

**ALABAMA  
COASTAL AREA MANAGEMENT PROGRAM**

**SECTION 309  
Enhancement Grant Program**

**2021-2025  
ASSESSMENT & STRATEGY**

April 16th, 2021

**ALABAMA DEPARTMENT OF CONSERVATION & NATURAL RESOURCES  
State Lands Division, Coastal Section**



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

Will Underwood  
Alabama Department of Conservation and Natural Resources State Lands Division  
31115 Five Rivers Boulevard  
Spanish Fort, AL 36527

Dear Mr. Underwood:

The Office for Coastal Management (OCM) has completed its review of the Alabama Coastal Management Program's Fiscal Year (FY) 2021-2025 Coastal Zone Management Act (CZMA) Section 309 Final Assessment and Strategy. We initially received a draft to review on January 6, 2021, and received final revisions on April 16, 2021. OCM is pleased to inform you that we approve Alabama's 2021-2025 Assessment and Strategy and concur with the State's designated priority rankings for the nine enhancement areas. With an approved Assessment and Strategy, the Alabama Coastal Management Program is eligible for FY 2021-2025 weighted formula (or base) funds under Section 309 of the CZMA to implement the work plan as presented in Alabama's strategy.

States with approved strategies that address an enhancement area of national importance are also eligible to compete for Projects of Special Merit funding to further their strategies. Coastal Hazards is designated as an enhancement area of national importance for the FY2021-FY2025 enhancement cycle. Therefore, you are currently eligible to apply for competitive Projects of Special Merit funding to further your *Coastal Riparian Structure Database Development* strategy. OCM may choose to designate additional enhancement areas of national importance during the FY2021-2025 cycle to address new or emerging issues that may arise.

We appreciate the time and effort that you and your staff put into this process, as well as your continued support for and participation in the Enhancement Grants Program. OCM looks forward to working together to achieve the strategy goals you have set for Alabama over the next five years. Again, we offer our congratulations.

Sincerely,

Laura E. Petes, PhD  
Communities Program Manager

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## Introduction

### The Alabama Coastal Area Management Program & National Coastal Zone Management Program

The Alabama Coastal Area Management Program (ACAMP) is a voluntary federal/state partnership established by the Alabama State Legislature in 1979 in accordance with the Coastal Zone Management Act of 1972 (CZMA). There are 34 states and territories that implement a state coastal area program under the guidance of the National Coastal Zone Management Program.

The ACAMP is intended to provide for the protection, restoration, and responsible development of state's legislatively defined coastal area. The purpose of ACAMP is to balance economic growth with the need for conservation of Alabama's coastal resources for future generations. The program promotes wise management of the cultural and natural resources of the state's coastal areas and fosters efforts to ensure the long-term ecological and economic productivity of coastal Alabama. ACAMP is implemented in the legislatively defined [Alabama Coastal Area](#), which extends from the continuous 10-foot contour seaward to the 3-mile limit in Mobile and Baldwin counties.

The ACAMP is administered by the Alabama Department of Conservation and Natural Resources (ADCNR), State Lands Division (SLD), Coastal Section. The national program is administered by the U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), Office for Coastal Management (OCM).

While the states must follow basic requirements set forth by the CZMA and the national program, states are also given the flexibility to design unique programs that best address their coastal challenges and regulations, with the intent to leverage expertise and resources and strengthen the capabilities to address coastal issues.

The major components of the national program include federal consistency, program enhancement and nonpoint pollution control. This 309 Assessment and Strategy document addresses the program enhancement component of the national program as it relates to the state of Alabama. The enhancement component was established in the CZMA as Section 309 Coastal Zone Enhancement Program.

### The Section 309 Coastal Zone Enhancement Program

The Section 309 Coastal Zone Enhancement Program (309 Enhancement Program) encourages state and territorial coastal management programs to strengthen and improve their federally approved coastal management programs in one or more of nine areas. These "enhancement areas" include wetlands, coastal hazards, public access, marine debris, cumulative and secondary impacts, special area management plans, ocean and Great Lakes resources, energy and government facility siting, and aquaculture.

### Development of the 309 Assessment and Strategy for the ACAMP

In order to comply with the 309 Enhancement Program, the ACAMP staff adhered to the Section 309 Program Guidance – 2021 to 2025 Enhancement Cycle developed by NOAA. This required the staff to conduct self-assessments of the ACAMP to determine challenges and enhancement possibilities within each of the nine enhancement areas. This included assessing the effectiveness of existing management efforts to address identified problems, high priority management issues, and important needs and information gaps the program must fill to address these issues and provide opportunities for enhancement.

The self-assessment includes stakeholder input. The manner in which the staff solicited and collected this input is described under the “ACAMP Stakeholder Input” heading.

Following the self-assessment, ACAMP staff consulted with NOAA OCM to further identify the high priority needs for improvement within one or more of the nine areas. The staff then developed strategies for certain high priority areas, in consultation with OCM, to improve operations that will address management needs. Staff will submit this draft 309 Assessment and Strategy document to NOAA OCM for review and will seek final approval following the public review period. Upon approval of the documents, the state will be eligible to receive Section 309 funding to carry out the strategies.

#### ACAMP Stakeholder Input

As required by NOAA OCM, the ACAMP staff solicited stakeholder input by developing and distributing, via email, a survey to 180 stakeholders in Mobile and Baldwin counties representing state and federal agencies, local governments, state universities, non-governmental agencies and private industry. Responses were collected, organized, analyzed and incorporated into the self-assessment.

#### Public Review and Comment –

The draft 309 assessment and strategy were posted on the ACAMP webpage on March 9th, 2021 and original survey recipients were made aware of the comment period via email. Comments were received through April 8th, 2021.

## **Summary of Recent Section 309 Achievements**

The ACAMP staff participated in planning, research, outreach, and technical assistance to implement the year five activities in accordance with the Section 309 Assessment and Strategy Focus Area, Community Resilience Initiative 2016-2020 from the Performance Measures category of Coastal Hazards.

The previous strategy included a description of potential new and revised local programs that would address the needs identified in the Coastal Hazards Assessment and a work plan to achieve appropriate and cost-effective improvements that would aid the ACAMP in furthering the goals and objectives of a resilient coastal area. For the fifth year, ACAMP staff specifically addressed outreach, education, and training related to Community Rating System (CRS) needs and barriers. Projects designed to reduce flood vulnerability of coastal communities through planning efforts were funded in several local municipalities, and a local university partnered with the program to produce maps of existing undeveloped open space to help municipalities participating in the CRS.

Perhaps the most impactful outcome of the current strategy has been the development and continued growth of the South Alabama Flood Engagement Team (SAFE-T), which has been coordinated under contract with the Baldwin County Soil and Water Conservation District (BCSWCD). The group has served as a community of practice for flood management practitioners, municipal planners and building officials, and others to gather with the common goal of reducing flood impacts to local communities. The group has hosted numerous meetings, continuing education events, and online trainings to facilitate learning and information sharing around this vitally important topic. All indications are that the SAFE-T effort will survive the sunset of the current 309 strategy implementation through combined support of participating local governments and municipalities.

## Assessments – Phase I

The section contains the Phase I assessment for each of the nine enhancement areas. The ACAMP staff completed the assessments using existing data and information on national, state and local levels as detailed in the assessment guidance.

### Aquaculture

**Section 309 Enhancement Objective:** Adoption of procedures and policies to evaluate and facilitate the siting of public and private aquaculture facilities in the coastal zone, which will enable states to formulate, administer, and implement strategic plans for marine aquaculture. §309(a)(9)

**Phase I (High-Level) Assessment:** Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the CMP that warrants a more in-depth assessment.

**Resource Characterization:**

1. In the table below, characterize the existing status and trends of aquaculture facilities in the state’s coastal zone based on the best available data.

Type of Facility/Activity	Status and Trends of Aquaculture Facilities and Activities		
	# of Facilities	Approximate Economic Value	Change Since Last Assessment (, ↓, -, unknown)
Off-Bottom Oyster Aquaculture	21	\$2,000,000 +	↑ □

2. If available, briefly list and summarize the results of any additional state- or territory-specific data or reports on the status and trends or potential impacts from aquaculture activities in the coastal zone since the last assessment.

As reported in the 2019 Alabama Shellfish Aquaculture Situation & Outlook Report, the oyster aquaculture industry remains a growing industry in the coastal area.

- Farm gate value for Alabama oyster commercial operations was \$1,452,000.
- Total number of single market oysters harvested in 2019 was \$2,425,000.
- Oyster market prices realized for respondents ranged from \$0.30 to \$0.70 with an average price of \$0.46.
- Operators reported 30 full-time employees and 30 part-time employees.
- There were 74 acres permitted for oyster aquaculture with at least 40 acres used in production.
- The Alabama Department of Public Health certified 21 oyster aquaculture operations in 2019.

**Management Characterization:**

1. Indicate if the approach is employed by the state or territory and if there have been any state or territory-level changes (positive or negative) that could facilitate or impede the siting of public or private aquaculture facilities in the coastal zone.

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Aquaculture comprehensive siting plans or procedures	N (NOAA)	If requested	Y
Other aquaculture statutes, regulations, policies, or case law interpreting these	Y	If requested	Y

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
  - a. Describe the significance of the changes;
  - b. Specify if they were 309 or other CZM-driven changes; and
  - c. Characterize the outcomes or likely future outcomes of the changes.

As stated on the previous assessment, aquaculture has become a higher profile topic in coastal Alabama. Changes in off-bottom oyster aquaculture technologies and the emergence of upscale oyster bars has created a demand for high quality oysters. This has resulted in several requests to start oyster aquaculture operations in Alabama. This demand has also raised a need to address certain issues related to oyster aquaculture including siting, impacts to other natural resources (existing oyster beds, marshes and sea grasses), proper growth conditions, user conflicts, riparian rights and other similar issues. It has been recognized that these emerging issues will need to be addressed with a combination of regulations, planning, education and outreach, and proper natural resource management.

The Alabama Legislature passed legislation establishing a Shellfish Aquaculture Review Board with the purpose of “developing a shellfish aquaculture policy and implementing a sustainable program for leasing land in the coastal waters of Alabama for oyster aquaculture.” The efforts of the Board resulted in the (DCNR proposing a new shellfish aquaculture rule in February 2014 to provide for the granting of easements of state-owned submerged lands to encourage and support this new practice. The rule was adopted on April 7, 2014 (Water Log, June 2014) and updated in 2017.

<http://alaquaculture.com/assets/2017/11/shellfish-aquaculture-selected-laws-and-regulations.pdf>

Since then, there have been amendments made: Section 9-12-21 “Natural Oyster Reef” defined, Section 9-12-22 “Right of owners of land fronting public waters to plant and gather oysters”, and Section 9-12-27 “Standard measures for oysters and shrimp; possession, use for purchase or sale, etc., of nonstandard measures for oysters or shrimp; inspections”. The actions of the board, facilitated by numerous meetings, resulted in ADCNR’s adoption of Alabama Admin. Rule 220-4-.17, Shellfish Aquaculture Easements. This rule sets requirements for those individuals/corporations applying for an easement for, and the siting of, shellfish aquaculture operations on state-owned submerged lands. Additionally, the Alabama Department of Environmental Management issued Coastal Zone Management Consistency Certification for USACE Nationwide Permit #48, which would facilitate Section 10 and Section 404 permitting of off-bottom oyster aquaculture operations which meet certain specific conditions. To ensure such operations are properly sited and minimize adverse impacts, development of prudent regulations, planning, education and outreach, and natural resource management will need to remain consistent, such as the use of Joint Permit Application (Form 1668) which is not only approved by ADCNR, but also by ACOE and ADEM.

