Weeks Bay
National Estuarine Research Reserve

Management Plan
2017 - 2022

ACKNOWLEDGEMENTS

This management plan has been developed in accordance with NOAA regulations, including all provisions for public involvement. It is consistent with the congressional intent of Section 315 of the Coastal Zone Management Act of 1972, as amended, and the provisions of the Alabama Coastal Area Management Program.

The revision of the January 2007 Weeks Bay National Estuarine Research Reserve (Reserve or NERR) Management Plan was made possible through the cooperative efforts of the Weeks Bay NERR staff, the Weeks Bay Advisory Committee, the Alabama Department of Conservation and Natural Resources, State Lands Division, Coastal Section, and the National Oceanic and Atmospheric Administration, Stewardship Division staff. Special recognition is given to the Dauphin Island Sea Lab for facilitating this revision under sub-award DISL-WB-315-12-1.

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This publication is available for downloading at
https://coast.noaa.gov/nerrs/reserves/weeks-bay.html
and www.weeksbayreserve.com.

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ABBREVIATIONS

ACAMP	Alabama Coastal Area Management Plan
ACES	Alabama Cooperative Extension System
ADCNR	Alabama Department of Conservation and Natural Resources
ADECA	Alabama Department of Economic and Community Affairs
ADEM	Alabama Department of Environmental Management
ADPH	Alabama Department of Public Health
ALDOT	Alabama Department of Transportation
ASHRAE	American Society of Heating, Refrigerating and Air-Conditioning Engineers
AU	Auburn University
AUMERC	Auburn University Marine Extension and Research Center
AWW	Alabama Water Watch
BCC	Baldwin County Commission
BCBE	Baldwin County Board of Education
BMP	Best Management Practice
CAC	Weeks Bay Watershed Project Citizens Advisory Committee
CBRP	Community-Based Restoration Program
CDMO	Central Data Management Office
CERF	Coastal & Estuarine Research Federation
CO-OPS	NOAA Center for Operational Oceanographic Products and Services
CPRP	Coastal Protection and Restoration Program
CSC	Coastal Services Center
CTP	Coastal Training Program
CWA	Clean Water Act
CZM	Coastal Zone Management
CZMA	Coastal Zone Management Act
DARP	Damage Assessment and Restoration Program
DISL	Dauphin Island Sea Lab (see also Marine Environmental Sciences Consortium)
DRP	Disaster Response Plan
E101	Estuaries 101
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ERA	Estuary Restoration Act
FDA	Food and Drug Administration
FEMA	Federal Emergency Management Agency
FWS	Fish and Wildlife Service
GAPC	Geographic Area of Particular Concern

GCOOS	Gulf of Mexico Coastal Ocean Observing System
GEMS	Gulf Ecological Management Sites
GIS	Geographic Information System
GMF	Gulf of Mexico Foundation
GOMA	Gulf of Mexico Alliance
GPS	Global Positioning System
GSA	Geological Survey of Alabama
HABs	Harmful Algal Blooms
KEEP	K-12 Estuarine Education Program
LID	Low Impact Development
LULC	Land use/Land cover
MASGC	Mississippi-Alabama Sea Grant Consortium
MESC	Marine Environmental Sciences Consortium (see Dauphin Island Sea Lab)
MOU	Memorandum of Understanding
NCCC	AmeriCorps National Civilian Community Corps
NCCOS	National Centers for Coastal Ocean Science
NEP	National Estuary Program
NEPA	National Environmental Policy Act
NERR	National Estuarine Research Reserve
NERRS	National Estuarine Research Reserve System
NGI	Northern Gulf Institute
NGO	Non-Governmental Organization
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
NOS	National Ocean Service
NPDES	National Pollutant Discharge Elimination System
NPS	Non-Point Source (Pollution)
NRCS	Natural Resources Conservation Service
NWLON	National Water Level Observation Network
OAW	Outstanding Alabama Water
OCM	Office for Coastal Management
ONRW	Outstanding National Resource Water
ORR	Office of Response and Restoration
RAE	Restore America's Estuaries
Reserve	Weeks Bay National Estuarine Research Reserve
SAV	Submerged Aquatic Vegetation
SET	Sediment Elevation Tables
SLD	State Lands Division
SD	Stewardship Division
SWCD	Soil and Water Conservation District

SWMP	System-wide Monitoring Program
SWPPP	Stormwater Pollution Prevention Practices System
TMDL	Total Maximum Daily Load
TNC	The Nature Conservancy
TOTE	Teachers on the Estuary
USA	University of South Alabama
USACE	United States Army Corps of Engineers
USCG	United States Coast Guard
USDA	United States Department of Agriculture
USGS	United States Geological Survey
USFWS	United States Fish and Wildlife Service
WBAC	Weeks Bay Advisory Committee
WBF	Weeks Bay Foundation
WBWP	Weeks Bay Watershed Project
YSI EXO	Yellow Springs Instruments Extended Operations Project

EXECUTIVE SUMMARY

The people of coastal Alabama live near and use the waters around Mobile Bay and its tributaries for many purposes. Coastal waters, quality of life and economic prosperity are inseparable. The activities that people do on the water and on adjacent lands affect the health of the coastal environments. Nowhere are effects more evident than in estuaries, where freshwater and saltwater mix together. Estuaries serve valuable functions for people and the environment. Residents of coastal Alabama, drawn from many walks of life and vocations, recognized the essential roles estuaries serve and the need to protect and conserve them. These residents focused their attention on a unique, shallow water embayment, Weeks Bay. The bay was healthy and ecologically diverse while still being a place for recreational and other uses. Citizens, coastal organizations, and local, state and federal agencies worked collaboratively to find a way to conserve the waters and lands and provide a place for people to learn about the functions and values of an estuary. In 1986, the National Oceanic and Atmospheric Administration (NOAA) officially designated the Weeks Bay National Estuarine Research Reserve (Reserve). The Reserve remains, 30 years later, a leader in research, stewardship of conserved land and water and education of youth and adults in the function and management of vital estuarine environments.

Location of Weeks Bay Reserve on northern coast of the Gulf of Mexico

Weeks Bay is an estuarine system, located along the eastern shore of Mobile Bay in Baldwin County, Alabama, between the major metropolitan areas of Mobile, Alabama, and Pensacola, Florida. At designation, the Reserve occupied 3,042 acres of land and water bottoms. Currently, the Reserve boundary includes 6,525 acres of land and water habitat that supports a wide variety of plant and animal species. The boundary expansion documented herein includes the addition of (7) tracts acquired by the State of Alabama totaling 962 acres and 1,830 acres of water bottoms adjacent to the newly acquired land.

The Reserve is a vital part of the Alabama Department of Conservation and Natural Resources (ADCNR), State Lands Division (SLD), Coastal Section and a component of the NOAA National Estuarine Research Reserve System (Reserve System or NERRS). The NERRS is a network of twenty-eight (28) areas representing different biogeographic regions and estuarine types within the United States. Designation as a NERR protects these areas for long-term research, monitoring, education and coastal stewardship. The Weeks Bay Reserve Management Plan provides a framework to guide the activities of the Reserve. This plan describes management approach updates to the 2007 plan to be implemented beginning in 2017.

The Reserve conducts land conservation and stewardship, research, monitoring, education and training. All tasks seek to add volunteer support, cross-sector collaboration and cooperation between NERRs. Together, the activities promote a single, clear **Vision**, "**A healthy Weeks Bay estuary and watershed appreciated by the community**." To attain the vision, the Reserve endeavors to complete the **Mission**, "**Provide leadership to promote informed management and stewardship of estuarine habitats through research, partnerships, education, and training using a placed-based system of protected areas**." Since 2007, the Reserve recorded many accomplishments in pursuit of its mission including these highlights:

- Participated in more than 37 research projects from which at least 29 peer-reviewed journal articles or reports were published;
- Contributed approximately 5,000 water quality, nutrient and weather data points per month to the continuous System-wide Monitoring Program;
- Conducted over 100 Coastal Training Program training events for over 3,300 participants, 2007-2016;
- Acquired a large-capacity, 45 foot pontoon boat in 2008 conducting more than 110 floating education and outreach events for over 3,000 K-12 and adult participants through 2015;
- Opened the 5,000 ft^2 Arthur C. "Skipper" Tonsmeire Weeks Bay Resource Center (Resource Center) overlooking Weeks Bay, hosting 15-25 education events and 10-15 advisory and community group meetings per year since 2010 and a 24-bed research dormitory was added in 2016;
- Acquired 962 acres of ecologically sensitive habitat including the Meadows Tract, the

largest single land acquisition in Reserve history, and 1,830 acres of adjacent waterbottoms;
- Accumulated over 5,000 volunteer service hours per year for education and conservation programming;
- Convened a permanent Restoration Advisory Board and collaborated with The Nature Conservancy and university teams conducting marsh and alternative shoreline restoration; and
- Developed the Gulf Guardian award winning Squeaky Sneakers summer program in partnership with the Eastern Shore Arts Center and served over 500 youth, adult and underserved participants.

Weeks Bay and the land areas with rivers and creeks that drain into the bay (watershed) are compact but complete. The area is representative of larger estuarine systems and a location for conducting the scientific investigation needed to help resolve management issues. Ecological stressors experienced in Weeks Bay and its watershed center around two general issues: land use change and climate change. The stressors manifest as habitat destruction, habitat fragmentation, spread of invasive species, and water quality degradation. The effects of a changing climate include alterations in weather patterns, fluctuations in tides and stream flow, rising sea levels and increasing severity of tropical events. The Reserve Management Plan identifies these stressors as priorities worthy of research and study. The Reserve uses accumulated science and monitoring data to manage better property within its boundary. The Reserve develops education and training to get information to citizens and managers to help them make better decisions on use of coastal resources. The Management Plan establishes programmatic goals of the Reserve consistent with completing the mission:

- Protect and improve ecosystem health and biological diversity within the boundary of the Reserve;
- Inform decisions affecting estuaries and coastal watersheds; and
- Promote education, training, stewardship, and scientific research focusing on estuarine ecosystems.

Actions to meet mission objectives include research, partnership building, land management, education, and training. Activities center on protected lands of the Reserve with place-based facilities, a qualified staff, and administrative support. Over the next management period, research priorities include in part land use effects on nutrient loading and watershed hydrology and the effects of wetland loss on the economy and public health. Training priorities include site-level sediment and erosion control technics, low impact development and alternative shorelines, and methods to reduce effects of flooding. Completion of a holistic restoration plan, completion of large-scale restoration on two Reserve tracts, and full implementation of the Climate Change Sentinel Site are priorities for the stewardship program. Education efforts include development

of training for student teachers, completion of communications and volunteer plans, implementation of a Community Action education program and increasing summer programming. All programs endeavor to work across sectors, increase partnerships and enhance citizen volunteer participation. Including efforts to utilize the knowledge, skills and resources embedded in the NERR System, the Reserve strives to accomplish the vision of promoting a healthy Weeks Bay estuary and watershed. The Reserve will use this successful model to address climate-related impacts and land use changes in the watershed.

White-topped pitcher plants in the Weeks Bay Reserve Bog

WEEKS BAY RESERVE MANAGEMENT PLAN

I. INTRODUCTION

National Estuarine Research Reserve System

The National Estuarine Research Reserve System (Reserve System or NERRS) was created by the Coastal Zone Management Act of 1972, as amended, to augment the National Coastal Zone Management Program which is dedicated to comprehensive, sustainable management of the nation's coasts.

The Reserve System is a network of protected areas representative of the various biogeographic regions and estuarine types in the United States. Reserves are established for long-term research, education and interpretation to promote informed management of the Nation's estuaries and coastal habitats (15 C.F.R. Part 921.1(a)). The Reserve System currently consists of 28 reserves in 23 states and territories, protecting over one million acres of estuarine lands and waters (Figure 1). The Reserve System is a partnership program between the National Oceanic and Atmospheric Administration (NOAA) and the coastal states. NOAA provides funding, national guidance and technical assistance. The state partner manages reserve resources on a daily basis working collaboratively with local and regional partners.

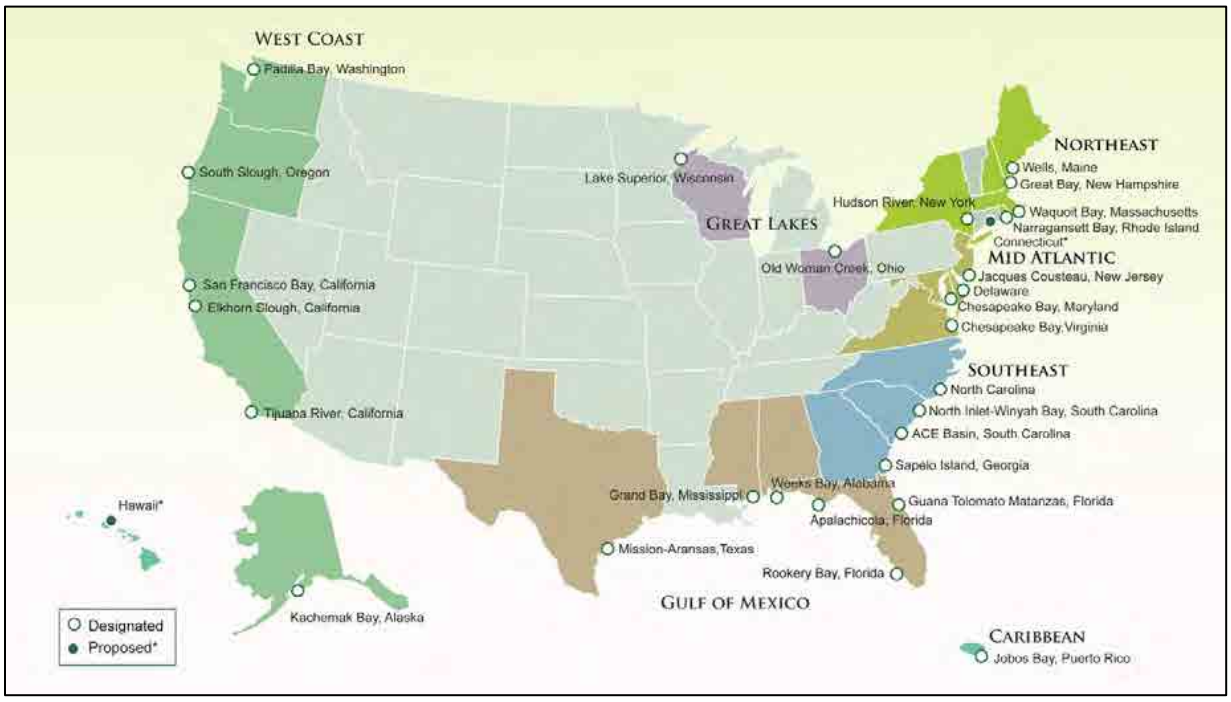


Figure 1. National Estuarine Research Reserve System Map.

National Estuarine Research Reserve System Strategic Goals

Estuaries are biologically rich, economically valuable, and highly vulnerable ecosystems. The vision and mission of the Reserve System reflect the importance of these systems within our communities.

> ***Vision***: Resilient estuaries and coastal watersheds where human and natural communities thrive.
>
> ***Mission:*** To practice and promote stewardship of coasts and estuaries through innovative research, education, and training using a place-based system of protected areas.

The program goals, per Federal regulations 15 C.F.R. Part 921.1(b), outline five specific goals for the Reserve System:

1. Ensure a stable environment for research through long-term protection of National Estuarine Research Reserve resources;
2. Address coastal management issues identified as significant through coordinated estuarine research within the Reserve System;
3. Enhance public awareness and understanding of estuarine areas and provide suitable opportunities for public education and interpretation;
4. Promote Federal, state, public and private use of one or more Reserves within the Reserve System when such entities conduct estuarine research; and
5. Conduct and coordinate estuarine research within the Reserve System, gathering and making available information necessary for improved understanding and management of estuarine areas.

These foundational goals are complemented by those that are systematically set by the program every five years. Strategic planning has been an integral part of the National Estuarine Research Reserve System for nearly twenty years. The planning process is designed to bridge national program direction with local coastal management needs through a representative and participatory process that supports NOAA's mission of science, service, and stewardship. The 2011-2016 Reserve System Strategic Plan focuses reserve core strengths of research, education, and training on three core issues: climate change, habitat protection, and water quality. The Reserve System Strategic Plan Goals are:

1. **Protected Places:** Estuaries and coastal watersheds are better protected and managed by implementing place-based approaches at reserves.

2. **Science:** National Estuarine Research Reserve System scientific investigations improve understanding and inform decisions affecting estuaries and coastal watersheds.

3. **People:** National Estuarine Research Reserve System education and training increases participants' environmental literacy and ability to make science-based decisions related to estuaries and coastal watersheds.

Biogeographic Regions and Boundaries of the National Estuarine Research Reserve System

NOAA has identified eleven distinct biogeographic regions and 29 subregions in the United States, each of which contains several types of estuarine ecosystems (15 C.F.R. Part 921, Appendix I and II). When complete, the Reserve System will contain examples of estuarine hydrologic and biological types characteristic of each biogeographic region. As of 2016, the Reserve System includes 28 reserves and two states in the process of designating a reserve.

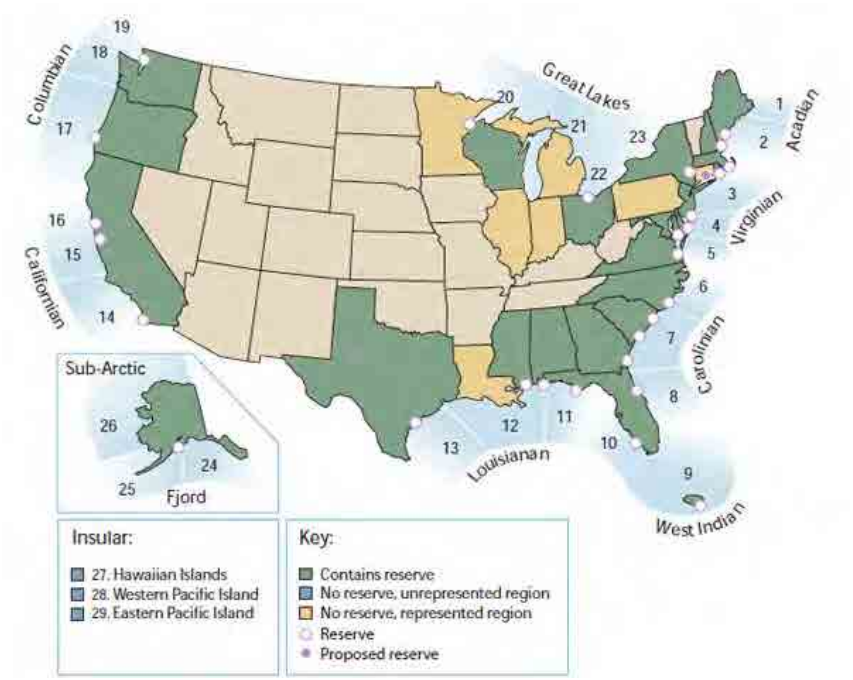


Figure 2. Map of the National Estuarine Research Reserves by biogeographic region.

Reserve boundary size will vary greatly depending on the nature of the ecosystem. Boundaries must include an adequate portion of the key land and water areas of the natural system to approximate an ecological unit and to ensure effective conservation. Reserve boundaries encompass areas for which adequate state control has or will be established by the managing entity over human activities occurring within the reserve. Reserve boundaries include a "core" area which is comprised of key land and water encompassing resources representative of the total ecosystem, which if compromised could endanger the research objectives of the reserve, as well as a "buffer" area designed to protect the core area and provide additional protection for estuarine-dependent species, including those that are rare or endangered. Buffer areas may also include areas necessary for facilities required for research and interpretation. Additionally, buffer areas are identified to accommodate a shift of the core area as a result of biological, ecological or geo-morphological change which reasonably could be expected to occur (15 C.F.R. Part 921.11 (c) (3)).

National Estuarine Research Reserve Administrative Framework

The process for federal designation of a National Estuarine Research Reserve has many steps and involves many individuals and organizations. While each reserve is a partnership program

between NOAA and a coastal state, there are many entities that collaborate to support designation of a reserve. Other partners include federal and state agencies, non-profit groups, universities and members of the local community. For more information on the designation process see nerrs.noaa.gov/background.

Upon designation, the reserve implements the approved management plan and is eligible for NOAA financial assistance on a cost-share basis with the state. A reserve may apply to NOAA for funds to help support implementation of the management plan largely funding operations, research, monitoring, education/interpretation, training, stewardship, development projects, facility construction, and land acquisition. Management plans provide a vision and framework to guide reserve activities during a five year period and enable the reserves and NOAA to track progress and realize opportunities for growth. Each management plan contains the reserve goals, objectives, and strategies supported by programs focused on research and monitoring, education and outreach, training, and stewardship. They also outline administration, public access, land acquisition and facility plans and needs, as well as restoration and resource manipulation plans, if applicable. Reserves are increasingly confronted with complex questions regarding new uses in or near reserves that may or may not be compatible with the Reserve System's mission. A thoughtful and comprehensive management plan provides a foundation for addressing these challenges to protect and manage reserve resources wisely and ensure the public and coastal decision-makers value and protect coastal resources.

NOAA administers the Reserve System (Figure 3.) and establishes standards for designating and operating reserves, provides support for reserve operations and system-wide programming, undertakes projects that benefit the Reserve System, and integrates information from individual reserves and programs to support decision-making at the national level. Additionally, NOAA periodically evaluates reserves for compliance with federal requirements and with the individual reserve's federally approved management plan, as mandated under Section 312 of the Coastal Zone Management Act (15 C.F.R. Part 921.40).

NOAA currently provides leadership and support for three system-wide programs including the System-Wide Monitoring Program, the K-12 Estuarine Education Program, and the Coastal Training Program, as well as the NERRS Science Collaborative. They also provide support for initiatives focused on the Reserve System's priorities: climate change, water quality and habitat protection.

Figure 3. National Estuarine Research Reserve Federal Administrative Framework.

Weeks Bay Reserve Administrative Framework

In February 1986, Weeks Bay was officially designated as the nation's 16th National Estuarine Sanctuary. In April, concomitant with 1986 amendments, the name of the Sanctuary was changed to the Weeks Bay National Estuarine Research Reserve (Reserve). The Alabama Department of Conservation and Natural Resources (ADCNR), State Lands Division (SLD), Coastal Section is the cooperating state agency and provides the administrative framework for operation of the Reserve (Figure 4).

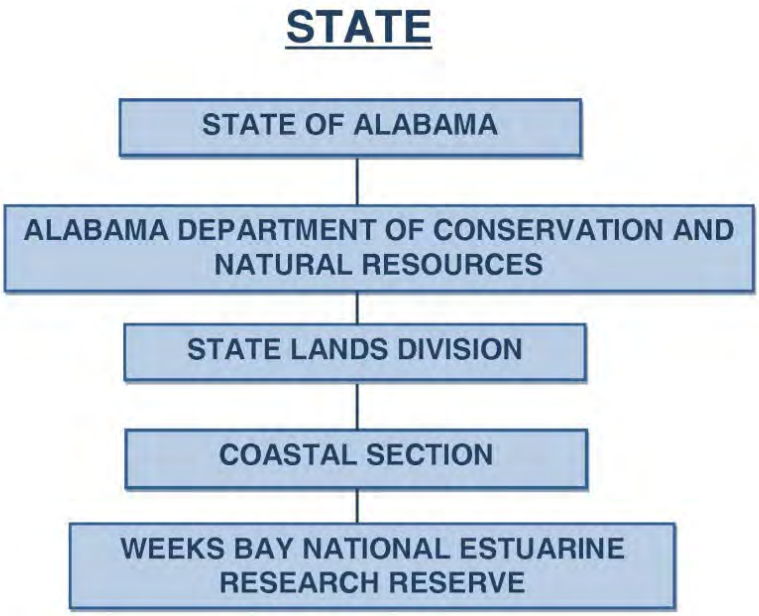


Figure 4. Weeks Bay Reserve State Administrative Framework.

NERR Management Plans

Every reserve is required by Federal NERR regulations, 15 C.F.R. Part 921.13, to have an approved management plan that is updated every five years. A management plan:

- provides a framework for the direction and timing of a Reserve's programs;
- allows Reserve managers to assess how successfully a Reserve's goals have been met and to determine necessary changes in direction; and,
- is used to guide Section 312 programmatic evaluations of the Reserve.

The plan must describe the Reserve's goals, objectives, and management issues. It must identify the Reserve's intended actions for research, education/interpretation, training, public access, construction, acquisition, and resource preservation, restoration, and manipulation. Staff roles in each of these areas must also be addressed.

Weeks Bay Reserve Management Plan

The Weeks Bay Reserve Management Plan describes the Reserve's goals, objectives, and management issues as required by the NOAA guidance described above. A proposed boundary expansion is described (Section IV) that includes additional lands under state management leading to greater conservation consistent with established goals of the NERR System as established in Federal Register 15 CFR Part 921.1(b). This document serves as a required update to the Weeks Bay National Estuarine Research Reserve Management Plan January 2007. This Weeks Bay National Estuarine Research Reserve Management Plan will guide Reserve actions over the next five years.

Arthur C. "Skipper" Tonsmeire Weeks Bay Resource Center at the mouth of Fish River

Weeks Bay Reserve Strategic Plan

All NERRs undergo strategic planning to provide direction and structure for local reserve activities to meet goals and objectives in concurrence with federal regulation, state requirements, and local priority issues. The Reserve established the following vision and mission:

> The ***Vision*** is, "A healthy Weeks Bay estuary and watershed appreciated by the community."
>
> The ***Mission*** is to, "Provide leadership to promote informed management and stewardship of estuarine habitats through research, partnerships, education, and training using a place-based system of protected areas."

The following table (Table 1) outlines the Strategic Plan (strategic goals and objectives) developed to guide each Reserve program. This Management Plan and associated actions, described throughout, serve to illustrate how the Strategic Plan is implemented. The Reserve Strategic Plan table also reflects the goal priorities of the NERR System – Places, Science, and People. The goals of the Reserve strive to protect places, learn more through science, and transfer this to decision-makers and the greater community. Objectives lead to implementation of actions to achieve the vision and mission of the Reserve. Evaluation metrics have been developed as part of the federal 312 evaluation process. These approved Section 312 Evaluation Metrics have been used to assist evaluation of core programs from 2012 through 2017. The evaluation metrics currently in use are shown both in the strategic plan (Table 1.) and Appendix H. The Reserve will endeavor to revise and update future evaluation metrics in accordance with OCM guidelines. Required program 312 evaluation metrics are footnoted in Table 1. to show their correlation.

Welcome to Weeks Bay Reserve

Plan	**VISION:** A healthy Weeks Bay estuary and watershed appreciated by the community.		
	MISSION: Provide leadership to promote informed management and stewardship of estuarine habitats through research, partnerships, education, and training using a place-based system of protected areas.		
	GOAL #1 (Places)	**GOAL #2 (Science)**	**GOAL #3 (People)**
	Protect and improve ecosystem health and biological diversity within the boundary of the Reserve.	Inform decisions affecting estuaries and coastal watersheds.	Promote education, training, stewardship, and scientific research focusing on estuarine ecosystems.
	OBJECTIVES	**OBJECTIVES**	**OBJECTIVES**
Administration	1-1: Funding increases improve Reserve projects that support ecosystem health and biological diversity.	2-1: Reserve programs facilitate the transference of scientific information to coastal decision-makers.	3-1: Reserve administration and financial management activities facilitate implementation of research, stewardship, training and education programs.
			3-2: Adequate administrative staffing and facilities support implementation of Reserve programs.
			3-3: Reserve programs benefit from improved existing and establishment of external partnerships.
Volunteers	1-2: Volunteers increase their participation in stewardship-related projects.	2-2: Trained volunteers transfer knowledge to wider audiences.	3-4: Reserve utilizes volunteers to enhance and expand programs.
			3-5: Reserve increases the opportunities for volunteers to be involved with education, training, stewardship, and research programs.
Stewardship	1-3: Reserve manages ecosystems to maintain and restore native diversity and function through at least one project per year.	2-3: Transfer of stewardship and management practices promote better informed coastal decision-making.	3-6: Reserve updates exhibits and outreach initiatives to support ongoing or new programs through at least two programs per year.
	1-4: Reserve conducts land acquisition to implement ecosystem restoration and protection.	2-4: Reserve programs facilitate responsible access and use of ecologically sensitive public lands.	3-7: Reserve increases involvement of residents in watershed planning and management activities.

Table 1. Strategic Plan.

	Goal #1: Protect and improve ecosystem health and biological diversity within the boundary of the Reserve.	**Goal #2:** Inform decisions affecting estuaries and coastal watersheds.	**Goal #3:** Promote education, training, stewardship, and scientific research focusing on estuarine ecosystems.
Boundary & Acquisition	1-5: Reserve prioritizes habitat areas and land tracts according to their contributions to ecosystem function for acquisition within the Weeks Bay Coastal Area.		
	1-6: Reserve develops land acquisition methods and conservation initiatives to protect ecologically valuable habitats and expand boundary.		
Public Access	1-7: Reserve reduces negative effects on public lands using designated areas and guidance for access.	2-5: Reserve responsible access and visitor use guidelines protect area ecosystems.	3-8: Reserve utilizes water access to support programs and increase public involvement.
Facilities & Construction			3-9: Reserve uses practices where possible in infrastructure development that have a low impact on the ecosystem.
			3-10: Reserve programs improve and enhance existing resources through implementation of the Facility Master Plan.
Research & Monitoring	1-8: Applied research and monitoring projects improve methods of resource protection.	[1] 2-6: Decision-makers access baseline data on habitats and water quality through SWMP Centralized Data Management Office (CDMO): http://cdmo.baruch.sc.edu/	[1] 3-11: Independent researchers receive resources, support and data for projects within the Reserve and associated areas.
		2-7: Governments, agencies and other nongovernmental partners benefit from the translation and dissemination of Reserve data.	

Table 1. Strategic Plan continued.

Education	**Goal #1:** Protect and improve ecosystem health and biological diversity within the boundary of the Reserve.	**Goal #2:** Inform decisions affecting estuaries and coastal watersheds.	**Goal #3:** Promote education, training, stewardship, and scientific research focusing on estuarine ecosystems.
	1-9: Audience awareness of ecosystem health and biological diversity issues at the Reserve increases through implementation and development of education programs.	2-8: Teacher training and outreach increases audience knowledge of current issues affecting estuaries.	[2] 3-13: Knowledge of estuarine ecosystems of target audience increases from participation in comprehensive education programs.
		2-9: Capacity of community members and groups increases from participation in Conservation Action education.	3-14: Reserve education programs are effective as determined by needs assessments and evaluation tools.
Training	1-10: All scientists participating in research at WBNERR are aware of the support and information needs of coastal decision-makers.	[3] 2-10: Decision-makers increase understanding that their decisions affect coastal ecosystems.	[3] 3-15: All training events and materials meet the needs of coastal decision-makers.
		[3] 2-11: Decision-makers increase application of the new knowledge and skills to make informed decisions.	

Table 1. Strategic Plan continued.

[1, 2, 3] **Correlate with approved Section 312 Evaluation Metrics**	
1	By 2017, provide resources, support, and background data to facilitate independent research projects within the Reserve and adjacent associated waters.
2	By 2017, develop and implement comprehensive education and interpretation programs to increase knowledge of target audiences to protect and inform habitat and biological diversity within the boundary of the Reserve.
3	By 2017, use the training and outreach center (Resource Center) for capacity building of coastal resource managers in an effort to inform decisions affecting estuarine and coastal resources.

Weeks Bay Reserve Accomplishments

Weeks Bay Reserve achieved numerous accomplishments during its 30 years of operation. The facility endured several major natural and technological disasters. The Reserve developed the previous Management Plan in 2007 on the heels of two major hurricanes, Ivan in 2004 and Katrina in 2005. Both storms produced significant effects on the Alabama Gulf coast. In 2010, the Deepwater Horizon oil spill altered approaches to ecosystem management including approaches utilized by the Reserve.

Weeks Bay Reserve remains resilient. Lands continue to be acquired for protection, staff implements diverse programs, research priorities include those issue areas that lead to improved best management of resources, and partners work in a collaborative manner to conserve coastal Alabama resources. Major strengths of the Reserve are adapting to change and building capacity.

Significant accomplishments include:

- Participated in more than 37 research projects from which at least 29 peer-reviewed journal articles or reports were published;
- Collected 18 years of continuous System-wide Monitoring Program data (SWMP) incorporated into at least 10 research projects since 2007 and into revisions of the Weeks Bay Watershed Management Plan;
- Housed the Watershed Project at the Reserve for the past 22 years;
- Conducted over 100 Coastal Training Program training events for over 3,300 participants, 2007-2015;
- Purchased large-capacity, 45 ft pontoon boat in 2008 conducting more than 100 floating education and outreach events for over 3,000 K-12 and adult participants through 2014 ;
- Constructed 5,000 ft^2 Resource Center overlooking Weeks Bay estuary hosting 15-25 education events and 10-15 advisory and community group meetings per year since 2010;
- Constructed a 3,500 ft^2 Research dormitory with 26 beds;
- Acquired 685 acre Meadows Tract 2010, the largest acquisition in history of Reserve; and
- Celebrated 30th Anniversary of Reserve designation in spring 2016.

Trailhead of the Weeks Bay Pitcher Plant Bog Boardwalk

Weeks Bay Reserve Setting

Weeks Bay is an estuarine system located along the eastern shore of Mobile Bay in Baldwin County, Alabama, between the major metropolitan areas of Mobile, Alabama, and Pensacola, Florida (Figure 5). Weeks Bay National Estuarine Research Reserve contains 9,317 acres of land and water habitat which supports a wide variety of plant and animal species.

Figure 5. Weeks Bay Metropolitan Area.

Reserve lands and waters are representative of the greater Mobile Bay system and the Mississippi Delta subcategory of the Louisianan Biogeographic Province. The Reserve is one of five (5) NERRs in the Gulf of Mexico region. Within the Reserve is located a suite of natural communities of great importance to the eastern Mobile Bay system. Habitats support abundant flora and fauna. Natural communities include tidal wetlands and swamps, salt

Alabama red-bellied turtle, *P. alabamensis*
Photo courtesy of David Nelson

marshes, submerged aquatic vegetation (SAV), pine flatwoods, pitcher plant bogs and benthic estuarine sediments. A multitude of rare, threatened and endangered species, such as Wherry's Sweet pitcher plant (*Sarracennia rubra* subsp. *wherryi*), eastern indigo snake (*Drymarchon couperi*), and Alabama red-bellied turtle (*Pseudemys alabamensis*) exist or have ranges and habitat requirements supported by natural communities within Reserve boundaries.

Weeks Bay serves as a nursery for blue crabs, *Callinectes sapidus*
Photo courtesy of Mary Gohres

Weeks Bay and surrounding marshes are highly productive areas that serve as a nursery for commercially important shellfish and finfish. Additionally, the location acts as a filter for pollutants, provides shoreline stabilization, and offers recreational and educational opportunities for people on the coast. Weeks Bay has received designation as an Outstanding National Resource Water (ONRW), the highest such water quality designation in the State of Alabama. This designation limits point source discharge into such waters and promotes best management practices for nonpoint source discharges into waters flowing into the ONRW. The designation process was initiated in 1990 with efforts from members of the Weeks Bay Advisory Committee and the Weeks Bay Foundation.

Magnolia River, one of the two tributaries of Weeks Bay, is designated an Outstanding Alabama Water (OAW) by the Alabama Department of Environmental Management (ADEM). The designation is considered by the U.S. Environmental Protection Agency (EPA) to be consistent with the "fishable/swimmable" goal and, therefore, provide for protection of aquatic life and human health. For more information regarding criteria used for this designation refer to http://adem.alabama.gov/programs/water/wquality/2012WAM.pdf.

The Watershed

The Alabama coastal area has some 400,000 acres of bay and estuarine waters, 121,000 acres of wetlands, and 330 identified species of birds. Alabama's two coastal counties host nearly 1,400 wildlife tourism-related businesses and have a robust commercial fishing industry (Table 2) (http://www.edf.org/sites/default/files/alabama_datu_study.pdf).

Year	Metric Tons	Pounds	$
2007	13,351.30	29,434,386	48,845,194
2008	11,090.60	24,450,280	44,355,582
2009	13,074.80	28,824,787	38,869,107
2010	6,378.80	14,062,732	26,334,800
2011	11,847.50	26,119,043	50,909,988
2012	11,946.20	26,336,576	46,534,329
GRAND TOTALS:	**67,689.30**	**149,227,804**	**255,849,000**

Table 2. Coastal Alabama Annual Commercial Fishing Landings.

The watershed of Weeks Bay encompasses about 149,000 acres in Baldwin County. Parts of the city limits of Fairhope, Robertsdale, Foley, Loxley and Magnolia Springs are located in the area (Figure 6). According to the U.S. Census 2010, these towns have populations of 16,479; 5,547; 15,402; 1,632 and 726, respectively. Activities such as fishing, boating, crabbing, hunting, and wildlife photography/observation are common in Weeks Bay. The watershed is primarily rural, but is within commuting distance from the cities of Mobile and Pensacola. As a result, a substantial increase in residential and commercial development within the watershed continues to occur, especially along the Eastern Shore of Mobile Bay, adjacent to US Highway 98 and on the outskirts of the city of Foley, Alabama.

Boater on Weeks Bay

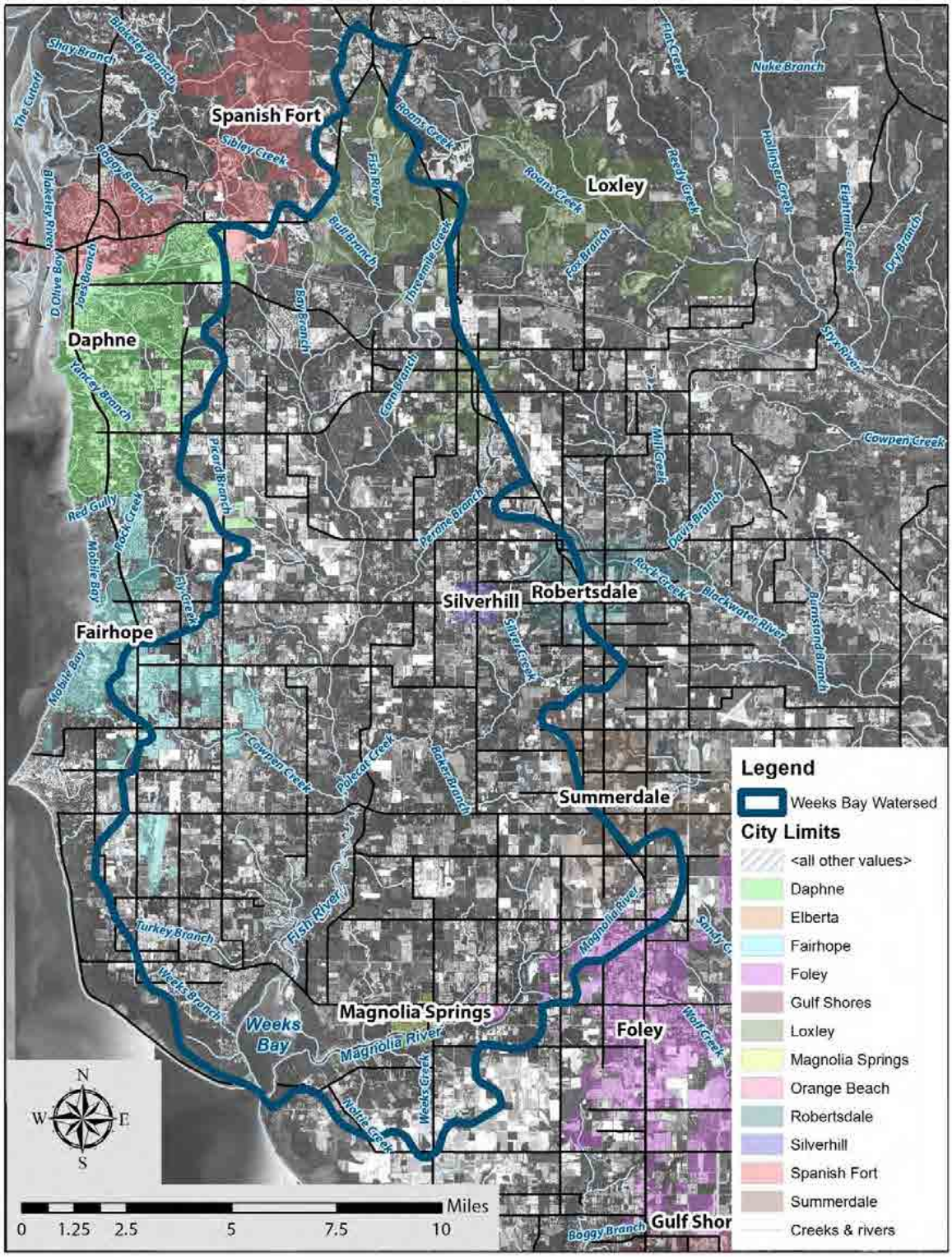


Figure 6. Weeks Bay Reserve Baldwin County, Alabama.

Weeks Bay Physical Aspects

General Physiography

Coastal Alabama rests within parts of two major physiographic provinces, the East Gulf Coastal Plain section of the Coastal Plain province, and the Mississippi- Alabama shelf section of the Continental Shelf province. Land areas in coastal Alabama are within the Southern Pine Hills and the Coastal Lowlands subdivisions of the East Gulf Coastal Plain section. The Southern Pine Hills comprises the portions of eastern and western coastal Alabama with elevated or rolling topography. The Coastal Lowlands are a flat to gently undulating plain extending along the coast adjacent to the Mississippi Sound and along the margins of Mobile, Bon Secour, and Perdido Bays. The lowlands are indented by many tidal creeks, rivers, and estuaries fringed by tidal marshes which are subject to inundation at high tide. These topographies, high bluffs and coastal lowlands are unique to the Gulf of Mexico region.

Tidal creek with fringing marsh

Climate

The Reserve lies in the humid sub-tropical climate region (Trewartha and Horn 1980) that dominates the Gulf Coast states and Florida Peninsula. Summers are warm, with an average high of 91° F while winters are relatively mild, averaging 61° F with occasional cold waves. In the contiguous United States, the Gulf coast leads the nation in highest annual average rainfall (The Climate Corporation 2013). Mobile, Alabama, has the designation "rainiest city" receiving precipitation from a combination of winter storms, thunderstorms and tropical systems with an average annual accumulation of 67 inches (The Climate Corporation 2013).

Geology

The Reserve lies in the Southern Pine Hills subdivision of the Gulf Coastal Plain physiographic province (Chermock et al. 1974). Sediments in this region are composed of quartz-rich sand interlayered with clays and silts. The Weeks Bay embayment was believed to have been formed at least 11,000 years ago during the Pleistocene Epoch (Smith 1986). Benthic sediments within Weeks Bay are a

Aerial image showing location of Weeks Bay Reserve

combination of silts and clays found throughout most of the interior of the bay and relatively clean quartz sands found in three areas of the bay system
(Haywick et al. 1994). The source of the silt and clay material, as well as the sand, is principally from Fish and Magnolia Rivers that drain interior uplands of Baldwin County. However, the sands around the periphery of the bay are mostly the result of erosional processes along the shoreline. The sands in the vicinity of the inlet at the mouth of the bay are likely derived from bedload inputs from the rivers, shoreline erosion within the bay, and material transported into Weeks Bay from Mobile Bay.

Typical Habitats of Weeks Bay Reserve

Presence or absence of water, either fresh or salt, determines the type of habitat present in locations around the Reserve. Plant and animal communities respond to hydrologic conditions on the surface and in the soil to form distinct habitats. Certain scientific classification systems divide the Weeks Bay Reserve into many different habitats. The Reserve research, monitoring and stewardship programs use detailed habitat maps to make decisions about resource management actions and practices. For the purpose of the Management Plan, the Reserve combines different biological communities into four typical habitats found within the Weeks Bay Reserve.

Moist pine forest wetland

Upland and Transitional Zone

Pine and Oak forests dominate the upland and transitional zones inside the Reserve. Live oak (*Quercus virginiana*) and Loblolly Pine (*Pinus taeda*) are frequent inhabitants of the uplands. Long leaf Pine (*Pinus palustris*), may be present. As habitats progress from uplands into the transitional zone, soils change from dry to wetter conditions. The habitat supports growth of plants that tolerate wetter soils. Plant species include water oak (*Quercus nigra*), laurel oak (*Quercus laurifolia*), sweetgum (*Liquidambar styraciflua*), southern magnolia (*Magnolia grandiflora),* devilwood (*Osmanthus americana*), and yaupon *(Ilex vomitoria).*

Cypress swamp

Forested Wetlands and Swamp Habitats

Forested wetlands and swamps occupy much of the land around Weeks Bay. These wetlands are flat or have low relief and contain saturated wetland soils. During storm events, wind-driven surge or floodwaters from heavy rains inundate these wetlands. The vegetation in forested wetlands and swamps is diverse and rich in species. Common trees are slash pine (*Pinus elliottii*) and sweetbay (*Magnolia virginiana*) although longleaf pine (*Pinus palustris*) also grows there. The understory may be very dense, consisting largely of greenbriar (*Smilax laurifolia*), gallberry (*Ilex glabra*), wax myrtle (*Morella cerifera*), saw palmetto (*Serenoa repens*), St. John's wort (*Hypericum fasciculatum*), swamp bay (*Persea palustris*), and swamp tupelo (*Nyssa biflora*).

