

# Respect The Connect



Comprehensive Conservation & Management Plan  
for Alabama's Estuaries & Coast  
2019-2023

## Preface

In 1972, the Clean Water Act was created to restore and maintain the chemical and biological integrity of the nation's waters so they can support the protection and propagation of fish, shellfish, wildlife, and recreation in and on the water.

In 1987, the National Estuary Program (NEP) was created by the U.S. Congress via amendments to this act to identify, restore, and protect nationally significant estuaries. Authorized under Title 3, Section 320, Public Law 94-117, 33 U.S.C 466, the goal of this program is to protect and restore the water quality and resources of estuaries, designated by the EPA Administrator as "Estuaries of National Significance," and associated watersheds.



Prepared by the Mobile Bay National Estuary Program  
A division of the Dauphin Island Sea Lab

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# Acronyms

**ACAMP**

Alabama  
Coastal Area  
Management  
Program

**ACBT**

Alabama Coastal  
Birding Trail

**ACES**

Alabama  
Cooperative  
Extension System

**ACF**

Alabama Coastal  
Foundation

**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

**AFC**

Alabama Forestry  
Commission

**AFS**

American  
Fisheries Society

**ALDOT**

Alabama  
Department of  
Transportation

**AMSA**

Association of  
Metropolitan  
Sewer Agencies

**ANS**

Aquatic Nuisance  
Species

**AOS**

Alabama  
Ornithological  
Society

**APHIS**

Animal and Plant  
Health Inspection  
Service

**As** Arsenic

**AUMERC**

Auburn University  
Marine Extension  
Research Center

**AWW**

Alabama Water  
Watch

**BMPs**

Best  
Management  
Practices

**BRC**

Business  
Resources  
Committee

**CAC**

Community  
Action Committee

**CACWP**

Coastal Alabama  
Clean Water  
Partnership

**CAFO**

Concentrated  
Animal Feeding  
Operation

**CBCP**

Coastal Bird  
Conservation  
Program

**CCA**

Coastal  
Conservation  
Association

**CCL**

Construction  
Control Line

**CCMP**

Comprehensive  
Conservation  
and Management  
Plan

**CHCT**

Coastal Habitats  
Coordinating  
Team

**CMP**

Corridor  
Management  
Plan

**CRI**

Community  
Resilience Index

**CSO**

Combined Sewer  
Overflows

**CWA**

Clean Water Act

**DIN**

Dissolved  
Inorganic  
Nitrogen

**DIP**

Dissolved  
Inorganic  
Phosphorous

**DISL**

Dauphin Island  
Sea Lab

**DO**

Dissolved Oxygen

**DRCR**

Dog River  
Clearwater  
Reviual

**EFH**

Essential Fish  
Habitat

**EPA**

Environmental  
Protection Agency

**EPCRA**

Emergency  
Planning and  
Community Right  
to Know Act

**FAMP**

Fisheries  
Assessment  
and Monitoring  
Program

**FERC**

Federal Energy  
Regulatory  
Commission

**GMP**

Gulf of Mexico  
Program

**GNC**

Government  
Networks  
Committee

**GOMA**

Gulf of Mexico  
Alliance

**GSA**

Geological Society  
of America

**GSA**

Geological Survey  
of Alabama

**GSMFC**

Gulf States  
Marine Fisheries  
Commission

**HABs**

Harmful Algal  
Blooms

**Hg** Mercury

**LID**

Low Impact  
Development

**LLPS**

Little Lagoon  
Preservation  
Society

**MASGC**

Mississippi  
Alabama Sea  
Grant Consortium

**MAWSS**

Mobile Area  
Water and  
Sewer System

**MBAS**

Mobile Bay  
Audubon Society

**MBK**

Mobile Baykeeper

**MBNEP**

Mobile Bay  
National Estuary  
Program



<b>MC</b> Management Committee	<b>NAS</b> Non-indigenous Aquatic Species	<b>NRCS</b> Natural Resource Conservation Service	<b>SARPC</b> South Alabama Regional Planning Commission	<b>USACE</b> United States Army Corps of Engineers
<b>MCHD</b> Mobile County Health Department	<b>NAWQA</b> National Water-Quality Assessment	<b>NRDA</b> Natural Resource Damage Assessment	<b>SAV</b> Submerged Aquatic Vegetation	<b>WES</b> Waterways Experiment Station
<b>MCWCA</b> Mobile County Wildlife and Conservation Association	<b>NCCA</b> National Coastal Condition Assessment	<b>NRHP</b> National Register of Historic Places	<b>SEAMAP</b> Southeast Area Monitoring and Assessment Program	<b>USCG</b> U.S. Coast Guard
<b>MDN</b> Mercury Deposition Network	<b>NEMO</b> Non Point Education for Municipal and Elected Officials	<b>NTN</b> National Trends Network monitoring site	<b>SEPMN</b> Southeastern Plankton Monitoring Network	<b>USDA</b> United States Department of Agriculture
<b>MHW</b> Mean High Water	<b>NERR</b> National Estuarine Research Reserve	<b>NWR</b> National Wildlife Refuge	<b>SLD</b> State Lands Division	<b>USFWS</b> U.S. Fish and Wildlife Service
<b>MRD</b> Marine Resources Division	<b>NFWA</b> National Fish and Wildlife Foundation	<b>OAR</b> Office of Archaeological Research	<b>SSO</b> Sanitary Sewer Overflow	<b>USGS</b> U.S. Geological Survey
<b>MWW</b> Muddy Water Watch	<b>NISA</b> National Invasive Species Act	<b>OAW</b> Outstanding Alabama Waterway	<b>SWCD</b> Soil and Water Conservation District	<b>VOCs</b> Volatile Organic Compounds
<b>NADP</b> National Atmospheric Deposition Program	<b>NMFS</b> National Marine Fisheries Service	<b>OSAA</b> Organized Seafood Association of Alabama	<b>TMDL</b> Total Maximum Daily Load	<b>WBNERR</b> Weeks Bay National Estuarine Research Reserve
<b>NAFSMA</b> National Association of Flood and Storm Water Management Agencies	<b>NOAA</b> National Oceanic and Atmospheric Administration	<b>PIC</b> Project Implementation Committee	<b>TNC</b> The Nature Conservancy	<b>WBWW</b> Wolf Bay Watershed Watch
<b>NARS</b> National Aquatic Resources Surveys	<b>NPDES</b> National Pollutant Discharge Elimination System	<b>SABA</b> South Alabama Birding Association	<b>TRI</b> Toxic Release Inventory	<b>WFFD</b> Wildlife and Freshwater Fisheries Division
	<b>NPS</b> Non Point Source (Pollution)	<b>SAC</b> Science Advisory Committee	<b>UNEP</b> United Nations Environment Programme	<b>WRATT</b> Waste Reduction and Technology Transfer



Kayakers on Bon Secour Bay

# Introduction

**NEPs work to implement estuarine ecosystem-based management by characterizing the priority problems in their estuaries and surrounding watersheds, developing Comprehensive Conservation and Management Plans (CCMPs) that list and describe actions to address those problems, and identifying partners, including lead entities, to implement the actions.**

The Mobile Bay National Estuary Program (MBNEP) was recognized by the EPA Administration as an NEP in 1995 at the request of then-Governor Fob James. It is one of 28 federally authorized NEPs administered and funded by the EPA. A State-sponsored program through its Department of Conservation and Natural Resources, the purpose of the MBNEP is to bring together engaged and diverse communities committed to developing consensus on what our ecosystem priorities are, how to achieve them, and how to facilitate and promote their implementation. This is accomplished through the support of a Management Conference made up of diverse stakeholder committees who develop and implement the strategies contained within a CCMP. The MBNEP serves as a catalyst for activities of the Management Conference, helping to build community-based organizational capacity for sound resource management and leveraging commitment and investment to ensure the sustainability of Alabama's estuaries and coast.

The creation of and updates to the CCMP utilize scientific assessments of where and what stressors are impacting the health of our estuarine ecosystems. Input is captured from citizens throughout Mobile and Baldwin counties and beyond, and actions are identified by community leaders, resource managers, and scientists to conserve, restore, and protect those things valued most by those living in coastal Alabama. *Respect the Connect: A Comprehensive Conservation and Management Plan for Alabama's Estuaries and Coast (Respect the Connect)* was published in 2013 (MBNEP 2013). Since its publication, many of the strategies for measuring ecosystem health, restoring watersheds, building community capacity, and expanding citizen education and involvement have been implemented, resulting in some noteworthy successes. However, implementation of *Respect the Connect* is far from complete.

In 2018, the MBNEP began the process of updating the CCMP as a requirement of the *National Estuary Program Comprehensive Conservation and Management Plan Revision and Update Guidelines* (EPA, May 2016), which mandates these updates every five years to ensure the plans are relevant and effective. The *CCMP Update 2019-2023* reaffirms the goals of the *Respect the Connect*, based on an analysis of the strengths, weaknesses, opportunities, and threats of implementing the strategies in this 2013-2018 Plan. It refines the objectives and suggested activities, improves organization within the strategies, clarifies responsibilities across the Management Conference committees, and provides an overview of activity financing alternatives.

**This *CCMP Update 2019-2023* provides the Mobile Bay National Estuary Program Management Conference with a road map for meeting the environmental needs of Alabama estuaries and coast.**



**Reddish Egret Near  
Lightning Point,  
Bayou La Batre**

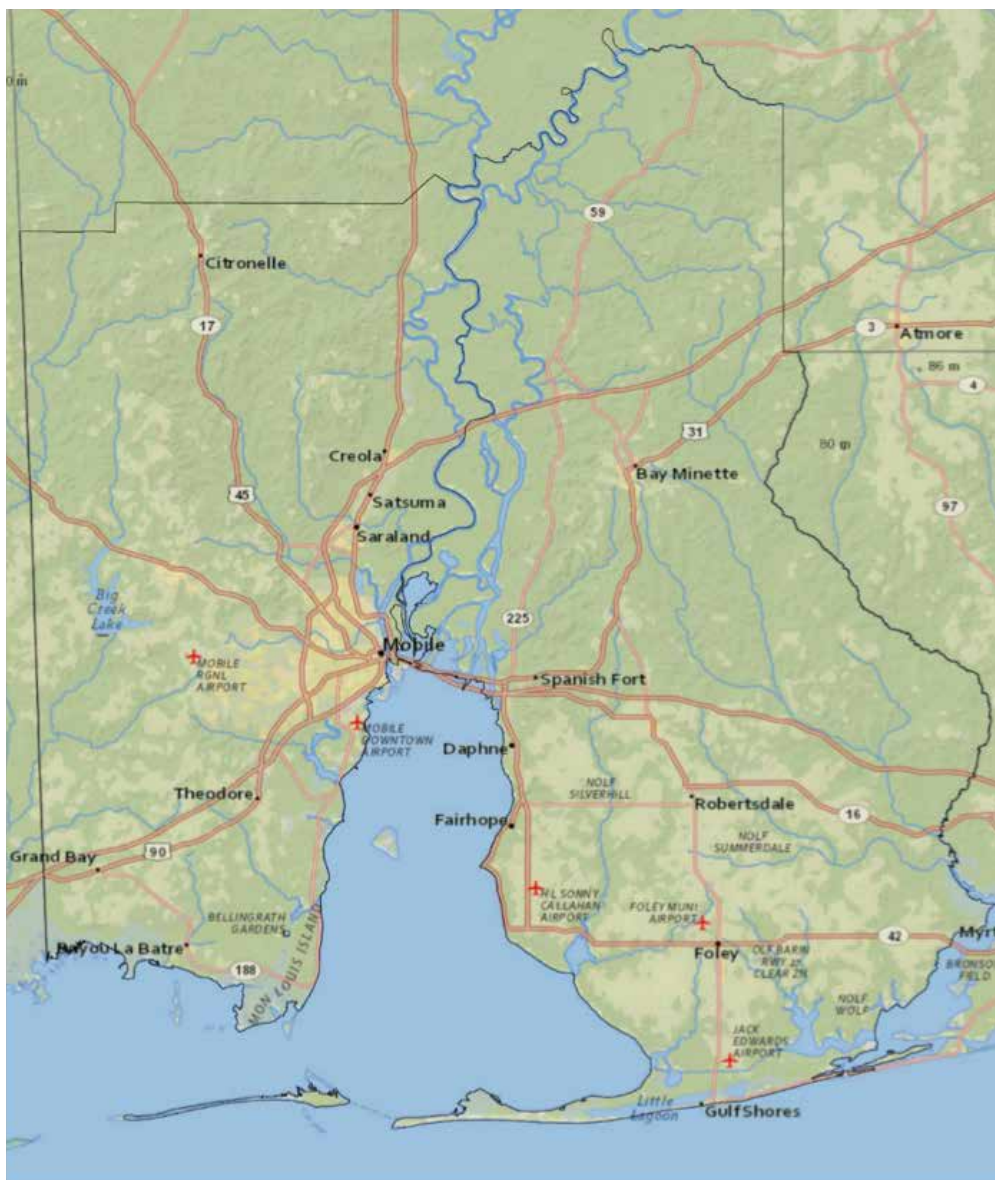


Arlington Park



## An Overview: The Landscape

The Mobile Bay Watershed (shown on facing page) is the sixth-largest drainage basin by area (over 43,600 square miles) with the fourth largest freshwater flow volume (62,000 cubic feet per second on average) in the United States, draining most of the State of Alabama and portions of Mississippi, Georgia, and even Tennessee. Outflows from Alabama's major rivers consolidate into five - the Mobile, Spanish, Tensaw, Apalachee, and Blakely Rivers - to create the second largest intact river delta system in the nation, The Mobile-Tensaw Delta. The Delta includes a vast network of wetlands and waterways, with over 200 rivers, bays, creeks, bayous, lakes, cutoffs, branches, and sloughs. Large watersheds draining to major rivers can be divided into many smaller subwatersheds that drain to tributaries of those rivers.



**Figure 1:** MBNEP's primary target area, Alabama's two coastal counties - Mobile County (west) and Baldwin County (east). Page 17 shows the greater Mobile Bay Watershed.



**TENNESSEE**

**MISSISSIPPI**

**ALABAMA**

**GEORGIA**

Mobile Bay

Gulf of Mexico



# Alabama's Coastal and Estuarine Habitats

The Mobile Bay estuary includes waters within Baldwin and Mobile counties and Mobile Bay, where the fresh water from several Alabama rivers mixes with the salt water of the Gulf of Mexico to produce rich brackish waters. It supports both fresh and saltwater species and serves as nursery habitat for many commercially and recreationally important fish and shellfish. It is considered environmentally and economically important because of its exceptional biodiversity and productivity. This estuary is greatly affected by the upstream waters draining the expansive Mobile Bay Watershed. At its southern terminus lies the Mobile-Tensaw Delta and a network of habitats supporting the greatest diversity of species in any state east of the Mississippi River. Mobile Bay is approximately 32 miles long and 23 miles across at its widest point and averages only 10 feet of depth.

Other coastal estuaries in and near Alabama include Escatawpa River drainage to the Alabama-Mississippi State Line and Perdido Bay and its drainage to the Alabama-Florida border. Alabama's two coastal counties (Baldwin and Mobile) and these estuaries support 337 species of fish, 126 species of reptiles and amphibians, 355 species of birds, and 49 species of mammals, including over 625,000 humans (US Census 2017). The variety of fish and wildlife species calling coastal Alabama home depends on many different habitats for food and shelter.

## The following habitats provide critical ecosystem services to the flora and fauna of our coast:

### **Freshwater Wetlands:**

Freshwater wetlands are bottomland to upland areas with a natural supply of water, either from flooding rivers or streams, groundwater seeps, or depressions perched above shallow groundwater, ensuring wet conditions for at least a part, if not all, of the year. These vegetated habitats serve to slow and

store floodwater, recharge groundwater supplies, and enhance water quality by trapping excess sediments, nutrients, and other pollutants. Freshwater wetlands support highly diverse biological communities but are among the most highly stressed and historically altered habitats in coastal Alabama.

### **Intertidal Marshes and Flats:**

Intertidal marshes and flats are nearshore habitats, tidally inundated with salt or brackish water. Salt marshes represent one of the world's most biologically productive natural communities, supporting dense stands of only a few robust species of herbaceous plants and some shrubs. Birds, wildlife,

and finfish frequently visit salt marshes to dine on the small or juvenile fish, crustaceans, snails, and bivalve mollusks they support. Tidal marshes and flats act as storm buffers, absorbing wave energy and reducing shoreline erosion; improve water quality by absorbing excess nutrients from the water column and stormwater runoff; and provide nursery habitat for numerous important fishery populations. Much of the early development around the City of Mobile, including Water Street, was built on land created by filling marshes along the Mobile River.

**Rivers, Streams, and Riparian Buffers:** Rivers and streams are natural, flowing watercourses, bounded by channel banks that carry freshwater from upland sources downstream to tidally influenced estuaries. Streams may be perennial (relatively permanent) to ephemeral (temporary and intermittent), with beds varying from cobbles to unconsolidated sandy or muddy sediments. Riparian buffers are the lands adjacent to these watercourses. Vegetated buffers help stabilize stream channel

structure by providing root systems resistant to stream bank erosion and dissipating the energy of flowing waters during flood events. Riparian buffers protect the water quality of streams or rivers by filtering and trapping sediments, nutrients, and other pollutants. Together, streams, rivers, and buffers provide complex edge habitat that support a diversity of fish; reptiles; birds; wildlife; and insects, crustaceans, and other benthic invertebrates.

**Upland Forests:** Three different forest habitat types – long leaf pine, pine savanna, and maritime forest – are included in this group, due to both delivery of similar ecosystem services and impacts by stressors.

**Longleaf pine** was the most prevalent landscape in the southeastern U.S. when Europeans first arrived. Providing exceptional wildlife habitat, dependent upon fires, tolerant of strong winds, and resistant to many insects and fungal diseases affecting other pine species, most long leaf pine forests had disappeared by the 20<sup>th</sup> century due to logging and development.

**Pine savanna** systems occur on non-riverine, poorly drained, coastal lands dominated by loblolly and slash pines, with some hardwoods in wetter areas. They are coastal buffers with widely scattered trees and a mostly-grass and herb understory of high species diversity. Decreases in their distribution are blamed largely on human development.

Once a more prevalent habitat along the northern Gulf coastline, remnant **maritime forests** now only remain in narrow, discontinuous bands, covering more stable portions of barrier islands and coastal dune ridges. Adapted to windy conditions and salty air, maritime forests stabilize soils and provide storage capacity for groundwater and wildlife habitat favored by many migratory bird populations.

**Subtidal Habitats:** Oyster reefs, submerged aquatic vegetation, and other subtidal habitats face stresses from sedimentation, dredge and fill, and freshwater discharge. Subtidal habitats include any areas below the mean low tide line, including unconsolidated sediments and hard bottoms supporting fish, crustaceans, mollusks, and other benthic invertebrates.

Dense, three-dimensional **oyster reefs** form when oysters attach to one another in brackish to salty waters of Mobile Bay and the Mississippi Sound. In addition to their commercial value, oyster reefs provide refuge habitat for many aquatic species, improve water quality by active filtration, and stabilize shorelines and water bottoms by buffering wave action. Locally, oysters face natural stress from oyster drill predation, stimulated by drought and high salinities, and further human stress from harvest.

**Submerged aquatic vegetation** (SAV or seagrasses) occurs in vast expanses in shallow water areas across a range of salinity preferences. SAV beds filter pollution from runoff, reduce erosion, and provide food for manatees and waterfowl and refuge habitat for commercially and recreationally important fish and shellfish. The extent of SAV was greatly reduced in the 20<sup>th</sup> century, due in part to land use conversion, associated degradation of water quality by sediment and nutrients, and scarring from recreational boat propellers.

### **Beaches and Shorelines:**

Beaches and dunes fronting the Gulf of Mexico support herbaceous plants like sea oats, salt-spray-tolerant grasses and herbs, and maritime forests which together provide nesting habitat for the Alabama beach mouse, sea turtles, and a variety of resident and migratory shorebirds. Beaches and dunes provide the first line of defense against tropical storm surge and wave action.

Natural estuarine shorelines, like salt marshes, provide critical edge habitat between uplands and waters and provide food and refuge for aquatic and land species. Loss of this habitat is largely attributable to shoreline armoring, or installation of bulkheads or revetments, to protect waterfront properties from erosion. Deflection of wave energy off bulkheads causes scouring that eliminates productive edge habitat and intensifies erosion on neighboring, unarmored properties.

**Open Water:** More downstream waters in Alabama's estuarine system include the open waters of lower Mobile Bay, Mississippi Sound, and the nearshore Gulf of Mexico. Along the predominantly featureless bottom landscape of sand and muddy substrate, Alabama's artificial reef program has added complexity and increased connectivity between inshore, nearshore, and offshore habitats. Through a cooperative agreement between the U.S. Army Corps of Engineers (USACE) and the Alabama Marine Resources Division (MRD), ecologically productive reefs have been created using decommissioned bridge spans, oil/gas platform jackets, limestone aggregate, pre-fabricated reef modules, army tanks, re-purposed concrete culverts/manholes/pipes, ships, dry docks, barges, and other "materials of opportunity." Along with oil and gas platforms that provide exceptionally productive fish habitat, artificial reefs and nearshore sand bars are destinations for the red drum, sheepshead, gray snapper, and southern/Gulf flounder that migrate as juveniles from rivers, bayous, bays, and other inshore waters.

### **Human Ecosystem:**

The predominant species surrounding, using, and impacting the estuarine waters of Alabama are humans. Since the discovery of Mobile Bay around 1500 by Spanish explorers, humans have been changing land uses, fragmenting habitats, impacting water quality, extracting resources, and stressing the natural environment. In 2010, coastal shoreline counties comprising less than 10 percent of U.S. land area were home to 39 percent of the national population. These counties support a density of 446 persons per square mile (persons/mi<sup>2</sup>), or over four times the national population density of 105 persons/mi<sup>2</sup>

and six times the density of national inland counties of 74 persons/mi<sup>2</sup>. Alabama's two coastal counties reflect this trend.

Since 1990, Baldwin County's population has more than doubled from 98,280 in 1990 to an estimated 212,022 in 2018, reflecting a 27-year population increase of 116 percent. The seventh-most-populated county in the State and the second-fastest-growing, Baldwin County has a median age of 42.6 years, median household income of \$52,562, median property value of \$182,000, and a home ownership rate of 72.9 percent. While 85,953 of its residents are employed, its poverty rate is 11.8 percent.

In comparison, over the same time, Mobile County's population has grown from 378,643 to an estimated 413,955, reflecting a more modest 9.3 percent population increase. The second-most-populated county in the State, Mobile County is younger, with a median age of 38.2, and not as wealthy, with a median household income of \$46,023, median property value of \$131,200, and home ownership rate of 65.6 percent. While 173,485 of its residents are employed, its poverty rate is 19.3 percent.

# Ecosystem Services

Ecosystem services include the various benefits that humans gain – free of charge – from the natural environment and properly functioning ecosystems, whether forest, grassland, aquatic, or marsh. Ecosystem services are grouped into four categories: provisioning, such as the production of food, water, medicinal resources, and energy; regulating, such as climate control, pollination, water or air purification, and pest or disease control; supporting, such as nutrient cycling, photosynthesis (primary and oxygen production), soil formation, and oxygen production; and cultural, including spiritual, educational, and recreational benefits.

## Coastal Stressors

Environmental stressors are factors or phenomena that negatively impact waters or habitats and reduce their ability to provide ecosystem services. Some stressors, like hurricanes, droughts, or cold snaps, occur naturally, independent of human activity. However, of the 13 stressors evaluated by MBNEP's Science Advisory Committee for impacts to coastal habitat types, all are related to anthropogenic (or human-caused) factors. The ten stressor types described in Table 1 were identified by the Science Advisory Committee as having the greatest impact across coastal habitats, with the first five each impacting several habitat types.

### Habitat Fragmentation

The single stressor impacting most of the six coastal habitat types is habitat fragmentation. When people clear natural landscapes to develop or farm, large continuous tracts of natural habitat are divided into smaller, separate, leftover "islands," isolated from each other by cropland, pasture, or pavement. These patches, with less genetic diversity and vigor, support smaller populations of species. Populations can maintain genetic diversity through migration, which is also disrupted by fragmentation. Fragmentation reduces biodiversity and forces animals into smaller patches of habitat, leading to overcrowding and intense competition for food, space, and other needs.

### Land-Use Change

Conversion of natural landscapes to agricultural or urban uses eliminates the ecosystem services they once provided. Land-use changes reduce primary production, rainwater infiltration, and water purification and retention, while causing habitat fragmentation and loss, increased volumes and velocities of stormwater runoff, stream bank erosion, and sedimentation.

### Dredging/Filling

Dredging involves removal of accumulated sediment from waterway bottoms, so vessels can navigate and operate. Filling is used primarily to convert wetlands or open water to residential, urban, or industrial uses. Together, these processes destroy wetlands and marshes and

impact shorelines and benthic (or bottom) habitats by either decreasing sediment where it has been lost, and in the process impacting benthic invertebrates, or increasing the sedimentation and covering over benthic habitats and communities.

**Sedimentation** is a natural part of healthy estuarine systems, until it is carried from eroding stream banks or poorly managed construction sites to receiving waters by stormwater runoff. Silt accumulates on water

bottoms, smothering or disrupting benthic organisms and their habitats. Sediments also reduce water clarity necessary for growth of submerged aquatic vegetation, disrupt predator/prey relationships in fish, and impact the health of several estuarine fish species.

**Freshwater discharge** from rivers into salty Gulf or ocean waters is what creates an estuary. Commercially and recreationally important fish and shellfish species depend on brackish plant communities

and waters to complete important life cycle stages. Reduced freshwater related to droughts (or even dams) may stress plants that prefer fresher waters and makes oysters more vulnerable to predation by oyster drills, which thrive in saltier waters. Conversely, high levels of freshwater discharge from significant rain events may harm sessile (fixed or attached) estuarine species, like oysters, and push motile species downstream towards saltier waters.

## Other stressors impacting coastal Alabama habitats

**Resource extraction** involves withdrawing materials from the natural environment. Overfishing, clear cutting of upland forests, or extracting gas or oil from estuarine water bottoms are three examples that each disrupt estuarine habitats.

**Pathogens** are potentially disease-causing bacteria or other microorganisms carried by stormwater runoff to estuarine waters from sanitary sewer overflows, faulty septic systems, wildlife waste, or poorly managed livestock operations.

**Nutrient enrichment** is the delivery of high concentrations of nitrate and phosphate from fertilized fields, golf courses, parks and yards, or water

treatment facilities by stormwater runoff into receiving waters. It promotes rapid growth of algae, including harmful algal blooms like "red tide." Through a process called eutrophication, nutrient-stimulated blooms of single-celled algae accumulate and then die and decompose, depleting dissolved oxygen in the water and causing hypoxic (reduced oxygen) or anoxic (no oxygen) conditions, dangerous to most fauna.

**Climate variability and sea level rise** are both impacts of a changing atmosphere that underlie greater temperature extremes with higher average temperatures; increased frequency and intensity of

storm events; increased risk of droughts and fire; higher waters with more rapid coastal erosion, increased flooding, shoreline change, and loss of protective barriers; and saltwater intrusion into aquifers and surface waters.

**Fire suppression** threatens plant communities (e.g., long leaf pines) which require regular to occasional fires to eliminate invasive competitors and overcrowding and promote growth of desirable understory plants. Without these necessary fires, invasive species take over, and flammable fuels accumulate until ignited, resulting in destructive "crown fires" which kill even fire-tolerant species.

# Habitats Most Vulnerable to Stressors

In 2012, to determine where stresses are having the most impact throughout our estuary and coast, over 25 scientists representing a diversity of disciplines evaluated the impacts of human-related stressors, including chemical contamination, dredging and filling, fire suppression, habitat fragmentation, invasive species, nutrient enrichment, pathogens, sea level rise, climate variability, freshwater discharge, and resource extraction, on the ecosystem services provided by a variety of coastal habitats.

Results are indicated in Table 1 showing the three most stressed habitats: freshwater wetlands; intertidal marshes and flats; and streams, rivers, and their riparian buffers; the ecosystem services most impacted, the most significant sources of stress, and the values impacted. These habitats are still considered to be most vulnerable to anthropogenic stressors, and, as such, watershed planning for the next five years will continue to concentrate efforts to stabilize, restore, and conserve freshwater wetlands; intertidal marshes and flats; and streams, river, and riparian buffers.

**Table 1.** The three most-stressed coastal habitat types, most-stressed ecosystem services, the most significant sources of stress, and the citizen values most impacted.

<b>HABITAT</b>	<b>ECOSYSTEM SERVICES MOST STRESSED</b>	<b>TOP STRESS IMPACTS</b>	<b>CITIZEN VALUES</b>
<b>Freshwater Wetlands</b>	Nesting for birds and turtles Biodiversity Wildlife Fisheries	Land-use Change Fragmentation Dredging and Filling	Access Fish Heritage Resilience Water Quality
<b>Intertidal Marshes and Flats</b>	Biodiversity Fisheries Wildlife Water Quality	Sediment Sea Level Rise Fragmentation	Access Fish Heritage Resilience Water Quality Beaches
<b>Streams and Rivers (Riparian Buffers)</b>	Fisheries Bio Diversity Water Quality Sediment	Freshwater Dishcharge Land-use Change Sediments	Access Fish Heritage Resilience Water Quality





Maple Street

Erosion at Wolf Creek, Foley



Gulf State Park Salt Marsh, Gulf Shores



# Getting to an Update: The Background

Since the MBNEP's first CCMP was adopted in 2002, (with 101 recommended actions, of which 87 were accomplished on some level), the coast has survived several catastrophic events, including historically significant hurricanes, the *Deepwater Horizon* incident (an oil spill with uncertain long-term effects), and an economic collapse second only to the Great Depression. Each incident has resulted in population shifts and governments scrambling for revenue. Mobile is now Alabama's third most populous city, and the eastern shore of Mobile Bay continues to experience unbridled growth.

In 2013, the second CCMP, *Respect the Connect*, was adopted. Through a consensus-building and collaborative decision-making process, MBNEP engaged over 1,000 stakeholders from federal, state, and local agencies; industry; academia; and citizen groups to develop a "roadmap" integrating local input and supporting local priorities to ensure the quality and ecological integrity of Alabama's estuarine waters. MBNEP conducted an extensive process of gathering community input through surveys and community meetings to assess environmental attitudes and find common values, thoroughly evaluating the original CCMP's implementation successes and gaps, and scientifically evaluating which habitats were most at risk. The information from these three activities formed the foundation of the 2013-2018 CCMP to ensure the actions it recommended resonated with the community, were based in science, and were achievable and realistic.

*Respect the Connect* garnered national attention for an approach prescribing watershed management plan development as a basis for ensuring protection and restoration efforts across coastal Alabama are scientifically defensible and fit into an overall management program structured around **drainage areas**, rather than **geopolitical boundaries**. Since its publication, many of the strategies for measuring ecosystem health, restoring watersheds, building community capacity, and expanding citizen education and involvement have been implemented, resulting in some noteworthy successes, including nine completed watershed management plans currently being implemented. However, while public awareness about the environment has increased and public support of the CCMP is strong, much remains to be done to protect, conserve, and improve management of our natural resources.