**Enhancement Area Prioritization:**

1. What level of priority is the enhancement area for the coastal management program?

**High**      \_\_\_\_\_  
**Medium**    \_\_\_\_\_  
**Low**          X  

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

As noted above, several groups are moving to address this issue and have the resources to better develop plans and policies to more directly and efficiently address the management needs and information gaps of this enhancement area. Accordingly, a low level of priority has been assigned for the purposes of this assessment. However, coastal staff will continue to monitor the progress of these groups and to offer assistance where needed or requested, as appropriate, in connection with this enhancement area.

**Stakeholder Response:**

Aquaculture ranked 8<sup>th</sup> in priority of the nine enhancement areas. Of the 20 individual responses received, one ranked aquaculture as a primary priority and another ranked it as a secondary priority. It did not receive any votes for 3<sup>rd</sup> highest ranked area. Two groups were represented in the 2 responses: city municipalities and a non-profit.

The groups that did not rank aquaculture as a top three priority were other non-profits, private industry, regional federal/state/local partnerships, state agencies, government agencies, engineering groups, other city municipalities, and a local agriculturist.

## Coastal Hazards

**Section 309 Enhancement Objective:** Prevent or significantly reduce threats to life and property by eliminating development and redevelopment in high-hazard areas, managing development in other hazard areas, and anticipating and managing the effects of potential sea level rise and Great Lakes level change. §309(a)(2)

*Note: For purposes of the Hazards Assessment, coastal hazards include the following traditional hazards and those identified in the CZMA: flooding; coastal storms (including associated storm surge); geological hazards (e.g., tsunamis, earthquakes); shoreline erosion (including bluff and dune erosion); sea level rise; Great Lake level change; land subsidence; and saltwater intrusion.*

**Phase I (High-Level) Assessment:** Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the CMP that warrants a more in-depth assessment.

**Resource Characterization:**

1. In the table below, indicate the general level of risk in the coastal zone for each of the coastal hazards. The following resources may help assess the level of risk for each hazard.
  - The state’s multi-hazard mitigation plan
  - Coastal County Snapshots: Flood Exposure
  - Coastal Flood Exposure Mapper
  - Sea Level Rise Viewer/Great Lakes Level Change Viewer
  - National Climate Assessment

Type of Hazard	General Level of Risk (H, M, L)
Flooding (riverine, stormwater)	H
Coastal storms (including storm surge)	H
Geological hazards (e.g., tsunamis, earthquakes)	L
Shoreline erosion	H
Sea level rise	H
Great Lake level change	L
Land subsidence	L
Saltwater intrusion	M
Other (please specify)-	

Risk is defined as “the estimated impact that a hazard would have on people, services, facilities and structures in a community; the likelihood of a hazard event resulting in an adverse condition that causes injury or damage.” *Understanding Your Risks: Identifying Hazards and Estimating Losses. FEMA 386-2. August 2001*

2. If available, briefly list and summarize the results of any additional data or reports on the level of risk and vulnerability to coastal hazards within your state since the last assessment.

Alabama has taken strong action to address its current coastal flooding risks, primarily through its State Hazard Mitigation Plan, updated in 2018 and currently ongoing. While the state keeps records of coastal flooding events and impacts, it has not published any projections for future coastal flooding events. The State Hazard Mitigation Plan, technical assistance programs, disaster response plans, emergency communications materials, and sector-specific programs are helping the state prepare for its current climate risks. The state climatologist publishes monthly climate reports.

These reports are records of climatological data and trends that could be used to assess the state's climate change vulnerabilities.

Alabama State Hazard Mitigation Plan

<https://ema.alabama.gov/county-mitigation-plan/>

The Weeks Bay Reserve Disaster Response Plan (DRP) was developed in 2013 (updated 2017) by the Weeks Bay National Estuarine Research Reserve (Weeks Bay NERR) to help improve the Reserve's preparation for both natural and technological disasters. In addition to preparing staff to respond to threats, the Reserve uses the DRP to educate local responders on the need to minimize effects on Reserve infrastructure, science stations and conservation lands. The DRP promotes the use of Reserve expertise and research and monitoring data in response and recovery when appropriate. These situations include fire, spills, accidents, hurricanes, and stranding of manatees or other marine mammals.

Weeks Bay NERR Disaster Response Plan

<https://www.outdooralabama.com/sites/default/files/Weeks%20Bay%20Reserve/WBNERR%20Management%20Plan%20-%20Aug%202017%20low%20res.pdf>

Through partnership with the USACE Mobile District, the state has developed the Alabama Coastal Comprehensive Plan (ACCP), which presents estimates of extent of storm surge and associated risk and vulnerability of coastal infrastructure to these surges under a suite of synthetic storm events. This assessment includes a geo-spatial representation of areas that may require additional resources for disaster preparation, absorption, recovery, or adaptation and links these vulnerabilities to existing plans and methodologies for identifying solutions to problems, knowledge gaps, and potential funding sources.

Alabama Coastal Comprehensive Plan

<https://www.sam.usace.army.mil/Missions/Program-and-Project-Management/Alabama-Coastal-Comprehensive-Plan/>

NOAA's National Center for Coastal and Ocean Science Ecological Effects of Sea Level Rise in the Northern Gulf of Mexico (NCCOS EESLR-NGOM) research program (2010-2017) combined field-based data collection and dynamic modeling techniques to simulate the impacts of future storm surge flooding under a variety of sea level rise scenarios and hurricane intensities. The results of this work are useful in defining at-risk natural and human communities and identifying areas for mitigation, restoration, and protection. An additional outcome of this research program was the development of the Hydro-MEM model, which predicts marsh productivity for the Weeks Bay NERR under a suite of sea level rise scenarios.

NCCOS EESLR-NGOM

<https://coast.noaa.gov/digitalcoast/data/eeslr.html>

Simulated Storm Surge

<https://noaa.maps.arcgis.com/apps/MapJournal/index.html?appid=964181e11b4d4736ac85d7ecd33104ab>

Hydro-MEM

<https://noaa.maps.arcgis.com/apps/MapJournal/index.html?appid=85242c8a228945f3b943f3ec7f01e035#>

[Local Projections of Sea Level Rise](http://www.localslr.org)

[www.localslr.org](http://www.localslr.org)

Respect the Connect: 2019-2023 CCMP (Update) – The Mobile Bay National Estuary Program’s Comprehensive Conservation and Management Plan (2019-2023) incorporates stakeholder input and science-based decision making into a document designed to guide management actions on a watershed specific basis. The plan provides a structure of ongoing and future development of watershed management plans and implementation of projects identified in those plans. The planning area includes all of Mobile and Baldwin Counties.

CCMP Update

[http://www.mobilebaynep.com/what\\_we\\_do/ccmp/](http://www.mobilebaynep.com/what_we_do/ccmp/)

The Alabama Department of Economic and Community Affairs Office of Water Resources maintains the Alabama Flood Risk Information System, which provides an interactive online mapper of FEMA flood maps statewide. Both Mobile and Baldwin Counties have recently undergone mapping revisions, and the most recent regulatory effective flood zones are indicated on the mapper.

Alabama Flood Risk Information System

<https://alabamaflood.com/map>

**Management Characterization:**

1. In the tables below, indicate if the approach is employed by the state or territory and if significant state- or territory-level changes (positive or negative) have occurred that could impact the CMP’s ability to prevent or significantly reduce coastal hazards risk since the last assessment.

**Significant Changes in Hazards Statutes, Regulations, Policies, or Case Law**

Topic Addressed	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Elimination of development/redevelopment in high-hazard areas	Y- Division 8 Coastal Program Regulation	Y	N
Management of development/redevelopment in other hazard areas	Y - Division 8 Coastal Program Regulation	Y	N
Climate change impacts, including sea level rise or Great Lakes level change	N	Y	N

**Significant Changes in Hazards Planning Programs or Initiatives**

Topic Addressed	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Hazard mitigation	Y	Y	Y
Climate change impacts, including sea level rise or Great Lakes level change	Y	Y	Y

### Significant Changes in Hazards Mapping or Modeling Programs or Initiatives

Topic Addressed	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Sea level rise or Great Lakes level change	Y	Y	Y
Other hazards	Y	Y	Y

2. Briefly state how “high-hazard areas” are defined in your coastal zone.

FEMA flood maps and ADEM Division 8 Coastal Regulations:

FEMA defines high-hazards areas as follows:

V-Zone – Coastal Areas with a 1 percent or greater chance of flooding and additional hazards associated with storm waves. These areas have a 26 percent chance of flooding over a 30-year period.

VE-Zone – Same as V-Zone however the “E” zone stands for elevation. There is always a number given after the E. The number refers to the base flood elevation and how subjectable you are to the high-hazards.

ADEM, through its Administrative Code and Division 8 Coastal Program Regulations, permits, regulates, and monitors uses and activities having a direct or significant impact on coastal Alabama and its resources. One way is by using a Construction Control Line (CCL) to provide protection for the primary dunes, beach sands, and covering vegetation in the Alabama Coastal Zone. The CCL is a defined, surveyed line essentially paralleling, and setback from, the Gulf shoreline. Structures located seaward of this line are not permitted by the program. The CCL was designed to provide long-term protection of the beaches and dunes by prohibiting construction seaward of this established setback line. The CCL helps protect property values and minimize damage from storm surge and other natural hazards. Developers are not allowed to remove primary dune or beach sands and/or vegetation between the CCL and the mean high tide.

From the Alabama State Hazard Mitigation Plan:

- A beach and dune enhancement plan which calls for dune fencing, dune walkovers and planting of vegetation to control shoreline erosion and minimize impacts to beaches and dunes.
- Control of the use of bulkheads, retaining walls and similar structures which could impact beaches, dunes and structures during storm surge.
- Permitting and certification requirements for dredging and fill in the coastal area.

3. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:

- a. Describe the significance of the changes;
- b. Specify if they were 309 or other CZM-driven changes; and
- c. Characterize the outcomes or likely future outcomes of the changes.

As referenced in the above resource characterization (section 2) for this enhancement area, the Alabama Coastal Comprehensive Plan and NOAA’s National Center for Coastal and Ocean Science Ecological Effects of Sea Level Rise in the Northern Gulf of Mexico modeling effort have both provided detailed insight into the present and future vulnerability of coastal resources to storm surge and sea level change related hazards. These modelling efforts will provide important building blocks for future efforts and will be used in planning and prioritization of management and restoration actions going forward. While these efforts were not a direct outcome of a previous 309 implementation, they were both heavily influenced and guided by extensive participation of staff from both the CZM program and the Weeks Bay NERR.

The Coastal Resilience Initiative and resultant South Alabama Flood Engagement Team (SAFE-T) are the direct result of the current 309 strategy implementation. These efforts have enhanced the communication between stakeholders, improved training opportunities for local decision makers, and provided funding for planning related to the reduction of flood related hazards in Coastal Alabama. The planned continuation of these efforts beyond the expiration of the current strategy implementation is testament to the impact and relevance of these efforts.

**Enhancement Area Prioritization:**

1. What level of priority is the enhancement area for the coastal management program?

<b>High</b>	<u>  X  </u>
<b>Medium</b>	<u>      </u>
<b>Low</b>	<u>      </u>

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

While there has been tremendous effort put forth in the state to address coastal hazards, the enhancement area remains a high priority due to continued increase in coastal population and exposure of coastal environments and inhabitants to coastal hazards. The significant advancements in mapping and modeling referenced above have provided additional information for making informed coastal management decisions but could benefit from enhanced resolution and characterization of physical attributes of man-made structures in the shoreline and riparian zones.