Forested wetlands and swamps border Fish River, Magnolia River, and several small tidal streams in the Weeks Bay watershed. The vegetation of these swamps varies depending partly on the amount and duration of flooding. If flooding is extensive, pond cypress (*Taxodium ascendens*) and swamp tupelo may dominate the canopy. Usually under moderate flooding, the dominant tree is sweet bay. Red maple (*Acer rubrum*), swamp tupelo, swamp bay and tulip tree (*Liriodendron tulipifera*) may also occur there. Atlantic white cedar (*Chamaecyparis thyoides*), an occasional to uncommon species, becomes increasingly more frequent in swamps along upper reaches of streams, especially along Fish and Magnolia Rivers.

Florida anise, *I. floridanum*

A few shrubs such as Virginia willow (*Itea virginica*), Florida anise (*Illicium floridanum*), and fetterbush (*Leucothoe axillaris*) grow under the dense shade of the trees. Netted chainfern (*Woodwardia areolata*) and cinnamon fern (*Osmundastrum cinnamomeum*) are among the few shade tolerant herbs present.

Dense thickets of swamp cyrilla (*Cyrilla racemiflora*), black titi (*Cliftonia monophylla*), and large gallberry (Ilex coriacea) persist in the open borders of these swampy woods. The additional sunlight helps Wax myrtle (*Myrica cerifera*) and yaupon holly (*Ilex vomitoria*) grow in this habitat. Species need to tolerate saltier water conditions along the brackish waters of Weeks Bay and on the Swift Tract bordering Bon Secour Bay.

Cinnamon fern, *O. cinnamomea*

Marshes

The shoreline of Weeks Bay supports marshes dominated by salt-tolerant herbs and grass-like plants. Marshes occur as narrow shoreline fringes and extend up the tidal mouths of the Fish and Magnolia Rivers. Black needlerush (*Juncus roemerianus*) is an abundant species and dominates portions of the saltmarsh at the edge of the water.

Brackish Marsh

Two species of cordgrass (*Spartina alterniflora* and *Spartina cynosuroides*) grow abundantly in the intertidal zone. Other common species are saltgrass (*Distichlis spicata*), saltmeadow cordgrass (*Spartina patens*), saltmarsh aster (*Aster tenuifolius*), saltmarsh false foxglove (*Agalinis maritima*), and sea lavender (*Limonium carolinianum*).

Within the less saline, brackish marshes, a greater diversity of species occurs. Of the salt marsh species, only black needlerush and saltmeadow cordgrass grow frequently in the brackish environment. Other common brackish species include cattails (*Typha* spp.), spikerush (*Eleocharis* spp.), common reed (*Phragmites australis*), bull rushes (*Scirpus* spp.), and sawgrass (*Cladium jamaicense*).

Submerged Aquatic Vegetation (SAV)

Four species of plants dominate the submerged grass beds in Weeks Bay. The most abundant species is widgeon grass (*Ruppia maritima*). The other species are Eurasian watermilfoil (*Myriophyllum spicatum,* INVASIVE), tape grass (*Vallisneria americana*), and slender pondweed (*Potamogeton pusillus*). Grass beds occur in relatively quiet waters along shorelines. High turbidity conditions and the subsequent reduction of available light restrict grass beds growth to shallow waters less than two meters deep with most in less than one-half meter.

Invasive Species Found in Weeks Bay Reserve

A number of non-native, invasive species are present in the Reserve and pose a significant

threat to the integrity and community structure of Reserve habitats. Notable species observed are:

Invasive Terrestrial Species	Invasive Aquatic Species
Sapium sebiferum – popcorn or tallow tree	*Eichhornia crassipes* – water hyacinth
Imperata cylindrical – cogongrass	*Salvinia minima* – water spangles
Lygodium japonicum- Japanese climbing fern	*Pistia stratiotes* – water lettuce
Cinnamomum camphora – camphortree	*Hydrilla verticillata* – waterthyme
Colocasia esculenta – elephant ear	*Myriophyllum spicatum* – Eurasian watermilfoil;
Dioscorea bulbifera – air potato	
Pueraria montana – kudzu	
Ligustrum sinense – Chinese privet	
Both Aquatic and Terrestrial	
Panicum repens – torpedo grass	
Alternanthera philoxeroides – alligatorweed	

Table 3. Notable Invasive Species for Weeks Bay, Alabama.

Feral pigs (Sus scrofa)

These pigs have become a serious problem in certain habitats of the Reserve. Pigs are an invasive, exotic animal that root into the substrate looking for food. In recent years pigs have entered the Weeks Bay pitcher plant bog and disrupted the plant community found there. This presents a serious management issue to either keep the animals from entering the bog or to remove them entirely from the premises. The reality of dealing with these pigs is somewhere in between these two methods of management.

Pig damage at the Reserve pitcher plant bog

Hydrilla (Hydrilla verticillata)

Also known as waterthyme, a sub-aquatic species, has been observed in Barner Branch. Hydrilla eradication efforts undertaken over the past five years appear to be successful with no hydrilla currently observed by staff within the Weeks Bay watershed. Additionally control efforts have successfully reduced the presence of a variety of terrestrial invasive species. Submerged and emergent

Feral Pig, *S. scrofa*

invasive flora species within the Weeks Bay watershed were mapped in 2007 and remapped in 2015.

Waterthyme, *H. verticillata* in Barner Branch

Critical Stressors Affecting Weeks Bay

The history of Weeks Bay has its beginning with Native American Indians. Indian tribes dwelling in southwest Alabama lived around the bay. Native Americans once lived throughout what is known today as the state of Alabama. Many tribes existed 'in Alabama' prior to the coming of early explorers arriving from Europe. There was a transition of Native Americans in this region of the northern Gulf coast to a Mississippian Culture during the years 400-1200 AD (Fundaburk, et. al. 1957). In portions of what is known today as southern Alabama, there was a rich and well documented history of Alabama Creek tribes. This continued well into the eighteenth century with the Native Americans using Alabama Rivers and living, for example, in what today is known as Baldwin County in the Tensaw Lake area near Stockton (Stiggins, George. 1989).

Today, the only living Native American tribe in south Alabama is that of the Poarch Creek Indians living in the Atmore area of Baldwin County. Atmore is some sixty (60) miles north of the Reserve and the Poarch Creek Indians are very active and hold land in that area. This tribe in Baldwin County is relatively far from the Reserve. The Poarch Band of Creek Indians is the only federally recognized Indian Tribe in the state of Alabama; this and more information on this

active tribe can be found at the website: http://pci-nsn.gov/westminster/index.html. The Weeks Bay area remained relatively undisturbed for many years since European explorers and settlers followed the Native Americans, but the recent push for coastal development has led to a need for preservation and good management practices.

The lands around Weeks Bay change frequently for many reasons. Baldwin County has been a home to intensive agriculture and silviculture for nearly two centuries. Forests changed into row crops then to residential and commercial development. Development in the watershed is increasing rapidly. The consequences of rapid change are stresses on the ecology and environment of Weeks Bay. A changing climate contributes additional negative effects. Critical stressors that affect Weeks Bay include:

- Change in Land Use – potential degradation of coastal habitats and increased polluted runoff, flooding and erosion.
- Polluted Stormwater Runoff – the dominant source of water pollution in the coastal area as land use changes from forested land to a more urban setting.
- Coastal Development – increased residential and commercial development throughout the coastal area destroying habitat and reducing groundwater recharge.
- Climate change and sea level rise – potential habitat loss, altered rainfall patterns, increased storm surge severity and changed natural community structure and dynamics.
- Dredging – maintenance dredging requirement in Mobile Bay produces millions of cubic yards of spoil materials annually.
- Energy Development – prospect of continued gas, pipeline and coal terminal development in the coastal area.
- Pollution from major industrial and municipal sources - discharge of millions of tons of various waste products each day into coastal waters and the air.

Building on previous successes, the Reserve implements strategies and actions to address the effects of these critical stressors. Reserve sectors work together through a collaborative research process to learn more about climate and land use changes. The science is applied using restoration and stewardship practices. Education and training programs are developed to get the science to students, adults and resource managers so that they can make educated decisions about the use of coastal resources.

Population Growth and Associated Development

The coastal area of Alabama, especially Baldwin County, experienced rapid population increases as well as urban growth. Baldwin County is one of the fastest growing counties in the state of Alabama, with an overall population doubling from 98,280 in 1990 (ARE REC 2005) to an estimated 200,111 in 2014 (United States Census Bureau 2015). Such growth led to changes in land use in the Weeks Bay watershed. These changes resulted in loss of habitat and polluted

runoff from urbanized areas that has impacted water quality. The projection for 2020 population is 227,727 (ARAREC 2005) (Figure 7). This population increase can detrimentally affect Weeks Bay and may be the ultimate issue affecting management of the Reserve.

Sunset over Weeks Bay

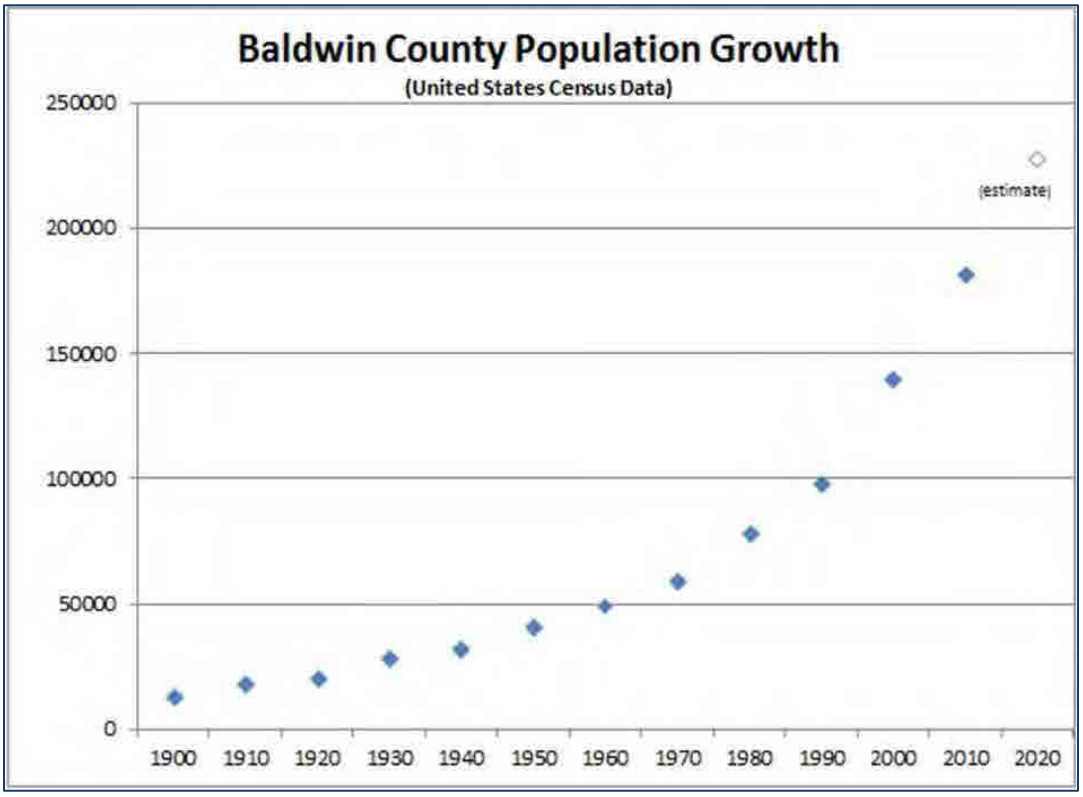


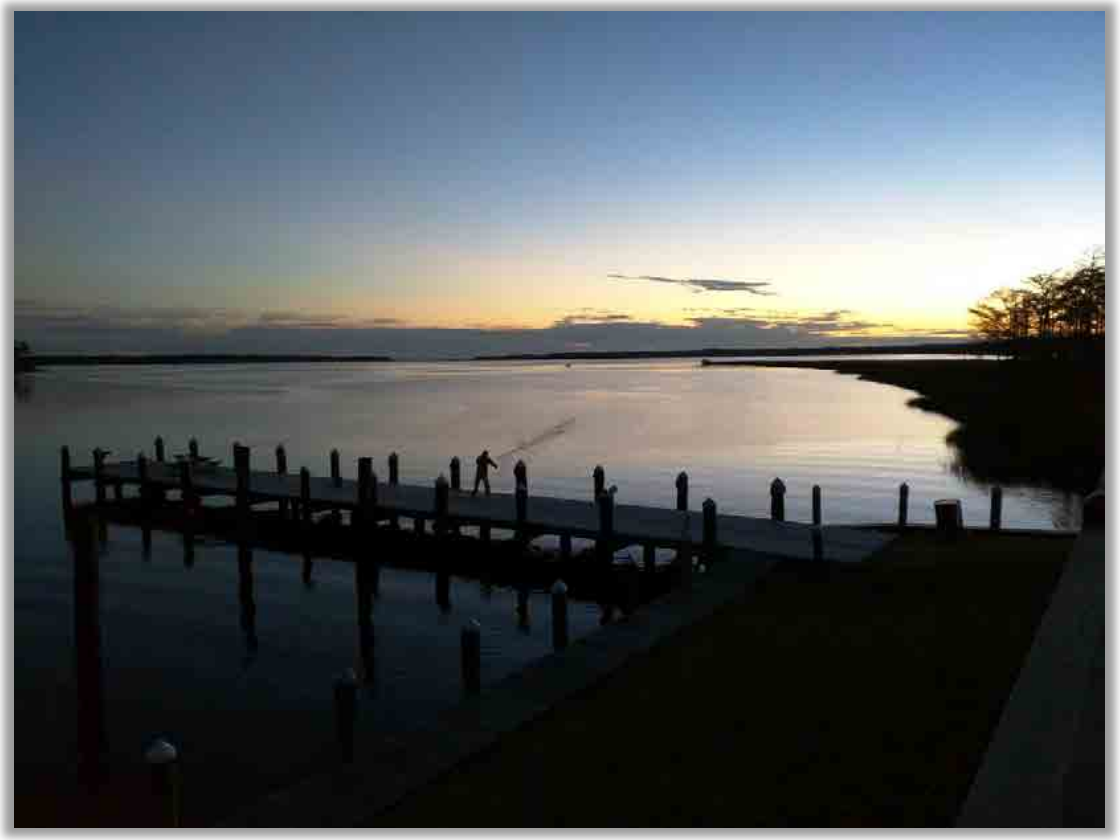
Figure 7. Baldwin County population 1900-2010 with projection for 2020.

Weeks Bay Coastal Area

The Weeks Bay Coastal Area is a defined geographic location of special concern and focus for the Reserve. The majority of the Reserve boundary falls within the Weeks Bay Coastal Area (Figure 8). Reserve staff assesses the environmental impacts of various activities and responds to

citizen concerns related to water quality, wildlife, and wetlands. Reserve staff concentrates land acquisition and resource management activities as required for designation as a National Estuarine Research Reserve within the Weeks Bay Coastal Area. .

The Alabama Coastal Area as delineated in the Alabama Coastal Area Management Program (ACAMP) established under the Coastal Zone Act of 1972, as amended, consists of that land seaward of the continuous ten (10) foot contour to the limits of the State's territorial waters. The Weeks Bay Coastal Area is that portion of the Alabama Coastal Area surrounding Weeks Bay, reaching up Fish River to the County Road 32 bridge, reaching up Magnolia River to the County Road 49 bridge, and extending from the mouth of Bon Secour River to Mullet Point Park at the intersection of US Highway 98 and County Road 1. Having the Weeks Bay Coastal Area delineated promotes consistency of interaction between the Alabama Coastal Area Management Program as administered by ADCNR, Alabama Department of Environmental Management (ADEM) and the Reserve.



Net Casting off Weeks Bay pier

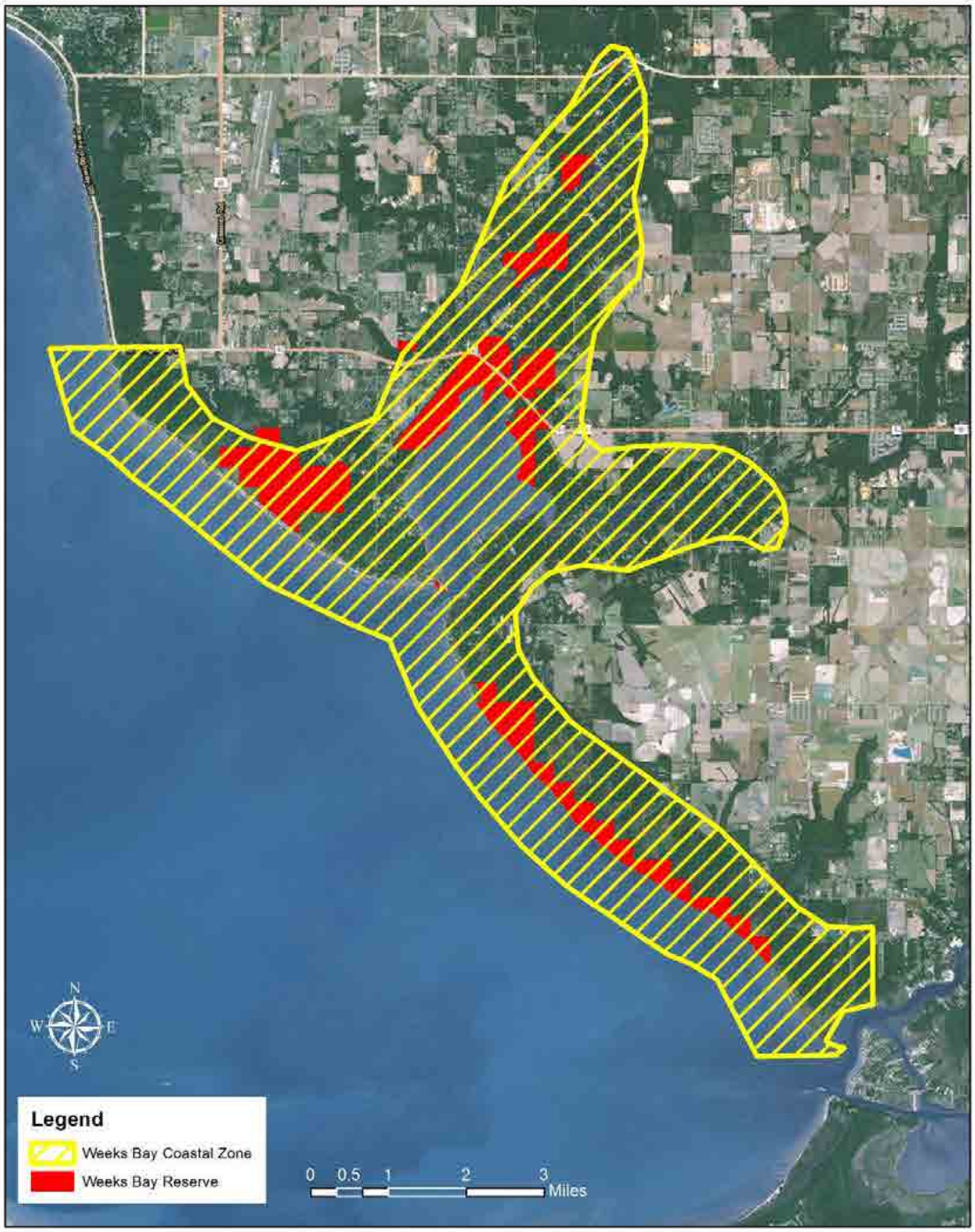


Figure 8. Weeks Bay Coastal Area.

Weeks Bay Reserve Boundaries

Located in south Baldwin County 30 miles southeast of Mobile, the Reserve is accessible by U.S. Highway 98 and County Roads 17, 27, and 1, as well as by boat. Bon Secour National Wildlife Refuge is located to the south of the Reserve. The Reserve includes thirteen tracts of State-owned land: the Foley tract (178 acres) on the northeast side of Weeks Bay and along the

eastern shore of Fish River; the Ogburn tract (157 acres) directly south of the Foley parcel extending approximately to the mouth of Magnolia River; the Swift tract (615 acres) approximately 1.5 miles south of the mouth of Weeks Bay; the Damson tract (360 acres) south of U.S. Highway 98 which extends along the western shore of Weeks Bay; Viewpoint Park (2 acres) at the mouth of Weeks Bay; the Fish River Marina tract (22 acres) at Fish River Bridge on US Highway 98, the Turkey Branch tract (20 acres) adjacent to and west of County Road 27; Harris tract (64 acres) and Worchester tract (49 acres), adjacent to each other located on Fish River; the Riverlands tract (90 acres) located south of Keeney Road; the Safe Harbor tract (81 acres) across U.S. Highway 98 from the Ottilie Hallstead Weeks Bay Visitor Center (Weeks Bay Visitor Center or Visitor Center); the Lott tract (3 acres) at the end of County Road 1; and the Meador tract (4 acres) at the County Road 32 bridge.

A boundary expansion documented herein includes eight additional tracts totaling 962 acres acquired by the State of Alabama from 2007 to present. Tracts include the Pryor tract (11 acres), Key tract (40 acres), Dever tract (64 acres), Metcalf tract (30 acres), Martin tract (63 acres), Lipscomb tract (40 acres), Meyer (29 acres), and the largest acquisition in the history of the Reserve, the Meadows tract (685 acres). In addition, the expansion includes additional water bottoms (1,830 acres) adjacent to or in close proximity to these tracts held in title by SLD (see Figure 22 in chapter IV. Boundary and Acquisition showing map of boundary expansion).

This Boundary expansion supports the goals of the NERRS as established in the Federal Register 15 CFR part 921.1(b). The regulation states that reserves will promote long-term protection of estuaries, address management issues, and encourage stewardship, research, education, and training. Boundary expansion offers greater protection of the Weeks Bay estuarine system and promotes conservation of coastal resources. Expansion of the Reserve boundary affords greater protection to the Alabama coastal area. Greater protection and management of these expanded areas protects and improves habitat resulting in conservation of biological diversity. Incorporation of tracts in the Reserve boundary preserves the lands for research. Education and stewardship benefit from the boundary expansion as these protected areas can more easily be incorporated into various projects.

Weeks Bay Core and Buffer Area

Weeks Bay Reserve establishes geographic areas dedicated to education, training, research, stewardship and resource protection subject to the management strategies of the Reserve as set forth in the Management Plan. The Weeks Bay Core and Buffer areas make up the Reserve boundary and fulfill required descriptions of the Reserve components as part of the designation as a National Estuarine Research Reserve. The waterbottoms within the Reserve, up to mean high tide, are considered critical habitat that influence the integrity of the Core area. All other lands within the Reserve boundary serve as a buffer to protect the Core and provide additional protection for estuarine-dependent species (Figure 9).

The Core area includes: 1) the waterbottoms of Weeks Bay, Fish and Magnolia Rivers, and their tributaries, to the mean high tide line and to the termination of tidal influence, and 2) the water bottoms of Bon Secour Bay adjacent to the Swift tract with additions and north across the mouth of Weeks Bay to an area adjacent to the Meadows tract up to the mean high tide line. Expanded Core includes: 1) the waterbottoms of Bon Secour Bay from Mary Ann Beach Park near the mouth of Weeks Bay northward along the shoreline adjacent to the Meadows tract, to the mean high tide line, and 2) the waterbottoms of Bon Secour Bay from the Swift tract southward to the extent of the Swift tract addition tracts. Further detail of the boundary and expansion can be found in "Section IV Boundary and Acquisition".

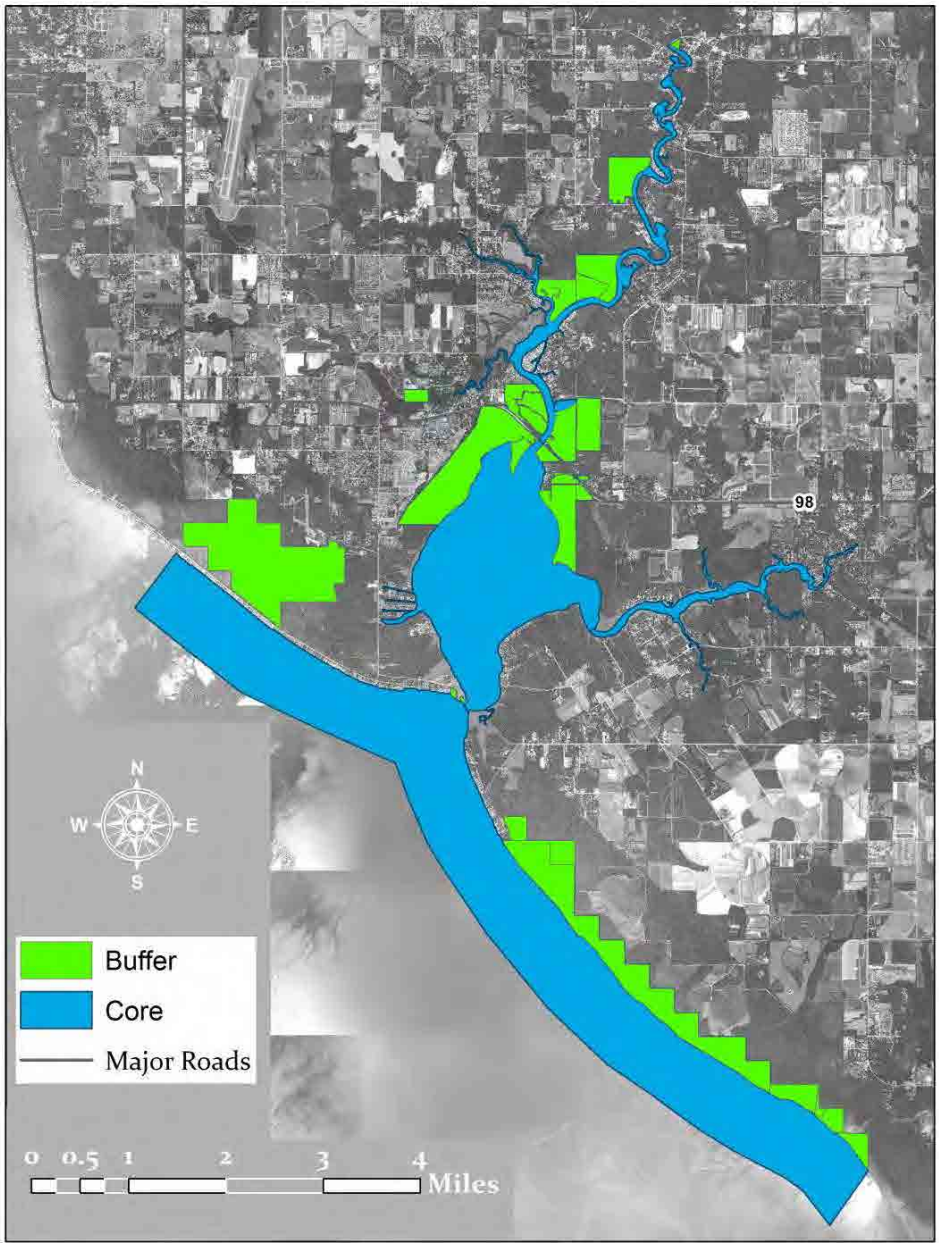


Figure 9. Weeks Bay Core and Buffer.

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White-topped pitcher plants

Weeks Bay Reserve Staff

II. ADMINISTRATION

The National Estuarine Research Reserve System (Reserve System or NERRS) is a cooperative program between the National Oceanic and Atmospheric Administration (NOAA) and participating State agencies. Administration at the Reserve oversees all activities by an established framework for implementing and evaluating staff and programs, managing and soliciting funds, and coordinating activities of the Reserve. The Administration framework (Figure 10.) ensures that management activities are coordinated and encourages support for local and state user groups. Management of the Reserve is a collective effort involving administrative agencies, Reserve staff, local and state agencies, user groups and the Weeks Bay Advisory Committee (WBAC).

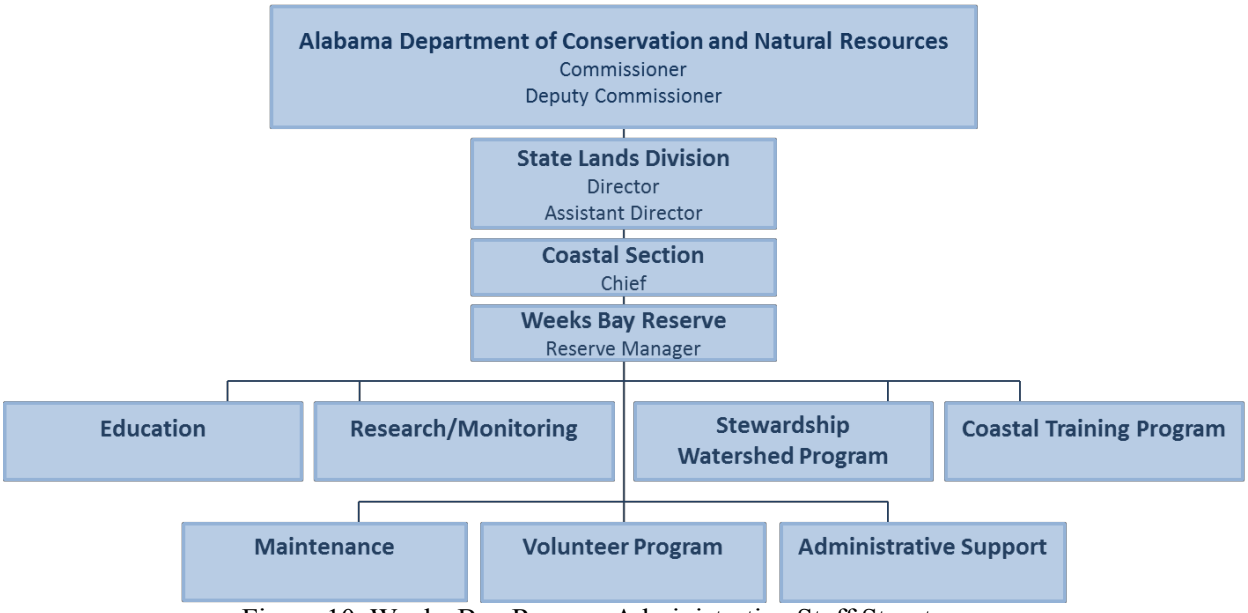


Figure 10. Weeks Bay Reserve Administrative Staff Structure.

State Agencies

Alabama Department of Conservation and Natural Resources (ADCNR) is the cooperating lead state agency for the Reserve and an executive agency of Alabama state government. The Commissioner of ADCNR is appointed by and reports directly to the Governor. The Reserve is located in the ADCNR Coastal Section of the State Lands Division. The Coastal Section also houses the Alabama Coastal Area Management Program (ACAMP). Reserve staff are ADCNR employees with the exception of the Resource Teacher, who is employed by the Baldwin County Board of Education.

ADCNR provides administrative services for the Reserve. Services include: accounting for grants and other fiscal activities, personnel, purchasing, legal counsel and legislative liaison. These services are funded by an indirect cost charged to the Reserve program as a percent of the funds handled by ADCNR for the Reserve. State Lands Division provides state matching and other state funds used for the Reserve.

The Department of Conservation and Natural Resources is an executive and administrative department of the State of Alabama created by statute. The Commissioner, appointed by the Governor as a member of his/her cabinet, advises the Governor and Legislature on management of freshwater fish, wildlife, marine resources, waterway safety, state lands, state parks, and other natural resources. The Department has four divisions: Marine Resources, State Lands, State Parks, and Wildlife and Freshwater Fisheries. ADCNR is the state agency responsible for the conservation and management of Alabama's natural resources including state parks, state lands, wildlife and aquatic resources. ADCNR also issues hunting and fishing licenses for the state.

Alabama Department of Environmental Management (ADEM) administers environmental legislation, reviews and issues permits concerning activities in the coastal area, promulgates regulations and standards, and develops environmental policy for the state. ADEM is the regulatory, permitting, monitoring and enforcement arm of the ACAMP. ADEM collects environmental and regulatory data statewide and administers federally- designated environmental projects. ADEM provides the coastal regulatory controls and enforcement of coastal development authorities. ADEM serves the Reserve in an advisory capacity with a member on the WBAC.

Reserve Staff

Staff positions needed to implement the Management Plan and operate the Reserve are: Reserve Manager, Administrative Assistant, Education Coordinator, Resource Teacher, Coastal Training Program Coordinator, Research Coordinator, Research Technician, GIS Specialist, Stewardship Coordinator, Watershed Coordinator, Watershed Assistant, Volunteer Coordinator, Maintenance/Repair Supervisor, Laborer/Receptionists (2), Temporary Laborer, Volunteer Staff, and Summer Interns. Core staff positions required by NOAA include Reserve Manager, Education Coordinator and Research Coordinator. The activities and roles of core

positions are essential to the operation of the Reserve and are filled continuously. Positions other than the core staff may or may not be filled depending on availability of resources.

Roles and Responsibilities

Reserve Manager supervises the implementation of the Management Plan and coordinates Reserve activities and programs. In addition, the manager develops and manages the annual operations plan and budget; oversees ongoing education, research, and stewardship programs; develops and fosters partnerships with other agencies and non-governmental organizations to promote conservation of coastal resources; oversees ongoing site development, acquisition, and maintenance activities; maintains a strong working relationship with the Weeks Bay Foundation; and represents the Reserve at the national level.

Administrative Assistant conducts administrative operations of the Reserve. This person orients visitors to displays, programs, and Reserve personnel. Duties occasionally include opening and closing the Visitor Center on weekends.

Resource Teacher develops and implements youth education and teacher professional development training. This position is a cooperative effort between the Reserve and the Baldwin County Board of Education. The position requires practical education experience as well as expertise in the areas of marine and environmental science. Duties include, but are not limited to, planning, scheduling and coordinating age-appropriate group activities; conducting in-service activities for Baldwin County teachers; assisting in the development of exhibits and collections; assisting in the development of grant proposals for educational programs; and participation in special school projects.

Education Coordinator supports K-12 and community education and outreach programs at the Reserve. The position requires education experience as well as expertise in biological and environmental science. This person leads interpretive tours, makes presentations to community organizations, assists in educational workshops, coordinates summer estuary camps, and participates at outreach events and festivals. Additionally, this person maintains the Reserve website and social media pages.

Education Assistant (1) assists with K-12 programs of the Reserve and includes leading age appropriate interpretive tours and activities at the Reserve, aiding with student field studies and restoration projects, and assisting with educational workshops. This position is provided by the Weeks Bay Foundation (WBF or Foundation) through the Gaynor McCown Environmental Education Fellowship.

Education Assistant (2) supports K-12 programs at the Reserve by leading age appropriate interpretive tours and activities at the Reserve, aiding with student field studies and restoration projects, and assisting with educational workshops. Additionally, this position assists with community education, stewardship, and research activities of the Reserve as needed.

Coastal Training Program (CTP) Coordinator develops and conducts training events and provides technical support for organizations or agencies that make decisions affecting coastal resources. CTP audiences may include but are not limited to governments, resource management agencies, private engineers or consultants and environmental groups. CTP Coordinator activities include conducting workshops, developing manuals and guidebooks, leading grant-funded projects, building partnerships and serving on advisory and technical committees.

Research Coordinator oversees research and monitoring activities, initiates research projects, and facilitates research activities from academic, governmental, non-profit and private research organizations partnering with the Reserve. This is a professional position requiring a background in field research and expertise in estuarine ecology including experience in at least one of the Reserve System Priority Research Areas

Research Technician assists the Research Coordinator in monitoring duties of the System-wide Monitoring Program and facilitation of research at the Reserve. The Research Technician calibrates and troubleshoots electronic data loggers and electronic sample collection devices, does quality control on large data sets, collects water samples in accordance with established techniques, and is able to safely operate boats and All-Terrain Vehicles (ATVs) in all types of weather. This position is also responsible for collection and testing of water samples.

Geographic Information Systems (GIS) Specialist creates and maintains GIS databases, produces digital and printed map products, and assists with development of GIS applications for the Reserve. This position requires advanced technical training in GIS and other software, specialized experience and continuing education.

Stewardship Coordinator leads planning and restoration activities within the Reserve boundary. The program coordinator conducts habitat monitoring and collaborates with agency, academic and private experts to develop and implement activities that improve the ecological health and biological diversity of lands in and around the Reserve. Others duties include assisting with research and monitoring and land acquisition. This position requires scientific and educational experience. Coordinator must be able to comprehend information at various technical levels in order to communicate and present marine and estuarine science to the public.

Watershed Coordinator develops local programs designed to educate and involve citizens and resource managers regarding watershed issues and pollution reduction. This position was established to promote watershed protection and provide technical assistance in the management of pollution problems within the Weeks Bay watershed. The coordinator promotes improvement in water quality through building partnerships with area residents and implementing pollution control practices.

Watershed Assistant assists the watershed coordinator with overall management of the

watershed program, maintaining water quality data, and coordinating various workshops and meetings.

Volunteer Coordinator recruits, coordinates activities, and directs volunteers in support of Reserve activities and programs.

Maintenance Supervisor supervises laborer positions and conducts maintenance and repair of equipment, vehicles, vessels, buildings and grounds of the Reserve.

Laborer (1) conducts cleaning and maintenance activities in the Visitor Center and opening and closing the Reserve on Saturdays. This position participates in limited administrative and part-time reception duties.

Laborer (2) maintains the grounds of the Reserve and conducts janitorial duties as required in all Reserve buildings. Duties include opening and closing the Visitor Center on weekends. This position requires some reception duties.

Temporary Laborer performs maintenance and janitorial duties as required. This position is a temporary position filled annually as needed typically during the warmer months.

Summer Interns perform various research, stewardship and education tasks as needed or as directed by the organization funding the internship. These positions are filled as resources are made available or as needed. Interns are supervised in partnership with Weeks Bay Foundation (WBF or Foundation) and other partners such as the Alabama Coastal Foundation (ACF).

Strategic Partnerships

The administration of the Reserve occurs through a collaborative process involving a variety of agencies and organizations at various levels of engagement. Organizations key to the administrative function of the Reserve are noted.

Alabama Coastal Area Management Program (ACAMP) supports the Reserve through funding, program policy, and regulations. Where funds are available and their use not prohibited by federal or state guidelines, the ACAMP financially supports the activities of the Reserve. Additionally, ACAMP recognizes and reinforces the goals of the Reserve, and ADEM promotes the resource protection program wherever feasible.

The Reserve Manager reports to the ACAMP Manager who is also the Coastal Section Chief of ADCNR State Lands Division. ACAMP, the State Lands office, and Reserve staff work together regularly on coastal programs. The Reserve is represented on the ACAMP Coastal Resources Advisory Committee and ACAMP is represented on the Weeks Bay Advisory Committee.
In addition to coordination and support activities outlined above, the Reserve leads or supports ACAMP in three areas - public education, training and research. A large part of the public

education/outreach needs of the ACAMP, particularly those directed towards youth, are met by the programs of the Reserve. Reserve CTP collaborates with ACAMP on workshops and other training opportunities for professional audiences.

Closer coordination of education, outreach and training activities is a priority of both programs. The Reserve endeavors to expand its role in research coordination and assistance in support of ACAMP. The results would be more research, data and best practices useful for both programs and the wider coastal resource management effort.

Baldwin County Board of Education (BCBE) assists Reserve Administration by providing financial support for the Resource Teacher. Additionally, a representative of the BCBE serves on the WBAC. This agency is integral to the success of the educational program.

Weeks Bay Foundation (WBF or Foundation) incorporated as a non-profit corporation to provide support, funding and resources for the Reserve. The Foundation raises money through donations, grants, and membership fees to support activities of the Reserve, as well as facilitates property acquisition and special activities.

Weeks Bay Volunteers formed as an unincorporated, non- profit association in 1997. The primary purpose of this association is to aid the Reserve by organizing volunteers to actively assist the staff in education, research, training, and resource protection functions. A board of seven directors manages the affairs of this association in accordance with its constitution and bylaws (Appendix C). An annual business meeting is held on the 2nd Tuesday of January. The organization holds board meetings quarterly on the 2nd Tuesday of the month. The Reserve Manager, or his/her designee, receives prior notification of and furnishes advice for any project undertaken on behalf of the Reserve. Through fundraising activities, the volunteers support many projects to assist the Reserve.

Weeks Bay Advisory Committee

The Weeks Bay Advisory Committee (WBAC) was established during the initial stages of the Reserve designation. This Committee is composed of local and state representatives that provide a wide range of expertise operating under a set of established bylaws (Appendix D). Individuals serve to advise management on matters of operations at the Reserve. The WBAC promotes the Reserve by seeking support for programs. Since committee members are involved in community efforts, they also inform management of needs, concerns, and interests of citizens using the Reserve. WBAC may form subcommittees as needed to address such topics as research and education.

The Weeks Bay Advisory Committee is composed of eighteen members plus two non-voting Citizen Representatives that include:

Agency Representatives

1. ADCNR, Wildlife and Freshwater Fisheries Division (appointed by ADCNR Commissioner)
2. ADCNR, Marine Resources Division (appointed by the ADCNR Commissioner)
3. ADCNR, Land Division (appointed by the ADCNR Commissioner)
4. Alabama Department of Environmental Management (appointed by the Chief of the ADEM Mobile Field Office)
5. Alabama Senate - Seat No. 32
6. Alabama House of Representatives - Seat No. 94
7. Baldwin County Board of Education (appointed by the Baldwin County Superintendent)
8. Marine Environmental Sciences Consortium (MESC), (a.k.a. Dauphin Island Sea Lab (DISL), appointed by the MESC Director)
9. Baldwin County Commission (BCC), (appointed by the BCC Chairperson)
10. Auburn University Marine Extension and Research Center (AUMERC), (appointed by the AUMERC Director)
11. Environmental Studies Center (ESC), Mobile County Board of Education (appointed by the ESC Director)
12. Faulkner State Community College (appointed by the Faulkner State Community College President)

Citizen Representatives

1. Six additional members appointed by the Governor for the duration of his/her term
2. Two non-voting members:
    a. ADCNR, State Lands Division, Coastal Section Chief
    b. Weeks Bay Foundation (appointed by the President)

Communications

The ability to communicate effectively with target audiences is critical to promote Reserve activities and to engage local residents. Reserve staff share communication responsibilities across sectors. Success of the approach varies because each staff member must add communication specialist to existing sector roles and responsibilities. Staff may not possess the skills or training to use rapidly evolving communications media. Developing a more cohesive communication strategy is necessary so that key messages from Reserve Programs or advertising of Reserve-sponsored events reach intended potential audiences.

Typically, the Reserve communicates to local audiences via:

- *Newsletters - The Pelican Post* newsletter is a quarterly publication shared with the Weeks Bay Foundation. Beginning fall 2015, the Reserve began issuing the *Weeks Bay Current*.

- *Traditional Media* - The Reserve attempts to communicate via traditional broadcast and print media. Staff members are responsible for writing and distributing press releases and seeking television and radio coverage of events.
- *Websites* - The official website of the Alabama Department of Conservation and Natural Resources is *Outdoor Alabama* includes pages dedicated to the Reserve and sector programs found at www.outdooralabama.com/weeks-bay-reserve and www.weeksbayreserve.com. www.WeeksBay.org is the web address of the Weeks Bay Foundation that provides basic, up-to-date information on events in the Weeks Bay area and some Reserve programming. The Reserve makes available to the public *Real Time Water Quality and Weather Data* through a cooperative arrangement with the Dauphin Island Sea Lab via www.mymobilebay.com. The national NERR System curriculum, Estuaries 101 at http://estuaries.noaa.gov, uses Reserve SWMP data.
- *Social Media* - The Reserve posts material to Twitter, Facebook, Instagram, and Pinterest. Both Reserve staff and the Foundation utilize these media with varying degrees of frequency.
- *Printed Materials* - Reserve staff create flyers, posters, brochures, and other print materials on a project or event basis.

Reserve staff builds partnerships with agencies and other organizations to promote events. An example of the partnership is communicating the annual Coastal Cleanup event. ADCNR and the Alabama People Against A Littered State collaborate with Reserve staff to conduct public relations for the event. The team develops posters, flyers and billboards; and advertises on community calendars, a dedicated Facebook page, and a dedicated website update. The team places announcements in magazines and newspapers and on television.

In lieu of dedicated communication staff, Reserve employees take an active role in promoting and communicating their sector activities. The Volunteer Program partners with the Baldwin County Master Gardeners to educate the local community on gardening issues related to native plants. Volunteers perform outreach roles in the Visitor Center, help publicize Reserve events, and conduct youth and adult educational activities. The Research Sector primarily shares the results of work conducted in the Reserve through its research partners. Staff and independent researchers communicate through articles, peer-reviewed manuscripts, reports and presentations published in scholarly publications and at conferences.

The Education Sector announces programs and workshops via teacher-targeted networks. Announcements reach schools or individual teachers through the Mobile and Baldwin County Board of Education courier systems, the South Alabama Research and Inservice Center, and established relationships with local science teachers. Education programs like the Watershed Wagon and Summer Camps, reach a youth and adult audience beyond the formal education programs. In 2009, the Reserve Watershed Program received an award from GOMA to fund an

offsite outreach program, the Watershed Wagon. The Watershed Wagon is a rolling classroom that visits schools, camps, festivals and other locations reaching audiences that may not visit the Reserve. Watershed Wagon activities concentrate on pollution prevention and watershed protection. Summer Camps educate youth audiences about estuaries, habitats and coastal flora and fauna. The camps incorporate art and nature (Squeaky Sneakers), outdoor activities and boat trips. The youth audience includes church groups, daycares and youth organization day camps. Summer programs include onsite and offsite venues.

