan our annual Estuaries Day event in August. They are detail oriented and great at sharing knowledge with our interpretive staff as we provide environmental education opportunities for children and adults. They have put on interesting displays about the creatures that inhabit our waters and how to measure such factors as water salinity and turbidity. They also bring their Chesapeake Champions campers to the park for canoe trips and marsh studies. I see Sarah and Jaclyn as my partners in a different agency, siblings from another mother.

Overall, we have enjoyed our bond with CBNERRS and VIMS as a whole. Another Educator, Katie McMillan, have put on great programs on Native American fishing techniques, jellyfish, and sharks. The VIMS researchers don't mind answering a question or two as they are collecting data. This partnership has helped to make York River State Park a very unique place in our agency and makes quite an impression on guest and staff.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Mr. Gresham for his comments. No response required.

Stephanie Sowers, National Board Certified Teacher
Peasley Middle School

Comments: I have been a part of the CBNERR program for the past 10 years and am currently. It has been beneficial to me as a 7th grade Life Science teacher when the representatives from the program came into my classroom and taught my students hands on lessons about the Bay. They brought in animals for students to measure and observe and for scientific exploration. They set up tanks for us to use throughout the years. We collect organisms on the field trips to display and educate others with. Later they no longer set the tanks up for us, but we still have them to use to show our students the life of the Bay. My students love to come in and check out what's going on in the tanks. "What the mummichog or crab doing today...."

My students have attended these fieldtrips at VIMS through this program for many years. After they were no longer visiting our classrooms because they had moved on to other schools, we were able to keep the lessons alive through their Discovery boxes; we could check out and teach the lesson ourselves. And luckily, we were able to still visit the classroom/lab and use the

River access and safety equipment that is provided on amazing fieldtrips that our students have been able to participate in yearly from the beginning. These fieldtrips are goldmines of Discovery and Wonder. The students get to explore the estuarine environment and then classify what they found.

Almost all of my learning about the Bay has stemmed from this program and I have in turn shared it with my students. I have attended several teacher workshops, field trips, and the evening public outreach sessions with my own children. My son attended the summer camp for 3rd graders this summer which is amazingly organized and well run; full of interesting/pertinent information about the Bay and stewardship. This program is ***invaluable*** to my school and my own family loves the resource as well. I look forward to a continued relationship with CBNERRs. Sarah and Jackie and the education coordinators before them have done a great job.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Sowers for her comments. No response required.

Jeff Gaylord, Teacher
Tabb Middle School
Yorktown, VA

Comments: My name is Jeff Gaylord and I am a 7th grade Life Science teacher at Tabb Middle School in Yorktown, VA. I have had the pleasure of working closely with Sarah Nuss and Jaclyn Beck from CBNERR for the past several years. Sarah and Jaclyn have been instrumental at incorporating Chesapeake Bay studies into classrooms at local school districts. I have attended 2 high quality Meaningful Watershed Educational Experience (MWEE) Capacity Building Workshops for teachers at CBNERR led by Sarah and Jaclyn. In addition, Sarah invited me to be a co-instructor this past spring for another teacher workshop. The workshops have provided us with lessons and materials necessary to implement engaging Chesapeake Bay activities with real-world application into our classes. Sarah and Jaclyn continue to offer support to local teachers for planning and executing MWEEs for students.

In addition, for the past 3 years, Tabb Middle School has been fortunate to bring all 7th grade students (approximately 325 per year) to VIMS at CBNERR to participate in a field experience led by Sarah and her staff. The first year of the program was fully funded by a B-WET grant Sarah received and supported 2 classroom lessons and a field trip to VIMS at CBNERR. The experience was so well received by our students, parents and administration that we have continued the field trips each subsequent year. This year we are scheduled to bring all 12 of our life science classes to VIMS at CBNERR for this valuable learning experience. Students have so much fun that they often choose to attend the annual VIMS "Marine Science Day" open to the general public.

The programs and tremendous support that Sarah and her staff have provided our students has had a positive impact on their knowledge and citizenship in the Chesapeake Bay watershed. Please feel free to contact me at any time if you have any questions.

NOAA Office for Coastal Management’s Response: The Office for Coastal Management thanks Mr. Gaylord for his comments. No response required.

**Kristen Barr, Teacher
York County, VA**

Comments: My name is Kristin Barr and I am a 7th grade life science teacher in York County. I am unable to attend the public evaluation meeting being held on Sept 18th but feel strongly about the programs offered to the local science community through CBNERR and VIMS. In years past, Grafton Middle School had the wonderful opportunity to host educators from CBNERR as resources for our students while learning about conservation and the local environment. The educational, engaging, expert activities that were provided were top-notch. My students loved the opportunity to learn from true scientists.

Additionally, I have checked out resource boxes to use in lieu of their presentation in person. While not the same as having the Bay experts in the classroom, my students used real specimens and examples to deepen their knowledge of the Bay, conservation, and the local environment.

These programs are invaluable to the health of the Bay and the education of local students about the Bay. Sarah and Jaclyn are fabulous educators and assets to the programs. Please feel free to contact me if you require more information.

NOAA Office for Coastal Management’s Response: The Office for Coastal Management thanks Ms. Barr for her comments. No response required.

**Lesley Reading, Teacher
Yorktown Middle School
Yorktown, VA**

Comments: I have been involved with CBNERR—teacher workshops, critter collection days, field trips and/or classroom visits—for several years. In my opinion their service is invaluable! I teach at a school that is a ‘stone’s throw’ away from the York River and CBNERR. My students have a varying level of knowledge and experience with the local waterways. Some students live on the York River &/or use the York River for food and/or entertainment. Other students have never been to the York River and/or could not tell you where the closest beach is! Having the opportunity to take my students to CBNERR, have CBNERR educators come into my classrooms or use resources provided by CBNERR has made all of the difference in teaching about watersheds and human impact on the Chesapeake Bay. For the students’ whose lives are

impacted by the York River frequently make those connections from their daily lives to school. Other students are made aware of how their daily lives impact the Chesapeake Bay even if they have never touched a river.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Reading for her comments. No response required.

Mark F. Tomcany, M.Ed.
Science Department
Mathews High School

Comments: I am writing in regards to the Chesapeake Bay National Estuarine Research Reserve (CBNERR). As an Earth Science teacher at Mathews High School I have been collaborating with CBNERR since the fall of 2013 and feel that this has been an overwhelmingly positive relationship. In that time I have participated in several meaningful experiences through the Climate Education for a Changing Bay program.