**Stakeholder Response:**

Coastal Hazards ranked 1<sup>st</sup> in priority of the nine enhancement areas. Of the 20 individual responses received, five ranked Coastal Hazards as a primary priority and nine ranked it as a secondary priority. It received three votes for 3<sup>rd</sup> highest ranked area. All stakeholder groups were represented in this category.

## Cumulative and Secondary Impacts

**Section 309 Enhancement Objective:** Development and adoption of procedures to assess, consider, and control cumulative and secondary impacts of coastal growth and development, including the collective effect on various individual uses or activities on coastal resources, such as coastal wetlands and fishery resources. §309(a)(5)

**Phase I (High-Level) Assessment:** Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the CMP that warrants a more in-depth assessment.

**Resource Characterization:**

- Using National Ocean Economics Program Data on population and housing, indicate the change in population and housing units in the state’s coastal counties between 2012 and 2017. Additional trend comparisons to look at longer time horizons may be added (data available back to 1970), but at a minimum, show change over the most recent five-year period (2012-2017) to approximate current assessment period.

**Trends in Coastal Population and Housing Units**

	2012	2019	Percent Change (2012-2019)
Number of people	604,065	636,444	5.38%
Number of housing units	286,400	304,447	6.32%

- Using provided reports from NOAA’s Land Cover Atlas, indicate the status and trends for various land uses in the state’s coastal counties between 1996 and 2016. Other information and graphs and figures may be used to help illustrate the information.

In general, there is a strong trend towards increased urban and suburban development in the area. Much of the land cover change is conversion of agricultural lands to residential development.

**Distribution of Land Cover Types in Coastal Counties**

Land Cover Type	Land Area Coverage in 2010 (Acres)	Gain/Loss Since 1996 (Acres)
Developed, High Intensity	27878.4	8070.4
Developed, Low Intensity	73222.4	15328
Developed, Open Space	42470.4	7961.6
Grassland	70918.4	35795.2
Scrub/Shrub	187008	83110.4
Barren Land	17702.4	1664
Open Water	527769.6	352
Agriculture	248044.8	-7564.8
Forested	624102.4	-127808
Woody Wetland	484070.4	-24256
Emergent Wetland	49478.4	7360

3. Using provided reports from NOAA’s Land Cover Atlas, indicate the status and trends for developed areas in the state’s coastal counties between 1996 and 2016 in the two tables below. Other information, graphs and figures may be used to help illustrate the information.

Since the tool is not yet updated, the most recent data available for each coastal county of Alabama is presented.

<b>Development Status and Trends for Mobile County</b>			
	<b>1996</b>	<b>2010</b>	<b>Percent Net Change</b>
Percent land area developed	8.79%	10.11%	15.0%
Percent impervious surface area	2.66%	3.13%	17.7%

<b>Development Status and Trends for Baldwin County</b>			
	<b>1996</b>	<b>2010</b>	<b>Percent Net Change</b>
Percent land area developed	3.64%	5.0%	37.4%
Percent impervious surface area	1.05%	1.48%	41.0%

<b>How Land Use Is Changing in Mobile County</b>	
<b>Land Cover Type</b>	<b>Areas Lost to Development Between 1996-2010 (Acres)</b>
Barren Land	684.8
Emergent Wetland	390.4
Woody Wetland	2739.2
Open Water	166.4
Agriculture	1632
Scrub/Shrub	2060.8
Grassland	985.6
Forested	5702.4

<b>How Land Use Is Changing in Baldwin County</b>	
<b>Land Cover Type</b>	<b>Areas Lost to Development Between 1996-2010 (Acres)</b>
Barren Land	672
Emergent Wetland	313.6
Woody Wetland	1811.2
Open Water	89.6
Agriculture	5561.6
Scrub/Shrub	1728
Grassland	2425.6
Forested	5088

Although the land cover atlas tool has not been updated, the 2016 Land Cover Change Index Conterminous data from the National Land Cover Database was downloaded and the Alabama coastal counties were extrapolated and analyzed using ArcMap software. The resulting acreages provided an educated estimate and show the change in land cover type from 2001 to 2016.

<b>NLCD Land Cover Change Index, Baldwin and Mobile Counties, AL</b>	
<b>Land Cover Type</b>	<b>2016 Change (Acres)</b>
No change	195,000
Water change	8000
Urban change	28000
Wetland within Class change	67000
Herbaceous Wetland change	990
Ag Hay/Pasture change	6200
Cultivated Crop change	3400
Hay/Pasture change	14200
Persistent Grass & Shrub change	24
Barren change	200
Forest-theme change	281000
Woody Wetland change	27

- Briefly characterize how the coastal shoreline has changed in the past five years due to development, including potential changes to shoreline structures such as groins, bulkheads and other shoreline stabilization structures, and docks and piers. If available, include quantitative data that may be available from permitting databases or other resources about changes in shoreline structures.

Again, this is data from the last assessment:

<b>Shoreline Types</b>	
<b>Surveyed Shoreline Type</b>	<b>Percent of Shoreline</b>
Armored	11 percent
Beaches	10 percent
Flats	4 percent
Rocky	2 percent
Vegetated	73 percent

- Briefly summarize the results of any additional state- or territory-specific data or reports on the cumulative and secondary impacts of coastal growth and development, such as water quality, shoreline hardening, and habitat fragmentation, since the last assessment.

A comprehensive shoreline mapping and shoreline change study in coastal Alabama was conducted under Section 309, and the final phase and report was completed under NA#10NOS4190206. The study, conducted by the Geological Survey of Alabama's Geologic Investigations Program and entitled "COMPREHENSIVE SHORELINE MAPPING, BALDWIN AND MOBILE COUNTIES, ALABAMA: PHASE III - OPEN FILE REPORT 1204," was designed to document only the areas already developed and prone to development, because a large portion of the Alabama shoreline is within the Mobile-Tensaw Delta and other large marsh or bluff areas not likely to be developed. The study areas are located in the most southern portions of Baldwin and Mobile counties, and are either on, or in close proximity to the

Gulf of Mexico. The GSA continues to monitor and analyze gulf-fronting shorelines yearly with funding support from NOAA and the ACAMP.

This project is still ongoing, but the latest results include 822 miles of shoreline mapping.

Shoreline Types	
Surveyed Shoreline Type	Percent of Shoreline
Natural, unretained	67.6 percent
Bulkhead	20.2 percent
Rubble/riprap	5.7 percent
Living shoreline	0.17 percent

ADEM conducted a water quality update in early 2020. Alabama’s water quality assessment and listing methodology may be found at the Department’s web page at:

<http://www.adem.alabama.gov/programs/water/wquality/2020WAM.pdf>

To address problems such as habitat fragmentation, ADCNR developed “Alabama’s Wildlife Action Plan 2015-2025”.

[https://www.outdooralabama.com/sites/default/files/Research/SWCS/AL\\_SWAP\\_FINAL%20June2017.pdf](https://www.outdooralabama.com/sites/default/files/Research/SWCS/AL_SWAP_FINAL%20June2017.pdf)

**Management Characterization:**

1. Indicate if the approach is employed by the state or territory and if there have been any significant state-level changes (positive or negative) in the development and adoption of procedures to assess, consider, and control cumulative and secondary impacts of coastal growth and development, including the collective effect on various individual uses or activities on coastal resources, such as coastal wetlands and fishery resources, since the last assessment.

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Y	If requested	N
Guidance documents	Y	If requested	Y
Management plans (including SAMPs)	N	If requested	N

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
  - a. Describe the significance of the changes;
  - b. Specify if they were 309 or other CZM-driven changes; and
  - c. Characterize the outcomes or likely future outcomes of the changes.

To address problems such as habitat fragmentation, ADCNR developed “Alabama’s Wildlife Action Plan 2015-2025 - ADCNR Division of Wildlife and Freshwater Fisheries”. This document is the 10-year update of Alabama’s Comprehensive Wildlife Conservation Strategy (CWCS, now called the State Wildlife Action Plan [SWAP]), an effective strategy for wildlife conservation supported through the U.S. Fish and Wildlife Service’s State Wildlife Grants (SWG) program. This opportunity enabled the Alabama Department of Conservation and Natural Resources (ADCNR) to assess and address its outstanding wildlife diversity on a comprehensive statewide scale.

[https://www.outdooralabama.com/sites/default/files/Research/SWCS/AL\\_SWAP\\_FINAL%20June2017.pdf](https://www.outdooralabama.com/sites/default/files/Research/SWCS/AL_SWAP_FINAL%20June2017.pdf)

**Enhancement Area Prioritization:**

1. What level of priority is the enhancement area for the coastal management program?

<b>High</b>	<u>    </u>
<b>Medium</b>	<u>  X  </u>
<b>Low</b>	<u>    </u>

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

Continued population growth and development of both coastal and upland areas of Mobile and Baldwin counties have driven the need to better understand the cumulative and secondary impacts of these activities as they relate to the sustainability of healthy coastal ecosystems. Population growth comes with associated increased demands for coastal resources in the form of recreation, storm-water management, and erosion prevention. This enhancement area, while important, is primarily driven by development patterns and pressures that are outside of the immediate influence of the coastal program. The coastal program will continue to provide technical support and resources to stakeholders interested in assessing and influencing these impacts.

**Stakeholder Response:**

Cumulative and Secondary Impacts ranked 3<sup>rd</sup> in priority of the nine enhancement areas. Of the 20 individual responses received, two ranked it as a primary priority and one ranked it as a secondary priority. It was ranked as a third priority by 5 individuals. All stakeholder groups were represented in this category.

## Energy and Government Facility Siting

**Section 309 Enhancement Objective:** Adoption of procedures and enforceable policies to help facilitate the siting of energy facilities and government facilities and energy-related activities and government activities which may be of greater than local significance. §309(a)(8)

**Phase I (High-Level) Assessment:** Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the CMP that warrants a more in-depth assessment.

### Resource Characterization:

1. In the table below, characterize the status and trends of different types of energy facilities and activities in the state's or territory's coastal zone based on best available data. If available, identify the approximate number of facilities by type.

<b>Status and Trends in Energy Facilities and Activities in the Coastal Zone</b>				
<b>Type of Energy Facility/Activity</b>	<b>Exists in CZ</b>		<b>Proposed in CZ</b>	
	(# or Y/N)	Change Since Last Assessment (↑, ↓, -, unknown)	(# or Y/N)	Change Since Last Assessment (↑, ↓, -, unknown)
<i>Energy Transport</i>				
(no. of companies) Pipelines	8	---	Y	↑ ---
Electrical grid (transmission cables)		Not available for Coastal Counties ONLY		
Ports	1	---	N	---
Liquid natural gas (LNG)	0	---	N	---
Other (please specify)				
<i>Energy Facilities</i>				
(Theodore Cogen & James M. Barry Plant – Mobile Co.) Oil and gas	3	---	N	↑
(James M. Barry Plant – Mobile Co.) Coal	1	---	N	---
Nuclear	0	---	N	---
Wind	0	---	N	---
Wave	0	---	N	---
Tidal	0	---	N	---
Current (ocean, lake, river)	0	----	N	----
Hydropower	0	----	N	----
Ocean thermal energy conversion	0	----	N	----
Solar	0	----	N	----
(Mobile Energy Svc., Mobile Co.) Biomass	1	----	N	----
Other (please specify)				

2. If available, briefly list and summarize the results of any additional state or territory-specific information, data, or reports on the status and trends for energy facilities and activities of greater than local significance in the coastal zone since the last assessment.