CTP maintains and periodically updates a marketing strategy. In market analyses and needs assessments, the CTP Coordinators asks decision-maker audiences about preferred methods of communication and training delivery strategies. CTP uses the information to advertise workshops and training events. Email remains the primary communication method for CTP. In addition, CTP takes advantage of multiple other strategies to communicate activities:

- The five Gulf of Mexico NERR CTPs developed a Regional CTP website funded by awards from the Gulf of Mexico Alliance and the USEPA Gulf of Mexico Program. CTP Coordinators use the website, www.gulfcoastaltraining.org, to publicize upcoming trainings and workshops.
- Weeks Bay CTP creates flyers distributed through various listservs and contact databases.
- Weeks Bay CTP serves on several coastal and regional committees to promote Reserve activities to a diverse decision-maker audience.

Communications Planning

The Reserve will develop a written communications plan. The plan will include ways to identify training opportunities to improve communication skills and use of social media. Reserve staff has limited time to develop outreach materials. Sectors need to identify ways to collaborate in the development of outreach materials and activities. The plan should include methods to incorporate the skills of volunteers and the resources offered by the Weeks Bay Volunteer organization. The Reserve will ensure it is fully utilizing public relations and outreach services potentially available through the ADCNR, Information and Education Section. Services offered by NERRA, Weeks Bay Foundation and other local NGOs could support Reserve marketing and planning goals. The Reserve will complete a strategic communications plan during the management period.

A trained volunteer educates staffers at 2015 NERRS/NERRA annual meeting

Weeks Bay Volunteer assists with many tasks at the Reserve

Volunteers

Volunteers make tremendous contributions to Reserve programs by supplementing the efforts of staff. The Reserve recruits people with a wide variety of skills and expertise from the local community. In addition to directly assisting Reserve staff with specific tasks, trained volunteers serve to effectively transfer information on the value of estuaries to a broader public audience. The Reserve benefits from volunteers carrying their knowledge and experiences to portions of the public not easily reached by Reserve staff. Volunteers gain personal satisfaction from the knowledge that they are performing an important role in protecting local estuarine and coastal resources.

The Volunteer Program provides volunteer orientation, education, and development.so that citizens can participate across Reserve sectors. A Volunteer Program Coordinator plans activities, recruits and trains individuals wanting to participate in Reserve programming. An effective partnership exists between the Volunteer Program and the Weeks Bay Volunteer organization. The Reserve remains committed to managing a robust volunteer program to increase community participation and to meet the needs of sector programming.

Accomplishments

Weeks Bay Reserve maintains an active and strong volunteer base. Collaborative efforts of the Reserve, volunteers and the Weeks Bay Volunteer organization result in significant accomplishments. These accomplishments include:

- Maintained an active volunteer program as a registered "Alabama Unincorporated Nonprofit Association" for more than 20 years;
- Contributed over 5,000 volunteer hours per year to Reserve programs;
- Conducted its 22nd native plant sale in 2015, placing over 40,000 native plants into local landscapes and educating hundreds of people on the value of native plants and awareness of exotic invasive species;
- Made available $7,000 - $10,000 per year to support Reserve programs, projects, personnel, and infrastructure;
- Maintained and increased numbers of specimens to an herbarium housed at the Reserve;
- Established an arboretum on Reserve property, continuing to maintain and add to the collection of Baldwin County native and established plants; and

- Planted and maintained 500 longleaf pine trees and 200 wiregrass plants in a longleaf pine demonstration project on Reserve property.

Coordination

The Volunteer Coordinator is an integral component of both Reserve staff and the Weeks Bay Volunteer organization. The Volunteer Coordinator, in cooperation with volunteers and staff, develops volunteer job descriptions, plans overall work schedules for volunteer assignments, and documents volunteer service.

This staff member directly interacts with volunteers and ensures that volunteers are utilized appropriately on tasks suited to their abilities. The Coordinator ensures that staff are accessible and maintain contact with volunteers assigned to them. Additionally, the Volunteer Coordinator serves as a moderator to resolve any problems arising between volunteers and staff members or among volunteers themselves. Volunteers attend recommended in-service training. In this way, volunteers receive the adequate preparation to interact with Reserve staff and the public within assigned tasks.

Weeks Bay Volunteer organization identify annual budget needs based on the recommendations of the organization, Reserve Manager and staff. Working with the Volunteer Coordinator, the volunteer organization authorizes expenditures, disperses funds, and conducts fundraising events.

Recruiting

Recruitment of new volunteers involves primarily direct contact. The Reserve Manager, staff and existing volunteers meet and recruit new individuals at Reserve events like Earth Day, Coastal Cleanup and the Native Plant Sale. Potential volunteers meet staff during visits to the Visitor Center. Existing volunteers share their experiences with friends and family to generate interest. Interpersonal contact remains the most valuable techniques for recruiting new volunteers. The need exists to expand recruiting to include more use of social and traditional media.

Planning

Currently, Reserve manager, staff, Volunteer Coordinator, Weeks Bay Volunteers and individual volunteers plan projects and identify when volunteer assistance is required. Strategic planning will be undertaken to better meet existing and future programming requirements. A plan should identify task descriptions, needed training, expanded methods for recruiting and other resources needed to promote the Reserve to the coastal community and to other volunteer organizations. Volunteer Program planning requires collaboration with future Communications Planning. Recruiting methods need to include an expanded presence on social media without neglecting traditional media. New volunteer programs like a Visitor Center docent corp or development of “program representatives" trained to speak on behalf of the Volunteer Program would be initiatives included in a strategic plan.

Recognition

The Volunteer Coordinator plans recognition events to acknowledge the valuable service provided by volunteers. Recognition of volunteer service affirms the Reserve's commitment to volunteerism, increases retention of trained supporters and motivates future participation. The Coordinator supports volunteers by writing letters of reference and recognizes accomplishments through newsletters, meetings, and other media.

Volunteer appreciation boat trip

AmeriCorps volunteers repair research boardwalk

Weeks Bay Reserve Disaster Response

In response to the need for emergency preparedness, the Reserve developed a Disaster Response Plan (DRP). In addition to preparing staff to respond to threats, the Reserve uses the DRP to educate local responders to the need to minimize effects on Reserve infrastructure, science stations and conserved lands. The DRP promotes the use of Reserve expertise and research and monitoring data in response and recovery when appropriate. The full DRP is available by request.

In general, emergency response follows a contingency plan to provide safety for individuals and protection for state assets. The Reserve working with coastal emergency managers, first responders and responder support organizations developed contingency plans to respond to emergency conditions which may arise. Plans are generic in nature and include actions that proceed through basic steps depending on the emergency condition. The approach is as follows:

- Notification of Emergency
- Immediate Response
- Confirmation of Emergency and Evaluation
- Agency Contact and Follow-up Procedures

The Reserve staff and partners developing the DRP prioritized threats and emergency situations likely to occur at WBNERR. For these situations, the DRP includes specific contingency responses. These situations include fire, spills, accidents, hurricanes, and stranding of manatees or other marine mammals.

Emergency Actions

Weeks Bay Reserve has identified the following actions to undertake in the case of specific emergencies.

1. Hurricane

    a. Buildings - board windows, unplug and cover and/or store all electronic equipment, and take any other measures necessary to protect Reserve property where appropriate. Add frequent backups to procedures and secure back up files in appropriate manner.
    b. Vessels – Reserve vessels will be secured at a location that is as safe as possible,

either on the water or land, as deemed necessary. This usually means a canal at Safe Harbor, on a trailer at the Reserve, or secured on land in an acceptable manner. All electronic equipment (radios, etc.) will be taken off the boats and stored at the Reserve.

c. Vehicles - Reserve vehicles will be parked in the lot at the Reserve at the spot least likely to be hit by falling trees or impacted by flood waters. When possible, vehicles will be filled with gasoline prior to storms.

Storm damage

2. Oil spill

Contact with Coast Guard, ADCNR-SLD, and other state/county agencies (ADEM, other divisions in ADCNR) will be made as soon as possible after Reserve staff notification. Emergency procedures presently established with the Coast Guard and ADEM will be followed.

3. Marine Mammal and other Endangered Animal Species Stranding

After notification and confirmation procedures, the following local agencies will be contacted:

a. Marine Mammal Stranding Network
b. U.S. Fish and Wildlife Service
c. Department of Conservation and Natural Resources

4. Fires

a. Buildings - Depending on the severity of the fire, notification of the Fire Department will occur as the building is evacuated.
b. Wildfire - Depending upon the severity of the fire, the local Volunteer Fire Departments and Alabama Forestry Commission will be notified.
c. Prescribed fire - Will be managed by the Reserve and the ADCNR-SLD.

5. Accidents

Following the basic steps of response, the accident is evaluated and then appropriate

procedures applied, such as first aid, contacting emergency response personnel, and potential transportation to hospital. These steps abide by appropriate risk management methods.

Emergencies may occur that fall into the category of an accident or incident involving vessels on the water including boats operated by the Reserve, visiting researchers, or the public. Human health and safety is the primary concern. First response will be accomplished in the most immediate method as feasible. Reserve vessels are ready for rescue as appropriate and coordination with emergency rescue professionals will be a first response.

Administration Objectives and Actions

The Administration Sector identifies objectives and actions to accomplish components of the Management Plan. Reserve goals provide direction and structure for the Administration Sector to take cohesive action towards meeting objectives over the next five years. This section outlines Administration Sector objectives and actions to meet Reserve goals.

Goal 1: Protect and improve ecosystem health and biological diversity within the boundary of the Reserve.

Objective 1-1: Funding increases improve Reserve projects that support ecosystem health and biological diversity.

Actions:

a. Provide grant administration support to ensure that funds are solicited and managed efficiently.
b. Write grants to secure funding in support of habitat and biological diversity within the Reserve.

Goal 2: Inform decisions affecting estuaries and coastal watersheds

Objective 2-1: Reserve programs facilitate the transference of scientific information to coastal decision-makers.

Actions:

a. Assist efforts to collect scientific data and translate for a variety of target audiences.
b. Assist in production of outreach tools and program events to best transfer information to appropriate audiences.

Goal 3: Promote education, training, stewardship, and scientific research focusing on estuarine ecosystems

Objective 3-1: Reserve administration and financial management activities facilitate implementation of research, stewardship, training and education programs.

Actions:

a. Provide grant administration support to ensure funds are managed efficiently.
b. Write grants to secure funding for programmatic support.
c. Participate in NERR System meetings to support Reserve Programs.
d. Develop a strategic Communications Plan.
e. Revise and update Section 312 Evaluation Metrics in accordance to OCM guidance.

Objective 3-2: Adequate administrative staffing and facilities support implementation of Reserve programs.

Actions:

a. Target agency capabilities to meet the needs of Reserve programs through better coordination and communication of essential gaps to be addressed or filled.
b. Employ additional staff as needed to support Reserve programs.
c. Create usable and efficient staff workspace allowing better coordination among programs.
d. Work to improve existing facilities to better house staff, programs, and visitors. This will proceed with implementation of the Facility Master Plan as resources allow.
e. Clarify and revise the roles and capabilities of federal, state, and local governments or agencies.
f. Prioritize and purchase equipment and supplies to enhance staff productivity

Objective 3-3: Reserve programs benefit from improved existing and establishment of external partnerships.

Actions:

a. Update Memoranda of Understanding (MOU) with local, state, and federal organizations. The focus of these MOUs would be cooperative understanding and protection of the Reserve resources. In this way, the Reserve will strengthen existing relationships with regulatory protection agencies, research and monitoring organizations/institutions, and educational organizations.
b. Facilitate partnerships with local agencies to support Reserve programs.
c. Periodically exercise the Reserve DRP with cooperating first responders and other appropriate agencies.

Volunteer Objectives and Actions

Weeks Bay Reserve Volunteers follow a set of objectives and actions in support of the Reserve.

Goal 1: Protect and improve ecosystem health and biological diversity within the boundary of the Reserve.

Objective 1-2: Volunteers increase their participation in stewardship-related projects.

Actions:

a. Inform the Weeks Bay Volunteer organization and individual volunteers of stewardship project opportunities.
b. Recruit volunteers from the Master Naturalist Program and other service organizations.
c. Develop a Natures Notebook phenology program, record monitoring and other data and disseminate information via social media or other formats.

Goal 2: Inform decisions affecting estuarine and coastal resources.

Objective 2-2: Trained volunteers transfer knowledge to wider audiences.

Actions:

a. Manage recruitment efforts.
b. Develop recruitment and media relations materials.
c. Encourage public speaking and personal contacts.
d. Continue to develop and refine orientation program for all volunteers.
e. Continue to develop and refine initial training plan.
f. Revise educational materials to be used for volunteer orientation and training.

Goal 3: Promote education, training, stewardship, and scientific research focusing on estuarine ecosystems.

Objective 3-4: Reserve utilizes volunteers to enhance and expand programs.

Actions:

a. Develop a Volunteer Program strategic plan to identify effective ways to utilize volunteers in program enhancement.
b. Identify the Reserve's need for assistance.
c. Identify the main areas for volunteer involvement.
d. Develop new volunteer projects.
e. Coordinate volunteer assignments and schedules.

Objective 3-5: Reserve increases the opportunities for volunteers to be involved with education, training, stewardship, and research programs

Actions:

a. Communicate regularly with members of the staff.
b. Create and manage annual funding for the volunteer program.
c. Provide volunteers with adequate Reserve support for their program needs.
d. Monitor the supervision of the volunteers and act as an advocate for the volunteers.
e. Develop professional resources.
f. Develop in-service training for the volunteers and for the staff.
g. Provide motivation and appreciation activities for volunteers.

Weeks Bay Volunteer annual plant sale

III. STEWARDSHIP

Prescribed burn at Weeks Bay Pitcher Plant Bog

One of the National Estuarine Research Reserve system-wide goals is, "Estuaries and coastal watersheds are better protected and managed by implementing place-based approaches at Reserves." This goal is directed by an objective to "Demonstrate best practices in land and estuarine stewardship and climate change adaptation at reserve properties and facilities." The Reserve Stewardship Program incorporates a blend of education, outreach, research and management initiatives that applies knowledge of local natural resources to support the system-wide objective and goal. Good stewardship practices are utilized to protect, enhance, and restore ecological integrity for long- term research, education, training, and management.

Stewardship is the management of ecosystems to maintain or improve structure, function, and resiliency. Stewardship at the Reserve is informed and facilitated by collective input from on-site research and monitoring, scientific publications, advisory and technical boards, and citizen groups. A robust stewardship program requires 1) evaluation of processes that affect natural resources, 2) initiation and support of research and monitoring efforts, 3) engagement of citizens and 4) the application of management actions to preserve, restore or create natural communities and ecosystems.

A component of the Stewardship Program is the Watershed Program. The Watershed Program began in 1994 as the Weeks Bay Watershed Project (WBWP) funded by Section 319 of the United States Environmental Protection Agency (USEPA) Clean Water Act. The project combined the expertise of federal, state and local agencies, scientists, and non-governmental organizations (NGOs) with engagement of concerned citizens to help protect and improve the waterways draining into Weeks Bay. Baldwin County Soil and Water Conservation District (SWCD), Natural Resources Conservation Service (NRCS), ADEM and the Reserve provided leadership and additional funding for the WBWP. Project leaders formed a Citizens Advisory Committee (CAC) to build local support. The CAC engaged watershed residents and cultivated good working relationships with landowners, civic and county leaders, businesses, and state agencies. WBWP developed and implemented a watershed management plan that continues to evolve as the environmental challenges facing the watershed of Weeks Bay change. The CAC remains a partner of the Watershed Program In 2002, the Reserve integrated WBWP into its programming.

Accomplishments

The Stewardship Program achieved significant accomplishments. The Program builds partnerships with outside researchers, collaborates with restoration professionals and acquires funds to plan and implement improvements on Reserve tracts. Management actions continue to build on major accomplishments since 2007 that include:

- Completed first phase restoration efforts on the Safe Harbor Tract;
- Continued the Weeks Bay Watershed Project (WBWP) and watershed planning;
- Collaborated with teams conducting marsh restoration and alternative shoreline;
- Mapped aquatic invasive species within management boundaries of Weeks Bay Reserve;
- Expanded appropriate prescribed fire regime within ecological communities of the Reserve:
- Acquired a 45 ft research and outreach vessel, Weeks Bay Explorer, with Coast Guard Certification and 50 ton Merchant Marine Officers credentials and
- Formed Restoration Advisory Board;

The Reserve Stewardship Program utilizes best management practices to protect, enhance, and restore ecological integrity. Conservation and restoration practices provide long-term benefit to the environment and the ecosystem services it provides. Conserved and restored lands and waters serve as locations for field research, monitoring and community use. Reserve stewardship program partners with other Reserve sectors to provide education, outreach, training, and instruction on the beneficial use of these practices in the coastal community.

Weeks Bay Ecosystem Restoration and Conservation

The underlying priority for the Reserve is to restore and conserve ecosystems located within Reserve boundaries. Ecological restoration is the process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed (SER 2004). The Stewardship Program with the assistance of qualified professionals completes habitat, cultural, historical and other pertinent studies to ascertain the prior state of the area to be restored. From this examination, restoration practices are designed and completed to return ecosystems to a stable state (Clewell and Aronson 2007).

Clearing of woody vegetation to restore pitcher plant bog habitat

When restoration activities are completed, ecosystem composition, structure, pattern, and ecological processes in the restored land and water resources are sustainable, resilient, and healthy under current and future conditions (USFS 2010).

Conservation is preservation for the future. The Reserve conducts conservation planning and acts to prevent exploitation, destruction and neglect of lands, waters and natural communities. The Stewardship Program works to maintain the health of relatively pristine ecosystems within the Reserve and prevent further degradation of existing habitats. The Reserve staff design and perform tailored restoration projects on individual land tracts. The Stewardship Program collaborates with the Restoration Advisory Board and other professionals in and outside the NERR System to develop a restoration and conservation plan for each State owned tract located within management boundaries of the Reserve. The Restoration Advisory Board consists of practitioners that make recommendations to restore natural communities. This group convenes as needed and at the behest of the Stewardship Coordinator to meet the specific project demands or ongoing restoration efforts.The Management and Restoration Plan serves as guidance framework for future stewardship activities.

The Reserve uses the best available science, management practices and expertise to identify appropriate tract-level restoration or conservation management practices depending on the desired outcomes. In addition, the Reserve works with conservation partners (see "Resource Protection" section) to identify management practices to implement for use, conservation or restoration activities within the NERR or in new tracts acquired. For example, the USFWS provides best management practices to mitigate effects to both flora and fauna species including Alabama red-belly turtle and manatee. Use of appropriate practices results in avoidance, minimization or mitigation of effects of these activities on natural or historical/cultural resources, habitat and wildlife/plant species.

For any activity requiring permitting, the Reserve will seek the necessary permits. Activities could include construction, restoration or research. The Reserve cooperates with federal, state and local agencies to secure the proper permits. Avoiding negative effects of activities on historical and cultural resources is important to the Reserve. As needed, the Reserve will cooperate with the Alabama Historical Commission to identify known historical and cultural resources in a project area and implement the appropriate practices. In past projects, the Reserve has collaborated with research scientists to perform investigations of historical or cultural resources.

The Reserve endeavors to examine biological and habitat resources affected by public use, restoration or research activities. The Stewardship Program has categorized habitats in the Reserve. In addition, the Stewardship Program works with the Restoration Advisory Board to seek partners to assist with assessments of tracts or project areas. These assessments could include plants including invasive species, wildlife, fish, soil, hydrology and other appropriate

categories. Cooperation with outside researchers yields additional insight into the possible presence of threatened, endangered, rare or recovering species.

Status of Tract Level Restoration: Current Activities and Planning

Since designation, the Reserve conducted restoration activities on tracts within the boundary. By 2018, the Reserve will complete a tract-level Management and Restoration Plan. The Management and Restoration Plan includes activities currently underway or likely to occur within the next 5 years. Current status of restoration planning and activities:

- *Damson* – Tract-level plan will be finalized in 2017. Observations indicate that decades of fire negation has fundamentally altered habitat structure, function and community composition on the Damson Tract resulting in the proliferation of hardwood species within the flatwoods and associated natural communities. Anticipated actions include reduction of canopy density by 50 - 60% via selected timber harvest and continuation of prescribed fire. These actions will reduce transpiration, mid-story hardwood species abundance, and canopy density. The resulting increase in light penetration and moisture content should prove favorable to the natural regeneration of diverse herbaceous communities historically associated with pine flatwoods. Of particular interest is the restoration of a species rich pitcher plant bog within the Okenee soil portion of the tract.

- *Foley* - Tract-level plan will be finalized in 2017.
  Traditionally, the parcels of land that compose the Foley Tract are referred to as the Pitcher Plant Bog, which indicates the 94 acre parcel to the west of County Road 17, and the Upland Trail which refers to the approximately 84 acre tract to the east of CR17. The Upland Trail parcel of the Foley Tract is suitable for restoration of critically endangered longleaf pine forest. The Pitcher Plant Bog portion requires actions to maintain herbaceous diversity. Anticipated actions for these tracts include continuation of prescribed fires on both tracts, treatment of exotic invasive species, and select timber removal and planting of longleaf pines in the upland portion.

  Restoration to longleaf pine will allow use of the parcel as a land management demonstration and education site and may assist in the recovery of Gopher tortoises on the site. Abandoned gopher tortoise burrows are present on the parcel with active burrows existing on nearby privately owned tracts. As noted within the *Partners in Flight Bird Conservation Plan for the East Gulf Coastal Plain: Priority Bird Populations and Habitats*, restoring even small parcels of pine-dominated ecosystems provides habitat for many vulnerable species. The plan also states that “carefully managed southern pine forests types that includes a combination of cool and warm season burning and mechanical removal of hardwoods, can provide optimal habitat for many avian species of priority conservation” and “effective provision of suitable habitats for transient migrants

requires protecting a mosaic of different habitat types distributed throughout the region."

- *Swift (incorporating Key, Lipscomb, Martin, Metcalfe, Meyers)* - Tract-level pre-restoration data collection, monitoring, and plan development for terrestrial portion to begin in 2017 and be finalized in 2018 in partnership with the Alabama Forever Wild Land Trust. In addition to the terrestrial portion, NOAA acquired funds through the Deepwater Horizon Oil Spill: Programmatic and Phase III Early Restoration Plan and Early Restoration Programmatic Environmental Impact Statement to implement the *Swift Tract Living Shoreline Project*. Anticipated activities include the construction of "approximately 1.6 miles of breakwaters covered with oyster shell to reduce shoreline erosion, protect salt marsh habitat, and restore ecosystem diversity and productivity in Mobile Bay" with the expectation " that over time, the breakwaters would develop into reefs, providing added reproductive and foraging habitat and shelter from predators" (http://www.gulfspillrestoration.noaa.gov/sites/default/files/wp-content/uploads/SwiftTract_FINAL12_2_13.pdf). *Spartina alterniflora* will be planted behind the breakwater both for experimental purposes and to accelerate establishment of marsh habitat. Prescribed fire and treatment of exotic invasive species may also occur.

- *Ogburn* - Planning for tract-level plan includes pre-restoration data collection, monitoring, and plan development for terrestrial portion to begin in 2017 and be finalized in 2018. The Reserve has no anticipated actions for this tract in the upcoming management period other than application of prescribed fire and treatment of exotic invasive species.

- *Safe Harbor* – NOAA acquired funding through the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act (RESTORE Act) Initial Funded Priorities List and Gulf Coast Ecosystem Restoration Council to conduct *Marsh Restoration in Fish River, Weeks Bay, Oyster Bay & Meadows Tract*project. Anticipated activities include marsh and hydrologic restoration in the Safe Harbor Tract. The Reserve will integrate planning activities for this project into tract-level Management and Restoration Plan by 2019. Anticipated restoration activities to occur after data collection and design phases include filling dead-end canals to create natural tidal creeks and salt marsh habitat and explore the remediation of potential impediments to tidal flow. (https://www.restorethegulf.gov/sites/default/files/FPL_forDec9Vote_Errata_04-07-2016.pdf)

- *Meadows* –NOAA acquired funding through the RESTORE Act Initial Funded Priorities List and Gulf Coast Ecosystem Restoration Council to conduct the *Marsh Restoration in Fish River, Weeks Bay, Oyster Bay & Meadows Tract* project. Anticipated activities

include marsh, forested wetlands and hydrologic restoration in the Meadows Tract. The Reserve will integrate planning activities for this project into tract-level Management and Restoration Plan by 2019. Additional anticipated activities to occur after data collection and design phases include restoration of tidal exchange to marsh and forested wetlands and sheet flow from uplands within the site. Project design includes replacement of undersized culverts at up to three locations where wetlands drain from the Meadows Tract to Mobile Bay. (https://www.restorethegulf.gov/sites/default/files/FPL_forDec9Vote_Errata_04-07-2016.pdf)

- *Harris, Riverlands, Turkey Branch and Worcester* - The Alabama Forever Wild Land Trust developed management and restoration plans for tracts acquired through this program. The Reserve has no anticipated actions for these tracts in the upcoming management period.

Many of the guiding principles for restoration as set forth within the *National Estuarine Research Reserve System Restoration Science Strategy: A Framework* (NOAA/NERRS 2002) will be utilized and incorporated. These include:

- Preservation and conservation of existing habitat must occur along with restoration;
- Reserve participation is voluntary and additional funding is required for implementation;
- Reserves will not support habitat manipulation that causes adverse impacts;
- Restoration will require a partnered approach among established science and management entities; and
- Restoration will require an integrated research, education, and stewardship approach.

The development of a restoration plan informed by our best understanding of ecosystem response to environmental variability through time is necessary to guide sound stewardship activities at the Reserve. This understanding will be acquired by collecting, analyzing and synthesizing information garnered through field observations, research, monitoring programs, expert opinion, and the methods of historical ecology.

The Reserve participated in watershed planning for Weeks Bay dating back to 1998. A revised watershed management plan is anticipated in 2017. Attributes included in the 2017 Watershed Management will benefit Reserve tract-level restoration planning. The Watershed Plan incorporates results for hydrologic and land use assessment models that can be incorporated in Reserve planning. The models can be manipulated to examine the effects of modification of flow, erosion and other watershed characteristics. The Watershed Plan will identify problem sites located outside of the boundary that contribute pollutants or sediment or sites for future acquisition or restoration. Actions to reduce or eliminate these pollutant stressors can be

incorporated into tract-level plans. The Watershed Plan will include a communications plan that the Reserve could use to improve stakeholder engagement in Reserve tract restoration. Possessing an approved management plan for Weeks Bay increases opportunities for partnerships and availability of certain sources of external funding.

Resource Manipulation within Reserve Boundary

The Reserve boundary includes the Core and Buffer areas. The Reserve allows for manipulation of the Core and Buffer for the benefit of conservation, restoration and research. The negative effects of manipulation should be minimized by following established federal and state permitting processes like those prescribed in the USACE General Permit for Weeks Bay (ALG-24, http://www.sam.usace.army.mil/Missions/Regulatory/Source-Book/Alabama-General-Permits/) or by using practices that cause low impacts. Any manipulation especially those in the Reserve Core should be justified by demonstrating some benefit. Benefits could include but not limited to fulfilling research or project-based needs, reducing or eliminating erosion, restoring or creating habitat or preventing water quality degradation.

The Reserve will examine the benefits and effects of resource manipulation prior to initiation of any activity. Since the Reserve Core consists entirely of publically-owned water bottoms, both temporary and permanent manipulations will result in effects to sediments and the benthic processes occurring therein. Activities that occur in the Reserve Core will have measurable benefits that exceed the negative effects.

The Reserve cooperates with researchers, restoration practitioners, permitting agencies and riparian landowners to reduce effects of Core manipulation. In the past, projects initiated on water bottoms by independent researchers caused temporary impacts to the resource. Activities included placement of mesocosyms on the sediment or installation of marker poles in the water bottoms. Researchers left Core areas around the effected sediment unmanipulated for use as a control or reference. Each practice was necessary for successful completion of the research project. Riparian landowners on Weeks Bay follow strict construction requirements for installation of docks and piers or shoreline protection. Even though these types of construction manipulate the Reserve Core, use of better practices minimized the extent of degradation.

Other activities result in long-term manipulation. The installation of alternative shoreline protection practices is an example. Two large-scale shoreline protection projects are completed or underway in the Reserve Core along the Swift Tract. Restoration practitioners installed low-profile breakwaters for the purpose of erosion control and oyster/shoreline habitat restoration. Scientists in cooperation with the Reserve monitor wildlife colonization, plant recruitment, erosion and sediment accretion. Reaches of unmanipulated shoreline are used as reference sites. A second larger shoreline protection project (see Tract Level Restoration in Stewardship Section) is scheduled for the same location. Even with the additional construction, unmanipulated

shoreline remains for use as reference. The benefits to the Reserve include reducing erosion, improving habitat and increasing resilience to rising sea levels. The addition of the permanent structure may inspire future research investigating the long-term effects of breakwaters and other features. The NERR Science Collaborative provided funds for projects that examine pollutant removal of created marsh. Again, construction of research sites manipulated Reserve water bottoms. In each case and even with effects to the Core area, the Reserve benefits from the marsh creation and the information gained that can educate future management decisions.

Embracing these approaches of inquiry during plan development assists in identifying and evaluating the significant factors and stressors that have influenced an ecosystem's trajectory (developmental pathway through time). Once factors that have negatively affected ecosystem structure or function have been identified, an adaptive management strategy that anticipates ecosystem response to future variability can be developed. Informational gaps encountered during the process of determining appropriate ecosystem management strategies provides an opportunity for Reserve staff to communicate informational needs to research partners. A full listing of the Reserve's partners can be found in Appendix E.

Monitoring and Evaluation

Data from a variety of monitoring programs, research projects, and site observations are used to assess ecosystem health within Reserve boundaries. These include but are not limited to the following:

- *SWMP* - The NERRS implemented in order to better understand the underlying processes and impacts of existing anthropogenic, natural, and climate change stressors on coastal habitats and human communities. Additional information can be located at http://nerrs.noaa.gov.

- *NERRS SWMP, Sentinel Sites Program* - sentinel site application module 1 - **"**The first sentinel site application module (SSAM-1) developed for the National Estuarine Research Reserve System's SWMP data is focused on understanding changes in sea levels, inundation, and the associated responses of marsh, mangrove, and submerged aquatic vegetation. This focus could be expanded to include ecologically important transition zones that are characterized by scrub-shrub and coastal maritime forest". For more information please visit https://coast.noaa.gov/data/docs/nerrs/Research_SentinelSitesGuidanceDoc.pdf

- *On-site partner research* - Numerous researchers from universities, governmental agencies, and NGOs completed or are undertaking scientific research projects at the Reserve. The data and conclusions derived from these research projects are used to guide stewardship management actions. For more information refer to the "Research and

Monitoring" section of this document and/or visit http://www.outdooralabama.com/weeks-bay-research.

- *Alabama Water Watch (AWW)* - Alabama Water Watch is a citizen volunteer, water quality monitoring program covering all of the major river basins of the state. The mission of AWW is to improve both water quality and water policy through citizen monitoring and action. Weeks Bay Water Watch is the local chapter of the AWW program.

  Established in 1992, AWW is a national model for citizen involvement in watershed stewardship, largely because of its three interrelated components: citizen monitoring groups, a university-based program, and a non-profit association. AWW uses EPA-approved monitoring plans with a community-based approach to train citizens to monitor conditions and trends of their local water bodies.

- *ADEM trend monitoring sites; basin studies* - ADEM personnel measure core indicators to meet data quantity and quality requirements as outlined in Alabama's Listing and Assessment Methodology so that all water-bodies can be categorized in Alabama's Integrated Report, listing/delisting decisions can be made, and sites can be prioritized for Section 319 funding and best management practices (BMP) implementation. For additional information please refer to http://www.adem.state.al.us/programs/water/waterforms/SurfaceWaterMonitoring.pdf.

- *ADCNR, Marine Resources Division* - Marine Resources Division personnel assist with management of the estuaries and saltwater resources along Alabama's Gulf Coast. The division manages Alabama's marine fisheries resources with assessment and monitoring, applied research, and enforcement programs. The Marine Resources Division houses extensive biological data.

These programs and their use are also discussed in the "Research and Monitoring" chapter.

Weeks Bay Ecosystem Protection

The Reserve serves in part as a national, regional, and local center of information on coastal and estuarine resources. The Reserve is an outdoor laboratory for study, providing opportunities for monitoring, research, education, and restoration management activities. It serves as a testing ground for applied coastal management techniques and as a point of contact and outreach for federal, state, and other relevant agencies and organizations. The watershed of Weeks Bay contains approximately 149,000 acres of row crop agriculture, silviculture, turf production and urban uses. The Weeks Bay Watershed Management Plan describes strategies and actions to support ecosystem protection within the Reserve. The Reserve serves as a regional source of

objective and integrated information regarding the nexus of estuaries with marine and terrestrial ecosystems, the role of governments in their protection and management, and the need for individual responsibility and stewardship. South Baldwin County has a rapidly growing population, and the Reserve can take an active role in providing effective technical assistance to promote informed coastal management decisions.

The ecosystems within the Reserve management area and watershed encompass both terrestrial and aquatic habitats. The lands held by ADCNR-SLD include a rich array of natural communities (Figure 11). Included are the submerged lands (i.e., water bottoms) of Weeks Bay and its tributaries to the limit of tidal influence. These sensitive areas are composed of emergent marsh, submerged aquatic vegetation, soft bottom, and open water habitats. In an effort to protect these living resources of coastal Alabama and maintain them in a natural state, science guided management strategies have been implemented. As an example, natural pitcher plant bog communities are preserved through the implementation of prescribed fire to reduce hardwood encroachment.

An estimated 3,000 acres of wetlands converted for silvicultural and agricultural purposes are located within the Weeks Bay watershed. Wetlands trap soil particles and pollutants associated with upstream runoff. The conversion of these wetlands and their associated water quality functions has contributed to nutrient loads and sedimentation in many of the tributaries and portions of Fish and Magnolia Rivers as well as Weeks Bay. Land use/land cover and nonpoint source pollution (NPS) resulting from urbanization/residential development in the Weeks Bay watershed contribute high levels of nitrate. Other major contributors are agriculture and sod production.

Light penetration reduced by sediment and plankton in the water column may limit SAV abundance in Weeks Bay. Stout and Lelong (1981) located only two small patches of SAV less than an acre each, near the bay mouth at Muddy Bayou to the west and Williams Creek just inside the bay to the east. Species present were mostly freshwater aquatics (tapegrass, watermilfoil and slender pondweed) except for widgeon grass. Recent surveys (2012) of these sites failed to locate these beds. Although SAV communities are ephemeral, the lack of recovery or establishment of new communities of SAV is a concern. Ecosystem protection efforts will focus on reducing negative anthropogenic impact on coastal ecosystems through outreach and education and, when possible, restoring natural communities.

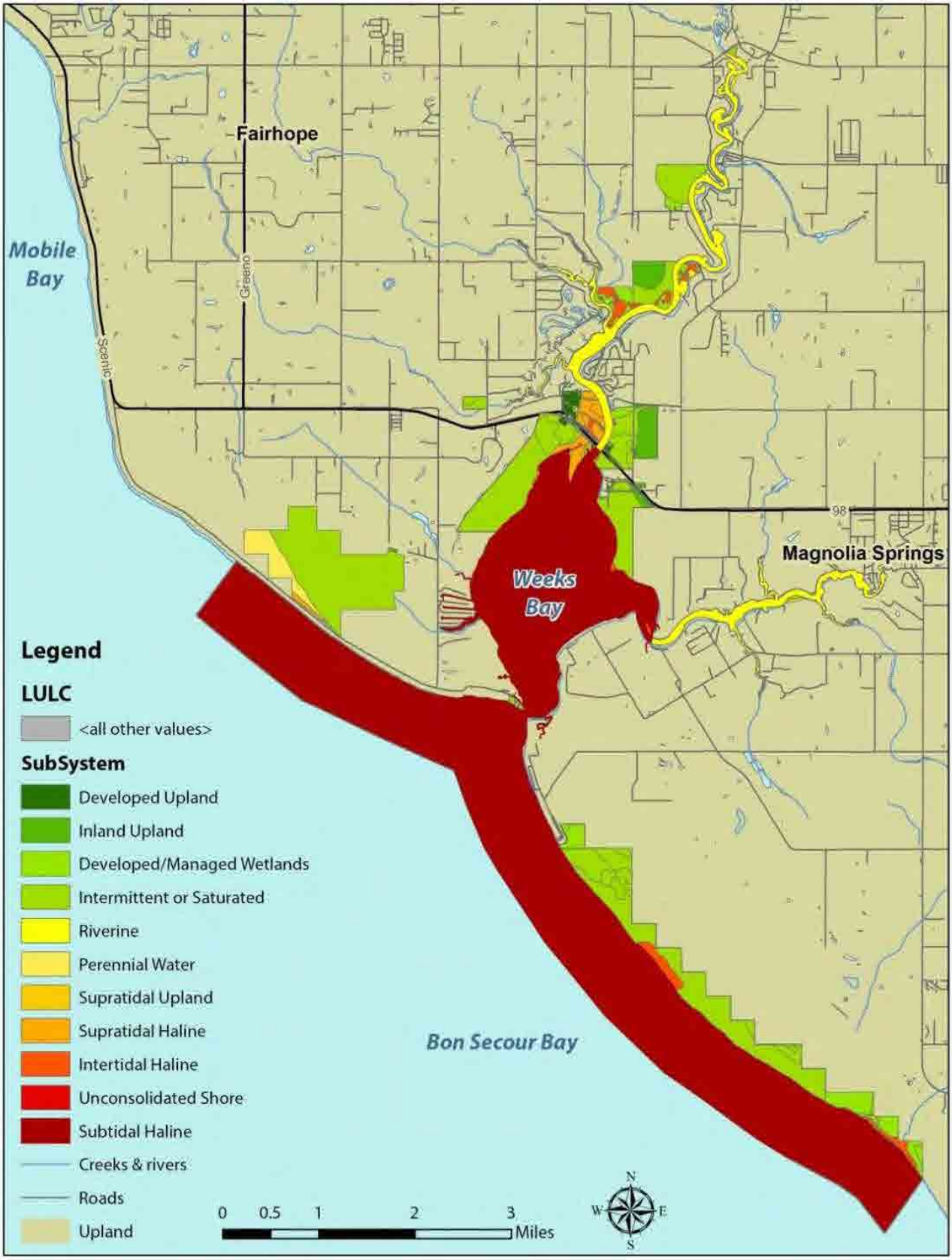


Figure 11. Weeks Bay Reserve Habitat Map.

Weeks Bay Reserve Public Access and Visitor Use

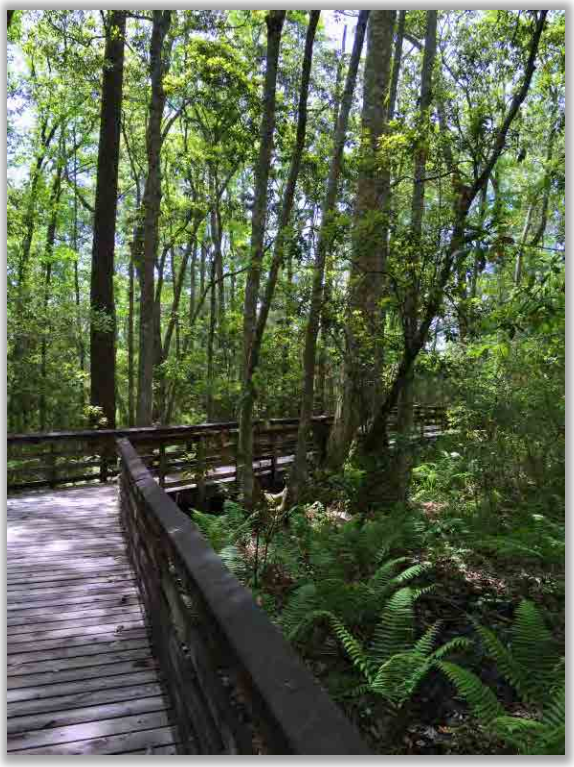
Current Public Access to Facilities

Visitors to Weeks Bay Reserve include a broad array of citizens, education and conservation groups, non-governmental organizations, and researchers. Providing visitors access to the Reserve and its facilities for educational, research and recreational activities is essential to fulfilling the Reserve's mission and promoting public support and stewardship. Reserve holdings include multiple access points with interpretive signage. (Figure 12). The Visitor Center offers information on estuaries, local habitats, natural communities and resource conservation efforts. Laboratory space located in the Visitor Center is available upon request of visiting scientists. Access to the extensive number of preserved specimens in the Reserve herbarium is limited.

The buildings at the Resource Center are not open for unscheduled use or visitation. The public may access the decks, covered pavilions with picnic tables and fishing pier during daylight hours only. The public may use the Resource Center buildings based on their availability. The Reserve developed a policy for building use that is available upon request. The Reserve Manager with participation of staff determines compliance with the use policy. Use policy is available upon request.

Current Access to Outdoor Recreation and Trails

Boardwalks and nature trails maintained by Reserve staff offer opportunities for hiking, wildlife viewing, photography, research and other permissible outdoor activities. Approximately one mile of boardwalks is available for access located in two areas. An interpretive boardwalk is located behind the Weeks Bay Visitor Center running about 3,500 linear feet through a hardwood forest/swamp and overlooks Weeks Bay. Another 2,000 feet of boardwalk passes through the Weeks Bay Pitcher Plant bog and terminates with an overlook on Fish River. Approximately two miles of ground trail are available in addition to the boardwalks. A one-mile Nature Trail is accessible from the Visitor Center and another one mile Upland Trail is accessible from the parking area adjacent to the Pitcher Plant Bog on County Road 17. Two boat ramps maintained by ADCNR allow access to Weeks Bay and adjoining waterways for recreational and research purposes (Figure 12).



Boardwalk at Weeks Bay Visitor Center

The Reserve plans access to newly acquired properties as tracts are added to the boundary. Current planning identifies only additional access at the Meadows. Meadows visitor access and use are included in Meadows Management and Restoration Plan - Restore Council funded Category one activities (2018).

Boardwalk and pavilion at the Weeks Bay pitcher plant bog

Public Access Opportunities and the Visitor Experience

When individuals visit the Visitor Center or hike the trails, they have an opportunity to gain a better appreciation for the natural beauty, intricacies and value of coastal habitats. The Visitor Center provides information on specific habitats and resource conservation serving as the focal point for visitor access to learn more about estuaries and the boardwalk and trail experiences that are available. Weeks Bay Reserve serves as a focal point for education and outreach and provides the public with opportunities to experience and enjoy nature. The Reserve is ideally situated for education and outreach activities by virtue of its accessibility.

Part of the visitor experience involves passive or active learning at one or more of Reserve's exhibits. The Stewardship Coordinator, working with other Reserve staff, updates signage, exhibits, and similar outreach materials. A discussion on future exhibits is in Section V. Facility and Construction.

Weeks Bay Visitor Center

Public Access Challenges

Population growth within neighboring communities will continue to stress the capacity of aging visitor facilities of the Reserve. The Facility Master Plan discusses existing conditions and provides a roadmap for site development to meet anticipated facility needs. The Facility Master Plan can be viewed at http://www.outdooralabama.com/weeks-bay-facility-master-plan.

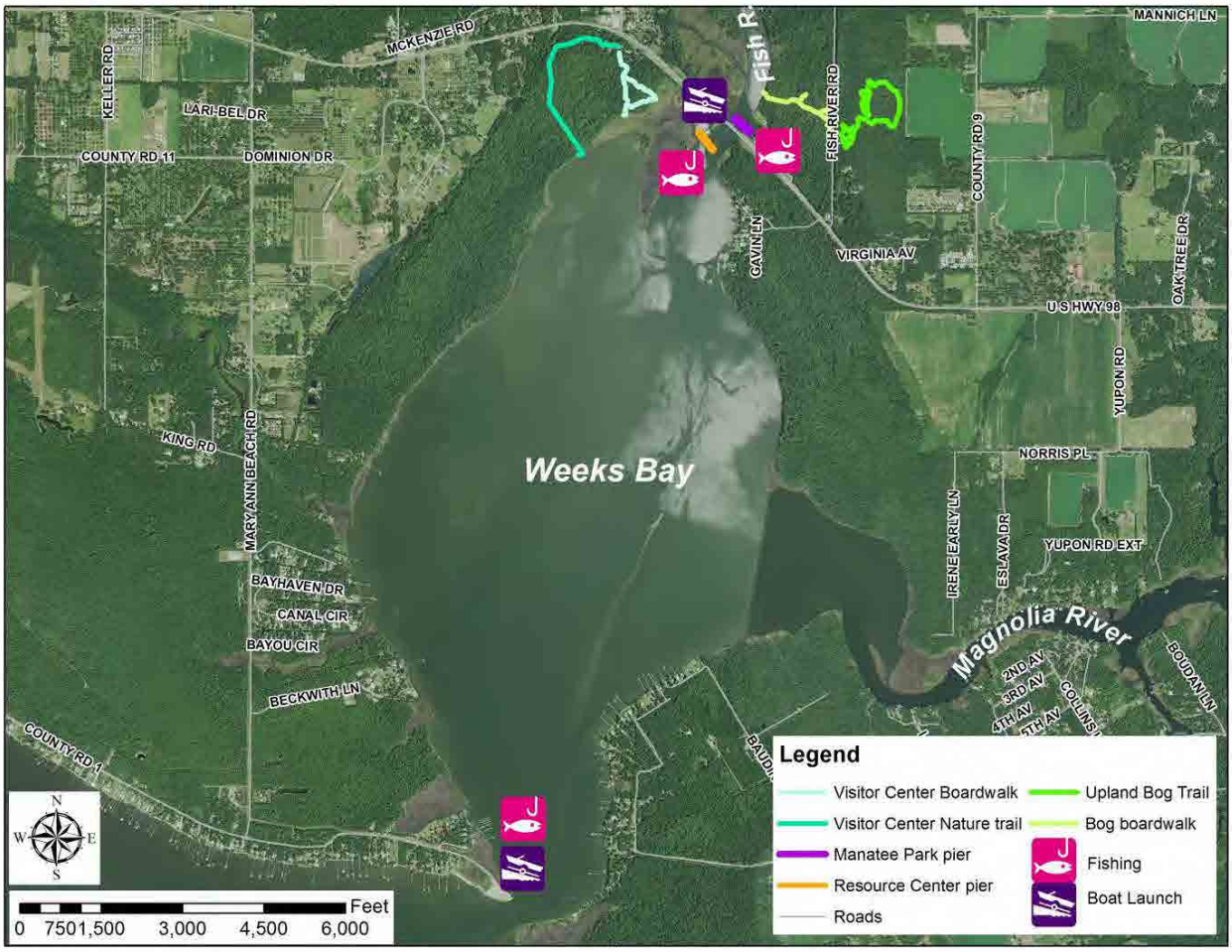


Figure 12. Weeks Bay Public Access Map.