This program has included classroom visits, field trips, and teacher workshops. I found each of these to be extremely beneficial in educating students about the Bay and the impacts of a changing climate. This program has allowed for a working relationship between students, teachers, and CBNERR. Having this open line of communication dispels a lot of the myths, setting aside many of the fears and doubts regarding climate change and its impact on our local community. It also presents climate change information in a way that is understandable and appropriate for the students. Through this program students are able to make the necessary connections between the classroom and the real world, such as modeling current data and projected sea level rise in terms of local landmarks.

As a teacher in a small community resources are scarce and budgets are small. CBNERR plays a critical role in providing valuable resources for my curriculum. They provide instructional materials that my budget does not allow for. These materials are vital for offering students the hands-on experiences necessary for essential understanding of core concepts.

I am looking forward to continuing this relationship with CBNERR to maintain this unique opportunity is available for future classes.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Mr. Tomcany for his comments. No response required.

Russell A. Vrhovac
Chesapeake, VA

Comments: As I write this letter I look back on my college education as a Marine Biologist at Coastal Carolina University. I spent 4 years toiling over papers, research and balancing my love of the outdoors with the discipline and dedication it takes to understand and protect it. I no longer am involved Marine Biology however I still dabble and relish knowing that others have taken up the torch. Instead of studying it in a college lab or writing about in a scientific journal, I use what I learned and apply it every time I step foot in the outdoors, cast out a fishing line for a striped bass (a success story in itself owing that success to sound scientific research and partnerships with federal, state and local regulatory and conservation organizations) or rise from my grassed duck blind to down a feathered migrator fresh from the Canadian boreal forest. The success of the increase in waterfowl numbers over the past 10 years has been, in large part, due to the Private/Public partnerships that have occurred which fund scientific research and purchase land for public protection and use.

Success stories like the striped bass and waterfowl are owed to research and strategic partnerships. The results of those efforts are shown in places like Goodwin Island. Goodwin Island is a pristine coastal island with upland, marsh, sand, and mud. The flora and fauna that reside or migrate there have a haven, fertile with food. Food like the eel grass and sea lettuce that grows in its shallows which feed not only fin and shellfish but the migrating waterfowl on its annual migration. For some of those migrators, the Chesapeake Bay is their ultimate destination as it is rich in clean water and food.

Some of my reasons for wanting to continue the CBNERR program are based on wanting to continue my use of those areas. A by-product if using the CBNERR is, as a sportsman, I get to see how this area is being used for research and how it directly and indirectly benefits what I love. I have been fortunate enough to have been chosen in the past to use Goodwin Island during the Virginia waterfowl season. The sunrises I have witnessed and the flocks of migrating waterfowl that frequent this area are nothing short of inspiring. Knowing that science and conservation are to thanks for having the abundant wildlife using this area is inspiring as well. The folks who conduct research on Goodwin Island regularly use the same areas that the Waterfowl Hunting Program uses which sometimes prohibits those locations from being used by hunters. I am excited to know that the area is being used for research and the folks I have met through this program are also stewards of the area. To the organizations that are involved with the CBNERR, I would say, "Nothing is stronger than the heart of a volunteer". Hunters are and have always been voluntary stewards of the areas they frequent and have been responsible for the majority of Conservation initiatives. Giving those same types of people the opportunity to use such a beautiful place can only be beneficial to these locales. Conservation and research have always gone hand-in-hand. I would like to see it continue.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Mr. Vrhovac for his comments. No response required.

Mr. and Ms. Annich

Comments: My name is Travis McAninch and my son attended the Estuary Explorers Summer Camp 2014 given by the Virginia Institute of Marine Science. A large part of this program took place at The Chesapeake Bay National Estuarine Research Reserve (CBNERR) located on the Eastern Shore of Virginia. I would like to express my thanks and gratitude for the opportunity that CBNERR gave my son, and the rest of my family as well. The knowledge that he gained and the experience he had is invaluable and will be a special memory for the rest of his life. It has been months since the program and he still talks about and shares with the rest of the family everything that he learned. This knowledge has not only impacted him but also his siblings (and in a lot of cases his parents) as they learn from him. This would not have been possible without the excellent Staff of VIMS and CBNERR.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks the Annichs for their comments. No response required.

**The Basak Family
Yorktown, VA**

Comments: The Basak family would like to express our thanks for NOAA's generous support to the Chesapeake Bay National Estuarine Research Reserve in Virginia. Our four daughters look forward to attending the monthly Discovery Lab program and programs at the CBNERR. The programs let our daughters see marine life up close and not just read about it in books. They learn how marine life affects so many people's lives every day. The Discovery Lab is one of the only hands on marine programs in Hampton Roads area. Our daughters especially liked the Discovery Lab series on coral reefs and spoke about it for over a month. Mad Lab is by far their yearly favorite themed lab.

Two of our girls now want to go to college at the VIMS that will benefit CBNERR. They hope to go to the VIMS for marine biology or oceanography. One would like to be a marine biologist and the other would like to study oceanography. It is a positive reflection of the Discovery Lab series and CBNERR that two young girls have now considered their education goals at such a young age. The cost of the Discovery Lab and the greater overall programs of CBNERR is a low cost investment in saving the Chesapeake Bay.

I have grown up witnessing the negative effects of lack of investment in a valuable natural resource. I grew up on the Great South Bay of Long Island. The Great South Bay was abundant with clams, oysters and a large variety of fish. It was the livelihood of many people on Long Island. Sadly, lack of awareness and pollution led to the contamination of large portion of the Great South Bay. The oyster and clamming industries were devastated. If only a small investment in education and awareness had been made many years ago, the Great South Bay would have prospered.

Our children are our future leaders. I can already see the positive results in our four girls. They recycle and participate in the Hampton Bay cleanup. They are the future leaders to ensure the Chesapeake Bay continues to prosper in a positive direction.

We implore your future support for the CBNERR. We clearly understand that government agencies are making difficult choices with our nations recent fiscal challenges. CBNERR is the investment in our future generation. I would like to again thank you for your fiscal support to CBNERR.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks the Basak family for their comments. No response required.

Jennifer Hindman

Comments: My daughter attended the Chesapeake Champions program at VIMS. Even two months later, she talks about her experiences working in the field. Her interest in science and knowledge of the local area was increased by the experience. It had a positive impact on her engagement and learning. Regretfully, I am teaching a class during the public meeting time and unable to bring my daughter to VIMS to comment.