According to the U.S. Energy Information Administration, Magnolia Intrastate (Magnolia Extension) announced a project in MS and AL beginning in 2019 and extending until 2025. Alabama also has the following pipeline projects applied for in the 2018-2023 timeframe: FGT Western Division Project – MS, AL, South Alabama Project – AL, FL, and the Southeastern Trail Expansion Project – GA, AL, MS, LA <https://www.eia.gov/naturalgas/data.php#pipelines>

3. Briefly characterize the existing status and trends for federal government facilities and activities of greater than local significance in the state’s coastal zone since the last assessment.

The Broad Run Expansion Project run by the Tennessee Gas Pipeline Co was completed in 2018.

The following pipeline project was under construction in 2018-2019 – Atlantic Sunrise Project Phase 1B by Transcontinental Gas Pipeline.

The following natural gas pipeline projects were approved 2018-2023: Hillabee Expansion phase 2 (2020) and Hillabee Expansion phase 3 (2021), both ran by Transcontinental Gas Pipeline. Sabal Trail Project Phase II (2020) and Sabal Trail Project Phase III (2021), both ran by Spectra Energy Corp/NextEra Energy/Duke Energy.

<https://www.eia.gov/naturalgas/data.php#pipelines>

**Management Characterization:**

1. Indicate if the approach is employed by the state or territory and if significant state- or territory-level changes (positive or negative) that could facilitate or impede energy and government facility siting and activities have occurred since the last assessment.

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Y	N	N
State comprehensive siting plans or procedures	Y	N	N

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
  - a. Describe the significance of the changes;
  - b. Specify if they were 309 or other CZM-driven changes; and
  - c. Characterize the outcomes or likely future outcomes of the changes.

N/A

**Enhancement Area Prioritization:**

1. What level of priority is the enhancement area for the coastal management program?

**High**      \_\_\_\_\_  
**Medium**    \_\_\_\_\_  
**Low**          X  

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

There were no significant changes since the previous assessment and the state continues to administer offshore leases in state waters and to monitor activities in federal waters.

Stakeholder Response:

Energy & Government Facility Siting ranked 9<sup>th</sup> in priority of the nine enhancement areas. Of the 20 individual responses received, no respondent ranked energy and government facility siting as a top three priority.

## Marine Debris

**Section 309 Enhancement Objective:** Reducing marine debris entering the nation’s coastal and ocean environment by managing uses and activities that contribute to the entry of such debris. §309(a)(4)

**Phase I (High-Level) Assessment:** Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the CMP that warrants a more in-depth assessment.

**Resource Characterization:**

- In the table below, characterize the existing status and trends of marine debris in the state’s coastal zone based on the best available data.

Source of Marine Debris	Existing Status and Trends of Marine Debris in Coastal Zone		
	Significance of Source (H, M, L, unknown)	Type of Impact (aesthetic, resource damage, user conflicts, other)	Change Since Last Assessment (, ↓, -, unknown)
<i>Land-based</i>			
Beach/shore litter	M	Aesthetically detrimental to tourism, resource damage, human health issues	-
Dumping	M	Aesthetically detrimental to tourism, resource damage, human health issues	-
Storm drains and runoff	H	Aesthetically detrimental to tourism, resource damage, impaired water quality, human health issues	-
Fishing (e.g., fishing line, gear)	M	Aesthetically detrimental to tourism, resource damage, damage to recreational activities	-
Other (please specify)	N/A		
<i>Ocean or Great Lake-based</i>			
Fishing (e.g., derelict fishing gear)	M	Aesthetically detrimental to tourism, resource damage, damage to recreational activities	-
Derelict vessels	L	Aesthetically detrimental to tourism, resource damage, damage to recreational activities; human health and safety hazards	-
Vessel-based (e.g., cruise ship, cargo ship, general vessel)	L	Aesthetically detrimental to tourism, resource damage, damage to recreational activities	-
Hurricane/Storm	H	Aesthetically detrimental to tourism, resource damage, damage to recreational activities; human health and safety hazards; water quality impacts, high economic impacts	-
Tsunami	N/A		
Other (please specify)	N/A		

2. If available, briefly list and summarize the results of any additional state or territory-specific data or reports on the status and trends or potential impacts from marine debris in the coastal zone since the last assessment.

NOAA’s Marine Debris Program developed a plan to specifically address “acute” waterway debris incidents, such as debris generated by natural disasters, in Baldwin and Mobile counties. The purpose of the plan is to improve preparedness for response and recovery operations following an acute waterway debris release incident in coastal Alabama. The plan stated that Coastal Alabama is vulnerable to many natural and man-made hazards that could result in an acute waterway debris incident. An overview of the risk of occurrence for hazards that could result in a release of waterway debris in Mobile and Baldwin counties showed that there is a high risk of incidents resulting from the three hazards that routinely occur in Coastal Alabama: flooding; hurricanes/tropical storm; tornado/wind storms. It is important to note that the plan does not address chronic waterway debris issues.

This guide is updated every 3 years and was updated in 2019. See link here:

[https://marinedebris.noaa.gov/sites/default/files/publications-files/AL\\_Marine\\_Debris\\_Emergency\\_Response\\_Guide\\_Contact\\_Update\\_2019\\_508\\_0.pdf](https://marinedebris.noaa.gov/sites/default/files/publications-files/AL_Marine_Debris_Emergency_Response_Guide_Contact_Update_2019_508_0.pdf)

**Management Characterization:**

1. Indicate if the approach is employed by the state or territory and if there have been any significant state or territory-level management changes (positive or negative) for how marine debris is managed in the coastal zone.

<b>Management Category</b>	<b>Employed by State/Territory (Y or N)</b>	<b>CMP Provides Assistance to Locals that Employ (Y or N)</b>	<b>Significant Changes Since Last Assessment (Y or N)</b>
Marine debris statutes, regulations, policies or case law interpreting these	Y	N	Y
Marine debris removal programs	Y	Y	N

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
  - a. Describe the significance of the changes;
  - b. Specify if they were 309 or other CZM-driven changes; and
  - c. Characterize the outcomes and likely future outcomes of the changes.

The State of Alabama in 2018 passed the Alabama Abandoned and Derelict Vessel Act, placing administration and implementation of the act under the jurisdiction of the Alabama State Law Enforcement Agency *Ala. Code § 33-5A-1 (1975)*. The statute was subject to rulemaking in 2020, and provisions for notification related to removal, storage, and disposal of derelict vessels were established. At this time, provisions for funding a vessel removal program related to this act have not been established.

**Enhancement Area Prioritization:**

1. What level of priority is the enhancement area for the coastal management program?

**High** \_\_\_\_\_  
**Medium**   X    
**Low** \_\_\_\_\_

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

Marine debris issues are being addressed through cleanup events, K-12 and adult education programs, citizen science projects and management programs including: Annual Alabama Coastal Cleanup, Fish River Cleanup, MLK Day of Service Tire Cleanup, Island of Perdido Service Day Cleanup, Toulminville Cleanup, Monofilament Recycling Program, Clean Marina Program, City of Mobile Clean Water Partnership, Eco-Team Recycling at Bayfest and Mardi Gras, “Litter Gitter” debris capture devices installed in Mobile County waterways, Nurdle Patrol Citizen Science monitoring, and Citizen Microplastics Monitoring programs. In addition, the Gulf of Mexico Alliance addresses marine debris research, removal, and prevention gulf-wide through their Marine Debris Priority Issue Team.

**Stakeholder Response:**

Marine Debris ranked 6<sup>th</sup> in priority of the nine enhancement areas. Of the 20 individual responses received, 5 ranked marine debris as a top three priority. Three groups were represented in the 5 responses: engineering firms, federal entities, and non-profits.

## Ocean and Great Lakes Resources

**Section 309 Enhancement Objective:** Planning for the use of ocean [and Great Lakes] resources.  
§309(a)(7)

**Phase I (High-Level) Assessment:** *Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the CMP that warrants a more in-depth assessment.*

**Resource Characterization:**

1. Understanding the ocean and Great Lakes economy can help improve management of the resources it depends on. Using Economics: National Ocean Watch (ENOW), indicate the status of the ocean and Great Lakes economy as of 2015 (the most recent data), in the tables below. Include graphs and figures, as appropriate, to help illustrate the information.

**Status of Ocean and Great Lakes Economy for Coastal Counties (2015)**

	All Ocean Sectors	Living Resources	Marine Construction	Ship & Boat Building	Marine Transportation	Offshore Mineral Extraction	Tourism & Recreation
Employment (# of Jobs) inc. self employed	47616	3495	865	11541	6090	646	24027
Establishments (# of Establishments)	1822	183	69	89	173	66	1238
Wages (Millions of Dollars)	1.628 billion	65.9	40	711.8	305.7	36.1	399.5
GDP (Millions of Dollars)	3.7 billion	212.9	73	1.386 billion	611.4	244.4	834.1

**Change in Ocean and Great Lakes Economy for Coastal Counties (2005-2015) Mobile County**

	All Ocean Sectors	Living Resources	Marine Construction	Ship & Boat Building	Marine Transportation	Offshore Mineral Extraction	Tourism & Recreation
Employment (# of Jobs)	5856	-84	85	5726	1163	-364	858
Establishments (# of Establishments)	51	-4	6	38	-8	6	54
Wages (Millions of Dollars)	396.1	3.2	7.1	353.2	64.6	-29.5	33.3
GDP (Millions of Dollars)	58.7	9.7	10.3	687.8	139.2	-881.8	67.2

**Change in Ocean and Great Lakes Economy for Coastal Counties (2005-2015) Baldwin County**

	<b>All Ocean Sectors</b>	<b>Living Resources</b>	<b>Marine Construction</b>	<b>Ship &amp; Boat Building</b>	<b>Marine Transportation</b>	<b>Offshore Mineral Extraction</b>	<b>Tourism &amp; Recreation</b>
Employment (# of Jobs)	5740	-25	33	X	309	-15.5	5472
Establishments (# of Establishments)	195	-13	-4	X	-1	5	187
Wages (Millions of Dollars)	139.6	-478 thousand	3.8	X	13.3	788.5 thousand	123.8
GDP (Millions of Dollars)	277.3	-1.1	6.2	X	18	186 thousand	251.7
		No data past 2013		No data – does not exist in Baldwin County		No data for 2015 – took the average btwn 2014 & 2016	

**Change in Ocean and Great Lakes Economy for Coastal Counties merged (2005-2015)**

	<b>All Ocean Sectors</b>	<b>Living Resources</b>	<b>Marine Construction</b>	<b>Ship &amp; Boat Building</b>	<b>Marine Transportation</b>	<b>Offshore Mineral Extraction</b>	<b>Tourism &amp; Recreation</b>
Employment (# of Jobs)	11596	-109	118	5726	1472	-379.5	6330
Establishments (# of Establishments)	246	-17	2	38	-9	11	241
Wages (Millions of Dollars)	535.7	2.7	10.9	353.2	77.9	-28.7	157.1
GDP (Millions of Dollars)	336	8.6	16.5	687.8	157.2	-881.6	324.3

- Understanding existing uses within ocean and Great Lakes waters can help reduce use conflicts and minimize threats when planning for ocean and Great Lakes resources. Using Ocean Reports, indicate the number of uses within ocean or Great Lakes waters off of your state.