Resource Protection

State Management and Statutory Authority

Weeks Bay Reserve works with agencies and programs to enhance resource protection. These programs and agencies include:

Alabama Coastal Area Management Program (ACAMP) In addition to program administration, the ACAMP implements and enforces policies and regulations for the purpose of protecting Alabama's coastal resources. The enforceable policies of the program provide for regulation of various activities on coastal lands and waters seaward of the continuous 10-foot contour in Baldwin and Mobile Counties of Alabama. The ACAMP is a joint effort of the ADCNR-SLD and the ADEM Coastal Program. ALDCNR-SLD is responsible for planning and policy development while ADEM is responsible for permitting, monitoring and enforcement activities, as detailed in the ADEM Division 8 Coastal Programs Regulations (ADEM Admin. Code R 335-8-x-xx 2013).

Alabama Department of Public Health (ADPH) The ADPH enforces state and local regulations relating to environmental health. The Division of Community Environmental Protection (CEP) carries out programs to minimize the adverse effects of disposal of sewage and high-strength sewage on human health and the environment by establishing and enforcing requirements for the design, permitting, installation, approval, and use of onsite sewage treatment and disposal systems. The Soils and Onsite Sewage Branch's main objective is to coordinate the onsite sewage program in the county health departments. The Solid Waste Branch provides technical assistance to county environmentalists who work in the solid waste, septage management, and vector control programs. Local activities include the investigation of vector control complaints and unauthorized dumps, the permitting/inspection of transfer stations, processing facilities, and garbage collection vehicles, and the permitting and inspection of septage/grease land application sites. Many counties also enforce local mandatory garbage collection programs and review applications for certificates of exception for such programs.

The ADPH Alabama Coastal Beach Monitoring Program began in June 1999 in cooperation with ADEM. The program monitors selected swimming beaches and recreational areas on the Gulf of Mexico, Mobile Bay, Perdido Bay and several other riverine waters for the presence of Enterococcus bacteria and provides prompt notification at each site when water quality standards are not being met. Currently, the ADPH program monitors 26 sites and publishes results on the ADEM webpage, http://www.adem.state.al.us/programs/coastal/beachMonitoring.cnt.

Baldwin County Soil and Water Conservation District (SWCD) The Baldwin County SWCD Board provides direction for local programs and ensures that the district staff fulfill their primary mission of working with landowners to install BMPs to control erosion, protect water quality, and provide other measures necessary to enhance and protect the environment. In addition, Baldwin County SWCD provides leadership and funding for the Weeks Bay Watershed Project Citizens Advisory Committee and the volunteer water monitoring group, Weeks Bay Water Watch.

Alabama Historical Commission (AHC) The AHC was established by the Alabama Legislature in 1966 (Code of Ala. 1975, §§41-9-240, et seq.) to foster the understanding and preservation of Alabama's heritage. The AHC conducts archeological surveys or testing projects that are required as elements of cultural resource assessments for compliance with federal laws and regulations, including the National Historic Preservation Act.

Federal Regulatory Agencies and Programs

U.S. Fish and Wildlife Service (USFWS) The USFWS has regulatory authority for endangered species and migratory bird issues as they relate to the Reserve. The USFWS also makes recommendations to the U.S. Army Corps of Engineers regarding wetland permits.

U.S. Army Corps of Engineers (USACE) The USACE is responsible for administration of the

federal wetland permitting programs for tidal and non-tidal wetlands within the Reserve and on adjacent waters and wetlands through its Mobile, Alabama, District Office.

NOAA/National Marine Fisheries Service (NMFS) The NMFS is responsible for identifying essential fish habitats for federally regulated species of fishes and carrying out provisions of the Magnuson-Stevens Act. Further, under the Endangered Species Act, the NMFS helps protect threatened and endangered species. NMFS is also responsible for marine mammal protection under the Marine Mammal Protection Act. NMFS often makes recommendations to the USACE on wetlands permits under the Clean Water Act.

NOAA/Office of Response and Restoration/Disaster Response Center (DRC) The DRC is the lead office for NOAA in preparing for and responding to oil and chemical releases in marine waters. Weeks Bay Reserve along with the other Gulf Coast reserves were funded by the DRC to develop Disaster Response Plans to address response and coordination relating to the trust resources of these reserves. This integrated plan is coordinated with other local, state and federal responders and will serve as a template for similar plans for other protected areas. This will aid efforts to protect reserve resources in the event of hazardous releases or other emergencies.

U.S. Environmental Protection Agency (USEPA) The USEPA has enforcement and commenting authority for the federal wetlands permitting program in addition to joint responsibilities with the Mississippi Department of Environmental Quality for administrating the Clean Air and Clean Water acts in Mississippi.

Allowable Ecosystem Uses

It is Reserve policy to continue traditional, recreational uses of coastal resources that are compatible with Reserve goals. These include hiking, boating, fishing, swimming, crabbing, bird watching and photography (Figure 13) as these activities/uses are governed by appropriate agencies. Changes in allowable activities may occur due to changes in habitat resources or increased public activity in the future.

Ecosystem Protection Strategies

The Reserve endeavors to use protection strategies to reduce or mitigate the effects of public use, restoration or research activities. The Reserve ascribes to management practices for its activities that protect species, habitats and lands including wetlands, submerged lands and shorelines. Cooperation with outside researchers and citizens yields insight into the presence of threatened, endangered, rare or recovering species. Within the Reserve, these species exist or habitats where these species could exist are present. The Reserve uses practices identified in USFWS recovery plans to manage activities where threatened, endangered, rare or recovering species could exist (Table 4.).

Protection of aquatic habitat is important to the Reserve. The Reserve manages activities to avoid

effects on essential fish habitat. Essential fish habitat for several species described in NMFS Fishery Management Plans (1998; Appendices, 2004) is included in the Reserve boundary. The Reserve uses management practices identified in the NMFS plans to avoid effects on fish habitat. No species critical habitat is described within the Reserve.

Name	Status According to USFWS	USFWS Species Profile	USFWS Recovery Plans
Bald eagle (*Haliaeetus leucocephalus*)	Recovery	Species Profile for Bald eagle	Southern States Bald Eagle Recovery Plan
Atlantic sturgeon (Gulf subspecies) (*Acipenser oxyrinchus* (=*oxyrhynchus*) *desotoi*)	Threatened	Species Profile for Gulf sturgeon	Gulf Sturgeon Recovery/ Management Plan
Eastern Indigo snake (*Drymarchon corais couperi*)	Threatened	Species Profile for Eastern Indigo snake	Eastern Indigo Snake Recovery Plan
West Indian Manatee (*Trichechus manatus*)	Endangered	Species Profile for West Indian Manatee	Florida Manatee Recovery Plan, 3rd Revision
Alabama red-belly turtle (*Pseudemys alabamensis*)	Endangered	Species Profile for Alabama Red-Belly turtle	Alabama Red-bellied Turtle Recovery Plan
Gopher tortoise (*Gopherus polyphemus*)	Candidate	Species Profile for Gopher tortoise	Gopher tortoise Recovery Plan
Wherry's Sweet pitcher-plant (*Sarracenia rubra* ssp. *wherryi*)	Under Review	Species Profile for Wherry's Sweet pitcher-plant	No recovery plan at this time

Table 4. Examples of threatened, endangered, candidate, rare or recovering speices present or potentially in Weeks Bay reserve and Management Plans for these species.

Activities specific to restoration or other projects require management practices. A project that could require land disturbance needs to include management practices that prevent erosion and control for sediment. Whether implemented by Reserve staff, researchers or contractors, the Reserve will ensure that adequate erosion and sediment control measures are implemented. The *Alabama Handbook for Erosion Control, Sediment Control, and Stormwater Management on Construction Sites and Urban Areas* is a resource for appropriate management practices in such cases. A Forestry management practices manual exists to provide the Stewardship Program, researchers and contractors with methods to prevent damage caused by activities in forests. The manual, *Alabama's Best Management Practices for Forestry*, contains practices that could be

implemented as part of tract management and restoration.

ADCNR is the state agency that oversees activities within the Reserve and outside its boundaries. The following components are those addressed by the agency that may impact area ecosystems.

Watercraft The Reserve encourages operation of watercraft in a manner that is compatible with the goals of the Reserve, particularly in the maintenance of wild habitat and natural setting. Examples of incompatible activities would include those that create excessive wave action, noise, petroleum product pollution (personal watercraft), or disturbance of benthic organisms. The Reserve encourages compatible activities through public education/information and public outreach efforts in cooperation with appropriate agencies if necessary. Manatees are present in the waters of the Reserve in spring and summer. The Reserve and other agencies post signage at public launches within the Reserve boundary to educate boaters about practices that protect manatee.

Fisheries The Reserve encourages fishing activities that are compatible with the goals of the Reserve, particularly the maintenance of wildlife habitat and providing a natural research laboratory. Commercial shrimping is not allowed within Weeks Bay. Commercial crabbing and gill netting, and recreational crabbing and fishing are allowed. Activities that result in depletion of fisheries or diminish the education or research goals of the Reserve will be discouraged. The Reserve will encourage compatible activities through public education/information and public outreach efforts in cooperation with appropriate agencies if necessary.

Fishing is a favorite activity on Weeks Bay

Wildlife (Including Endangered and Threatened Species and Wildlife Habitat) The Reserve encourages activities related to wildlife and wildlife habitat that are compatible with the goals of the Reserve. These include maintenance of wildlife habitat, particularly cover and forage, the protection of endangered and threatened species, and the provision of a natural research

laboratory. Within the Reserve, wildlife is surveyed and monitored to enhance protection. Activities which enhance the protection of wildlife and wildlife habitat in the Reserve coastal area are encouraged through public education/outreach efforts in cooperation with appropriate agencies.

PRIORITY DELIVERY: COASTAL VULNERABILITY ASSESSMENT

Climate impacts and land use change around the watershed are serious threats to Weeks Bay Reserve lands, natural communities, and habitats. Stressors associated with a changing climate include alterations in average temperatures; variation in rainfall intensity, amounts, and frequency; increased flooding; increased periods of drought and wildfires; sea level rise and changes to freshwater inflows. Several Reserve sectors examined conditions at the Reserve using the NERR Climate Change Vulnerability Assessment Tool for Coastal Habitats. At the same time, the team looked at other stressors not related to climate change. The team determined that climate stressors like altered rainfall patterns and changing freshwater flows are threats. These threats are made worse by changing land use and urbanization in the watershed. This assessment will help the Reserve respond to conservation and restoration planning for managed lands. Understanding local vulnerabilities assists Stewardship and other staff working with land managers, researchers, and local officials who are challenged with making conservation decisions.

Lands The Reserve manages lands within its boundary in order to protect and restore ecosystems, maintain and enhance wildlife habitat, and ensure the maintenance of the natural research laboratory.

Management activities prevent pollution from stormwater runoff, maintain shoreline buffer strips, restore natural communities through prescribed burns and replanting, and maintain vegetation for wildlife cover and forage. The Reserve encourages the use of these and other activities like low impact development in Coastal Alabama through education/outreach and on the ground projects.

Permissible Actions

To accomplish the goals of good stewardship and ecosystem protection, several actions that may be prohibited are, upon approval, permissible on Reserve holdings provided that they do not cause permanent damage to the resources. These actions may include approved research and resource manipulation activities (see "Research and Monitoring" section of this document) and resource collection. Individuals or organizations will need to acquire the necessary permits according to ADCNR guidelines. Regardless of the action, all activities require prior notification to, and permission of, the Reserve in order to access holdings.

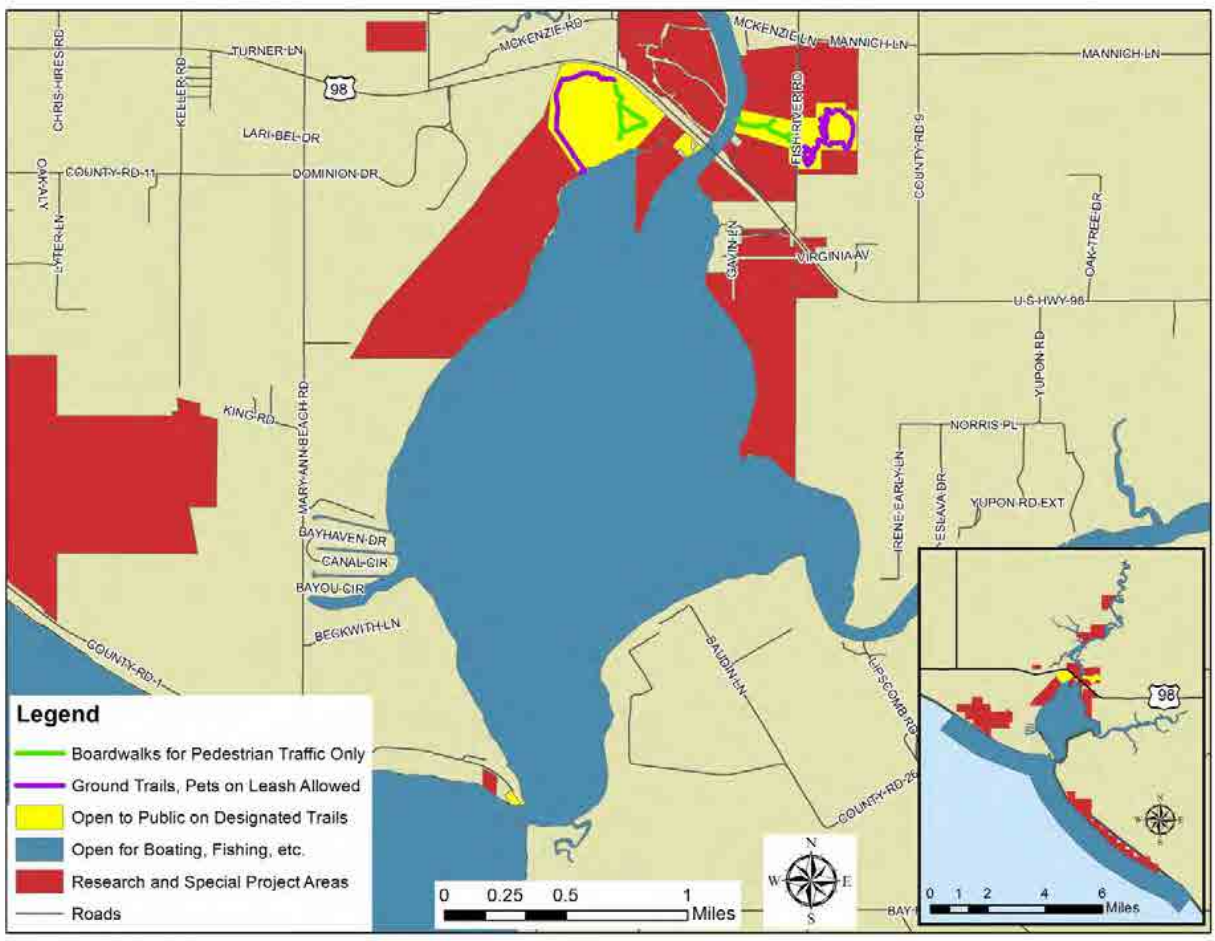


Figure 13. Weeks Bay Reserve Allowable Uses Map**.**

Any activity not listed, but prohibited by local, state and federal regulations, is also prohibited within the Reserve boundaries and its managed resources. Changes in prohibited activities may occur due to Reserve developments in the future.

Wetlands The Reserve discourages activities in or uses of wetlands in the Reserve coastal area that are not compatible with the goals of the Reserve. Specified activities that would be discouraged include dredging, filling of wetlands, or shading of submerged water bottoms (submerged lands). Reserve policy is compatible with the wetlands regulatory program of ADEM/USACE as embodied in Section 404 of the Clean Water Act and ADEM Division 8: Coastal Program Regulations. Reserve staff review permit applications for activities affecting wetlands and submit comment recommendations to ADCNR for consideration. Reserve staff monitor and report wetland disturbance in the Reserve to ADEM and USACE. Within the Reserve boundary, the Reserve management proposes no activities that alter wetlands except those necessary to support education or research goals.

Water Quality The Reserve discourages activities or uses that significantly diminish the water

quality of ground or surface water in the Reserve coastal area and the Weeks Bay watershed. Such activities or uses include pollution from runoff, septic tank leaching, and other discharges in the bay or watershed. Reserve management works cooperatively with ADEM through the Section 319 Nonpoint Source Pollution Program, Division 8: Coastal Program Regulations, the National Pollutant Discharge Elimination System regulations, and the provisions of the Outstanding National Resource Water (ONRW) designation. ONRWs are protected or require a thorough evaluation of discharges from new or expanded point sources of pollutants (ADEM 2012b). Cooperative efforts include working with ADEM on permitted activities affecting the Reserve and report activities affecting water quality. Reserve management also works with federal, state, and local entities to reduce pollution from stormwater through public education/outreach, training, and cooperative demonstration projects. Reserve management works with the Baldwin County Health Department to assess and reduce pollution caused by failing septic tanks through public outreach and assistance, training, and to provide monitoring assistance.

Submerged Lands The Reserve discourages activities on, or uses of, submerged lands in the Reserve coastal area which are not compatible with its goals. Reserve policy is compatible with State Lands Division Administrative Code, 220-4. The Reserve discourages any activity that significantly alters the water currents or flow, either riverine or tidal, physically disturbs benthic organisms, or diminishes sunlight reaching submerged lands. Examples of incompatible activities/uses include dredging of channels, operation of watercraft in too shallow water, and construction of structures which result in more than minimum shading of submerged lands. The Reserve encourages compatible activities and practices that reduce negative effects on submerged lands through education/outreach efforts in cooperation with appropriate agencies.

Shoreline Growing along the estuarine shoreline are emergent and fringe marshes, wetlands which protect the land from erosion and provide habitat for fish and other organisms. The marsh buffer provides protection from pollution and helps reduce damage from flooding and storm surge. The Reserve discourages activities or uses that significantly alter the shoreline or coastal buffer and are not compatible with Reserve goals. The Reserve discourages alteration of emergent or fringe wetlands, construction of bulkheads, and clearing of natural cover from the buffer strip.

A living shoreline protects and helps restore eroded bayfront along Bon Secour Bay

Conversely, the Reserve supports

and encourages the use of living shorelines and alternatives to vertical hard structures. USACE Regional General Permits for Alabama, ALGP-10 and ALGP-24, include activities and techniques supported by the Reserve. Other strategies encouraged include the restoration of fringe wetlands, non- structural means of stabilizing shorelines, and protection of the natural vegetation in the buffer strip adjacent to the water. Living shorelines are being used to reduce shoreline erosion, protect saltmarsh habitat, and restore ecosystem diversity and productivity along Reserve Property in Bon Secour Bay. It is expected that over time, the breakwaters will develop into reefs, providing added reproductive and foraging habitat and shelter from predators. The Reserve supports compatible activities through public education, training, outreach efforts, development and implementation of wise land-use planning by appropriate local governments, and the purchase of conservation easements.

Air Quality The Reserve encourages activities that do not diminish air quality below standards established by ADEM. The Reserve discourages activities that negatively impact air quality and reports air quality problems to ADEM.

Areas of Concern

Piers and Docks Due to the potential impact of piers, docks, and related structures on water quality, submerged lands, fringe wetlands, and the Weeks Bay shoreline, Regional General Permit for Alabama, ALGP-24administered by USACE provides for issuance of a permit for construction of piers and docks within the embayment of Weeks Bay that minimizes resource impacts.

Pollution from Stormwater Runoff The Reserve encourages management of activities and uses in a manner that minimizes pollution from stormwater runoff primarily through the application of best management practices. The Reserve coordinates with local governments and agencies, ADEM Section 319 program, and Coastal Zone Management (CZM) Section 6217 program to encourage similar approaches to minimize nonpoint source pollution in the Reserve coastal area and Weeks Bay watershed. This involves public education/outreach programs and cooperative projects, monitoring and reporting non-point source pollutants, and working with applicable agencies to develop appropriate BMPs. Specific areas of NPS pollution to be addressed include: 1) sedimentation from residential and commercial construction, maintenance of roads and road right-of-ways and agricultural uses, 2) nutrient enrichment from fertilizer runoff and septic tank leaching, 3) herbicide and pesticide runoff, and 4) trash and debris on both land and water.

Surveillance and Enforcement

Surveillance and enforcement activities require the coordination of law enforcement agencies, establishment of patrol schedules, and assessment. The Reserve provides guidelines and signage to assist enforcement procedures. The Reserve follows established guidelines for ensuring that activities conducted within the Reserve conform to practices that promote resource protection. The Reserve will contact the Baldwin County Sheriff, ADCNR Conservation Enforcement

Officers, and Marine Police as necessary, and will be a full partner in the review of any permit affecting the Reserve's resources.

Ecosystem Protection Challenges

Land Use Changes Land use changes in the watershed may potentially be the greatest threat to the coastal communities within the Reserve. The conversion of open land to residential and commercials will have a negative effect on the lands and waters of the Reserve watershed. Where and how development occurs has direct impacts to water quality, aquatic species, and wildlife habitat. Waterfront development and bulkheaded shoreline are primary concerns. Riparian vegetation plays an important role in reducing turbidity by trapping sediment, providing thermal cover to prevent water temperature extremes, and taking up excess nutrients that may be present in runoff. Shoreline vegetation absorbs wave energy and reduces erosion. Floodplain habitat reduces the height and velocity of flood waters. Waterfront development and bulkheading will greatly reduce these natural protections for water quality and wildlife habitat.

Climate Change Climate change is a serious threat to Reserve lands, communities, and habitats. Stressors associated with climate change can include sea level rise; changes in average temperatures, rainfall amounts and frequency; increased intensity and flooding from storms; increased periods of drought and wildfires; and changes to freshwater inflows. Additionally, these changes may increase the effects that pathogens and exotic invasive species have on the ecosystem. Effects such as these can vary widely but are expected to increasingly affect coastal communities and economies. The Reserve monitors and studies the effects of climate change through facilitation of visiting researchers and their related projects, monitoring through SWMP and continued development of the Reserve Sentinel Site Program. Gathering information such as this will best position the Reserve to work with communities to plan and adapt to these changes. Training, education and outreach programs of the Reserve will continue to incorporate climate change and related scientific information in an effort to help communities understand and adapt to anticipated effects of local and regional climate change.

Climate change priorities at the Reserve include understanding the effects of climate change on the biological, physical, ecological and socio-demographic components of the Reserve and relationships to nearby built communities. Priorities also include engaging with citizens and their communities to communicate a message that addresses understanding, adaptation and mitigation of potential impacts of climate change. Staff members are currently participating in several ongoing activities across Reserve programs that address climate change priorities including the NERRS Climate Change Initiative, NERRS Sentinel Sites Program, NOAA’s Northern Gulf of Mexico Sentinel Site Cooperative, Ecological Effects of Sea Level Rise in the Northern Gulf of Mexico project, and a Coastal Training Program Initiative for Resilient Communities (Robinson, et.al 2013).

Magnolia River

Stewardship Objectives and Actions

The Weeks Bay Reserve Strategic Plan identifies overarching Reserve goals to inform the Stewardship Program objectives and actions. These objectives and actions address resource protection, public access and visitor use, and ecosystem protection. The following actions provide specific direction for the Reserve.

Goal 1: Protect and improve ecosystem health and biological diversity within the boundary of the Reserve.

Objective 1-3: Reserve manages ecosystems to maintain and restore native diversity and function through at least one project per year.

Actions:

a. Analyze and synthesize information regarding ecosystems to develop tract specific ecosystem conservation and restoration recommendations and plan.

b. Prioritize management and restoration projects by conferring with members of the Weeks Bay Reserve Restoration Advisory Board to develop a restoration ranking matrix. The matrix will incorporate:

    1. Species, habitats and natural communities of special concern
    2. Extent of ecosystem degradation
    3. Anticipated impact of stressors
    4. Feasibility of ecosystem restoration and/or conservation success
    5. Availability of funding

c. Accomplish conservation and restoration measures "in-house' using Reserve staff, volunteers and equipment readily available.
d. Seek funding and partners to undertake conservation and management projects that cannot be completed in-house.
e. Develop science based monitoring and evaluation strategies for each ecosystem management or restoration project.

Objective 1-4: Reserve conducts land acquisition to implement ecosystem restoration and protection

Actions:

a. Evaluate and prioritize lands in the Weeks Bay Coastal Area that would be suitable for restoration or acquisition projects.
b. Partner with organizations and land owners in an effort to identify lands for conservation projects in the vicinity of the Reserve.
c. Utilize tools and methodology from restoration science of local and regional projects.
d. Highlight successful projects through education and outreach strategies to promote conservation through habitat restoration and land acquisition projects.
e. Seek funds to expand projects through grant opportunities and regional partnerships.

Goal: Inform decisions affecting estuaries and coastal ecosystems.

Objective 2-3: Transfer of stewardship and management practices promote better informed coastal decision-making.

Actions:

a. Evaluate and make comments and recommendations on USACE and ADEM permit applications for construction, land use changes, and habitat alterations.
b. Use Geographic Information Systems (GIS) to evaluate land use information, physical

and biological watershed characteristics, chemical water quality data, and ecosystem structure, function and change over time to support decision-making and create databases utilized to generate graphs and maps which will serve as tools to inform ecosystem management issues.

c. Employ the methods of historical ecology to assist in determining ecosystem reference conditions and identifying management or restoration needs and provide usable data and analysis for evaluation by Reserve staff, advisory committees and regulatory organizations.
d. Locate or create maps that convey abiotic and biotic information pertinent to informing management and restoration decisions and provide narrative descriptions of abiotic or biotic information for ecosystems of the Reserve.
e. Collaborate with NRCS researchers to update soil maps to better inform management decisions and inform visiting researchers of information needs of the stewardship program and encourage research projects that assist in meeting those needs.
f. Identify long-term climate and non-climate stressors that may impact ecosystem management decisions by providing assistance to researchers on the Integrated Modeling for the Assessment of Ecological Impacts of Sea Level Rise project for the Northern Gulf Coast, assisting Reserve personnel with the development of a Coastal Vulnerability Assessment, and seeking outside assistance to further identify and understand socioeconomic and demographically driven ecosystem stressors.

Objective 2-4: Reserve programs facilitate responsible access and use of ecologically sensitive public lands.

Actions:

a. Collaborate with outside researchers and social scientists to complete a visitor use needs assessment.
b. Develop a comprehensive strategy for meeting current and anticipated visitor use needs that maximizes protection of ecosystem health.
c. Collaborate with Marine Resources Division to track vessel access usage.

Goal 3: Promote education, training, stewardship, and scientific research focusing on estuarine ecosystems.

Objective 3-6: Reserve updates exhibits and outreach initiatives to support ongoing or new programs through at least two programs per year. (Refer to Facilities and Construction Section V. for details)

Actions:

a. Evaluate exhibits related to conservation and stewardship efforts for refurbishing or replacing signage as needed.

b. Maintain exhibits related to conservation and stewardship and evaluate exhibits upgrades related to maintaining the exhibits currently housed at the Weeks Bay Visitor Center and on the grounds, boardwalks and trails of the Reserve.
c. Evaluate, improve and incorporate signage and way finding into the Reserve grounds to assist visitor flow for a smooth transition from one area to another.

Objective 3-7: Reserve increases involvement of residents in watershed planning and management activities.

Actions:

a. Engage residents as feasible in the following practices:
    1. employ low impact development practices to reduce polluted runoff from residential areas;
    2. utilize pollution prevention programs like USDA NRCS, EPA and FWS programs;
    3. reduce pathogen pollution from treatment systems, sanitary sewer and livestock;
    4. create residential habitat that will improve water quality;
    5. revive Greener by the Yard program with Master Gardeners/Weeks Bay Volunteers;
    6. support land-use planning as a tool to protect environmentally sensitive areas.

b. Solicit community volunteers to:
    1. increase the number of volunteers and testing locations in Weeks Bay Water Watch;
    2. assist with implementation of ecosystem management and restoration activities;
    3. develop a docent corps to lead visitors on guided interpretive tours of Reserve facilities and lands.

c. Seek partners and funding for the design and implementation of improved vessel access points within Reserve management boundaries.
d. Train stakeholders in the utilization of low impact practices during structure design and construction.
e. Write grants to fund programs which will provide assistance to landowners for restoration activities.

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Trailhead of the Weeks Bay Reserve Visitor Center Boardwalk

Weeks Bay

IV. BOUNDARY AND ACQUISITION

A land acquisition plan is a required element of a reserve management plan, per the Federal Code of Regulations 15 CFR 921.13 (7)(i). Estuaries, and their associated habitats, offer numerous and diverse benefits to society and natural systems. Some of these benefits include storm buffers to protect property from hurricanes; nurseries for commercially important species; and areas to enjoy for recreation and aesthetics. However, in many cases, human development has significantly eliminated or degraded the habitats that provide these ecological and societal values. To address the conservation of coastal habitats, the U.S. Commission on Ocean Policy in 2004 recommended that each state identify priority coastal habitats and develop plans, in partnership with willing landowners, federal agencies and others, for coastal and estuarine land conservation.

NOAA supports this recommendation through several acquisition investment tools under the Coastal Zone Management Act (CZMA) of 1972, as amended. These include the Coastal Resource Improvement Program authorized under Section 306A, the Coastal and Estuarine Land Conservation Program under Section 307A, and the Reserve System Land Acquisition and Construction Program under Section 315. Each of these programs provides an opportunity to conserve coastal habitats.

Weeks Bay Reserve is a site-based facility that accomplishes conservation of habitats and ecosystems largely through acquiring and managing lands. Since designation, the State of Alabama has continued to acquire critical tracts essential to best manage wetlands in the coastal area of Weeks Bay. Since the last management plan in 2007, the Reserve has acquired eight tracts encompassing 962 acres. The Meadows Wetland Tract, 685 acres of coastal wetland habitat, was the largest of these eight and the largest in the history of the Reserve (Figure 14). This acquisition was the result of a collaborative effort including local, county, state, federal, and regional partners. This exemplifies the success of Weeks Bay Reserve in working together to conserve coastal ecosystems.

Weeks Bay Reserve property marker

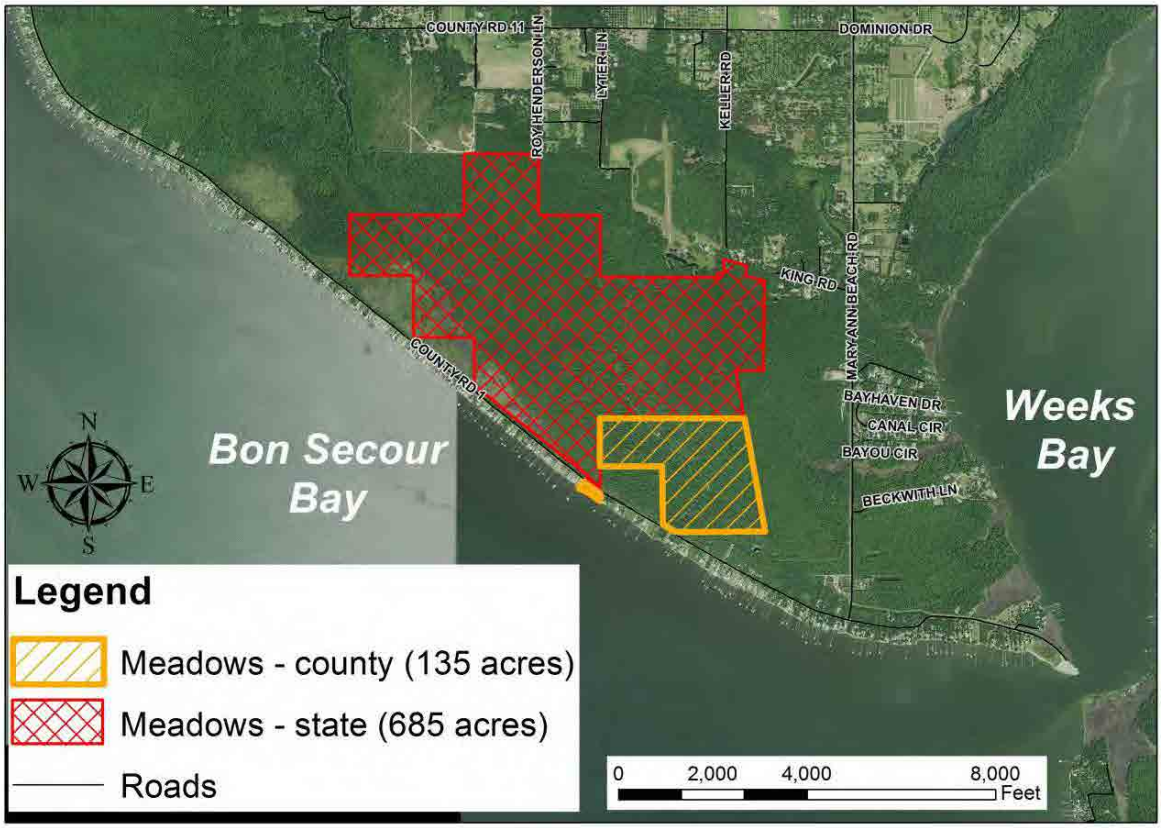

Figure 14. Meadows Wetland Tract Lands.

Accomplishments

Weeks Bay Reserve benefits from federal, state, local and land trust partnerships that support the acquisition of critical habitats and make significant contributions to their conservation. Increased land conservation contributes to improved public access, water quality, and opportunities for research and education. These partnerships were the key factor to implementing the largest addition to the Reserve since its designation in 1986.

Significant accomplishments since 2007 include:

- Acquisition of the Meadows Tract, the largest tract acquired in the history of the Reserve;
- Acquisition of eight additional tracts including the Pryor, Key, Dever, Metcalf, Martin, Meyer and Lipscomb Tracts;
- Secured federal grant for $1,000,000 (FY14) to acquire wetlands in the Weeks Bay Coastal Area; and
- Built partnerships for acquisition that include Alabama Forever Wild Land Trust, Baldwin County Commission, The Conservation Fund, NOAA, and Weeks Bay Foundation, with support from organizations that include the Alabama Coastal Foundation, Audubon Society, Dauphin Island Sea Lab, Mobile Bay NEP, The Nature Conservancy, and the U.S. Fish and Wildlife Service.

Weeks Bay Reserve Boundary

The original boundary concepts of Weeks Bay Reserve encompass tracts of land owned by the State of Alabama and designated as the Reserve. The water bottoms that include the intertidal area up to the mean high tide line of Weeks Bay, portions and tributaries of Fish and Magnolia Rivers, and Bon Secour Bay link the tracts together. The current boundary was originally delineated in 1985 in the *Final Environmental Impact Statement and Management Plan for the Proposed Weeks Bay National Estuarine Sanctuary*. In 2007, it was expanded in the federally approved Reserve Management Plan. This boundary concept continues today with plans to incorporate additional land parcels. Features and concerns related to lands considered for acquisition are outlined below.

Habitat Identification

To delineate boundaries and target properties for priority acquisition, the Reserve documented area habitats. The documentation process identified Five (5) geographically distinct project areas containing significant ecological habitats. Ecological characteristics considered significant are habitat type, rare/endangered species, breeding/nursery area, forage area, migratory species, geomorphic features, ecosystem function, and uniqueness of natural community.

White-topped pitcher plant, *S. leucophylla*

Habitat Type In general, fresh and salt marshes, swamp, and forested, low-lying areas of sand and/or sandy/clay soils typify the habitats of the Reserve. Much is tidally influenced and wet year round.

Rare/Endangered Species Rare and endangered animal species include the American bald eagle (*Haliaeetus leucocephalus*), pileated woodpecker (*Dryocopus pileatus*), Alabama red- bellied turtle (*Pseudemys alabamensis*), gopher tortoise (*Gopherus polyphemus*), eastern indigo snake (*Drymarchon couperi*), and West Indian manatee (*Trichechus manatus*). Rare plants often include those common to pitcher plant bogs such as the white-topped pitcher plant (*Sarracenia leucophylla*).

Gopher Tortoise, *G.polyphemus*

Breeding/Nursery Area Widgeon grass (*Ruppia maritima*) and tape grass (*Vallisneria americana)* SAVs grow in dispersed patches along shoreline areas of the bay. Salt and Freshwater marshes provide substantial cover for fish, shellfish, birds and other wildlife to nest

or rear juveniles. The bay bottoms host a living, thriving and productive benthic community. Prime nursery habitat exists for shrimp and many other commercial and non-commercial fishes and crustaceans in both brackish and freshwater habitats.

Forage Area The ecosystem is a forage area for multitudes of species of mammals, reptiles, birds, amphibians, and fish. Freshwater and salt marshes and surrounding swamp dominate the shorelines of Weeks Bay and tributaries.

Migratory Species Dozens of migratory species pass through the Reserve. The birds, insects and fish include, but are not limited the American white pelican (*Pelecanus erythrorhynchos*) and other bird species such as warblers and ducks; recreational fish such as speckled trout (*Cynoscion nebulosus*); and insects such as the monarch butterfly (*Danaus plexippus*).

American coot, *Fulica americana* (winter migrant)

Geomorphic Features The estuarine area contains a mixture of soil types. Soils are sandy and clayey with varying amounts of organic material. The organic material arise from decaying plants. Saturation of the soil by water or inundation is dominant influence on soil type in highly productive estuarine habitats.

Ecosystem Function Primary ecosystem services include food sources, flood control, water quality protection and purification, riparian habitat, groundwater recharge, wildlife habitat, nursery, and spawning grounds.

Uniqueness of Natural Community The Reserve has exceptional biological productivity and diversity. The lands are the last stops and first arrival habitats for many migratory species crossing the Gulf of Mexico. The Reserve contains rare stands of Atlantic white cedar, pitcher plant bogs, and cypress swamps.

Priority Acquisition

Acquisition of lands is an important part of the implementation of the Management Plan. The task aligns with the Strategic Plan of the National Estuarine Research Reserve System. Property acquisition can be a lengthy process and requires planning and partnership building. The Reserve evaluates parcel for acquisition on a case by case basis. A parcel's ecological and conservation value to the Weeks Bay ecosystem and its proximity to the boundary core and buffer areas determine acquisition priority ranking. Historical, cultural, recreational, and other merits that

align with the Reserve Management Plan goals and objectives may influence acquisition prioritization.

The Reserve evaluates properties for acquisition based on future stressors that, if not appropriately managed, would negatively affect the parcel or adjoining habitats. An example includes acquiring and conserving critical areas that, if developed, would have the potential to reduce the natural state and function within the ecosystem. Other stressors to be evaluated include invasive species, land zoning, and climate related criteria such as inundation, coastal erosion, salinity changes, and potential changes in habitat function.

Acquisition Strategies

Acquisition opportunities can arise when land becomes available from a willing seller. One acquisition mechanism is the Forever Wild Program, the land trust program in the State of Alabama. The Forever Wild Program provides a process for nomination, value appraisal, and purchase negotiation. The Reserve and Forever Wild worked together successfully on prior acquisitions. Once acquired , property is incorporated into the Reserve boundary. Public ownership affords the best protection of the ecologic value and for integration into Reserve programs.

The Weeks Bay Foundation (the Foundation) is the "friends group" of the Reserve incorporated as a 501(c) (3) corporation in 1990. The Foundation formed for the purpose of providing support for the operation and development of the Reserve. Its charter members played instrumental roles in acquisition of property and designation of the Reserve in 1986. The Foundation assisted with many programs and acquisitions over the years and continues to be a strong partner of the Reserve.

Other mechanisms to acquire properties may include partners such as local or regional land trusts and conservation organizations that have the capacity to conserve properties. Partnerships with these groups can lead to fee simple transactions or conservation easements that accomplish land preservation

Another method of protecting land cover, land use and wildlife habitat is through the use of conservation easements. Under a conservation easement, the landowner retains ownership but conveys to a second party, a land trust or other entity, the right to engage in specific activities. . The desirability of using easements may increase with the continued inflation of land values and the desire of some landowners to ensure the natural setting of an area for future generations. Constitutional Amendment 543 provided for conservation easements in Alabama in 1993. This amendment specifically allows the state to accept such easements to protect natural areas. The Alabama legislature passed the Uniform Conservation Easement Act in 1997 as a means of specifying the methods and uses of conservation easements in the state. As part of ADCNR State Lands Division, the Reserve will pursue conservation easements where acquisition is not

obtainable and continue implementation of conservation easement education programs.

Valuation

Dynamic market processes determine the valuation of land within acquisition areas. Valuation of land can be estimated at any given time but cannot be determined for future opportunities. Acquisition of land follows procedures of the Forever Wild Program which establishes value by appraisals done at the time of consideration for purchase.

Valuation of property intended for acquisition by the Reserve is done on a case-by-case basis as part of the process. It is not determined years in advance for single or multiple parcels. This process establishes fair market value at the time of consideration for acquisition.

Ecologic value of land for acquisition is a critical component of the process for consideration and prioritization of parcels. Such value is determined by habitat, biodiversity, size, and location of parcels contiguous to other Reserve properties that can establish significant conservation corridors. Additional values taken into consideration include historical, conservation, cultural, recreational and other qualities that contribute to the overall importance of a parcel, especially as they relate to established goals and objectives of the Reserve.

Stressors

Climate and non-climate stressors also play a role in evaluating land for acquisition. Climate stressors include those impacts related to sea level rise, storm intensity, and rainfall amounts. Other factors may include those that can lead to coastal erosion, changes in water quality and salinity, inundation of coastal areas, drought, and flooding, as well as changes in habitats and species diversity. In evaluating land for acquisition, climate related prioritization criteria would include how sensitive an area is to change, elevation and habitat composition, potential for species migration, and habitat connectivity. Evaluation criteria would consider key ecosystem features that contribute to natural function, habitat maintenance, and species diversity.

Non-climate stressors must be considered as well in evaluating and prioritizing land for acquisition. Development threats are one factor that often comes into play when evaluating lands for conservation. Frequently, lands are targeted for development where conservation value would be lost. Conservation corridors become fragmented and are taken out of the natural state of protecting habitat and species diversity. Other anthropogenic factors would include land use changes in areas of agriculture, silviculture, hydrologic manipulations, and municipal infrastructure that affect habitat, nutrient input, sediment and pollutant loadings, and fluctuations in salinity, flooding and drought. Evaluating parcels that conserve lands and natural features is critical in determining where investments are to be made. Using such criteria maximizes the benefit of acquiring lands that protect key ecosystem features and play a significant role in maintaining system functions and natural processes.

Priority Acquisition Areas

The Reserve delineated five areas that contain parcels already within the boundary or parcels to be evaluated for acquisition (Figure 15):

- Weeks Bay Project Area,
- Magnolia River Project Area,
- Lower Fish River Project Area,
- Upper Fish River Project Area, and
- Bon Secour Bay Project Area.

The five priority acquisition areas contain waters or lands having unique or special designations like National Estuarine Research Reserve (NERR), Outstanding National Resource Water (ONRW), Outstanding Alabama Water (OAW), Gulf Ecological Management Site (GEMS), Geographic Area of Particular Concern (GAPC), and Alabama Coastal Area Management Program (ACAMP). The project areas lie within the rapidly growing northern Gulf coast. Land is available for commercial and residential uses, as well as for resource protection. Development and population growth pressures encroach on each priority area. These project areas are described below.