## The CCMP is Guided by These Tenets

- Vision** Alabama's estuaries, where the rivers meet the sea, are healthy and support ecological function and human uses.
- Purpose** The MBNEP brings together an engaged and diverse community committed to integrating environmental health with community and economy to develop consensus on what our ecosystem priorities are, how to achieve them, and how to facilitate/promote their implementation.
- Mission** To provide the tools to promote the wise stewardship of the water quality and living resource base of the Mobile Bay estuary and the Mobile-Tensaw Delta.
- Goals**
  - Water that is fishable, swimmable, and drinkable (meeting or exceeding state's designated uses)
  - Conservation, restoration, and protection of critical habitats
  - Community who understands and supports the value of our coastal resources
  - Integration of environmental health with a balanced economy
  - Participating stakeholders' capacities are effectively integrated and leveraged

**The MBNEP works within a set of principles to maximize its effectiveness in promoting its goals.**

**Those who live it know it.**

Citizens, anglers, boaters, scientists, hunters, and others have a unique insight into the environmental challenges we face, what works, and what doesn't. **Stakeholder input is vital to developing long-term solutions to local challenges.**

**Economic opportunities must be available.**

Our coast is an economic engine, creating significant wealth for our State each year through activities such as trade through the Port of Mobile, recreational and commercial fishing, tourism, hunting, and coastal construction. **Many jobs depend on coastal water quality, healthy populations of fish and wildlife, and a mosaic of habitats that provide essential natural functions.**

**Environmental stewardship is interconnected.**

Residents, towns, cities, counties, businesses, industries, academia, community developers, and social services all have vested interests in preserving the quality of life derived from Alabama's estuaries and coast. **Coalitions that bring together a diversity of stakeholder interests are critical to comprehensively addressing the challenges of balancing economic development with environmental protection.**

**It happens in the river, in the sea, and on the street.**

Involvement of citizens in carrying out activities aimed at improving our estuaries, bays, and surrounding watersheds is paramount to ensuring the long-term health and vitality of Alabama's estuaries and coast. **Citizens must be actively engaged in balancing the many uses of our waters so we can preserve these unique natural resources.**

# Staying Focused on What People Value about Living on the Alabama Coast

Over the last quarter century, since the inception of the MBNEP, one thing has stayed the same for coastal Alabama residents: nothing is more important than water. Whether it is to drink, catch food, earn a living, play, swim, or simply view, coastal residents value our water.

To successfully restore, protect, and conserve our coastal way of life, it is imperative for us to maintain connection to what contributes to our coastal quality of life. Through an extensive citizen-input process conducted for the 2013 CCMP update, six common values most important to those living in Coastal Alabama were identified.



**Access:** To the water and open spaces for recreation and vistas.



**Beaches and Shorelines:** Protection, economy, beauty.



**Fish and Wildlife:** Habitats, abundance, livelihoods.



**Heritage and Culture:** Promoting our area's historic identity and protecting this legacy for future generations.



**Resilience:** Protecting the capacity of human and natural physical systems to rebound from unforeseen events.



**Water Quality:** Whether drinkable, fishable, or swimmable, the public places high value on quality rivers, creeks, and bays.

The strategies of the CCMP Update 2019-2023 remain focused on preserving these coastal values with goals and objectives in four Action Areas:

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**1 Ecosystem Status and Trends** – Research, monitoring, and reporting on the health of our coastal resources.

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**2 Ecosystem Restoration and Protection** – Watershed planning and implementation; restoration, conservation, and acquisition of land; provision of access to coastal natural resources.

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**3 Technical Assistance and Capacity Development** – Professional education and training needs; policy and regulatory changes; development of economic incentives to stimulate stewardship behavior.

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**4 Education and Public Involvement** - Building community stewardship, including outreach and education to raise awareness and create a community of citizen scientists.

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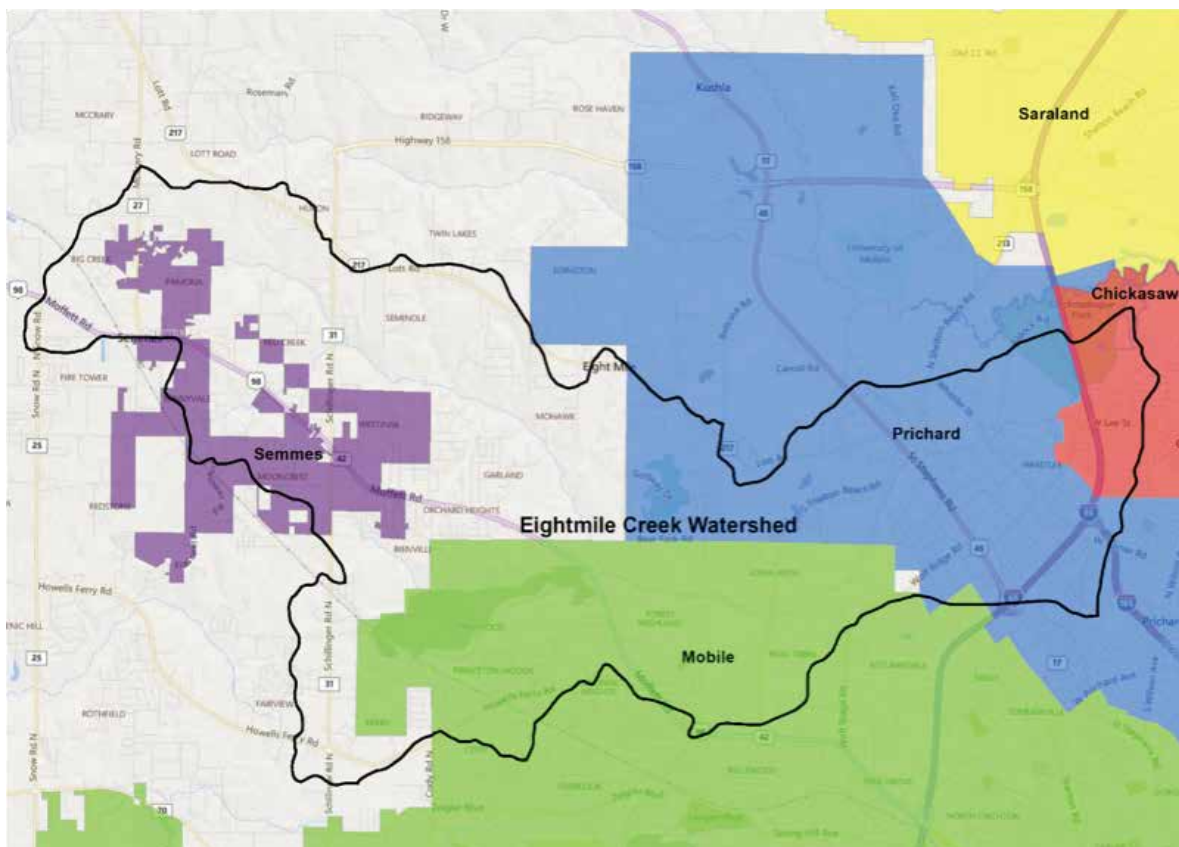


# Using a Watershed Approach to Engage Residents and Determine Needs

In 2013, the Mobile Bay National Estuary Program (MBNEP) embarked upon a holistic, watershed-based approach to guide coastal ecosystem restoration and protection measures through watershed management planning. The MBNEP's five-year Ecosystem Restoration and Protection strategy of *Respect the Connect* initiated this novel approach. It prescribes development of watershed management plans (WMPs) for drainage areas, not political jurisdictions, to ensure restoration projects are scientifically defensible and components of an overall management program.

The Eight Mile Creek Watershed, shown in Figure 2, provides an example, with Watershed boundaries containing portions of four different municipalities – the cities of Chickasaw, Prichard, Mobile, and Semmes - along with unincorporated areas of Mobile County, all draining to Eight Mile Creek. Rather than

the traditional ways of pushing problems downstream for off-site management, this watershed-based approach focuses on managing a system's problem closest to its source in a way that restores or mimics the function of the natural environment.



**Figure 2.** Map of the Eight Mile Creek Watershed, with Watershed boundaries and municipal boundaries represented

The watershed approach is based on this premise: The relationship between community growth and impaired waters develops over time. If we want to maintain a high quality of life, which in coastal Alabama is intrinsically tied to our water-rich landscape, communities must seek new ways to control stormwater runoff (and the pollution carried by it) created by the hard surfaces related to features of community growth, like driveways, parking lots, sidewalks, streets, and rooftops.

## The goals of watershed planning are to:

- 1 Improve water quality,
- 2 Improve habitats,
- 3 Protect continued customary uses of biological resources,
- 4 Improve watershed resilience, and
- 5 Expand opportunities for community access.

A WMP identifies problems that threaten the quality of receiving waters (waterbodies to which a watershed drains) and recommends prioritized solutions to those problems. It even identifies and recommends potential funding sources to pay for those solutions. Watershed plans provide a vehicle to ensure a sustainable quality of life for coastal residents by setting goals focused on the six common values most important to those living in coastal Alabama. These WMPs are invaluable to our State's decision makers, as they direct limited funding available through various sources. To date, over \$135 million in *Deepwater Horizon*-related funding has been allocated to projects identified through the watershed planning process.

Since 2009, the MBNEP has facilitated the creation and implementation of nine comprehensive WMPs. Throughout this effort, citizens have been engaged in documenting their community environmental concerns, learning about what impacts watershed health and how water runs through a drainage area, developing action plans to improve conditions, and engaging other residents in "being part of the solution" through volunteer monitoring, cleanups, and other activities.

Integral to the success of these plans are partnerships built from the initial stages of plan development and continuing through implementation of WMP recommendations, which may stretch out over a decade. The planning process reaches beyond geopolitical boundaries, bringing differing governing bodies together through intergovernmental task forces or public-private partnerships to manage shared interests and resources on a watershed scale. Creating a sense of ownership by engaging key stakeholders from the outset and incorporating community input and concerns to inform recommended actions generates momentum to carry the finished WMPs forward. They focus on teaching communities about their watersheds with data, gathered from existing sources or collected in the field, and including, but not limited to, geology and geography, biology and ecology, and hydrology and climate. These planning processes relate scientific assessments to governance, demographics, and socioeconomics. Watershed engagement has been promoted through volunteer water quality monitoring programs, community clean-ups, paddle trips, and watershed educational signage.

Thus far, throughout watershed planning efforts, over 1,500 citizens have been engaged in learning about the areas draining into their rivers and creeks and how natural flows have been altered over time. They are learning about what types and levels of pollutants are impairing or threatening their water quality, why shorelines are eroding, where restoration is most prudent and cost-effective, and when results from lots of hard work will finally pay off in terms of clean water and resilient buffers to storms and stormwater runoff.

The value of the collaboration required and inspired by watershed planning cannot be overstated. These plans have become as much about community development as they are about environmental protection. Creating a resilient watershed will require long-term commitment of governments, businesses, and citizens to responsibly grow their community by balancing development with environmental protection. Managing our coastal resources by watershed is a clear demonstration of how we are connected by water. The watershed approach is instrumental in developing a shared understanding of conservation priorities across many different stakeholder interests, and this understanding is key to informing future land and water management decisions.

# What's New in This CCMP Update

**This five-year update reaffirms the goals of 2013-2018 and renews the MBNEP's commitment to the six values most important to our coastal quality of life. This update also highlights the significant progress made in protecting watersheds through comprehensive, cross-institutional watershed planning and project implementation. The critical role of the MBNEP Management Conference and the watershed planning process in ensuring ongoing community engagement and stakeholder involvement in implementation is also highlighted.**

In 2016, the Management Conference created a new committee to provide an opportunity for regional non-profit organizations to develop consensus for how collectively they could support CCMP implementation. The Community Resources Committee was established and has been incorporated into the overall Management Conference structure.

To improve coordination in coastal planning required by EPA and National Oceanic and Atmospheric Administration (NOAA), the CCMP Update for 2019-2023 incorporates the requirements of Section 6217 of the Coastal Zone Act Reauthorization Amendments

(CZARA) to streamline coastal planning efforts focused on addressing nonpoint source (NPS) pollution problems in coastal waters. Historically, Section 6217 requirements were addressed in a separate plan produced by the State of Alabama as part of its Coastal Zone Management Program (CZMP). This CZMP plan has now been woven into the CCMP Update to capitalize on the watershed approach prescribed as part of the Ecosystem Restoration and Protection strategy.



**Green Heron, Bon Secour  
National Wildlife Refuge**



Orange Beach







**PART ONE**  
**Accomplishments**





1

Major Ecosystem Status  
and Trends Accomplishments  
2013-2018



Investigating Fowl River Marsh Spits

# Major Ecosystem Status and Trends Accomplishments 2013-2018

**What does biological integrity look like in the Mobile Bay estuary? What monitoring and research is needed to track environmental conditions through time? How do we reduce stressors and communicate resultant biological changes? One of the charges of the Science Advisory Committee is to integrate science into the development of an environmental monitoring program to inform on the condition of the Mobile Bay estuary. It is imperative for this monitoring program to coincide with what citizens value and for data to be communicated to the public so progress on improving or protecting conditions has widespread community support.**

For the past five years, the Science Advisory Committee has pursued the development of data sets and research to better understand our estuarine system; identified what data gaps exist in determining baseline conditions; created a monitoring framework for measuring watershed health; and conducted extensive monitoring in the D'Olive Creek, Tiawasee Creek, and Joe's Branch Watershed (D'Olive Watershed) to "test" the framework. The major challenges confronting the measure of status and trends in coastal conditions is a lack of consistent funding for monitoring at

the watershed scale for a long-enough period to ascertain change. Fortunately, for the short-term, the MBNEP has secured funding to build baseline datasets for submerged aquatic vegetation, high-resolution habitat mapping, sediment studies, and comprehensive restoration project monitoring. These data sets provide a solid foundation for refinement of the watershed monitoring framework into a methodology for strategically collecting key data contributing to the determination of a watershed condition index.

## Significant accomplishments include:

### EST-1: Increase data related to how the estuarine ecosystem responds to human stressors

#### Submerged Aquatic Vegetation Mapping

The MBNEP and the Alabama Department of Conservation and Natural Resources (ADCNR) have partnered since 2002 to study the

historical changes in SAV distribution in Mobile and Baldwin counties. MBNEP has coordinated SAV mapping in 2002, 2008/2009, and most recently in 2015, with acreages reflected in Table

2. Between 2002 and 2009, mapping results showed a loss of 1,796 acres of SAV. Between 2009 and 2015, the study revealed a 3,875-acre increase in SAV (Vittor, and Associates 2016).

**Table 2.** Total SAV acreage (continuous + patchy) by U.S.G.S. 7.5-Minute Quadrangle for the summer 2015, 2009, and 2002 surveys.

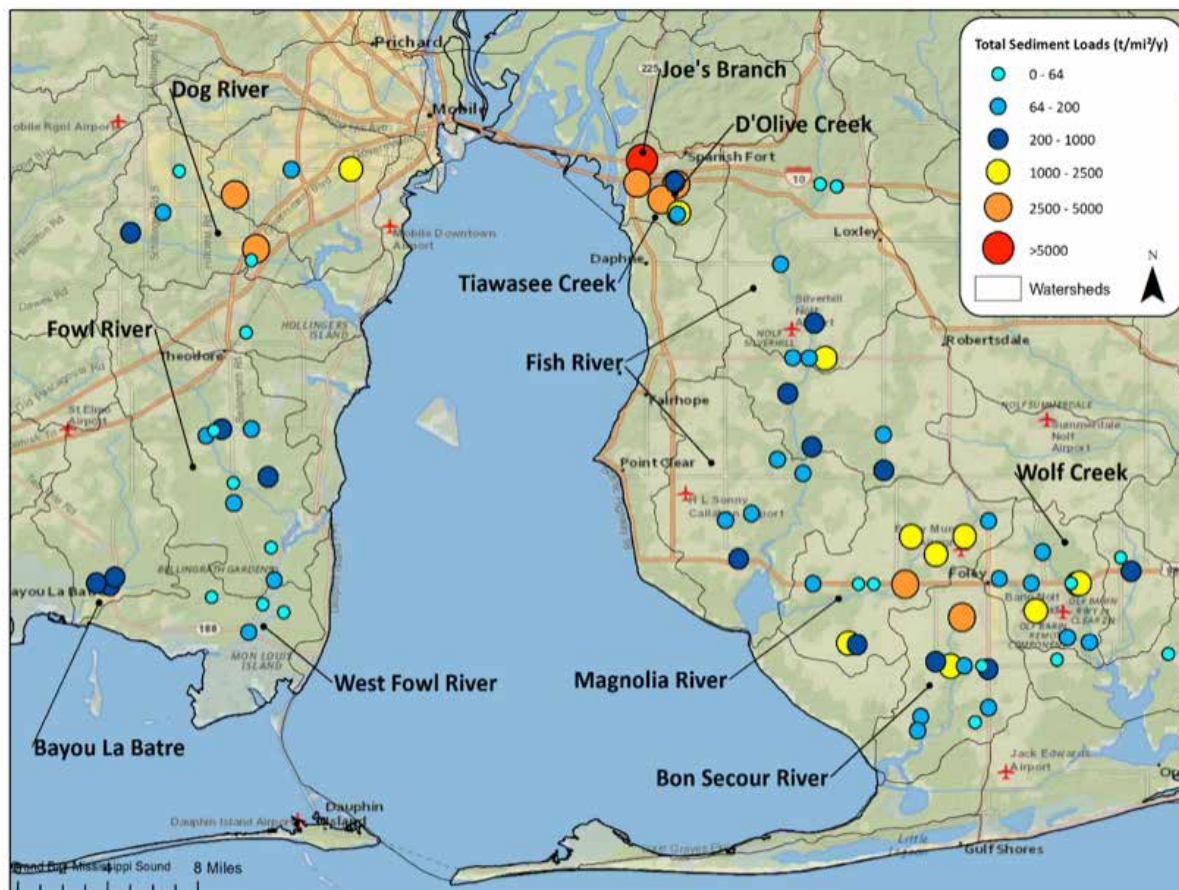
USGS QUADRANGLE	2015 ACREAGE	2009 ACREAGE	2002 ACREAGE
Bellfontaine	1.7	0	0
Bridgehead	5,905.30	3,450.30	3,641.00
Chickasaw	107.9	21.2	26.9
Coden	5.1	0	0
Daphne	209.3	35.1	9.5
Fort Morgan	1.7	0	0
Fort Morgan NW	28.6	25.2	0
Grand Bay	414.6	364.2	296.4
Grand Bay SW	93.6	61.8	79.9
Gulf Shores	164.6	1.5	1.2
Heron Bay	10.2	0	0
Hollinger's Island	61.3	0	126.7
Hurricane	125.7	1.9	517.3
Isle aux Herbes	125.7	1.9	517.3
Kreole	162.1	218.8	295.9
Little Dauphin Island	0.4	0	0
Magnolia Springs	2.3	0	0
Mobile	1,021.30	509.8	1,007.00
Orange Beach	179.7	150.8	60
Perdido Bay	164.2	135.4	114.6
Petit Bois Pass	203.8	142.3	59.6
Pine Beach	3.8	1.2	0.1
Spring Hill	37.4	0	0
Theodore	55.7	0	0

## Comprehensive Coastal Sediment Loading Baseline Analyses

As sedimentation is a major source of stress in coastal watersheds, one important component of comprehensive watershed planning includes the development of data related to land conversion through time. MBNEP has partnered with the Geological Survey of Alabama (GSA) to characterize land use, erosion, and sedimentation in coastal 12-digit hydrologic

unit code (HUC) watersheds. These studies establish sedimentation rating curves to measure bed and suspended sediment loads and identify historic sources of sediment in coastal streams, providing valuable information on what is natural sedimentation versus what is the result of anthropogenic (human) factors. As of 2018, sediment studies have been completed for the D'Olive, Dog River, Fowl River, Bayou La Batre, West Fowl River, Fish River, Fish River/Weeks

Bay, Bon Secour River, and Wolf Bay watersheds, with normalized load data (tons/mile<sup>2</sup>/year) derived from sediment analyses reflected in Figure 3. Sediment studies are currently being developed for the Mobile Tensaw-Apalachee, Deer River, and Fly Creek watersheds. These studies provide a baseline of sediment data prior to restoration actions and are used to evaluate restoration success.



**Figure 3.** Normalized sediment loads (tons/mile<sup>2</sup>/year) derived from watershed sediment loading analysis.

## **Update of Mobile County Soil Survey**

The most recent Soil Survey of Mobile County, Alabama, was published in 1980 and lacked the specificity needed to adequately inform development decisions or landscape assessments. MBNEP contracted with U.S. Department of Agriculture-Natural Resource Conservation Service to update the soil maps for Mobile County to provide more comprehensive soil and site data for managing crop and forest lands, conserving water and protecting water quality, restoring

wildlife habitat, determining soil potential ratings, and preparing plans for watersheds and recreational and urban areas. This survey, completed in 2017, will be useful in validating habitat types characterized through habitat mapping of Mobile County.

## **Uplands and Wetlands Habitat Mapping**

In 2015, MBNEP commissioned high-resolution (one meter) mapping of wetlands and upland coastal habitats in Mobile and Baldwin counties (approximately 3,671 square miles) in Alabama to help

assess water quality trends, identify degraded habitats, and recommend corrective actions. The goal of the project was to generate an updated habitat classification map to establish a baseline of acreages of habitats for coastal watersheds. Maps were delivered in 2016 before further refinement in 2019.

## EST-2: Establish process for measuring change in estuarine conditions

### Mobile Bay Subwatershed Restoration Monitoring Framework

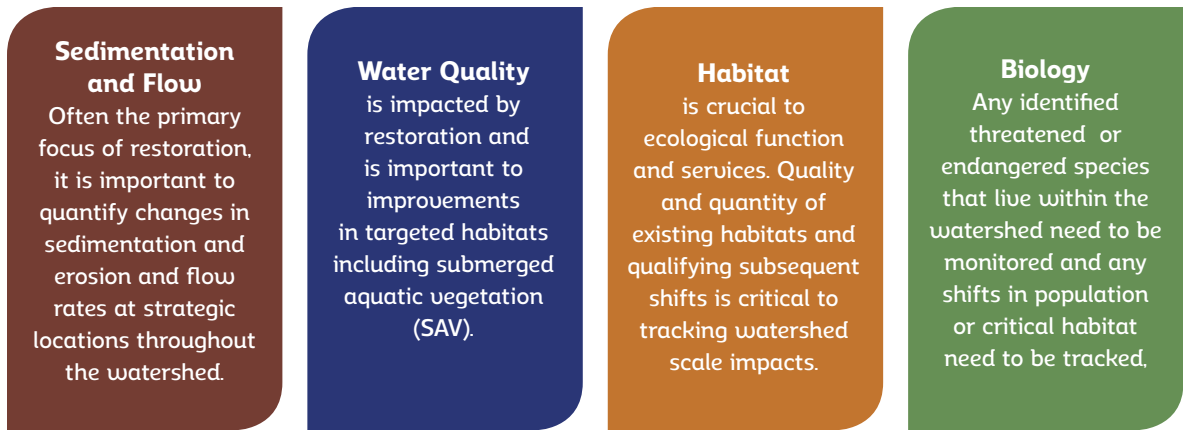
Mobile Bay provides a wealth of ecosystem services that benefit Alabama citizens, including water purification, nutrient cycling, carbon storage, and recreational opportunities. The provision of these valuable services depends, in part, on the ecological integrity of our coastal watersheds. The water quality and ecological health of Mobile Bay cannot be adequately protected through efforts focused solely on the edge of the Bay. Improving environmental conditions by managing anthropogenic stressors requires knowledge of what is being contributed to these receiving waters by upstream sources, and this necessitates the establishment of a more robust monitoring program.

Four years ago, the Science Advisory Committee created a working group to develop a basic Framework for Monitoring the condition of watersheds at the 12-digit HUC scale adjacent to Mobile Bay to standardize data collection and synthesis. The vision: Establishing comprehensive quantitative assessments of restoration success and synthesis of this data to provide a better picture of overall ecosystem function across the coast. Implementation of the Monitoring Framework as it applies to each watershed aims to answer these questions:

- .....  
1 What, if any, changes are there in the water quality and flow, sedimentation, biology, and habitat quantity and quality because of restoration efforts and management plan implementation?  
.....
- 2 How are potential ecosystem health indicators related to stressors and ecosystem functions/services?  
.....
- 3 What is the long-term status of the biological condition in the Mobile Bay Watershed?  
.....

The Framework ensures standardized data collection for restoration efforts throughout Mobile and Baldwin counties, allowing temporal and spatial comparisons and data archival. Through the Framework, MBNEP coordinates data synthesis to develop tools and products for baseline establishment, assessment of restoration success, and adaptive resource management. MBNEP also coordinates periodic reporting of monitoring data in outreach products. The Monitoring Framework is required to be incorporated into all watershed management plans and restoration work. On a regional scale, the Framework can serve as a model to develop larger networks across the Gulf Coast, including those envisioned by the Gulf of Mexico Alliance, NOAA, and the Gulf of Mexico Coastal Ocean Observing System.





Data derived from WMP-recommended projects/activities undertaken by the MBNEP are required to be stored in the Dauphin Island Sea Lab Repository. The Ecosystem Status and Trends strategy calls for all environmental data related to coastal Alabama to have appropriate metadata and be catalogued to ensure accessibility. There is no formal monitoring committee for each watershed planning effort, but WMPs developed by MBNEP are required to address ongoing monitoring needs related to plan implementation.

Through a contract template created by the MBNEP, each watershed management plan is required to address aspects of monitoring.

- 1 Provide a framework for tracking changes and evaluating success from baseline data through the progress of management measures over time.
- 2 Utilize the Mobile Bay Sub Watershed Restoration Framework as the template for monitoring.
- 3 Research previous and ongoing monitoring activities and identify gaps, leveraging opportunities, and any changes necessary to the existing plans.
- 4 Seek ways to build on resources such as Alabama Water Watch, and Water Rangers.
- 5 Seek ways to improve citizen science monitoring.
- 6 Develop self-evaluation score sheets to provide MBNEP and its partners the data necessary to know if the management measures are on track.

Current funding sources, including NFWF's Gulf Environmental Benefit Fund and the RESTORE Act, are anticipated to be sufficient to conduct monitoring for many WMP-recommended projects over the next five years. Projects for which funding is not sufficient to conduct monitoring will be addressed through the Finance Strategy.

### EST-3: Improve understanding of relationship between biological condition and provision of ecosystem services

#### Restoration Monitoring in the D'Olive Watershed

This Monitoring Framework has been piloted to measure restoration success in the D'Olive Watershed. Implementation of the D'Olive Watershed Management Plan began in earnest in 2012. In this Watershed, extensive restoration work focused on restoring streams currently listed as impaired by the State of Alabama. Figure 4 compares normalized sediment loads (tons/mile<sup>2</sup>/year<sup>2</sup>) from selected streams throughout Alabama, showing Joe's Branch, pre-restoration, with the largest sediment loads of 55 streams statewide monitored by the Geological Survey of Alabama. Sites with the largest sediment loads are from stormwater runoff in more mature,

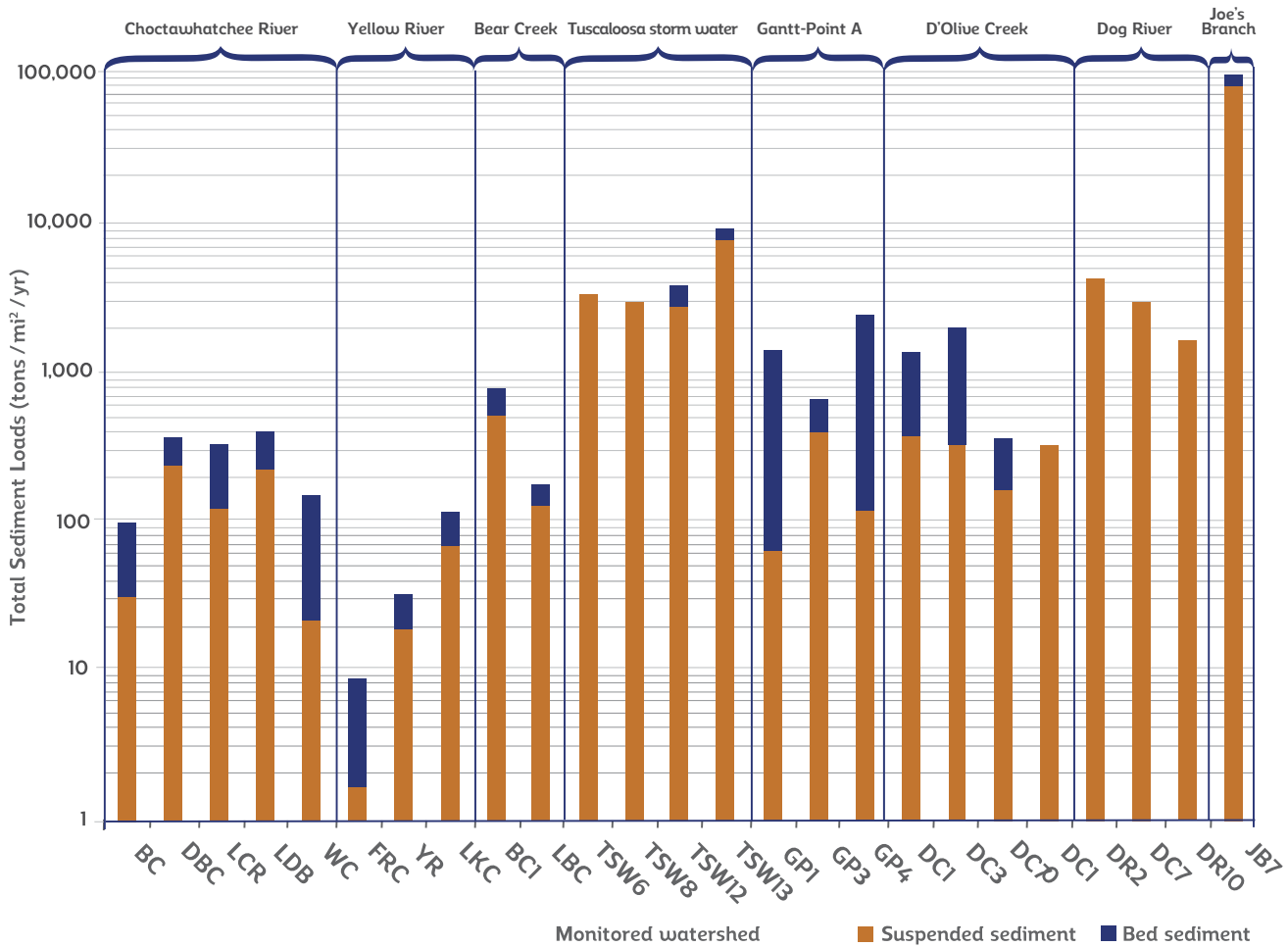
urban watersheds. The first projects, the 2012 installation of a Step Pool Conveyance System in Joes Branch just downstream of Highway 31 and restoration further downstream in Tributary JB, were monitored from 2014-2018, and post-restoration monitoring revealed an over 90% reduction in downstream sediment loads, indicated in Figure 5 (comparisons of estimated total sediment loads in selected coastal Alabama streams) and Figure 6 (measured total suspended solids and stream discharge during pre- and post-restoration monitoring downstream at Joe's Branch). Monitoring of stream restoration work throughout the D'Olive Creek and Tiawasee Creek subwatersheds continues, although as construction

continues in these areas, the systems have not yet had a chance to stabilize and demonstrate ecosystem response. In 2016, the Alabama Department of Environmental Management (ADEM) began collecting water quality data in the D'Olive Creek Subwatershed to test a methodology for using reference streams as indicators of "natural" sediment transport for the purposes of de-listing impaired streams. The extensive work being conducted by the D'Olive Watershed management team provided a perfect environment for testing and validating a State method against the one developed through the Science Advisory Monitoring workgroup.