My daughter had the following to convey about her experiences.

I liked canoeing. On that day we went to a beach where we seined, wrote down our findings, and wrote our notes about what the conservation man said. Then we went up an inlet. I still want to learn more about periwinkle snails and their role in the Chesapeake Bay. We collected some that day, but didn't study them. I am glad the program existed and want to apply for the next level to go to the eastern shore.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Hindman for her comments. No response required.

K. Casper Mathews, VA

Comments: I've participated in Chesapeake Champions and Estuary Explorers through VIMS and the Chesapeake Bay National Estuarine Research Reserve. These were, by far, my favorite learning experiences ever. I enjoy school and learning in general, but this was different. It was very hands on, on the bay and in the lab.

For Christmas last year my parents gave me a book with a collection of pictures from Estuary Explorers, and it was one of my favorite presents. It is a reminder of all the fun times and the cool places we went to learn and study. On the Eastern Shore, we dissected dogfish and it was,

surprisingly, my favorite activity. This inspired my dreams of becoming a Medical Examiner when I grow up.

Next year, I hope to become a VIMS junior counselor and help some younger students have experiences as awesome as I have had. I thoroughly enjoyed the camps and hope to continue participating and working with them in the future. I hope that the wonderful teachers, counselors and their programs continue to get the credit and support that they deserve.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks K. Casper for the comments. No response required.

BJ Perkins

Comments: I write as a parent of multiple children who have grown through programs offered at VIMS during the summer. The programs run there are phenomenal and are far superior to anything else out there. The programs help build on the very base knowledge children have growing up in this area. One of ours even had the opportunity to attend the Estuary camp this summer which just may have swayed her college choices. Sarah McGuire and team are the best.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks BJ Perkins for the comments. No response required.

Marta Sanderson Williamsburg, VA

Comments: I am not able to attend the public meeting being held as part of the federal performance evaluation of the Chesapeake Bay National Estuarine Research Reserve in Virginia on Thursday, September 18th. However, I would like to take this opportunity to provide some of my personal comments on one of the many educational activities implemented by CBNERR at VIMS – the VIMS Summer Camps.

My son was very fortunate to be selected through the lottery process to participate in the VIMS Sea Squirts Summer Camp (for rising 1st and 2nd graders) in the summer of 2013. The summer camp was very well organized, educational, and fun! I was thoroughly impressed with all the well thought out and planned educational components of the program. My son really learned a lot about the Chesapeake Bay, the animals and plants that are vital to the ecosystem, and ways to help protect it and the environment. Ms. Sarah Nuss and Ms. Jaclyn Beck were wonderful teachers; this was clearly demonstrated through their enthusiasm and knowledge of the activities and their kind and gentle interactions with the children.

I think one of the best compliments of the program is that when I was looking into summer camps for this past summer, I asked my son which summer camps that he did the year before would he like to do again. His immediate response without hesitation was “VIMS summer camp – it was awesome!” I think that sums it up nicely.

NOAA Office for Coastal Management’s Response: The Office for Coastal Management thanks Ms. Sanderson for her comments. No response required.

Karin Juraszek

Comments: The CBNERR program has been very beneficial for our son for both personal and educational reasons.

Even though some projects didn’t always seem easy at first, he knew that he would continue to receive inspiration and support from the VIMS staff while continuing to build his confidence skills through activities related to scientific research, marine biology, and ecology. Thus, we wouldn’t want to change anything in that perspective.

We are very grateful, that he had the awesome opportunity to attend the camp. It would, however, be nice if it could be opened to a larger candidate pool so that more kids could be able to enjoy the program as well.

Learning about the Bay has impacted his and our lives in many ways. While attending the camp, he learned new ways on how to protect and restore the health, heritage, natural resources, and the social and economic value of the nation’s largest estuarine ecosystem and the natural sustainability of its watershed. He has become interested in marine biology and possibly trying to turn this into his career. As a volunteer, he had the chance to help younger kids with having fun and learning more about marine science just like he did. Thus, we hope that many others too will be able to enjoy and benefit from the program.

Thank you so much, to the staff, the donors and everyone else that made the program possible!!!

NOAA Office for Coastal Management’s Response: The Office for Coastal Management thanks Ms. Juraszek for her comments. No response required.

Jennifer Meyers

Comments: My daughter participated this year in the program, Bay buddies, and it was absolutely fantastic. My first concern is that my child is in a safe environment, and I felt comfortable dropping her off the first day. The five days were packed with information about reusing products, the environment, polluting, science experiments, seining, and new words and

concepts about the bay. I appreciated the slide show at the end of the week to show me in a detailed way her daily tasks. Please thank all the people who have worked to put this program together and know that it has certainly made a difference in our lives.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Meyers for her comments. No response required.

**Michele Mixner DeWitt
Williamsburg, VA**

Comments: Please accept my comments and glowing endorsement of the Chesapeake Bay National Estuarine Research Reserve project in Virginia. My son participated in the summer program. We were amazed by his experience and his increased passion for the treasure that is the Chesapeake Bay. Please continue this program.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Mixner for her comments. No response required.

Jennifer Healy

My name is Jennifer Healy and I am writing this email because my daughter was fortunate to have attended the Chesapeake Champions camp for a week at Virginia Institute of Marine Science this past July. She had applied for a spot in camps during previous summers, but had not been fortunate enough to have been granted a place via the lottery system due to the popularity of these great programs. She applied in March, but was anxious that she once again would not be selected. She was hopeful that her chances might be improved since this year she was required to respond to essay questions as part of the application process for a rising 5th grader. Although we live in the Richmond area, I felt the benefit of this camp outweighed the potential logistical difficulties in getting there each day, and made arrangements to stay in Williamsburg for the week with family.

She learned that she had been accepted in April and was incredibly excited by the news. Her favorite subject in school is Science. We were very impressed by the packet we received describing the planned activities. She waited impatiently for July to arrive.

I was very pleased by how the camp was run. I thought the counselors did a great job of making sure the kids were checked in and out and were safe during the day and communicated well with the kids and parents. The planned activities were educational and fun and my daughter left each day with lots of interesting stories to entertain me with during our 40 minute drive back to Williamsburg. She made new friends, collected and identified specimens, and learned about water quality and job opportunities related to marine science. She got to go seining, canoeing and swimming. Working with other students, she participated in a power point presentation for the parents. I was incredibly impressed with her week at VIMS and am hopeful

that she may get another opportunity there in the future as either a camper or counselor. She now hopes to be a marine biologist. The camp was a terrific experience for her and I am very happy she was given the opportunity to attend.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Healy for her comments. No response required.