### Uses within Ocean or Great Lakes Waters

Type of Use	Number of Sites
Federal sand and gravel leases ( <i>Completed</i> )	0
Federal sand and gravel leases ( <i>Active</i> )	0
Federal sand and gravel leases ( <i>Expired</i> )	0
Federal sand and gravel leases ( <i>Proposed</i> )	0
Beach Nourishment Projects	9
Ocean Disposal Sites	74
Principle Ports ( <i>Number and Total Tonnage</i> )	1 port 58,024,317/year
Coastal Maintained Channels	89
Designated Anchorage Areas	2
Danger Zones and Restricted Areas	2
Other (please specify)	

3. In the table below, characterize how the threats to and use conflicts over ocean and Great Lakes resources in the state's or territory's coastal zone have changed since the last assessment.

### Significant Changes to Ocean and Great Lakes Resources and Uses

Resource/Use	Change in the Threat to the Resource or Use Conflict Since Last Assessment (↑, ↓, -, unknown)
Benthic habitat (including coral reefs)	-
Living marine resources (fish, shellfish, marine mammals, birds, etc.)	unknown
Sand/gravel	-
Cultural/historic	-
Other (please specify)	-
Transportation/navigation	-
Offshore development <sup>1</sup>	-
Energy production	-
Fishing (commercial and recreational)	-
Recreation/tourism	-
Sand/gravel extraction	-
Dredge disposal	-
Aquaculture	-
Other (please specify)	

4. For the ocean and Great Lakes resources and uses in the table above that had an increase in threat to the resource or increased use conflict in the state's or territory's coastal zone since the last assessment, characterize the major contributors to that increase. Place an "X" in the column if the use or phenomenon is a major contributor to the increase.

**Major Contributors to an Increase in Threat or Use Conflict to Ocean and Great Lakes Resources**

	Land-based development	Offshore development	Polluted runoff	Invasive species	Fishing (Comm and Rec)	Aquaculture	Recreation	Marine Transportation	Dredging	Sand/Mineral Extraction	Ocean Acidification	Other (Specify)
Living marine resources												

- If available, briefly list and summarize the results of any additional state- or territory-specific data or reports on the status and trends of ocean and Great Lakes resources or threats to those resources since the last assessment to augment the national data sets.

N/A

**Management Characterization:**

- Indicate if the approach is employed by the state or territory and if any significant state or territory-level changes (positive or negative) in the management of ocean and Great Lakes resources have occurred since the last assessment?

**Significant Changes to Management of Ocean and Great Lakes Resources**

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Yes	Yes	No
Regional comprehensive ocean/Great Lakes management plans	Yes	Yes	No
State comprehensive ocean/Great Lakes management plans	No	No	No
Single-sector management plans	No	No	No

- For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
  - Describe the significance of the changes;
  - Specify if they were 309 or other CZM-driven changes; and
  - Characterize the outcomes or likely future outcomes of the changes.

- Indicate if your state or territory has a comprehensive ocean or Great Lakes management plan.

<b>Comprehensive Ocean/Great Lakes Management Plan</b>	<b>State Plan</b>	<b>Regional Plan</b>
Completed plan (Y/N) (If yes, specify year completed)	No	
Under development (Y/N)	No	
Web address (if available)	-	
Area covered by plan	-	

**Enhancement Area Prioritization:**

1. What level of priority is the enhancement area for the coastal management program?

**High**      \_\_\_\_\_  
**Medium**    \_\_\_\_\_  
**Low**          X  

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

Given significant attention to the area by other state and federal entities, the enhancement area will not be further addressed in this evaluation.

**Stakeholder Response:**

Ocean Resources ranked 7<sup>th</sup> in priority of the nine enhancement areas. Of the 20 individual responses received, only 1 ranked ocean resources as a top three priority. The group that rated Ocean Resources as a priority was a state entity.

## Public Access

**Section 309 Enhancement Objective:** Attain increased opportunities for public access, taking into account current and future public access needs, to coastal areas of recreational, historical, aesthetic, ecological, or cultural value. §309(a)(3)

**Phase I (High-Level) Assessment:** Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the CMP that warrants a more in-depth assessment. To determine key problems and opportunities to improve the CMP's ability to increase and enhance public access opportunities to coastal areas.

### Resource Characterization:

1. Use the table below to provide data on public access availability within the coastal zone.

<b>Public Access Status and Trends</b>			
<b>Type of Access</b>	<b>Current number</b>	<b>Changes or Trends Since Last Assessment</b> (↑, ↓, -, unknown)	<b>Cite data source</b>
Beach access sites	19	↑	*Gulf Shores Orange Beach Tourism website *Dauphin Island Park and Beach website
Shoreline (other than beach) access sites	133	-; shoreline access includes beach access, boat access and fishing access sites	*Public Access Inventory 2013
Recreational boat (power or non-motorized) access sites	37 hard surface boat launches, 84 carry down access, 4 unmaintained	-; Carry down access sites includes shoreline access that may not be designated as a launch	*Public Access Inventory 2013
Number of designated scenic vistas or overlook points	0	-*Many of the sites provide scenic vistas or overlooks but none are designated	*Public Access Inventory 2013
Number of fishing access points (i.e. piers, jetties)	68 posted 85 not posted	↑	*Public Access Inventory 2013 *Previous 309 Assessment
Coastal trails/boardwalks	No. of Trails/boardwalks 32/41 Miles of Trails/boardwalks > 160 miles	↑There have been additional miles of coastal trails and boardwalks added through implementation of Deepwater Horizon Recreational Use Projects. These will be enumerated in an update to the Public Access Inventory which is in progress.	*Public Access Inventory 2013 *Previous 309 Assessment <a href="https://www.recpro.org/assets/Library/SCORPs/al_scorp_2013.pdf">https://www.recpro.org/assets/Library/SCORPs/al_scorp_2013.pdf</a>
Number of acres parkland/open space	Total sites	↑There have been numerous additions of land accessible to the public through acquisition associated with the Forever	

<b>Public Access Status and Trends</b>			
<b>Type of Access</b>	<b>Current number</b>	<b>Changes or Trends Since Last Assessment</b> (↑, ↓, -, unknown)	<b>Cite data source</b>
	Sites per miles of shoreline	<b>Wild Land Trust, Weeks Bay NERR, and Deepwater Horizon Restoration Activities. A revision of the 2013 public access assessment is currently underway.; As of last Public Access Inventory, there were 189 total public access sites (beach, shoreline, boat and fishing) as recorded in the Public Access Inventory (2013) with approximately 653 miles of shoreline available for public access</b>	
Access sites that are Americans with Disabilities Act (ADA) compliant	1	<b>As of last Public Access inventory 70 sites included handicap parking</b>	<b>Gulf Shores Orange Beach Tourism website</b>
Other (please specify)			

2. Briefly characterize the demand for coastal public access and the process for periodically assessing demand. Include a statement on the projected population increase for your coastal counties. There are several additional sources of statewide information that may help inform this response, such as the Statewide Comprehensive Outdoor Recreation Plan, the National Survey on Fishing, Hunting, and Wildlife Associated Recreation, and your state’s tourism office.

The population within the state’s coastal counties continues to increase. Between 2010 and 2018, the population of Baldwin County increased by 20% and Mobile County increased by 0.2%. With an increasing coastal population, the demand for public access including boat launches, fishing piers, walking trails, and beach access is significant for citizens within the two coastal counties, as well as tourists to the area. ADCNR Coastal Section assesses demand for public access through regular communication with local governments and county officials. Additionally, a public access inventory is maintained to keep track of the numbers and types of public access points within each of the coastal counties. The importance of public access in coastal Alabama is reflected in the yearly emphasis on 306a funded public access improvements in the ACAMP call for proposals.

3. If available, briefly list and summarize the results of any additional data or reports on the status or trends for coastal public access since the last assessment.

ACAMP continues to work with communities to improve access points and increase ADA accessibility.

**Management Characterization:**

1. Indicate if the approach is employed by the state or territory and if there have been any significant state- or territory-level management changes (positive or negative) that could impact the future provision of public access to coastal areas of recreational, historical, aesthetic, ecological, or cultural value.

**Significant Changes in Public Access Management**

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Y	Y	N
Operation/maintenance of existing facilities	Y	N	N
Acquisition/enhancement programs	Y	Y	N

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
  - a. Describe the significance of the changes;
  - b. Specify if they were 309 or other CZM-driven changes; and
  - c. Characterize the outcomes or likely future outcomes of the changes.

No significant changes.

3. Indicate if your state or territory has a publicly available public access guide. How current is the publication and how frequently it is updated?

**Publicly Available Access Guide**

Public Access Guide	Printed	Online	Mobile App
State or territory has? (Y or N)	N	N	N
Web address (if applicable)	N	N	N
Date of last update	Inventory update 2014	N	N
Frequency of update	In-progress	N	N

Boat launch access is available on the ADCNR website:

<https://www.outdooralabama.com/boating/coastal-alabama-boating-access>

Although we do not have a current printed public access guide, the last inventory is available in GIS format on request.

**Enhancement Area Prioritization:**

1. What level of priority is the enhancement area for the coastal management program?

<b>High</b>	<u>      </u>
<b>Medium</b>	<u>  X  </u>
<b>Low</b>	<u>      </u>

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

The Alabama Coastal staff is active in public access planning efforts and routinely provides 306a funding to local and state governments to plan and implement public access improvements throughout the coastal area. ACAMP staff are currently partnering with the MBNEP to update and validate the existing public access inventory.

**Stakeholder Response:**

Public Access tied for 3<sup>rd</sup> in priority of the nine enhancement areas. Of the 20 individual responses received, 6 ranked public access as a top three priority. Five groups were represented in the 6 responses: city municipalities, engineering firms, regional agencies, an independent contractor, and the agriculturist.

## Special Area Management Planning

**Section 309 Enhancement Objective:** Preparing and implementing special area management plans for important coastal areas. §309(a)(6)

The Coastal Zone Management Act defines a special area management plan (SAMP) as “a comprehensive plan providing for natural resource protection and reasonable coastal-dependent economic growth containing a detailed and comprehensive statement of policies; standards and criteria to guide public and private uses of lands and waters; and mechanisms for timely implementation in specific geographic areas within the coastal zone. In addition, SAMPs provide for increased specificity in protecting natural resources, reasonable coastal-dependent economic growth, improved protection of life and property in hazardous areas, including those areas likely to be affected by land subsidence, sea level rise, or fluctuating water levels of the Great Lakes, and improved predictability in governmental decision making.”

**Phase I (High-Level) Assessment:** Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the CMP that warrants a more in-depth assessment.

### Resource Characterization:

1. In the table below, identify geographic areas in the coastal zone subject to use conflicts that may be able to be addressed through a SAMP. This can include areas that are already covered by a SAMP but where new issues or conflicts have emerged that are not addressed through the current SAMP.

Geographic Area	Opportunities for New or Updated Special Area Management Plans
	Major conflicts/issues
NONE	

2. If available, briefly list and summarize the results of any additional state- or territory-specific data or reports on the status and trends of SAMPs since the last assessment.

*NONE*

### Management Characterization:

1. Indicate if the approach is employed by the state or territory and if there have been any significant state- or territory-level management changes (positive or negative) that could help prepare and implement SAMPs in the coastal zone.

Management Category	Employed by State or Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Changes Since Last Assessment (Y or N)
SAMP policies, or case law interpreting these	None	If requested	N
SAMP plans	None	If requested	N

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
  - a. Describe the significance of the changes;
  - b. Specify if they were 309 or other CZM-driven changes; and
  - c. Characterize the outcomes or likely future outcomes of the changes.