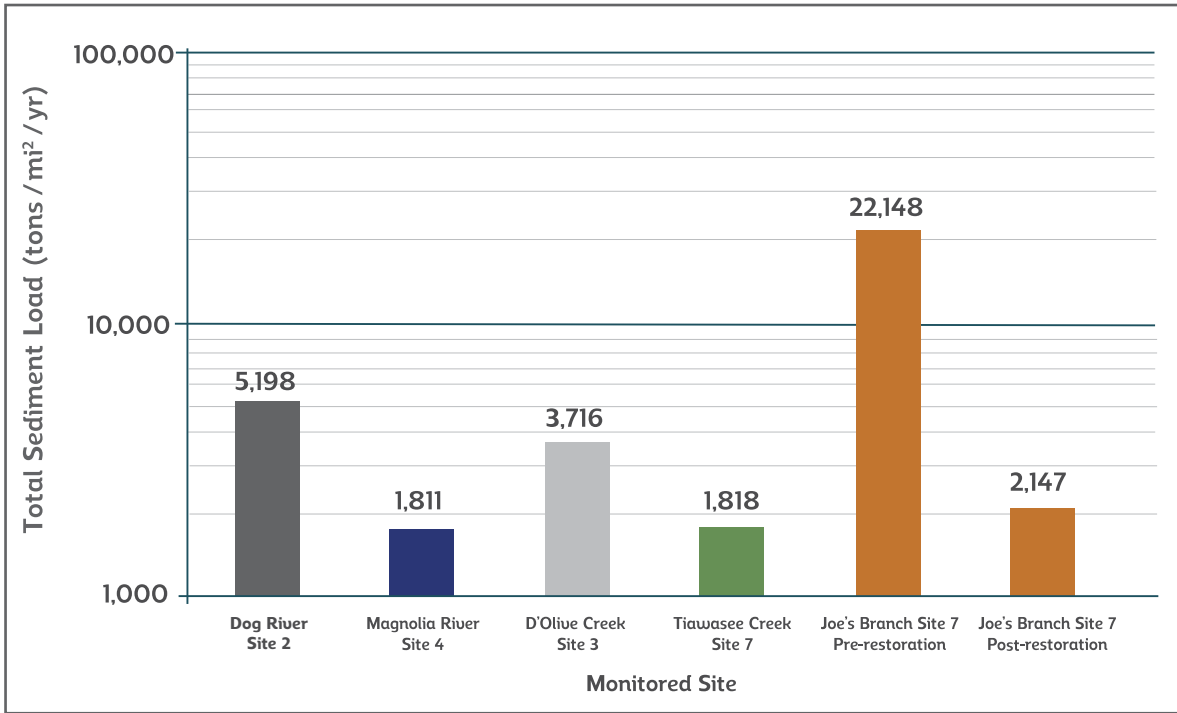


Wolf Creek, Foley

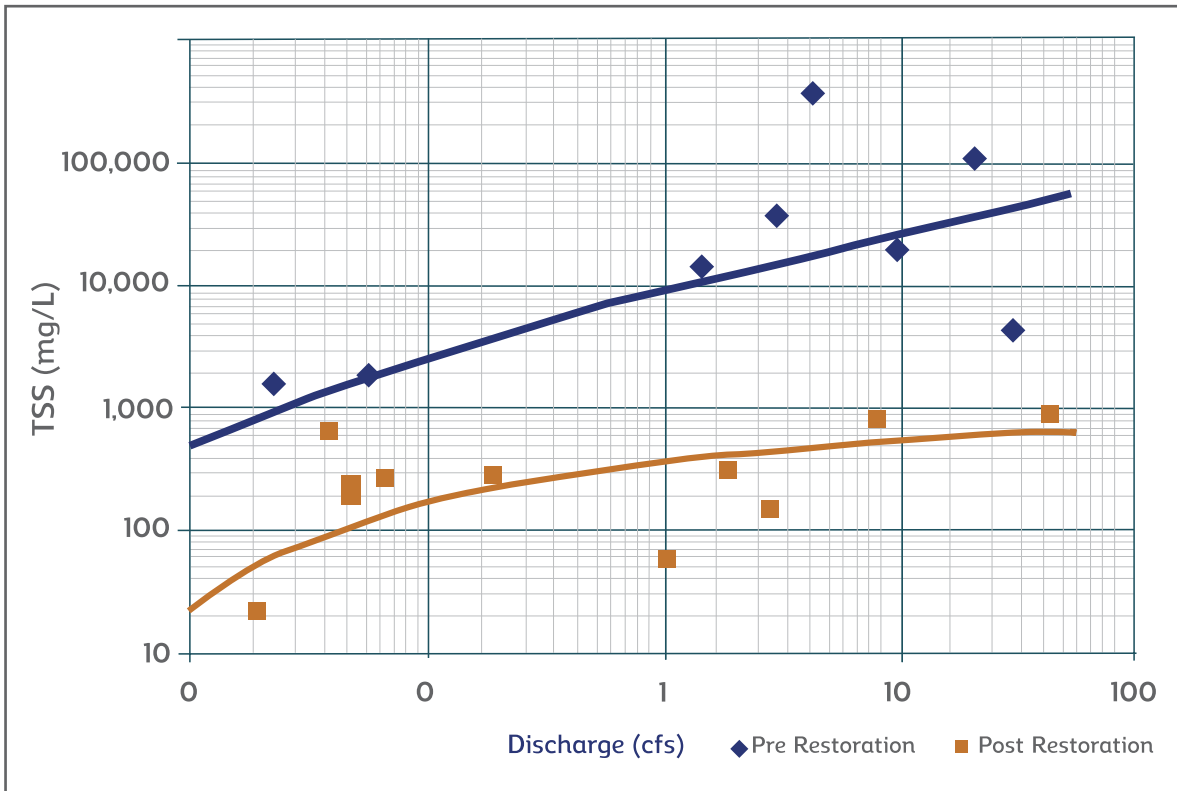
## Comparison of Sediment Loads From Selected Streams



**Figure 4.** Comparison of sediment loads from selected streams throughout Alabama showing Joe's Branch (pre-restoration) with the largest sediment loads of streams evaluated by the GSA.



**Figure 5.** Comparison of estimated total sediment loads from selected coastal Alabama streams.



**Figure 6.** Measured total suspended solids and stream discharge during the pre- and post-restoration monitoring periods downstream at Joe's Branch.

## Other notable Ecosystem Status and Trends accomplishments

### The MBNEP and its Management Conference partners:

- > Explored options for consolidating all coastal Alabama data related to environmental conditions in a central repository, including National Centers for Environmental Information and the Dauphin Island Sea Lab (DISL).
- > Inventoried cultural resources within 1,800 feet of Mobile and Baldwin County bay-fronting shorelines from Mississippi Sound to the tip of Fort Morgan.
- > Began the study of economic impacts of D'Olive Watershed restoration activities.
- > Initiated development of a watershed condition index tool to measure improvements to habitat and ecosystem service provision resulting from restoration efforts.
- > Made progress toward development and adoption of indices of biological integrity for streams and rivers (and their riparian buffers), freshwater wetlands (which has been completed), and intertidal marshes and flats.
- > Made progress toward development of numeric criteria for habitat conditions for streams and rivers (and riparian buffers), freshwater wetlands (completed), and intertidal marshes and flats.
- > Completed a drainage study for the Toulmin's Spring Branch and Gum Tree Branch subwatersheds.

### Major Gaps

The major gap in Ecosystem Status and Trends accomplishments is related to measuring the effects of restoration while active restoration remains ongoing in a watershed. Ecosystem restoration requires landscape disturbance and takes time. While downstream monitoring has been aggressively pursued

in the D'Olive Watershed (the pilot area for measuring ecosystem restoration effects), concurrent active restoration efforts within this drainage area create intermittent pulses of sedimentation and "noise" which complicates assaying the effects of completed restoration projects. Concurrently, due

to time constraints related to ecosystem response to restoration efforts, an assessment of economic impacts is currently ongoing and not anticipated to demonstrate major results until a period of time has lapsed since completion of the restoration program.



Ruddy Turnstone Near Lightning  
Point, Bayou La Batre



Water Lilies, Bon Secour  
National Wildlife Refuge







2

Major Ecosystem  
Restoration and Protection  
Accomplishments  
2013-2018



**Tiawassee Creek Restoration, Daphne**

# Major Ecosystem Restoration and Protection Accomplishments: 2013-2018

Restoring and protecting ecosystem function and services is fundamental to safeguarding the things people value most about living in coastal Alabama. Over the past five years, MBNEP's Management Conference has made tremendous advancements in watershed planning; environmentally sensitive land acquisition; provision of access to resources; and protection and restoration of waterways, watersheds, and coastal habitats. These have been accomplished at record pace due to historical funding opportunities resulting from fines and criminal penalties made available from the 2010 *Deepwater Horizon* oil spill in the Gulf of Mexico.

Significant accomplishments by objective include:

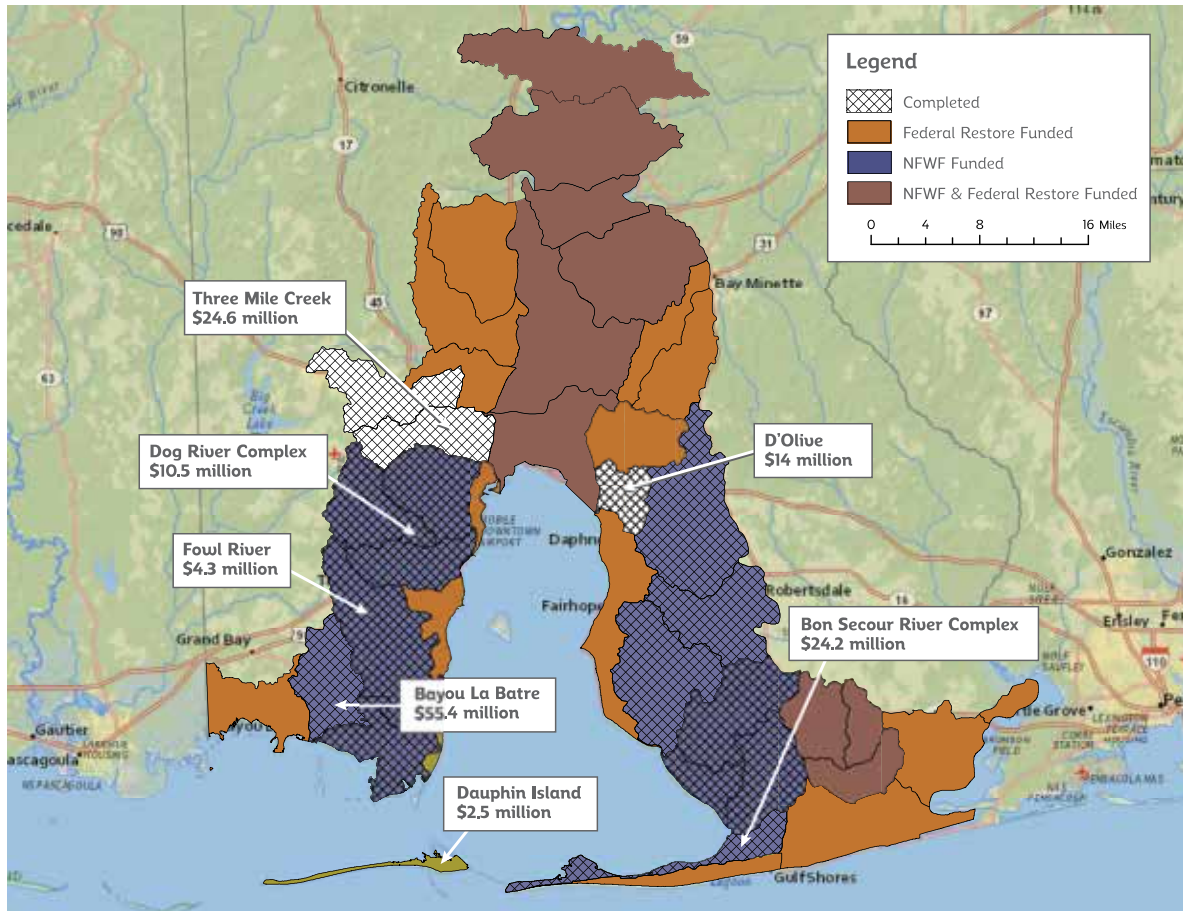
## ERP-1: Improve trends in water quality in priority watersheds discharging into priority fish nursery areas.

### Watershed Management Plan Development

MBNEP's Project Implementation Committee has embarked on a holistic, watershed-based approach to ecosystem restoration and protection that prescribes development and implementation of comprehensive watershed management plans (WMPs) for all 12-digit HUC

watersheds in coastal Alabama. With a primary focus on tidally influenced watersheds, nine WMPs have been completed over the past five years including: Eight Mile Creek, Fowl River, Bayou la Batre, Bon Secour River Complex, Dog River Complex, D'Olive, Three Mile Creek, the Weeks Bay Complex, and West Fowl River. Three other WMPs are in development

for Wolf Bay, Mobile Tensaw Apalachee, and Dauphin Island watersheds, with all remaining tidally influenced watersheds funded for future WMP development. Figure 7 shows funding sources for WMPs completed, in progress, and planned, along with amounts of funding secured in seven of the watersheds to implement those plans.



**Figure 7.** Map showing funding sources for WMPs completed, in progress, or planned. Along with amounts of funding secured to implement seven of the WMPs.

**All WMPs are expected to address the six things people value most about living in coastal Alabama, conform to the EPA’s nine key elements, incorporate the Monitoring Framework, and include a vulnerability assessment related to changing climatic conditions on critical habitats. These watershed plans inform coastal resource management by providing:**

- > Intensive community education and engagement related to the local environment.
- > Identification of restoration and protection opportunities.
- > Recommendations prioritized based upon “biggest bang for the buck.”
- > Tools for local governments to assist in securing resources.
- > Justification of projects for funders, and
- > National Flood Insurance Program Discounts through the Community Rating System.

## Watershed Management Plan Implementation

With nine comprehensive WMPs created and implemented through the MBNEP and three more under development in 2019, Table 3 provides an overview of the major concerns, community visions, and the status of these WMPs.

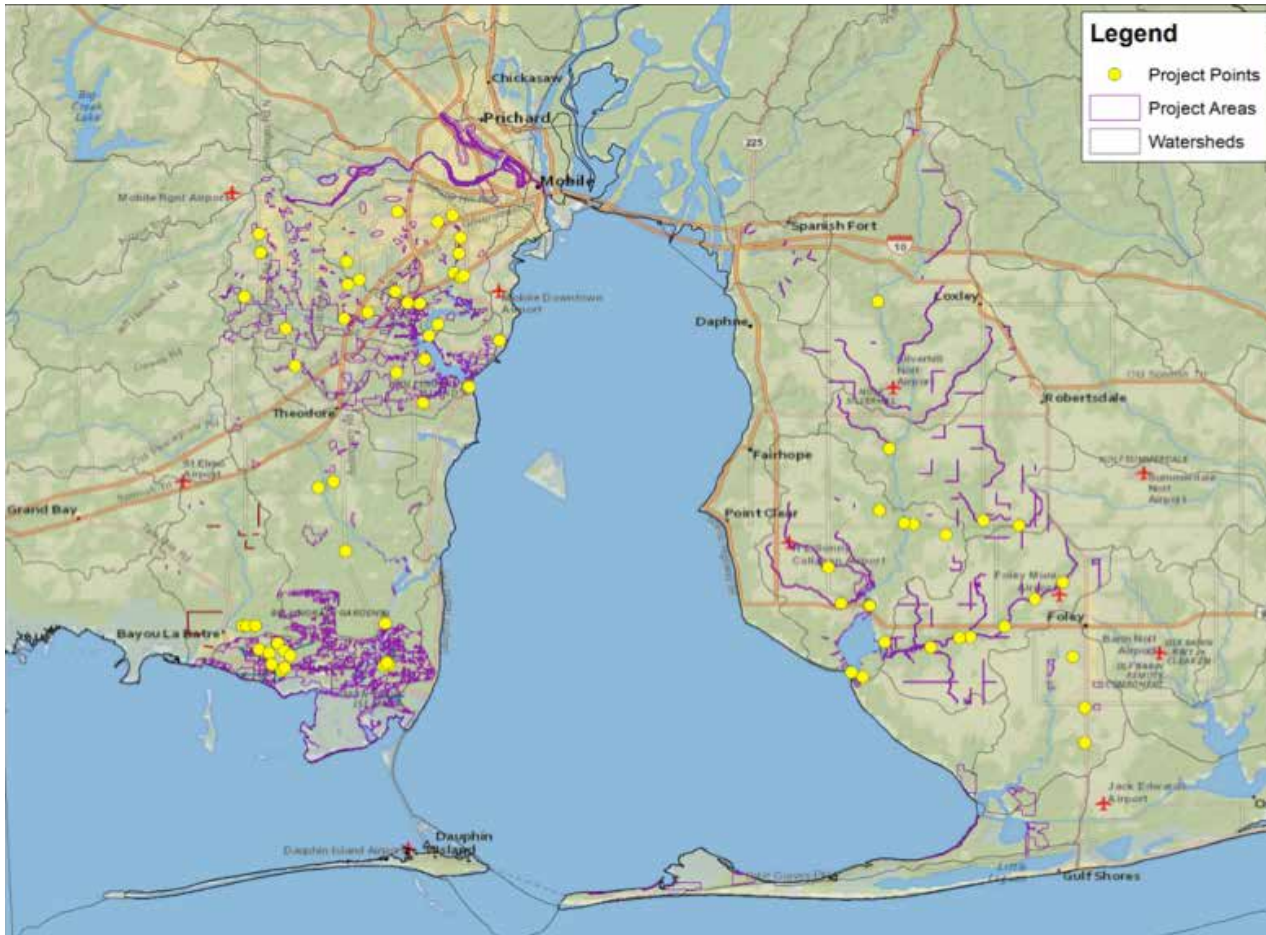
**Table 3.** Overview and status of management plans for 12 coastal Alabama watersheds. The first nine are currently in implementation with the last four in development.

WATERSHED	MAJOR CONCERN	COMMUNITY VISION	STATUS
<b>Eight Mile Creek</b>	Failing septic and sewer infrastructure; stormwater runoff	Clean Water, passive recreation	Plan completed 2011; mapping of septic infrastructure; stream restoration/passive park complete; stormwater improvements in Gum Tree Branch
<b>D'Olive Creek, Tiawasee Creek, and Joe's Branch</b>	Streambank erosion; sediment in water	Clean water; responsible development	Plan completed 2010; over \$15 million in funding; two miles of streams restored; subdivision regulation changes for stormwater management; Master Environmental Educators program piloted
<b>Three Mile Creek</b>	Urban runoff; lack of access to resource; streambank erosion; sediment deposits in stream segments; invasive species; sea level rise	Destination location for City of Mobile with trail along creek from USA to downtown; clean water for passive boating and fishing	Plan completed 2014; first leg of trail complete; second leg in development; stormwater management improvements in Toulmins Spring Branch; community capacity building in lower reaches of creek; partnership with USA students for implementing Plan on campus; development of an invasive species control plan; Projects in process: 12 Mile Creek restoration; Langan Park lake dredging; stormwater outfall mapping; comprehensive trash abatement
<b>Fowl River</b>	Shoreline erosion; marsh protection; stormwater runoff/litter; development pressure; sea level rise	Clean water; responsible development; resilient shorelines; protect and restore critical habitats	Plan completed 2015; restoration complete for tip of Mon Louis Island; Comprehensive marsh study leading to project in process to stabilize shorelines and protect salt marshes on four land spits in marine section of river; volunteer monitoring program initiated
<b>Dog River Complex</b>	Stormwater runoff/litter; erosion of streambanks; sediment deposits; lack of access to resource; sea level rise	Clean water; protect and restore critical habitats; increase community resilience; improve community access	Plan completed 2016; Projects in process: wetland protection in Halls Mill area; hydrologic modeling to improve development decisions; comprehensive trash abatement; improved recreational access to Perch Creek; improvements to sanitary sewer infrastructure

Table 3. Continued

WATERSHED	MAJOR CONCERN	COMMUNITY VISION	STATUS
<b>Bon Secour River Complex</b>	Streambank erosion; stormwater runoff/litter; development in headwaters; wetland and coastal marsh protection; sea level rise	Clean water; responsible development; resilient shorelines; protect critical habitats; cultural preservation	Plan completed 2017; acquisition and protection of wetlands; updated development standards to require low-impact development practices for new construction; headwater stream restoration
<b>Weeks Bay Complex</b>	Rapid development; stormwater runoff; erosion and sedimentation; water quality; sea level rise	Clean water; responsible development; improved agricultural practices; protect critical habitats; resilient shorelines	Plan completed 2017; Watershed Management Coordinator hired; three stream restoration projects being developed for funding
<b>Bayou La Batre</b>	Community resilience; stormwater runoff; water quality; sea level rise	Clean water; improved agricultural practices; resilient shorelines; cultural preservation; increased access	Plan completed 2018; Lightning Point marsh creation and shoreline stabilization; MS Sound habitat conservation; sanitary sewer infrastructure improvements initiated.
<b>West Fowl River</b>	Bacterial pollution	Clean water; resilient shorelines; cultural preservation; protect critical habitats	Plan completed in 2018; pollutant loading model developed to assess pathogen sources ongoing
<b>Wolf Bay</b>	Recreational access; development pressure; erosion and sedimentation	Clean water; responsible development; preserved natural landscapes	Under development in 2019
<b>Mobile Tensaw Apalachee</b>	Altered hydrology; water quality; land use and management	Land conservation; clean water; restored hydrology; protect critical habitats; expanded access	Under development in 2019
<b>Dauphin Island</b>	Beach erosion; development pressure; sea level rise	Economic viability; cultural preservation; sustainable tourism; clean water, resilient shorelines	Under development in 2019

Many projects recommended in these WMPs (with locations indicated in Figure 8 below) have been implemented in the past five years with funding from the National Fish and Wildlife Foundation (NFWF) Gulf Environmental Benefit Fund (GEBF), the ADEM Section 319 Program, the Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States (RESTORE) Act of 2012, and other local sources.



**Figure 8.** Locations of coastal Alabama projects recommended in completed Watershed Management Plans.



## WMP-recommended implementation measures completed include, but are not limited to:

- > **Fowl River WMP** - A multi-disciplinary study was undertaken to ascertain the causes and factors underlying degradation of marsh spits located in the downstream transitional region of Fowl River, including current marsh condition, hydrology, sediment loads, salinity, sea level rise, and boat wake impacts.
- > **D'Olive WMP** - This restoration effort addressed over 11,000 feet of erosion-impacted streams and 44 acres of floodplain and wetlands, restoration/creation of several storm water retention/detention facilities, and regulatory revisions by the cities of Daphne and Spanish Fort.
- > **Three Mile Creek WMP** - Implementation efforts included engineering and design to 60 percent to restore 12 Mile Creek; demonstration of the Coastal Alabama Conservation Corps to train and educate at-risk, 19 to 26-year-old, minority, downstream community members to implement smaller-scaled measures of the WMP in preparation for employment in the Gulf restoration economy; preparation of the *Prichard Drainage Study – Toulmins Spring Branch and Gum Tree Branch* (MBNEP, 2016); relocation of Mobile Area Water and Sewer System outfall from the Creek to the Mobile River; engineering and design of improved main trunk sewer line and stormwater attenuation tanks in watershed; implementation of comprehensive trash abatement program; and development of a strategic invasive species control plan for watershed.



Mon Louis Island Tip Restoration



## ERP-2: Improve ecosystem resilience through protection, restoration and conservation of beaches, bays, and backwaters

Since 2013, Alabama has received \$148M of its \$356M allocation of criminal penalties from the *Deepwater Horizon* oil spill, administered through the NFWF GEBF. More than \$80M has been spent to acquire, protect, and restore over 4,000 acres of coastal habitat in Alabama. In 2018, RESTORE Act funding became available for implementation of projects, with examples including:

### Grand Bay Savanna and Lightning Point

With funding from the NFWF GEBF, The Nature Conservancy (TNC) acquired over 2,400 acres of Grand Bay Savanna coastal habitat and wetlands in south Mobile County. TNC also purchased over 100 acres of coastal habitat for the Lightning Point Acquisition and Restoration Project, which will restore 28 acres of coastal marsh and install 1.5 miles of intertidal, nearshore breakwaters along the mouth of the Bayou La Batre River.

### Fort Morgan Peninsula

Four priority coastal parcels on the Fort Morgan Peninsula were acquired using NFWF funding. The 113-acre Gulf Highlands property was deeded to the State of Alabama and featured

2,700 feet of Gulf-fronting beach and dune habitat important for coastal birds, sea turtles, and the endangered beach mouse. The City of Gulf Shores' Bon Secour-Oyster Bay Wetland Acquisition Project will protect 836 acres of tidal marshes, maritime forests, and freshwater wetlands, critical for protecting threatened and endangered species, including the Alabama red-bellied turtle, eastern indigo snake, and a variety of wading birds. A 251-acre parcel and a 236-acre parcel were acquired by The Conservation Fund, including scrub/shrub, pine flatwood, salt marsh, and tidal creek habitats, deeded to the U.S. Fish and Wildlife Service and added to the Bon Secour National Wildlife Refuge.

### Western Shore of Mobile Bay

The 233-acre Salt Aire parcel near the mouth of Fowl River on Mobile Bay was purchased with NFWF GEBF funds by the Mobile County Commission. This site contains over 4,000 feet of Mobile Bay and Old Fowl River frontage and about 90 acres of brackish marsh and transitional upland forest. The County received additional funding for the Salt Aire Shoreline Restoration project, which stabilized over a mile of eroding shoreline and enhanced 30-acres of salt marsh with living shoreline measures, including segmented breakwater structures to reduce wave energy and beneficially used dredge material to provide substrate for creation of new salt marsh habitat.

### **Mon Louis Island Tip**

The storm-vulnerable, chronically eroded, and habitat-rich northern tip of Mon Louis Island was restored by the MBNEP with funding from NFWF, GEBF and the State of Alabama *Deepwater Horizon* Impact Fund. The project stabilized the shoreline along its 1995 footprint with a continuous rock breakwater, creating over four acres of salt marsh habitat using dredge material obtained from an open-water disposal area and protecting an additional eight acres of existing marsh. Material obtained from maintenance dredging of the shallow, neglected Fowl River navigation channel was beneficially used to replace borrowed material and avoid water quality impacts. The substrate was planted with native species with help from the Coastal Alabama Conservation Corps to create productive salt marsh to support local fisheries.

### **Living Shorelines and Oyster Restoration**

With various funding sources, nearly 29,000 linear feet of living shorelines have been installed along publicly owned bay, backwater, and intertidal waterways by Management Conference partners, including projects on Marsh Island, North Point Aux Pins, Lightning Point, Salt Aire, the Swift Tract, and Little Bay. Approximately 9,000 linear feet of living shorelines have been installed along privately owned parcels, including two projects on Mon Louis Island. Oyster restoration has been conducted in Portersville Bay, Mississippi Sound, the Heggeman Coastal Conservation Association Reef, and elsewhere.

### **Sea Oats Planting**

Over 75 acres of sea oats have been planted by Alabama Coastal Foundation and other Management Conference partners to

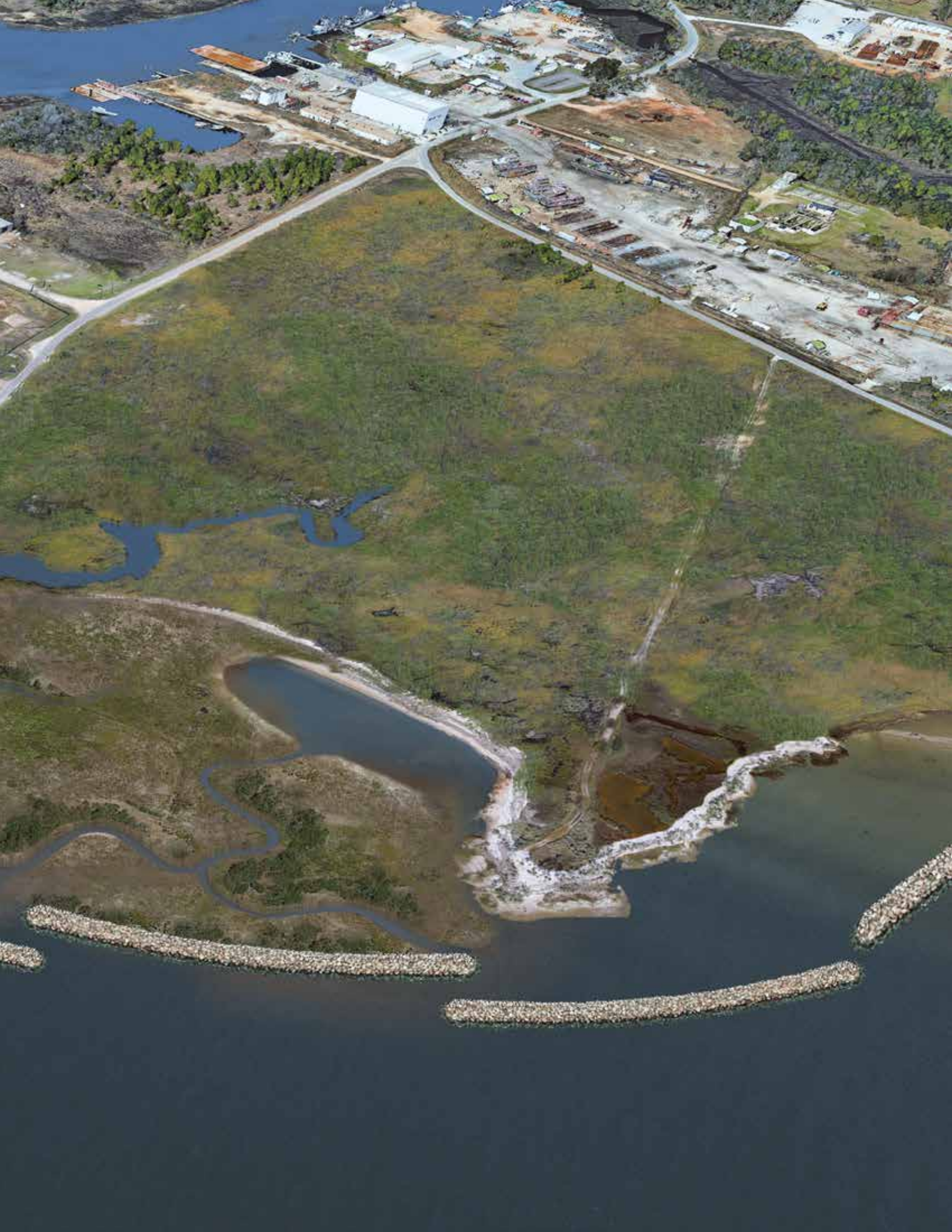
stabilize dune systems along Gulf-fronting beaches, including Fort Morgan Peninsula, Perdido Key, and Dauphin Island's east end. Other beach habitat restoration includes projects at Dauphin Island Mid-Island Beach and Terri Deviney Dune.

### **Invasive Species Management**

Invasive species control activities have focused on the Three Mile Creek Watershed, Helen Wood Park in Mobile, and Village Point Park in Daphne. With funding from the EPA through the Gulf Coast Ecosystem Restoration Council and the RESTORE Act, a Three Mile Creek Invasive Species Control Plan was completed for the MBNEP in early 2019.



Lightning Point Schematic, Bayou La Batre



## ERP-3: Promote/Expand human connections

Access is an important component of coastal protection, because the more connected people are to the environment, the more they will value and protect it. Developing and protecting appropriate access to Alabama's aquatic assets also offers opportunities to grow Alabama's sustainable and eco-tourism economic sectors.