Michele Oliver and Family

Comments: I wanted to provide public comments on the Chesapeake Bay CBNERR group. Due to conflicts with my work schedule I am not able to attend the public meeting on the 18th. I cannot begin to express just how valuable this group has been to my family and to our community! Sarah and Mr. Reay have been great support to my son. We have attended countless Discovery labs as a family. My oldest son, now almost 20 years old, has had help with school projects and attended both day and overnight camps. He is now pursuing a degree in Marine Science which has been a dream of his since he was old enough to talk. I truly believe the support that he and countless others from our community have received from Sarah is what has made their success possible! As you can tell I have nothing but rave reviews for them!! My only request is that they remain there for years to come to continue to share their knowledge and enthusiasm for the Chesapeake Bay!

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Oliver and family for their comments. No response required.

Ken Ricklin Newport News, VA

Comments: While this letter of support for the CBNERR may be late, I wanted to take a moment to express my thoughts.

We - my family - feel very fortunate to live near the VIMS. In the past few months we've attended at least three discovery labs that have expanded our knowledge of the Chesapeake Bay, the marine and wildlife it supports. The labs are very family friendly and provide much incentive to learn more about the Bay in particular, as well as the oceans. My daughter loves to go and hopes to study marine biology when she gets older.

Thanks to the CBNERR Discovery Lab for doing good work that is shared with the public.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Mr. Ricklin for his comments. No response required.

Tracy and Deenesh Sohoni
Visiting Assistant Professor
The College of William and Mary
Williamsburg, VA

Comments: We are writing to provide feedback on our experience with CBNERR. Our son attended the “Sea Squirts” program this past summer, and we were greatly impressed by the quality of the program and the staff. Our son greatly benefited from having the ability to learn hands-on about the Chesapeake Bay and marine life. The activities were engaging and age-appropriate, and were very effective in sparking a passion about marine life. Not only was the educational program top-notch, but we were also impressed with how well the staff nurtured a community environment among the students as well as their ability to connect with the students.

We feel very fortunate that our son was able to be involved in this program, and believe it is a great asset to the organization and the wider community.

NOAA Office for Coastal Management’s Response: The Office for Coastal Management thanks the Sohonis for their comments. No response required.

Katherine Davis Small
Mathews, VA

Comments: I am writing to provide my comments about my family’s interactions and experiences with the Chesapeake Bay National Estuarine Research Reserve in Virginia (CBNERRVA).

Both of my school-aged children have attended summer camps provided by CBNERRVA at the Virginia Institute of Marine Science (VIMS). My daughter has been able to attend several camps, and my son was able to attend for the first time this past summer. They have both thoroughly enjoyed learning about Marine Science at the Reserve.

At the end of each camp the children present what they’ve learned to their parents, and every time I am amazed at the breadth of information the staff has managed to convey in a week-long day camp. The children come away with knowledge about:

- the many, varied careers that exist in the field of Marine Science;
- the complicated ecosystems and varied species that exist in their local, coastal communities (through hands-on field experiences on the VIMS campus (beach river pier, teaching marsh) and at CBNERRVA Reserve sites (marshes, kayaking);
- the ways in which new technologies are employed in the study of Marine Science;

- strategies for becoming better stewards of marine and coastal habitats (simple changes that the children can effect themselves – reducing lunch waste, employing re-usable items instead of disposable ones, etc.); and
- the scientific methods and tools employed by real Marine Scientists.

My children have been thrilled with the CBNERRVA camp experience every time they've been fortunate enough to attend. There are always many applicants for few spaces. The camps are incredibly popular, which I think speaks both to quality of the educational experience, as well as the light-hearted, creative manner in which information is presented.

Some campers may become future Marine Scientists; others may apply what they've learned to other scientific fields. At the very least, the children who have attended CBNERRVA camps will be better-informed citizens, and more careful stewards of their world. I am incredibly grateful to CBNERRVA for providing this wonderful opportunity to our local schoolchildren, and I hope they continue these camps for many years to come.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Small for her comments. No response required.

Stephanie Schmuck

Comments: I am writing regarding the evaluation of the programs run by CBNERRVA. Our family has been participating in several of the programs they have offered over the last 4 years. Some of these include the Discovery Labs, the summer camps, Marine science day, and Estuaries Day. We have always learned something new at every presentation. Each one has been unique, interesting, well planned and executed, and has never been a disappointment. The mixture of learning approaches keeps us all engaged. They have lots of written information, colorful display boards, hands on experiences, opportunities to use scientific equipment, question and answer challenges, a craft for the children, as well as excellent presentations by experts in the subject of the day. The summer camp was also an excellent experience for our child. Perhaps the only thing I wish was possible would be more chances to get into the summer camps. They are extremely popular for several very good reasons and I am certain that my children would love to participate every summer if they could.

All of the experiences have inspired our children and ourselves to be better, more informed, stewards of the Chesapeake bay. They help to keep us current on environmental impacts of our decisions and often give suggestions on how to do things in a way that is better for the environment. This spills over into other experiences in nature so we are more compassionate about the creatures and habitat in our own back yard, our school, workplace, and wherever we go. We appreciate the opportunity to become better informed citizens and hope that our children will continue to enjoy, learn, and protect the nature they are a part of. After all, we are more likely to care about things when we understand their importance.

The only thing I wanted to add was that we feel very fortunate to have this valuable resource available and plan to continue to participate in the future. We hope that NOAA will support this excellent research reserve and help them to continue to expand their reach.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Schmuck for her comments. No response required.

Marianne Rizzio

Comments: We think the Discovery Labs are excellent. We have taken our two grandchildren many times and have always enjoyed the programs, talks and activities. I also think it is wonderful you often have young people manning the various stations and explaining the significance of their station. That's really impresses not only the adults but is an excellent role model for the little children. My only suggestion is to get lecturers who can really relate to children and make the topic meaningful for them. There was only a couple who were not natural at this. I understand not everyone is a natural teacher, however, and I commend everyone who took part in the presentation.

Thank you for the Discovery Lab programs.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Rizzio for her comments. No response required.