No significant changes.

**Enhancement Area Prioritization:**

1. What level of priority is the enhancement area for the coastal management program?

<b>High</b>	
<b>Medium</b>	
<b>Low</b>	<u>X</u>

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

No gaps have been identified that can be addressed by a SAMP, which targets use conflicts within a geographic area. Needs and information gaps relevant to the Alabama Coastal Area can be more appropriately addressed under one of the other eight enhancement objectives.

**Stakeholder Response:**

Special Area Management Planning ranked 5<sup>th</sup> in priority of the nine enhancement areas. Of the 20 individual responses received, four ranked special area management planning as a top three priority. Four groups were represented in the four responses: city municipalities, non-profit, an engineering firm, and an independent contractor.

## Wetlands

**Section 309 Enhancement Objective:** Protection, restoration, or enhancement of the existing coastal wetlands base, or creation of new coastal wetlands. §309(a)(1)

Note: For the purposes of the Wetlands Assessment, wetlands are “those areas that are inundated or saturated at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.” [33CFR328.3(b)]. See also pg. 174 of the CZMA Performance Measurement Guidance<sup>3</sup> for a more in-depth discussion of what should be considered a wetland.

**Phase I High-Level Assessment:** Purpose: To quickly determine whether the enhancement area is a high-priority enhancement objective for the CMP that warrants a more in-depth assessment.

**Resource Characterization:**

- Using reports from NOAA’s Land Cover Atlas, indicate the extent, status, and trends of wetlands in the state’s coastal counties. Additional or alternative information or use of graphs or other visuals can be used to help illustrate or replace the table entirely if better data are available.

Current state of wetlands in 2016 (acres) - est 271,000 coastal acres / 3.6 million in the state \_\_\_  
<http://www.adem.state.al.us/programs/water/nps/files/mgmtplan5.pdf>

Alabama does have an EPA-approved Wetland Program Plan, along with a coastal permitting program associated with the Section 404 Program. Although the Clean Water Act (CWA) states the option of assuming administration of this federal §404 program, Alabama plays a role in that process but it is limited to §401 water quality certifications, CZMA consistency reviews, or serving as the point of contact for the federal program.

Coastal Wetlands Status and Trends		
Change in Wetlands		
Percent net change in total wetlands (% gained or lost)*	from 1996-2010	from 2006-2010
	-6.48	-1.32
Percent net change in freshwater (palustrine wetlands) (% gained or lost)*	from 1996-2010	from 2006-2010
	-6.99	-1.22
Percent net change in saltwater (estuarine) wetlands (% gained or lost)*	from 1996-2010	from 2006-2010
	-0.97	-1.89

How Wetlands Are Changing*		
Land Cover Type	Area of Wetlands Transformed to Another Type of Land Cover between 1996-2010 (Sq. Miles)	Area of Wetlands Transformed to Another Type of Land Cover between 2006-2010 (Sq. Miles)
Development	8.53	3.93
Agriculture	2.99	0.38
Barren Land	1.30	0.54
Water	1.92	0.43

If available, briefly list and summarize the results of any additional state- or territory-specific data or reports on the status and trends of coastal wetlands since the last assessment to augment the national data sets.

Alabama’s Wetland Monitoring Program is included in a statewide water monitoring plan (2011). A statewide wetland monitoring strategy has been developed for 2015-2019, including monitoring and assessing Category 2B and 4A wetlands, wetland restoration projects. There is currently no overall wetland gain and loss tracking system in place. Wetland monitoring goals are specifically included in the state’s wetland program plan.

[http://water.epa.gov/type/wetlands/upload/al\\_adem\\_wpp.pdf](http://water.epa.gov/type/wetlands/upload/al_adem_wpp.pdf)

**Management Characterization:**

1. Indicate if there have been any significant changes at the state or territory level (positive or negative) that could impact the future protection, restoration, enhancement, or creation of coastal wetlands since the last assessment.

Management Category	Significant Changes Since Last Assessment (Y or N)
Statutes, regulations, policies, or case law interpreting these	Y
Wetlands programs (e.g., regulatory, mitigation, restoration, acquisition)	Y

2. For any management categories with significant changes, briefly provide the information below. If this information is provided under another enhancement area or section of the document, please provide a reference to the other section rather than duplicate the information:
  - a. Describe the significance of the changes;
  - b. Specify if they were 309 or other CZM-driven changes; and
  - c. Characterize the outcomes or likely future outcomes of the changes.

-The **Clean Water Rule** is a 2015 regulation published by the U.S. Environmental Protection Agency (EPA) and the United States Army Corps of Engineers (USACE) to clarify **water** resource management in the United States under a provision of the **Clean Water Act** of 1972. This rule was partly repealed in 2020 and the definition of wetlands was changed.

<https://www.govinfo.gov/content/pkg/FR-2020-04-21/pdf/2020-02500.pdf>

-The Deepwater Horizon settlements and subsequent restoration programs have, since 2016, provided funding for numerous planning, data collection, project implementation, and restoration activities that support the protection, restoration, enhancement and creation of wetlands and other coastal habitats. These funds and related projects will continue over the next decade and will contribute greatly to the status of coastal resources.

Alabama Coastal Restoration Project Mapper

<https://www.alabamacoastalrestoration.org/projects/projects-map>

**Enhancement Area Prioritization:**

1. What level of priority is the enhancement area for the coastal management program?

<b>High</b>	<u>    </u>
<b>Medium</b>	<u>  X  </u>
<b>Low</b>	<u>    </u>

2. Briefly explain the reason for this level of priority. Include input from stakeholder engagement, including the types of stakeholders engaged.

While this evaluation reveals continued threats to wetlands due to a number of factors, there remain other entities better equipped to address those threats. In particular, restoration and conservation efforts related to the Deepwater Horizon funding and land acquisitions through the Forever Wild Land Trust and associated grants will take a central role in wetland protection and enhancement. The ACAMP staff has been and will continue to be heavily engaged in providing technical support to these efforts.

Stakeholder Response:

Wetlands ranked 2<sup>nd</sup> in priority of the nine enhancement areas. Of the 20 individual responses received, 16 ranked wetlands as a top three priority. All groups were represented in the 16 responses.

## Assessment – Phase II

This section contains the Phase II assessment for high priority enhancement areas.

The ACAMP has determined that the following enhancement area is a high priority for the Alabama Coastal Area: Coastal Hazards

### Coastal Hazards

#### **In-Depth Resource Characterization:**

Purpose: To determine key problems and opportunities to improve the CMP’s ability to prevent or significantly reduce coastal hazard risks by eliminating development and redevelopment in high-hazard areas and managing the effects of potential sea level rise and Great Lakes level change.

1. Based on the characterization of coastal hazard risk, what are the three most significant coastal hazards within your coastal zone? Also indicate the geographic scope of the hazard, i.e., is it prevalent throughout the coastal zone, or are there specific areas most at risk?

	<b>Type of Hazard</b>	<b>Geographic Scope</b> (throughout coastal zone or specific areas most threatened)
Hazard 1	Storm surge/erosion	Shorelines, riparian areas and associated structures
Hazard 2	Flooding	Prevalent throughout
Hazard 3	Sea-Level Rise	Shorelines, marshes, adjacent forested wetlands

2. Briefly explain why these are currently the most significant coastal hazards within the coastal zone. Cite stakeholder input and/or existing reports or studies to support this assessment.

Alabama experiences significant weather events throughout the year including hurricanes (June-November), major rainstorms, high winds, lightning, hail, flash floods and tornados. Because of potential risk from storms, flooding, and sea level rise, there is a continuing need to assist coastal communities in understanding the benefits and use of various methods of risk assessment tools and planning guides, as well as maintaining and enhancing at-risk coastal resources before and after a hazardous event. As indicated in the assessment narrative for coastal hazards, there have been numerous mapping and modeling efforts aimed at identifying and quantifying the vulnerability of coastal Alabama to these threats.

3. Are there emerging issues of concern, but which lack sufficient information to evaluate the level of the potential threat? If so, please list. Include additional lines if needed.

Emerging Issue	Information Needed
Construction in the riparian zone and associated impact on coastal habitats, potential contribution of marine debris following storm damage	Quantification and characterization of structures (piers, docks, boathouses, bulkheads)
Cumulative impact of full buildout of riparian structures	Adherence to riparian setbacks, adherence to permitting requirements, as-built vs. permitted design

**In-Depth Management Characterization:**

*Purpose: To determine the effectiveness of management efforts to address identified problems related to the coastal hazards enhancement objective.*

1. For each coastal hazard management category below, indicate if the approach is employed by the state or territory and if there has been a significant change since the last assessment.

**Significant Changes in Coastal Hazards Statutes, Regulations, and Policies**

Management Category	Employed by State/Territory (Y or N)	CMP Provides Assistance to Locals that Employ (Y or N)	Significant Change Since the Last Assessment (Y or N)
Shorefront setbacks/no build areas	Y	N	Y – 2016 regulation of setbacks in Baldwin county
Rolling easements	N	N	N
Repair/rebuilding restrictions	Y	N	N
Hard shoreline protection structure restrictions	Y	Y	N
Promotion of alternative shoreline stabilization methodologies (i.e., living shorelines/green infrastructure)	Y	Y	N
Repair/replacement of shore protection structure restrictions	Y	Y	N
Inlet management	Y	Y	N
Protection of important natural resources for hazard mitigation benefits (e.g., dunes, wetlands, barrier islands, coral reefs) (other than setbacks/no build areas)	Y	Y	Y
Repetitive flood loss policies (e.g., relocation, buyouts)	N	N	N
Freeboard requirements	Y	N	N
Real estate sales disclosure requirements	N	N	N
Restrictions on publicly funded infrastructure	N	N	N
Infrastructure protection (e.g., considering hazards in siting and design)	N	N	N
Other (please specify)			

**Significant Changes to Coastal Hazard Management Planning Programs or Initiatives**

<b>Management Category</b>	<b>Employed by State/Territory (Y or N)</b>	<b>CMP Provides Assistance to Locals that Employ (Y or N)</b>	<b>Significant Change Since the Last Assessment (Y or N)</b>
Hazard mitigation plans	Y	N	Y – added pandemic and bioterrorism plans
Sea level rise/Great Lake level change or climate change adaptation plans	Y	N	Y
Statewide requirement for local post-disaster recovery planning	N	N	N
Sediment management plans	Y	N	Y
Beach nourishment plans	N	N	N
Special Area Management Plans (that address hazards issues)	N	N	N
Managed retreat plans	N	N	N
Other (please specify)			

**Significant Changes to Coastal Hazard Research, Mapping, and Education Programs or Initiatives**

<b>Management Category</b>	<b>Employed by State/Territory (Y or N)</b>	<b>CMP Provides Assistance to Locals that Employ (Y or N)</b>	<b>Significant Change Since the Last Assessment (Y or N)</b>
General hazards mapping or modeling	Y	Y	Y
Sea level rise mapping or modeling	Y	Y	Y
Hazards monitoring (e.g., erosion rate, shoreline change, high-water marks)	Y	Y	Y
Hazards education and outreach	Y	Y	Y
Other (please specify)			

2. Identify and describe the conclusions of any studies that have been done that illustrate the effectiveness of the state’s management efforts in addressing coastal hazards since the last assessment. If none, is there any information that you are lacking to assess the effectiveness of the state’s management efforts?