### Examples of projects completed include:

#### Gator Alley

MBNEP partnered to improve the City of Daphne's popular tourist attraction, Gator Alley, in the D'Olive Watershed. Improvements included an expanded parking area with pervious pavement, an overlook area, and demonstrations of in-stream stormwater management. MBNEP provided educational signage for the project.

#### Three Mile Creek Greenway

Construction of a bike trail beginning near Tricentennial

Park and progressing westward was initiated by the City of Mobile, the first step in reconnecting neighborhoods within the Three Mile Creek watershed and beyond to one of Mobile's "hidden jewels." Although the Creek's value has waned over the years, this trail supports a comprehensive restoration effort currently underway.

#### Other Public Access Accomplishments

New public access points that feature demonstrations of restoration techniques were created or are under

construction at Gulf State Park, Fort Morgan Pier, Laguna Cove, Bayfront Park, Dauphin Island Environmental Education Area, Mid-Island Park and Public Beach, Lightning Point, Tricentennial Park, and Five Rivers Kayak Launch. New eco-heritage tourism trails featuring historical, ethnic, or religious themes are underway at Three Mile Creek, Africatown, and Live Oak Landing in addition to the existing Dora Franklin Finley African American Heritage Trail in Mobile.



## Major Gaps

The major gap in Ecosystem Restoration and Protection accomplishments is related to delays in securing funding to implement WMP recommendations. While the watershed planning process “hit the ground running,” implementing recommendations of these plans requires funding which, due to complex federal requirements, has slowed progress. Some

recommendations, including the stream stabilization of 12 Mile Creek, the primary sediment source impairing Langan Park lakes and Three Mile Creek, and development of a Three Mile Creek Invasive Species Control Plan were funded by the U.S. EPA Gulf of Mexico Program through the Gulf Coast Ecosystem Restoration Council and the RESTORE Act. Generally speaking,

the diversity of federal, *Deepwater Horizon*-related and other funding sources necessary for leveraging restoration projects is challenging in terms of timing, review processes, grant funding releases, and complexities of grant compliance. Additionally, the influx of funding has put great pressure on the existing capacity of the few agencies capable of managing such complex grants.



# 3

## Major Technical Assistance and Capacity Building Accomplishments 2013-2018

# Trash Blows...Stow It!



# Major Technical Assistance and Capacity Building Accomplishments: 2013-2018

**MBNEP provides technical assistance and supports efforts to increase the scientific knowledge, technical capacity, and skills of elected officials, businesses, and other groups to promote best practices and management of Alabama's estuaries and coast. A three-pronged approach of identifying environmental issues impacting business and government, educating and promoting the use of environmentally sound business practices, and recommending coastal management priorities and regulatory improvements provide the foundation for the work of the Business Resources, Community Resources and Government Networks committees who lead these efforts.**

**Significant accomplishments by objective include:**

## **TAC-1: Improve business community understanding of how coastal resources contribute to economic, cultural, and community well-being**

### **Community Presentations and Tours**

To improve understanding in the business community about how Alabama's estuaries and coast contribute to economic, cultural, and community well-being, MBNEP provides tours and presentations to private-sector stakeholders. Over the past five years, MBNEP has hosted over 25 private-sector tours of conservation and restoration projects. Tours focused on the Three Mile Creek and D'Olive watersheds, engaging over 200 individuals on the issues, challenges, and solutions being employed.

MBNEP also delivered over 50 presentations on watershed dynamics, estuary value, impacts of stormwater runoff, and Create a Clean Water Future to audiences, including more than 500 local business and community leaders.

### **The Create a Clean Water Future Campaign**

Through the Create a Clean Water Future (CCWF) campaign, businesses, schools, groups, and communities are improving their understanding and actions related to reducing polluted runoff and preserving our unique way

of life, dependent on healthy waterways. The CCWF campaign explains what stormwater is and encourages actions resulting in the reduction of stormwater pollution at both individual and community levels. The campaign features a pledge for new members, an informative website with effective message delivery usable for diverse audiences, literature and videos, open-source signs and billboards, and even links to where more environmentally sustainable products can be purchased.

## **TAC-2: Increase business support for protecting the estuary/coast**

**Over the past five years, much attention has been paid to engaging the business community in “coming to the table” to learn about our coastal resources and the work of the MBNEP Management Conference. With a strong foundation laid, this is an area of the CCMP which will be the focus of implementation in the next five-year period.**

### **Amphibious Assault on the Maple Street Canal, Mobile, AL**

MBNEP’s Business Resources Committee, together with Partners for Environmental Progress (PEP), the City of Mobile, and Thompson Engineering, organized a cleanup of the Maple Street Tributary, one of Mobile’s and Three Mile Creek’s most trash-impacted waterways. Volunteers collected 200 bags of litter and 12 tires, transforming the quarter-mile-long waterway into a showcase of how Three Mile Creek can be revitalized into a tremendous asset for

the City of Mobile. Shortly after the successful Maple Street Cleanup, a prototype “Litter Gitter”, designed by the Osprey Initiative and assembled from cable, hardware cloth, and pool noodles to trap waterborne litter, was deployed there. The Litter Gitter was routinely monitored and estimated to collect over 90% of floating litter entering the tributary at stormwater outfalls. Based on the success of the prototype, MBNEP received a grant from U.S. EPA Gulf of Mexico Program to initiate a comprehensive trash abatement program, including the installation and

maintenance of 10 additional Litter Gitters, shoreline clean up, and litter tracking in the Three Mile Creek Watershed (Mobile and Prichard). To date these activities have removed over 5,000 pounds of trash from the watershed and characterized what types of trash are most pervasive. MBNEP and PEP have partnered to install Litter Gitters in the Bon Secour River Watershed (Foley), and several in the Dog River Watershed (Mobile).

## The Osprey Initiative

Given the high priority of trash abatement across all WMPs produced to date, the MBNEP was approached by a Business Resource Committee member about a potential business opportunity for addressing this issue. Based on the early success of Maple Street pilot test of the Litter Gitter, the Osprey Initiative (Osprey), a private company, was created to provide local communities with an alternative litter reduction service for coastal waterways. Osprey is the owner of the Litter Gitter (patent pending), a small-stream collection device used to intercept floating litter delivered by stormwater runoff. Initial tests indicate a 95+ percent success rate in preventing the loss of floating litter downstream. Osprey handles all aspects of installing and maintaining Litter Gitters, including separating litter from vegetative debris and recyclables from regular trash. Quantities are recorded, and results are reported on a

quarterly basis for inclusion in Municipal Separate Storm Sewer System (MS4) reporting, if needed.

## Promoting Low Impact Development Practices

Working with staff from the cities of Mobile, Daphne, Fairhope, and Foley, as well as Mobile and Baldwin counties, short videos were produced and distributed to the development community and others to promote the use of green infrastructure and low impact development practices. This group guided the development of the following videos for use in educating local officials and community members about best practices in stormwater management: *Stormwater and Pollution - Creating a Clean Water Future*, *Low Impact Development (LID) - Stormwater Doesn't Have to be a Headache*, *Why is There a Pond in My Backyard? - Maintenance of Detention and Retention Basins*, *Litter - An Increasing Challenge*, and *Understanding Your Watershed*.

## The Alabama Oyster Shell Recycling Program

In October 2016, the Alabama Coastal Foundation initiated the Alabama Oyster Shell Recycling (AOSR) Program with funding from a NFWF Gulf Coast Conservation Grant. The AOSR Program collects oyster shells from local restaurants, which had previously discarded them into the waste stream. Through the AOSR Program, shells are collected and cured, then placed as cultch back into estuarine waters to promote settlement of oyster larvae, or "spat." The shells also provide habitat for other shellfish and finfish, attenuate erosive wave energy, and promote water quality improvement. As of August 3, 2018, over 7.3 million shells had been collected by the AOSR Program through February 1, 2019.

## TAC-3: Conserve and improve working waterfronts and preserve fishing communities

### Alabama Coastal Marine Planning Tool and GIS Inventory of Coastal Resources

With funding from the State of Alabama, MBNEP created tools to increase management capacity in the region. For example, in conjunction with the Working Waterfronts Coalition, MBNEP helped update the Alabama Comprehensive Geographical Information Systems (GIS) Inventory of Coastal Resources. The MBNEP has made this data-rich inventory available on a flash drive upon request. An additional web-based tool, the Alabama Coastal Marine Planning Tool/Public Viewer, was also developed to help the public visualize, analyze, and understand data and coordinate uses along the Alabama coast and is accessible at <http://www.arcgis.com/apps/Viewer/index.html?appid=28ee2b81558d4aeab563164137b1cec7>.

### Cultural Resource Survey of Alabama Coast

A Comprehensive Cultural Resource Survey (<http://www.mobilebaynep.com/images/uploads/library/SubmergedCRASurvey%20Final%20April%202019.pdf>) was conducted to inventory objects of potential cultural significance within 1,800 feet of all non-Gulf-fronting Alabama shorelines (not including rivers or streams) from Mississippi Sound along the coastline to the tip of Fort Morgan. This survey was developed to conform to U.S. Army Corps of Engineer guidelines associated with permitting within the riparian areas along the coast.

### Alabama State Port Authority's Green Port

In 2016, the Alabama State Port Authority (ASPA) elected to participate in the Green Marine Program, an environmental certification program for the North American marine industry.

This voluntary, transparent, and inclusive initiative addresses key environmental issues through performance indicators. To qualify for certification, participants must benchmark annual environmental performance through the Program's rigorous self-evaluation guidelines, have results verified by an accredited external verifier every other year, and agree to publication of individual results. The ASPA has already undertaken an emissions inventory of land-based vehicles, implemented Policy ENV-002 to limit idling vehicles on ASPA premises, and applied for EPA Clean Diesel funding to retrofit, replace, or repower marine diesel engines.



Shrimp Boats, Bon Secour





## TAC-4: Establish long-term capability of local governments to manage and maintain coastal environmental resources

### South Alabama Stormwater Regulatory Review

Across Mobile and Baldwin counties, local governments have recognized the need to proactively manage stormwater and conserve natural habitats by updating regulations and ordinances related to low impact development and riparian and wetland buffers. All WMPs include a review of the regulatory drivers within the watershed, including construction-phase best management practice (BMP) requirements; post-construction-phase stormwater management requirements, coastal area resource protection, low impact design requirements, and shoreline structures and stabilization.

A formal review of existing laws, regulations, permits and ordinances at the federal, state, and local levels for the Mobile Bay Watershed (including 27 city and county jurisdictions) found opportunities

to improve regulations intended to protect natural resources (Carlton, 2018). The overlapping maze of federal and state permitting requirements is not enough to protect the natural function of Alabama's coastal systems.

The South Alabama Stormwater Regulatory Review (Carlton, 2018) provides a review of existing laws, regulations, permits, and ordinances at the federal, state, and local levels for the geopolitical boundaries of the MBNEP study area, i.e., Mobile and Baldwin counties. The 27 jurisdictions reviewed include Mobile County and its 11 incorporated towns and cities and Baldwin County and its 14 incorporated municipalities, with all lands being under state and federal jurisdiction. Approximately 50 county and municipal government regulations were reviewed relative to several factors influencing stormwater runoff, water quality, wetland protection, and stream and

shoreline protection. The codified regulations of each local entity were reviewed, and a chart listing regulatory requirements was prepared. Responses were compiled into a Regulatory Matrix for ease of comparison.

Other key findings include:

- > The State of Alabama currently has no codified buffer or setback requirements (other than the setback requirements in the construction general permit).
- > There are no federal or State requirements for post-construction stormwater management.
- > Federal and State permits allowing wetlands to be impacted either directly or indirectly are routinely issued. Although mitigation for stream and wetland impacts may be required by the permit, mitigation often takes place outside of the watershed in which impacts occur.



Pitcher Plants, Weeks Bay National Estuarine Research Reserve

### **Improving Stormwater Management Video Series**

Several short videos were produced to educate elected officials about responsibilities and alternatives for managing stormwater in their communities. Working with staff from the cities of Mobile, Daphne, Fairhope, and Foley, as well as Mobile and Baldwin counties,

videos were produced and distributed to promote the use of green infrastructure and low impact development practices. This group guided the development of the following videos for use in educating local officials and community members about best practices in stormwater management: *Stormwater and Pollution – Creating a Clean Water*

*Future, and Partnering to Manage, Protect, and Restore Alabama’s Waters.* The videos focus attention on watershed functions, stormwater runoff, and non-point source pollution. In addition, they educate the elected officials and public about municipal requirements under the MS4 permit program administered by ADEM and the EPA.

## **TAC-5: Minimize impacts and amount of contaminated stormwater runoff entering coastal waterways**

### **Community Clean-Ups**

Each year, as part of the Martin Luther King Jr. Day of Service, over 130 volunteers meet in traditionally underserved Three Mile Creek Watershed neighborhoods to collect hundreds of bags of trash and material from in and around the Creek, including hundreds of illegally dumped tires. Emanating from 30 years of Coastal Cleanups, which continue to draw thousands of volunteers across the State and its two coastal counties every September, local cleanup efforts gained momentum in Mobile with Cleanup the Bottom in 2011 and Take Back Toulminville in

2013 and have expanded into Mobile’s Dog River Watershed, where cleanups have been undertaken at Montlimar, Eslava, and Moore creeks, as well as ongoing clean-ups by community volunteer groups, including, but not limited, to Clean and Lean and Eslava Creek Yakkers. Management Conference partners began an “It’s in the Bag” campaign on both sides of the Bay, which evolved into a “Love Your Community 2019 Cleanup Challenge” competition sponsored by Mobile County Commission District Two. Cleanup activity has also increased in the Bayou La Batre Watershed and along Mobile Bay’s Eastern Shore in Fairhope and Daphne.

### **Intergovernmental and Community Cooperation**

A key component of watershed management planning is ensuring an adequate organizational structure is in place to champion implementation efforts. Since most watersheds fall across geopolitical boundaries (e.g., the Weeks Bay Watershed, which includes nine municipalities and Baldwin County), intergovernmental cooperation is vital to watershed management success.

Each watershed is unique, and, as a result, the level of cooperation recommended in plans is tailored to the resources available. In the D'Olive Watershed, an Intergovernmental Task Force meets quarterly to review implementation status and coordinate uses of resources focused on ongoing stormwater management. Both municipalities (cities of Daphne and Spanish Fort) have updated their subdivision regulations to ensure consistency across political boundaries.

In the Three Mile Creek Watershed, the 3MC Partnership was established to support the City of Mobile in implementing the WMP with a vision of creating a transformational corridor of renewal along the Creek. The 3MC Partnership works with the City of Mobile and private sector stakeholders to support the development of the Mobile Greenway Trail and amenities, neighborhood

renewal and development in the Three Mile Creek corridor, and the creation of a more usable waterway through the environmental restoration of the Creek.

The Fowl River Area Community Association has adopted the Fowl River WMP and established an implementation subcommittee and volunteer water quality monitoring work group to develop long-term environmental monitoring data for the watershed.

Due to the sheer size and complexity of the Weeks Bay Watershed, which stretches as far north as Loxley, AL, Baldwin County and several watershed municipalities agreed to support the creation of a centralized Watershed Management Coordinator position, housed with the Baldwin County Soil and Water Conservation District and supported by the Weeks Bay Watershed Implementation Team to

champion efforts in the Weeks Bay Watershed Complex and across Baldwin County. This position is supported, in part, by the Baldwin County Commission; Gulf Coast Resource Conservation and Development Council; the Alabama Soil and Water Conservation Committee; and the towns of Magnolia Springs, Robertsdale, and Loxley. A group of resource managers on the Weeks Bay Watershed Implementation Team formed Plan Lower Alabama Now (PLAN), overseen by the City of Foley, to share and coordinate use of geospatial datasets across school districts, municipalities, and the County to better inform watershed community growth and development and promote consistency in subdivision regulations.

## TAC-6: Promote the protection of Gulf-fronting beaches, dunes, and shorelines as a first line of defense

### *The Flight of the Frigate Bird*

In 2018, MBNEP produced the Dauphin Island documentary film *The Flight of the Frigate Bird – An Omen of Rising Seas*. Narrated by Mobile singer/songwriter Shelby Lynne, the film features interviews with area residents, public officials, and scientists about the history of the Island and its challenges relating to sea level rise and a changing

environment. For example, the film details how past generations of Islanders recognized the importance of preserving dunes, forests, and marshes to reduce damage from hurricanes and storm surge and avoided building directly on vulnerable beach habitat. The film also explains how booming post-50s development largely ignored historical knowledge, leaving difficult decisions today about how to best adapt to an

eroding shoreline, rising seas, and more intense storms, while protecting tourism and the tax-base it provides.

Another video, *The Dunes of Dauphin Island*, was produced to educate island property owners on municipal efforts to protect existing dunes by establishing a Dune Overlay Protection Program.

### Major Gaps

Major gaps in Technical Assistance and Capacity Building accomplishments are related to a lack of knowledge or understanding of the economic importance of environmental

management by local government and business entities and changing political wills based on elections or other community demands. There remains a need to develop additional tools to continue elevating the

cost of “not prioritizing environmental protection” and to promote incentives for sound environmental management and protection.



**Gulf Shores**



4

**Major Education and  
Public Involvement  
Accomplishments  
2013-2018**





### D'Olive Creek

#### Did You Know?

#### Managing water can help ecosystems.

When rain falls, water flows into streams, creeks, and rivers. These different waterways are called "watersheds" and the land draining the watershed is called a "watershed." Watersheds contain ecosystems with a variety of plants and animals that live in the water and on the land. Each watershed is unique and has its own special characteristics.

#### Birds of D'Olive Creek



- Look for these birds in the sky, on trees, and on the ground:
- Great Blue Heron (*Ardea herodias*)
  - Mockingbird (*Mimus polyglottos*)
  - Red-tailed Hawk (*Bubo virginianus*)
  - Ring-billed Gull (*Larus delawarensis*)
  - Snowy Egret (*Egretta thula*)

#### Wetlands include swamps, marshes, and bogs...

Wetlands are the most productive ecosystems on earth. A wetland is an area that is flooded or soaked with water at least part of the year but may be dry at other times. Wetlands may be dominated by trees, shrubs, grasses, or moss. Plants found in wetlands provide habitat for many different types of wildlife. Wetlands help manage water from storms by absorbing wind and soil. Wetlands filter, clean, and store water. Like "sponges" of our estuaries, clean water from wetlands supports healthy submerged aquatic vegetation (seagrasses) that provides nursery habitat for the fish, shrimp, and crabs.

Wetlands are home to many different plants and animals. Some of the animals that live in wetlands are:

- Bonded/Spotted Sandpiper (*Actitis macularia*)
- Green Anole (*Anolis carolinensis*)
- Mosquito Fish (*Gambusia affinis holbrooki*)
- Northern Leopard Frog (*Rana pipiens*)
- Water Moccasin (*Aplopeltastes palawensis*)



Gator Alley Park, Daphne

# Major Education and Public Involvement Accomplishments: 2013-2018

Public education and engagement are paramount to building support for environmental conservation and restoration. MBNEP provides education and engagement opportunities by developing and conducting outreach and awareness campaigns, field trips, lectures, videos, and hands-on learning and stewardship experiences. These activities build stewardship and enhance quality of life by experientially connecting people to their watersheds, estuarine and coastal habitats, and the living things that depend upon them. The Business Resources Committee, Community Resources Committee, and the Community Action Committee have made significant progress in advancing the goals of this Action Plan.

## EPI-1: Increase awareness of coastal resources supporting what people value about living in coastal Alabama

### Special Events

Coastal Alabama provides many opportunities to celebrate and learn about our coastal values and way of life. Through events, including, but not limited to, the Earth Day Mobile Bay, Alabama Coastal BirdFest, Three Mile Creek Fest, the Wolf Bay Watershed Watch Stan Mahoney Kid's Fishing Tournament, Trash-Free Mardi Gras, Alabama Deep Sea Fishing Rodeo, the Blessing of the Fleet, Green Coast Council, Sustainability Summit, and Coastal Kids Quiz, the general public has ample opportunities to learn about our watershed, the challenges of maintaining environmental

health, and the great work being undertaken by the resource management and non-profit community to protect what we value about living on the Alabama coast.

Citizens and visitors participate in the Alabama Coastal Cleanup each year, the largest annual volunteer event in Alabama. The Coastal Cleanup has grown over 30 years to include over 30 cleanup sites and more than 5,000 volunteers annually. The Coastal Cleanup excels in educating the public about the sources and effects of waterborne trash and reinforces the positive message that everyone can

play a part in maintaining healthy estuaries and coasts.

Every two years, MBNEP, MASGC, and others host the Bays and Bayous Symposium, a two day meeting focused on coastal research, education, and outreach in the northern Gulf of Mexico. The symposium provides a space for scientists, resource managers, nonprofit groups and government to share their best practices or research. Local communities showcase their resilience and conservation efforts and educators and extension professionals share research and successful outreach efforts.

# Objectives

- Monthly fishing ( $F$ ), natural mortality ( $M$ ) estimates
- Annual Estimates  $F$ ,  $M$ ,  $Z$
- Fish movement response to salinity and temperature



## EPI-2: Improve community ability to participate in ecosystem-based management actions

### Watershed Plan Community Participation

MBNEP's watershed planning process has engaged over 1,500 community members, ensuring that watershed planning is as much about community development as it is about environmental protection. These residents and other key stakeholders participate in a series of community assessments, watershed education, and prioritization of management measure alternatives as mechanisms for truly understanding the challenges and options available for improved environmental management. In this way they have become educated participants in management recommendations and implementation of WMPs.

### Volunteer Water Quality Monitoring

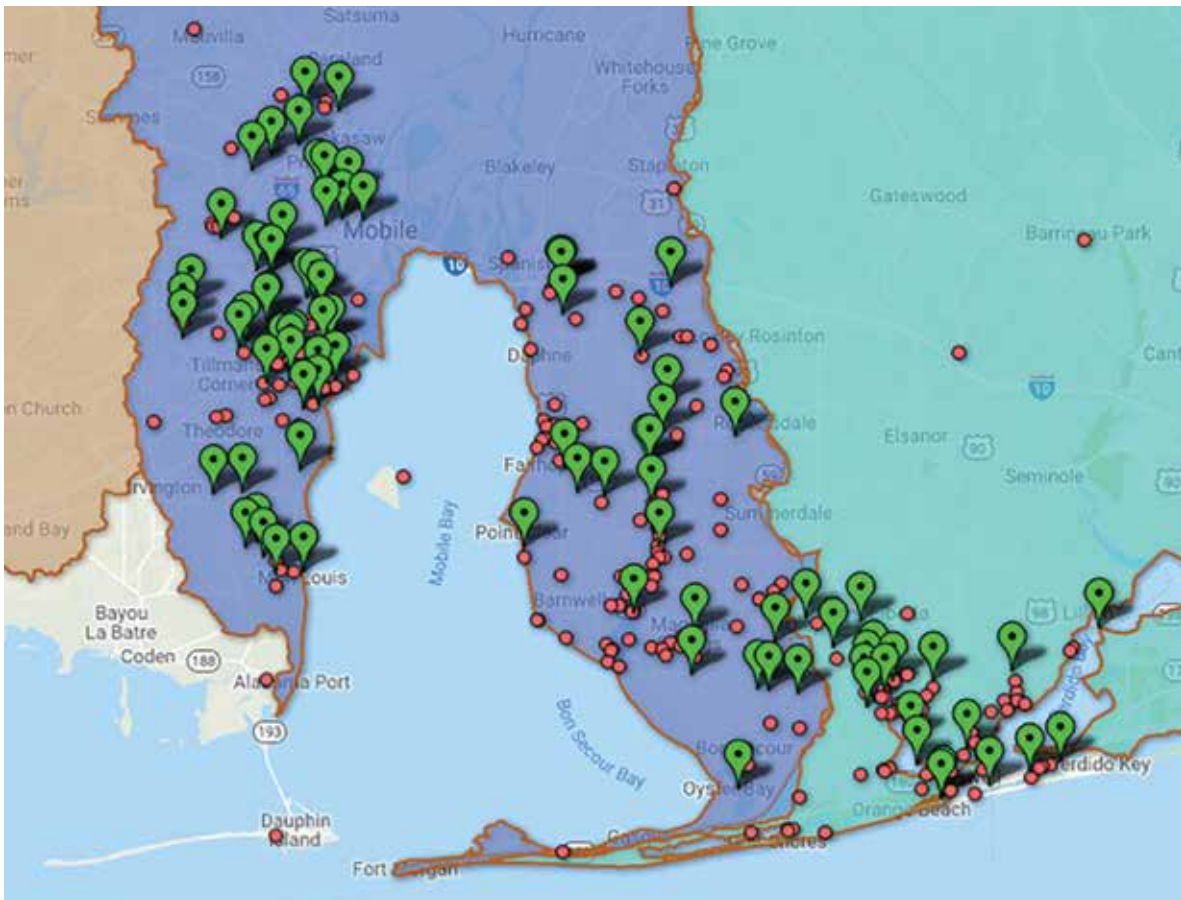
MBNEP also works to build capacity of citizens to inform coastal resource management through the expansion and support of volunteer water quality and biological monitoring programs. The MBNEP

Community Action Committee supports grassroots water quality monitoring by place-based organizations by providing training and technical support using Alabama Water Watch (AWW) protocols and equipment. Figure 9 shows a map of volunteer water quality monitoring sites in coastal Alabama. Alabama Water Watch is a citizen volunteer water quality monitoring program which aims to improve water quality and policy through citizen monitoring and action. The AWW educates citizens on water issues and trains them to use standard equipment and approved techniques to collect credible water quality data using quality assurance protocols.

It empowers citizens to make a positive impact by using water monitoring data for water education and to guide restoration and protection efforts. In 2017, AWW celebrated its 25-year anniversary, with 442 sites established on 219 waterbodies serviced by 70 active monitoring groups statewide.

### Water Rangers Website and Data Portal

When the MBNEP Community Action Committee recognized a gap in the capacity of volunteer water quality monitoring programs to quickly capture and report water quality issues and data, Water Rangers, an existing platform, filled the need. Water Rangers is a user-friendly, web-based platform and smartphone app that allows the public to report data related to water quality, animal and plant observations, and pollution. The app allows users to upload data, photos, and GPS coordinates directly from the field in real-time. The MBNEP funded new functionality for Water Rangers to further improve usability for coastal Alabama residents. Local grassroots groups are now trained to use Water Rangers, filling a data void that previously had limited the successes of citizen science efforts in coastal Alabama.



**Figure 9.** Map of Alabama Water Watch volunteer water quality monitoring sites in coastal Alabama. Green markers indicate active sites, and red dots indicate inactive sites.



Fowl River Bridge and Marina



## **EPI-3: Increase citizen actions to mitigate impacts of humans on the environment**

**Community involvement in and support for stewardship, volunteer, and educational opportunities includes place-based celebrations, litter cleanups, installation of trash traps, and an innovative “Pick Up the Trash” Trash Mob production. Early, large, and successful cleanup efforts related to Three Mile Creek Watershed engagement led to events like the Martin Luther King Day of Service, an annual opportunity to clean up runoff-delivered litter from urban neighborhoods, while engaging the public to educate and encourage positive behavior changes. Coastal Alabama Conservation Corps members performed outreach to public school children to achieve the same goals. The MBNEP Community Action Committee is focused on volunteer monitoring activities, and Community Resources Committee is concerned with environmental education and advocacy for environmental protection.**

### **Strategic Watershed Awareness and Monitoring Program**

The Strategic Watershed Awareness and Monitoring Program (SWAMP) was created by Mobile Baykeeper to target area high school students and build strong connections within watersheds by providing necessary tools for monitoring waterway health and solving local pollution problems. Students are first educated on watersheds, water quality, and how individual actions can impact water quality, and then interested individuals receive training in EPA-approved AWW water quality monitoring protocols. SWAMP has been implemented in five local schools, where, in 2017-18, 4,751 individuals were educated, and 163 volunteer water quality monitors were trained.

### **The Coastal Alabama Conservation Corps**

With funding through a NFWF Creating a New Generation of Conservationists grant, MBNEP, the Martin Luther King Jr. Avenue Redevelopment Corporation of Mobile, and the Student Conservation Association of Washington, D.C. established the Coastal Alabama Conservation Corps, focusing on environmental stewardship and awareness among minority, low-income, young adults through training and employment. The project trained and employed 10 local Corps members to conduct small-scale restoration projects, including invasive species control, drainage improvements, and control of NPS pollution, recommended in the Three Mile Creek WMP. Corps members developed watershed education media,

which they presented to Mobile County Public School System sixth graders. This program has been woven into the Gulf Corps initiative undertaken by The Nature Conservancy.

### **The Trash Mob**

Created by the MBNEP and the Coastal Conservation Corps, the “Trash Mob” utilizes the pop-culture phenomenon of a “flash mob” to raise awareness and encourage behavioral change toward reducing littering and Creating a Clean Water Future. Participants meet in crowded spaces and perform a “spontaneous” dance to a catchy song, “Pick Up the Trash”, with an anti-littering message. The Trash Mob has performed at community meetings and festivals.



## **EPI-4: Build capacity of grassroots groups**

**The MBNEP Community Action Committee is committed to growing the capacity of volunteer, place-based grassroots groups through the provision of periodic training workshops and technical and financial support for the volunteer water quality monitoring program. Several workshops have been conducted in the past five years:**

- > In 2015, the Community Action Committee participated in a fundraising, grant writing, and capacity-building workshop.
- > In April 2017, the City of Mobile Deputy Communications Director conducted a social media training.
- > In Spring 2017, while not a formal training, per se, the MBNEP conducted a focused discussion and provided a template for groups to produce their own monitoring articles to “tell their story”, highlight a monitor, and consider why observed trends were happening. Intent was to help grassroots groups educate and engage their community.
- > Volunteer Water Quality Monitoring (VWQM) Training took place as follows:
  - Established Fowl River VWQM Program in September 2016.
  - Established Bon Secour VWQM Program in June 2017.
  - University of South Alabama Students trained for Three Mile Creek VWQM in January 2018.
  - Daphne Utilities personnel received D’Olive Creek water quality monitoring training in July 18
  - Many other AWW workshops, individual trainings, and refreshers to supplement existing efforts in active watershed were conducted.

## EPI-5: Advocate for issues addressed in the CCMP

### The Mobile Peninsula Corridor Master Plan

MBNEP partnered with Auburn University, Alabama Coastal Foundation, Mobile Baykeeper, Dog River Clearwater Revival, the City of Mobile, and others to empower the Mobile Peninsula community to set and achieve environmental goals. Accomplishments include creation of a Mobile Peninsula Corridor Master Plan and a digital map book of the Highway 163 corridor and adjacent wetlands; proposals for *Deepwater Horizon* Oil Spill funding for a series of nature trails and

preserves; development of Peninsula brochures; hiring of a business director; creation of logo and promotional materials, including maps, website, Facebook page, and an E-newsletter; and implementation of small restoration projects.

### Coastal Homeowners' Insurance Reform

The MBNEP, based on the recommendation of its Government Networks Committee, supported efforts by the Coastal Legislative Delegation to restore fair, non-discriminatory insurance premiums throughout the

State of Alabama. Partnering with the Homeowners' Hurricane Insurance Initiative, the Government Networks Committee and MBNEP approved a resolution in support of prohibiting geographically discriminatory homeowners' insurance policies, submitted it to then-Governor Bentley for consideration, and requested his continued support of efforts to ensure equitable insurance rates for all of Alabama, resulting in the establishment of a State-wide task force to address the issue.

### Major Gaps

Major Gaps in Education and Public Involvement accomplishments are related to the volunteer nature of watershed-based, grassroots organizations, where members work other jobs during traditional working hours,

and the geographical range of Community Action Committee member organizations, which limits abilities to cross network. Efforts to address this gap are ongoing with renewed exploration of video conference technologies.