Emma Watterson

Comments: Our family has absolutely loved the CBNERR Discovery Labs :) We are all hands-on learners and these labs have really given us a more visual and tangible picture of the health of the Bay (and importance)! It's so important to provide opportunities like this for our kids and to keep us all informed about our natural and surrounding environment. Thank you for all of your hard work and planning for putting these together.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Watterson for her comments. No response required.

Anne-Lise Gere

Comments: My daughter was selected to attend the VIMS estuary explorer camp in June 2014. We were very pleased with the quality of the program and the dedication of the staff towards the 16 campers. Incredible to think that this was free to families. We are grateful for this!

My daughter describes this camp as “one of the best week of my life”. She learned a lot during the 5 days of camp on the eastern shores and has been keen to share with the family over the summer. She is planning to participate in the science fair at her middle school with a marine biology-based project.

NOAA Office for Coastal Management’s Response: The Office for Coastal Management thanks Ms. Gere for her comments. No response required.

Jimmy Kilduff
Gloucester, VA

Comments: I am writing to you to express support and admiration for the VIMS Discovery Labs series my family attends. The labs are well organized, enlightening, and the kids always have a great time. The labs have contributed to my children’s (and my own) knowledge and appreciation of the bay and local water systems.

My children have been attending the labs for a few years. Some favorites in the past have been labs on dolphins, sharks, the USS Monitor, and also seafood (of course!). My children are educated at home, and VIMS Discovery Labs make a great addition to our curriculum.

NOAA Office for Coastal Management’s Response: The Office for Coastal Management thanks Mr. Kilduff for his comments. No response required.

The Wade Family
Glouster, VA

K. Wade

I cannot say enough about the wonderful staff and volunteers at CBNERR and VIMS. They are amazing with the kids who attend their programs. They are so kind and knowledgeable and love to share that knowledge. They make learning about the water and everything in and around it exciting and new.

My children and I have attended many programs this year and my son attended summer camp. It was a trip to the past for me as I remember driving my nephew to these camps when he was their age and he is now 26.

We have visited several Discovery Labs and they get so excited about what they are going to see and learn. They love the hands on environment and everything is so kid friendly. The kids always come home with some interesting fact to share and make me sign up for the next lab as soon as we get home.

The children both applied for summer camps. My son got in and my daughter made the waiting

list. He was so excited on the way home every day and had so much to tell us. He brought home something new each day to help teach him about small things he could do each day to reduce his impact on the environment. We learned so much that week through his experiences. My daughter is now determined to work hard to get in to camp next year as a result.

We learned about other opportunities to explore the environment from the staff at camp. We spent the day at York River State Park for Estuary Day and had a wonderful time. So many activities for families to spend the day together and learn something new. We discovered many new activities at the park we look forward to in the future. We love the Labs we have attended and recommend them to everyone. While I wish there were more camp spaces available, I also appreciate the smaller groups for a more individualized experience. I sincerely hope they continue to offer these programs and anymore that they can create.

D. Wade

I am writing about VIMS and all of the things I have gotten to do there. My family started going to the evening Discovery Labs this year. I learned about the penguins in Antarctica. We talked to a man who went there to work and saw videos of the places they had been. We learned about what penguins eat and how they live and that they are really good swimmers. We learned why they live on a pink island too. Another night we learned about horseshoe crabs. We got to touch live ones and learn the difference between male and female and how to turn them over if we see them upside down. I can't wait to see what Mad Lab is next month.

I also got picked to go to Bay Buddies this summer. It was so much fun. We got to use nets to catch things and study them. We learned about so much stuff. They taught us about how oysters and marsh grass are the water cleaners and they filter out the bad stuff in the water. We learned about our trash and how long it takes to decompose and the impact it has on the water and the animals. We also learned how little changes can make a big difference if you do them every day. We took trips to the areas around the camp and saw lots of stuff. The Marsh area was my favorite and I really liked the Periwinkle snails. I really hope I get to go to more camps there.

They invited us to Estuary Day at York River State Park at the end of camp and my whole family went. We got to go kayaking, fishing, hiking and use the nets again. We made buoys and had a picnic. It was so much fun and I got to see the counselors from camp again.

Thank you so much for having all of these programs for people to go to. It's a lot of fun and we learn a bunch too.

B. Wade

Thank you for all of the Discovery Labs and camps at VIMS. I love the Discovery Labs. They are a ton of fun and I learn so much. I've learned about penguins and horseshoe crabs so far. There are lots of varieties of penguins, they eat little tiny creatures called krill and both parents help to hatch and raise them. The female horseshoe crab is the biggest and they migrate to Delaware Bay to lay thousands of eggs. Mad Lab is in October and I know it will be so much fun.

I applied for the Chesapeake Champions summer camp. I didn't get in this year but I did make it on the waiting list so I'm going to try hard to get in next year. My brother got in to Bay Buddies this summer and he had a blast. Every day he told us about what he did, learned, and brought home something new to help him reduce the trash he uses every day at lunch.

At the end of camp program, they invited us to Estuary Day. We had never been before and it was the best day. We spent the whole day at the park learning about the water and animals and exploring the area. I built a buoy that could hold 65 golf balls. I pulled out a fossil in the nets and the ranger told me about it and let me keep it. I can't wait until next year to go again.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks the Wade family for their comments. No response required.

Marleen Lynch

Comments: My name is Marleen Lynch and I am writing in great support of the VIMS programs especially its summer camps.

My daughter spent a week at the VIMS campus during the summer of 2013. It proved to be an amazing week for her. She learned an incredible amount about the Chesapeake Bay area and the species that inhabit it. She loved spending her days exploring the waters by boat, walking through the marshes and ending her days in the lab. During that week, myself and my three other children spent the time in Chincoteague and Wachapreague. We ourselves learned a great deal about the area through a boat tour and through talking to the people who live in Wachapreague. We loved how natural, and not "built-up" the coastline of VA is and how protected the bay area is compared to the New Jersey coastline which is where we live.

I am hoping these camps continue on for many years to come as I would like my three younger children to learn to appreciate the natural marine life around them and to experience coastal living at its most pure and finest. It's a great way to teach the younger generations to respect and protect our coastline and all of the species that thrive there.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Lynch for her comments. No response required.

Beth Mackrella

A Happy and Thankful Parent

Comments: I am a parent whose children were fortunate enough to attend several summer classes at VIMS. I am sending this email to let you know that Sarah and the staff have done an exceptional job in what they do. They made education fun for my kids, they learn and have a blast at the same

time. They have learned so much about their local water environment and Chesapeake Bay to say the least.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Mackrella for her comments. No response required.