Brown Pelican, *Pelecanus occidentalis*

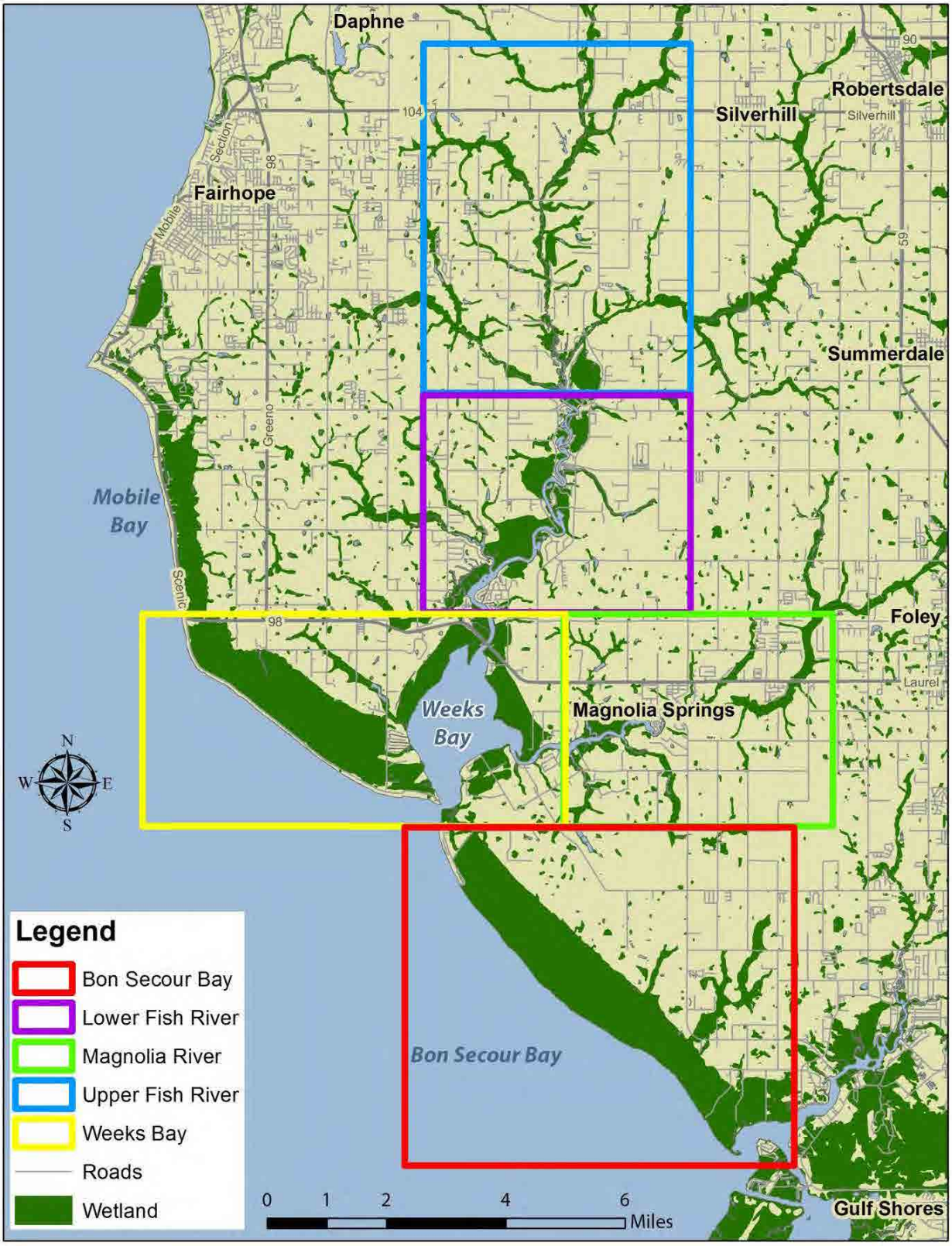

Figure 15. Weeks Bay Reserve Five Project Acquisition Areas.

Weeks Bay Project Area

Weeks Bay is a shallow (4.8ft/1.6m), diamond-shaped estuary, having a surface area approximately 4 miles^2 (1.5mi E-W x 2.5mi N-S). Historically, its entire perimeter was fringed with an emergent marsh of black needlerush (*Juncus roemarianus*) and saltmarsh cordgrass (*Spartina alterniflora*). Close to the shore (10-20ft/3-7m) are bottomland hardwood forests, with slash and loblolly pines (*Pinus elliotti, P. taeda*) and commonly seen bald and pond cypress (*Taxodium distichum, T. ascendens*).With slight elevation, the encompassing forested wetlands include such common tree species as live, water, and chestnut oaks (*Quercus virginiana, Q. nigra, Q. prinus*), sweetgum (*Liquidambar styraciflua*), blackgum *(Nyssa sylvatica*), red cedar (*Juniperus virginiana*), red and silver maples (*Acer rubrum, A. saccharinum*), American, yaupon, and dahoon hollies (*Ilex opaca, I. vomitoria, I. cassine*), and southern and sweet bay magnolias (*Magnolia grandiflora, M. virginiana*). These habitats still exist on the northern half of the bay on both east and west sides within the Reserve boundary. The south half of the bay has been developed in many areas, yet much of the emergent marsh and swamp areas still exist. There are a few large areas of saltmarsh in the Weeks Bay Project Area (Figure 16) that provide many ecological benefits and should be acquired for conservation if the opportunity arises.

Figure 16. Weeks Bay Project Area.

Magnolia River Project Area

Although sparsely developed, the Magnolia River contains large tracts of undisturbed fresh and brackish water habitats (Figure 17). Much of the area contains emergent saltmarsh and freshwater marsh, with tidal and non-tidal swamp and lowland areas. Including the species listed in the Weeks Bay area, other dominant species in this project area include common reed (*Phragmites australis*), sawgrass (*Cladium jamaicense*), cattails (*Typha spp*.), arrow arum (*Peltandra virginica*), wild rice (*Zizania aquatica*), pickerelweed (*Pontederia cordata*), bulrushes (*Scirpus spp*.) and tapegrass (*Vallisneria americana*). These habitats are of particular value for nursery areas and as flood control during the regions frequent hurricanes and storms.

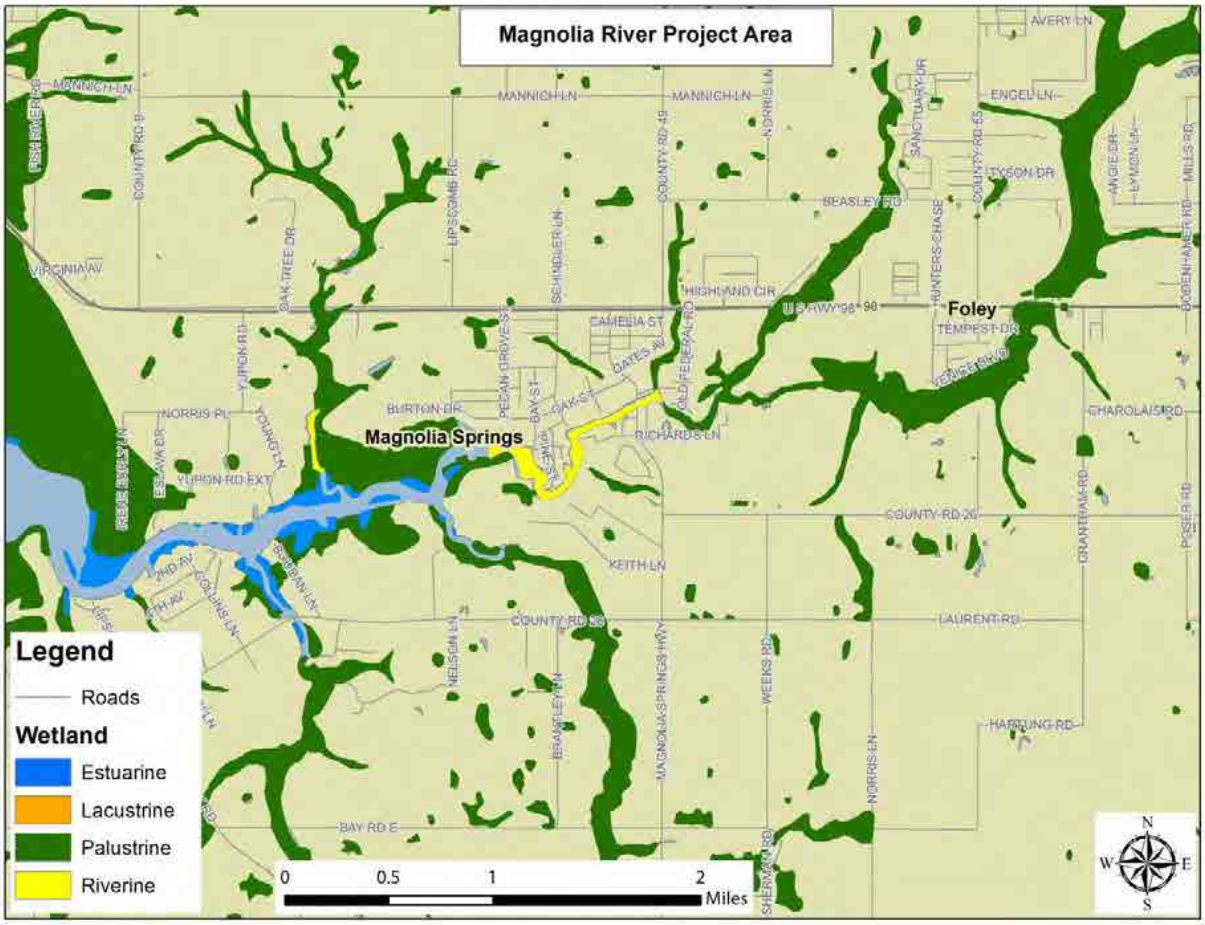

Figure 17. Magnolia River Project Area.

Lower Fish River Project Area

The largest tributary of Weeks Bay, Fish River, provides 74% of the water volume entering the bay. Fish River is more developed, with permanent and vacation homes along approximately ⅓ of its shoreline. A dwindling length of shoreline on the lower reaches of the river remains undisturbed, lined with tidal and non-tidal swamps and emergent freshwater marshes. The

dominant land use is agriculture. Many tributaries of Fish River are developed but have natural buffers and limited access (Figure 18).

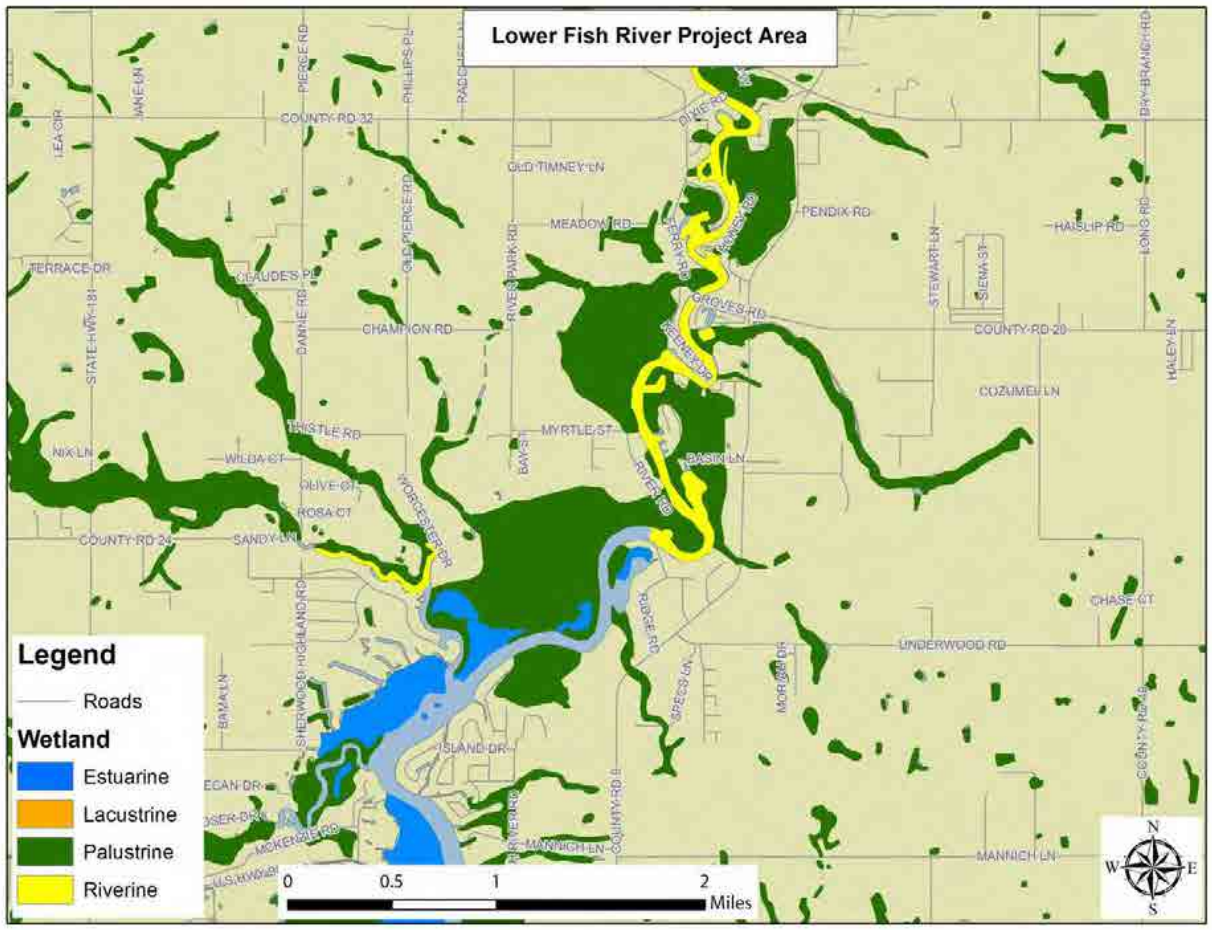

Figure 18. Lower Fish River Project Area.

Upper Fish River Project Area

The upper reaches of Fish River are more remote, mostly forested, and are less populated compared with the lower half of the river (Figure 19). With time, intense population growth is converting more of this forest and cropland into housing subdivisions. Two identified stands of rare and unique Atlantic white cedar swamp/forest exist in the upper Fish River watershed representing a distinct community not currently protected. Several rare plant and animal species are documented here including pitcher plants in low lying areas and gopher tortoises in the uplands.

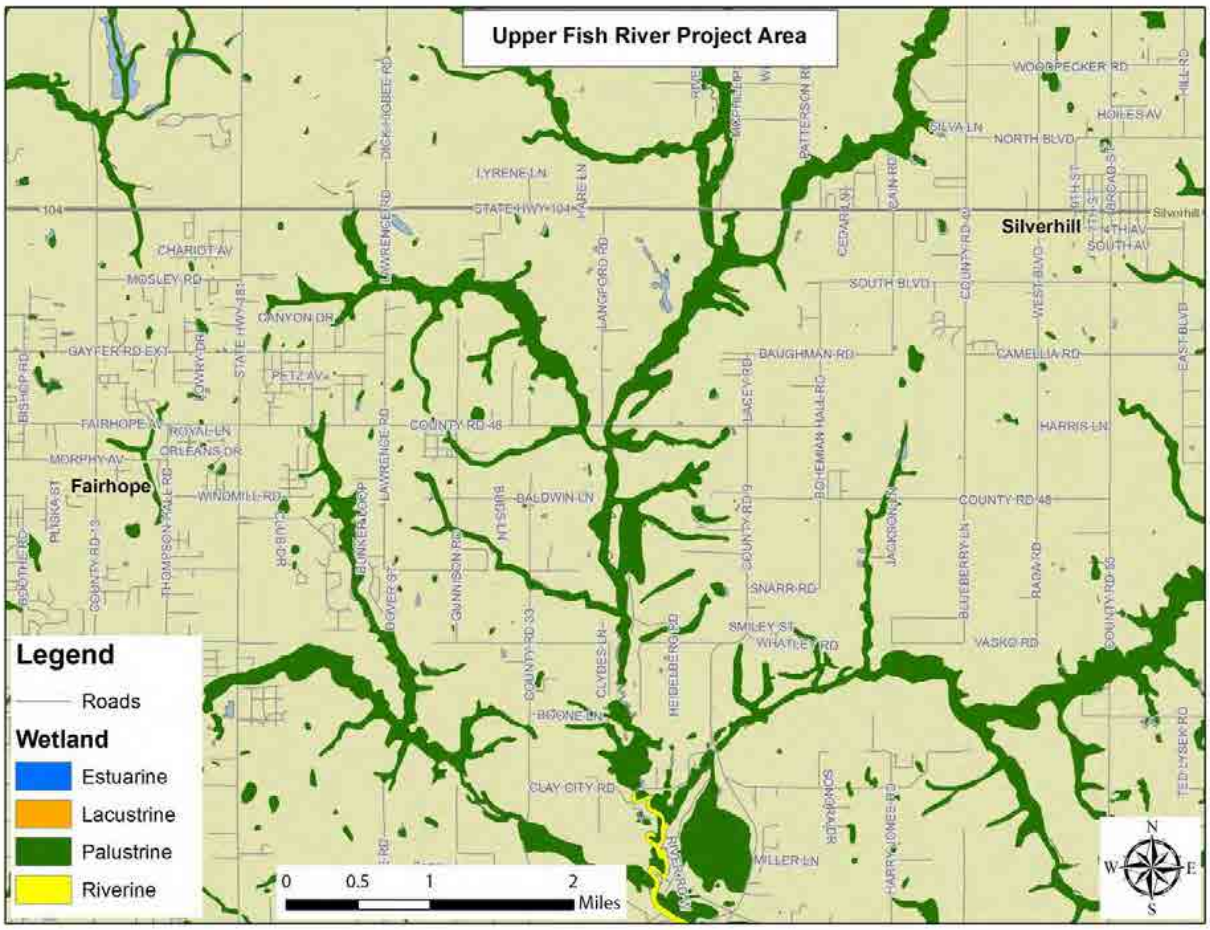

Figure 19. Upper Fish River Project Area.

Bon Secour Bay Project Area

Tracts within the Reserve boundary lie outside of the Weeks Bay. The land and water bottoms are located on Bon Secour Bay, a subembayment of Mobile Bay (Figure 20). Parcels adjacent to and near Reserve property consist of cypress, oak, and pine swamp. These parcels are currently unprotected and accessible only by water. Expanded acquisition southward along Bon Secour Bay would preempt possible shoreline development.

Figure 20. Bon Secour Bay Project Area.

Weeks Bay Reserve Properties

Weeks Bay Reserve includes properties owned by the State of Alabama and designated as the Reserve (Figure 21). These properties include the following:

Submerged Lands

- water bottoms (submerged lands) up to the mean high tide line of Weeks Bay (1,730 acres)
- water bottoms of Fish and Magnolia Rivers, and their tributaries, to the mean high tide line and to the termination of tidal influence (534 acres)
- water bottoms of Bon Secour Bay adjacent to Swift with addition tracts and north across the mouth of Weeks Bay opposite Meadows tract to the mean high tide line (4,446 acres)

Uplands

- Foley tract (178 acres)
- Ogburn tract (157 acres)

- Swift tract (615 acres)
- Damson tract (360 acres)
- View Point Park (2 acres)
- Fish River Marina tract (22 acres)
- Turkey Branch tract (20 acres)
- Harris tract (64 acres)
- Worcester tract (49 acres)
- Riverlands tract (90 acres)
- Safe Harbor (81 acres)
- Lott Property (3 acres)
- Meador tract (4 acres)

Uplands Newly Acquired

- Pryor (11 acres)
- Key (40 acres)
- Dever (64 acres)
- Metcalfe (30 acres)
- Meadows (685 acres)
- Martin (63 acres)
- Lipscomb (40 acres)
- Meyer (29 acres)

View from Visitor Center observation deck

Figure 21. Weeks Bay Reserve Properties.

Weeks Bay Reserve Boundary Expansion

The Reserve is seeking to expand its boundaries to encompass core areas and buffer properties currently owned by the State of Alabama but not previously included in the Reserve (Figure 22).

Once approved, the Reserve boundary will include 9,317 acres of land and water habitat which supports a wide variety of plant and animal species. Expansion of the Reserve boundary is consistent with the NERRS goals. The new boundary will include land and water portions of the Weeks Bay estuarine system acquired due to ecological significance and availability. These lands will be incorporated into the Reserve upon NOAA approval of the boundary expansion and increase the area managed for conservation by 2,792 acres.

The core area in Bon Secour Bay will continue from Mary Ann Beach Park northward along the shoreline to the extent of the Meadows Tract on County Road 1 and continue from the Swift Tract southward along the Swift Tract Addition Properties to the extent of the Lipscomb Tract expanding the core area by a total of 1,830 acres. This boundary expansion is in the areas of recent acquisition of properties by the State of Alabama. The buffer lands included in the expansion are representative of the unique and valuable wetland habitats found in the Weeks Bay Coastal Area. These new lands added to the Reserve total 962 acres and include the tracts Pryor (11 acres), Key (40 acres), Dever (64 acres), Metcalf (30 acres), Meadows (685 acres), Martin (63 acres), Lipscomb (40 acres) and Meyer (29 acres).

The Reserve intends future boundary expansion to include willing seller acquisition of tracts that are environmentally significant and will contribute to the overall ecologic integrity of the Weeks Bay estuarine system. All land acquisitions planned by the Reserve will contribute to conservation in an effort to include the key land and water portions of the estuary, and adjacent transitional areas and uplands constituting to the extent feasible, a natural unit. As indicated in the Ecosystem Restoration and Conservation: Ecosystem Protection Strategies, the Reserve utilizes strategies that support management of threatened, endangered, rare or recovering species and ecologically important habitats. The recorded or possible presence of these species and habitat increases the priority of land parcels as candidate for acquisition. Parcels that serve as transitional buffers for wetlands and waterways rank as priorities because acquisition and subsequent conservation increases protection of species and habitats. Parcels contiguous with existing Reserve lands are priorities because their addition to the boundary increases habitat continuity. The Priority Acquisition Areas section of the Management Plan details large Project Areas evaluated as conservation priorities. In addition, these lands, through conservation management, will be set aside as a natural field laboratory to provide long-term opportunities for research, education, training, and stewardship.

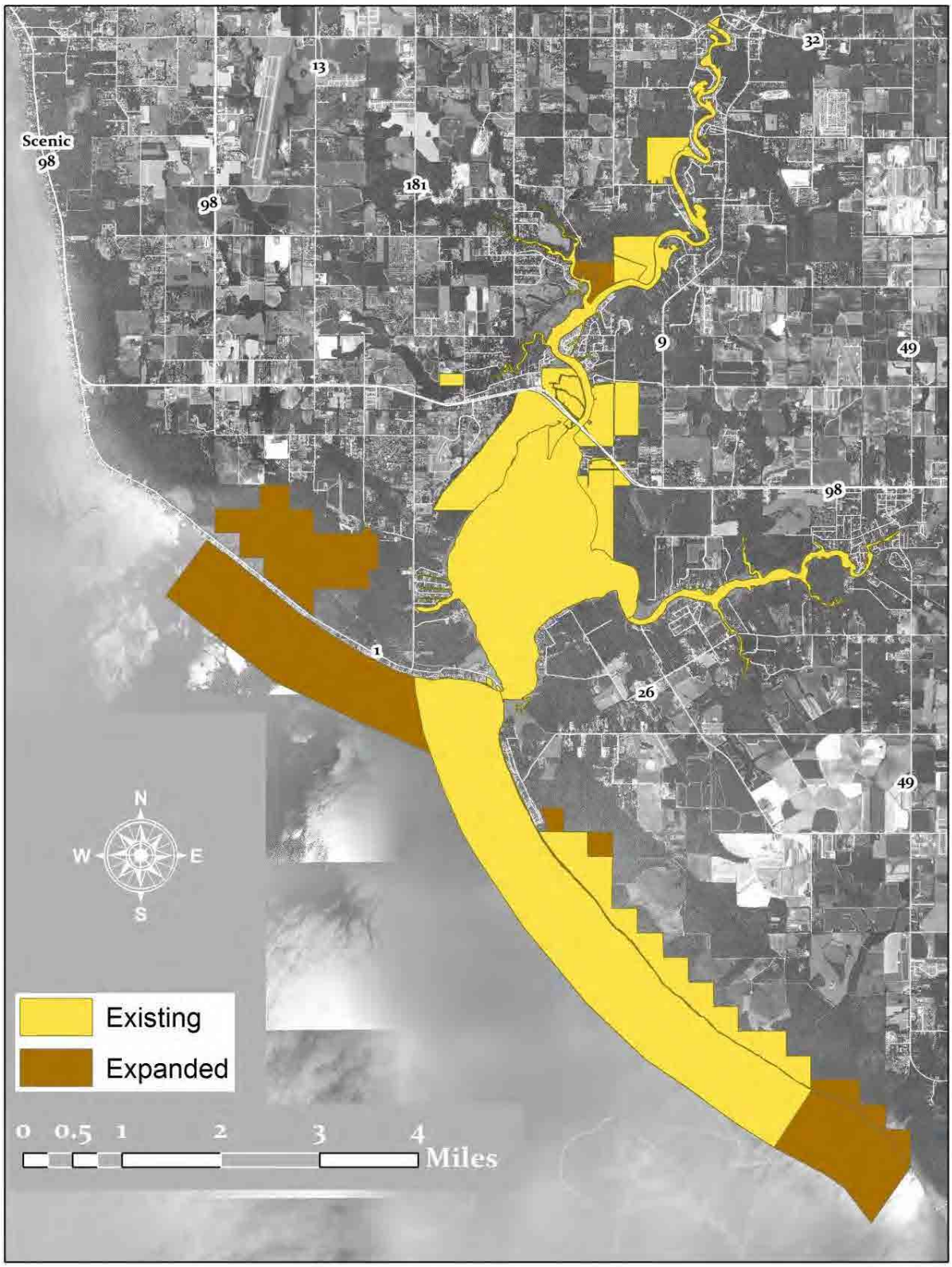

Figure 22. Weeks Bay Reserve Existing and Expanded Acquisitions.

Weeks Bay Foundation

Ten (10) tracts of land are retained by the Weeks Bay Foundation holding for the benefit of the Reserve (Figure 23). These Foundation properties are not included in the expanded boundary of the Reserve described earlier in the management plan. Upon future title transfer and subsequent approval by NOAA, these tracts could expand the area within the Reserve boundary by 384.5 acres.

- Juniper Preserve (34 acres)
- Herndon-Bon Secour Bay tract (11 acres)
- Baileys Branch Preserve (18.5 acres)
- Balzli Preserve (22.5 acres)
- Wood Hiatt – Meadows Phase II (28 acres)
- Stelzenmuller tract– Meadows Phase II (73 acres)
- Shine tract (20 acres)
- Ollinger tract – Meadows Phase II (143 acres)
- Stone Creek tract (26 acres)
- McAleer tract (8.5 acres)

Weeks Bay Foundation Juniper Bog

Figure 23. Weeks Bay Foundation Properties.

Boundary and Acquisition Objectives and Strategies

The Weeks Bay Reserve Boundary and Acquisition strategies identify objectives and specific actions that direct property procurement. Included are:

Goal: Protect and improve ecosystem health and biological diversity within the boundary of the Reserve.

Objective 1-5: Reserve prioritizes habitat areas and land tracts according to their contributions to ecosystem function for acquisition within the Weeks Bay Coastal Area.

Actions:

a. Describe land tracts by land use.
b. Identify ecologically significant estuarine habitats.
c. Identify existing and/or potentially degrading land uses.

Objective 1-6: Reserve develops land acquisition methods and conservation initiatives to protect ecologically valuable habitats and expand boundary.

Actions:

a. Organize funding strategies to provide resources for the Reserve.
b. Coordinate state and federal efforts to expand boundary of the Reserve.
c. Provide conservation mechanisms within the watershed.
d. Assist organization of community efforts towards conservation.
e. Continue to promote the use of conservation easements and other mechanisms for coastal resource management.

A pod of pelicans on Weeks Bay

Installing hurricane protection

V. FACILITIES AND CONSTRUCTION

The facilities of Weeks Bay Reserve comprise a Visitor Center, Resource Center, and Research Center. The Visitor Center is located on the south side of U.S. Highway 98, the Resource Center to the east near the bridge over Fish River, and the Research Center is located directly across U.S. Highway 98 from the Visitor Center. These general areas of the Reserve are shown in Figure 24 and are described in the 2011 Facility Master Plan document which is used to inform much of this chapter.

Figure 24. Map of Weeks Bay Reserve Facilities.

Accomplishments

Accomplishments since the last management plan in 2007 include:

- Completed construction of the approximately 5,000 ft^2 Resource Center on Weeks Bay with expansive observation decks and observation tower;
- Completed the Weeks Bay Facility Master Plan Study and Design in September 2011 that charts the course of future facilities;
- Completed construction of new research dormitory. Secured Coastal Impact Assistance Program (CIAP) funds and started architectural/construction documents for a new research dormitory;
- Recovered from Hurricanes Ivan in 2004 and Katrina in 2005 repairing waterfront docks and fishing piers; and
- Repaired and replaced bulkhead and boardwalk at the Fish River Marina boat basins with federal grant and state matching funds.

Current Facilities

The Reserve, following designation in February 1986, moved operations into its first onsite facility in November 1992. Weeks Bay Reserve administrative offices are located in a 4,500 ft^2 Visitor Center located on U.S. Highway 98 (Figure 25). This center currently serves to house staff positions and provides exhibits and access for visitors to learn more about the estuarine habitats found at Weeks Bay. It includes a classroom, laboratory, conference room, and exhibit area containing live animals, restrooms, and storage space. A 3,600 linear ft. elevated boardwalk with an observation deck overlooking Weeks Bay was completed behind the Visitor Center in 1996. In August 1996, a 16 x 20 ft^2 portion of the observation deck was covered with a pavilion to provide shelter for visitors.

A second elevated boardwalk provides access to citizens who are interested in visiting the Weeks Bay Pitcher Plant Bog. This boardwalk and overlook/observation area is accessible from a parking lot provided by Baldwin County. Construction of a two-story, 3,500 ft^2 Research & Education Facility was completed in 1997. This facility, directly adjacent to the Visitor Center, contains an auditorium for educational programs and additional office space (Figure 26). The Resource Center, located near the Fish River bridge
(Figure 27), was constructed on this site in 2008 replacing the buildings destroyed by Hurricane Ivan in 2004. The center contains facilities for meetings, CTP, educator, and community workshops, as well as public events. The Reserve completed construction of a new Research Dormitory in the spring of 2016. The facility is approximately 3,500 ft^2 in area with seven rooms containing 26 beds and contains several elements of sustainable design. Addition of the space more than doubles the previous dormitory capacity. It is anticipated that the research dormitory will provide a valuable asset to the Reserve for many years to come.

Figure 25. Weeks Bay Reserve Visitor Center.

Figure 26. Weeks Bay Reserve Research and Education Facility.

Figure 27. Arthur C. "Skipper" Tonsmeire Weeks Bay Resource Center.

Figure 28. Weeks Bay Research Dormitory.

Since the 2007 Management Plan, the Reserve has added more than 8,500 ft^2 of facilities, a 45 ft pontoon boat for estuarine outreach excursions, replaced aging vehicles by acquiring three to

support programmatic needs, and purchased an 18 ft skiff for research and access to open water sites like the Swift Tract. It is through planning and collaborative efforts that funds were acquired that allowed these accomplishments to be achieved. The Facility Master Plan will assist planning and implementation of future development and construction at the Reserve.

Facility Vulnerability

In planning for facility development, use and function determine what types of buildings are needed. Siting of facilities defines degree of effect on sensitive habitats, vulnerability to rising sea levels, and exposure to increases in storm frequency and severity of vulnerability to stressors that may or may not be related to climate. Planning efforts have taken much of this into consideration but more specific planning would be useful in predicting vulnerability and resiliency of facilities so that a minimum life span of 30 years could be achieved.

The coastal area of the Reserve presents a harsh environment for facilities. Climate change will present new challenges and exacerbate existing stressors. Facilities and construction including renovations, repairs and regular maintenance will be impacted by factors that stress the structures of the Reserve. These stressors to consider include increased precipitation, higher temperatures, sea level change, and frequency or intensity of storms. Choosing sites for new facilities or upgrades need to be considered for optimal sustainability, survivability, and accessibility while also taking into account projected use and utility for staff and partners.

In planning facilities, consideration must be made for future conditions that will be significant factors in siting of buildings, material use, footprint size, use and functionality, and impact on natural resources. The Reserve considered facility vulnerabilities in development of the Facility Master Plan.

Conservation techniques for energy and water usage as well as recycling are examples of topics addressed in this planning document for facilities and construction at the Reserve. Construction of the Resource Center increased the capacity of CTP and other education programs to meet increased demand. No additional capacity exists in the Visitor Center and Auditorium complex. These facilities include dormitory space, visitor exhibits and K-12 program classroom. On many occasions, limited space reduces the ability to schedule outreach events or researcher visits.

The new dormitory facility contains design elements to reduce energy consumption. The building's layout takes advantage of natural light, heat gain in the winter, and shading in the summer. The dormitory's south facing roof uses solar panels to supplement electrical power. The Facility Master Plan identifies potential modifications to the Visitor Center and Auditorium complex.

Planned Facilities

The Facility Master Plan provides guidance for accommodating program developments at the Reserve. As programs grow and expand, requiring new or adapted facilities, this document will assist in providing direction on the implementation of various building and construction projects. The Facility Master Plan was developed in five distinct chapters; chapter one, "Design Principles", was created as a roadmap to align the design and construction of future facilities at the Reserve with goals described in the Reserve Management Plan. The next four chapters, "Overall Site", "Visitor Center", "Resource Center", and "Research Center", describe each of the four facility activity areas of the Reserve. Each chapter includes "Existing Conditions", "Programming", "Design Concepts", and "Budget Projection" for each site over the next ten to fifteen years. The Facility Master Plan will be used to guide the Reserve with facilities and construction especially in the short to mid-term period over the next five years. Facility development will result in a need for increased staffing also addressed in the Facility Master Plan. The full Facility Master Plan document can be found online at: http://www.outdooralabama.com/weeks-bay-facility-master-plan

Exhibits

Exhibits at the Reserve offer a comprehensive look at the Weeks Bay estuary. Visitors to the Reserve see ecosystem- based topics, examples of area flora and fauna, and models demonstrating species relation to habitat. Additional exhibits showcase local geology, history, and culture. The Facility Master Plan (section 3) identifies potential enlarged and remodeled exhibit areas for the Visitor Center. Specific design for individual exhibits or remodeled areas with subject detail is not shown in the Facility Master Plan. As new areas for housing exhibits are added, specific details of exhibit topics will be designed at that time.

The Reserve plans no significant additions to educational exhibits in the Reserve Visitor Center over the next five years. Space will continue to be evaluated and consideration for reconfiguration of access and visitor flow through the center will continue in the short term. Long-term Master

Planning provides for additional space and renovations of existing facilities that could incorporate additional exhibits, but this is projected in the 10-15 year range. The Reserve makes improvement to the exterior signage way finding markers as need or funding allows.

Sustainable Building

Facility additions demand an increase in utilities and staff. The Facility Master Plan included potential future development of programs and facilities without reservation to available funds. Weeks Bay Principles in the Facility Master Plans serve as a guide for future design teams and facility operators. The Principles define appropriate ways for new and existing buildings to interact with the ecology of the Reserve. Facility Master Plan component implementation is dependent on availability of funds and resources.

Site development associated with new facilities will incorporate low impact design practices and techniques where feasible. All new facilities will incorporate designs for energy efficiency that maximize daylight while shielding windows from direct sun to minimize heat gain. Future construction will include renewable energy designs as funding allows. Possible renewable energy sources include but are not limited to: wind energy, solar hot water heating, geothermal HVAC, geothermal hot water heating, and photovoltaics.

Facilities and Construction Objectives and Actions

The Weeks Bay Reserve Facilities and Construction follow a set of objectives, and actions in support of the Reserve goals. These are derived chiefly from the 2011 Facility Master Plan.

Goal 3: Promote education, training, stewardship, and scientific research focusing on estuarine ecosystems.

Objective 3-9: Reserve uses practices where possible in infrastructure development that have a low impact on the ecosystem.

Actions: Site Development, Restoration, & Protection

a. Balance development and restoration.
b. Prevent light pollution.
c. Implement stormwater sensitive site design.
d. Implement Stormwater Pollution Prevention Practices (SWPPP).
e. Promote reduction in non-point source pollution in facilities management.

Actions: Water Conservation and Re-Use

a. Demonstrate conservation methods in new construction;
b. Retrofit existing facilities to reduce water use;
c. Reduce exterior water use.
d. Conduct water collection, re-use, and treatment.

Actions: Efficient Energy Use

a. Use cool day lighting as appropriate.
b. Be energy efficient - new construction.
a. Use energy efficiency- retrofits.
b. Utilize renewable energy production as appropriate.

Actions: Building Materials and Resource Conservation

a. Plan for construction waste reduction and recycling.
b. Practice on-site salvage and re-use.

c. Pursue additional operational waste reduction.
d. Establish sustainable purchasing.
e. Pursue resilient facilities.

Actions: Creating Healthy Indoor Environments

a. Establish efficient climate control.
b. Establish cool day lighting.
c. Promote access to views.
d. Utilize low emitting materials.
e. Utilize humidity control as appropriate.

Goal 3: Promote education, training, stewardship, and scientific research focusing on estuarine ecosystems.

Objective 3-10: Reserve programs improve and enhance existing resources through implementation of the Facility Master Plan.

Actions: Overall Site

a. Provide signage to identify boundaries of Reserve for highway travelers.
b. Create and install new educational markers for water boundaries along the river and bay.
c. Establish boundary and perimeter markers.
d. Define demonstration zones.
e. Create natural edge areas along US 98 as appropriate.

Actions: Visitor Center - Site

a. Rework existing parking area to provide permeable or minimum discharge from site.
b. Provide defined area for welcoming/orientation/picnics for school groups.
c. Adjust boardwalk/trailhead flow away from main flow of visitor center.
d. Provide wayfinding elements to segregate public from staff and clarify entrance.
e. Provide new maintenance/grounds keeping support building.

Actions: Facilities – Visitor Center

a. Enhance visitor experience by revising visitor flow.
b. Segregate visitor flow and administration/research functions.
c. Segregate large group flow and individual visitors.
d. Revise visitor flow to improve exhibit visibility.
e. Evaluate existing systems to reduce energy and water consumption as practical.

Actions: Resource Center Site

a. Minimize flooding of site by elevating parking area as appropriate;
b. Reduce muddy runoff from site;
c. Define public use areas for boaters, fisherman, and visitors to Resource Center;
d. Use Landscaping elements to establish "Shade Zones" to provide micro-climate cool; and
e. Provide defined parking for 40 +/- vehicles at Resource Center.

Actions: Research Center

a. Construct new laboratory facility.
b. Construct new boat and maintenance facility.

References

WBNERR. 2011. Weeks Bay Reserve Facility Master Plan Study and Design. Weeks Bay National Estuarine Research Reserve. NOAA grant NA08NOS4200308. Fairhope, AL.

Rainbow over Weeks Bay Reserve

Studying fire/hurricane history of marsh

VI. RESEARCH AND MONITORING

The National Estuarine Research Reserve System's mission provides that reserves are protected and managed to afford opportunities for long-term research. Research at each reserve is designed to fulfill the Reserve System goals as defined in the regulations (15 Part 921(b)):

- Address coastal management issues identified as significant through coordinated estuarine research within the system;
- Promote federal, state, public and private use of one or more reserves within the system when such entities conduct estuarine research;
- Conduct and coordinate estuarine research within the system, gather and making available information necessary for improved understanding and management of estuarine areas.

To sustain these system goals, the 2011-2016 Reserve System Strategic Plan outlines research objectives that support the focus areas of climate change, habitat protection, and water quality:

- Expand capacity to monitor changes in water quality and quantity, habitat, and biological indicators in response to land use and climate change drivers.
- Improve understanding of the effects of climate change and coastal pollution on estuarine and coastal ecology, ecosystem processes, and habitat function.
- Characterize coastal watersheds and estuary ecosystems and quantify ecosystem services to support ecosystem-based management of natural and built communities.
- Increase social science research and use of social information to foster coastal stewards that value and protect estuaries.

The Reserve System's research and monitoring programs provide the scientific basis for addressing coastal management challenges. Reserve research and monitoring activities provide valuable information about estuarine resources to increase understanding and awareness of their importance to a variety of audiences including scientists, resource managers, educators, and the general public.

Reserve System Research Programs

Currently, there is one focused effort to fund estuarine research in the Reserve System. The National Estuarine Research Reserve System Science Collaborative, a partnership between NOAA and the University of Michigan, is a program that focuses on integrating science

into the management of coastal natural resources. Currently administered through the University of Michigan, the program integrates and applies the principles of collaborative research, information and technology transfer, graduate education, and adaptive management with the goal of developing and applying science-based tools to detect, prevent, and reverse the impacts of coastal pollution and habitat degradation in a time of climate change. The program is designed to enhance the Reserve System's ability to support decisions related to coastal resources through collaborative approaches that engages the people who produce science and technology with those who need it. In so doing, the Science Collaborative seeks to make the process of linking science to coastal management decisions, practices, and policies more efficient, timely, and effective and share best practices and examples for how this can be done.

Reserve System-Wide Monitoring Program

The System-Wide Monitoring Program provides standardized data on national estuarine environmental trends while allowing the flexibility to assess coastal management issues of regional or local concern and is guided by the Reserve System-Wide Monitoring Program Plan. The principal mission of the monitoring program is to develop quantitative measurements of short-term variability and long-term changes in water quality, biological systems, and land use/ land cover characteristics of estuaries and estuarine ecosystems for the purposes of informing effective coastal zone management. The program is designed to enhance the value and vision of the reserves as a system of national references sites and focuses on three ecosystem characteristics:

1. *Abiotic Characteristics*: Abiotic measurements are supported by standard protocols, parameters, and approaches that describe the physical environment including weather, water quality, hydrological, and sediment related parameters. The monitoring program currently provides data on water temperature, specific conductivity, percent saturation of dissolved oxygen, pressure, pH, turbidity, salinity, concentration of dissolved oxygen, and pressure corrected water depth. Meteorological data include air temperature, relative humidity, barometric pressure, wind speed, wind direction, rainfall, and photosynthetically active radiation (PAR). In addition, the program collects monthly nutrient and chlorophyll a samples and monthly diel samples at one SWMP data logger station. Data is Federal Geographical Data Committee compliant and available via the *Reserve System Centralized Data Management Office*.

SWMP abiotic monitoring station

2. *Biotic Characteristics*: As funds are available, reserves are focusing on monitoring habitats and biodiversity.

3. *Watershed and Land-use Classifications*: The Reserve System is examining the link between watershed land use and coastal habitat quality by tracking and evaluating changes in coastal habitats and watershed land use/cover. This element is guided by the Reserve System Habitat Mapping and Change Plan.

Building on these foundational elements, the Reserve System is developing a network of sentinel sites and the capacity to assess the impact of sea level/lake level changes and inundation on the diverse set of coastal vegetative habitats represented in the system. Reserves are implementing a suite of activities, as described in the 2016 Reserve System Sentinel Site Application document, to assess the relationship between vegetative communities (marsh, mangrove and submerged aquatic vegetation) and sea level. Reserves are adding surface elevation tables and monitoring pore water chemistry along vegetation monitoring transects and linking their System-Wide Monitoring Program to a network of specialized spatial infrastructure to allow precise measurement of local sea level and lake level changes and subsequent impacts to key habitats. The Reserve System is working in partnership with NOAA's National Geodetic Survey and the Center for Operational Oceanographic Products and Services to support the development of sentinel sites.

Measuring HAB effects *in situ*

Reserve System Research Funding Priorities

Federal regulations, 15 C.F.R. Part 921.50 (a), specify the purposes for which research funds are to be used:

- Support management-related research that will enhance scientific understanding of the Reserve ecosystem;
- Provide information needed by Reserve managers and coastal ecosystem policy-makers; and
- Improve public awareness and understanding of estuarine ecosystems and estuarine management issues.

The NERRS Strategic plan identifies three strategic areas of focus and investment that are also the priority focus areas of the NERRS Research and Monitoring Plan:

- Climate Change,
- Water Quality, and
- Habitat Protection

Weeks Bay Reserve Research and Monitoring

Weeks Bay watershed is rapidly urbanizing. This watershed drains directly into the Weeks Bay Estuary. The population of the region has increased substantially during the past 12 years. Urbanization and resultant anthropogenic eutrophication is one of the prescribed management concerns of most all coastal ecosystems. Land use changes in the watershed may potentially be the greatest threat to coastal resources. Water quality threats to the Weeks Bay watershed include increased nutrient concentration, increased incidence of hypoxia, and harmful algal blooms (HABs).

Reserve data collected by SWMP and from previous research, show high nutrient loading of the estuary and a high trophic transfer of secondary productivity. *The Sentinel Sites Program Guidance for Climate Change Impacts* (NOAA/NERRS 2012) recommends all programs within the Reserve System consider local climate change in planning documents and in future projects.

A series of massive HABs occurred in waters of the Reserve in recent years. SWMP hydrographic data from Weeks Bay during summer months is a continuous record of hyperoxic and hypoxic events. Several fish kills occurred, and laboratory analysis confirmed the presence of high levels of a toxin during one HAB event. In January 2008, a bloom reached incredible proportions with counts of *Prorocentrum minimum* above 2 billion cells per liter. Providing answers regarding HABs is an absolute necessity to those people responsible for management of the northern Gulf of Mexico coastal community.

Plant communities become more susceptible to invasion by non-native plants when exposed to

fluctuations in resource availability. Nutrient input is often linked to plant invasion and loss of native plant dominance in aquatic systems (Miller, et al. 2011). Additionally, yearly and seasonal variations in environmental conditions (e.g., temperature, pH, salinity, dissolved oxygen, light intensity and attenuation) are important. Together with an influx of nutrients from stormwater runoff, conditions favor invasive plant establishment and growth. The threat of invasive exotic species and the potential loss of native species is linked to coastal eutrophication, habitat loss due to changes in land use land cover (LULC) and urbanization, and ultimately to anthropogenic climate change.

In the face of these threats, the Reserve's Research and Monitoring Program seeks to determine best management practices for Alabama's valuable coastal and estuarine habitats through careful monitoring of biotic and abiotic conditions and through applied research. The Reserve Research Program utilizes this information to assist management decisions that address a variety of issues. Over the years, these issues included dead end canals, HABs, fish kills, shoreline construction, sedimentation, nutrient loading, and establishing a base line for change.

The Reserve is working to fully implement the Sentinel Site Program. Sentinel Sites will provide a baseline that will allow measure of change over time. The Reserve continues to work towards becoming a fully functional Sentinel Site as required by NERRs Climate Change Initiative. To date, steps completed at the Reserve to become a Sentinel Site include:

- Installation of vegetative transects;
- Installation of Sediment Elevation Tables (SETs);
- Working boardwalk for SET and transect access;
- Installation of National Water Level Observation Network (NWLON) tide station; and
- Leveling SETs to tide station.