There have been no comprehensive studies to date that illustrate the role of limited management actions in mitigating coastal hazards. Monitoring of recent shoreline wave attenuation and living shoreline installations is underway to determine effectiveness of these efforts, but continued monitoring will be needed to draw significant conclusions from these efforts. In general, the design of these projects is highly site specific and it is often necessary to make iterative adaptations to account for changing conditions. Alabama lacks a comprehensive database of riparian structures at risk to coastal hazards, and as such it is difficult to evaluate the impacts of significant storm events on these structures.

**Identification of Priorities:**

1. Considering changes in coastal hazard risk and coastal hazard management since the last assessment and stakeholder input, identify and briefly describe the top one to three management priorities where

there is the greatest opportunity for the CMP to improve its ability to more effectively address the most significant hazard risks. (Approximately 1-3 sentences per management priority.)

*Management Priority 1: Understand distribution, characterization, and vulnerability of riparian structures.*

*Description: This priority includes mapping of existing structures, including characterizing dimensions, height above water, construction methods and materials, and other factors that influence susceptibility to impact from coastal hazards.*

*Management Priority 2: Develop a technical assistance program to support state and local government as requested in incorporating riparian structure database information, structure characteristics, and vulnerability into permitting decisions and specifications for structure construction.*

*Description: This priority includes providing individualized technical assistance and training in the interpretation and use of the riparian database developed as part of the strategy.*

*Management Priority 3: Integrate findings into applicable permitting and regulatory standards for riparian structures.*

*Description: This priority includes integrating findings of the 309 strategy implementation into the regulatory decision-making framework by providing validation and recommendations, if applicable, for potential changes to USACE general permit criteria related to riparian structures through interagency discussions and the public comment process.*

2. Identify and briefly explain priority needs and information gaps the CMP has for addressing the management priorities identified above. The needs and gaps identified here should not be limited to those items that will be addressed through a Section 309 strategy but should include any items that will be part of a strategy.

<b>Priority Needs</b>	<b>Need? (Y or N)</b>	<b>Brief Explanation of Need/Gap</b>
Research	y	Best practices and methodology for characterizing riparian structures; effect of riparian structures on ecological productivity and physical processes of shorelines and near-shore habitats
Mapping/GIS/modeling	y	Methodology for mapping and ground-truthing remote sensing information
Data and information management	y	Development of data sharing capabilities with regulatory community
Training/Capacity building	y	Train practitioners in use of methodology
Decision-support tools	y	Integration of gathered information into regulatory decision-making
Communication and outreach	y	Outreach and communication of impacts of riparian structures
Other (specify)		

**Enhancement Area Strategy Development:**

1. Will the CMP develop one or more strategies for this enhancement area?

Yes        X    
No              

2. Briefly explain why a strategy will or will not be developed for this enhancement area.

A strategy will be developed for this area because there is currently very little understanding of the distribution, characterization, and impacts of riparian structures on coastal habitats in Alabama. This strategy will provide baseline information and ongoing updates that will inform the regulatory and management community. It will allow for an enhanced understanding of the trade-offs and implications of full coastal buildout and may allow for identification of ecological tipping points which could negatively impact the resilience of coastal habitats to hazards. The implementation of this strategy will also provide valuable data to be incorporated into current and future modeling efforts of vulnerability of coastal structures to hazards and will support the estimation of marine debris inputs and navigational hazards post storm and will assist with orderly and compliant rebuilding of structures following storm impacts.

## **[Coastal Riparian Structure Database Development]**

### **I. Issue Area(s)**

The proposed strategy or implementation activities will support the following high-priority enhancement areas (*check all that apply*):

- |  |   |
|--|---|
| <input type="checkbox"/> Aquaculture                           | <input type="checkbox"/> Cumulative and Secondary Impacts |
| <input type="checkbox"/> Energy and Government Facility Siting | <input type="checkbox"/> Wetlands                         |
| <input checked="" type="checkbox"/> Coastal Hazards            | <input type="checkbox"/> Marine Debris                    |
| <input type="checkbox"/> Ocean/Great Lakes Resources           | <input type="checkbox"/> Public Access                    |
| <input type="checkbox"/> Special Area Management Planning      |   |

### **II. Strategy Description**

**A.** The proposed strategy will lead to, or implement, the following types of program changes (*check all that apply*):

- A change to coastal zone boundaries
- New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;
- New or revised local coastal programs and implementing ordinances;
- New or revised coastal land acquisition, management, and restoration programs;
- New or revised special area management plans (SAMP) or plans for areas of particular concern (APC) including enforceable policies and other necessary implementation mechanisms or criteria and procedures for designating and managing APCs; and,
- New or revised guidelines, procedures, and policy documents which are formally adopted by a state or territory and provide specific interpretations of enforceable CZM program policies to applicants, local government, and other agencies that will result in meaningful improvements in coastal resource management.

**B. *Strategy Goal:*** Coastal Riparian Structure Database Development

State the goal of the strategy for the five-year assessment period. The goal should be the specific program change to be achieved or be a statement describing the results of the project, with the expectation that achieving the goal would eventually lead to a program change. For strategies that implement an existing program change, the goal should be a specific implementation milestone. For example, work with three communities to develop revised draft comprehensive plans that consider future sea level rise or, based on research and policy analysis, present proposed legislation on wetland buffers to state legislature for consideration. Rather than a lofty statement, the goal should be achievable within the time frame of the strategy.

The goal of this strategy is to develop an outreach and technical assistance program to support compliance with and enforcement of existing ADEM Division 8 regulations related to structures built in the riparian zone and to support and serve as a technical assistance resource to local jurisdictions in developing and implementing building standards for overwater structures. A further goal of the strategy will be the development of best-practices guidance recommendations on resilient construction techniques and materials for riparian structures, incorporating best-available science on storm surge predictions and sea-level rise rate estimates. Finally, the strategy will be designed to provide technical assistance and data to inform the potential future revision of USACE General Permits related to riparian construction in coastal Alabama.

- C. Describe the proposed strategy and how the strategy will lead to and/or implement the program changes selected above. If the strategy will only involve implementation activities, briefly describe the program change that has already been adopted, and how the proposed activities will further that program change. (Note that implementation strategies are not to exceed two years.)

The strategy will build upon work conducted by the Geological Survey of Alabama to map and classify shoreline types and protection measures within Alabama's coastal zone as well as previous applications of various living shoreline suitability models in the area. While these previous efforts provide valuable insight into shoreline condition and rates of change, none have directly characterized and classified other man-made structures such as boathouses, docks, and piers which are directly at risk from coastal hazards including sea level rise, coastal flooding, and storm surge from tropical storms and which contribute to cumulative and secondary impacts to coastal resources, marine debris, and hazards to navigation. First year activities will include conversations with local jurisdictions to assess whether they are currently evaluating and permitting riparian structures and how the development of this strategy can best support their needs.

This proposed strategy will begin with gathering existing data from efforts mentioned above, as well as other modeling and mapping efforts. A desktop GIS analysis using best available imagery will be conducted to update existing datasets and to produce layers characterizing existing shoreline and over-water improvements including shoreline hardening, living shorelines, piers, docks, and boathouses. This information will undergo field verification with additional data-collection conducted from a small watercraft or unmanned aerial vehicle. Mapped structures could be referenced against site plans submitted to the ADCNR State Lands Division for review of Notice of Intent to Impact State Owned Submerged Lands and joint notification applications submitted to the Alabama Department of Environmental Management (ADEM) and could be of assistance to both agencies as to furthering compliance with existing regulations. Periodic maintenance of the GIS will include the use of near-real-time satellite imagery to detect changes in the built environment as well as the inclusion of site plans submitted by permit applicants as referenced above.

The strategy will provide a direct quantification of at-risk structures vulnerable to coastal hazards, which will result in an enhanced ability to prepare for storm events through targeted education and outreach and more advanced planning of response and recovery needs. In addition, it will provide a baseline of pre-storm conditions that is often lacking during the re-building stage post-storm. Perhaps most importantly, the strategy will provide a comprehensive platform to evaluate the cumulative and secondary impacts of development in state waters.

Concurrent with data collection and database development, work will begin on a best practices recommendation guide for construction and maintenance activities of riparian structures. This will provide information on material selection, construction methods, and will include guidance on evaluating localized current and future surge risk when determining design characteristics of the structure. The coastal staff will also provide technical assistance and training as requested throughout the implementation to local governments and other state agencies in the interpretation and use of the database in local permitting and planning processes.

### **III. Needs and Gaps Addressed**

Identify what priority needs and gaps the strategy addresses, and explain why the proposed program change or implementation activities are the most appropriate means to address the priority needs and gaps. This discussion should reference the key findings of the assessment and explain how the strategy addresses those findings.

As described in the 309 assessment, coastal Alabama is experiencing unprecedented growth in population, especially in waterfront areas that are vulnerable to coastal hazards such as flooding and storm surge. To date, there has been no comprehensive effort to map, quantify, and monitor infrastructure such as piers, boathouses, and bulkheads constructed over riparian areas. A vital gap in this area will be assessing the as-built height of existing structures above the water, which is directly correlated with their vulnerability to storm surge. With advances in storm surge and inundation modeling brought about by efforts such as the Alabama Coastal Comprehensive Plan and NOAA NCCOS EESLR NGOM program, access to such a database of riparian structures would allow for estimation of the vulnerability of these structures to coastal hazards. This information will prove useful in assessing the associated risks of impairment of ecological function and the potential contribution to marine debris issues resulting from storm related damage to structures. The results of this strategy effort can be combined with modeling efforts to better inform local building codes related to riparian structures and will provide valuable information to refine General Permits issued by the USACE.

The strategy will also provide a valuable dataset for evaluation of cumulative and secondary impacts related to development and building in riparian areas. While the strategy is focused on coastal hazards and impacts, there is a natural nexus to other assessment areas including wetlands and marine debris. The workflow and field data collection methodology developed during the implementation of this strategy will be directly applicable to other coastal management needs including tracking of derelict vessels and tracking of cumulative impacts to coastal wetlands.

#### **IV. Benefits to Coastal Management**

Discuss the anticipated effect of the strategy, including the scope and value of the strategy, in advancing improvements in the CMP and coastal management, in general.

This strategy will provide a much-needed comprehensive assessment and baseline of existing development adjacent to and over state-owned water bottoms. This information will be the catalyst for driving conversations and action among coastal stakeholders regarding the vulnerability of our resources to coastal hazards as well as the cumulative and secondary impacts of increased coastal development. The information will directly benefit the coastal decision-making process and will provide valuable support for evaluation of existing regulations governing coastline development and their effectiveness in protecting the ecological integrity of the coastal environment.

#### **V. Likelihood of Success**

Discuss the likelihood of attaining the strategy goal and program change (if not part of the strategy goal) during the five-year assessment cycle or at a later date. Address the nature and degree of support for pursuing the strategy and the proposed program change, as well as the specific actions the state or territory will undertake to maintain or build future support for achieving and implementing the program change, including education and outreach activities.

There is a high likelihood of obtaining the strategy goal within the assessment cycle as the directed funding will allow for allocation of resources sufficient to accomplish the goal. The results of the strategy will be incorporated into educational and outreach activities of both the ACAMP and Weeks Bay NERR and will be shared with other coastal partners including the Mobile District of the USACE and the Mobile Bay National Estuary Program. While the strategy may not result in a program change within its duration, it will be a vital tool in sparking conversation and planning actions related to coastal development and the need to balance ecological integrity of coastal resources with the ever-growing development pressure on coastal uses. The strategy will provide

outputs that could be useful for inclusion in the Alabama Coastal Comprehensive Plan Tool as developed in collaboration with the USACE.