Kristie Brookshire

I'm writing to provide input regarding the Discovery Lab program for their upcoming evaluation. My son has attended several Discovery Labs at VIMS and has thoroughly enjoyed them all. Attendance at these programs has fostered a love of marine science for him. When asked what he wants to do when for his career – he always says he is going to be a marine biologist. I have no doubt this is due to what he has learned and enjoyed at Discovery Labs.

As a parent of a child who loves to learn, loves science, and seeks to learn more – I am so grateful for the free educational enrichment opportunity this has provided my son. This service provides instruction that he would not receive in a public school in our county, and it is certainly something I could not otherwise provide as a parent.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Brookshire for her comments. No response required.

Shelby Mingee

Shelby Mingee's Skin Care

Comments: I, just last year began homeschooling my 2 boys. I found out about the GREAT programs offered through CBNERR through my homeschool group. The information from the discovery lab program has been a vital part of our science curriculum. Both of my boys were lucky enough to be selected in the lottery draw for the day camp programs. This is hands down the best camp program my children (or I) have ever attended. The boys came home each day excited for the next and sharing all that they learned. We will continue to attend discovery labs and apply for the camp program! My children have learned to love the bay and how to protect it through these programs. LOVE the ladies at CBNERR!

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Mingee for her comments. No response required.

Paula Jasinski
Chesapeake Environmental Communications
Gloucester, VA

Comments: I was notified that you are accepting written comments regarding CBNERR's summer educational camps and programs. Although I am also planning to attend the public meeting on September 18th and offer comments there, I wanted to take the opportunity to submit some written comments via email.

We have 2 children who have been lucky enough to live near the VIMS' based CBNERR. My husband and I work in the field of marine science and Chesapeake Bay management so our children have grown up with a connection to science and the Chesapeake Bay. Even so, having CBNERR in our community has been a huge advantage.

The CBNERR educational and research staff provide invaluable opportunities to the local community. Our son is enrolled at the Chesapeake Bay Governor's School for Marine Science, a dual enrollment program between the local community college and the public high school. He is required to conduct an independent research project in his senior year of high school. He chose to monitor connections between weather, water quality, benthic health, and shoreline development within Sarah Creek, a tributary of the York River near the CBNERRS offices. Dr. Willy Reay, Sarah McGuire, and other staff have been very helpful to him in developing the project and understanding specifics regarding his sampling process.

Our daughter has participated in several summer CBNERRS educational camps. She was selected to participate in a week-long immersive marine science camp program at the VIMS Wachapreague Lab on the Eastern Shore. We were so impressed by Sarah McGuire and others who ran that camp. They connected with the students on so many different levels, through hands-on exercises like kayaking through wetlands, animal dissections, as well as through games and interactive presentations. We also never once worried about our daughter being in good hands with Sarah and her team. We knew that the students were safe and well cared for.

Since that experience, she has twice been selected to serve as a volunteer junior camp counselor with CBNERR's summer camps. For the past two summers, our daughter happily woke up early and worked 40+ hours/camp to help other children learn about the Chesapeake Bay. And as her mother I can attest that she didn't happily wake up early over summer breaks for much else! She recently announced to us that she wanted to work in environmental education as a career. Sarah McGuire and Jaclyn Beck have definitely inspired the next generation of educators!

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Jasinski for her comments. No response required.

Jana Brultz

Comments: Just wanted to be sure to give you my feedback regarding the vims camps. My daughter attended two summers ago, and is hoping to be selected for next summer! She was a bay buddy, and it was amazing for me as a parent to see her love of science be nurtured in such a positive way. If a goal is to teach kids about marine life in the rivers, bays, oceans, etc... then job well done! The staff were wonderful, and my daughter wants very much to continue to work in this area of science! Love it! Wish there was more of it!

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Brultz for her comments. No response required.

Kim E. Hummel
IOW Environmental Planner

Comments: I have attended several day-long workshops put on by this group, and I have always been very impressed. The workshops are detailed, informative and timely. There are a variety of speakers and topics offered. The workshop location – at the Virginia Institute of Marine Science in Gloucester Point – also is convenient for me to attend. So I am a supporter of the Chesapeake Bay National Estuarine Research Reserve in Virginia.

As an example of what a typical workshop might look like, I have pulled the agenda from September 2010 called, "What's Happening to Our Native Plants and Animals." The topics were as follows: Chesapeake Bay Invaders: Past, Present and Predictions for the Future; Honeybees, what's really going on?; Overview of the Varied Types of Survey, Detection and State Regulatory Programs; Survey and Detection of Exotic Invasive Insect and Plant Disease Species; White Nose Syndrome ... What's Happening to Our Bats?; Early Detection and Online Reporting Tools for Invasive Species; Questions/Answers – Wrap up. It was a good topic, well covered, with time for questions and answers at the end. This is how it usually goes for these workshops.

I think this organization is an outstanding service to the community.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Hummel for her comments. No response required.

May Louise McD. Sligh, TMDL Nonpoint Source Coordinator
DEQ Northern Regional Office
Woodbridge, VA

Comments: I'd like to just take this opportunity to compliment the staff at CBNERRVA for their excellent coordination amongst the various water quality partners in Virginia. I have had the opportunity to participate in a number of the trainings they have offered at VIMS over the

years, covering a variety of topics. I have also worked directly with Sandra Erdle on designing meaningful training sessions to help better educate local environmental staff and citizens of the York watershed, ranging from the sharing of important scientific research taking place in the basin to how improvements can be made to our educational materials and messaging. We are currently planning an event that will address the concern over pesticide impacts in our local streams and the Chesapeake Bay. I know that this will be a well received event thanks to the thoroughness and skillful organization of the CBNERRVA staff. We are lucky to have them in Virginia to help increase the effectiveness of our water quality work.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Sligh for her comments. No response required.

Alexander Long, IV CCIM, AICP, ALC
Weichert Realtors
Fredericksburg, VA

Comments: As chairman of the planning commission for a small town, Port Royal, VA, I am a volunteer, giving of my time and talent. The courses at Chesapeake Bay National Estuarine Research Reserve in Virginia; Virginia Institute of Marine Science are a big help to me and the town. As a real estate broker specializing in land, the information and education are also helpful and foster a better understanding of why and how regulations impact land use.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Mr. Long for his comments. No response required.