The MBNEP has developed a draft Outreach Strategy (Appendix A) to expand the Program's messaging reach and raise awareness of the Program, its activities, and its mission, to encourage wise stewardship of our estuarine resources.



Bee on a Swamp Sunflower



5

**Major Accomplishments  
Aimed at Addressing  
the Impacts of  
Climate Change**



Fowl River

# Major Accomplishments to Address Impacts of Climate Change

Along the northern Gulf Coast, we face increased risk from climate change-related stressors, including, but not limited to, warmer summers, winters, and waters, increasing incidences and durations of drought, increasing frequency and intensity of tropical weather events; and sea level rise. The MBNEP and its Management Conference have made significant progress in assessing and raising awareness about the impacts of climate change across all Alabama coastlines.

## Estuary Status and Trends

The Alabama Department of Conservation and Natural Resources has partnered with the USACE, Mississippi-Alabama Sea Grant Consortium (MASGC), and the MBNEP to develop a constituent-informed, science-based *Alabama Coastal Comprehensive Plan* (ACCP) to identify ways to reduce vulnerability and increase coastal resilience. Development of the ACCP included 19 visioning exercises with various sectors of communities and the public in the two coastal counties. Input from participants along with available data, including 295 U.S. Federal Emergency Management Agency (FEMA) storm simulations, contributed to a Corps-developed,

coast-wide, vulnerability and adaptability assessment with mapping to identify risks due to sea level rise. The effort produced an interactive map, which can be found using this url: <https://www.arcgis.com/apps/MapSeries/index.html?appid=470487519df24b9ebb08f89084d6cead#>.

## Ecosystem Restoration and Protection

The CCMP prescribes a watershed-planning framework to ensure local stakeholder participation and that geopolitical boundaries do not limit management measures focused on improved environmental protection. Each of Alabama's 48 tidally influenced 12-digit HUCs have either been the subject of watershed management plans (WMPs)

or are slated for planning with funding secured from *Deepwater Horizon*-related sources. The MBNEP requires that contractors include an assessment of vulnerabilities associated with climate change and sea level rise in each WMP published. It is not expected that individual models will be developed as part of a WMP. Rather, watershed teams can rely on currently available information, including the USACE's coastal vulnerability assessment completed as part of the ACCP. The Coastal Resilience Index, developed by the MASGC, is recommended as a tool for conducting local vulnerability assessments as part of the watershed planning process.

With restoration of four erosion-impacted, salt marsh-covered spits a priority recommendation of the Fowl River WMP, MBNEP secured a NFWF GEBF grant to initiate a marsh health study to investigate why salt marshes in the river's salinity transition zone appear to

be degrading from interior to exterior portions of the marsh. This comprehensive marsh health study includes assessments of marsh condition, investigations of stressors (including sea level rise) potentially underlying observed degradation, and a hydrologic model to

ensure restoration efforts maintain pace with relative sea level rise. Eustatic sea level rise and site-specific subsidence rates were also considerations in the design of the Fowl River WMP-recommended restoration of the north end of Mon Louis Island.

**Several activities recommended in the Three Mile Creek (TMC) Watershed Management Plan (2014) have been implemented to address climate vulnerabilities in low-lying, minority, traditionally underserved communities:**

- > An Auburn University team assessed hydrology in the Toulmins Spring Branch (TSB) Subwatershed. They "ground-truthed" subwatershed boundaries, located and characterized stormwater outfalls, installed pressure gauges to record flow and depth and establish a curve, installed a rain gauge at Prichard City Hall; calibrated a stormwater management model, and conducted water quality sampling. A Community Solutions Fellow collaborated to determine areas of low elevation, sought information from residents to identify vulnerable areas of flooding and neglect, and described conditions underlying identified problem areas.
- > The MBNEP funded the *Prichard Drainage Study: Toulmins Spring Branch and Gum Tree Branch* (MBNEP, 2016) for the Mobile County Commission. It included recommendations for low impact development measures to improve stormwater management and reduce flooding and for increased maintenance by the County, municipalities, and others.
- > Based upon those recommendations, MBNEP initiated a Rain Barrel Installation Program (a recommendation of both the WMP and *Prichard Drainage Study*) in the TSB community to concentrate installation of barrels in target neighborhoods to reduce runoff and educate residents about sources and mitigation of stormwater runoff.

## Technical Assistance and Capacity Building.

In response to TMC WMP recommendations, MBNEP partnered in hosting three initiatives to engage low-lying, minority, traditionally underserved communities, particularly vulnerable to climate change impacts: The Martin Luther King Jr. (MLK) Avenue Leadership Academy, the Coastal Alabama Conservation Corps, and TSB Community Engagement. In 2015, MBNEP partnered with the MLK Avenue Redevelopment Corporation to train “emerging and reluctant leaders” in environmental awareness and climate change vulnerability, leadership, communication, and conflict resolution. Fourteen Leadership Academy participants attended ten two-hour sessions, successfully encouraged the Mobile City Council to formally adopt the TMC WMP, and recommended connecting area young adults with environmental assets through education and job training. This recommendation culminated in creation of the pilot Coastal Alabama Conservation Corps in 2017. Under-employed, high-risk,

young adults were hired and trained to implement smaller-scaled WMP implementation measures to clear stormwater conveyances and install rain barrels in TSB, control invasive species, and provide credible community outreach.

Also, in 2015, MBNEP hired Kimberly Pettway of the University of South Alabama to lead an effort to engage TSB residents in community planning to adapt to climate change impacts and build capacity for improving community resilience. Three community meetings were held to educate residents about the environment, causes of flooding and water pollution, and how hazards will increase due to the effects of climate change. The series concluded in an Ideas Festival to identify community assets in need of protection, offer ideas to reduce flooding, identify existing resources and skill sets to increase resilience, explore opportunities to work with the City of Prichard to increase resilience, and identify community members willing to help.

Dr. Tracie Sempier of MASGC explained the National Flood Insurance Program (NFIP) and Community Rating System (CRS) to elected officials, state agency heads, and regional government administrators in the MBNEP’s Government Networks Committee. The NFIP is implemented by FEMA and provides federally backed flood insurance in exchange for communities adopting minimum floodplain management requirements. The CRS is an incentive program for the NFIP with goals to reduce flood losses, facilitate accurate insurance ratings, and promote the awareness of flood insurance to address vulnerabilities related to rising sea level. Dr. Sempier also led several coastal Alabama municipalities in developing Community Resilience Indices, to examine their levels of preparation for storms and storm recovery.

A climate vulnerability assessment of the Action Plans/five-year-strategies of the Updated CCMP 2019-2023 was prepared and presented in Part Three, Section 5.



## Education and Public Involvement

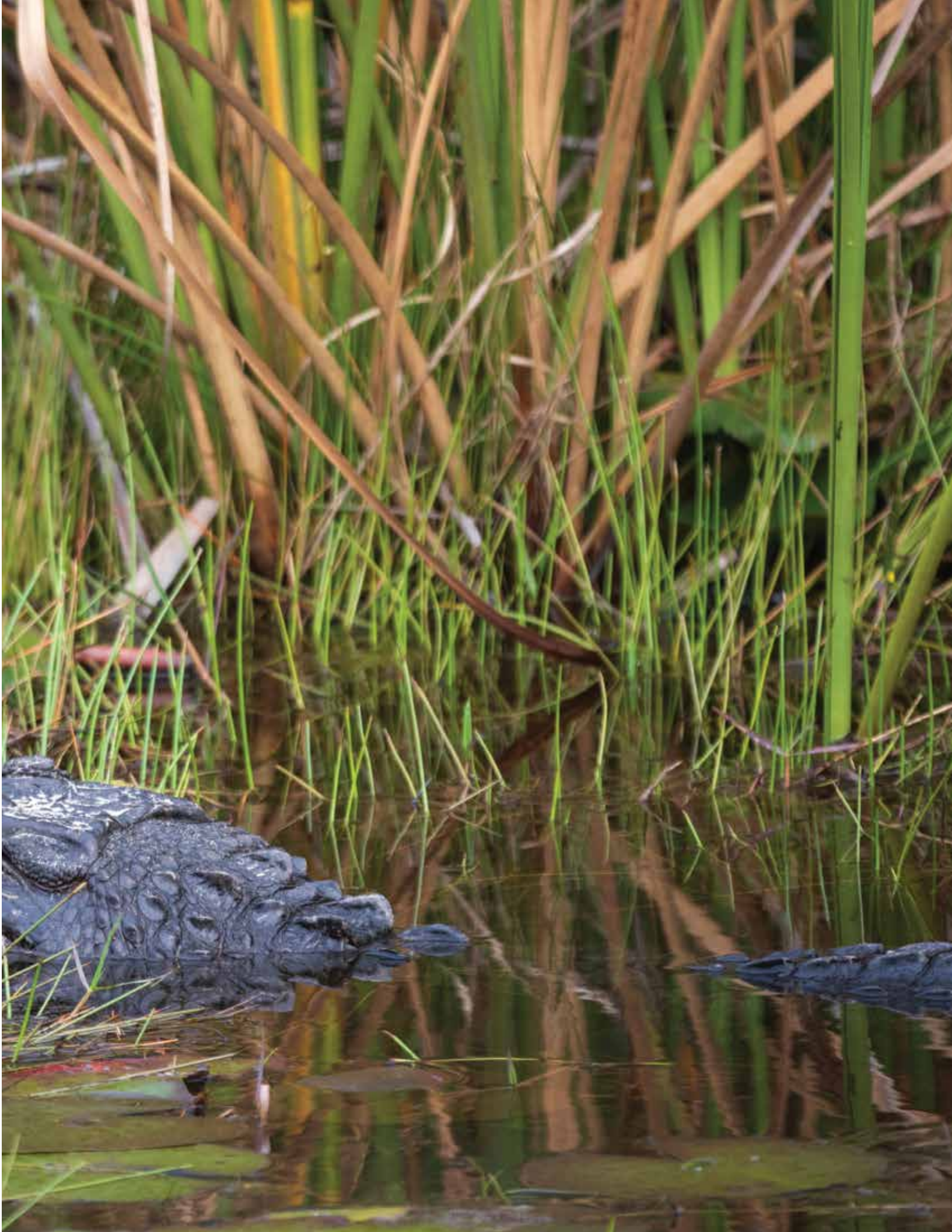
In 2018, MBNEP and Cobia Productions completed the 30-minute video, *Flight of the Frigate Bird*, narrated by country music performer, Shelby Lynne. As large storms and rising seas threaten the future of Dauphin Island, this documentary examines how generations

of islanders once adapted to the ever-changing landscape of barrier-island life. Oral histories were used to convey how they knew to protect the dunes, forests, and marshes, since they offered the greatest protection from hurricanes and storm surge. As development boomed after bridge construction in the 1950s, many of the tenets

that sustained island life in the face of tropical weather events were abandoned, leaving current islanders facing daunting decisions about how best to adapt to eroding shorelines, rising seas, and larger storms.

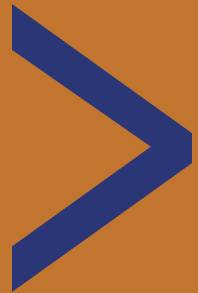


Alligator in the Delta





**PART TWO**  
Getting to an  
Updated CCMP





1

Committee  
and Stakeholder  
Engagement



Great Blue Heron and Frog

# Committee and Stakeholder Engagement

To update *Respect the Connect* for the next five years, efforts were undertaken to evaluate progress towards implementation of the CCMP's four Action Plans, make necessary changes to address existing gaps or new issues, and update strategies to guide planning and implementation through 2023.

## Evaluating Past CCMP Implementation Progress

In early 2018, the MBNEP began the process of updating the CCMP, following the *National Estuary Program Comprehensive Conservation and Management Plan Revision and Update Guidelines* (U.S. EPA 2016). As per guidelines, this update takes the form of an updated implementation plan, including reporting on accomplishments, refinements to action plans (strategies), changes to the Management Conference structure, and reaffirming the original values and goals of the 2013-2018 CCMP.

The Management Conference committees began meeting in late 2017 to evaluate progress over the last five years in implementing the CCMP strategies under their purview. The Science Advisory Committee evaluated the Ecosystem Status and Trends strategy; the Project Implementation Committee evaluated Ecosystem Restoration and Protection

strategy; the Business Resources, Government Networks, and Community Resources committees evaluated the Technical Assistance and Capacity Building strategy; and the Community Action and Community Resources committees evaluated the Education and Public Involvement strategy. In a modified Strengths/Weaknesses/Opportunities/Threats (SWOT) analysis, committees considered and discussed each goal and objective with a focus on implementation status, barriers to implementation, and emerging/evolving issues, while also identifying untapped resources that could help with implementation.

In addition, the MBNEP staff undertook an internal SWOT analysis of the committees to consider opportunities for enhancing the focus, function, and information flow within and between committees. Key questions considered

included: Do we have the right people serving on the committees? How can we better support committee co-chairs to set and achieve committee goals that in turn energize members? How can we improve communication within and between committees, especially measuring and sharing successes? The hallmark and great strength of the Management Conference committee structure is building coalitions among diverse stakeholders by community sector with strong qualifications and enthusiasm for implementing CCMP activities. Continuous engagement of these all-volunteer committee members within the committee structure as well as in meetings which bring all committees together, while minimizing conflicts of interests and avoiding duplication of effort, is important to maintaining momentum towards achieving shared goals.

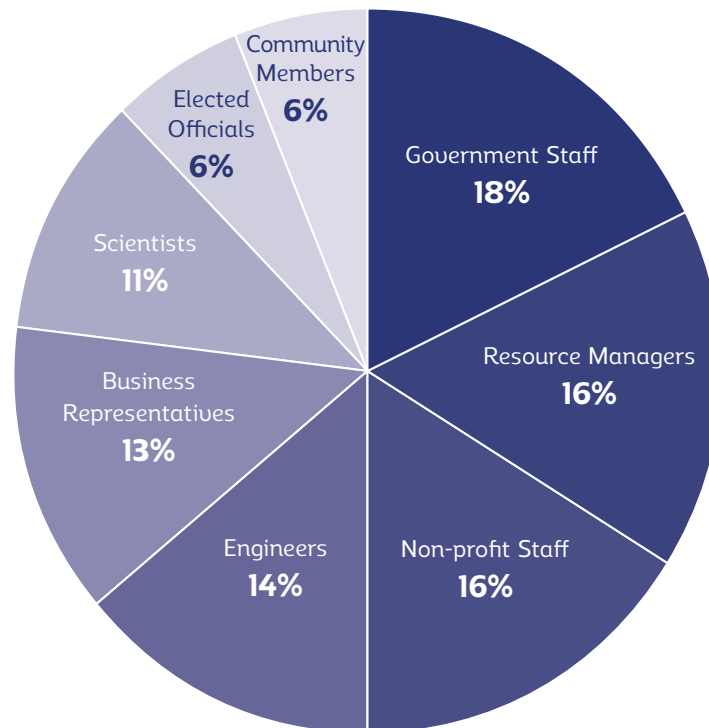


## Community Stakeholder Engagement: The CCMP Update Meeting

On August 30, 2018, 178 community leaders (most of whom already participate on one or more MBNEP committees) representing diverse stakeholder groups (represented in Figure 10) participated in a day-long meeting to “brainstorm” activities, challenges, and long-term considerations related to implementing the CCMP over the next five years (2018-2023). The purpose of this Management Conference

CCMP Update Meeting was to ensure that strategies for measuring estuary status and trends, restoring and protecting critical ecosystem components, building community capacity, and expanding citizen stewardship resonate with the community and are both achievable and science-based. Participants engaged in a series of facilitated round-table discussions centered around the six guiding values of

the CCMP (access, beaches and shorelines, fish and wildlife, heritage and culture, environmental and community resilience, and water quality) and identified opportunities, challenges, and long-term-sustainability considerations for the coming five years. Hundreds of activities were suggested and discussed by participants and recorded.



**Figure 10.** Chart showing backgrounds of August 30, 2018 CCMP Update meeting participants

## Stakeholder Ranking of the Opportunities

To further prioritize the numerous activities suggested during the CCMP Update Meeting, suggested activities compiled from the meeting were consolidated, organized under CCMP Action Areas, and developed into an input questionnaire by which respondents ranked each, relative to their importance for pursuit over the next five years. Over 45% of meeting participants responded to the questionnaire, providing important guidance to

ensure MBNEP strategies resonate with stakeholders. The meeting output of ranked lists of activities for each Action Area was then considered by Management Conference committees during quarterly meetings and refined by committee Co-Chairs to fine-tune and finalize the strategies. As a result, goals, objectives and activities of the strategic plan have been refined and better organized for clarity. This nine-month review

process ensured stakeholder input is woven into the fabric of the CCMP Update, providing a consensus-based blueprint for managing our estuarine waters and coastal resources for the next five years. Changes in Goals and Objectives in Action Area strategies from *Respect the Connect* to the updated 2019-2023 CCMP are reflected as a crosswalk and shared as Appendix B.

## Public Review Process

On February 1, 2019, the draft 2019-2023 CCMP update was released for comments as a PDF file for a 45-day review period. The electronic file was emailed to Management Conference members and advertised to the general

public in local and social media with a link to the document on the MBNEP website. An initial comment deadline was imposed on March 18, 2019. On March 28, 2019, the comment period was extended an additional

45 days until May 3. Comments were logged upon receipt, edits and changes implemented, and responses indicated in Appendix C. MBNEP's CCMP Comments Summary.



Cast Netting Near  
Lightning Point, Bayou La Batre



Cycling the Trails at Gulf State Park





# 2

## Prioritizing Areas of Stress and Preparing for Watershed Development



Sea Oats

# Prioritizing Areas of Stress and Preparing for Watershed Plan Development

## Reaffirming Stressed Habitats and Reprioritizing Watersheds

The Science Advisory Committee undertook a process in 2012 to determine which habitats were most vulnerable to a diversity of environmental stressors. These habitats - freshwater wetlands, intertidal marshes and flats, as well as, streams, rivers, and riparian buffers - continue to be the focus of restoration efforts for the next five years.

Using a prioritization exercise like the one used to develop the original prioritized list of watersheds for *Respect the Connect*, the MBNEP Project Implementation Committee representatives visited each of the Management Conference committees during 2018 and undertook an exercise with each committee to revisit the prioritization of remaining watersheds with tidal influences for watershed management planning purposes. The results of each committee's responses were compiled and the list of prioritized watersheds and scores is represented in Table 4 below.

**Table 4.** Results of prioritization exercise conducted by the Project Implementation Committee with each of the Management Conference Committees

<b>WATERSHED</b>	<b>PRIORITY SCORING</b>
Fly Creek	4.3
Bayou Sara	4.1
Little Lagoon/Perdido Pass	4.1
Mobile Tensaw-Apalachee	4.0
Lower Chasaw	4.0
Garrows Bend	3.9
Bay Minette Creek/Whitehouse Creek	3.8
Delchamps Bayou/Deer River	3.5
Bridge Creek/Palmetto Creek	3.5
Dauphin Island	3.5
Gunnison Creek/Cold Creek	3.0
Grand Bay Swamp	2.4



On November 2, 2018, the MBNEP hosted a Watershed Planners Meeting for WMP plan contractors (in anticipation of availability of RESTORE Act funding) to communicate WMP-development expectations, scheduling, resource availability for planners, and ways to improve efficiency of the process moving forward. A shared MBNEP Google Drive folder, including GIS data sets, standard WMP table of contents, sea level rise data, the South Alabama Regulatory Review, Cultural Resource Inventory, etc., was made available to contractors. Approximate (desired) timelines were determined for individual WMP components.

With a recognition of needed pre-restoration assessments/ sediment analyses for identified watersheds (including Fly Creek, Bayou Sara and Cold Creek [Western Delta], Whitehouse Creek and Bay Minette Creek [Eastern Delta], and Palmetto Creek watersheds), the participants in the meeting reprioritized the roll-out of watershed planning based on timing of sediment studies. In addition

to EPA's nine key elements, NEP expects WMPs to address the six values, focus on the most stressed habitats, and include addressing management measures defined by Alabama's Coastal Nonpoint Pollution Control Program. They determined that seven WMPs for watershed complexes would more efficiently be prepared than individual WMPs for nineteen 12-digit HUCs. Watersheds or complexes recommended for initial release of Requests for Qualifications in early 2019 included Perdido/Gulf Frontal and Little Lagoon Watershed and the Western Shore Complex (Garrows Bend, Deer River and Delchamps Bayou watersheds).

Federal RESTORE Act funding, received through the State of Alabama, will allow completion of management plans for all tidally influenced watersheds (shown in the map in Figure 11). Collectively, these watersheds cover a landscape comprising 27 geopolitical units, including municipalities and two counties and encompassing 41 stream segments designated "impaired"

by ADEM for pollutants and impacts including ammonia, nutrients, low dissolved oxygen, siltation/ sediment, pathogens, organic enrichment, and metals. Within these watersheds, three waterbodies are designated as "Outstanding Alabama Waters" and 13 place-based grassroots groups of volunteer members are committed to Creating a Clean Water Future for their communities. With science-based projects already identified and with the added value of precursor stakeholder participation, MBNEP's WMPs have proven invaluable in directing limited restoration funding to the projects delivering the greatest impact to improving coastal water and habitat quality and in helping to secure funding to implement the CCMP goals.

## The Watershed Management Planning Approach in Detail

To ensure all restoration efforts are based in science and part of an overall management program, the MBNEP Project Implementation Committee adopted a comprehensive watershed planning and implementation approach to coastal restoration. The approach included the development of sediment analyses, where appropriate, to determine baseline environmental conditions and conforms to EPA, NOAA, and ADEM requirements for managing NPS pollution. In addition, these plans must address the CCMPs six values (page 4) for each watershed, including vulnerabilities related to changing climatic conditions.

The EPA and the NOAA's Coastal Zone Act Reauthorization Amendment (CZARA) Section 6217 (g) guidance prescribe watershed management planning for the smallest watersheds classified numerically by the U.S. Geological Survey into Hydrologic Unit Codes, the

12-digit HUCs, to guide science-based project implementation.

Typically, a single WMP covers a single 12-digit HUC area; for example, the Fowl River Watershed (HUC 031602050208) individually covers 82 square miles. But when watersheds are adjacent and have similar

demographics and issues, WMPs may be developed for complexes of watersheds to achieve economies of scale. For example, the Dog River WMP was developed for the complex of three 12-digit HUCs, which all drain to Dog River: Upper Dog River, Halls Mill Creek, and Lower Dog River.

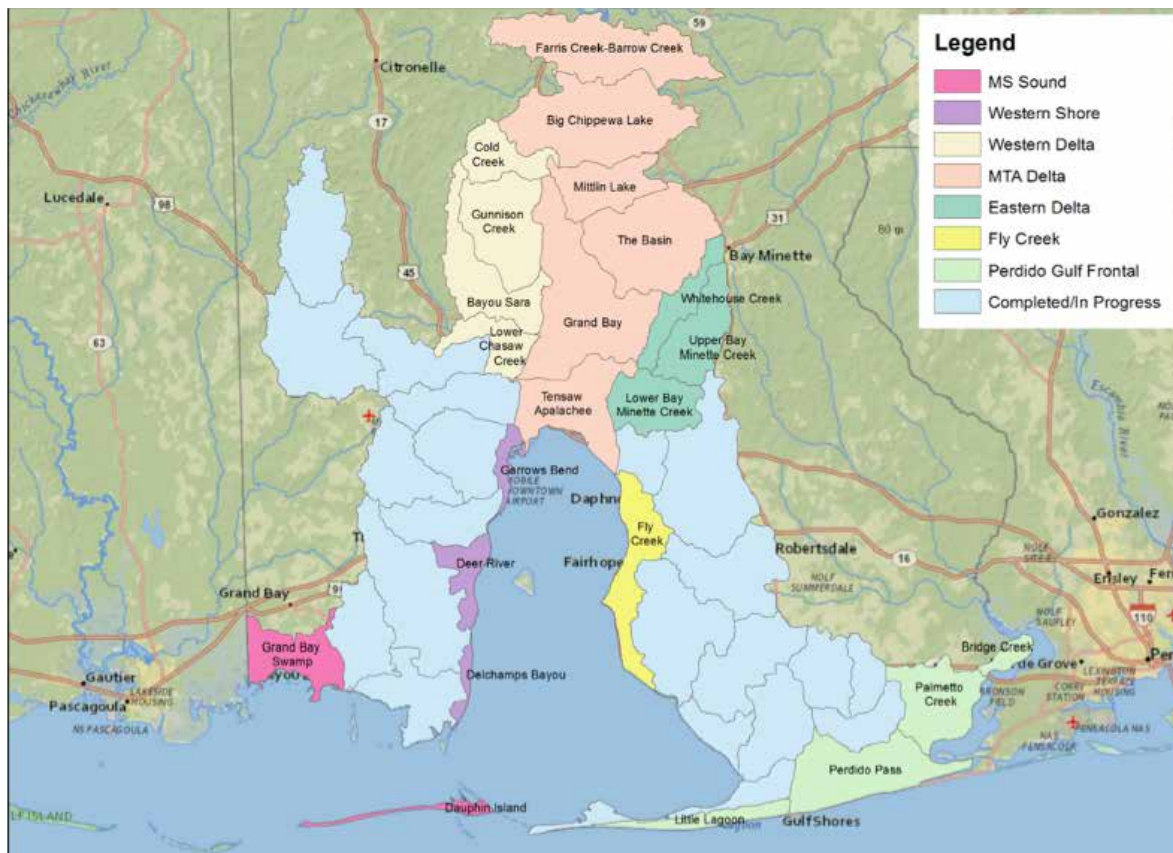


Figure II. Map of intertidal 12-digit HUV watersheds for which watershed management plans have been completed or in process/light blue) or are planned (color coded with watershed names).

## EPA's Nine Key Elements

All watershed plans are based on EPA guidance, addressing the following key nine elements:

- 1 Identify causes and sources of impairment.
- 2 Estimate the pollutant load reductions expected from restoration/management measures.
- 3 Describe NPS pollution reduction measures and critical areas where those measures will take place.
- 4 Estimate the amount of financial support needed to implement plan recommendations, including monitoring.
- 5 Create an outreach and education plan to increase residents' understanding of and involvement in restoration measures and to engage them in long-term implementation of the plan.
- 6 Provide a schedule for implementing recommended NPS pollution management measures.
- 7 Describe interim measurable milestones for determining whether NPS pollution management measures or control actions are being implemented.
- 8 Develop criteria to determine whether pollutant-load reductions are being achieved over time and progress is being achieved towards attaining water quality standards, and, if not, develop criteria for determining whether WMPs need revision.
- 9 Develop a monitoring component to evaluate the effectiveness of implementation efforts over time.

In addition to EPA's nine key elements, Project Implementation Committee watershed planning will identify restoration, protection, and conservation opportunities or projects for the three most stressed habitats: freshwater wetlands; streams, rivers and riparian buffers; and intertidal marshes and flats; and address impacts related to

changing climates and sea level rise.

The MBNEP requires that contractors include an assessment of vulnerabilities associated with climate change and sea level rise in each WMP published. As discussed in Section 5 it is not expected that individual models will be developed as part of a WMP. Rather, watershed teams can

rely on currently available information, including the USACE coastal vulnerability assessment completed as part of its ACCP. The Coastal Resilience Index, developed by the MASGC, is recommended as a tool for conducting local vulnerability assessments as part of the watershed planning process.

## NOAA's Coastal Zone Reauthorization Amendment Section 6217

MBNEP's watershed planning process also conforms to CZARA Section 6217(g) management measures. As the State lead on water quality, ADEM's Alabama Coastal Nonpoint Pollution Control Program must conform to Section 6217(g) requirements to be compliant for funding under Section 306 of the Coastal Zone Management Act and Section 319 of the Clean Water Act. These so-called 6217(g) requirements include geographic scope of the program, pollutant sources to be addressed, types of management measures used, establishment of critical areas, technical assistance, public participation, and administrative coordination.

Management measures are defined in CZARA as economically achievable measures to control the addition of pollutants to our coastal waters, which reflect the greatest degree of pollutant reduction achievable through the application

of the best available NPS pollution control practices, technologies, processes, siting criteria, operating methods, or other alternatives. The CZARA management measure areas of concern for NPS pollution control include: agriculture; forestry; urban areas; marinas and recreational boating; and hydrologic modification/channelization, channel modification, dams, and streambank and shoreline erosion.

While State NPS pollution control programs are required to specify management measures in conformity with this guidance, credit can be given to existing practices, plans, and systems that have already made progress toward accomplishing NPS pollution control. Since the MBNEP's watershed planning process conforms with the 6217(g) requirements, ADEM supports MBNEP in developing and implementing WMPs, rather than duplicating the effort.

MBNEP staff reviewed each of the nine completed watershed management plans to evaluate conformance to 6217(g) requirements across the seven CZARA management areas of concern. Where activities of concern for NPS pollution (e.g., agriculture, forestry, urban areas, etc.) are occurring in the watershed, the WMP's recommended management measures were compared to the 6217(g) recommended management measures. All WMP recommendations conform to 6217(g) guidance in terms of best management practices. However, gaps in coverage for particular areas of pollution control were identified for the Eight Mile Creek, Bon Secour River, and D'Olive WMPs and are shown in Table 5 with recommended management measures described in Appendix D. These WMPs will be updated to address these additional potential sources of pollution.

**Table 5.** Gaps in watershed planning efforts not conforming to CZARA Section 6217 (g) requirements in the Bon Secour River, D'Olive, and Eight Mile Creek Watershed Management Plans.

<b>WATERSHED MANAGEMENT PLAN</b>	<b>Gap(s) in Management Recommendations as per 6217(g) guidance. See Appendix D for specific recommendations</b>	
<b>Bon Secour River and D'Olive</b>	4.4 Onsite Disposal Systems	<ul style="list-style-type: none"> <li>A. New on-site disposal system management measure</li> <li>B. Operating on-site disposal management measure</li> </ul>
<b>Eight Mile Creek</b>	4.6 Roads, Highways & Bridges	<ul style="list-style-type: none"> <li>A. Management measure for planning, siting, and developing roads and highways</li> <li>B. Management measure for bridges</li> <li>C. Management measures for construction projects</li> <li>D. Management measure for construction site chemical control</li> <li>E. Management measure for operation and maintenance</li> <li>F. Management measure for road, highway, and bridge runoff systems</li> </ul>
	6.1 Channelization and Channel Modification Management Measures	<ul style="list-style-type: none"> <li>A. Management measures for physical and chemical characteristics of surface waters</li> <li>B. Instream and riparian habitat restoration management measures</li> </ul>
	6.1 Dams Management Measures	<ul style="list-style-type: none"> <li>A. Management measure for erosion and sediment control</li> <li>B. Management measure for chemical and pollutant control</li> <li>C. Management measure for protection of surface water quality and instream and riparian habitat</li> </ul>



Mon Louis Island Tip Restoration





3

Key Issues of Focus for  
the Next Five Years





Black Skimmers

# Key Issues of Focus for the Next Five Years

## Improved Understanding of Hydrologic Flows

Hydrologic models provide simulations of real-world systems that aid in explaining, predicting, and managing the flow of waters over landscapes. The MBNEP, the two coastal counties, and engineering contractors have found these computer software tools valuable in watershed or other landscape planning efforts to simulate flow and behavior of water through a watershed to determine where recommended preservation, restoration, and

conservation activities will have the greatest impacts for improving the health and resilience of a watershed. Completed models are used to model dynamics of stream segments to inform marsh restoration or shoreline stabilization design. Just as important, these models provide local planning jurisdictions with a tool for evaluating impacts of future growth (increased runoff or sediment loading, etc.) or proposed developments with

respect to compliance with codes or standards. They are also used to evaluate potential retrofit measures in previously developed areas to aid in selection of watershed-specific retention measures or capture target volumes. The models also facilitate quantitative estimation of loadings that simulate both upland runoff and in-stream processes, providing understanding of water movement and shear stresses along shorelines.