Map of SETs along the marsh and upland transect

Partnerships with the USGS, NOAA's CO-OPs program, the Grand Bay NERR, researchers from the University of Alabama and Southern Illinois University, and volunteers from the AmeriCorps and Outward Bound programs helped accomplish these tasks. Research staff at the Reserve intends to continue with these partnerships and build new collaborations with the Geological Survey of Alabama (GSA) and the Alabama Department of Transportation (ALDOT).

Establishment of the Sentinel Site, working with research institutions on key issues, continuing SWMP monitoring, and coordinating with agency partners assist in taking science to management in making critical decisions to protect resources in the Weeks Bay Coastal Area. It is the science of the Reserve that can assist in making best decisions for the future. The role of the Reserve is essential in making the critical decisions that must be used to best manage coastal resources. Research and monitoring at the Reserve provide a baseline and measure of both biotic and abiotic factors that make up the health of the ecosystem.

Accomplishments

Accomplishments at Weeks Bay Reserve in research and monitoring include:

- Participated in more than 37 research projects from which at least 29 peer-reviewed journal articles or reports were published;
- Established the Sentinel Site and completed actions in becoming fully functional;
- Collected 20 years of continuous SWMP data at four sites and transmitted to CDMO;
- Partnered with more than 20 Institutions doing research in Reserve in last five years;
- Conveyed applied science research to coastal managers on best management practices;
- Research topics that address NOAA's research priorities completed and utilized; and
- Hosted visiting researchers in dormitory the majority of days during the year.

Integrated Success: Cross-Sector Cooperation

Science Collaborative

The Research Sector benefitted from the collaborative investigation process. New partnerships were added and established relationships with Dauphin Island Sea Lab and nearby universities were strengthened. Research at canal sites assessed marsh restoration strategies and their effects on nutrient exchange in the rhizosphere. Results showed that projected sea level rise would not affect greatly the health or nutrient removal capacity of restored marsh. Restored marshes can be effective filters of nutrient pollution.

The social science research conducted during the project indicated that the public cares about restoration and conservation projects. This information will be used to better design and communicate the benefits of restoration projects to a broad spectrum of end-users. Success of this project resulted funding from the Science Collaborative to continue marsh restoration research.

Research Program Context

The geographic scope of the Reserve Research Program is concentrated within the management boundaries of the Reserve as well as the watershed of Weeks Bay. Some projects will be supported that investigate coastal Alabama and coastal ecosystems in general. Projects that investigate issues in freshwater streams and in wetlands that are not estuarine are promoted and supported. For example, there is an ongoing project investigating the effects of headwater wetland degradation on nitrogen loading in the watershed. In the past five years, research at the Reserve has included projects investigating the source, fate, and effects of non-point source nutrient and metals pollution; modeling the effects of land use/land cover changes and hydrologic degradation at the landscape level; habitat diversity and resilience in relation to natural and anthropogenic stressors including climate change; and best practices for management and restoration strategies for coastal ecosystems.

Marsh organs are used to study the effects of sea level rise on plant communities

Research Program Capacity

The Reserve Research Program is staffed primarily by the Research Coordinator; however, other staff are often involved with research that addresses areas of their concern or expertise. The Research Coordinator promotes, supports, and initiates research in all of the pressing research areas of concern and coordinates the efforts of visitors from the surrounding research community. The Watershed Coordinator at the Reserve promotes, supports, and initiates research in the areas of watershed issues such as storm water management, coliform source tracking, and determination of total maximum daily loads (TMDLs). The Stewardship Coordinator promotes, supports, and initiates research in the areas of restoration ecology and invasive species management. The Research Coordinator, Watershed Coordinator and Stewardship Coordinator often collaborate with the Coastal Training Program and the Education Staff on projects involving public outreach and training. The Reserve GIS Specialist works with the Research Coordinator and other staff on projects involving remotely sensed imagery and mapping. This integration among Reserve staff best supports the mission and goals of the Reserve and the NERR System as a whole.

The Reserve equips the laboratory for the determination of all typical water quality parameters including spectrophotometric and fluorometric measurements of chlorophyll and chemical nutrients. Equipment to produce type III distilled/deionized water is available along with the typical compliment of basic benchtop laboratory tools such as a pH meter, Mettler balances,

muffle furnace, drying oven, centrifuges, water bath, autoclave, vacuum pumps and filtration equipment. The Reserve maintains light, phase contrast and stereoscopic microscopes. The Reserve laboratory houses a registered herbarium with over 1000 species of plants found in the Reserve and surrounding habitats. This herbarium is the only one in the NERRS. Scientists and volunteers collect and catalog specimens to assist in identifying plant species for use in future habitat restoration. The Reserve maintains logistical equipment for research including several boats ranging from small skiffs and canoes to a large pontoon boat, a 4-wheel drive truck equipped with a winch, and 4-wheel drive ATV. The Reserve maintains a research dormitory for short-term or extended lodging of visiting researchers and can handle groups of up to 26 people at a time.

Researcher conducts nutrient analysis in the Weeks Bay laboratory

Weeks Bay Research Program Delivery

Reserve implements NERR system-wide programs. The Research Program is challenged, needing additional staff and equipment. With this acknowledged, Reserve SWMP will upgrade hydrographic monitoring to YSI EXO datasondes which provide a higher quality data stream with less maintenance; weather station sensors; and add a total nitrogen component to the Nutrient Monitoring Program to satisfy the demands of the wider research community.

The Reserve works towards becoming a fully functional Sentinel Site as per the NERRS Climate Change Initiative. At present, staff completed installation of vegetative transects with established SETs associated, a National Water Level Observation Network (NWLON) station and a Continuously Operating Reference Stations (CORS) site. With assistance from other agencies, staff-leveled SETs and completed transect elevation protocols in 2014. The Reserve completed its Sentinel Site Plan in 2015. The plan is under review by NOAA.

Local and regional visiting research support will be that which proposes to answer priority issues within the Reserve and Alabama Coastal Area. Weeks Bay Reserve will continue to support research that increases the ability to effectively manage and conserve coastal ecosystems. Lodging, laboratory space and logistical equipment (boats, etc.) are provided to researchers working on priority projects within the Reserve. Staff and volunteer support are also available. The Reserve has an extensive Geographic Information Systems (GIS) database and skilled technical assistance will be available for visiting researchers.

Priority Issues

The existing knowledge base produced by past research at the Weeks Bay Reserve and the priorities advanced by the NERRS Research and Monitoring Plan suggest obvious research needs.

The most pressing research issues at Weeks Bay Reserve are:

- Nutrients (N and P) from surface water, runoff and groundwater impacts, loading, sources and sinks;
- Carbon cycle studies including effects of current management and restoration of Weeks Bay habitats on the overall carbon cycle;
- Phytoplankton assemblage dynamics, trophic interactions, factors controlling primary productivity and HABs;
- Effects of eutrophication on secondary productivity;
- Identification of possible trophic thresholds via monitoring of nutrient and carbon cycle inputs and disruptions (i.e. dystrophy);
- Effects of current management and restoration activities on biological community structure and function;
- Long-term monitoring of key estuarine assemblages (nekton, plankton, benthos, submerged and emergent vegetation);
- Population dynamics and recruitment studies of key estuarine species;
- Documenting species of concerns (i.e. endangered, threatened) including population dynamics and long-term monitoring;
- Long-term monitoring of both impacted and restored habitats;
- Management strategies for restored habitats;
- Effects of land use/land cover that affect hydrologic processes;
- Regularly updated surveys of land use that can be compared to previous surveys to produce a long-term monitoring of land use within the watershed;
- Comprehensive rainfall monitoring throughout the watershed coupled with streamflow gauges at the sub-watershed level;
- Accurate, continuous flow data for the entire watershed and the mouth of Weeks Bay;
- Rainfall incorporation rate differences between various land covers within the watershed, (i.e. a place-based comprehensive model of runoff and incorporation);
- A comprehensive economic and public health cost analysis of wetland loss and increases in impervious surface;
- Climate change and sea level rise and corresponding effects on coastal resilience; and
- Socioeconomic studies of user groups and stake holders in the community.

Visiting researchers may certainly suggest projects on issues that have not been listed. Weeks Bay Research Staff will enthusiastically support those projects in the interest of promoting a

knowledge base perhaps completely unforeseen.

Priority Audiences

The research community surrounding the Reserve consists of university research programs including the Dauphin Island Sea Lab (DISL), federally funded agencies such as the Mobile Bay National Estuary Program (MBNEP) and Mississippi Alabama Sea Grant Consortium (MASGC), and various not for profit organizations. Weeks Bay Reserve works in collaboration with and/or in support of this community. The aim of this collaboration and support at the Reserve is to increase the knowledge of coastal ecosystem form and function to allow for better protection and management of these valuable assets for the State of Alabama.

Program Alignment and Delivery

Weeks Bay Reserve will continue to work towards full implementation of the Sentinel Sites Program. This will be done in accordance with the Sentinel Sites Program Guidance for Climate Change Impacts (NOAA/NERRS 2012), through the input from the Sentinel Site Guidance Committee, and with input from our state and regional partnerships. Weeks Bay Reserve will continue to implement SWMP and to address priority issues in the face of reduced funding. In 2007-2008, Weeks Bay Reserve began to monitor biomass structure of the planktonic algal assemblage with the help of a partnership with the ADPH and researchers from the DISL. This monitoring project had to be suspended due to loss of funding and personnel. The Reserve's research staff hopes to restart and continue this important project through yet to be determined funding sources and new partnerships.

Program Needs and Opportunities

The ability to monitor the planktonic algal assemblage within Weeks Bay would allow research staff to integrate SWMP abiotic monitoring with the trophic system. The interaction of changes to the hydrology of the watershed, nutrient loading, and food web dynamics is exhibited in the producer assemblage. Accurate long-term monitoring of this assemblage requires an investment in manpower and infrastructure. Reserve Research staff will bring this about with external funding working within the framework of SWMP Biological Monitoring Plan.
Reserve staff will continue to work towards the full integration of the SSAM1 (Sentinel Site Application Module 1). The data stream from SSAM1fills a large gap in monitoring data resulting in an increase in accuracy of sea level rise models. Accurate models using Reserve data help resource managers make better decisions and improve coastal resilience in the face of local climate change impacts.

There is one important infrastructure gap in the Reserves monitoring program. Researchers have been forced to estimate the volume of exchange within the Bay. For example, nutrient loading models for the Weeks Bay system estimate volume inputs using 2 USGS gauges in the upper Fish and Magnolia watersheds. These gauges represent only a small percentage of the actual watershed. Rainfall measured in the watershed varies greatly from sub-watershed to sub-

watershed. The installation of an accurate flow metering station at the mouth of Weeks Bay and carefully placed rainfall monitoring gauges in the sub-watersheds feeding the Fish and Magnolia River would greatly increase our ability to estimate nutrient loading, the effects of ongoing hydrologic changes, and potential flood prone areas.

The primary need for the continuation of the Reserve's Research and Monitoring program is increased staffing support. Research staff has been challenged to begin SSAM1, to maintain SWMP, and to continue support of both internal and visiting research. The loss of the SWMP Research Technician position created a shortfall in manpower. With these challenges, the Reserve Research staff intends to address HABS monitoring and SSAM1 via partnerships with Grand Bay NERR, United States Geological Survey (USGS), Geological Survey of Alabama (GSA), NOAA Center for Operational Oceanographic Products and Services (CO-OPS), Alabama Department of Transportation (ALDOT), local and regional universities, and the DISL. Reserve staff will attempt to address shortfalls in manpower with externally funded internships and by filling in with volunteers.

Program Monitoring and Evaluation

Current SWMP evaluation is accomplished through the efforts of the SWMP Oversight Committee with input from the Central Data Management Office (CDMO). Research projects are entered into the NERRS research database. Reserve research staff hopes to accomplish the initiation of three new research projects per reporting year addressing the priority issues stated previously.

Program Impacts and Dissemination of Program Results

The ultimate goal of the Reserve Research Program is to improve the management of Alabama's coastal and estuarine habitats. This will be accomplished by giving managers and decision-makers scientifically accurate information.

In the past five years, research from Weeks Bay was used to:

- determine pier impacts for the Fish and Magnolia Rivers,
- guide the acquisition of coastal lands for protection,
- plan fire management of pitcher plant bogs and marshes, and
- guide our efforts to reduce exotic invasive species.

In the next five years, the Reserve plans to use research to guide the restoration of coastal and estuarine holdings in the face of climate change and coastal erosion. Reserve research has been disseminated directly to coastal managers and decision-makers in dedicated workshops via the Coastal Training Program (CTP) and will continue to use this avenue. Reserve research is made available to the wider research community via peer reviewed literature and technical reports. Weeks Bay Reserve staff hosted research symposia to highlight research within the Reserve on

two previous occasions and plans to hold a new symposium within the next five years. Researchers also participate in local, regional, and national symposia to disseminate the results of their work.

PRIORITY DELIVERY: SENTINEL SITE BUILDOUT

Land use in the Weeks Bay watershed is changing rapidly. Population is growing and with this growth comes increased urbanization. Rapid development comes with a loss of wetlands and an increase in impervious surfaces causing, in turn, an increase in both flooding and drought. Flooding causes increased erosion and sediment pollution of the Bay. Drought increases the resident time of the water moving through the Bay which has been associated with Harmful Algal Blooms (HABs). Climate change certainly interacts with changes in land use. The effects of these interactions are immensely important in the management decisions we all need to make along Alabama's Gulf Coast. The NERRs Sentinel Site Program is designed to measure the important parameters of climate change and sea level rise. Weeks Bay Reserve Research Staff will continue to build out the Sentinel Site Program by creating a marsh Digital Elevation Model (DEM) and begin monitoring the vegetation along the Sediment Elevation Tables (SETs) already installed. Weeks Bay Research Staff will link these parameters with the effects of rapid development and urbanization of the watershed through the existing System-Wide Monitoring Program (SWMP). This linkage gives researchers the ability to measure sediment levels, nutrient loading, sea level, groundwater and variation in vegetation along transects from the Bay to the uplands and inform future management of our valuable Alabama coastline.

Real time datalogger

Research and Monitoring Objectives and Actions

A major priority of reserves is to coordinate, facilitate and conduct research to provide information needed to manage coastal ecosystems. The objectives and actions of the Weeks Bay Reserve Research and Monitoring Strategic Plan are:

Goal 1. Protect and improve ecosystem health and biological diversity within the boundary of the Reserve.

Objective 1-8: Applied research and monitoring projects improve methods of resource protection.

Actions:

a. Establish a priority list of applied research and monitoring themes consistent with the goals of the Reserve.
b. Use priority list to seek outside research and monitoring or to initiate internal applied research and monitoring projects.
c. Establish and implement procedures using scientifically accepted or standard methods to monitor and collect the appropriate data from applied research and monitoring projects conducted at the Reserve.
d. Continue to cooperate with appropriate federal, state, and local agencies and watershed stakeholders to address federally listed impaired waterways and to establishment Total Maximum Daily Load implementation plans.
e. Establish flow monitoring equipment near the mouth of Weeks Bay in order to facilitate accurate modeling of watershed hydrologic variables.

Goal 2: Inform decisions affecting estuarine and coastal watersheds.

Objective 2-6: Decision-makers access baseline data on habitats and water quality through SWMP Centralized Data Management Office (CDMO): http://cdmo.baruch.sc.edu/

Actions:

a. Create and update numerical databases that include information on habitats and water quality making these available to entities outside of the Reserve.
b. Create and update georeferenced data layers based on habitat and water quality data sets.
c. Incorporate data collected through the System-Wide Monitoring Program into site specific GIS format.
d. Ensure adequate training in GIS for the Reserve Staff.

e. Create products for various user groups.

Objective 2-7: Governments and agencies and other nongovernmental partners benefit from the translation and dissemination of Reserve data.

Actions:

a. Establish and host research forums open to coastal resource managers and the general public with active researchers presenting quality assured or peer-reviewed data from research and monitoring projects.
b. Publish articles in local media and newsletters outlining research and monitoring activities.
c. Present research and monitoring data at professional meetings or other appropriate public events.

Goal 3: Promote education, training, stewardship, and scientific research focusing on estuarine ecosystems.

Objective 3-11: Independent researchers receive resources, support and data for projects within the Reserve and associated areas.

Actions:

a. Evaluate research proposals for consistency with Reserve goals and to ensure that the proposed research will not interfere with other research at the Reserve.
b. Provide information and data housed at the Reserve to researchers if requested to assist research, including maps, species lists, charts, access to reserve boats, field gear, lodging, computers, laboratory, equipment, etc.
c. Provide use of research vessels to visiting researchers. A Reserve staff person shall pilot all Reserve vessels unless researchers are qualified, licensed vessel operators, knowledgeable in proper small boat handling and safety, and receive prior permission.
d. Continue vertical control efforts as they relate to NERRS Sentinel Site guidance with the goal of complete compliance as a NERRS Sentinel Site including the following:

    1. Complete Sentinel Site Plan;
    2. Complete GPS vertical survey of SETs;
    3. Bring vegetative transects into compliance with NERRS Sentinel Site guidance;
    4. Creation of digital elevation models using RTK GPS; and
    5. Complete GPS surveys of SWMP stations.

References

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Marsh organs are used to study the effects of sea level rise on plant communities

VII. EDUCATION

Squeaky Sneakers kids view zooplankton

The National Estuarine Research Reserve System's mission includes an emphasis on education, interpretation, and outreach. Education at each reserve is designed to fulfill the Reserve System goals as defined in the regulations (15 CFR Part 921(b)):

- Enhance public awareness and understanding of estuarine areas and provide suitable opportunities for public education and interpretation;
- Conduct and coordinate estuarine research within the system, gathering and making available information necessary for improved understanding and management of estuarine areas.

To sustain these system goals, the 2011-2016 Reserve System Strategic Plan outlines education objectives that support the focus areas of climate change, habitat protection and water quality:

- Enhance the capacity and skills of teachers and students to understand and use Reserve System data and information for inquiry-based learning; and
- Increase estuary literacy and promote active stewardship among public audiences through the development and delivery of tools and programs addressing climate change, habitat protection, and water quality.

The Reserve System provides a vehicle to increase understanding and awareness of estuarine systems and improve decision-making among key audiences to promote stewardship of the nation's coastal resources. Education and interpretation incorporate science-based content into a range of programs and methodologies that are systematically tailored to key audiences around priority coastal resource issues.

Reserves conduct formal and informal education activities, as well as outreach activities that target culturally diverse audiences of educators and students, environmental professionals, resource users and the general public. Education and public programs, interpretive exhibits and community outreach programs integrate elements of Reserve System science, research and monitoring activities and ensure a systematic, multi-faceted, and locally focused approach to fostering stewardship.

The reserves system is committed to preparing tomorrow's future leaders with the knowledge and understanding of our nation's oceans and coasts to be responsible stewards. To fulfill this commitment, the Reserve System has created the K-12 Estuarine Education Program (KEEP) to

increase the estuary literacy of students, teachers and the general public. The KEEP Program helps students and teachers learn about essential coastal and estuarine concepts, develop data literacy skills and strengthen their critical thinking, team building, and problem-solving skills. K-12 and professional development programs for teachers include the use of established coastal and estuarine science curricula aligned with state and national science education standards and frequently involves both on-site and in-school follow-up activity. Community education is another priority for the Reserve System.

Community education programs foster behavioral change to promote resource conservation. These programs work with audiences whose choices directly impact the integrity of our estuaries and their associated watersheds.

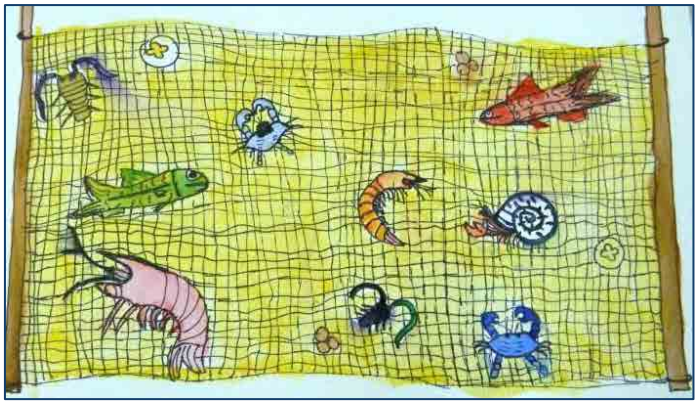
Weeks Bay Education

Weeks Bay Reserve educational programming is comprehensive, involving K-12 student and teacher education, place-based and off-site outreach, and opportunities for self-guided enrichment. The Reserve integrates education across all sector programming, often relying heavily on volunteers and partners to maximize effectiveness. The Reserve is committed to the transfer of knowledge and inspiring behavior change to youth and adult audiences.

Accomplishments

Since 2007, Weeks Bay Reserve education programs and staff have been part of local and nationally recognized program development and success. These include:

- Received a National Wetlands Education Award and a regional Gulf Guardian Award for partnership;
- Conducted a professional teacher development market analysis and needs assessments;
- Conducted needs assessment for community education and outreach;
- Served as lead for Estuaries 101 (E101) national middle school curriculum development; and
- Implemented entire K-12 Estuary Education Program.



Nature artwork created by Squeaky Sneakers student

Program Context

Weeks Bay Reserve designs programs to teach target audiences about the importance of estuaries and demonstrate appropriate actions that individuals and communities can take to help protect these valuable habitats. Target audiences are diverse and include educators, K-12 students, Reserve walk-in visitors and volunteers, Weeks Bay Foundation members, local residents, civic organizations, senior citizen groups, religious organizations, youth organizations, and other community members. The Reserve recruits underserved and underrepresented populations to participate especially in summer education programming.

Reserve education programs address a large geographic scope to include Baldwin, Clarke, Mobile, Monroe and Washington Counties in Alabama, coastal Mississippi, and northwest Florida. The Reserve receives walk-in visitation that reflects international, national, and local reach.

Additionally, Reserve staff members are regularly involved in state, regional and national education initiatives.

Since 2007, Weeks Bay Reserve conducted several assessments used to inform and deliver current and future educational programming (copies available upon request at the Reserve). These assessments included:

- A 2009-2010 market analysis assessed which local organizations conduct teacher professional development training. The analysis determined what topics are being taught. The assessment included a gap analysis to determine which audiences and topics are not currently being addressed.
- A 2009 K-12 curriculum evaluation conducted for students who visit Weeks Bay Reserve. The Education Program used results to determine if programs reach the goals of teaching students: 1) What an estuary is, 2) Why estuaries are important, and 3) What students can personally do to help protect estuaries. Based on results, recommendations were made to improve activities to better address the overall goal of the K-12

Integrated Success: External Partnerships

Squeaky Sneakers

Since 2010, Weeks Bay Reserve has partnered with the Eastern Shore Art Center to deliver experiential environmental education. Squeaky Sneakers, an interdisciplinary program that marries art and informal science education as a teaching tool, was so named because participants' wet shoes "squeak" while exploring the outdoors.

Over 1200 participants learned about estuarine conservation and coastal resources. The partners reached underserved audiences to include those from the Southwest Alabama Regional School for the Deaf and Blind and the Arc of Baldwin County, an organization for intellectually challenged individuals. In 2013, Squeaky Sneakers received a 3rd place Gulf Guardian Award from the EPA Gulf of Mexico Program.

program. Adjustments are being implemented. A needs assessment that was conducted for elementary and secondary science teachers to evaluate their professional development needs in terms of topics, length of workshops, and when to offer the workshops. Results were used to plan the first Teachers on the Estuary (TOTE) workshop fall of 2010.

- A 2011 community education and outreach needs assessment that was conducted to identify local issues to include in programmatic actions.

Program Capacity

Staff supporting the education mission of the Reserve includes a Resource Teacher provided in partnership by the Baldwin County Board of Education. The Resource Teacher conducts teacher workshops as well as K-12 programs for public, private, parochial, and homeschool groups who wish to schedule a program during the school year. An Education Coordinator supports K-12 education and leads summer and community programs. Additionally, this individual is shared with the Alabama Coastal Area Management Program conducting community outreach activities. The Stewardship Coordinator supports community education and is responsible for facility displays, boardwalks, and signage. The CTP/Watershed Coordinator provides community engagement and professional development.

Reserve education coordinator demonstrates polluted runoff to students

As education and outreach is conducted in concert with other Reserve activities, volunteers and partners provide support to help reach education goals. Partners include local organizations such as the Baldwin County Board of Education, Weeks Bay Foundation, Baldwin County Soil and Water Conservation District, Alabama Coastal Foundation and other government and non-governmental organizations. These organizations provide supplies, volunteers, staff and monetary resources to K-12, summer and outreach programs. The Reserve works closely with other NERR staff on regional and national education initiatives.

Students learn about the diversity of birds and wildlife while aboard the pontoon boat

Facilities to support education and outreach at Weeks Bay Reserve include the Visitor Center, the Resource Center, Auditorium, two boardwalks, and a pontoon boat. Education programs use these resources to meet the needs of various audiences including walk-in visitors. Reserve staff conducts education offsite with participating K-12 schools. These

Student uses hand lens to see hairs inside a pitcher plant

programs involve presentations for school assemblies, hands-on activities in formal classrooms and with after school groups, and specialized programs such as "Grasses in Classes" and "Squeaky Sneakers". Additionally, a mobile Watershed Wagon delivers targeted water related outreach to K-12 and community audiences within Mobile and Baldwin counties.

Nationally identified goals, priorities, and implementation strategies guide implementation of education activities. Education programs, interpretive exhibits and community outreach programs integrate elements of NERR System science, research, and monitoring activities. This ensures a systematic, multi-faceted, and locally focused approach to fostering stewardship.

Local priority issues include habitat loss and fragmentation, species diversity, impacts of invasive plants and animals on ecosystems, community resilience, nutrient loading in the estuary and climate change impacts. As much as practical, program delivery incorporates local and topical information.

Program Delivery

K-12 Programs

Reserve priority issues along with participation of the Baldwin County Board of Education Science Supervisor guide development of education program content. The market analysis and teacher needs assessment results, funding sources for the workshop, and NERRS priority topics are used to determine teacher professional development topics and audiences. All teacher and student related programs are assessed via traditional written or verbal pre- and post-test evaluations and standardized metrics.

Teachers The Resource Teacher designs teacher professional development programs to include established coastal and estuarine science curricula aligned with state and national science education standards. Participants in Reserve K-12 and teacher professional development programs reside primarily in coastal areas of Alabama, Mississippi and Florida.

Providing training opportunities for teachers is an important component of the Reserve Education Program

Over the past few years, the Reserve implemented every component of the K-12 Estuarine Education Program (KEEP). As part of KEEP, the Reserve conducted a TOTE workshop in August 2010 using the newly developed E101 middle school curriculum. The E101 middle school curriculum aligns with the NERR SWMP and the NERR Climate Change Initiative goals. With the assistance of the Research, Stewardship, and Watershed Coordinators, the education staff plans to infuse more information about climate change and its possible effects on estuaries into K-12 programs and teacher workshops in the coming years.

Surveys of teachers and other stakeholder groups help the Reserve identify onsite educational needs. These needs include but are not limited to accommodating larger group sizes, free field-based professional development programs throughout the school year, and professional development programs offered to pre-service teachers in the area.

Students Reserve staff design student programs to provide experiential learning opportunities in grades K-12. On-site programs include facility tours and targeted curriculum activities. The Reserve evaluated curriculum to determine if the programs are reaching the goal of teaching students: 1) What an estuary is, 2) Why estuaries are important, and 3) What students can personally do to help protect estuaries. Based on the evaluation results, recommendations were made on how to improve some of the activities to better address the overall goal of the K-12 program. Adjustments are being made to improve the effectiveness of the programs.

In 2005, the Baldwin County Resource Teacher established the Baldwin County Grasses in Classes (BCGIC) program with the goal of helping students establish a sense of ownership/stewardship of our coastal environment by empowering them to take action to help restore beaches and salt marshes. Hundreds of high school students participate in the BCGIC program each year by growing native plants at their schools and planting them on public lands throughout the area.

Summer Programs In addition to formal K-12 programs during the school year, Reserve

Through seining, students learn first-hand that estuaries are productive nursery grounds for fish and shellfish

Integrated Success: External Partnerships

Grasses in Classes

The Baldwin County Grasses in Classes (BCGIC) Program coordinates and sustains a network of teachers, students, restoration specialists, and other community members to plan and implement restoration of coastal environments in Baldwin County, Alabama. The program helps restore Alabama's coastal habitats, while providing high school students with the opportunity to work with environmental professionals to solve real world ecological problems.

Over 1,000 Baldwin County students have planted more than 21,000 native plants in coastal Alabama. In 2005, the program's first year, it was recognized with an EPA Gulf of Mexico Program 3rd place Gulf Guardian Award. The program has since been sustained by numerous grant awards.

staff identified a need to offer summer programs for the community. The Education Coordinator leads the implementation, along with assistance from the Stewardship Coordinator. Since 2008, summer programs at the Reserve-delivered experiential environmental education to participants ranging in age from preschool to senior citizens with a variety of abilities and backgrounds.

Reserve summer programs strive to enhance environmental awareness and protection among culturally diverse and underserved communities. Groups including Fairhope Rotary Youth Club, Foley Snook Youth Club, Poarch Creek Indians, ARC of Baldwin County, Fairhope UMC Shepherd's Place, Camp Horizon Wilderness Program, Baldwin County Public Schools Summer Programs, and Southwest Alabama Regional School for the Deaf and Blind participated in summer programs.

Summer programs at the Reserve incorporate innovative teaching tools such as combining art and field studies to teach about local environments. This approach leads participants to better appreciate and value coastal resources and their impact on them. Not only do participants gain a general understanding of the role organisms play within the coastal ecosystem, but participants are able to take this knowledge and make better informed decisions in their daily lives in regards to issues such as recycling, marine debris prevention, prevention of erosion, and prevention of nutrient enrichment in waterways. Additionally, they gain the confidence to share this knowledge with others.

Summer programs at the Reserve depend on many partnerships and volunteers to increase its reach and effectiveness. In past years, Exxon-Mobil Community Summer Jobs Program interns, AmeriCorps Vista and NCCC members, and interns

from the Eastern Shore Art Center have assisted with summer program activities. This leveraging of resources and partnerships has produced a highly successful and sustainable program. Success of summer programs is measured in the total number of participants reached and their increased understanding of coastal topics. Increased knowledge is gauged with pre- and post-tests, either written or verbal. Additionally, student writings and/or participant feedback give great insight into what participants are learning and how they currently value coastal resources.

Students' sketching, writings, and paintings enforce concepts and knowledge learned during Squeaky Sneakers Summer Camp

Conservation Action Education and Community Outreach

The Reserve develops Conservation Action Education and Community Outreach programs to raise awareness and to foster behavior change that promotes resource conservation. These programs work with audiences whose choices directly impact the integrity of estuaries and their associated watersheds. The audience includes walk-in visitors, volunteers, Weeks Bay Foundation members, local residents, civic organizations, senior citizen groups, religious organizations, youth organizations, lifetime learning classes, and non-governmental organizations (NGOs).

Reserve staff conducted a Conservation Action Education and Community Outreach needs assessment in 2011. The results informed programmatic actions to address priority issues and local needs. Potential topics included Baldwin County history and culture, coastal geology, public land conservation in Alabama, identifying and selecting native plants, creating environmentally friendly landscapes, implementing organic gardening techniques, and creating backyard habitats. The Reserve plans to continue to ask audiences about their needs and to reach out to new audiences. Current NERRS research science and techniques, including SWMP and climate change data, are incorporated into programs whenever possible.

The Education Coordinator, Stewardship Coordinator, and Watershed Coordinator jointly share responsibility for developing and implementing this program. Within the next 5 years, this staff plans on building the capacity of the Conservation Action Education and Community Outreach

program as well as incorporating techniques to evaluate the program's success. Reserve staff anticipates developing and hosting four events per year. Evaluation techniques may include pre-program assessment of participants' current knowledge and experience with the subject matter. Post-event evaluations will be used to determine participant satisfaction with the program. Additionally, follow-up surveys will be conducted at least eight months following a program to access participants' increase in knowledge of the subject matter and their ability and willingness to apply the knowledge at their home or business. All evaluation techniques will allow staff to modify programs to better meet the needs of the audience.

Needs and Opportunities

Education staff desires to offer increased programming for pre-service (student) teachers as identified by the 2009-2010 Teacher Professional Development Market Analysis. The Education Coordinator and Resource Teacher plan to contact local and state universities to inform Education Departments about Reserve programs including field study and other opportunities. In 2015, the Education Coordinator initiated contact with the University of Mobile and provided a presentation at an event for upperclass students in elementary education. The Education Coordinator and Resource Teacher seek to create marketing materials and expand contact with universities. Integrating Reserve field trip resources and other resources like Estuaries 101 curriculum will enhance teacher training and awareness of coastal issues. The Education Sector will include other Reserve Sectors in planning education training.

The Reserve Education Sector will increase marketing of existing and new education programs. The Communication Plan includes a variety of methods to contact schools and teachers directly. Marketing opportunities encompass state and national education and science organization websites, community calendars and newsletters, local newspapers and radio stations, and social media outlets. The Reserve will strengthen its relationships with the local school system with addition of a new Resource Teacher employed by the Baldwin County Board of Education. Education staff plan to connect with regional organizations to increase the Reserve presence as an education and training leader in the community. Using existing Reserve resources like field sites, restoration sites, offsite outreach like the Watershed Wagon, summer programs and educational boat trips, Education staff will increase exposure to the community and attract additional participation.

The Reserve Facility Master Plan identifies additional facility space to support increased program capacity. Existing classroom space in the Visitor Center accommodates only 20-25 students, teachers and support staff. Restricted size of Visitor Center display areas makes instructing larger groups challenging. Groups are not able to congregate within view or earshot of instructor. Currently, the Reserve accommodates large groups by splitting into smaller units. This process requires the use of staff members from other sectors and volunteers to participate. Education staff will continue to identify opportunities to expand facilities as prescribed in the Facility Master Plan.

Seining with TOTE teachers at the mouth of Weeks Bay

PRIORITY DELIVERY: TOTE Teachers on the Estuary

Each year, there are a variety of teacher trainings offered across the National Estuarine Research Reserve System (NERRS). The Teachers on the Estuary (TOTE) program is a research and field-based teacher training initiative. The Weeks Bay Reserve Education Sector can tailor experiential learning to the needs of local teachers. The goal is to improve understanding of climate and land use related impacts using local examples in Baldwin County, Alabama. The Weeks Bay Stewardship and Research Sectors play an active role in accomplishing this program.

Education Objectives and Actions

Weeks Bay Reserve has developed specific objectives and actions to accomplish education and outreach. The objectives and actions are an amalgamation of K-12, outreach, and stewardship related programs.

Goal 1: Protect and improve ecosystem health and biological diversity within the boundary of the Reserve.

Objective 1-9: Audience awareness of ecosystem health and biological diversity issues at the Reserve increases through implementation and development of education programs.

Actions:

a. Incorporate new technologies to enhance K-12 and Professional Teacher Development Programs.
b. Continue to employ an aide to assist with educational programs throughout the year.
c. Provide opportunities for the Reserve education staff to attend professional development programs and trainings.

Goal 2: Inform decisions affecting estuaries and coastal watersheds.

Objective 2-8: Teacher training and outreach increases audience knowledge of current issues affecting estuaries.

Actions:

a. Emphasize NERRS research on water quality, habitat protection and climate change issues in teacher trainings.
b. Collaborate with the Research and Stewardship Coordinators to ensure teachers understand the current impacts on coastal resources, communities, and infrastructure and the challenges of adapting to and mitigating these impacts in the future.
c. Provide teachers with the resources (E101 middle school curriculum and fieldtrip opportunities) and guidance they need to educate their students about water quality, habitat protection, and climate change issues and to challenge students to consider how they can make a positive difference in their communities to mitigate human impacts.
d. Deliver one TOTE training per year.

Objective 2-9: Capacity of community members and groups increases from participation in Conservation Action education.

Actions:

a. Emphasize NERRS research on water quality, habitat protection and climate change issues in community education programs.
b. Ensure citizens participating in community education programs understand the current impacts on coastal resources, communities, and infrastructure and the challenges of adapting to and mitigating these impacts in the future.

Goal 3: Promote education, training, stewardship, and scientific research focusing on estuarine ecosystems.

Objective 3-13: Knowledge of estuarine ecosystems of target audience increases from participation in comprehensive education programs.

Actions:

a. Continue to update and supplement the K-12 curriculum incorporating new knowledge and technology (e.g. Estuaries 101 MS curriculum was developed to meet the need of middle grade students).
b. Continue to develop and update brochures, interpretive guides for trails, and signage as needed to best suit the Reserve community and the National Program.
c. Educational materials will be revised and new materials as well as new technology will be added periodically to meet the changing needs of our audiences.

Objective 3-14: Reserve education programs are effective as determined by needs assessments and evaluation tools.

Actions:

a. Utilize the results of the KEEP program market analysis, needs assessment and K-12 program evaluation to improve present and future teacher professional development trainings and K-12 student programs to promote the mission of Weeks Bay Reserve and the National System.
b. Utilize results from teacher satisfaction surveys to improve fieldtrip experiences for K-12 programs.
c. Conduct new Conservation Action Education and Community Outreach needs assessment to plan programming.
d. Develop and use evaluation methods to assess community education participants' satisfaction rate with programs and to assess participants' increase in knowledge and skills.

Students plant marsh grasses along Weeks Bay as part of the BCGIC Program.

Participants learn about macro invertebrate sampling and water quality as part of the Reserve's Community Outreach programs

VIII. COASTAL TRAINING PROGRAM

Submerged Aquatic Vegetation (SAV) workshop participants knee-deep in Perdido Bay

The National Estuarine Research Reserve System's mission includes an emphasis on education and interpretation. The Reserve System recognizes it has a responsibility to educate coastal decision-makers and supports the Reserve System goals, as defined in the regulations (15 C.F.R Part 921(b)), through the Coastal Training Program:

- Enhance public awareness and understanding of estuarine areas and provide suitable opportunities for public education and interpretation;
- Conduct and coordinate estuarine research within the system, gathering and making available information necessary for improved understanding and management of estuarine areas.

To sustain these system goals, the 2011-2016 Reserve System Strategic Plan outlines coastal training objectives that support the focus areas of climate change, habitat protection and water quality:

- Increase estuary literacy and promote active stewardship among public audiences through the development and delivery of tools and programs addressing climate change, habitat protection, and water quality.
- Improve the capacity and skills of coastal decision-makers to use and apply science-based information in decisions that affect estuaries and coastal watersheds.

The Coastal Training Program provides up-to-date scientific information and skill-building opportunities to coastal decision-makers responsible for making decisions affecting coastal resources. Through this program, reserves ensure that coastal decision-makers have the knowledge and tools they need to address local critical resource management issues.

Coastal decision-makers are defined as individuals whose duties include making decisions that affect the coast and its resources. The target decision-maker groups vary according to reserve priorities, but generally include groups such as local elected or appointed officials, managers of both public and private lands, natural resource managers, coastal and community planners, and coastal business owners and operators. They may also include groups such as farmers, watershed councils, professional associations, recreation enthusiasts, researchers, and more.

Reserves are uniquely positioned to deliver pertinent information to local and regional decision-makers given their place-based nature. Coastal Training Program coordinators who know the local people, places, and science are able to skillfully convene training participants and experts to address coastal management issues. Coastal training programs are built upon solid and strategic program documents, including an analysis of the training market and assessment of audience needs. Coordinators then work with the results to identify how their program can best address local and Reserve System priority issues.

Partnerships are integral to the success of the program. Reserves work closely with several other NOAA programs, as well as a host of local partners in determining key coastal resource issues, target audiences, and expertise to deliver relevant and accessible programs.

John Cartwright (left) and Louis Wasson (right) lead students in ArcHydro exercises.

Weeks Bay Coastal Training Program

The Reserve fully implemented CTP in 2004. Leading up to full implementation, CTP developed a marketing strategy and conducted a market analysis that identified organizations along the Alabama coast performing training. The market analysis

Integrated Success: External Partnerships

Helping Communities Reduce Flooding

Coastal communities face many flooding hazards. The Community Rating System (CRS) is part of the National Flood Insurance Program that identifies policies and actions leaders must take to make their communities more resistant to flooding damage and costs.

Weeks Bay CTP recognized that communities needed assistance with the CRS enrollment process. In partnership with the Alabama Coastal Zone Management Program, CTP secured funding through the NOAA §309 Enhancement Grant Program to implement the Community Resiliency Initiative.

The initiative will enable communities to identify the steps they need to take to enroll in the CRS and provide personnel to help through the membership process. It includes training for leaders and staff to fill gaps in knowledge and skill.

Outcomes of the five-year project include successful enrollment in CRS, new community CRS policies that reduce flooding and damage, and a program to reduce flooding problems. CTP is collaborating with agencies and training partners to implement the initiatives necessary to create resilient communities.

became the foundation for potential collaborations and building strong training partnerships. A training needs assessment provided a basis on which to offer training events on topics demanded by the CTP audience. Significant impacts to the Gulf Coast occurred during the previous management plan period: devastating tropical hurricanes in 2004-2005 and the Deepwater Horizon oil disaster in 2010. In order to capture changes in training needs CTP, in partnership with Grand Bay Reserve CTP, completed two additional training needs assessments in 2008 and 2011. The Reserve recognizes the importance of training and establishes a unique section in this management plan to outline the role of the CTP sector.

Accomplishments

During the last management plan period, the Reserve made significant strides implementing the CTP in South Alabama. Management actions in this plan will build on these major accomplishments that include (and are not limited to):

- Conducted two additional needs assessments to address natural and man-made disasters;
- Development and leadership in a multi-faceted stormwater program that includes specialized Low Impact Development (LID) training sessions, low-impact guidebook, and a locally branded stormwater initiative;
- Development, initiation, and participation in the first regional CTP program in the Reserve system; and
- Conducted over 100 Coastal Training Program training events for over 3,300 participants, 2007-2015.

Program Context

CTP conducts training and performs technical assistance to improve decision-making related to coastal resource management in Alabama and along the Gulf Coast. Workshop activities include lecture with integrated exercises and field-based events. Online training remains a viable option when appropriate. Weeks Bay CTP integrates NERR sectors and scientific research conducted at the NERR into training activities. Building and maintaining partnerships with other Gulf Coast NERRs; federal, state and local agencies; private firms; and nongovernmental organizations is essential to

Integrated Success: Cross-Sector Cooperation

Science Collaborative

CTP served as the Collaborative Lead on a Science Collaborative project. The CTP Coordinator worked closely with the research team in the establishment of the Management Applications Team (MAT). The MAT served an advisory role during the crafting of the research proposal and implementation of the research over the three (3) year length of the project. CTP helped ensure that a collaborative process was followed at meetings and that decision-making during the project involved the research team and the MAT.

CTP served as liaison to the MAT so that information applicable to marsh restoration was made available to the larger community of resource managers. CTP worked with a social scientist at the Northern Michigan University to develop and implement the restoration perception surveys. Collaborative research builds on already robust cross-sector cooperation at the Reserve.

effective delivery of training needs identified and ongoing communication with workshop participants and decision-makers. Weeks Bay Reserve Coastal Training Program Strategy Document 2011-2015 (WBNERR 2011), updated every five years, guides Weeks Bay Reserve CTP in developing training events and delivery methods that are current and meet the needs of audiences and clients. The document is available upon request from the Reserve.

CTP audiences are coastal decision-makers, resource managers, and professionals who advise or provide services to decision-makers, managers and private organizations whose activities affect coastal resources. Elected officials, departmental staff, regulatory agency personnel and boards/commissions are important audiences as are realtors, developers, engineers and consultants. The private entities represent an influential audience because they are by in large the regulated community and many of their activities affect natural resources directly. CTP provides service primarily in the two coastal counties of Alabama. Through regional partnerships with other Gulf Coast NERRs, Reserve CTP training events assist in meeting the needs of audiences in northwest Florida and coastal Mississippi. In the past, Weeks Bay Reserve CTP acted on opportunities to reach audiences in Louisiana and endeavors to continue to partner with other coastal organizations in the Gulf Coast states.

Program Capacity

CTP forms solid partnerships with other NERR sectors, other Reserve training programs and many agencies and groups around the northern Gulf Coast. CTP collaborates with the Reserve Watershed Program to aid watershed stakeholders in addressing management and water quality issues especially those on identified impaired waterways. Training partners include the other Gulf Coast Reserves, federal and state agencies, local governments, private businesses and NGOs. Weeks Bay Reserve CTP coordinator serves on several local groups like the Coastal Alabama Clean Water Partnership, the Coastal Alabama Stormwater Team and the National Estuary Program Project Implementation Committee. Participation in regional planning groups like these provides CTP with ongoing analysis on issues and needs of common audiences and with opportunities to strengthen new and existing partnerships. Partners aid in the development of educational products/workshops, provide logistical assistance, contribute monetary support to meet training costs, secure adequate venues and help obtain nationally recognized expert instructors.

Training facilities both at the Reserve and in the CTP service area are numerous. The Reserve operates several venues for workshops onsite. These venues have integrated audio and video capabilities as well as wireless internet access. Outside the Reserve are additional venues like 5 Rivers Delta Resource Center (Spanish Fort, AL), Red Cross (Mobile, AL) and NOAA Disaster Response Center (Mobile, AL) with convenient access to interstate highways. Using these locations and others like them reduces travel distances for CTP audiences not only in Alabama but also in Florida and Mississippi.

Priority Issues

The key estuarine and coastal issues addressed by the system-wide CTP are improved water quality through reduction of pollution, better stormwater management, improved land conservation and management practices, increased protection of water resources, increased coastal resilience and disaster response, and adaptation to climate change impacts. Results of training needs assessments and responses on workshop evaluations support making these issues priorities. Priority issues identified by CTP audiences align with the priorities identified in NERRS strategic planning: water quality, habitat protection and climate change.