Janet M Swords
JMS Soil Consulting

Comments: I have attended stormwater management courses and wetland courses that were offered by VIMS. These classes were very informative and have helped me with my business. I am looking forward to VIMS being able to continue to offer classes.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Swords for her comments. No response required.

Sarah E. Diebel, M.S.
DoD/DoN Chesapeake Bay Program
Norfolk, VA

Comments: As the DoD Chesapeake Bay Coordinator, I find the workshops and lectures provided by Sandra Erdle and the rest of her team through the Chesapeake Bay National

Estuarine Research Reserve Coastal Training Program very helpful and informative. They also help to serve as a networking tool. With the decline in federal travel dollars to attend conferences out of the Hampton Roads area, the workshops offer a great alternative. Many of the workshops and training opportunities are applicable to DoD installations and help to serve natural resource specialists in their areas of responsibility. We truly value this program and the topics shared!

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Diebel for her comments. No response required.

**Elizabeth F. Hodson, Biologist
Environmental & Development Services
Mosquito Control
Yorktown, VA**

Comments: I am sending this email to voice my opinion of the CBNERR. I feel so very fortunate to have to opportunity to be a part of the programs they offer. Being a resident of the Hampton Roads area my whole life has giving me a great love for the Chesapeake Bay. This organization has allowed me to participate in programs I wouldn't have been able to do on my own. My only regret is I don't have more time to spend with this wonderful group. I wish them continued success and I look forward to my next adventure with them.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Hodson for her comments. No response required.

**Craig J. Hofmeyer, Environmental Specialist,
Department of Engineering
City of Newport News**

Comments: I have attended many training workshops at VIMS through the Chesapeake Bay National Estuarine Research Reserve in VA (CBNERRVA) Coastal Training Program. As an environmental specialist working for a municipality, it is has helped me stay informed on issues such as wetlands, sea level rise, tidal influence, health of the Chesapeake Bay, environmental stewardship, conservation, nutrient reduction, stormwater management etc. The team at VIMS does good work and I hope they continue to receive the necessary funds required to help educate the public and conduct further research of the bay and the tidal rivers of VA.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Mr. Hofmeyer for his comments. No response required.

**Shannon Alexander, Managing Owner
Bay Country Kayaking**

Comments: As the owner/operator of Bay Country Kayaking, offering guided ecotours, an employee of Terwilliger Consulting, a natural resource consulting company, and as an avid environmentalist and outdoor enthusiast, I have attended various training opportunities at the Gloucester Point campus. Having obtained both a B.S. in Environmental Science and M.S. in Coastal Zone Management, I appreciate opportunities to continue my education and connect with others in similar fields.

Although I won't be able to attend the meeting on September 18th, I wanted to provide my positive feedback on the programs supplied by VIMS. Every workshop or training that I've attended has been well organized, informative, and enjoyable.

Below are some of the events in which I've been lucky enough to be a participant.

- Water Words that Work (2013)
- Wildflowers - Identification of Wildflowers in Virginia's Coastal Plain! (Dr. DeBerry, 2014)
- Foraging Ecology of Sea Ducks on the Seaside & Bayside of the Eastern Shore (P.G.Ross; VIMS ES Laboratory)
- Working Waterfronts Workshop (VIMS, CZMP, etc.)
- Introduction to Plant Identification: Wetland Species of the Mid-Atlantic Coast (Dr. DeBerry, 2012)
- Perspectives on the 2010 BP-Deepwater Horizon oil spill in the Gulf of Mexico: environmental and societal impacts (Dr. Richard Snyder; VIMS ES Laboratory)
- 2013-14 Bottlenose Dolphin Die-off in Virginia: Responding to a Dolphin Disaster (Susan Barco; VIMS ES Laboratory)

Thank you much for your efforts in accumulating information for CBNERRVA, so that VIMS can continue to offer such beneficial programs in the future.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Alexander for her comments. No response required.

**David S. Nunnally, Senior Environmental Planner
Caroline County Planning & Community Development
Bowling Green, VA**

Comments: The CBNERRVA program is simply the best in Va. I have attended numerous seminars over the past 4-5 years. This is the only program reasonably available to me that presents up-to-date, science-based, research-supported topics and presentations. The facility and overall organization are consistently excellent and professional quality.

As far as suggestions, I would like to see more (!), especially focusing on stormwater management and water quality related topics. While I realize that some people may see this as 'stepping on [other agencies'] toes,' in my opinion, even these other agencies could be benefit from these opportunities.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Mr. Nunnally for his comments. No response required.

**Meredith Malone, Restoration Projects Coordinator
Lynnhaven River NOW
Virginia Beach, VA**

Comments: Please accept my comments about the Chesapeake Bay National Estuarine Research Reserve Coastal Training Program. As an ecologist in the Hampton Roads region, I can tell you that this program performs an invaluable service to the scientific conservation community. In my previous work as an Environmental Scientist for a private military contractor in Hampton, my colleagues and I often depended on the CBNERR for training that helped us improve plant identification skills and keep up-to-date on the latest research and science in ecological management, including coastal restoration techniques such as living shorelines. In my newer position at a Virginia Beach non-profit, Lynnhaven River NOW, I continue to use the services of CBNERR to continue my education in living shorelines approaches to coastal restoration. My colleagues and I have also benefited from other workshops they've held about effectively communicating the importance of protecting watersheds to the public. Without this free training available by such highly regarded scientists, many businesses, in all sectors, would be negatively affected in their effectiveness to apply current science to their work. We sincerely hope funding will be continued for years to come to this important program.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Malone for her comments. No response required.

**J.C. Douglass PWD, LEED AP BD+C
Environmental Scientist
CLARK NEXSEN
Virginia Beach, VA**

Comments: I would like to submit my comments in response to the public meeting request for September 18, 2014, as I will not be able to attend in person. I have participated in several training events in recent years hosted by VIMS CBNERRVA. I believe these sessions are an invaluable opportunity for the professional and public communities to receive high-quality educational offerings at very reasonable rates. These training opportunities also provide an excellent forum and networking opportunities for personnel from all sectors (public, private,

government, academia) to learn together and benefit from each other's experiences. I think the work of CBNERRVA is an invaluable part of the mission at VIMS.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Mr. Douglass for his comments. No response required.