## Focused Monitoring at the Watershed and System-wide Scale

To better understand the current health and function of the Mobile Bay estuary and any shifts due to restoration, the Science Advisory Committee of the MBNEP developed the Mobile Bay Subwatershed Restoration Monitoring Framework (MBNEP SAC 2015). This comprehensive monitoring framework recommends specific monitoring procedures to assist in determining 1) what, if any, changes in water quality, flow, sedimentation, biology, and habitat quantity and quality result from restoration efforts and WMP implementation;

2) how potential ecosystem health indicators relate to stressors and ecosystem function/services; and 3) the long-term status of the biological condition of the Mobile Bay Watershed. Recommended protocols will result in standardized data collection for restoration efforts throughout Mobile and Baldwin counties, allowing both temporal and spatial comparisons, improved decision making, and data preservation for future use. The monitoring program outlined in the framework is included as an implementation activity in all WMPs being

developed by the MBNEP. Since 2015, monitoring efforts recommended by the framework have been initiated as a pilot in the D'Olive Watershed for sedimentation and flow, water quality, habitat, wetlands, and streams and riparian buffers. Data will continue to be collected as restoration continues. An important task included in this CCMP update will be to review and, where possible, closely align with Gulf Coast and regional monitoring networks.

## Expanded Reach upstream to improve the quality of water discharging into Alabama's Bays and Mississippi Sound

In 2018, the MBNEP secured funding from the Healthy Watersheds Consortium Grant Program to extend the protocols used in developing the Coastal Habitat Atlas (*Conserving Alabama's Coastal Habitats: Acquisition and Restoration Priorities in Mobile and Baldwin Counties*) (MBNEP and TNC, 2006) upstream into

the Mobile-Tombigbee and Alabama River watersheds. This Habitat Atlas, currently in development, will identify forested headwater parcels whose protection offers the greatest benefits to the ecological health of Alabama's estuarine waters. The Atlas will be vetted by forestry resource managers to determine which have the

greatest potential for sale or conservation easement by property owners. The Alabama Forest Resources Center has been contracted to vet and then implement the Atlas by coordinating protection of targeted parcels, with an initial target of protecting 10,000 acres in the first year.

## Increased Engagement of Key Stakeholders in improving how our coastal resources are managed

The MBNEP's Government Networks Committee works to engage locally elected officials and state and federal agency representatives to build capacity of local governments to manage and enhance coastal environmental resources. Moving forward, an emphasis will be placed on supporting

actions to protect and restore coastal habitats to increase both environmental and economic resilience of our coastal communities. The South Alabama Stormwater Regulatory Review (Carlton, 2018) identified inconsistencies and recommended actions the GNC will lead to improve coastal regulatory frameworks

to better protect coastal resources. An additional focus is continuing programs to educate local decision makers, utilizing a variety of tools to improve their understanding of the relationship between land use, water resource management decisions, and environmental impacts.



Bayou La Batre Shrimp Boats

## Attention to Issues of Common Concern Across Alabama's Coastal Watersheds

### Five pervasive issues of concern:

- 1 Stormwater-borne trash and litter in our waters.
- 2 Diminished and disappearing oyster populations and water quality challenges in harvest areas.
- 3 Concerns related to sediment loads (excessive or insufficient).
- 4 Pathogens and other bacteria entering waterways, and
- 5 Stormwater management challenges have been identified across the nine watersheds for which WMPs have been developed.

Lower Alabamians of both counties and most watersheds who share the six values contributing to our coastal quality of life also share concerns about "trash, oysters, dirt, bacteria and stormwater runoff." While CCMP strategies have been developed to guide WMP implementation, these five issues rise to a particular level of general concern that could drive Management Conference committees and members to initiate concerted and united mitigation efforts.



4

Community  
Involvement in CCMP  
Implementation



Great Blue Heron

## Stakeholder Engagement Through the Management Conference Committees

In addition to the CCMP itself, a hallmark of every NEP is the establishment and convention of a Management Conference, critical to its ability to facilitate collaborative efforts among local stakeholders to implement the CCMP. Section 320 of the Clean Water Act outlines how NEPs are required to establish a Management Conference to develop a CCMP and ensure its implementation by stating in part:

**Purposes of Conference** The purposes of any Management Conference convened with respect to an estuary under this subsection shall be to:

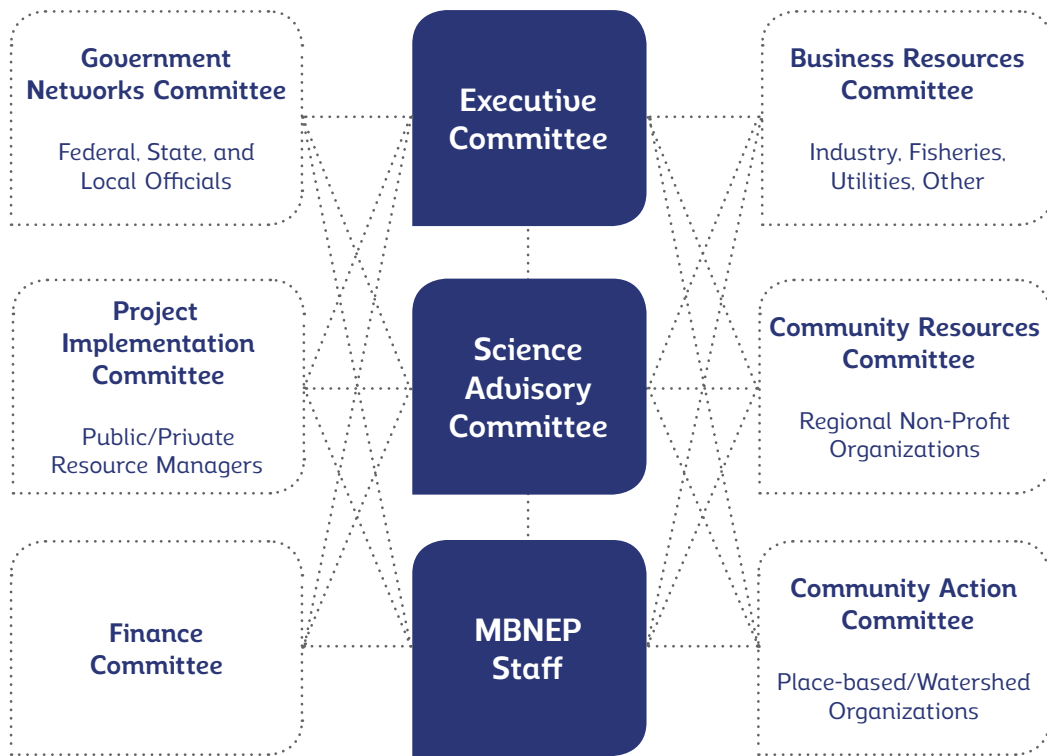
- 1 Assess trends in water quality, natural resources, and uses of the estuary.
- 2 Collect, characterize, and assess data on topics, nutrients, and natural resources within the estuarine zone to identify the causes of environmental problems.
- 3 Develop the relationship between the in-place loads and point and nonpoint source loadings of pollutants to the estuarine zone and the potential uses of the zone, water quality, and natural resources.
- 4 Develop a comprehensive conservation and management plan that recommends priority corrective actions and compliance schedules addressing point and nonpoint sources of pollution to restore and maintain the chemical, physical, and biological integrity of the estuary, including restoration and maintenance of water quality; a balanced indigenous population of shellfish, fish, and wildlife; and recreational activities in the estuary; and assure that the designated uses of the estuary are protected.
- 5 Develop plans for the coordinated implementation of the plan by the states as well as federal and local agencies participating in the conference.



In addition to the Finance and Executive committees, our current Management Conference structure of six working committees (shown in Figure 12) provides a mix of policy makers (both public and private), implementers (both public and private), and grassroots (community groups and citizens) to ensure expanding support for CCMP implementation and identification and engagement of emerging issues related to CCMP objectives. Management Conference committees meet approximately four times annually to work on specific goals, objectives, and activities of the four strategic Action Plans with dedicated MBNEP staff serving as committee facilitators.

Diverse representation of stakeholders on working Management Conference committees ensures direct, community-wide involvement in CCMP implementation by participating partner organizations, including science, technical, and policy support, as well as public education and engagement on important watershed planning and stewardship issues. The goal is an increased ability for the MBNEP to function as a community connector and capacity builder and the backbone organization necessary for achieving collective impact in the environmental arena to our coastal communities.

## MBNEP Management Conference



**Figure 12.** Committee organizational structure of the MBNEP Management Conference.

## Management Conference Members

ACCEL Day and Evening Academy	AM/NS Calvert	Clarke County Commission
Alabama Association of Conservation Districts	Anchor QEA, LLC	Coastal Alabama Partnership
Alabama Coastal Foundation	Auburn University Department of Fisheries	Coastal Conservation Association
Alabama Coastal Heritage Trust	Auburn University Marine Extension and Research Center	Congressman Bradley Byrne
Alabama Department of Public Health - Seafood Branch	Auburn University School of Fisheries, Aquaculture & Aquatic Sciences	Conservation Alabama
Alabama Department of Conservation and Natural Resources - Coastal Section	Auburn University School of Forestry and Wildlife Sciences	Cook Hydrogeology, LLC
Alabama Department of Conservation and Natural Resources - Marine Resources Division	Baldwin County Commission	Cooper/T. Smith Corp.
Alabama Department of Conservation and Natural Resources - State Lands Division	Baldwin County Economic Development Alliance	Covington Civil and Environmental
Alabama Department of Conservation and Natural Resources - Wildlife & Freshwater Fisheries	Baldwin County Legislative Delegation	Cypress Environmental Science and Engineering
Alabama Department of Environmental Management	Baldwin County Planning and Zoning Department	Daphne Utilities
Alabama Department of Public Health - Baldwin County Health Department	Baldwin County Soil and Water Conservation District	Dauphin Island Property Owners Association
Alabama Department of Public Health - Escambia County Health Department	BancorpSouth	Dauphin Island Sea Lab
Alabama Department of Public Health - Mobile County Health Department	Barry A. Vittor and Associates	Dauphin Island Sea Lab Foundation
Alabama Department of Public Health - Mobile Division Laboratories	Birmingham Audubon Society	Dewberry, Inc.
Alabama Department of Transportation	Cam-Air LLC	Dog River Clearwater Revival
Alabama Forestry Commission	Canfor and Scotch Gulf Lumber	Eastern Shore Chamber of Commerce
Alabama Gulf Coast Restore Council	Cartridge World	Ecology and Environment, Inc.
Alabama House of Representatives	CH2M Hill	Environmental Science Associates
Alabama Oil and Gas Board	City of Bay Minette	Escambia County Commission
Alabama Power Company	City of Bayou La Batre	Escambia County Natural Resources Department
Alabama Rivers Alliance	City of Chickasaw	Evonik Corporation
Alabama Soil and Water Conservation Committee	City of Citronelle	Fairhope Environmental Advisory Board
Alabama State Port Authority	City of Creola	Food and Drug Administration
Alabama State Senate	City of Daphne	Fort Morgan Civic Association
Alabama Water Watch	City of Fairhope	Fowl River Area Civic Association
Allen Engineering and Science	City of Foley	Friends of the Tensaw
	City of Gulf Shores	Geological Survey of Alabama
	City of Mobile	Geosyntec Consultants, Inc.
	City of Orange Beach	Golf Course Superintendents Association of America
	City of Prichard	Goodwyn, Mills & Cawood, Inc.
	City of Robertsdale	Grand Bay National Wildlife Research Reserve
	City of Saraland	Gulf Coast Containers
	City of Satsuma	Gulf Coast Ecosystem Restoration Council
	City of Semmes	Gulf Restoration Network
	City of Silverhill	Gulf Shores and Orange Beach Tourism
	City of Spanish Fort	

Hand Arendall LLC	M.O.V.E. Gulf Coast Community Development Corporation	Tetra Tech
Hargrove Engineers + Construction	National Aeronautics and Space Administration	The Lodge at Gulf State Park
Heritage Homes	National Audubon Society	The Nature Conservancy
Hydro, LLC	National Fish and Wildlife Foundation	Thompson Engineering
Integrated Science and Engineering	National Oceanic and Atmospheric Administration	Town of Dauphin Island
J.L. Bedsole Foundation	National Oceanic and Atmospheric Administration Gulf Coastal Services Center	Town of Elberta
Lagniappe Mobile	Natural Resources Conservation Service	Town of Loxley
Lake Forest Civic Association	North Baldwin County Chamber of Commerce	Town of Magnolia Springs
Lake Forest Improvement Committee	Northern Gulf Institute	Town of Mount Vernon
Land Heritage Properties	Olds Filtration Engineering, Inc.	Town of Perdido Beach
Little Lagoon Preservation Society	Organized Seafood Association of Alabama	Town of Summerdale
Manufacturers Packaging	Partners for Environmental Progress	United State Fish and Wildlife Service - Coastal Programs
McFadden, Rouse, & Bender, LLC	Payne Environmental Services	United State Fish and Wildlife Service - Gulf Restoration Program
Milling Realty	Pelican Coast Conservancy	United States Army Corps of Engineers
Mississippi Department of Environmental Quality	Peninsula of Mobile	United States Environmental Protection Agency
Mississippi State University	Pickett Real Estate	United States Environmental Protection Agency Gulf Ecology Division
Mississippi State University Coastal Research and Extension Center	Rowe Engineering and Surveying, Inc.	United States Environmental Protection Agency Gulf of Mexico Program
Mississippi-Alabama Sea Grant Consortium	S&ME, Inc.	United States House of Representatives
MLK Avenue Redevelopment Corporation	Senator Richard Shelby	United States Senate
Mobile Area Chamber of Commerce	Servis 1st Bank	University of Alabama, Huntsville
Mobile Area Water & Sewer Service	Sierra Club, Alabama Chapter	University of South Alabama
Mobile Baykeeper	Singing River Hospital	University of South Alabama Department of Civil, Coastal & Environmental Engineering
Mobile County Commission	Smart Home America	University of South Alabama Department of Earth Sciences
Mobile County Environmental Services	South Alabama Regional Planning Commission	University of Southern Mississippi
Mobile County Health Department	South Bay Communities Alliance	Volkert, Inc.
Mobile County Legislative Delegation	South Coast Engineers	Washington County Commission
Mobile County Public Works and Engineering	South Mobile County Community Development Corporation	Watermark Design
Mobile County Soil & Water Conservation District	Southeastern Wildlife Conservation Group	Weeks Bay Foundation
Mobile County Wildlife and Conservation Association	Stantec	Weeks Bay National Estuarine Research Reserve
Moffatt & Nichol, Inc.	Stirling Properties	Wolf Bay Watershed Watch
Monroe County Commission	Strategic Wealth Specialists	Wood PLC
	Sweep Masters, Inc.	

## Executive Committee (EC)

<b>Purpose</b>	To provide general guidance, direction, and support for the Program. Develop policies on issues and funding; review/approve annual work plans and budgets; evaluate the performance of the Director; and set financial goals for non-federal share.
<b>Identify Issues</b>	NO - Develops policies for Program based on identification of issues by other Committees.
<b>Authority to Approve Action Plans</b>	YES
<b>Advocating for Environmental Needs - Federally, Statewide, and Locally</b>	NO
<b>Affecting Policy Changes throughout the Community</b>	YES within the MBNEP Program
<b>Raising Cash and Other Resources</b>	YES - Through Finance Committee
<b>Undertaking Projects</b>	NO
<b>Catalyzing Community Action</b>	NO
<b>Committee Representation</b>	At least 15 members, including an EPA Region IV representative, the Marine Environmental Science Consortium/Dauphin Island Sea Lab Director, federal and state agency directors or designees, Management Conference committee Co-Chairs, and at least four at-large members identified by staff recommendations.
<b>Governance</b>	Co-Chairs: U.S. EPA Region 4 and ADCNR Commissioner. Simple majority rules.
<b>Meetings</b>	Quarterly

### The Executive Committee is tasked with the following:

- 1** Developing overall by-laws for the Management Conference.
- 2** Approving Action Plans/ advising on activities of the MBNEP office, including work plans and budgets.
- 3** Providing a forum for exchange of information (with each committee chair providing a report of its activities/issues at each meeting).
- 4** Appointing and charging Ad Hoc Committees as needed, based on recommendations of MBNEP (Issues Advisory Committees).

## Science Advisory Committee (EC)

<b>Purpose</b>	To bring together experts from the various scientific disciplines to assess and communicate health of the estuary and coastal resources; identify areas of stress, data and data gaps, and research and research gaps; and provide science-based decision support to the other committees in their decision-making processes.
<b>Identify Issues</b>	YES
<b>Authority to Approve Action Plans</b>	NO - but can recommend approval to Executive Committee
<b>Advocating for Environmental Needs - Federally, Statewide, and Locally</b>	YES - As it relates to data gaps and need for further understanding of issues
<b>Affecting Policy Changes Through the Community</b>	YES - Through reporting of status and trends
<b>Raising Cash and Other Resources</b>	NO
<b>Undertaking Projects</b>	YES
<b>Catalyzing Community Action</b>	NO
<b>Committee Representation</b>	OPEN to all scientists and government agency staff interested in developing methods for monitoring, assessing, and communicating ecosystem health.
<b>Governance</b>	Group will elect two Co-Chairs who serve as Executive Committee representatives.
<b>Meetings</b>	Quarterly

### The Science Advisory Committee is tasked with the following:

- 1** Assessing trends to determine where stresses are most acute in the system.
- 2** Developing frameworks and monitoring protocols for measuring changes in ecosystem health.
- 3** Providing technical advice or conducting scientific review of issues/ activities requested by other committees.
- 4** Identifying opportunities for public participation and project involvement (i.e., citizen monitoring).
- 5** Identifying projects and assisting with planning for their implementation (i.e., water quality monitoring, data management).
- 6** Cooperatively identifying tasks/roles for MBNEP in addressing issues or galvanizing action.

## Government Networks Committee (GNC)

<b>Purpose</b>	To bring State agency heads and regional government administrators together with local coastal Alabama officials to educate about State priorities and programs, provide a venue for local officials to more effectively communicate local needs, and to improve government management of our coastal resources.
<b>Identify Issues</b>	YES
<b>Authority to Approve Action Plans</b>	NO - But can recommend approval to Executive Committee
<b>Advocating for Environmental Needs - Federally, Statewide, and Locally</b>	YES
<b>Affecting Policy Changes throughout the Community</b>	YES
<b>Raising Cash and Other Resources</b>	YES - Through State budgetary process; local budgets
<b>Undertaking Projects</b>	NO - Can establish project priority for individual State departments/local governing entities.
<b>Catalyzing Community Action</b>	YES
<b>Committee Representation</b>	OPEN - This committee is open to all local public officials as well as heads of State agencies, regional government administrators, aides to U.S. Representatives and Senators; and GOMP Director.
<b>Governance</b>	Group will elect two Co-Chairs who serve as Executive Committee representatives.
<b>Meetings</b>	Quarterly

### The Government Networks Committee is tasked with the following:

**1** Discussing how federal and state agencies can work with local governments to cooperatively address local issues (i.e., stormwater management, public access, environmentally appropriate affordable housing, habitat protection).

**2** Educating local officials/ other federal/state/regional agencies about how each agency works and what

the main issues are at the local level (opportunities for federal and State agencies to present what they do to elected officials and staffs and opportunities for local communities to discuss major issues with State agencies and other communities).

**3** Engaging in constructive dialogue on ways for State agencies to partner with local governments or local

governments with other local governments to effect positive results

**4** Identifying opportunities for public participation and project involvement (i.e., citizen monitoring).

**5** Cooperatively identifying tasks or roles for the MBNEP in addressing issues or galvanizing action.

## Business Resources Committee (BRC)

<b>Purpose</b>	To bring together a diversity of interested business community leaders to identify common environmental concerns among sectors and ways of balancing different sector needs, and to identify and resolve coastal issues that impact their interests.
<b>Identify Issues</b>	YES
<b>Authority to Approve Action Plans</b>	NO - But can recommend approval to Executive Committee
<b>Advocating for Environmental Needs - Federally, Statewide, and Locally</b>	YES
<b>Affecting Policy Changes throughout the Community</b>	YES
<b>Raising Cash and Other Resources</b>	YES - Through development of investment strategies and resources among private sector groups/industries
<b>Undertaking Projects</b>	YES - Can recommend project priorities based on emerging issues.
<b>Catalyzing Community Action</b>	YES
<b>Committee Representation</b>	OPEN - This committee is open by recommendation/ invitation by the MBNEP to representatives from <b>industry, business, environmental services, fishing, tourism, and other private sectors</b> with environmental concerns and potential solutions with a commitment to Creating a Clean Water Future.
<b>Governance</b>	Group will elect two Co-Chairs who serve as Executive Committee representatives.
<b>Meetings</b>	Quarterly

### The Business Resources Committee is tasked with the following:

**1** Discussing/educating on the issues and how they relate to quality of life, economic opportunities, land management, environmental responsibility, preservation of ways of life, maintenance of natural resources, and balancing economic development with environmental sustainability.

**2** Educating others on the Committee about individual organizational efforts to address issues.

**3** Engaging in constructive dialogue on ways to partner to effect positive results.

**4** Identifying community resources to effectively aid in addressing issues and challenges.

**5** Cooperatively identifying tasks and roles for the MBNEP in addressing issues or galvanizing action.

## Project Implementation Committee (PIC)

<b>Purpose</b>	To bring together resource management agencies, organizations, and personnel along with engineers and planning professionals to undertake environmental projects related to CCMP Goals and Objectives.
<b>Identify Issues</b>	YES
<b>Authority to Approve Action Plans</b>	NO - But can recommend approval to Executive Committee
<b>Advocating for Environmental Needs - Federally, Statewide, and Locally</b>	YES - As it relates to project implementation
<b>Affecting Policy Changes throughout the Community</b>	NO
<b>Raising Cash and Other Resources</b>	YES - Primarily through bringing organizational resources to bear on CCMP Actions
<b>Undertaking Projects</b>	YES
<b>Catalyzing Community Action</b>	YES
<b>Committee Representation</b>	OPEN to agencies, organizations, and contractors involved with the implementation of CCMP projects focused on watershed plan implementation.
<b>Governance</b>	Group will elect two Co-Chairs who serve as Executive Committee representatives.
<b>Meetings</b>	On a project by project basis; as regularly as once a month; at least quarterly

### The Project Implementation Committee is tasked with the following:

- 1** Assessing restoration needs and resources and prioritizing watershed projects accordingly.
- 2** Using sediment analyses and watershed planning as a basis for conducting restoration activities.
- 3** Identifying projects and planning for their implementation (i.e., water quality monitoring; habitat conservation, restoration and protection; access, etc.).
- 4** Identifying tasks and citizen input mechanisms to be implemented.
- 5** Conducting periodic project status meetings to track progress.
- 6** Cooperatively identifying tasks and roles for the MBNEP in addressing issues or galvanizing action.



## Community Action Committee (CAC)

<b>Purpose</b>	To bring together community grassroots environmental organizations for networking, information sharing, issues development, and cooperative training purposes.
<b>Identify Issues</b>	YES
<b>Authority to Approve Action Plans</b>	NO - But can recommend approval to Executive Committee
<b>Advocating for Environmental Needs - Federally, Statewide, and Locally</b>	YES - Contacting government officials/advocacy
<b>Affecting Policy Changes throughout the Community</b>	YES - Contacting government officials; educating candidates
<b>Raising Cash and Other Resources</b>	YES - Primarily through volunteer involvement
<b>Undertaking Projects</b>	YES
<b>Catalyzing Community Action</b>	YES
<b>Committee Representation</b>	OPEN to all community grassroots groups (and citizens who are actively engaged in volunteer water monitoring) that have an interest in volunteer monitoring, local watershed planning, and stewardship issues.
<b>Governance</b>	Group will elect two Co-Chairs who serve as Executive Committee representatives.
<b>Meetings</b>	Quarterly; special issue trainings as determined

### The Community Action Committee is tasked with the following:

**1** Discussing/educating on the issues and how they relate to the environment (i.e., stormwater management, public access, environmentally appropriate affordable housing, and habitat protection).

**2** Educating others on the Committee about individual organizational efforts to address issues (opportunities for agencies to present what they do to the group; opportunities for groups to

learn new ways of energizing constituencies).

**3** Engaging in constructive dialogue on ways to partner with each other to effect positive results.

**4** Identifying community resources to effectively aid in addressing issues/challenges.

**5** Providing increased opportunities for public participation and project involvement (i.e., citizen

monitoring, volunteer opportunities, etc.).

**6** Identifying projects and assisting with planning for their implementation (i.e., water quality monitoring; habitat conservation, restoration, and protection; data management; public access; etc.).

**7** Cooperatively identifying tasks and roles for MBNEP in addressing issues or galvanizing action.

## Community Resources Committee (CRC)

<b>Purpose</b>	To bring together local and regional nonprofit organizations to coordinate capacity for providing training, advocacy, and educational opportunities to community members to effect positive environmental change.
<b>Identify Issues</b>	YES
<b>Authority to Approve Action Plans</b>	NO - But can recommend approval to Executive Committee
<b>Advocating for Environmental Needs - Federally, Statewide, and Locally</b>	YES - Contacting government officials/advocacy
<b>Affecting Policy Changes throughout the Community</b>	YES - Contacting government officials; educating candidates
<b>Raising Cash and Other Resources</b>	YES - Primarily through volunteer involvement
<b>Undertaking Projects</b>	YES
<b>Catalyzing Community Action</b>	YES
<b>Committee Representation</b>	OPEN to all regional and local non-profit organizations with capacity to advocate for and/or educate on the implementation of the CCMP.
<b>Governance</b>	Group will elect two Co-Chairs who serve as Executive Committee representatives.
<b>Meetings</b>	Quarterly; special events as determined

### The Community Resources Committee is tasked with the following:

**1** Educating and advocating on the issues and how they relate to the environment (ie, stormwater management, public access, environmentally appropriate affordable housing, and habitat protection).

**2** Educating and advocating for increased opportunities for public participation and project involvement (e.g., citizen monitoring, volunteer opportunities).

**3** Advocating for projects and assisting with educating citizens regarding planning and implementation (i.e., water quality monitoring, habitat conservation, restoration and protection, data management, public access, etc.).

## Finance Committee

The Finance Committee includes community leaders committed to assisting in securing non-federal matching funds to implement activities of the CCMP. The purpose of this committee is to develop local

ownership, responsibility, and partnerships for investing in the long-term conservation and protection of coastal Alabama's estuarine resources by establishing an investment program that mixes state, local, and private

sources to exceed the non-federal share requirements of the EPA grant, as well as other external funding awards.



5

Finance Strategy



Yellow-fringed Orchid

# MBNEP Finance Strategy Purpose, Goals and Objectives

The purpose of the MBNEP's Finance Strategy is to develop dedicated and diverse sources of funding to implement the CCMP. Over the past five-year period, the MBNEP has built a reputation of capability in expanding the resources, both financial and human, necessary for achieving improved environmental management across Baldwin and Mobile counties. Through leveraging of funding sources, management of complex grants, securing community investment in the Program, and soliciting funding from the private sector to support specific initiatives, MBNEP is now seen as a leader in its field.

The goals of the strategies are:

- 1 Educate local, state, and federal government agencies about the value and accountability of the MBNEP in ensuring responsible investment of public dollars.
- 2 Cultivate engagement of local, state and federal government, and private sector interests in specific project to demonstrate how the MBNEP works to achieve project success and community support.
- 3 Secure long-term investments from local, state, and federal government and private sector interests in overall program operation and fund development for support of CCMP implementation.

Prior-year funding for the implementation of the CCMP and operation of the program has come from the following sources:

- > Federal- Annual EPA funding, competitive grants
- > State of Alabama- State budget line, Memorandum of Understanding with the Alabama Department of Conservation and Natural Resources, competitive grants
- > Counties- Baldwin and Mobile
- > Municipalities- Mobile, Daphne, Fairhope, Spanish Fort, Foley, and Gulf Shores
- > National Groups- National Fish and Wildlife Foundation, Healthy Watersheds Consortium

In addition, it has solicited funding from local organizations, including, but not limited to, Partners for Environmental Progress, The Nature Conservancy, the engineering community, and the Alabama State Port Authority to support special events.

With successful WMP development and implementation occurring across both counties, the MBNEP is in a position to revisit the above financing mechanisms and further develop a finance strategy that plans for the long-term sustainability of the program and implementation of the CCMP.

## Objectives of the finance strategy are as follows:

- 1 Target key stakeholders (private and public) with interests in Mobile and Baldwin counties to educate about the MBNEP and its successes and needs.
- 2 Solicit community investment equivalent to minimum of 10% of project costs in either cash or in-kind resources in support of restoration or community projects.
- 3 Secure annual Program investments for the next five-year period from at least five new communities.
- 4 Increase annual Program investments by 30% from existing communities where WMP implementation is underway.
- 5 Establish a fund for coastal restoration through the Community Foundation of South Alabama as a mechanism for providing the non-federal matching share of grants supporting CCMP implementation with a target of raising \$100,000 within the first three years.
- 6 Solicit contributions to the coastal restoration fund targeting private sector interests.
- 7 Create a revolving loan fund, capitalized with State Revolving Funds, to support private sector investment in best management practices aimed at reducing stormwater runoff or supporting local fishing interests.

## Short-term Funding Priorities

The MBNEP will work through its Finance Committee to determine priorities for funding from one year to the next. However, based on a synthesis of WMPs completed to date and current knowledge of overarching conference priorities, MBNEP will seek to secure investments focused on the Key Issues of Focus for the Next Five years as outlined in Section 9. In addition, short-term funding priorities will include the following:

- > Watershed Plans- secured through federal RESTORE dollars through the State of Alabama.
- > Restoration Monitoring- secured through individual project plans and funding (NFWF, federal RESTORE dollars through EPA Gulf of Mexico Program).
- > Revolving Loan Fund(s)- Work with the Alabama Department of Environmental Management to create a mechanism for establishment using State Revolving Loan Funds.
- > Watershed Plan implementation of management measures- Pursue NFWF GEBF for priority projects as identified in the Coastal Alabama Habitat Restoration Plan (to be release in late 2019/early 2020).
- > Continue support for the Create a Clean Water Future Campaign- create a Sponsorship program.

## Short- and Long-term Resource Needs

Based on a very general assessment of need for each of the strategies outlined in this document, over the next five years, to fully implement the CCMP would require up to \$171.3 million as follows:

- > Estuary Status and Trends: \$8,000,000
- > Ecosystem Restoration and Protection: \$157,000,000
- > Technical Assistance and Capacity Building: \$4,300,000
- > Education and Public Involvement: \$2,000,000



## Actions to Garner New Resources

- 1 Federal- Secure long-term federal funding of Section 320 with \$1,000,000 per National Estuary Program through re-authorization (the Program is currently authorized through 2020). Support the Association of National Estuary Programs in elevating the value of the program in the federal and national private sectors and in building bi-partisan support for the program through outreach and education.
- 2 State- Increase State investment in the MBNEP through engaging other State agencies such as the Office of Water Resources and Alabama Department of Economic and Community Affairs, ADEM, and others.
- 3 Local- Increase local investment in the Program through implementing WMPs. Conduct economic impact analyses and socioeconomic studies to communicate the impact of the Program's work on local budgets.
- 4 Private- Increase private support for the Program through cultivation of relationships with industry groups and associations.