Training events include knowledge, skills and resources participants can apply in their vocations to address coastal challenges. Evaluation by CTP attempts to identify the changes in behaviors promoted at training events. Changes included approval of ordinances to protect resources, development of planning documents addressing coastal hazards and stormwater management, the effective use of best management practices, and the use of legal methods of land conservation to protect habitat. Evaluations conducted by CTP occur months and years after training events to identify changes in behavior. Follow up evaluations continue as a practice to measure the actions taken by CTP audiences and outcomes of training events.

PRIORITY DELIVERY: The Ways People Use the Land Affects the Health of Coastal Wetlands and Waterways

Coastal counties in Alabama are changing rapidly. Development is altering local landscapes. With these changes can come the loss of wildlife habitat, filling of wetlands, flooding and polluted runoff that degrades the health of local waterbodies. The Weeks Bay CTP develops workshops and technical support programs with its training partners to provide decision-makers with the knowledge, skills and tools to reduce these negative effects. Training topics include low impact development, stormwater management, urban forestry, and sediment and erosion control. CTP helps communities develop local plans and ordinances to address a changing landscape. CTP organizes grant writing workshops that increase partner capacity to secure funds to implement necessary changes or restoration projects. CTP endeavors to bring together audiences with recognized experts in alternative practices that help communities protect coastal resources and benefit from sensible land use planning.

Program Monitoring and Evaluation

Performance measures and program evaluation are important to the CTP in order to track success and plan for the future. CTP uses tools developed by the NERRS and the national CTP. With the Grand Bay NERR CTP, CTP conducted formal training needs assessments in 2008 and 2011. Since the two programs routinely work together on training events and attract audiences from Florida, Louisiana and Texas in addition to their home states, a joint needs assessment is beneficial and reaches a larger audience. Ongoing discussions with partners and questionnaires included on workshop evaluations accomplish informal monitoring of program training needs. As new information becomes available, CTP evaluates and revises plans like the strategic

document to reflect the current training environment. The performance measures developed by the NERR CTP community enable CTP to monitor and evaluate training and technical assistance. CTP uses evaluation forms distributed to all training event attendees to determine overall satisfaction with training and establish training effectiveness. Evaluation results recorded in the CTP performance monitoring database assist the Reserve and NOAA Office for Coastal Management determine effectiveness training and address any changes necessary.

Coastal Training Program Objectives and Actions

The mission of CTP is to improve the overall stewardship of Weeks Bay and its watershed by providing science-based training and technical assistance to professionals, officials, and volunteers who make decisions that impact the bay and its watershed. To meet the goals of the Reserve, the CTP sector establishes objectives and actions designed to improve the capacity and skills of coastal decision-makers to use and apply science-based information in decisions that affect estuaries and coastal watersheds. To this end, CTP training events and technical support initiatives include relevant estuarine research and data. In addition, CTP endeavors to expand training for coastal decision-makers focused on climate change, habitat protection, water quality and topics identified in training needs assessments (WBNERR 2011).

Goal 1: Protect and improve ecosystem health and biological diversity within the Boundary of the Reserve.

Objective 1-10: All scientists participating in research at WBNERR are aware of the support and information needs of coastal decision-makers.

Actions:

a. Collaborate with the Research Coordinator and others in the scientific and decision-making communities to organize at least 1 symposium over the current management plan on coastal research in the Reserve area.
b. Market the abilities of CTP to coordinate decision-maker needs and to engage decision-makers in the research process.
c. Communicate decision-maker information needs related to coastal resource management to four grant fund sources that fund Reserve research.
d. Update the training needs assessment to facilitate engagement of decision-makers in applied research regarding best practices for coastal resource management.

Goal 2: Inform decisions affecting estuaries and coastal watersheds.

Objective 2-10: Decision-makers increase understanding that their decisions affect coastal ecosystems.

Actions:

a. Conduct workshops on stormwater program governance to educate decision-makers about regulatory changes, ordinances and regional management practices.
b. Conduct workshops on groundwater supply and vulnerability to seawater intrusion.
c. Conduct an annual course on wetland regulation and compliance issues to ensure that decision-makers remain current.
d. Conduct climate vulnerability assessment at the Reserve and develop at least one training course based on results to use as model for coastal decision-makers. This will follow results of regional disaster response pilot project conducted at the five Gulf Reserves.
e. Conduct evaluation to assess the Reserve CTP impact on decision-making.

Objective 2-11: Decision-makers increase application of the new knowledge and skills to make informed decisions.

Actions:

a. Conduct 10-15 training events on stormwater, watershed management and LID.
b. Conduct 5 Coastal Resilience Index assessments with communities in Baldwin County.
c. Conduct 5 training events on the performance of stormwater practices.
d. Develop and conduct 3 courses focused on climate change adaptation or mitigation in 2017-2020.
e. Conduct six month post-workshop evaluations of workshop participants.

Goal 3: Promote education, training, stewardship, and scientific research focusing on estuarine ecosystems.

Objective 3-15: All training events and materials meet the needs of coastal decision-makers.

Actions:

a. Continue to cultivate training partnerships to identify training needs, priorities, outcomes, and collaboration opportunities.
b. Maintain the CTP Advisory Committee.
c. Seek funding to maintain Regional Training Program website to help coordinate advertisement, marketing, provide on-line registration, and serve as a portal to scientific information and tools.
d. Participate in local, regional and national conferences related to priority issues.
e. Assess the training needs of local officials related to grant writing for environmental projects and decision maker training and information needs related to climate change.

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APPENDICES

A. Federal Consistency Determination
B. Public Involvement and Comments
C. Weeks Bay Volunteers Constitution and Bylaws
D. Weeks Bay Advisory Committee Bylaws
E. Weeks Bay Reserve Partners
F. Weeks Bay Foundation Bylaws
G. NOAA and ADCNR State Lands Memorandum of Agreement 2017
H. Weeks Bay NERR Section 312 Evaluation Metrics 2012

A. FEDERAL CONSISTANCY DETERMINATION

U.S. DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
Office for Coastal Management
Silver Spring Metro Center, Building 4
1305 East-West Highway
Silver Spring, Maryland 20910

March 16, 2017

Mr. Scott Brown
Alabama Department of Environmental Management
2204 Perimeter Road
Mobile, Alabama 36695

Re: Coastal Zone Management Act Consistency Determination
Weeks Bay National Estuarine Research Reserve 2017-2022 Management Plan

Dear Mr. Brown:

Pursuant to section 307(c)(1) of the Coastal Zone Management Act, 16 U.S.C. § 1457(c)(1), and 15 C.F.R. part 930, subpart C, for management plan approval, the NOAA Office for Coastal Management (OCM) Stewardship Division is submitting this Consistency Determination to the Alabama Coastal Area Management Program (ACAMP) , for the Weeks Bay National Estuarine Research Reserve (the reserve) revised management plan. The information in this Consistency Determination is provided pursuant to 15 C.F.R. § 930.39 and is being submitted in compliance with 15 C.F.R. § 921.13.

The NOAA Office for Coastal Management believes that the Reserve's revised management plan contains goals, objectives and actions taken in support of meeting the Reserve's mission. The Reserve conducts land conservation and stewardship, research, monitoring, education and training. The Reserve manages construction and use of infrastructure in the form of, but not limited to, launches, buildings, boardwalks, docks and piers. Land management activities include restoration and stabilization of uplands, wetlands, shorelines and submerged lands. Research and monitoring activities conducted by Reserve staff or outside agencies and universities may include manipulation of areas within the Reserve boundary. In addition, the Reserve collaborates with agencies, nongovernmental organizations and other entities to reach out to willing landowners to the purpose of acquiring additional lands to support its research, education, preservation, and conservation goals.

The enforceable policies of ACAMP are codified under Alabama Department of Environmental Management (ADEM) Admin. Code R. 335-8-1 and pursuant to ADEM Administrative Code r. 335-8-1-.05, the conservation, repletion, research and management activities associated with the Reserve are permissible uses under the ACAMP. Reserve management and staff collaborate closely with the ACAMP so that activities and actions taken in support of the management plan are also consistent with ACAMP. The Reserve's activities and actions comply with the ACAMP's enforceable policies and will be conducted in a manner consistent with the ACAMP.

Based upon the following information, data and analysis, NOAA finds that the management plan revision and associated affects are consistent to the maximum extent practicable with the enforceable policies of the Alabama Coastal Management Program. Pursuant to 15 C.F.R. §930.41, the ACAMP has 60 days from the receipt of this statement in which to concur with or object to this Consistency Determination, or to request an extension under 15 C.F.R. §930.41 (b). The State's concurrence will be presumed if NOAA does not receive the State's response on the 60th day from receipt of this determination. The State's response should be sent to:

Matt Chasse
Coastal Management Specialist
National Oceanic & Atmospheric Administration
NOS, Office for Coastal Management
1305 East West Highway, SSMC4/10th Floor
Silver Spring, MD 20910

Please let me know if you have any questions or concerns. I can be reached at (240) 533-0808 or matt.chasse@noaa.gov.

Sincerely,

Matt Chasse
Coastal Management Specialist

Attachment

cc: Kerry Kehoe, NOAA Office for Coastal Management

LANCE R. LEFLEUR
DIRECTOR

ROBERT J. BENTLEY
GOVERNOR

Alabama Department of Environmental Management
adem.alabama.gov

1400 Coliseum Blvd. 36110-2400 ■ Post Office Box 301463
Montgomery, Alabama 36130-1463
(334) 271-7700 ■ FAX (334) 271-7950

April 12, 2017

Mr. Matt Chasse
Coastal Management Specialist
National Oceanic & Atmospheric Administration (NOAA)
NOS, Office for Coastal Management
1305 East West Highway, SSMC4/10th Floor
Silver Spring, Maryland 20910

RE: State of Alabama Coastal Consistency Concurrence
Weeks Bay National Estuarine Research Reserve 2017-2022 Management Plan
Alabama Department of Environmental Management (ADEM) Tracking Code: 2017-204-FC-FAA-NOAA

Dear Mr. Chasse:

The ADEM received NOAA's coastal consistency determination for the referenced activity - required by Title 15CFR §930.36 - on March 17, 2017. Public noticing requirements of Title 15CFR §930.42 have been completed. Pursuant to Title 15CFR §930.41, by this letter the ADEM hereby notifies NOAA of its **concurrence** with NOAA's determination that the proposed activities are consistent with the enforceable policies of the Alabama Coastal Area Management Program.

Contact the Mobile-Coastal office anytime with questions. Always include the ADEM tracking code above when corresponding on this matter.

Sincerely,

Anthony Scott Hughes, Chief
Field Operations Division

ASH/jsb

File: CZCERT

cc: Phillip Hinesley, ADCNR (Sent Via Email Only: Phillip.Hinesley@dcnr.alabama.gov)
L.G. Adams, ADCNR (Sent Via Email Only: LG.Adams@dcnr.alabama.gov)

Birmingham Branch
110 Vulcan Road
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(205) 942-6168
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B.PUBLIC INVOLVEMENT AND COMMENTS

Development of the Weeks Bay National Estuarine Research Reserve management plan occurred over three (3) years and included direct input from all Reserve staff members, the WBAC, ADCNR-SLD, other state agencies, and the NOAA-OCM staff. State agencies, WBAC and OCM provided review and comment at regular quarterly meetings and *ad hoc* workshops and individual sessions. The Reserve invited the public to review the document through social media and made copies available to visitors wishing to participate. Reserve staff collected, dated and reviewed all public comments.

NOAA-OCM reviewed and approved the plan after ensuring sufficient opportunity for comment by the public, per 15 Code of Federal Regulations 921.33. Once the management plan was approved by NOAA-OCM, a Federal Register Notice announcing a 30 day public comment period is published. The public comment period for this plan was published in the Federal Register in December 2016 and the comment period ended on February 2, 2017. Additionally, public notices were published in the Mobile Press Register December 2016; and a public meeting was held at 6:00pm on January 12, 2017 at the Weeks Bay Resource Center.This coincided with the comment period and comments were collected by a recording and prepared transcript, letters and emails directed to L. G. Adams, Reserve Manager. After the required 30 day public comment period, revisions to the document were made, where appropriate. Reserve staff addressed specific comments received on the plan. Public comments received are consolidated below.

Comments received during Public Review January 2 to February 2, 2017

Public Meeting January 12, 2017

Mr. Walter Ernest IV, Director Pelican Coast Conservancy

Mr. Ernest comments are found in the transcript that follows.

Ms. Yael Girard, Executive Director Weeks Bay Foundation

Ms. Girard comments are found in the transcript that follows.

Written comments submitted to Reserve Manager January 2 to February 2, 2017

Mr. Walter Ernest IV, Director Pelican Coast Conservancy

Letter dated January 23, 2017 (as follows)

Ms. Yael Girard, Executive Director Weeks Bay Foundation

Letter dated January 31, 2017 (as follows)

Mr. Randy Roach, Member Weeks Bay Advisory Committee

Email sent to L. G. Adams dated January 29, 2017

Comments are:

I have reviewed the draft management plan and offer some general comments followed by some specific comments.

General Comments

I am pleased to note much progress has been made in acquiring critical wetlands/and upland habitats within the Reserve core area since the last management plan in 2007. Hopefully, many more sensitive lands will be acquired in the next five years as per the management plan. My particular preference for acquisition is those wetlands/uplands surrounding Weeks Bay proper for many reasons but in particular the bay was the inspiration for what has followed. The lands surrounding the bay are under increasing development pressure and are very important to maintaining ecosystem health. With rather dire predictions on rising sea level, the forested areas along Weeks Bay may become the marshes of tomorrow. So it is important to protect them from development.

Regarding stewardship it is good to note planning is underway to develop tract level plans for several of the larger tracts in need of restoration. However, it appears the Stewardship position is seriously underfunded and staffed with essentially one person to manage 2700 acres on over separate 20 tracts of land requiring at least some form of oversight and management. With many

of the tracts requiring prescribed fire every several years, some appear to go many years without prescribed fire for a myriad of reasons. One particular tract that requires prescribed fire at least every 2 years is the Foley tract pitcher plant bog. The bog attracts much public use and it should be one of the crown jewels of the reserve property. Every effort should be made to implement regular prescribed burns on this tract. The Weeks Bay Restoration Advisory Committee mentioned in the document could perhaps be a help in this regard if they meet regularly.

Regarding outreach or education, there is a need to connect the landowners along the rivers (particularly Fish River) with the goals of the reserve such as alternatives to bulk heading and clearing of bank vegetation. Developments along the rivers appear to have a total disregard for these goals. It may not be very long before the Fish River is more canal like than a river with riparian buffers. Connecting with the adult landowners along the shorelines and in the watershed should be given more attention. The reserve does an excellent job of educating the children but the adults seem to be the missing link in conserving the resource.

Specific Comments

Page 63, paragraph 2. The makeup of the Weeks Bay Restoration Advisory Committee should be outlined similar to the Weeks Bay Advisory Committee.

Page 65 Foley tract. The restoration of the dead end canals should be a priority as the canals are a significant source of toxic algal blooms implicated in fish kills in the river. Based on high concentrations found in the canals within the reserve boundary, efforts to make restoration a higher priority than the other tracts as they will be completed in 2017 and 2018 and the Foley tract not until 2019. Funding is apparently available through the Restore Act. Additionally, the road leading to the abandoned pier on Fish River from Safe Harbor should be taken out as it is an impediment to flow during high water and may cause flooding upstream.

Page 77 Table 4. The gopher tortoise is a candidate species under the Endangered Species Act and may occur on reserve lands. It should be added to the table.

Page 80 Figure 13. According to the map, large portions of reserve lands are off limits to the public, i.e. area accessible for research or special projects only. Since these lands were purchased with federal and state funds, making them off limits to the public is unnecessarily restrictive. At least foot traffic should be permitted.

Page 87, item c. Encouraging additional boat access and traffic on the rivers should be discouraged not encouraged. One only has to be out in a boat on the river on the weekend or a holiday to realize there are too many boats that already have access. On many weekends and holidays it can be dangerous to be in a boat on the river. Boat wakes cause serious long term damage to wetlands and shorelines within the reserve boundary. Additional boat ramps will only increase the need for bulk heading by landowners to prevent boat wake shoreline erosion which is contrary to the goals to discourage such activity by the Reserve (as per page 81). Prior to the

extensive development on the rivers, the rivers did not have much wave action because they were protected. Now boat wakes may be the number one cause of shoreline erosion. The boats are getting larger and some boats actually try to make very large waves for wake boarders and tubers. Did the writers of the draft management plan consider no wake zones to reduce shoreline erosion?

Page 92, Rare/Endangered species. What is meant by "rare" species should be further explained. The American alligator probably should not be considered rare since there is a hunting season for gators in Alabama.

I appreciate the opportunity to review the draft management plan and look forward to working with you and the Reserve staff in the future.

Randy Roach

Weeks Bay Advisory Committee

Transcript from Public Meeting January 12, 2017

Weeks Bay Reserve
Public Meeting: January 12, 2017
Comments on the draft Weeks Bay National Estuarine Research Reserve Management Plan*
Location: 11525 US Highway 98
Fairhope, Al 36532

*Note: Transcript prepared from recording as best as could be determined from audio record.

Hank: We are holding this public meeting so you can hear from the manager, L. G. Adams, on the highlight of the plan and still have time to comment later.
The last day to make comments is February 2, 2017. You can give verbal comments today, but we prefer that you write them down. Or you can send them by email to L. G. Adams at a later date. We prefer the comment cards so we can best reflect those directly to the Management Plan. So L. G. is going to give a short presentation. This meeting is going to be recorded so we can best gather your comments and incorporate them in the plan. There are copies of the plan here also. I also have copies of the Federal Registry at the front table if anyone would like to look at one.

L. G. gives presentation of the Management Plan.

Hank: Now we have heard the basics and accomplishments of the strategic plan. The management
Plan has some cross sector work. We are really trying to have the Reserve showcase the sector work together. All in all there is some really good stuff in there and hopefully you

have had a chance to look at it besides hearing about it today. Right now I would like to collect any comments you may have. Again if you don't want to comment verbally you can write them down or email them to L. G. Adams by February 2, 2017.

Walter Ernest:I am Walter Ernest; I am a resident of Fairhope. I live in the Weeks Bay Watershed and I serve on the Coastal Resources Advisory Committee. And I worked with the Weeks Bay Foundation from 2003 to 2013. So I am very familiar with the Reserve current Management Plan and a lot of what is in this plan. First I want to commend you L. G. and your staff. You have done a great job and when I looked at the Management Plan I really got excited when I saw over ten thousand acres protected in the boundary. I believe in 2003 we were around six thousand acres plus or minus a few. Skipper and I always use to laugh about that cause we said we fibbed about it because of counting water bottoms.

So y'all have done great work and great work with your partner Weeks Bay Foundation and others. Y'all need to be commended on that. So working with the coastal training program I have had the pleasure of working with Mike Shelton in my prior roll. In my current roll I am Director of Operation with the Pelican Coast Conservancy Land Trust. We have held Conservation Restoration workshops which is totally foreign to this part of the county. Mike brought in some of the best people to do that. We provided some technical assistance to the Gulf training program on another Conservation workshop that they did at Restore America's Estuaries. I am glad to see the upper Watershed listed in this management plan. I hope that one day that the entire watershed will be in your boundaries if it could ever be done. Because with the growth being that this is the fastest growing part of Baldwin County and with the growth in Fish River areas it has always concerned me that the upper Watershed the" Golden Triangle" will get choked. And it will be like Fly Creek. Hopefully one day you can cover the entire watershed. I know Dr. John Borom would say the same thing if he was here tonight. Expect he would want you to cover the entire Delta too.

Also I want to point out for your outside partners, you have a great list of partners but you left out a few. NERRA, (National Estuarine Research Reserve Association) should be in that list. I served as the Friends and Foundation Director Representative for that and I know Mike Shelton volunteered his time as coastal training program sector Representative and L. G. has worked with them for years along with all the reserve managers. They do a great job from the national stand point for the entire system. And they have done some great things at Weeks Bay. I am calling it NERRA, National Estuarine Research Reserve Association. Two other groups, Partnership for Gulf Coast Land Conservation, PGLC. They are a new comer in the conservation arena, but they are doing good stuff. And I know the Foundation is a member and Pelican Coast has been a

member for a long time. They are doing things across the Gulf, but they are looking at prioritizing land in Alabama as well as the other Gulf states and Weeks Bay is an important focus there. Nature Conservancy is a member as well. You may want to include them. And the organization I work for the Pelican Coast Conservancy. While we do regional work, I live in Alabama. As my boss would say, if I had my way I would just be doing work in coastal Alabama, because I love the coastal area. So Pelican Coast Conservancy would be another one to add.

I will close with this; I really think you have thousands of cars that drive by Hwy 98. I didn't see a sign about this meeting. And they have a board across the street at the Foundation you could have put something up or a banner or something. Not to say more people would have been here but you never know unless you try. Communication is something we all need to work on, but I would like to see the reserve improve with the next Management Plan with communication, because I know what y'all do. If I was to ask my neighbor they would say what are you talking about or they would call it the wrong name. They may think you are ADEM or something. The folks that live on the river have absolutely no idea what you do or what the National System does. And y'all are one of the crown jewels of NOAA and the NERRS, and in my opinion, the public needs to know that. Especially any time you want to increase funding.

Is there a way you could include the parcels you are in the process of acquiring in the plan? I know that is questionable but I believe you are working on acquiring some tracts from the Foundation and others. I would hate to see this wonderful plan done and you just closed on properties. If you haven't closed on them maybe you can have a map showing optional properties because it should be public especially if they have been nominated to Forever Wild if you are working with Forever Wild. It would be nice to have those additional tracts listed in your plan that might get you a little closer to the ten thousand acres total. That is all I have to say. Sorry I have been long winded.

Yael Girard: Somehow these two proprieties aren't included in the Weeks Bay Foundation Track, but they are.

Walter: Oh, ok that's good. I saw your map but I didn't see anything on there. That's good to hear.

L. G.: If I may also comment there are three tracts that should be closing soon. I am trying to think how many acres the Foundation has.

Yael: 245'ish

L. G.: So if those close in the next two weeks we may be able to include those. But they are in the plan. They are just being held by the Foundation and Identified there.

Walter: Figure 8 I think you may have a mistake. It still shows a gap where you required three tracts from Lipscomb, Meyer and Regency Bank or Martin Family.

L. G.: Have you looked at that recently?

Walter: I looked at it just now and I saw it on line. So you may want to update that map so it doesn't look like the gap is there. I assume you could do it since you acquired the land. It is a map.

Hank: Page 39

Walter: I should have turned down the page.

L. G.: I think that gap should not be there and could be closed.

Walter: That's what I thought. Thanks for all that y'all do.

Hank: Thank you, Walter. Great comments if you can think of anything else before February 2, 2017, you are welcome to email them to L. G. or even tonight write them on a card and we will make sure they are added. Yael, do you have anything?

Yael: Well sure. I have written it all down. Thank you to the reserve staff. I know y'all spent a lot of time on this and it has gone through a lot of review and I am working on proof reading it. It sounds really good and there's not much left there. Especially to Mike Shelton for making things cohesive and putting it all together so it is readable and in a lot of ways very interesting. There are a lot of points there that are new to me and this is a great learning opportunity. I really appreciate that there is a section on Disaster Response and Preparedness. And that you guys are focused on that it is something we need to be conscious of as weather patterns change and possible man made and weather incidents can happen. And also there is in every section consideration of sea level rise, increase storm pressure, increase storm surge and climate change issue. I know those are hot bottom issues and people don't like to talk about them but, I think it is really good they are included, because let's be realistic about things. So that is really nice that it is there. I also want to congratulate you in all your achievements especially in the education sector, CTP, and the research has gotten a lot more programs started and a lot more successful programs and increasing those. I would like for the Foundation to be a

resource to help increase them further. Hopefully partnership can develop in new areas and make these programs even better than they have been.

I would also like to see either from a Science Collaborative or even a new funding source to increase opportunities for you guys. I would love to see increase funding. You know it is sad when you see there is one project being funded for this and it is the Science Collaborative. It is awesome that it exists but there should be more opportunities if these are National Research Reserves there really should be more chances for that to be a big point of the location.

ATLANTIC COAST CONSERVANCY

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Staff
Walter C. Ernest IV
Director of Operations

January 23, 2017

L.G. Adams
Manager
Weeks Bay National Estuarine Research Reserve
11300 US Hwy 98
Fairhope, AL 36532

Re: Weeks Bay Reserve Draft Management Plan

Dear L.G.,

I would like to commend you and the staff of the Weeks Bay National Estuarine Research Reserve (Reserve) for all of the diligent work that has been undertaken to develop the updated Reserve draft management plan. The detailed maps, reserve history, accomplishments and future plans described in the plan are to be commended. I am especially proud of the Reserve's land acquisition accomplishments. It is hard to believe the Reserve has protected close to 10,000 acres in the Reserve boundaries.

I would like to make several draft management plan recommendations.

The Weeks Bay Coastal Area Figure 8 map on page 39 of the plan does not show ownership the Meyer tract.

The 63 acre Bon Secor Bay tract which was acquired from the Regions Bank/Carl T. Martin Trust is misspelled. The grantor's name was Regions Bank c/o Carl. T. Martin Trust. The plan shows this parcel as the Matrin tract. This could be a typographical error. The tract is mentioned on pages 103,104 and 105 of the plan. The error could be present in other locations of the document that identify the tract.

I would encourage the Reserve to include the Weeks Bay Foundation's (Foundation) Crowder and Wirtes conservation easements in the plan. Both of these conservation easements are located in the Weeks Bay Reserve Project Area. The Crowder conservation easement adjoins the Meadows parcel. The Wirtes conservation easement adjoins the Foundation's Balzi tract.

I would like to see additional outside partners included in the management plan. The National Estuarine Research Reserve Association (NERRA), The Partnership for Gulf Coast Land Conservation (Gulf Partnership), and The Pelican Coast Conservancy are examples of organizations that should be added to the list of outside partners. All of these groups have partnered with the Reserve.

The National Estuarine Research Reserve Association (NERRA) is a national nonprofit organization established in 1987 to advance the work of the reserve system. Reserves and their regional friends groups rely on NERRA to help enhance successful programs, strengthen the network, and enable reserves to better address growing challenges to our nation's estuaries, coasts, and communities.

The Partnership for Gulf Coast Land Conservation (Gulf Partnership) is a coalition of more than two dozen local, regional and national conservation organizations that work in the Gulf Coast region within the five Gulf of Mexico states – Alabama, Florida, Louisiana, Mississippi and Texas. Our mission is to increase the pace, quality and permanence of voluntary land and water conservation within the coastal region. The Reserve's Coastal Training Program has assisted the partnership by providing coastal decision maker capacity building efforts.

The Pelican Coast Conservancy (PCC) is a land conservation organization whose mission is to provide 21st century solutions and sound scientific applications for conservation of critical natural resources in the face of a changing climate focusing on environmental restoration, preservation, and conservation efforts throughout the Gulf Coast region with specific utilization of geographic information systems applications in land conservation, ecosystem services, carbon sequestration and conservation biology. The PCC has partnered with the Weeks Bay Reserve Coastal Training Program to conduct workshops on the topics of perpetual conservation easements and carbon sequestration. The PCC has also partnered with the Gulf Coast Training Program on workshop topics.

I am pleased to see the proposed expanded boundary for the Reserve. I would like to see future Reserve boundaries include the entire Weeks Bay watershed. This boundary expansion would allow greater protection of the Upper Fish River Watershed and balance future growth. The Weeks Bay Watershed is one of the fastest growing watersheds in Baldwin County.

Please, do not hesitate to contact me if I can ever be of any assistance to the Weeks Bay Reserve.

Working for conservation,

Walter C. Ernest IV

WEEKS BAY FOUNDATION

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www.weeksbay.org

January 31, 2017

L. G. Adams
Manager, Weeks Bay National Estuarine Research Reserve
11300 US Highway 98
Fairhope, AL 36532

RE: Comments on the 2017 Weeks Bay Reserve Management Plan

Dear L.G. and Reserve Staff:

Congratulations on completing the draft version of the **Weeks Bay National Estuarine Research Reserve Management Plan 2017-2022**. I know that this document is the culmination of several years of diligent work. With numerous revisions and rewrites, I know it wasn't an easy process and I am impressed with the completed document.

Having had the pleasure of reading the entire document as a proofreader, I believe it tells the story of the Reserve very well. The narrative has been written in a way that gives the reader a holistic sense of the history of the Reserve, the various sectors, the accomplishments, and the future of your programs.

I would like to comment on several specific features of the document which I feel are particularly noteworthy. The focus on continued strategic acquisition within the Reserve priority areas resonates with the Foundation. We believe that the protection of existing, intact, habitats is far better than any artificial ecosystems. In addition, I think it is excellent that the Reserve has planned for disaster preparedness. With changing storm patterns, manmade disasters, and a history of large hurricanes in this area, having a comprehensive response plan is the most responsible choice.

Lastly, I would like to add that the Weeks Bay Foundation appreciates the work done by the Reserve in the research, education, training, and stewardship sectors. We hope to continue working with you as a partner in your endeavors.

Keep up the good work!

Yael Girard
Executive Director

C. WEEKS BAY VOLUNTEERS BYLAWS

AMENDED AND RESTATED BYLAWS OF WEEKS BAY VOLUNTEERS
AN ALABAMA UNINCORPORATED NONPROFIT ASSOCIATION

ARTICLE ONE
INTRODUCTION

Definition of Bylaws

1.01. These Bylaws constitute the code of rules adopted by Weeks Bay Volunteers, an unincorporated nonprofit association, for the regulation, management and governance of its affairs.

Purposed and Powers

1.02 This Association will have the purposes or powers as may be stated in its Constitution, and such powers as are now or may be granted hereafter by law.

The primary purpose of this unincorporated nonprofit association is to aid and assist the Weeks Bay National Estuarine Research Reserve (hereinafter referred to as "Weeks Bay Reserve") in its educational purpose by organizing volunteers to work and assist the Weeks Bay Reserve in its educational, research and resource protection functions and by fund raising activities to aid and supplement the financial resources of the Weeks Bay Reserve. The Reserve Manager or the Reserve Manager's designee shall receive prior notification of and furnish advice for any project in the name of the or on behalf of Weeks Bay Reserve.

ARTICLE TWO
MEMBERSHIP

Definition of Membership

2.01. The Members of this association are those persons having membership rights in accordance with the provisions of these Bylaws.

Qualification of Members

2.02. Members will be those persons who are at least 16 years of age who have attended orientation as prescribed by the Association.

Place of Members' Meetings

2.03. Meetings of Members will be held at the Weeks Bay Reserve Visitor Center or or any place in Baldwin County, Alabama as the Board of Directors may designate by resolution duly adopted.

Annual Members' Meetings

2.04. The annual meeting of the Members will be held each year in January at a time, date and place to be determined by the Board of Directors.

Special Members' Meetings

2.05. Special meetings of the Members may be called by any of the following:

(1) The Board of Directors;
(2) Ten (10) percent of the qualified membership.

Notice of Members' Meetings

2.06. Written or printed notice, stating the place, day and hour of the meeting and (in case of a special meeting) the purpose or purposes for which the meeting is called, must be posted in a conspicuous location at the Weeks Bay Reserve Visitor Center located at 11300 U.S. Highway 98, Fairhope, Alabama.

Voting Rights of Members

2.07. Each member will be entitled to one vote on each matter submitted to a vote of Members. A Member may not vote by proxy.

Quorum of Members

2.08. A quorum shall consist of Members present and voting at a properly called meeting. The vote of a majority of the votes entitled to be cast by the Members present at a meeting is necessary for the adoption of any matter voted on by the Members, unless a greater proportion is required by law, the Constitution of this Association, or any provision of these bylaws.

Termination of Membership

2.09. Membership in this Association will terminate on any of the following events, and for no other reason:

(1) Receipt by the Board of Directors of the written resignation of a Member, executed by such Member or his or her duly authorized attorney-in-fact;
(2) The death of the Member;
(3) or for cause, inconsistent with membership, and only after due notice and a hearing before the Board of Directors on the issues.

ARTICLE THREE
DIRECTORS

Definition of Board of Directors

3.01. The Board of Directors is that group of persons vested with the management of the affairs of this Association subject to the law, the Constitution of this Association, and these Bylaws.

Number of Directors

3.02. The Association shall elect six of its members to the Board of Directors. The Weeks Bay Manager or its designee shall also serve as an ex-officio member of the Board, for a total of seven directors.

Roster of Directors

3.03. The number of Directors of this Association will be seven. Officers shall be appointed by the Board of Directors as follows:

(1) Association President
(2) Association Vice-President
(3) Association Secretary
(4) Association Treasurer

Terms of Directors

3.04. (1) The initial Directors elected by the members will hold office until the first annual members meeting. At the first annual members meeting three Directors will be elected by the members for a term of one year and three Directors will be elected by the members for a term of two years. Thereafter, Directors will be elected by the members as such meeting for a term of two years. Each Director will hold office for the term for which elected or until a successor has been selected and qualified.

(2) A Director may be removed from office when such action will serve the best interests of this Association in the manner prescribed in the Constitution of this Association or these Bylaws for the election or appointment of Directors.

Vacancies on the Board

3.05. Resignation of Directors will become effective immediately or on the date specified therein, and vacancies will be deemed to exist of such effective date. Any vacancy occurring on the Board of Directors, and directorship to be filled by reason of an increase in the number of Directors, will be filled by appointment by a majority of the remaining Board of Directors. The new Director appointed to fill the vacancy will serve for the unexpired term of the predecessor in office.

Place of Directors' Meetings

3.06. Meetings of the Board of Directors, regular or special, will be held at the Weeks Bay Reserve Visitor Center or any place in Baldwin County, Alabama as the Board of Directors may designate by resolution duly adopted.

Regular Directors' Meetings

3.07. Regular meetings of the Board of Directors will be held at 10:00 a.m. on the third Tuesday of the first month of each calendar quarter or at such other times as the Board of Directors by resolution may designate.

Call of Special Board Meeting

3.08. A special meeting of the Board of Directors may be called by either the President or a majority of the Board of Directors.

Notice of Special Directors' Meetings

3.09. Written or printed notice stating the place, day and hour of any special meeting of the Board of Directors will be delivered to each Director not less than two days nor more than fifteen calendar days before the date of the meeting, either personally, by first class mail or by email, by or at the direction of the President, the Secretary or the Directors calling the meeting. Such notice need not state the business to be transacted at, nor the purpose of, such meeting.

Waiver of Notice

3.10. Attendance of a Director at any meeting of the Board of Directors will constitute a waiver of notice of such meeting, except where such Director attends a meeting for the express purpose of objecting, at the beginning of the meeting, to the transaction of any business because the meeting is not lawfully called or convened.

Quorum of Directors

3.11. One-third of the whole Board of Directors will constitute a quorum. The act of a majority of the Directors present at a meeting at which a quorum is present will be the act of the Board of Directors, unless a greater number is required under the provisions of the Constitution of this Association, or any provision of these Bylaws.

ARTICLE FOUR
OFFICERS

4.01. The officers of this Association will consist of the following personnel:

(1) President;
(2) Vice-President;
(3) Secretary;
(4) Treasurer.

Selection of Officers

4.02. Each of the Officers will be elected and appointed annually by the Board of Directors. Each Officer will remain in office until a successor to such office has been selected and qualified. Such election will take place at the regular meeting of the Board of Directors taking place in the first quarter of each year.

Multiple Officeholders

4.03. In any election of Officers, the Board of Directors may elect and appoint a single person to any two or more offices simultaneously, except that the offices of President and Secretary must be held by separate individuals. Officers may also serve simultaneously as Directors of this Association.

President

4.04. The President will be the Chief Executive Officer of this Association and will, subject to the control of the Board of Directors, supervise and control the affairs of the Association. The President will perform all duties incident to such office, and such other duties as may be provided in these Bylaws or as may be prescribed from time to time by the Board of Directors.

Vice-President

4.05. The Vice-President shall perform all duties and exercise all powers of the President when the President is absent or otherwise unable to act. The Vice-President will perform such other duties as may be prescribed from time to time by the Board of Directors.

Secretary

4.06. The Secretary shall (1) keep minutes of all meetings of Members and of the Board of Directors; (2) be the custodian of the corporate records; (3) give all notices as are required by law or by these Bylaws; and generally, (4) perform all duties incident to the office of Secretary to include having charge of correspondence, notifying members of meetings; and (5) perform other such duties as may be required by law, by the Constitution of this Association, or by these Bylaws, or that may be assigned from time to time by the Board of Directors.

Treasurer

4.07. The Treasurer shall (1) have charge and custody of all corporate funds; (2) deposit the funds as required by the Board of Directors; (3) keep and maintain adequate and correct accounts of the Association's properties and business transactions; (4) render reports and accountings to the Directors (and Members) as required by the Board of Directors or Members or by law; and (5) perform in general all duties incident to the office of Treasurer and such other duties as may be required by law, by the Constitution of the Association, or by these Bylaws, or that may be assigned from time to time by the Board of Directors.

Removal of Officers

4.08. Any officer elected or appointed to office may be removed by the persons authorized under these Bylaws to elect or appoint such Officers, whenever in their judgment the best interests of this Association will therefore be served.

ARTICLE FIVE
INFORMAL ACTION

Waiver of Notice

5.01. Whenever any notice is required to be given under the provisions of the law, the Constitution of the Association, or these Bylaws, a waiver of such notice in writing signed by the person or persons entitled to notice, whether before or after the time stated in such waiver, shall be deemed equivalent to the giving of such notice. Such waiver must, in the case of a special meeting of Members, specify the nature of the business to be transacted.

Action by Consent

5.02. Any action required by law or under the Constitution of this Association or these Bylaws, or any action that otherwise may be taken at a meeting or either the Members or Board of Directors, may be taken without a meeting if a consent in writing, setting forth the action so taken, is signed by all persons entitled to vote with respect to the subject matter of such consent, or all Directors in office, and filed with the Secretary.

ARTICLE SIX
COMMITTEES

Appointment of Committees

6.01. The Board of Directors, by resolution duly adopted may designate and appoint certain committees designed to transact certain ministerial business of the Association, or to advise the Board of Directors. Such Committees shall be

chaired by an Officer or Director as designated by the Board, who shall select the remaining members of the Committee up to the number sent by the Board, or terminate such memberships, or appoint successors in that Chairperson's discretion. The Board may terminate any such committee by resolution.

ARTICLE SEVEN
OPERATIONS

Fiscal Year

7.01. The fiscal year of this Association shall be the calendar year.

Execution of Documents

7.02. Except as otherwise provided by law, checks, drafts, promissory notes, and other evidences of indebtedness of this Association shall be signed by the Treasurer or by the President. Contracts, leases, or other instruments executed in the name of and on behalf of the Association shall be signed by the Secretary and countersigned by the President, and shall have attached copies of the resolutions of the Board of Directors (certified by the Secretary) authorizing such execution.

Books and Records

7.03. The Association shall keep correct and complete books and records of account, and minutes of the proceedings of its Members and of the Board of Directors. The Association will keep at its principal place of business a membership roster giving the names and addresses of all members and a copy of its Bylaws including amendments to date certified by the Secretary of the Association.

Inspection of Books and Records

7.04. All books and records of this Association may be inspected by any Member, or his or her agent or attorney, for any proper purpose at any reasonable time on written demand under oath stating such purpose.

Nonprofit Operations - Compensation

7.05. This Association shall not have or issue shares of stock. No Dividend shall be paid and no part of the income or profits of this Association shall be distributed to its Members, Directors or Officers. The Association may, however, pay compensation in a reasonable amount to Members, Officers or Directors for services rendered.

Loans to Management

7.06. This Association shall make no loans to any of its Directors or Officers.

Corporate Assets

7.07. No Member may have any vested right, interest, or privilege of, in, or to the Association's assets, functions or affairs, or any right, interest, or privilege that may be transferable or inheritable, or that will continue if his or her membership ceases, or wile he or she is not in good standing.

Upon dissolution any Association assets remaining after the payment or discharge of all Association liabilities; the return, transfer, or conveyances of assets held on conditions requiring the same; shall be distributed to an organization or organizations qualified under §501(c)(3) of the Internal Revenue Code or the corresponding section of any future tax code, or shall be distributed to the federal government, or to a state or local government, for a public purpose. Any such assets not so disposed of shall be disposed of by a Court of Competent Jurisdiction of the county in which the principal office of the Association is then located, exclusively for such purposes or to such organization or organizations, as said Court shall determine, which are organized and operated exclusively for such purposes.

The Directors may authorize secured transactions or other dispositions of Association assets without approval by the Members.

ARTICLE EIGHT
AMENDMENTS

Amendment of Constitution

8.01. The power to alter, amend or repeal the Constitution of this Association is vested in the Board of Directors and the Members. Such action must be taken pursuant to a resolution approved by a majority of the Directors and by a majority of the Members.

Modification of Bylaws

8.02. The power to alter, amend or repeal these Bylaws, or to adopt new Bylaws insofar as is allowed by law, is vested in the Board of Directors.

ADOPTION OF BYLAWS

Adopted by the Board of Directors by resolution and vote of SEVEN (7) for and ZERO against, on the 17th day of JANUARY, 2017 at the Weeks Bay Weeks Bay Resource Center located at 11525 U. S. Highway 98, Fairhope, Alabama.

DIRECTORS

Approving: Nancy D. Sainer

Maureen Nation

Jay M Zeanah

Dissenting:

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D. WEEKS BAY ADVISORY COMMITTEE BYLAWS

ARTICLES OF ORGANIZATION AND BY-LAWS FOR THE WEEKS BAY NATIONAL ESTUARINE AND RESEARCH RESERVE ADVISORY COMMITTEE

ARTICLE I.

Name

The name of this organization shall be the Weeks Bay National Estuarine Research Reserve Advisory Committee (WBNERRAC). All references in these Articles and Bylaws to "the Committee" are to such organization.

ARTICLE II.

Purpose

1. The principal purpose of the Committee shall be to provide a mechanism to facilitate operations and management of the Weeks Bay National Estuarine Research Reserve (WBNERR) through advice and other interactions with the Alabama Department of Conservation and Natural Resources (ADCNR) and the WBNERR staff.

2. The duration of this organization shall be perpetual pursuant to the conditions set forth in Article IV.

ARTICLE III.

Location

The principal office and mailing address of the Committee shall be the office of the Manager of the WBNERR.

ARTICLE IV.

Membership and Meetings

1. Membership. The membership of the Committee shall consist of those persons duly appointed by their respective agency executive as defined in the Weeks Bay National Estuarine Research Reserve Management Plan and other members appointed by the Governor of the State of Alabama. It is expected that members will attend

meetings and otherwise participate in the business of the Committee. Since participation is voluntary an individual or organization may resign at their discretion at any time.

2. Proxy. Agency Executives or the Governor may name alternate representatives to the Committee for their respective appointments or members of the Committee may name an individual to serve as a Proxy during any Committee meeting or function by notification of the Chair or the Reserve Manager prior to commencement of the meeting or function.

3. Membership Expansion. New members, in addition to those specified in the Management Plan, may be nominated by an existing member and appointed to the Committee or any of its subcommittees by the Chair following a two-thirds majority approval of the Committee.

4. Voting. Voting is by individual appointee, or their designated alternate or proxy, and a simple majority of the Committee or subcommittee present shall rule.

5. Meetings. The Committee shall hold quarterly meetings and such other regular meetings as it may deem advisable each year. Special meetings may be called by the Chair or by written request of at least four members of the Committee; with at least seven working days written notice of said meeting being given to the members.

6. Quorum: A quorum shall be a simple majority of the Committee or any of its subcommittees.

7. Minutes. It shall be the WBNERR Manager or other staff person's responsibility to keep an accurate record of the business conducted at each meeting of the Committee, which they shall promulgate to the Committee members as non-verbatim minutes, prior to the following meeting of the Committee.

8. Rules of Order. Meetings shall be run at the discretion of the Chair and Robert's Rules of Order (current edition) shall be the deciding factor in parliamentary questions not covered by these bylaws.

ARTICLE V.

Officers

The officers of the Committee shall be Chair, and Vice Chair.

1. Chair. The Chair shall preside at all meetings of the Committee and perform all other duties customarily associated with the office of Chair. The position of Chair shall be automatically filled biennially by the past Vice Chair.

2. Vice Chair. The Vice Chair shall serve in the absence of the Chair, assuming his duties when necessary, and shall also perform such tasks as designated by the Chair. The Vice Chair shall be elected biennially by the Committee.

3. Elections. The Chair and Vice Chair shall be elected positions, such election requiring a simple majority of a quorum of the Committee. Special elections for these offices shall be held in the event that both positions, or that of the Vice Chair, become vacant.

4. Subcommittees. Standing and ad hoc subcommittees of the Committee may be established by the Committee with members appointed to such subcommittees by the Chair, as needed. Subcommittees shall be charged with specific duties and responsibilities by the Committee at the time of their establishment.

ARTICLE VI.

Autonomy of Organizations and Exculpation of Members

Individual membership on the Committee shall in no way infringe upon the autonomy of any institution or organization to which the individual belongs or by which he is employed. No officer or other agent of the Committee or its facilities shall be liable to anyone for any acts on behalf of the Committee committed by such officer or agent.

ARTICLE VII

Effective Date

These Articles of Organization and Bylaws shall be effective upon ratification by a two-thirds majority of a quorum of the Committee.

ARTICLE IX

Amendments

These Articles of Organization and Bylaws may be amended by the Committee at any meeting of the Committee by the affirmative vote of two-thirds of the Committee present as a quorum, provided that notice of the proposed amendment shall have been given each member of the Committee in writing at least seven (7) working days prior to the scheduled meeting.

Adopted this 14 day of December, 2000.