**Leah Aguilar, Operations Superintendent
Mosquito Control
York County E&DS**

Comments: I just want to say that I have participated in several training events as part of this program over the past two years. I have found them all to be very educational and professional. The information presented is pertinent to the issues that we deal with on a regular basis. Also, with money being as tight as it is, these programs were great because they allowed us to get training where we otherwise may not have been able to due to budget constraints. I think this is a great program that should be continued.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Aguilar for her comments. No response required.

**Faye Andrashko, Education & Public Relations Manager
Northern Neck Soil & Water Conservation District
Warsaw, VA 22572**

Comments: I want to comment on the extraordinary personal value to me—in my profession—of the Chesapeake Bay National Estuarine Research Reserve (CBNERRs) Coastal Training Program offerings. I have taken advantage of each and every possible training I could, as they are a wealth of the most current information, always provided by exceptional presenters. As professional development goes, I can always count on the finest programs coming from CBNERR through VA Institute of Marine Science.

Such offerings as those listed below have provided our community extraordinary and relevant gems of trainings in an area where we would otherwise have to travel many hours to get!

- June 2014 - Wildflowers - Identification of wildflowers in Virginia's Coastal Plain!
- June 2014 - Forestry for the Bay!
- April 2014 - Wetland Delineation (Using the Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Atlantic and Gulf Coastal Plain Region (Version 2.0) [28-hour short-course training])
- April 29 - 30, 2014 - Basic Erosion and Sediment Control training with VA DEQ.
- October 9, 2013 - Water Words That Work - Environmental Message Method with Eric Eck!

- May 8 - 9, 2013. Navigating Rough Seas: Planning and Facilitating Collaborative Meetings.
- Evaluating and Conserving Natural Assets: Maximizing conservation potential in the developing landscape.
- Blue and Green Infrastructure in Coastal Virginia: Tools and Implementation (September 27, 2012).
- Habitat Restoration: Making a Difference in Coastal Virginia (March 6, 2012).
- Introducing Green Infrastructure for Coastal Resilience (February 2, 2012).

I thank you for any role you have had in helping support these programs!

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Andrashko for her comments. No response required.

Alli Baird, CLA, ASLA
VADCR – Division of Natural Heritage
Richmond, VA

Comments: Through the past decade, I have both attended training opportunities at CBNERRVA, and have given training at their facility. The experience has always been positive and it is a privilege to participate in the programs there.

The training they provide is always relevant to Coastal Plain issues, whether it is water quality and land use, such as Chesapeake Bay Act issues, or technical topics, such as identification of wetland plants or plants in winter; perennial stream identification, Natural Heritage resources, or other topics useful for practitioners, policy makers or local staff responsible for the implementation of regulations and policies.

Ms. Erdle has always been accommodating when helping to arrange training sessions, often providing coffee or snacks, and assuring the facility is prepared and the equipment is working properly. Sessions are always well organized and orchestrated with regard to time. She is attentive to topics of interest to participants that can facilitate their activities as locality staff, consultants or citizen naturalists and volunteers.

DCR, in fact, has an upcoming training scheduled at CBNERRVA in October. I am confident that the experience will be as good as it has always been in the past.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Baird for her comments. No response required.

Judy Tucker, Executive Director
The Coastal Society
Williamsburg, VA

Comments: This letter is in support of the excellent training and outreach programming offered by the Coastal Training Program of the Chesapeake Bay National Estuarine Program in Virginia coordinated by Sandra Erdle.

The most striking feature of the programming in general is its responsiveness to the needs of area coastal resource managers and planners, educators, and nonprofit organizations. By using a continuous feedback loop, the programs are tailored to our gaps in knowledge, yet presented at the appropriate level of existing knowledge or practice. Through this programming, participants get up-to-date scientific information, an introduction to new technology, and opportunities to build skills. Program participants are encouraged to make connections with the presenters and among other participants and to use these connections as resources after the program. We know we will be hearing from Sandra again as she asks us to evaluate the program we just took, or what programs we'd next like to see offered.

Specific examples of the value of these programs to me include:

“Green Infrastructure” – participated to understand best practices and what the members of the nonprofit organization I work for need to know

“Planning and Facilitating Collaborative Meetings” – participated to understand what the members go through and for my own use at board meetings

“Watershed Educators Institute session” – benefited from the CBNERR staff as trainers and the facility to practice educational activities for school children. Learned about the buoy system and the link to the Coastal Observing System. Was part of my required training to become a certified watershed instructor.

“VIMS After Hours lectures” – communication of science to the general public is critical to change, and it is encouraging to watch attendees engage through questions. Webinar option has been a nice addition, which also leads to the ability to disseminate information for future consumption by others. This program is also valuable to Master Naturalists like myself for their continuing education requirement.

“Discovery Labs” – my son and I have canoed and seined in the York River, toured test tanks of cow-nosed rays for ways to deter them from oyster beds, and eaten ray meat as a test market for reducing the number of these predators. My son is now a graduate student in marine affairs and policy, a result of a passion nurtured by these programs.

My familiarity with CBNERRVA is through trainings. I am impressed by the extent of all the other programs and goals, and how smoothly CBNERRVA integrates their scientific activities

with the Virginia Institute for Marine Science and the objectives of federal funding programs. CBNEERVA program, and Sandra Erdle, are to be commended for a job well done. I respectfully request that you consider these comments and find your review of the program favorable.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Tucker for her comments. No response required.

**M.B. Sheppard Jr., Environmental Health Supervisor
Gloucester County Health Department
Three Rivers Health District
Virginia Department of Health
Gloucester, VA**

Comments: Over the last few years I have attended several instructional courses provided by CBNERRVA. They have included Introduction To Plant Identification Wetland Species Of The Mid-Atlantic and Wetland Delineation. Both courses were taught by Dr. Doug Deberry, a fantastic instructor!! I am so glad I had the opportunity to attend as these courses and others provided by CBNERRVA have greatly enhanced my knowledge and professional growth. Please keep these educational opportunities coming.

Also I must commend Sandra Erdle, Coastal Training Program Coordinator for the wonderful and efficient job she does with this program. I always look forward to her postings of educational opportunities!

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Mr. Sheppard for his comments. No response required.

**Rose Sullivan
Gloucester, VA**

Comments: I attended the Wildflower Identification Seminar presented by Doug deBerry. The agenda was well thought out and the program was extremely informative. Doug deBerry was an engaging speaker and I learned a lot. I think it is important to continue training opportunities that teach us how to lessen the negative impacts on the Chesapeake Bay.

NOAA Office for Coastal Management's Response: The Office for Coastal Management thanks Ms. Sullivan for her comments. No response required.