## Current Sources of Dedicated Funding

**Sources of funding include federal, state, and local partners, cash and in-kind contributions from public and private sectors, and grants.**

MBNEP receives \$600,000 of base program funding from the EPA under Section 320 of the Clean Water Act to implement ecosystem-based management through its CCMP. Under a Cooperative Agreement with EPA, MBNEP must match this EPA funding with non-federal dollars in a 1:1 ratio. The match may be in the form of cash investments, donated property valuation, or in-kind equipment or professional or volunteer services. MBNEP receives matching support partly through continuing cash funding totaling more than

\$350,000 annually from the State of Alabama and local governmental entities and partly through acquisition of external non-federal grants such as the NFWF, GEBF (currently in the millions-of-dollars range). In addition, match is generated in the form of in-kind volunteer support and local contributions of services and equipment. Together, these sources support MBNEP Program Office Management Planning and Administration, as well as staff level CCMP Implementation.

**MBNEP relies on continued support from federal, state, and local governmental partners.**

## Federal Partners

### EPA Allocation and Non-Federal Matching Share



Each year, on average, the MBNEP receives an allocation of \$600,000 from the EPA to support activities directed toward achieving the objectives of the CCMP. These funds require a 1:1 match.

### Gulf of Mexico Program (GOMP)



The Gulf of Mexico Program facilitates collaborative actions to protect, maintain, and restore the health and productivity of the Gulf of Mexico in ways consistent with the economic well-being of the Region. The Gulf of Mexico Program is an important source of grant funding for watershed plan activities.

### Mississippi Alabama Sea Grant Consortium (MASGC)



The Mississippi Alabama Sea Grant Consortium is dedicated to activities that foster the conservation and sustainable development of coastal and marine resources in Mississippi and Alabama. Sea Grant is NOAA's primary university-based program in support of coastal resource use and conservation. The MASGC is an important partner to MBNEP in implementing many CCMP actions. MASGC provides technical expertise, program-development assistance, and research and is a leader of many initiatives related to CCMP objectives. At present, MBNEP is a member of the MASGC Advisory Council and the MASGC Director sits on the MBNEP Executive Committee.

### U.S. Army Corps of Engineers Participation (USACE)



The U.S. Army Corps of Engineers actively participates in the implementation of many actions in the CCMP. MBNEP works closely with the USACE to coordinate permitting and environmental project planning, especially in service to implementing watershed management plans.

# State Partners

## Alabama Department of Conservation and Natural Resources (ADCNR)



ADCNR has a long-term interest in Alabama’s coastal resources and the statutory responsibility for the conservation, management, and protection of these resources through its State Lands Division, Marine Resources Division, Wildlife and Fresh Water Fisheries Division, State Parks Division, and particularly through the Alabama Coastal Area Management Program. As a result, ADCNR has entered into a Memorandum of Agreement to provide annual funding to the MBNEP as part of its non-federal match requirement as an investment toward implementation of the CCMP. MBNEP partners with ADCNR to publish *Alabama Current Connection*, a joint newsletter highlighting current projects, Management Conference activities, and other issues of interest to coastal residents.

## State of Alabama



In 2007, MBNEP was added as a line item in the State budget through the auspices of the Marine Environmental Sciences Consortium (MESCC)/Dauphin Island Sea Lab (DISL) for a designated amount of \$250,000. This funding has continued each year, although the rate has steadily decreased to \$76,088, where it has been stable over the past five years (See Table 6).

**Table 6.** Current Annual funding from the State of Alabama and the Alabama Department of Conservation and Natural Resources.

Funding Year	State Amount	ADCNR Amount
2013-2014	\$76,088	\$88,000
2014-2015	\$76,088	\$88,000
2015-2016	\$76,088	\$98,000
2016-2017	\$76,088	\$98,000
2017-2018	\$76,088	\$98,000
2018-2019	\$76,088	\$98,000
<b>TOTALS</b>	<b>\$381,240</b>	<b>\$470,000</b>

## Local Partners

Local governmental entities provide continuing financial assistance to the MBNEP on an annual basis to support CCMP implementation. Although these communities only allocate funding annually, MBNEP anticipates expanded support from these and other coastal communities in the

future as WMPs are implemented. At present, the cities of Daphne and Mobile (up to \$50,000/year), as well as Baldwin and Mobile counties (on average \$50,000/year) have increased their annual investments due to WMP implementation in these communities/areas.

## Cash and In-Kind Contributions

The MBNEP has long depended on cash from governmental entities or the private sector and in-kind contributions to support Program activities and provide non-federal share to match EPA or other federal external funding. Prior to 2013, volunteer hours related to oyster gardening, derelict crab trap removals, marsh or dune plantings, or participation in other events, along with other in-kind environmental contributions, accounted for over half of the MBNEP's non-federal share

of match. Other in-kind services include use of city-owned machinery, the value of land donated for conservation purposes, and private cash and in-kind donations to cover expenses incurred for events and activities carried out by local grassroots organizations and sponsored by the MBNEP. Since 2013, *Deepwater Horizon*-related external grants have provided most of the non-federal share to match EPA or other federal external grant sources.

## Grants

MBNEP partners with federal, state, and local agencies to secure millions of dollars in grants for management planning, research, environmental monitoring, habitat restoration, water quality improvement, and educational projects to support CCMP Goals

and Objectives. Funding sources for these grants include EPA, Alabama Department of Transportation (ALDOT), ADEM, ADCNR, NFWF, New York Community Trust, Waterkeeper Alliance, GOMP, and the Alabama Gulf Coast Recovery Council (RESTORE Act 2012).

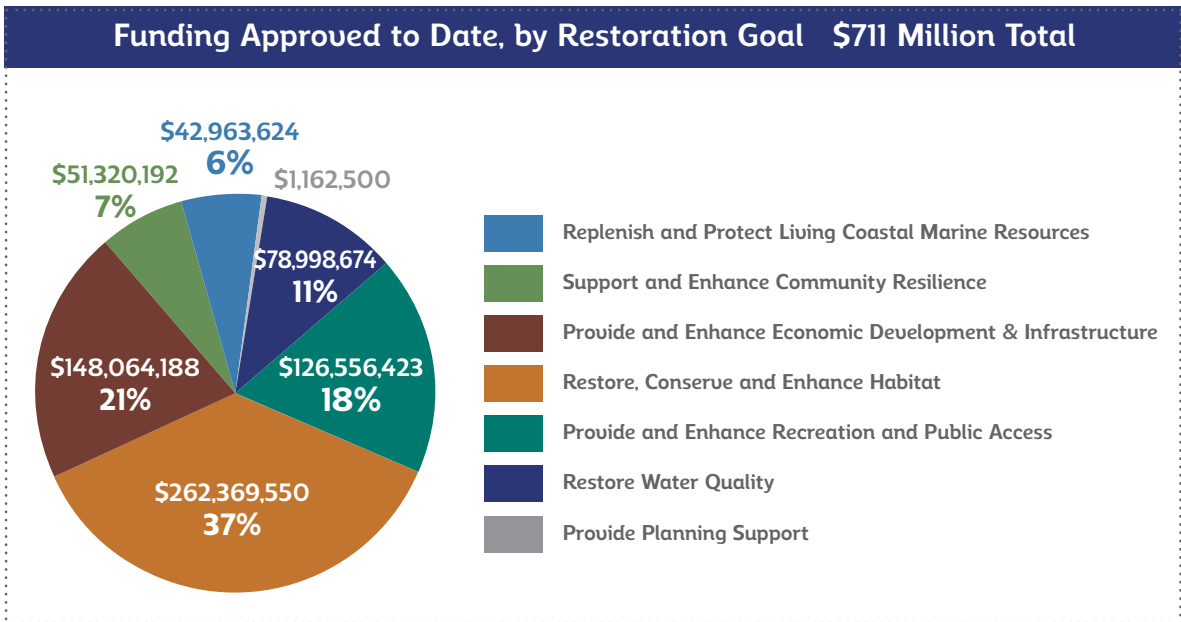
## Deepwater Horizon Oil Spill

CCMP Goals and Objectives are currently and will continue to be supported by funding opportunities of historic proportion resulting from the *Deepwater Horizon* oil spill in April 2010. The massive release of oil and other substances damaged fish and wildlife and productive coastal habitats, preventing people from fishing, going to the beach, and enjoying recreational activities around the Gulf of Mexico. Violations of statutes, including the

Oil Pollution Act and Clean Water Act, resulted in monetary settlements from responsible parties. From 2016–2031, Alabama will receive a minimum of nearly \$1.4 billion, to be paid in a series of 15 annual installments. These funds are and will continue to be used to support environmental restoration, economic development, tourism, and seafood promotion and research activities in Alabama's coasts and estuaries.

As of October 1, 2018, Alabama had committed settlement funding to 127 projects totaling nearly \$711 million, reflected in Figure 13. These projects supported and will continue to support Goals and Objectives of the MBNEP's CCMP, including:

- > Replenishing and protecting living coastal and marine resources;
- > Supporting and enhancing community resilience;
- > Providing and enhancing economic development and infrastructure;
- > Restoring, conserving, and enhancing habitat;
- > Providing and enhancing recreation and public access;
- > Restoring water quality;
- > Providing planning support; and
- > Conducting scientific research and monitoring.



**Figure 13.** State of Alabama funding approved to date of the \$711 million derived from monetary settlements related to the *Deepwater Horizon* oil spill.

## The settlements established three sources of funding to support environmental restoration, economic development, tourism and seafood promotion, and research in coastal Alabama:

### 1 The Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast States Act of 2012 (RESTORE)

The RESTORE Act of 2012 directs 80 percent of RESTORE Act funding to the Gulf Coast Restoration Fund (the Restoration Fund) for environmental and economic restoration. This Fund was divided into “buckets” with different targets and requirements developed by either the Alabama Gulf Coast Recovery Council (the Alabama Council) or the Gulf Coast Ecosystem Restoration Council (the Federal Council).

- > **Bucket 1** (35 percent of the Restoration Fund), overseen by the Alabama Council, is divided equally among the five Gulf states to fund a Multiyear Implementation Plan for ecosystem restoration, economic development, and promotion of tourism and seafood consumption.
- > **Bucket 2** (30 percent of the Restoration Fund), overseen by the Federal Council, is available exclusively for regional ecosystem restoration activities aligning with the Federal Council Comprehensive Plan.
- > **Bucket 3** (30 percent of the Restoration Fund) is divided among the five Gulf states according to the level of spill impacts each endured. Alabama received 20.4% of these funds, which are available to support ecosystem restoration, economic development, and promotion of tourism and seafood consumption. These funds require consistency with the Federal Council Comprehensive Plan, cap infrastructure awards to 25% of the State’s allocation, and are overseen by the Alabama Council.
- > **Bucket 4** (2.5 percent of the Restoration Fund plus interest) is allocated to NOAA to administer the Gulf Coast Ecosystem Restoration Science Program in consultation with U.S. Fish and Wildlife Service. These funds are available for research, observation, and monitoring activities supporting sustainability of the Gulf ecosystem; fish stocks and habitat; and the recreational, commercial, and charter fishing industries of the Gulf.
- > **Bucket 5** (2.5 percent of the Restoration Fund plus interest) is equally divided among the five Gulf states to establish Gulf Coast Centers for Excellence and to support coastal science, technology, and monitoring. The DISL has been designated the Center for Excellence for Alabama.

### 2 National Resource Damage Assessment

The Natural Resource Damage Assessment (NRDA) is the legal process used to evaluate the impacts and costs of oil spills. These funds are used to return injured resources to their original condition and to compensate the public for losses and lost use of the resources. Alabama’s share of the NRDA settlement is \$296 million.

Various entities oversee the distribution and oversight of *Deepwater Horizon* funds in Alabama. Table 7 provides a summary of *DWH* Restoration Processes in Alabama as of October 1, 2018 (Alabama Department of Conservation and Natural Resources, 2018).

### 3 National Fish and Wildlife Foundation-Gulf Environmental Benefit Fund

The NFWF GEBF, derived from criminal penalties, is directed to fund ecosystem restoration projects directly benefiting Gulf natural resources damaged by the oil spill.

**Table 7.** Summary of *Deepwater Horizon* Restoration Processes in Alabama.

Restoration Process	Alabama Coordinating Entity	Total Funding for Alabama	Funding Approved as of October 1, 2018
<b>Direct Component "RESTORE Bucket 1"</b>	Alabama Gulf Coast Recovery Council	\$373 million	\$192 million
<b>Council-Selected Restoration Component "RESTORE Bucket 2"</b>	Alabama Department of Conservation and Natural Resources	\$1.6 billion across 5 Gulf States	\$26 million
<b>Spill Impact Component "RESTORE Bucket 3"</b>	Alabama Gulf Coast Recovery Council	\$326 million	\$128 million
<b>RESTORE Centers of Excellence</b>	Marine Environmental Sciences Consortium & Alabama Gulf Coast Recovery Council	\$26 million	\$0*
<b>Natural Resource Damage Assessment (NRDA)</b>	Alabama Department of Conservation and Natural Resources	\$296 million	\$219 million
<b>National Fish &amp; Wildlife Foundation Gulf Environmental Benefit Fund (NFWF GEGF)</b>	Alabama Department of Conservation and Natural Resources	\$356 million	\$150 million

\*The Dauphin Island Sea Lab has been designated by the Alabama Council as the State's Center of Excellence, but funding has not yet been approved by the U.S. Department of Treasury.

The ADCNR serves as the lead State agency in administering these funds, working closely with the Gulf Coast Ecosystem Restoration Council (Federal Council) and the Alabama Gulf Coast Recovery Council (the Alabama Council). The Federal Council includes the governors of the states of Alabama, Florida, Louisiana, Mississippi and Texas, the secretaries of the U.S. departments of Agriculture, the Army, Commerce, Homeland

Security, and the Interior, as well as the Administrator of the EPA. The Alabama Council includes the Governor (Chair), the Director of the Alabama State Port Authority (Vice-Chair), the Chairman of the Baldwin County Commission, the President of the Mobile County Commission, and the mayors of Bayou La Batre, Dauphin Island, Fairhope, Gulf Shores, Mobile, and Orange Beach.

## MBNEP Budget

The MBNEP annual budget supports Management Planning and Administration and Staff as well as Projects and Activities to implement CCMP Goals and Objectives. The MBNEP receives annual funding from the EPA of \$600 thousand, on average. Over the last five-year period, the MBNEP coordinated or managed over \$24.3 million in external grants and \$4.3 million from EPA in support of Ecosystem Status and Trends (\$1.7 million), Ecosystem Restoration and Protection (\$20.7 million), Technical Assistance and Capacity Building (\$265 thousand), Education and Public Involvement (\$469 thousand), and Project Delivery, Planning and Administration (\$5.5 million). The MBNEP anticipates a similar level, if not increased, over the next five-year period comprising federal, State, and local dollars supporting implementation of the CCMP.

### Management Planning and Administration and Staff

The Management Planning and Administration budget provides resources for the Program office to continue Program planning, development, implementation, evaluation, and reporting. Activities of the MBNEP staff include:

- > Organizational and logistical support for all Management Conference committees and their meetings;
- > Coordination and communication with user groups; professional groups; local, State, and federal agencies; and other groups relevant to CCMP development and implementation;
- > Coordination of Management Conference committees and their quarterly and annual meetings;
- > Overall coordination for implementation of the CCMP;
- > Preparation of EPA-required documents;
- > Development and administration of grants and contracts;
- > Project management, including coordination of work plans and progress and draft and final reports with project leads;
- > Facilitation of projects among partners and in collaboration with partners;
- > Coordination of project work plans and activities with other local, State, and federal agencies; and
- > Overall Program Office coordination.



The Program Office budget includes all the necessary costs of program administration including salaries, benefits, supplies, equipment, and indirect administrative support from the program's administrative sponsor, the Marine Environmental Sciences Consortium (aka, the Dauphin Island Sea Lab). The DISL discounts its federally approved indirect rate to 15% of all MBNEP expenditures related to the EPA grant and any other small external grants awarded. For all large external grants, the DISL follows federal regulations in charging 43.2% indirect costs to all direct activities and to the first \$25,000 of each contract executed as part of each external grant.

In addition, the MBNEP Program Office budget supports staff lead activities related to CCMP Implementation, such as coastal monitoring, WMP implementation, citizen science and volunteer monitoring, public outreach education programs and events, and external program communications. The MBNEP Program Office works closely with all MBNEP Management Conference partners and the DISL on initiatives related to the CCMP. Management Conference partners and the Dauphin Island Sea Lab also help to fund activities that implement the CCMP.



# PART THREE

The Strategies for  
Improving  
Management of  
Alabama's Estuaries  
and Coast





# 1

## Ecosystem Status and Trends

Understanding the status and trends of marine, estuarine, and freshwater ecosystems of Alabama's estuaries and coasts is foundational to protecting the things people value most about coastal Alabama. To best inform this understanding, scientists and managers need to be able to accurately measure, analyze, and communicate changes in ecosystem conditions. The updated 2019-2023 CCMP EST Action Plan aims to improve these capacities for coastal Alabama through three interrelated goals.

The following matrices outline strategies for Ecosystem Status and Trends (EST), Ecosystem Restoration and Protection (ERP), Technical Assistance and Capacity Building (TAC), and Education and Public Involvement (EPI). The Annual Cost ranges are: \$- up to \$10,000; \$\$- \$10,000-/\$100,000; \$\$\$- \$100,000-\$1,000,000; and \$\$\$\$- over \$1,000,000.



Water Quality Monitoring on  
Three Mile Creek, Mobile

# Ecosystem Status and Trends



Goals/Objectives/Suggested Activities		Y 1	Y 2	Y 3	Y 4	Y 5	Performance Measure	Outcomes	Annual Cost	Lead
<b>EST-1: Increase availability and use of data related to how coastal ecosystems and their services respond to man-made stresses.</b>										
<b>EST-11 Establish a data management and usage strategy.</b>										
a	Ensure that all data generated through MBNEP activities are stored in the Dauphin Island Sea Lab repository.	x	x	x	x	x	Adopted data management and usage strategy	Improved data management and use	\$\$-\$\$\$	SAC
b	Ensure that all environmental data related to coastal Alabama has appropriate metadata and is catalogued to ensure accessibility.	x	x	x	x	x	# of datasets added to repository			
<b>EST-12 Maintain or improve existing level of monitoring and data analysis to assess trends in coastal ecosystem health at a watershed scale.</b>										
a	Update and refine the Monitoring Framework to ensure consistency with other monitoring guidelines throughout the Gulf (i.e. Federal RESTORE Monitoring and Adaptive Management Procedures and Guidelines Manual).	x	x	x	x	x	Coordinated monitoring program and updated framework	Improved tracking of environmental conditions	\$\$-\$\$\$	SAC and CAC
b	Implement and adapt the Monitoring Framework as applicable in coastal watersheds.									
c	Integrate volunteer environmental monitoring data into the Monitoring Framework.					x				
<b>EST-13 Promote consistent system-wide monitoring to assess trends in coastal ecosystem health.</b>										
a	Recommend data collection needs and create monitoring protocols for:	x	x	x	x	x				
	Land use and land cover/habitat distribution and characterization (including, but not limited to, submerged aquatic vegetation and wetlands)	x	x	x	x	x				
	Water quality (dissolved oxygen, nutrients, sediments, and pathogens)	x	x	x	x	x				
	Benthic communities (including oysters)	x	x	x	x	x				
	Socio-economic factors	x	x	x	x	x				
	Human uses (including traditional and cultural uses)	x	x	x	x	x				
	Shorelines	x	x	x	x	x				
	Human health	x	x	x	x	x				
	Living coastal, estuarine, and marine resources	x	x	x	x	x	Increased/improved baseline, pre-restoration and post-restoration data	Improved understanding of ecosystem response to land-use changes and restoration	\$\$\$	SAC and CAC
	Hydrology, meteorology, and hydrodynamics	x	x	x	x	x	Comparative study of bacterial monitoring methodologies			
	Dam and impoundment integrity and safety	x	x	x	x	x				
	Other									

# Ecosystem Status and Trends



Goals/Objectives/Suggested Activities		Y 1	Y 2	Y 3	Y 4	Y 5	Performance Measure	Outcomes	Annual Cost	Lead
<b>EST-13 Promote consistent system-wide monitoring to assess trends in coastal ecosystem health.</b>										
	Human health	x	x	x	x	x				
	Living coastal, estuarine, and marine resources	x	x	x	x	x				
	Hydrology, meteorology, and hydrodynamics	x	x	x	x	x	Increased/improved baseline, pre-restoration and post-restoration data	Improved understanding of ecosystem response to land-use changes and restoration	\$\$\$	SAC and CAC
	Dam and impoundment integrity and safety	x	x	x	x	x	Comparative study of bacterial monitoring methodologies			
	Other									
b	Undertake a comparison study of sanctioned methodologies for bacterial monitoring in brackish water ( <i>Enterococci</i> , <i>E. coli</i> ).		x							
c	Develop a remote sensing strategy to augment monitoring.	x	x	x						
d	Promote development of a framework for baseline environmental data collection and consistent post-construction monitoring of the ship channel and other hydrologic modifications to measure environmental impacts.			x						
e	Promote better coordination of testing methodologies and policies of State agencies related to fishery closures.	x	x	x						
f	Develop communication tools/materials to track trends in issues pervasive across coastal Alabama watersheds (e.g. waterborne trash and litter, oyster populations, and sediments).	x	x	x	x	x				

# Ecosystem Status and Trends



Goals/Objectives/Suggested Activities	Y 1	Y 2	Y 3	Y 4	Y 5	Performance Measure	Outcomes	Annual Cost	Lead
<b>EST-2: Establish a process for measuring, analyzing and communicating change in marine, estuarine, and freshwater ecosystem conditions.</b>									
<b>EST-2.1 Synthesize monitoring data to develop a watershed condition index to track and communicate trends in watershed restoration and management.</b>									
a		X							
b		X	X	X		Watershed Condition Index	Improved understanding of trends in watershed health	\$\$\$	SAC
c					X	Coastal Condition Report			
<b>EST-3: Model and predict connections between ecosystem condition and the ecosystem services people value.</b>									
<b>EST-3.1 Manage system for multiple services.</b>									
a	X		X	X					
b		X	X	X					
c		X			X	Demonstration of relationship between stresses and ecosystem services	Improved understanding of benefits and value of ecosystem restoration	\$\$\$	SAC and CAC
d	X								
e		X	X	X					
f				X					

\$	<\$10k
\$\$	\$10k-100k
\$\$\$	\$100k-1M
\$\$\$\$	\$1M-10M
\$\$\$\$\$	\$10M-100M





Mobile Bay Sunrise



# 2

## Ecosystem Restoration and Protection

Ecosystems provide invaluable services to natural and human communities, including water, food, and shelter; fisheries; recreational opportunities; and protection against climate change impacts. Over time, human population growth and development along Alabama's coast has led to diminished ecosystem function and services. The Management Conference is committed to restoring these systems to stable, healthy, and sustainable states. To ensure restoration efforts are based in science and are part of an overall management program, the MBNEP Project Implementation Committee will continue its commitment to a watershed-based approach to restoration to protect and restore Alabama's coastal ecosystems.

The updated 2019-2023 CCMP ERP five-year strategy directs ecosystem restoration and protection for priority watersheds and habitats in coastal Alabama through five interrelated goals.



Joe's Branch Restoration

# Ecosystem Restoration and Protection



Goals/Objectives/Suggested Activities		Y1	Y2	Y3	Y4	Y5	Performance Measure	Outcomes	Annual Cost	Lead
<b>ERP-1: Develop comprehensive management plans for all coastal watersheds (at the 12-digit hydrologic-unit-code scale).</b>										
<b>ERP-1.1 Develop 12 new coastal watershed management plans for those basins discharging into priority fishery nursery areas.</b>										
a	Fly Creek	x	x							
b	Bayou Sara			x	x			Improved water quality in impaired waterways		
c	Little Lagoon/Perdido Pass			x	x					
d	Mobile-Tensaw-Apalachee (MTA) Delta complex			x	x					
e	Lower Chasaw				x	x		Restoration and conservation of stressed habitats		
f	Garroux Bend	x	x						\$\$\$-\$\$\$\$	PIC
g	Bay Minette Creek/Whitehouse Creek			x	x		# of new watershed plans published	Improved health of fisheries		
h	Delchamps Bayou/Deer River	x	x					Reduced trash in waterways		
i	Bridge Creek/Palmetto Creek				x	x				
j	Dauphin Island (Mississippi Sound/Grand Bay)			x	x					
k	Gunnison Creek/ColdCreek			x	x					
l	Grand Bay Swamp				x	x				
<b>ERP-1.2 Prioritize watersheds and seek funding for watershed management plans in other non-tidally influenced coastal watersheds.</b>										
a	To be determined through prioritization.						# of watershed plans published for non-tidally influenced watersheds	Improved watershed management, including outcomes for ERP-1.1	\$\$-\$\$\$	PIC

# Ecosystem Restoration and Protection



Goals/Objectives/Suggested Activities		Y1	Y2	Y3	Y4	Y5	Performance Measure	Outcomes	Annual Cost	Lead				
<b>ERP-1: Develop comprehensive management plans for all coastal watersheds (at the 12-digit hydrologic-unit-code scale).</b>														
<b>ERP-1.3 Update existing watershed management plans to include new watershed planning criteria.</b>														
a	D'Olive	x												
b	Three Mile Creek	x												
c	Fowl River	x												
d	Bon Secour River	x					# of watershed plans updated	Improved watershed management, including outcomes for ERP-11	\$\$\$	PIC				
e	Bayou la Batre	x												
f	Weeks Bay	x												
g	Dog River	x												
h	Eight Mile Creek			x	x									
<b>ERP-2: Implement comprehensive watershed management plans with a focus on priority habitats.</b>														
<b>ERP-2.1 Develop a Coastal Alabama Habitat Restoration Plan to guide watershed management plan implementation.</b>														
a	Build Coastal Alabama Restoration Tool to provide process for prioritizing projects over time.	x	x								Habitat Restoration Plan developed and implemented.	Improved health and resilience of most stressed habitats		PIC and SAC
b	Implement projects identified in watershed management plans consistent with recommendations in the Coastal Alabama Habitat Restoration Plan with a focus on these habitat types: beaches, shorelines, and dunes; freshwater wetlands; intertidal marshes and flats; long leaf pine; maritime forests; pine savannah; and rivers, streams, and riparian buffers, as well as submerged aquatic vegetation and oyster reefs.	x	x	x	x		Acres/linear feet of habitat protected.	Improved health and resilience of shorelines, including beaches and dunes	\$\$-\$\$\$					

# Ecosystem Restoration and Protection



Goals/Objectives/Suggested Activities		Performance Measure					Outcomes	Annual Cost	Lead
		Y 1	Y 2	Y 3	Y 4	Y 5			
<b>ERP-3: Improve ecosystem function and resilience through protection, restoration, and conservation along shorelines of coastal Alabama beaches, bays, and backwaters.</b>									
<b>ERP-3.1 Develop a Comprehensive Regional Shorelines Plan for stabilization and protection.</b>									
a	Incorporate a strategy for beneficial use of dredge material (partner with USACE and Alabama State Port Authority).	x	x	x	x	x	Increased beneficial use of dredge material Increased availability of substrate for restoration and protection of habitats	\$\$\$-\$\$\$\$	PIC and CRC
b	Investigate ecological and economic tradeoffs and impacts of beach renourishment, considering sea level rise.						Increased understand of environmental/economic tradeoffs related to beach renourishments		
<b>ERP-4: Improve management of invasive species through coastal Alabama watersheds.</b>									
<b>ERP-4.1 Develop invasive species management plans (ISMPs) for coastal watersheds.</b>									
a	Conduct watershed-specific mapping of invasive species distribution.	x	x	x	x	x	Improved management of invasive species	\$\$-\$\$\$	PIC and SAC
b	Provide ISMPs to land-management entities for implementation.	x	x	x	x	x	Reduction in invasive species		

# Ecosystem Restoration and Protection



Goals/Objectives/Suggested Activities		Y1	Y2	Y3	Y4	Y5	Performance Measure	Outcomes	Annual Cost	Lead
<b>ERP-5: Restore and expand human connections to nature as a mechanism for improving environmental protection.</b>										
<b>ERP-51 Protect and conserve priority habitats for public benefit and access through acquisition or conservation easement.</b>										
a	Acquire and protect open spaces to provide access and preserve Alabama's coastal heritage.	x	x	x	x	x	# of acres of priority habitats acquired or protected by easement	Increased environmentally appropriate access to coastal resources	\$\$\$-\$\$\$\$	PIC and CRC
b	Enhance public access to the water and natural landscapes.	x	x	x	x	x				
c	Promote and support conservation activities in the greater Mobile Bay Watershed.	x	x	x	x	x				
<b>ERP-52 Create seven new access points, with at least five in Mobile County, incorporating environmental and cultural themes into each site's interpretive signage.</b>										
a	Develop Comprehensive Recreation Plan for Alabama's two coastal counties.		x	x	x	x		Managed public access to natural environmental and recreational opportunities		
b	Increase waterfront access through development of greenways and blueways across coastal Alabama.	x	x	x	x	x	Comprehensive Recreation Plan created	Increased public awareness	\$\$\$-\$\$\$\$	PIC and CRC
c	Create water access points (ramps, public piers, etc.) in economically depressed areas (Bayou La Batre, Three Mile Creek, and others)	x	x	x	x	x	# of new access points created	Improved public stewardship		
d	Repurpose abandoned railroad lines opportunistically.		x	x	x	x	Linear feet of trails or blueways created	Improved public health		
e	Improve conditions of the Mobile Causeway to enhance ability of subsistence and recreational anglers.		x	x	x	x				

\$	<\$10k
\$\$	\$10k-100k
\$\$\$	\$100k-1M
\$\$\$\$	\$1M-10M
\$\$\$\$\$	\$10M-100M



# 3

## Technical Assistance and Capacity Building

Coordinated community-wide environmental stewardship is essential to protecting the things people value most about living in coastal Alabama. The Management Conference will continue to empower diverse stakeholder groups with scientific knowledge, technical capacity, and skills necessary for these groups to contribute to environmental restoration and protection. The updated 2019-2023 CCMP TAC Action Plan will direct these efforts through five stakeholder-targeted goals.





Paddling Past a Litter Gitter,  
Three Mile Creek, Mobile

# Technical Assistance and Capacity Building



Goals/Objectives/Suggested Activities	Y 1					Y 2					Y 3					Y 4					Y 5					Performance Measure	Outcomes	Annual Cost	Lead									
	Y 1	Y 2	Y 3	Y 4	Y 5	Y 1	Y 2	Y 3	Y 4	Y 5	Y 1	Y 2	Y 3	Y 4	Y 5	Y 1	Y 2	Y 3	Y 4	Y 5	Y 1	Y 2	Y 3	Y 4	Y 5													
<b>TAC-1: Build capacity of water-dependent industries to improve sustainability of working waterfronts and preserve fishing communities.</b>																																						
<b>TAC-1.1 Conduct a comprehensive assessment of the current status of all safe harbors, including, but not limited to, USACE-designated locations.</b>																																						
a																										# of areas assessed for safe harbor status												
b																										Inventory of model ordinances in support of the establishment of safe harbors.	Preservation of fishing heritage											
c																										Develop public-private partnership frameworks for sustainable operation of safe harbors.	Improved fishing fleet safety	\$\$-\$\$\$										
<b>TAC-1.2 Pilot a peer lending program to support fishing business investment in best management practices.</b>																																						
a																										Create inventory of successful fishing community peer-lending programs (i.e. revolving loan funds or social impact investments).	Preservation of fishing heritage											
b																										Develop public-private partnership frameworks for sustainable operation of peer-lending programs.	Increased adoption of business practices improving water and habitat quality	\$\$-\$\$\$										
c																										Establish peer council to develop policies for use and loan terms.												