**VI. Strategy Work Plan**

Using the template below, provide a general work plan that includes the major steps that will lead toward or achieve a program change or implement a previously achieved program change. For example, even if the final adoption of the program change is outside of the CMP’s control, what steps will be included in the work plan so the CMP ensures the program change is considered, reviewed, and hopefully adopted by the outside entity? Who are the other stakeholders or elected officials that need to be engaged, and how and when during the strategy development process? What is the decision-making or voting process that is involved in the adoption of the program change, and how will the CMP interact with this process to ensure that the proposed program change is considered? If the state intends to fund implementation activities for the proposed program change, describe those in the plan as well. The plan should identify a schedule for completing the strategy and include major projected milestones (key products, deliverables, activities, and decisions) and budget estimates. If an activity will span two or more years, it can be combined into one entry (i.e., Years 2-3 rather than Year 2 and then Year 3). While the annual milestones are a useful guide to ensure the strategy remains on track, OCM recognizes that they may change somewhat over the course of the five-year strategy due to unforeseen circumstances. The same holds true for the annual budget estimates. Further detailing and adjustment of annual activities, milestones, and budgets will be determined through the annual cooperative agreement negotiation process.

**Strategy Goal:**

**Development of a Coastal Alabama Riparian Structure Database**

**Total Years: 5 years**

**Total Budget: \$435,000**

**Year(s): 1**

**Description of activities:**

Gather existing information; conduct digitization of existing structures using best available imagery; identify areas for fine scale field verification.

Purchase mobile LiDAR.

Make initial contacts with permitting entities and local jurisdictions to assess needs and current practices.

**Major Milestone(s):**

Produce a workable GIS database, complete coarse-level field verification; refine techniques.

Establish framework for technical assistance program.

**Budget: \$92,000**

**\$55,000- purchase mobile LiDAR**

**\$5,000- license costs for near-real time imagery**

**\$32,000- staff and/or contract time for implementation**

**Year(s): 2-4**

**Description of activities:**

Continue field verification, targeting heavily developed areas for fine scale field verification.

Refine structure database incorporating information from permit site plans, near-real time satellite imagery, and field verification data.

Conduct ongoing outreach and technical assistance activities related to project, included consultation with the USACE regarding general permit language and with local municipal and county building officials regarding any applicable permitting requirements for riparian structures.

Development of best practices document for riparian structure construction.

**Major Milestone(s):**

Completion of field verification and full build-out of structure database.

Continued development of technical assistance program.

**Budget: \$87,000 per year**  
**\$5,000- imagery license costs**  
**\$82,000- staff and/or contract time for implementation**

**Year: 5**

**Description of activities:**

Complete field verification.

Develop final workflow and guidance document for continuance of database management beyond project completion.

Continue training, education, and outreach activities, including recommendations to USACE for General Permit language and assistance if requested to local jurisdictions.

Dissemination of guidance document for riparian construction through digital media, in-person meetings, and outreach programs.

**Major Milestone(s):**

**Budget: \$87,000**  
**\$5,000- imagery license costs**  
**\$5,000- workshops and outreach activities**  
**\$77,000- staff and/or contract time for implementation**

*Continue to repeat the above template as needed.*

**VII. Fiscal and Technical Needs**

- A. Fiscal Needs:** If 309 funding is not sufficient to carry out the proposed strategy, identify additional funding needs. Provide a brief description of what efforts the CMP has made, if any, to secure additional state funds from the legislature and/or from other sources to support this strategy.

Section 309 funding will be sufficient to complete the strategy.

- B. Technical Needs:** If the state does not possess the technical knowledge, skills, or equipment to carry out all or part of the proposed strategy, identify these needs. Provide a brief description of what efforts the CMP has made, if any, to obtain the trained personnel or equipment needed (for example, through agreements with other state agencies).

The state has sufficient personnel and training to accomplish the strategy. Equipment needs will include the procurement of a small watercraft to facilitate field verification activities. A cost/benefit analysis will be conducted to determine if the procurement of a mobile LiDAR system would be warranted versus contracting or partnering with other agencies. Additional needs will include the procurement of access to near-real time satellite imagery through a site-license. The ACAMP has provided GIS training to several staff.

### **VIII. Projects of Special Merit (Optional)**

If desired, briefly state what projects of special merit the CMP may wish to pursue to augment this strategy. (Any activities that are necessary to achieve the program change or that the state intends to support with baseline funding should be included in the strategy above.) The information in this section will not be used to evaluate or rank projects of special merit and is simply meant to give CMPs the option to provide additional information if they choose. Project descriptions should be kept very brief (e.g., undertake benthic mapping to provide additional data for ocean management planning). Do not provide detailed project descriptions that would be needed for the funding competition.

Integrate project outcomes into Alabama Coastal Comprehensive Plan Tool.

Investigate impact of structure shading on benthic and water column productivity under varying scenarios of build-out.

## **5-Year Budget Summary by Strategy**

At the end of the strategy section, please include the following budget table summarizing your anticipated Section 309 expenses by strategy for each year. Generally, CMPs should only develop strategies for activities that the state intends to fund and work on given their anticipated level of Section 309 funding. However, in some circumstances, CMPs may wish to use the assessment and strategy development process as a broader strategic planning effort for the CMP. In that case, the CMP may elect to include additional strategies that exceed the state’s anticipated Section 309 funding over the five-year period. If the CMP chooses this approach, it should still clearly indicate which strategies it anticipates supporting with Section 309 funding and which strategies it anticipates supporting through other funding sources.

<b>Strategy Title</b>	<b>Anticipated Funding Source (309 or Other)</b>	<b>Year 1 Funding</b>	<b>Year 2 Funding</b>	<b>Year 3 Funding</b>	<b>Year 4 Funding</b>	<b>Year 5 Funding</b>	<b>Total Funding</b>
Coastal Riparian Structure Database Development	309	\$92,000	\$87,000	\$87,000	\$87,000	\$87,000	<b>\$440,000</b>
<b>Total Funding</b>		\$92,000	\$87,000	\$87,000	\$87,000	\$87,000	<b>\$440,000</b>

## **Summary of Stakeholder Comment**

This section provides a summary of stakeholder responses received during the self-assessment process.

### **Stakeholder Response**

During the self-assessment process, the Alabama Coastal staff solicited input through an electronic survey instrument that was distributed via email to 180 stakeholders representing state and federal agencies, local governments, state universities, public and private non-profit groups, advisory committees, and private sector businesses.

The survey was opened for eight days, May 6 – 13, 2020.

Stakeholders were asked to

- 1) prioritize the nine enhancement areas according to importance;
- 2) provide their opinions of the needs and information gaps associated with their top three priorities;  
and
- 3) list the type of information or management efforts needed for the Alabama Coastal staff to improve its ability to more effectively respond to and manage these enhancement areas.

The Alabama Coastal staff received 20 valid responses from eight different groups.

The enhancement areas chosen by the respondents as the top three priorities are Coastal Hazards, Wetlands, and Public Access. The three enhancement areas chosen by the ACAMP staff are Coastal Hazards, Wetlands, and Marine Debris. A summary of the rankings and preferred information or management efforts are listed below.

**Coastal Hazards:** 14 of 20 respondents (8 of 8 groups) ranked coastal hazards as one of their top three priorities.

The following is a summary of stakeholder comments regarding coastal hazards:

- cost of hazards, insurance issues, and lack of funds to mitigate hazards
- concern about continued risk of known hazards (flooding, erosion) and potential future hazards (sea level rise, climate change, increased storm intensity and frequency)
- existing regulations/policies either not enforced, ineffective, or needing updates
- lack of ability to measurably reduce cumulative impacts that impose threats to life and property in high-hazard areas.
- concern about saltwater intrusion after a storm
- lack of public agency to foster resiliency
- continued development in risky areas and FEMA, local governments not aggressive enough in creating “no-build” zone or enforcing flood zone regulations
- focus on restoring past rather than planning for the future
- general education on alternative development is poor

- disconnect between coastal hazards and community’s understanding of hazards and what should/should not be done

**Wetlands:** 16 of 20 respondents (8 of 8 groups) ranked wetlands as one of their top three priorities.

The following is a summary of stakeholder comments regarding wetlands:

- concern regarding rate of wetland loss
- concern regarding number of stressors on wetlands and the effects
- the lack of community understanding of the role of wetlands
- the need and more funding for and encourage of restoration and management and not permitting the purchase of credits off site
- the need for wetlands protection AND preservation for wildlife conservation and coastal economy
- encroachment problems - the need for improved regulation and/or improved enforcement
- the need for better identification and modeling
- the need for more documented delineated areas
- human impact
- the need for education, outreach, and policy

**Marine Debris:** only 5 of 20 respondents (3 of 8 groups) ranked Marine Debris as a top priority.

The following is a summary of stakeholder comments regarding Marine Debris:

- concern regarding education and outreach
- concern regarding number of stressors on wetlands and wildlife
- the lack of community understanding of the problem with Marine Debris
- the problem of abandoned and derelict vessels and fishing gear
- lack of disposal options when on the water and after a storm event
- problem of trash entering waterways through stormwater
- the need to educate local fishermen on best practices for securing traps and gear

**Public Access:** 6 of 20 respondents (5 of 8 groups) ranked Public Access as a top priority.

The following is a summary of stakeholder comments regarding Public Access:

- concern regarding education and outreach – no known public documents of where to find Public Access locations
- concern of limited public parks and access to waterways
- concern of limited funds to build access and supporting infrastructure
- concern of unsafe “word of mouth” unofficial access locations
- land cost issues
- gave ideas for coastal playgrounds and fishing piers with interpretive signage

## **Summary of Public Comment & ACAMP Response**

This section contains a summary of the public comments received during the public comment period and ACAMP responses.

The draft ACAMP 309 strategy was available for review and open for comment between March 9, 2021 and April 8, 2021. Comments were received from four stakeholders representing two state agencies (Geologic Survey of Alabama; Alabama Department of Environmental Management), Mississippi State University, and one private environmental consultant.

Comments were, in general, supportive of the strategy being proposed to develop a coastal riparian structure database. One commenter noted that the work plan was “quite ambitious, but also good timing” in reference to rebuilding of piers and other structures in the wake of recent hurricanes and also highlighted the importance of understanding factors that make structures more resistant to coastal hazards and encouraging use of resilient construction techniques. Another commenter applauded the advancement of techniques and data collection efforts to build off of previous shoreline mapping and characterization efforts. They noted that the incorporation of elevation data proposed in this strategy was an excellent way to better understand resilience of structures exposed to coastal hazards. A third commenter stated that the strategy actually addressed several priority areas, while the final commenter suggested that the database could have many important applications not contemplated in the document.

Several commenters addressed the identification of audiences and messaging for outreach and technical assistance resulting from this work, suggesting the development of varied outreach approaches tailored to the specific needs of each audience. It was also suggested that language be clarified to better depict the use of existing projections of future surge risk and sea level rise when producing guidance related to best practices for structure design elevation. These comments were addressed with minor revisions to the strategy.

One final theme that emerged from the comments centered on the implementation of the strategy, including the importance of building off of existing work, using available imagery to supplement the project, and leveraging existing NOAA and State of Alabama efforts to understand impacts of sea level rise and coastal development on shorelines. One commenter speculated on the need for mid-course correction in the case of a major hurricane striking during the implementation period. While this is a valid concern, data collection schedules will be flexible to accommodate weather extremes.