Respectfully: John Brown
Presiding Chair

Witness: L. Adams
WBNERR Manager

E. WEEKS BAY RESERVE PARTNERS

Ecosystem Management Partners

The Reserve System Restoration Strategy: A Framework document notes that a successful Restoration Science Program requires a partnered approach and identified the following potential partners and relationships.

The Office for Coastal Management/Coastal Zone Management Program. The Coastal Zone Management (CZM) Program is a state-federal partnership to promote the conservation and responsible management of our nation's coasts. It consists of a national office and 34 state and territorial CZM programs. Direct habitat restoration activities are carried out primarily by the state and territorial CZM programs. The national office provides policy and technical support on various coastal issues, including habitat restoration.

Potential Reserve System/CZM Program Relationship:

- The CZM Programs are users of reserve scientific and technical products to support policy making decisions. The CZM Program and reserve system can engage in a proactive dialogue to determine the science needed to support policy. The reserve system can provide restoration expertise, translation, advocacy, coastal decision-maker workshops, and demonstration projects.
- The CZM Programs engage in planning, policy making, permitting and enforcement that can be directed to support restoration projects in which reserves participate.
- Some CZM Programs actively support habitat restoration. There are many opportunities for collaboration between the reserve system and CZM Program.

The NMFS Restoration Center. The National Marine Fisheries Service (NMFS) Restoration Center (RC) undertakes restoration pursuant to federal legislation and to improve the state of restoration ecology and habitat management. Its chief programs are the restoration component of the Damage Assessment and Restoration Program (DARP) for injured NOAA trust resources; restoration of Louisiana salt marshes pursuant to the Coastal Wetlands Planning, Protection, and Restoration Act; and the Community-Based Restoration Program (CBRP) which provides expertise and competitive funding to numerous small, coastal community projects restoring marine and estuarine fishery habitat. Potential Reserve System/RC Relationship*:*

- The CBRP can provide funding on a competitive basis for community-based restoration projects at reserves and assign priority to proposed projects occurring

within reserve boundaries.

- Reserves can provide restoration science and monitoring expertise and a regional context for existing and proposed CBRP projects.
- Reserves can provide links with local communities and educational opportunities.
- The RC can provide technical support by expanding its national restoration project database to include reserve projects.

National Centers for Coastal Ocean Science/Beaufort Laboratory. The Beaufort Lab in North Carolina is one of four centers comprising the National Centers for Coastal Ocean Science (NCCOS). It is the Center for Coastal Fisheries and Habitat Research and has conducted numerous successful seagrass, oyster and salt marsh restorations throughout the eastern coastal United States.

Potential Reserve System/NCCOS Relationship*:*

- NCCOS can provide restoration expertise.
- The reserve system and NCCOS can engage in collaborative restoration science activities.

The National Sea Grant College Program. Sea Grant is a partnership between NOAA and 29 universities throughout the United States. It encourages the wise stewardship of marine resources through research, education, outreach, and technology transfer. It supports investigators engaged in restoration research and extension agents assisting communities in restoring habitat.

Potential Reserve System/Sea Grant Relationship

- Sea Grant and reserves can collaborate in restoration science and technical assistance activities.
- Sea Grant and reserves can collaborate on educational/community involvement aspects of restoration, including the Coastal Training Program.

Office for Coastal Management (OCM). The OCM Learning Services Division & Science and Geospatial Services Division work with various branches of NOAA and other federal agencies to bring information, services, and technology to the nation's coastal resource managers. The technologies referred to are primarily geospatial tools such as GIS and remote sensing. Learn more of these services and organization at the link as follows.

https://coast.noaa.gov/about/organization/

Potential Reserve System OCM Relationship:

- OCM can provide training as well as technical and financial support for reserve system restoration science activities.
- The reserve system provides a national network for OCM to deliver its

information and technology to the communities and coastal decision-makers.

Office of Response and Restoration. The Office of Response and Restoration (ORR) is the steward for NOAA trust resources. Its programs include (1) the Damage Assessment and Restoration Program (DARP) which ensures that injured NOAA trust resources are restored and that the public is compensated and (2) the Coastal Protection and Restoration Program (CPRP), a network of Coastal Resource Coordinators located in the EPA regional offices and a technical support group in Seattle that develop remedies that protect resources at hazardous waste sites. ORR is the NOS lead for the ERA and related activities.

Potential Reserve System/ORR Relationship:

- ORR can provide support for the restoration of reserve resources injured by the release of hazardous materials and oil.
- The reserve system can provide restoration expertise and a regional context for ORR activities.
- ORR may be able to provide funding from recovered damages for reserve restoration science projects (funding to acquire the equivalent of injured resources).
- ORR may be able to provide technical support (e.g. database; mapping). ORR can represent reserve system needs and capabilities in the ERA dialogue.

Outside Partnerships

The NERRS Restoration Science Workgroup preliminarily identified the following organizations as high priority partners for a NERRS Restoration Science Program:

Coastal & Estuarine Research Federation The Coastal & Estuarine Research Federation (CERF) is a national organization of research scientists dedicated to promoting research on estuaries and the coastal environment and sharing that knowledge with others. There are opportunities for the reserve system and CERF to collaborate in restoration science and related activities.
CERF offers opportunities for the reserve system to communicate its findings to the scientific community.

Mobile Bay National Estuary Program The Mobile Bay National Estuary Program (MBNEP) is administered through and funded by the U.S EPA under provisions of the Clean Water Act (CWA) of 1987. The MBNEP was established in 1995 and operates via a Comprehensive Conservation Management Plan (CCMP) as a blueprint for conserving the estuary. The Reserve interacts and partners with this program supporting common areas of research, education and outreach, and various projects and training taking science to coastal management and end user stakeholders especially in topics of watershed management.

National Fish and Wildlife Foundation The National Fish and Wildlife Foundation (NFWF) was created by Congress in 1984. It supports conservation efforts through granting opportunities. The Reserve works in concert with this organization having common goals and interacting in partnership with the U. S. Fish and Wildlife Service.

Natural Resources Conservation Service In 1935, Congress passed Public Law 74-46, and established the Soil Conservation Service (SCS) as a permanent agency in the U.S. Dept. of Agriculture. In 1994, SCS's name was changed to the Natural Resources Conservation Service to better reflect the broadened scope of the agency's concerns. In doing so, Congress reaffirmed the federal commitment to the conservation of the nation's soil and water resources. The Reserve interacts and partners with this service agency on watershed issues and technical consulting through the Citizens Advisory Committee (CAC) of the Weeks Bay Watershed Project.

Restore America's Estuaries Restore America's Estuaries (RAE) is a coalition of eleven regional community-based organizations that works to preserve estuaries across America by focusing attention on estuarine habitat loss and restoration. They are dedicated to reclaiming one million acres by 2010. The reserve system and RAE can collaborate in the implementation of the ERA. RAE offers opportunities to increase reserve system visibility among constituent groups and Congress. Likewise, the reserve system provides a constituency for RAE and can assist RAE in achieving its restoration goal. There are opportunities for the reserve system to collaborate with RAE member organizations in restoration science activities.

The Nature Conservancy. The Nature Conservancy (TNC) is an international non-profit conservation organization with strengths in acquisition, public-private partnerships, protection and management. TNC has several national programs such as the "Last Great Places," Bioreserves, and the Coastal and Marine Program that offer opportunities for collaboration.

U.S. Environmental Protection Agency The U.S. Environmental Protection Agency (EPA) is the federal agency that administers the National Estuary Program (NEP). There are opportunities for the reserve system and the NEP to collaborate in estuarine restoration, research, education, and demonstration projects. EPA also has various grant programs that are funding sources for NERRS restoration activities, including Wetlands Protection Development Grants, 205j Water Quality Planning Grants, and 319h Water Quality Nonpoint Source Pollution Grants.

US Fish and Wildlife Service The US Fish and Wildlife Service (FWS) is a federal resource management agency administering a number of restoration programs. They are engaged in activities to prevent and control invasive plant and animal species. FWS personnel work in

cooperation with other agencies and organizations to promote habitat rehabilitation and restoration of natural ecosystem functions using native species. FWS administers a number of relevant grant programs, including the National Coastal Wetland Conservation Program (grants for the acquisition, restoration, and enhancement of coastal lands or waterways) and Partners for Wildlife (natural habitat restoration on private property).

The FWS Coastal Program focuses FWS efforts in bays, estuaries, and coastal watersheds. The purpose of the program is to conserve fish and wildlife and their habitat to support healthy ecosystems. The Coastal Program provides funding to fifteen priority coastal ecosystems. Many of the reserves also have FWS National Wildlife Refuges within or adjacent to their boundaries. There are opportunities for the reserve system and FWS to collaborate in estuarine restoration, research, education, and demonstration projects.

US Army Corps of Engineers The US Army Corps of Engineers (USACE) is a federal agency with the mission to provide quality, responsive engineering services to the nation. The agency is involved in planning, designing, building and operating water resources and other civil works projects (e.g. Navigation, flood control, environmental management and restoration, disaster response). In this capacity, the agency undertakes restoration projects nationwide. These can be associated with individual authorized studies, beneficial use of dredge materials related to the operation of navigation channels, and several programmatic authorities. USACE staff often coordinates its restoration activities with states, nonprofit groups, local towns, and neighborhood associations. The USACE serves as the chair of the federal and state interagency task force implementing the Coastal Wetlands, Planning, Protection, and Restoration Act. In addition, the ERA establishes the USACE as the lead agency for the estuary habitat restoration program. The reserve system and USACE can collaborate in the implementation of the Act. With additional resources, there are also opportunities for the reserve system to provide the research, monitoring, and education for USACE projects.

Additional established stewardship partners include:

AmeriCorps National Civilian Community Corps (NCCC) AmeriCorps NCCC is a full-time, team- based residential program for men and women age 18-24. AmeriCorps NCCC strengthens communities and develops leaders through direct, team-based national and community service. In partnership with non-profits—secular and faith based—local municipalities, state governments, federal government, national and state parks, Indian tribes, and schools, members complete service projects throughout the region they are assigned.

Alabama Coastal Foundation The not-for-profit Alabama Coastal Foundation (ACF) was

established in 1993. ACF works to create a healthy balance between the conservation needs of coastal resources and the pressures of economic growth. The Reserve interacts and partners with this organization on various education and outreach projects, training workshops, and other opportunities as they arise.

Dauphin Island Sea Lab The Dauphin Island Sea Lab's mission encompasses marine science education, marine science research, coastal zone management policy and education. Research programs of the Sea Lab range from biogeochemistry and oceanography to systems ecology. The Sea Lab offers local government, industry and agency decision-makers a range of coastal zone management services.

Defenders of Wildlife Defenders of Wildlife is a major national conservation organization focused solely on wildlife and habitat conservation and the safeguarding of biodiversity. Defenders of Wildlife is dedicated to the protection of all native animals and plants in their natural communities.

Gulf of Mexico Alliance The Gulf of Mexico Alliance is a partnership of the states of Alabama, Florida, Louisiana, Mississippi, and Texas, with the goal of significantly increasing regional collaboration to enhance the ecological and economic health of the Gulf of Mexico.

Gulf of Mexico Coastal Ocean Observing System (GCOOS) GCOOS seeks to establish a sustained observing system for the Gulf of Mexico to provide observations and products needed by users in this region for the purposes of (1) Detecting and predicting climate variability and consequences, (2) Preserving and restoring healthy marine ecosystems,(3) Ensuring human health, (4) Managing resources, (5) Facilitating safe and efficient marine transportation, (6) Enhancing national security, and (6) Predicting and mitigating against coastal hazards.

Gulf of Mexico Foundation The mission of the Gulf of Mexico Foundation is to promote and facilitate conservation of the health and productivity of the Gulf of Mexico and its resources through education, public awareness, research and leadership programs.

The National Estuarine Research Reserve Association (NERRA) is a national nonprofit organization established in 1987 to advance the work of the reserve system. Reserves and their regional friends groups rely on NERRA to help enhance successful programs, strengthen the network and enable reserves to better address growing challenges to our nation's estuaries, coasts, and communities.

Northern Gulf Institute The Northern Gulf Institute is a cooperative institute led by Mississippi State University, partnering with the University of Southern Mississippi, Louisiana State University, Florida State University, and the Dauphin Island Sea Lab (AL),

whose combined interrelated expertise is ideally suited to fulfill the NOAA Cooperative Institute program requirements. The Northern Gulf Institute conducts research that builds an integrated, comprehensive understanding of natural and human impacts on northern Gulf of Mexico ecosystems and associated economies to improve its management

Outward Bound Outward Bound is a non-profit educational organization and expeditionary learning school serving people of all ages and backgrounds through active learning expeditions that inspire character development, self-discovery and service both in and out of the classroom. Outward Bound delivers programs using unfamiliar settings as a way for participants to experience adventure and challenge in a way that helps students realize they can do more than they thought possible. Customized courses provide curricula developed for struggling teens, groups with specific health, social or educational needs, business and professional organizations and faith based communities.

The Pelican Coast Conservancv (PCC) is a land conservation organization whose mission is to provide 21st century solutions and sound scientific applications for conservation of critical natural resources in the face of a changing climate focusing on environmental restoration, preservation, and conservation efforts throughout the Gulf Coast region with specific utilization of geographic information systems applications in land conservation, ecosystem services, carbon sequestration and conservation biology. The PCC has partnered with the Weeks Bay Reserve Coastal Training Program to conduct workshops on the topics of perpetual conservation easements and carbon sequestration. The PCC has also partnered with the Gulf Coast Training Program on workshop topics.

University of South Alabama The University of South Alabama is a public, doctoral-level university in Mobile, Alabama, USA. It was created by the Alabama Legislature in May, 1963, and replaced existing extension programs operated in Mobile by the University of Alabama. The mission of the University of South Alabama is to offer high-quality programs of teaching, research, public service, and health care that create, communicate, preserve and apply knowledge in service to the people of Alabama as citizens in a global community.

Weeks Bay Foundation The Weeks Bay Foundation is a non-profit organization whose members provide assistance and support to the Weeks Bay National Estuarine Research Reserve's goals and programs.

Weeks Bay Volunteers The Weeks Bay Volunteers is an unincorporated nonprofit association created to aid and assist the Weeks Bay National Estuarine Research Reserve in its educational, research and resource protection functions and by fund raising activities to aid and supplement the financial resources of the Weeks Bay Reserve.

F. WEEKS BAY FOUNDATION BYLAWS

BALDWIN COUNTY, ALABAMA
JUDGE ADRIAN T. JOHNS
Filed/cert. 7/30/2008 8:15 AM
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8 Pages

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BY-LAWS
FOR THE
WEEKS BAY FOUNDATION, INC.
A NON-PROFIT CORPORATION
As Amended on April 19, 2008

ARTICLE ONE: PURPOSE

WEEKS BAY FOUNDATION, INC., a non-profit corporation, has been organized to protect the natural resources of coastal Alabama and provide support for the Weeks Bay National Estuarine Research Reserve (WBNERR) for the operations, development and preservation of the WBNERR consistent with the following purpose:

WEEKS BAY FOUNDATION, INC., a non-profit corporation, is organized and established for the general charitable purposes of generating and providing supportive funds and resources for the Weeks Bay National Estuarine Research Reserve. Such support may provide for, but not be limited to, educational, scientific, research, and interpretive programs and capital development projects and land acquisitions. The second purpose of the WEEKS BAY FOUNDATION, INC., is the protection of the natural resources of coastal Alabama, that is in Mobile and Baldwin Counties, with the primary focus in the Weeks Bay watershed.

All functions undertaken by the WEEKS BAY FOUNDATION, INC., shall be consistent with all local, state and federal laws, rules, and regulations of the WBNERR and the Management Plan thereof. The expenditures of Foundation funds shall be approved by the Foundation President or other authorized board member up to five thousand dollars ($5,000), and disbursements in excess of five thousand dollars ($5,000), or other limits established by the Board of Directors, must be approved by the Board of Directors, or the appropriate committee established by the Board of Directors. A list of regular and usual expenses may be submitted and given a blanket approval by a vote of the Board of Directors.

ARTICLE TWO: LOCATION

The principal office of this non-profit corporation, at which the day-to-day business will be transacted and where the records will be kept, will be at such place in the State of Alabama as may be fixed from time to time by the Board of Directors.

ARTICLE THREE: MEMBERS

Members of the non-profit corporation will consist of the members of the Board of Directors and members at large; i.e., persons that have paid a membership fee for the purpose of supporting the WEEKS BAY FOUNDATION, INC.

Section 1 – Membership Qualifications. The qualifications for membership will be the payment of a membership fee and the desire to support the purposes of the Foundation as stated in the Articles of Incorporation.

Section 2 – Duration. Each membership shall be one (1) year in duration, with the exception of the Lifetime Membership category, which shall be for the lifetime of the member. The membership anniversary date shall be one (1) year from the date of receipt of the first membership fee payment, or in the event of membership interruption, the latest date of membership reinstatement.

Section 3 – Duties. The duties of the membership of this Foundation will include, but not be limited to, the election of members of the Board of Directors, and the support of the goals and objectives of the Foundation.

Section 4 – Classes of Membership. The Foundation shall have one (1) class of members, and no more than one (1) membership may be held by any one person, whether in that person's individual capacity or through any corporation, company or other business entity. Each membership shall be entitled to one (1) vote.

Section 5 – Admission to Membership. The directors shall from time to time prescribe the form and manner in which application may be made for membership.

Section 6 – Property Rights. No member shall have any rights, title, or interest in any of the property or assets, including any earnings or investment income of this Foundation, nor shall any such property or assets be distributed to any member on the dissolution or winding up thereof.

Section 7 – Liability of Members. No member of this Foundation shall be personally liable for any of its debts, liabilities, or obligations, nor shall any member be subject to any assessment.

Section 8 – Transfer, Termination, and Reinstatement. Membership in this Foundation is nontransferable. Membership shall terminate on the resignation or death of a member, or a failure to pay the dues required herein within sixty (60) days of the due date. Individuals whose membership has been terminated may apply for reinstatement in the same manner as application is made for initial membership.

ARTICLE FOUR: MEMBERSHIP DUES

Section 1 – Annual Dues. The Board of Directors may determine from time to time the amount of annual dues payable to the Foundation by members. More than one level of dues may be established.

ARTICLE FIVE: MEETINGS OF MEMBERS

Section 1 – Annual Meetings. The annual meeting of the membership shall be on a date to be determined by the Board of Directors. Notice of the meeting may be provided in the Foundation newsletter.

Section 2 – Special Meetings. Special meetings of the members may be called by the president, the Board of Directors, or not less than one-tenth ($1/10^{th}$) of such members as may be qualified to vote.

Section 3 – Meeting Chairman. The annual membership meeting will be chaired by the Chairman of the Board of Directors.

Section 4 – Vote by Proxy. Members may vote by written proxy at any meeting of members. Written proxy vote authorization must be received by the president of the Board of Directors forty-eight (48) hours before the date of the meeting for which the proxy is authorized.

Section 5 – Quorum. The personal presence or proxy of five (5) members constitutes a quorum at any meeting of the membership.

Section 6 – Rules of Procedure. Robert's Rules of Order will be the authority for all questions of procedure at any meeting of the Foundation.

ARTICLE SIX: BOARD OF DIRECTORS

The Business Properties and Affairs of this corporation shall be managed by a Board of Directors.

Section 1 - Number. The number of members of the Board of Directors of this Foundation will be not less than three (3) nor more than fifteen (15). The Manager of the Weeks Bay National Estuarine Research Reserve may, at the request of the Board, serve as an ex officio member of the Board of Directors. This position will not have any voting rights.

Section 2 – Qualifications. Directors will be representative of educational, scientific, research, business, government, civic, or environmental communities and will be responsible for carrying out the mission and goals of the Foundation as identified in Article One: Purpose. The Foundation is committed to the policy of fair representation on the Board of Directors, which shall not discriminate on the basis of race, origin, physical handicaps, sex, color, religion, sexual orientation, or age.

Section 3 - Nominations. Nominations for candidates for the Board of Directors shall be submitted by the Nominating Committee to the Board of Directors at least 15 days prior to the annual meeting. The Board of Directors shall prepare a slate of candidates which shall be submitted to the membership at the annual election.

Section 4 – Election. Election of new directors or reelection of current directors will occur as the first item of business at the annual meeting of the Foundation. Elected directors shall be installed as Board members as the second item of business at the annual meeting of the Foundation. Directors will be elected by a plurality vote of the membership voting in any Foundation election. As the third item of business, the directors by a majority vote shall elect a Chairman of the Board who will serve for one year or until his or her successor is elected. The Chairman shall preside over all meetings of the Board.

Section 5 – Terms. The term of each director of the Foundation will be two (2) years, except for the initial Board which shall serve staggered terms.

Section 6 – Vacancies. When a director dies, resigns, or is removed from directorship, the Board by a majority vote may appoint a replacement director to serve for the duration of the unexpired term. Said appointment will take place at the next Board of Directors' meeting following official notification of a vacancy to the Chairman.

Section 7 – Removal. Any director may be removed from the Board of Directors by an affirmative vote of the majority of directors at an official meeting of the Board. Notice of the proposed removal will be given to members of the Board of Directors with

the notice of the meeting. The director involved will be given an opportunity to be present and to be heard at the meeting at which his or her removal is to be considered.

Section 8 – Compensation. No compensation will be paid to any member of the Board of Directors for services as a member of the Board. However, the Foundation may pay or reimburse directors for actual expenses incurred by them in connection with a meeting or in carrying out the purposes of the corporation.

ARTICLE SEVEN: MEETINGS OF THE BOARD OF DIRECTORS

Section 1 – Special Meetings. Special meetings of the Board of Directors may be called at any time by the Chairman of the Board, or the president, or the vice president with approval of a majority of the Executive Committee members, or upon receipt of a written request signed by a majority of the directors.

Section 2 – Meeting by Telecommunications. Any regular or special meeting of the Board of Directors may be held by teleconference or other means of communication.

Section 3 – Quorum. The personal presence (physical or by teleconference or other mean of communication) or proxy of a majority of the membership of the Board of Directors will constitute a quorum at any meeting.

Section 4 – Proxy Voting. Proxy voting will be permitted, if submitted to the Chairman of the Board in advance of an official meeting. Submission may be by letter, fax, or e-mail.

Section 5 – Voting. At a meeting at which there is a quorum, a simple majority of affirmative votes of the directors or proxies present is required to pass a motion before the Board.

Section 6 – Vote by e-mail. When time is of the essence, the president may approve a polling of the board by e-mail. Responses received from a sufficient number of members of the Board of Directors to constitute a quorum will be considered a vote.

Section 7 – Rules of Procedure. Robert's Rules of Order will be the authority for all questions of procedure at any meeting of the Foundation.

ARTICLE EIGHT: OFFICERS

The Board of Directors will elect a chairman who shall preside over meetings of the Board of Directors.

Section 1 – Officers. The officers of this Foundation shall be a president, vice president, secretary, treasurer, and such other officers with duties as the Board prescribes.

Section 2 – Election and Terms. The officers of the Foundation will be elected at the annual meeting by a majority of members of the Board of Directors. Terms of office are one (1) year, subject to re-election.

Section 3 – Removal. Any officer may be removed with or without cause by the Board of Directors by a vote of a majority of the Board members. The matter of removal may be acted upon at any meeting of the Board, provided that notice of intention to consider said removal has been given to each Board member and to the officer affected at least thirty (30) days previously.

Section 4 – Vacancies. A vacancy in any office may be filled by a majority vote of the Board of Directors for the unexpired portion of the term.

Section 5 – President. The president will be the chief executive officer of the Foundation and will preside over all meetings of the Executive Committee. He will have general supervision of the affairs of the Foundation. The president will execute on behalf of the Foundation all contracts, deeds, conveyances, and other instruments in writing that may be required or authorized by the Board of Directors for the proper and necessary transaction of the business of the Foundation. The president will provide at the annual meeting of the Foundation a report describing the business of the Foundation during the recently completed year of operation.

Section 6 – Vice President. It will be the duty of the vice president to act in the absence or disability of the president and to perform such other duties as may be assigned by the president or the Board. In the absence of the president, the execution by the vice president on behalf of the Foundation of any instrument will have the same force and effect as if it were executed on behalf of the Foundation by the president.

Section 7 – Secretary. The secretary will be responsible for keeping the Foundation records. The secretary will give or cause to be given all notices of meetings of the Board of Directors and all other notices required by law or by these By-Laws. The secretary will be the custodian of all books, correspondence, and paper relating to the business of the Foundation, except those of the treasurer. The secretary prepares and presents to the Board of Directors such other reports as it may request at such reasonable time or times as it may designate.

Section 8 – Treasurer. The treasurer will have general charge of the finances of the Foundation. When necessary and proper, he or she will endorse on behalf of the Foundation all checks, drafts, notes, and other obligations and evidences of the payment of money to the Foundation or coming into his or her possession; and he or she will deposit the same, together with all other funds of the Foundation coming into his or her possession, in such financial institutions as may be selected by the Board of Directors. The treasurer will keep, or cause to be kept, full and accurate account of all receipts and disbursements of the Foundation in books belonging to the Foundation, which will be open during Foundation business hours and all other reasonable times to the inspection of the Board of Directors. The treasurer will present to the Board of Directors at its annual meeting a report which describes the financial condition of the Foundation and will from time to time make such other fiscal reports to the Board of Directors as the Board may require.

Section 9 – Additional Duties. Any officer of the Foundation, in addition to the powers conferred upon him or her by these By-Laws, will have such additional powers and perform such additional duties as may be prescribed from time to time by the Board of Directors.

ARTICLE NINE: EMPLOYEES AND VOLUNTEERS

The Board of Directors, at its discretion, may hire an executive director who will serve at the pleasure of the Board.

The area of responsibility of the executive director shall include, but not be limited to, assisting standing committee and ad hoc committee chairmen as requested by the chairmen in the discharge of their duties; managing the Foundation office and its employees in a professional and businesslike manner; developing a volunteer employee program and managing volunteer employees as needed; maintaining membership rosters; and performing other duties and responsibilities which are necessary to carry out the day-to-day business of the Foundation consistent with the Foundation's By-Laws and Articles of Incorporation.

The executive director may hire and discharge employees of the Foundation with approval of the Board of Directors. The executive director shall perform or cause to be performed other duties and responsibilities as assigned by the Board of Directors which are required or necessary to carry out the business of the Foundation.

ARTICLE TEN: COMMITTEES

Section 1 – Ad Hoc Committees. The president of the Foundation may designate one or more ad hoc committees, each of which will consist of at least one (1) committee chairman and one (1) or more committee members. Committee members may be members of the Board of Directors, members of the Foundation, or other interested individuals. The chairman of the committee will be appointed by the president of the Foundation, who will act with the Board's approval. After consultation with the committee chairman, the president will appoint committee members.

The studies, findings, and recommendations of all committees will be reported to the Board of Directors for consideration and action, except as otherwise ordered by the Board of Directors. Committees may adopt such rules for conduct of business as appropriate and which are not inconsistent with these By-Laws, the Articles of Incorporation, or state law.

Section 2 – Standing Committees. The Foundation may have committees as established by the Board of Directors, including, but not limited to, the following:

Executive Committee: This committee will be chaired by the president of the Foundation and will consist of all other officers of the Foundation and the chairmen of all other standing committees. This committee will serve as the central planning group for the Foundation and as an advisory group to the executive director. It also will have full authority to act for the Board in managing the normal day-to-day operating and management affairs of the Foundation during the intervals between Board meetings.

Budget and Finance Committee: This committee will be chaired by the treasurer and will oversee and monitor the fiscal operations of the Foundation and will develop an annual operating and long-term capital budget to be recommended to the Board of Directors for management of the Foundation's business.

Revenue and Resource Committee: This committee will be chaired by the vice president and will develop an annual Foundation plan for raising funds and resources that will support the operating and capital budget objectives for which the Foundation is organized.

Land Acquisition Committee: This committee will be chaired by a member of the Board of Directors as appointed by the President. The purpose of this committee will be to evaluate all land acquisition activities including, but not limited to fee simple, bargain sale, donation, and conservation easements. All proposals will be presented to the Board of Directors for final approval.

Nominating Committee: This committee will be chaired by the Chairman of the Board of Directors and shall also include the President of the Board of Directors. This committee will nominate and present a slate of qualified candidates for the Board of Directors to the Board of Directors for selection by the members at the annual meeting.

Communications Committee: This committee will oversee the Foundation's outreach activities, to include, but not be limited to, a newsletter and website.

ARTICLE ELEVEN: FINANCES AND RECORDS

Section 1 – Contracts. The Board of Directors may authorize any officer or officers, agent or agents of the Foundation, in addition to the officers so authorized by these By-Laws, to enter into any contract or execute and deliver any instrument in the name of and on behalf of the Foundation. Such authority may be general or confined to specific instances.

Section 2 – Checks and Drafts. All checks, drafts and other orders for payment of funds will be signed by the treasurer or, if not available, the president of the Foundation or such other person as the Board of Directors may from time to time designate. All requests for payment must be approved by the executive director or other designated board member in addition to the board member authorized to sign the order for payment.

Section 3 – Books and Records. The Foundation will keep correct and complete books and records of accounts and will also keep minutes of the proceedings of its members, Board of Directors and committees having any of the authority of the Board of Directors; and it will keep at the registered or principal office a record giving the names and addresses of the members entitled to vote. All books and records of the corporation may be inspected by any member of the Board of Directors upon written request to the Chairman of the Board for any proper or reasonable purpose at any reasonable time.

Section 4 – Fiscal Year. The fiscal year of the Foundation will be as determined by the Board of Directors.

Section 5 – Loans. The Foundation shall make no loans to any officer, director, employee, or member of the Foundation.

Section 6 – Gifts and Resources. The Board of Directors may accept on behalf of the Foundation any contribution, gift, resource, bequest or devise for the general purpose or for any special purpose of the Foundation consistent with the purposes stated in the Articles of Incorporation and/or these By-Laws.

Section 7 – Deposits. The treasurer, or such other person as the Board of Directors may from time to time designate, shall deposit all funds belonging to the Foundation in the name of the Foundation in such financial institutions as the Board shall designate.

ARTICLE TWELVE: DISSOLUTION

Upon the dissolution of the Foundation and after the payment or the provision for payment of all the liabilities of the Foundation, the Board of Directors will dispose of, or provide for the management of, the assets of the Foundation in the manner set forth in the Articles of Incorporation.

The Articles of Incorporation and the By-Laws for the WEEKS BAY FOUNDATION, INC., a non-profit foundation, shall in all respects be in compliance with the requirement of the State of Alabama's "Alabama Non-profit Corporation Act," (Acts 1984, No. 84 - 290, p. 502, & 1).

ARTICLE THIRTEEN: AMENDMENTS

The Board of Directors may amend these By-Laws to include or omit any provision that it could lawfully include or omit at the time the amendment is made. Upon written notice of at least thirty (30) days, any number of amendments or an entire revision of the By-Laws may be submitted and voted upon at a single meeting of the Board of Directors and will be adopted at such meeting upon receiving a majority vote of the members of the Board of Directors. Notice of the intent to amend these By-Laws may be published in the Foundation newsletter, and such notice will be deemed in full compliance with these By-Laws.

APPROVED on this the 29th day of July, 2008.

Chairman

ATTEST:

Executive Director

BALDWIN COUNTY, ALABAMA
JUDGE ADRIAN T. JOHNS
Filed/cert. 7/ 9/2009 9:21 AM
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1 Pages

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AMENDMENTS TO THE BY-LAWS OF WEEKS BAY FOUNDATION, INC.

These are Amendments to the By-Laws of Weeks Bay Foundation, Inc. These Amendments are adopted pursuant to the provisions of said By-Laws, by a majority vote of the Board of Directors.

AMENDMENT #1

Article Six, Section 1 – Number, of the By-Laws of Weeks Bay Foundation, Inc. is hereby amended so that it will hereafter read as follows:

"The number of members of the Board of Directors of this Foundation will not be less than three (3) nor more than twenty-one (21). The Manager of the Weeks Bay National Estuarine Research Reserve may, at the request of the Board, serve as an ex officio member of the Board of Directors. This position will not have any voting rights."

AMENDMENT #2

Article Ten, Section 2 – Standing Committees, of the By-Laws of Weeks Bay Foundation, Inc. is hereby amended with the addition of the following after the description of the *Budget and Finance Committee:*

"The Budget and Finance Committee shall annually review the IRS Form 990, or other similar forms that may be required, before the form(s) is(are) signed AND the Committee shall review the audited financial statements in advance of presenting them to the Board of Directors.

The Budget and Finance Committee shall review, on an annual basis, the Investment Policy of the Foundation with regards to (1) how the Foundation's financial agent(s) is(are) performing and (2) how the various categories of Board of Director designated funds are being used relative to their purpose and allowable uses of interest and principal. Findings shall be reported to the Board of Directors at the annual meeting or as needed."

Dated this 8th day of July, 2009

Signature

Ellis S. Acker Chairman
Print or type name and title

THIS INSTRUMENT PREPARED BY

Richard K. Wallace
Signature

WALTER C. ERNEST IV
Executive Director
Weeks Bay Foundation
11401 US HWY 98
Fairhope, AL 36532

RICHARD K. WALLACE, SECRETARY
Print or type name and title

AMENDMENTS
TO THE BY-LAWS OF
WEEKS BAY FOUNDATION, INC.

These are Amendments to the By-Laws of Weeks Bay Foundation, Inc. These Amendments are adopted pursuant to the provisions of said By-Laws, by a majority vote of the Board of Directors.

AMENDMENT #3

Article Seven, Section 2 – Meeting by Telecommunications, of the By-Laws of Weeks Bay Foundation, Inc. is hereby amended so that it will hereafter read as follows:

"Any regular or special meeting of the Board of Directors or its committees may be held by means of a conference telephone or similar communications equipment by means of which all persons participating in the meeting can hear each other at the same time, and participation by the means shall constitute presence in person at the meeting."

AMENDMENT #4

Article Seven, Section 6 – Vote by e-mail, of the By-Laws of Weeks Bay Foundation, Inc. is hereby amended so that it will hereafter read as follows:

"When time is of the essence, the president or the chairman may approve a polling of the board by e-mail to determine the consensus of the board on a specific issue needing action before a board meeting can be held. Positive responses received from a majority of board members will be considered conditional approval to proceed but the action must be ratified and confirmed at the next meeting of the Board of Directors."

Dated this 19 day of MAY, 2014.

Richard P. Wallace
Signature

PRESIDENT
Print or type name and title

AMENDMENTS
TO THE BY-LAWS OF
WEEKS BAY FOUNDATION, INC.

These are Amendments to the By-Laws of Weeks Bay Foundation, Inc. These Amendments are adopted pursuant to the provisions of said By-Laws, by a majority vote of the Board of Directors.

AMENDMENT #5

Strike Article Seven, Section 6 which reads:

Article Seven, Section 6 – Vote by e-mail. When time is of the essence, the president or the chairman may approve a polling of the board by e-mail to determine the consensus of the board on a specific issue needing action before a board meeting can be held. Positive responses received from a majority of board members will be considered conditional approval to proceed but the action must be ratified and confirmed at the next meeting of the Board of Directors.

Replace with:

Article Seven, Section 6 – Action by members or directors without meeting. Any action required to be taken at a meeting of the members or directors or any action which may be taken at a meeting of the members or directors or of a committee of directors may be taken without a meeting if a consent in writing, setting forth the action so taken, is signed by all of the members entitled to vote with respect to the subject matter thereof, all of the directors or all of the members of the committee of directors, as the case may be. The consent shall have the same force and effect as a unanimous vote and may be stated as such in any filing instrument filed with either the judge of probate or Secretary of State.

Dated this 26th day of January, 2015.

Signature

Print or type name and title

Signature

Print or type name and title

G. NOAA AND ADCNR STATE LANDS MEMORANDUM OF AGREEMENT 2017

Memorandum of Agreement between the National Oceanic and Atmospheric Administration and the Alabama Department of Conservation and Natural Resources, State Lands Division detailing the state-federal roles in the management of the Weeks Bay National Estuarine Research Reserve

This Memorandum of Agreement (MOA) states the provisions for the cooperative management of Weeks Bay National Estuarine Research Reserve (Weeks Bay NERR) in the State of Alabama between the Alabama Department of Conservation and Natural Resources (ADCNR) and the National Oceanic and Atmospheric Administration (NOAA), Office for Coastal Management (OCM). This Memorandum of Agreement supersedes the previous Memorandum of Understanding between NOAA and ADCNR regarding Weeks Bay NERR made on November 9, 2006.

I. BACKGROUND

A. The State of Alabama has determined that the waters and related coastal habitats of the Weeks Bay Watershed provide unique opportunities to: study natural and human processes that contribute to the science of estuarine ecosystem functions; enhance environmental education opportunities; and provide scientific information for effective coastal zone management in the State of Alabama.

B. The State of Alabama has determined that the resources of the Weeks Bay NERR and the values they represent to the citizens of Alabama and the United States will benefit from the management of these resources as part of the National Estuarine Research Reserve System.

C. The National Oceanic and Atmospheric Administration has concurred with that finding, and pursuant to its authority under Section 315 of the Coastal Zone Management Act of 1972, as amended (CZMA, 16 U.S.C. § 1461), and in accordance with implementing regulations at 15 C.F.R. § 921.30, has designated the Weeks Bay NERR.

D. ADCNR, as the agency designated by the Governor of Alabama, is responsible for maintaining and managing Weeks Bay NERR in accordance with Section 315 of the CZMA and acknowledges the value of state-federal cooperation for the long-term management of the reserve in a manner consistent with the purpose of its designation.

E. The Weeks Bay NERR management plan, approved by NOAA, describes the goals,

objectives, strategies/actions, administrative structure, and institutional arrangements for the reserve, including this MOA and others. In consideration of the mutual agreements herein, NOAA and ADCNR agree to the following roles indicated in Section II of this agreement.

II. STATE-FEDERAL ROLES IN RESERVE MANAGEMENT

ADCNR Role in Reserve Management

ADCNR shall:

1. comply with federal laws and regulations as applicable, and include language in the Weeks Bay NERR management plan to be consistent with the provisions of the CZMA and implementing regulations;

2. to the extent possible , protect natural resources of the reserve, and support enforcement of the provisions of state law, including rules and regulations of the Alabama Coastal Area Management Program;

3. to the extent possible , support long-term protection and management of lands and waters included within the reserve boundary;

4. apply for, budget, allocate, and expend funds in accordance with federal and state laws, the reserve management plan, and annual funding guidance for reserve operations, research and monitoring, education and stewardship, and, as necessary, land acquisition and reserve facility construction;

5. conduct and coordinate research and monitoring programs that encourage scientists from a variety of institutions to work together to understand the ecology of the reserve ecosystem to improve coastal management;

6. conduct and maintain programs that disseminate research results via materials, activities, workshops, and conferences to resource users, state and local agencies, school systems, general public, and other interested parties;

7. provide staff for programs of the reserve;

8. secure facilities and equipment required to implement the provisions within the reserve management plan;

9. expend funding derived from the NOAA operations grant and state match for facilities operation and maintenance;

10. maintain effective liaison with local, regional, state, and federal policy makers, regulators and the general public;

11. serve as principal contact for issues involving proposed boundary changes and/or amendments to the reserve management plan; and

12. respond to NOAA's requests for information made pursuant to the Federal Evaluation Section 312 of the CZMA, particularly cooperative agreement and grant progress reports and evaluation findings, including necessary actions and recommendations.

B. Federal Role in Reserve Management

NOAA's Office for Coastal Management shall:

1. administer the provisions of Sections 315 and 312 of the CZMA to ensure that the reserve operates in accordance with goals of the reserve system and the Weeks Bay NERR reserve management plan;

2. review and process applications for financial assistance from the ADCNR, consistent with 15 C.F.R. § 921, for management and operation, and, as appropriate, land acquisition and facility construction;

3. advise ADCNR of existing and emerging national and regional issues that have bearing on the reserve and reserve system;

4. maintain an information exchange network among reserves, including available research and monitoring data and educational materials developed within the reserve system;

5. to the extent possible, facilitate the allocation of NOAA resources and capabilities in support of reserve goals and programs.

C. General Provisions

1. Nothing in this agreement or subsequent financial assistance awards shall obligate either party in the expenditure of funds, or for future payments of money, in excess of appropriations authorized by law.

2. Upon termination of this agreement or any subsequent financial assistance awards to ADCNR, any equipment purchased for studies to further this agreement will be disposed of in accordance with 15 C.F.R. § 24.32.

3. A free exchange of research and assessment data between the parties is encouraged and is necessary to ensure success of cooperative studies.

D. Other Provisions

Nothing in this agreement diminishes the independent authority or coordination responsibility of either party in administering its respective statutory obligations. Nothing in this agreement is intended to conflict with current written directives or policies of either party. If the terms of this agreement are inconsistent with existing written directives or policies of either party entering this agreement, then those portions of the agreement which are determined to be inconsistent with such written directives and policies shall be invalid; but the remaining terms not affected by the inconsistency shall remain in full force and effect. At the first opportunity for revision of this agreement, all necessary changes shall be made by either an amendment to this agreement or by entering in a new superseding agreement, whichever is deemed expedient to the interested parties. Should disagreement arise on the interpretation of the provisions and/or amendments of this agreement, such disagreement shall be resolved by negotiations at the operating level of each party.

III. REAL PROPERTY ACQUIRED FOR PURPOSE OF THE RESERVE

As well as acknowledging the rest of the requirements set forth at 15 C.F.R. § 921, ADCNR specifically acknowledges and will fully comply with conditions set forth at 15 C.F.R. § 921.21 (e), which specify the legal documentation requirements concerning the use and disposition of real property acquired for reserve purposes with federal funds under Section 315 of the CZMA.

IV. PROGRAM EVALUATION

The Office for Coastal Management of NOAA will schedule periodic evaluations of ADCNR performance in meeting the terms of this agreement, financial assistance awards, and the reserve management plan. Where findings of deficiency occur, NOAA may initiate action in accordance with the designation withdrawal or interim sanctions procedures established by the CZMA and applicable regulations at 15 C.F.R. § 921.40-41.

V. EFFECTIVE DATE, REVIEW, AMENDMENT AND TERMINATION

A. This agreement is effective on the date of the last signature on this agreement and shall be in effect until terminated by either party.

B. This agreement will be reviewed periodically by both parties and may only be amended by the mutual written consent of both parties.

C. This agreement may be terminated by mutual consent of both parties.

D. If any clause, sentence or other portion of this MOA shall become illegal, null, or void for any reason, the remaining portions of this MOA shall remain in full force and effect.

E. No waiver of right by either party of any provision of this MOA shall be binding unless expressly confirmed in writing by the party giving the waiver.

IN WITNESS THEREOF, the parties have caused this agreement to be executed.

Jeffrey L. Payne, Ph.D.
Director
Office for Coastal Management
National Ocean Service
National Oceanic and Atmospheric Administration

7/6/17
Date

Patricia J. Powell
Director
State Lands Division
Alabama Department of Conservation and Natural Resources

7/13/17
Date

APPROVED AS TO LEGAL

Christopher M. Blankenship
Acting Commissioner
Alabama Department of Conservation and Natural Resources

7-27-17
Date

H. WEEKS BAY NERR SECTION 312 EVALUATION METRICS

WEEKS BAY NERR SECTION 312 EVALUATION METRICS APPROVED MAY 31, 2012

Goals and Objectives from the Weeks Bay NERR Management Plan dated 2007-2012

Goal: Protect and improve habitat and biological diversity within the boundary of the Reserve.

Objective: By 2017, develop and implement comprehensive education and interpretation programs to increase knowledge of target audiences to protect and improve habitat and biological diversity within the boundary of the Reserve.

Strategy: The Reserve Education Plan calls for the implementation of comprehensive K-12 education and interpretation programs to strengthen student understanding, appreciation and stewardship of estuaries and associated coastal habitats in an effort to protect and improve habitat and biological diversity within the boundary of the Reserve.

Performance Measure: Number of K-12 education programs held annually at the Reserve that focus on the value and conservation of estuaries.

Target: 25 K-12 education programs held annually at the Reserve focus on the value and conservation of estuaries.

Goal: Improve decisions affecting estuarine and coastal resources.

Objective: By 2017, use the training and outreach center (Resource Center) for the capacity building of coastal resource managers in an effort to improve decisions affecting estuarine and coastal resources.

Strategy: The Reserve Education Plan calls for the implementation of comprehensive coastal training programs to utilize the Resource Center in building capacity for coastal resource managers and strengthen understanding, appreciation and stewardship of estuaries, coastal habitats, and associated watersheds to improve decisions affecting estuarine and coastal resources.

Performance Measure: Number of Coastal Training Program (CTP) workshops held annually target coastal resource managers and local decision-makers and use Reserve-specific research to support best management decisions to protect coastal estuaries.

Target: 5 CTP workshops at the Reserve held annually target coastal resource managers and local decision-makers and use Reserve-specific research to support best management decisions to protect coastal estuaries.

Goal: Promote education, stewardship, and scientific research focusing on estuarine ecosystems.

Objective: By 2017, provide resources, support, and background data to facilitate independent research projects within the Reserve and adjacent associated waters.

Strategy: The Reserve will support and facilitate independent research projects of external researchers in the Weeks Bay Reserve boundary, the Weeks Bay watershed, and the Weeks Bay Coastal Area. Resources provided by the Reserve include laboratories, lodging, and field sites. Support and facilitation mean providing background data, logistical support including access to Reserve boats, and Reserve staff time.

Performance Measure: Number of Reserve supported research projects initiated annually at the Reserve that investigate the dynamics and function of estuaries.

Target: 3 Reserve supported research projects initiated annually at the Reserve that investigate the dynamics and function of estuaries.