# Technical Assistance and Capacity Building



Goals/Objectives/Suggested Activities		Y	Y	Y	Y	Performance Measure	Outcomes	Annual Cost	Lead	
		1	2	3	4					5
<b>TAC-1: Build capacity of water-dependent industries to improve sustainability of working waterfronts and preserve fishing communities.</b>										
<b>TAC-1.3 Promote the assessment, improvement, and designation of estuary ports as "Green Ports."</b>										
a	Continue progress towards Green Marine certification and Green Port status for the Alabama State Port Authority.	x	x	x	x	x	# of ports implementing green infrastructure practices	Increased adoption green business practices	\$\$	BRC
<b>TAC-1.4 Develop planning tools to balance multiple uses of marine, estuarine, and freshwater resources.</b>										
a	Educate constituencies about how marine, estuarine, and freshwater resources are used, and recommend better coordination of uses.	x	x				Establish coalition of commercial and recreational anglers and others	Improve coordination of multiple and diverse uses of marine, estuarine, and freshwater environments		
b	Inventory and analyze existing conditions and develop future scenarios.			x	x		Inventory/analysis of existing conditions and future scenarios for multiple uses		\$\$	BRC
c	Build coalition of commercial and recreational anglers and other users to cooperatively address fishery issues of common interest (Use Gulf States Marine Fisheries Commission as model).					x				

# Technical Assistance and Capacity Building



Goals/Objectives/Suggested Activities	Y	Y	Y	Y	Y	Performance Measure	Outcomes	Annual Cost	Lead
	1	2	3	4	5				
<b>TAC-2: Build capacity of the business community to support ecosystem protection and restoration.</b>									
<b>TAC-2.1 Engage the business community in support of implementation of the CCMP.</b>									
a	x	x	x	x	x	Established long-term plan for business support for CCMP implementation	Improved capacity of the business community to support environmental stewardship	\$-\$\$	BRC
b	x	x	x	x	x	Develop a long-term plan for business support of CCMP implementation.			
c	x	x	x	x	x	Establish public-private partnership to pursue ADEM /State Revolving Loan Fund to support green infrastructure and the Clean Marina Program.			
<b>TAC-2.2 Engage businesses in influencing local resource management decision-making</b>									
a	x	x	x	x	x	Recruit private sector support to advocate for more responsible stormwater management implementation through networking or letter-writing campaigns	Improved business community support for restoration and protection of estuaries and coasts	\$-\$\$	BRC and GNC

# Technical Assistance and Capacity Building



Goals/Objectives/Suggested Activities		Y	Y	Y	Y	Y	Performance Measure	Outcomes	Annual Cost	Lead
		1	2	3	4	5				
<b>TAC-3: Build capacity of local governments to manage and enhance coastal environmental resources.</b>										
<b>TAC-3.1 Support implementation of eight coastal watershed management plans.</b>										
a	Facilitate adoption of local resolutions of support for watershed management plans by affected municipalities and/or counties.	x	x	x	x	x	# of local resolutions of support for watershed management plans	Improved watershed management, including outcomes for ERP-1.1	\$\$\$-\$\$\$\$	PIC, GNC and CRC
b	Establish process for entering recommended management measures into appropriate funding portals.	x	x	x	x	x	Process established for entering Plan recommendations into appropriate funding portals			
c	Promote creation of or long-term support for Watershed Management Coordinator positions to catalyze implementation of watershed management plans.	x	x	x	x	x	# of Watershed Management Coordinator positions created			
<b>TAC-3.2 Support establishment and operation of watershed plan partnerships and task forces to ensure local ownership of implementation activities.</b>										
a	D'Olive Intergovernmental Taskforce	x								
b	3MC Partnership	x								
c	Fowl River Implementation Task Force			x						
d	Weeks Bay Watershed Implementation Task Force			x			# of watershed partnerships established/active	Increased management capacity and support for management activities	\$	GNC and BRC
e	Plan Lower Alabama Now (Coordinated by City of Foley)									
f	Bon Secour River				x					
g	Other				x	x				

# Technical Assistance and Capacity Building



Goals/Objectives/Suggested Activities	Y	Y	Y	Y	Y	Performance Measure	Outcomes	Annual Cost	Lead
	1	2	3	4	5				
<b>TAC-3: Build capacity of local governments to manage and enhance coastal environmental resources.</b>									
<b>TAC-3.3 Improve elected officials', planning commissions', and other land-use decision makers' understandings of the relationship between land use, water resource management decisions, and environmental impacts.</b>									
a		x	x	x					
b	x	x	x	x		# of educational videos in library # of tools and data sets in the inventory # of trainings or training tools conducted or developed	Increased awareness/environmental management knowledge of decision makers	\$S	GNC
c	x	x	x	x					
d	x	x	x	x					
<b>TAC-3.4 Improve regulatory framework to better protect coastal resources.</b>									
a	x	x	x	x					
b	x	x	x	x		# of ordinance changes to reduce non-point source pollution, improve habitat quality, and increase community resilience	Increased monitoring coordination and capacity of state agencies		GNC and CRC
c	x	x						\$S	
d			x	x		inventory of model ordinances	Reduced pollutants of concern, pathogens, sediment, nutrients, and litter		
e				x		# of State Agencies that have adopted use of third party data	Improved environmental protection		
f	x								
g				x					

# Technical Assistance and Capacity Building



Goals/Objectives/Suggested Activities	Y	Y	Y	Y	Y	Performance Measure	Outcomes	Annual Cost	Lead
	1	2	3	4	5				
<b>TAC-3: Build capacity of local governments to manage and enhance coastal environmental resources.</b>									
<b>TAC-3.5 Support actions to protect and restore coastal habitats, increasing community and economic resilience.</b>									
a	x	x	x	x	x				
b	x	x	x	x	x	Adoption of a State of Alabama Water Plan	Increased restoration and protection of coastal habitats	\$	GNC and CRC
c	x	x	x			Increased use of living shorelines best practices	Increased community and economic resilience		
d	x			x					
e									
<b>TAC-3.6 Inform elected officials and the public about changing climatic conditions and sea level rise.</b>									
a	x	x				# Outreach materials created	Increased public awareness and knowledge	\$	CRC and GNC
b	x	x	x	x	x	# Outreach events conducted			
c	x	x	x	x	x				

# Technical Assistance and Capacity Building



Goals/Objectives/Suggested Activities	Y	Y	Y	Y	Y	Performance Measure	Outcomes	Annual Cost	Lead
	1	2	3	4	5				
<b>TAC-4: Advocate integration of environmental protection into community and economic development.</b>									
<b>TAC-4.1 Advocate inclusion of watershed management plan recommendations into local policies, ordinances, and plans.</b>									
a	x	x	x	x	x	# of watershed management plan recommendations incorporated into local policies, ordinances, and plans	Coordinated implementation of watershed management plans among government partners	\$	CRC
b	x	x	x	x	x				
c	x	x	x	x	x				
d	x	x	x	x	x				
<b>TAC-4.2 Advocate inclusion of better building practices in long-range planning to improve environmental and community resilience.</b>									
a	x	x	x	x	x	Develop materials for developers and elected officials  Host two meetings (Mobile and Baldwin County)  Host two workshops (Mobile and Baldwin County)	Improved environmental and community resilience	\$	CAC
b	x	x	x	x	x				
c	x	x	x	x	x				
d	x	x	x	x	x				



# Technical Assistance and Capacity Building



Goals/Objectives/Suggested Activities	Performance Measure					Outcomes	Annual Cost	Lead
	Y1	Y2	Y3	Y4	Y5			
<b>TAC-5: Build capacity of grassroots groups and citizens to create more resilient and environmentally responsible communities.</b>								
<b>TAC-5.1 Support and promote opportunities to expand grassroots capacity development.</b>								
a	x	x	x	x	x			
b		x				# of grassroots organizations engaged	Increased capacity of grassroots organizations	CAC
c	x	x	x	x	x			
d	x	x	x	x	x			
<b>TAC-5.2 Develop comprehensive strategy for volunteer water quality monitoring to expand citizen science and community engagement programs to inform status and trends.</b>								
a	x	x	x	x	x			
b	x	x				# volunteers testing for bacteria		
c	x	x	x	x	x	# volunteers entering data on Water Rangers	Improved capacity, and best practices of volunteer monitoring programs	CAC and CRC
d	x	x	x	x	x	Creation and maintenance of volunteer directory		
e	x	x	x	x	x			
f	x	x	x	x	x	Creation of volunteer recognition program		
g	x	x	x	x	x			
h	x							

\$	<\$10k
\$\$	\$10k-100k
\$\$\$	\$100k-1M
\$\$\$\$	\$1M-10M
\$\$\$\$\$	\$10M-100M



# 4

## Education and Public Involvement

Alabama residents recognize a healthy environment is inextricably linked to their economic, cultural, and community well-being. A study commissioned by MBNEP in 2010 (and discussed in Section 3) identified six common values considered by coastal residents to be most important to quality of life in coastal Alabama. Public support for restoration and protection of Alabama's coasts and estuaries is improved by reinforcing their understanding of how healthy ecosystems protect their values. The updated 2019-2023 CCMP EPI Action Plan aims to improve public support for environmental protection and restoration through five goals targeting community and business groups and decision makers.



Coastal Cleanup on Dog River

# Education and Public Involvement



Goals/Objectives/Suggested Activities	Y	Y	Y	Y	Y	Performance Measure	Outcomes	Annual Cost	Lead
	1	2	3	4	5				
<b>EPI-1: Improve the business community's understanding of how coastal natural resources and estuaries contribute to economic, cultural, and community well-being.</b>									
<b>EPI-1.1</b>	<b>Conduct 15 tours to introduce the private sector to watersheds.</b>								
a	x	x	x	x	x	# tours	Increased awareness of environmental issues, support for best practices	\$-\$	BRC
b	x	x	x	x	x	# attendance			
c	x	x	x	x	x	# difference watershed outreach packages			
<b>EPI-1.2</b>									
<b>Develop outreach to improve business community understanding of opportunities for environmental protection.</b>									
a	x			x		Creation of communication plan to increase business community understanding of opportunities for environmental protection.	Increased environmental understanding in the business community	\$	BRC and CRC
b	x	x		x					
c	x	x	x	x	x				
d	x	x	x	x	x				

# Education and Public Involvement



Goals/Objectives/Suggested Activities		Y 1	Y 2	Y 3	Y 4	Y 5	Performance Measure	Outcomes	Annual Cost	Lead
<b>EPI-2: Increase the business community's involvement in and support for protecting the estuary and coast.</b>										
<b>EPI-2.1 Create a minimum of five service opportunities to engage business "teams" in participating in restoration or clean-up efforts.</b>										
a	Develop a "Watersheds 101" presentation capturing available opportunities, and conduct presentations at Chambers of Commerce and civic clubs to recruit participation.	x		x	x	x				
b	Serve as a clearing house between business teams and local opportunities to get involved in environmental management.			x	x	x	# of service opportunities for businesses	Increased business sector participation in environmental protection and watershed management planning	\$	BRC
c	Develop long-term cultivation of business stakeholders in watershed planning to make them aware of the planning process, educate about the value of watershed planning to the surrounding environment, and engage them as champions in the implementation of the watershed management plans.	x	x	x	x	x				
<b>EPI-2.2 Identify and connect business partners to a minimum of three existing projects celebrating the cultural heritage of Alabama's estuaries and coast.</b>										
a	Identify and prioritize cultural heritage projects.	x	x	x	x	x		Increased appreciation for connections between environmental protection and preservation of heritage		
b	Solicit private sector sponsorship of projects.	x	x	x	x	x	# cultural assets protected or maintained		\$	BRC
c	Include cultural and heritage signage as a component of each project as appropriate.	x	x	x	x	x				

# Education and Public Involvement



Goals/Objectives/Suggested Activities	Y	Y	Y	Y	Y	Performance Measure	Outcomes	Annual Cost	Lead
	1	2	3	4	5				
<b>EPI-3: Improve community understanding of how estuaries and coasts support what people value about living in coastal Alabama.</b>									
<b>EPI-3.1 Create and support recreational and educational programs and events that connect more people to local waterways, fish, and wildlife.</b>									
a	x	x	x	x	x	# of events connecting people to area waterways	Increased environmental understanding and stewardship in the general public	\$	CAC and CRC
<b>EPI-3.2 Educate youth about watersheds, water quality, and environmental issues relevant to the CCMP's six values.</b>									
a	x	x	x	x	x	# of youth engaged in watershed education	Increased environmental understanding among youth	\$\$	CRC
b									

# Education and Public Involvement



Goals/Objectives/Suggested Activities		Y 1	Y 2	Y 3	Y 4	Y 5	Performance Measure	Outcomes	Annual Cost	Lead
<b>EPI-4: Use the Clean Water Future campaign as a framework for encouraging actions to improve water quality.</b>										
<b>EPI-4.1 Support Partners for Environmental Progress in launching the CCWF campaign through its business members.</b>										
a	Increase membership by 30% in first year.	x						Improved capacity of the business community to support and participate in environmental stewardship and stormwater management	\$-\$	BRC
b	Establish program architecture for membership levels.	x	x				# CCWF members from the business community			
c	Define brand standards for use of CCWF materials and logos.	x	x							
d	Create training materials for CCWF business partners to educate their members and employees about how personal actions can be used to effect change in the management of stormwater runoff.	x	x	x	x	x				
e	Establish a Clean Water Future Annual Service Day.	x	x							
<b>EPI-4.2 Engage local government in adopting the CCWF campaign to promote improved stormwater management and quality of water flowing throughout the Mobile Bay Watershed and into coastal waters.</b>										
a	Conduct an assessment of communities throughout the greater Mobile Bay Watershed to determine opportunities for partnerships on outreach and education materials related to reductions in nonpoint source pollution.	x	x					Improved capacity, coordination, and willingness of local governments to manage stormwater	\$-\$	GNC
b	Recruit counties/municipalities to join the CCWF campaign.	x	x	x	x	x	# of local governments adopting CCWF			
c	Recruit counties/municipalities to provide content for the CCWF website.	x	x	x	x	x				
d	Distribute stormwater-related videos to elected officials and local government staffs.	x	x	x	x	x				
<b>EPI-4.3 Create a strategy for implementing the CCWF campaign at the community level.</b>										
a	Increase membership by 20% in first year, especially civic clubs and property owners associations.	x						Improved capacity of community groups in environmental stewardship and managing stormwater.	\$-\$	CAC
b	Establish program architecture for membership levels.	x					# CCWF members from community groups			
c	Define brand standards for use of CCWF materials and logos.	x								
d	Establish a Clean Water Future Annual Service Day.					x				

# Education and Public Involvement



Goals/Objectives/Suggested Activities	Performance Measure					Outcomes	Annual Cost	Lead	
	Y 1	Y 2	Y 3	Y 4	Y 5				
<b>EPI-5: Increase community involvement in and support for stewardship, volunteer, and educational opportunities.</b>									
<b>EPI-5.1 Promote environmentally friendly public events (e.g. parades, sporting events, fishing tournaments, etc.).</b>									
a	x	x	x	x	x	# environmentally-friendly practices at events	Increased environmental understanding and stewardship in the general public	\$	CRC
b	x	x	x	x	x	Develop and implement master action plan for coordinating and promoting more environmentally-friendly public events.			

\$	<\$10k
\$	\$10k-100k
\$	\$100k-1M
\$	\$1M-10M
\$	\$10M-100M





Dauphin Island

# 5

## Climate Vulnerability Assessment Matrix

This matrix evaluates vulnerabilities of the five-year CCMP strategies to impacts related to a changing climate, not necessarily restricted to the five-year duration of this Plan but extending into the next decade and beyond.

	<b>SCORING:</b>
	<b>Consequence:</b> What is the effect of the threat on the Goal and Objective of the Action Plan?
	<b>LOW</b> - not as important as other problems. The impact or challenge is not much worse than current or non-climate related challenges.
	<b>MEDIUM</b> - a serious challenge. The impact negatively affects and degrades coastal habitats and wildlife.
	<b>HIGH</b> - major disruption and challenge; goal may be impossible to achieve. The impact results in loss of coastal habitats and/or priority species.
	<b>Likelihood:</b> What is the probability that the threat will occur?
	<b>LOW</b> - it could happen
	<b>MEDIUM</b> - it probably will happen
	<b>HIGH</b> - it definitely will happen



Golden Silk Orb-weaver

# Ecosystem Status and Trends

Goals/Objectives/Suggested Activities	S L T R	P	O A	Consequence	Likelihood	Risk
<b>EST-1: Increase availability/use of data related to coastal ecosystems and their services' responses to man-made stresses.</b>						
EST-1.1	Establish a Data Management and Usage Strategy.					
	N/A					
EST-1.2	Maintain or improve existing level of monitoring and data analysis to assess trends in coastal ecosystem health at a watershed-scale.					
	N/A					
EST-1.3	Promote consistent system-wide monitoring to assess trends in coastal ecosystem health.					
	N/A					
<b>EST-2: Establish a process for measuring, analyzing, and communicating change in marine, estuarine, and freshwater ecosystem condition.</b>						
EST-2.1	Synthesize monitoring data to develop a watershed condition index to track and communicate trends in watershed restoration and management.					
	N/A					
<b>EST-3: Model and predict connections between ecosystem condition and the ecosystem services people value.</b>						
EST-3.1	Manage system for multiple services.					
	Increase in difficulty of achieving the multiple ecosystem services that people value due to degraded ecosystem condition from climate stressors	X	X	X	M	M

# Ecosystem Restoration and Protection

Goals/Objectives/Suggested Activities		S	L	T	P	O	A	Consequence	Likelihood	Risk
<b>ERP-1: Develop comprehensive management plans for all coastal watersheds (at the 12-digit hydrologic-unit-code scale).</b>										
<b>ERP-11 Develop 12 new coastal watershed management plans for those basins discharging into priority fishing nursery areas.</b>										
a	Increased concentration of pollutants (nutrients, chemicals, bacteria, and trash) in runoff after prolonged periods of drought.				x			M	H	H
b	Changes in nutrient cycling and primary productivity beneficial for harmful algae.				x			M	H	H
c	Emergency releases of partially-treated wastewater from treatment facilities overloaded by inflow and infiltration during storm events.	x				x		M	H	H
d	Increase in survival and growth of bacteria, viruses, and harmful algae.				x			M	H	H
e	Septic system failures due to ground water saturation.	x				x		M	M	M
f	Failure of low-lying wastewater lift stations and other wastewater conveyance infrastructure due to flooding.	x				x		M	M	M
g	Decrease in function of stormwater structures to detain floodwater and pollutants due to increase in flashy stormwater volume and elevated water table or saltwater intrusion.	x				x		M	M	M
h	Wash-out of coastal stormwater vaults, retention ponds, bioswales or vegetated areas, and lack of appropriate sites for relocation.	x				x		M	M	M
i	Failure of underground storage tanks and industrial waste storage ponds.	x				x		M	M	M
j	Inefficient drainage and capacity of stormwater pipes due to sea level rising above the level of outfalls.	x						L	H	M
k	Increased direct and indirect atmospheric deposition of nitrogen originating from power plants experiencing increased demand.				x	x		M	L	L
l	Increased concentrations of pollutants due to increased solubility with temperature and ocean acidification.				x		x	M	L	L
m	Increased use of chemical treatments in stormwater ponds to reduce more frequent algae blooms.				x	x		L	M	L

# Ecosystem Restoration and Protection

Goals/Objectives/Suggested Activities	S	L	T	P	O	A	Consequence	Likelihood	Risk	
	R									
<b>ERP-1: Develop comprehensive management plans for all coastal watersheds (at the 12-digit hydrologic-unit-code scale).</b>										
ERP-1.2							Prioritize watersheds and seek funding for watershed management plans in other non-tidally influenced coastal watersheds.			
							see ERP-1.1			
ERP-1.3							Update existing watershed plans to include new watershed planning criteria.			
							N/A			
<b>ERP-2: Implement comprehensive watershed management plans with a focus on priority habitats.</b>										
<b>ERP-2.1 Develop a Coastal Alabama Habitat Restoration Plan to guide watershed management plan implementation.</b>										
a							N/A			
b							Freshwater wetlands			
							Changes in freshwater wetland hydrology (e.g., locations, quality, and types) due to extended drought, increased evapotranspiration and/or flooding.	x	x	H
							Loss of native plant and animal species due to temperature intolerance.	x	x	H
							Changes in plant pests and diseases leading to species and habitat loss.	x	x	H
							Changes in wetland species composition and zonation, including spread of invasive species.	x	x	H
							Increase in development pressure in the upper watershed due to hazards of coastal development.	x	x	M
c							Streams, rivers, and riparian buffers.			
							Increase in sedimentation due to greater erosion and scour from tributaries.	x	x	H
							Increase or decrease in episodic volume and velocity of freshwater to tidal creeks and the bay, affecting salinity and life cycles of dependent fish and shellfish.	x	x	H

# Ecosystem Restoration and Protection

Goals/Objectives/Suggested Activities	S L T P O R A			Consequence	Likelihood	Risk
<b>ERP-2: Implement comprehensive watershed management plans with a focus on priority habitats.</b>						
<b>ERP-2.1 Develop a Coastal Alabama Habitat Restoration Plan to guide watershed management plan implementation.</b>						
		x		H	M	H
	Increase in salinity upstream that compresses isohaline zone and reduces low salinity habitat that provides fish nursery and refuge zones.					
	Increase in growth rates of bacteria and algae in waterways.	x	x	M	H	H
	Increase in difficulty in restoring natural/historic hydrology due to sea level rise, seasonal shifts, flashiness, increased storm intensity, and increased demand for consumptive water use.	x	x	M	M	M
	Increase in salinity upstream affecting zonation and species composition of riparian plants.	x		M	M	M
	OA, nutrient, and low dissolved oxygen hot spots in creeks, canals and bayous due to decomposing organic matter, including HABS.	x	x	M	M	M
	Increase in creeks and waterways clogged by invasive plants.	x		L	M	L
d	Intertidal marshes and flats					
	Loss of shallow intertidal habitat due to upland barriers to migration.	x		H	H	H
	Reduced capacity of salt marsh to buffer against upstream sediment and nutrient inputs due to loss of habitat.	x		H	H	H
	Reduced seagrass cover and epiphytes due to changes in water clarity, temperature, depth, and pH.	x	x	H	H	H
	Decrease in juvenile fish, shellfish, and bird feeding, breeding and refuge habitat.	x	x	H	H	H
	Increase in shellfish harvest closures.	x	x	H	H	H
	Decrease in fitness and growth of oysters and other shellfish.			M	M	M
e	Uplands adjacent to coastal habitats to accommodate landward migration due to sea level rise.					
	Increase in community priority to protect property with shoreline hardening and resistance to removal of barriers.	x	x	H	H	H
	Increase in community priority to protect property with shoreline hardening and resistance to removal of barriers.	x	x	M	M	M

# Ecosystem Restoration and Protection

Goals/Objectives/Suggested Activities	S	L	T	O	P	A	Consequence	Likelihood	Risk
<b>ERP-3: Improve ecosystem function and resilience through protection, restoration, and conservation along shorelines of coastal Alabama beaches, bays, and backwaters.</b>									
<b>ERP-3.1 Develop a Comprehensive Regional Shorelines Plan for stabilization and protection.</b>									
a	X			X			H	H	H
b	X						H	H	H
c	X						H	H	H
d	X			X			M	M	M
<b>ERP-4: Improve management of invasive species throughout coastal Alabama watersheds.</b>									
<b>ERP-4.1 Develop invasive species management plans (ISMPs) for coastal watersheds.</b>									
a				X	X	X	M	H	H
b				X	X	X	H	H	H
<b>ERP-5: Restore and expand human connections to nature as a mechanism for improving environmental protection.</b>									
<b>ERP-5.1 Protect and conserve priority habitats for public benefit and access by acquisition or easement.</b>									
				X			M	H	H
<b>ERP-5.2 Create seven new access points, at least five in Mobile County, incorporating environmental and cultural themes into each site's interpretive signage.</b>									
				X			M	H	H



# Technical Assistance and Capacity Building

Goals/Objectives/Suggested Activities	S	L	T	O	P	A	Consequence	Likelihood	Risk
	R								
<b>TAC-1: Build capacity of water-dependent industries to improve sustainability of working waterfronts and preserve fishing communities.</b>									
TAC-1.1				Conduct a comprehensive assessment of the current status of all safe harbors, including, but not limited to, USACE-designated locations.					
			X				M	L	L
TAC-1.2				Fewer choices in appropriate locations due to higher tides and increased flooding that reduces bridge clearance and access to docks and pull-outs.					
				Pilot a peer lending program to support fishing business investment in best practices.					
				N/A					
TAC-1.3				Promote the assessment, improvement, and designation of estuary ports as "Green Ports."					
				N/A					
TAC-1.4				Develop planning tools to balance multiple uses of marine, estuarine, and freshwater resources.					
			X	X	X	X	M	M	M
				Increase in difficulty of balancing multiple uses due to degraded ecosystem condition from climate stressors.					
<b>TAC-2: Build capacity of the business community to support ecosystem protection and restoration.</b>									
TAC-2.1				Engage the business community in support of implementation of the CCMP.					
			X	X	X	X	M	M	M
				Difficulty in motivating businesses to get involved due to conflicting social and political considerations for prioritizing environmental protection.					
TAC-2.2				Engage businesses in influencing local resource management decision-making.					
			X	X	X	X	M	M	M
				Difficulty in motivating businesses to get involved due to conflicting social and political considerations for prioritizing environmental protection.					

# Technical Assistance and Capacity Building

Goals/Objectives/Suggested Activities	S L R	T P A	O A	Consequence	Likelihood	Risk
<b>TAC-3: Build capacity of local governments to manage and enhance coastal environmental resources.</b>						
<b>TAC-3.1 Support implementation of eight coastal watershed management plans.</b>						
a	X	X	X	M	M	M
b	X	X	X	L	L	L
<b>TAC-3.2 Support establishment and operation of watershed plan partnerships and task forces to ensure local ownership of implementation activities.</b>						
	X	X	X	L	L	L
<b>TAC-3.3 Improve elected officials', planning commissions', and other land-use decision-makers' understanding of the relationships between land-use, water resources management decisions, and environmental impacts.</b>						
<b>TAC-3.4 Improve regulatory framework to better protect coastal resources.</b>						
	X	X	X	M	M	M
<b>TAC-3.5 Support actions to protect and restore coastal habitats, increasing community and economic resilience.</b>						
a	X	X		M	H	H
b	X	X		M	M	M

# Technical Assistance and Capacity Building

Goals/Objectives/Suggested Activities	S	L	T	O	P	A	R	Consequence	Likelihood	Risk
<b>TAC-4: Advocate integration of watershed management plans into community and economic development.</b>										
<b>TAC-4.1 Advocate integration of environmental protection into community and economic development.</b>										
Difficulty in motivating elected officials to prioritize response to environmental impacts due to other competing social and infrastructure needs.	x	x	x	x	x			M	M	M
<b>TAC-4.2 Advocate integration of environmental protection into community and economic development.</b>										
Difficulty in motivating elected officials to prioritize response to environmental impacts due to other competing social and infrastructure needs.	x	x	x	x	x			M	M	M
Perception of higher initial project design, implementation, and maintenance costs.	x	x	x	x	x			M	M	M
<b>TAC-5: Build capacity of grassroots groups and citizens to create more resilient and environmentally-responsible communities.</b>										
<b>TAC-5.1 Support and promote opportunities to expand grassroots capacity development.</b>										
Reduced citizen support, cooperation, and action due to feelings of hopelessness or fear over climate change impacts.	x	x	x	x	x			M	L	L
<b>TAC-5.2 Develop comprehensive strategy for volunteer water quality monitoring to expand citizen science and community engagement programs to inform status and trends.</b>										
Reduced citizen support, cooperation, and action due to feelings of hopelessness or fear over climate change impacts.	x	x	x	x	x			M	L	L

# Education and Public Involvement

Goals/Objectives/Suggested Activities	S	L	T	P	O	A	Consequence	Likelihood	Risk
<b>EPI-1: Improve the business community's understanding of how coastal natural resources and estuaries contribute to economic, cultural, and community well-being.</b>									
EPI-1.1									
Conduct 15 tours to introduce the private sector to watersheds.									
Reduced participation in outdoor watershed-related education due to extreme weather conditions, pests, diseases, and reduced water quality.	x	x	x	x	x		M	L	L
<b>EPI-1.2</b>									
Develop outreach to improve business community understanding of opportunities for environmental protection.									
Fewer opportunities to positively frame environmental messages and stories.	x	x	x	x	x		M	L	L
<b>EPI-2: Increase the business community's involvement in and support for protecting the estuary and coast.</b>									
<b>EPI-2.1</b>									
Create a minimum of five service opportunities to engage business "teams" in participating in restoration or clean-up efforts.									
Reduced participation in outdoor watershed-related recreation, volunteering, and education due to extreme weather conditions, pests, diseases, and reduced water quality.	x	x	x	x	x		M	L	L
Difficulty in motivating businesses to get involved due to conflicting social and political considerations for prioritizing environmental protection.	x	x	x	x	x		M	M	M
<b>EPI-2.2</b>									
Identify and connect business partners to a minimum of three existing projects celebrating the cultural heritage of Alabama's estuaries and coast.									
N/A									

# Education and Public Involvement

Goals/Objectives/Suggested Activities	S L R	T	P	O A	Consequence	Likelihood	Risk
<b>EPI-3: Improve community understanding of how estuaries and coasts support what people value about living in coastal Alabama.</b>							
<b>EPI-3.1</b> Create and support recreational and educational programs and events that connect more people to local waterways and fish and wildlife.							
a Reduced participation in outdoor watershed-related recreation, volunteering, and education due to extreme weather conditions, pests, diseases, and reduced water quality.	x	x	x	x	M	L	L
b Reduced citizen support, cooperation, and action due to feelings of hopelessness or fear over climate change impacts.	x	x	x	x	M	L	L
<b>EPI-3.2 Educate youth about watersheds, water quality, and environmental issues relevant to the CCMP's six values.</b>							
Fewer opportunities to positively frame environmental messages and stories.	x	x	x	x	M	L	L
<b>EPI-4: Use the Create a Clean Water Future campaign as a framework for encouraging actions to improve water quality.</b>							
<b>EPI-4.1 Support Partners for Environmental Progress in launching the CCWF campaign through its business members.</b>							
Difficulty in motivating businesses to get involved due to conflicting social and political considerations for prioritizing environmental protection.	x	x	x	x	M	M	M
<b>EPI-4.2 Engage local governments in adopting the CCWF campaign to promote improved stormwater management and the quality of water flowing throughout the Mobile Bay Watershed and into coastal waters.</b>							
N/A							
<b>EPI-4.3 Create a strategy for implementing the Create a Clean Water Future Campaign at the community level.</b>							
N/A							
<b>EPI-5: Promote environmentally-friendly public events (e.g. parades, sporting events, fishing tournaments, etc.)</b>							
<b>EPI-5.1 Promote environmentally-friendly public events (e.g. parades, sporting events, fishing tournaments, etc.)</b>							
Reduced participation in outdoor watershed-related events due to extreme weather conditions, pests, diseases, and reduced water quality.	x	x	x	x	M	L	L

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**Appendices found online at [www.mobilebaynep.com](http://www.mobilebaynep.com)**

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Boating on Arnica Bay





