

**STATE OF GEORGIA**  
**DEPARTMENT OF NATURAL RESOURCES**  
**COASTAL RESOURCES DIVISION**



**GEORGIA COASTAL**  
**MANAGEMENT PROGRAM**

**Section 309 Assessment and Strategy**  
**2016 to 2020**

***Submitted to:***

**Office of Ocean and Coastal Resource Management**  
**National Oceanic and Atmospheric Administration**  
**U.S. Department of Commerce**

***By:***

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**Coastal Resources Division**  
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**Georgia Coastal Management Program  
Section 309 Assessment**

**DRAFT Assessment  
May 1, 2015**

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## **Introduction**

Section 309 of the Coastal Zone Management Act identifies nine Program Enhancement Areas, including: wetlands, coastal hazards, public access, marine debris, cumulative and secondary impacts, ocean resources, energy and government facility siting, aquaculture and Special Area Management Plans. Every five years, coastal states are encouraged to conduct a self-assessment of their coastal management programs to assess the effectiveness of current efforts to address known or identified problems. The Georgia Coastal Management Program (GCMP) recently completed an assessment its Program and identified problems and opportunities for each of the enhancement areas; determined the effectiveness of the Program's existing efforts to address problems for each of the enhancement objectives; and identified priority needs for Program enhancements for the period 2016 to 2020.

A high level, Phase I assessment allowed the GCMP to evaluate each of the nine enhancement areas to determine in which existing management efforts are satisfactorily addressing enhancement area objectives. For enhancement areas for which deficiencies were noted, the GCMP ranked each area in terms of the Program's priority for addressing them. Priority was determined based on the perception of immediate need and whether the identified gaps were being addressed through other means. The GCMP ranked three enhancement areas as high priorities during its Phase I assessment: coastal hazards, cumulative and secondary impacts, and ocean resources.

A more intense, Phase II assessment was conducted for each of the high priority enhancement areas. Management priorities were identified for coastal hazards, cumulative and secondary impacts and ocean resources and potential strategies for addressing those priorities were explored. Upon conclusion of the Phase II assessment, the GCMP identified a single strategy to fulfill the management priorities for coastal hazards and cumulative and secondary impacts. This strategy entitled "Enhancing Coastal Resilience with Sustainable Infrastructure" will encourage the use of low-impact development and nature-based solutions to improve flood resilience in coastal communities. This strategy will take 5-years and will cost approximately \$1,375,000 in funding from NOAA.

While Ocean Resources ranked as a high priority during the Phase I assessment, further analysis revealed management priorities that will be best addressed through existing programs and activities.

As required by NOAA, on May 6th the Georgia Coastal Management Program's Draft Section 309 Assessment and Strategy will be made available for public comment. A public notice wsent to local media to inform the public that written comments would be received through Friday, June 5, 2015. An overview of the Assessment and Strategy will be presented to the Coastal Advisory Council on May 6, 2015. In addition, the Assessment and Strategy will be posted in the DNR Coastal Resources Division website.

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

The GCMP's most recent Section 309 Assessment will be completed in 2011 and resulted in two 5-year strategies addressing gaps in three program enhancement areas.

The first strategy under the Coastal Hazards Enhancement Area called for the development of a Coastal Hazards Program through which GCMP staff would gain the technical expertise to provide outreach to coastal communities on issues related to coastal storms and future hazards such as sea level rise. Additionally, this strategy provided funding for Post-Disaster Redevelopment Planning as outlined in

FEMAs National Disaster Recovery Framework with the addition of considerations for sea level rise and other long-term hazards. Early in this strategy, the GCMPs coordination with the state's emergency management agency (GEMA) resulted in the Governor of Georgia issuance of an Executive Order mandating GEMA and the Department of Natural Resources (through the GCMP) create the GA Disaster Recovery and Redevelopment Plan (GDRRP) framework for the state. GCMP is supporting the implementation of this mandate in coastal communities which are the first to develop post disaster recovery and redevelopment plans.

Another strategy under the Ocean Resources Enhancement Area, called Georgia Coastal and Marine Planning (GCAMP), calls for the development of a coastal and ocean data portal, decision support tools, and a state policy framework for managing offshore activities with effects on coastal resources of the state. The GCMP is partnering with Georgia Institute of Technology to accomplish this strategy. Currently the GCAMP data portal is scheduled to be revealed for public use in summer 2015 and is intended for use in siting and evaluation of offshore projects, including energy development projects. While still in year 4 of 5 of this strategy, the GCMP and project partners will initiate a hypothetical case study for using the GCAMP portal and applying state policies to offshore activities as a means to identify gaps in management policies and/or inefficiencies in state processes which can be improved through better coordination and/or policy changes.

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## Phase I Assessments

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## 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.” [33 CFR 328.3(b)]. See also pg. 17 of the CZMA Performance Measurement Guidance<sup>1</sup> for a more in-depth discussion of what should be considered a wetland.*

**PHASE I (HIGH-LEVEL) ASSESSMENT:** *(Must be completed by all states.)*

*Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.*

**Resource Characterization:**

- Using provided reports from NOAA’s Land Cover Atlas<sup>2</sup> or high-resolution C-CAP data<sup>3</sup> (Pacific and Caribbean Islands only), please indicate the extent, status, and trends of wetlands in the state’s coastal counties. You can provide additional or alternative information or use graphs or other visuals to help illustrate or replace the table entirely if better data are available. Note that the data available for the islands may be for a different time frame than the time periods reflected below. In that case, please specify the time period the data represents. Also note that Puerto Rico and the Commonwealth of the Northern Mariana Islands (CNMI) currently only have data for one time point so will not be able to report trend data. Instead, Puerto Rico and CNMI should just report current land use cover for all wetlands and each wetlands type.

Coastal Wetlands Status and Trends		
Current state of wetlands in 2011 (acres)	1669351.0 <b>(40.8% of state)</b>	
Net change in total wetlands (in acres) *	from 1996-2011	from 2006-2011
	-4409.6	-7338.2
Net change in freshwater (palustrine wetlands) (gained or lost)*	from 1996-2011	from 2006-2011
	-2612.0	-6944.1
Net change in saltwater (estuarine) wetlands (gained or lost)*	from 1996-2011	from 2006-2011
	48.3	-413.4
Net change in Unconsolidated Shore wetlands	from 1996-2011	from 2006-2011

<sup>1</sup> <http://coastalmanagement.noaa.gov/backmatter/media/czmapmsguide11.pdf>

<sup>2</sup> <http://www.csc.noaa.gov/ccapatlas/>. Summary reports compiling each state’s coastal county data are provided on the ftp site.

<sup>3</sup> <http://www.csc.noaa.gov/digitalcoast/data/ccaphighres>

(in acres)*	-1845.9	19.3
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How Wetlands Are Changing*		
Land Cover Type	Area of Wetlands Transformed to Another Type of Land Cover between 1996-2011 (Acres)	Area of Wetlands Transformed to Another Type of Land Cover between 2006-2011 (Acres)
Development	-8679.4	-5675.3
Agriculture	-593.8	163.2
Barren Land	-1396.4	-803.1
Water	-976.8	-296.9

\* Note: Islands likely have data for another time period and may only have one time interval to report. If so, only report the change in wetlands for the time period for which high-resolution C-CAP data are available. Puerto Rico and CNMI do not report.

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 coastal wetlands since the last assessment to augment the national data sets.
  - National Wetlands Condition Assessment (2011) – The National Wetland Condition Assessment (NWCA) is a statistical survey of the quality of the Nation’s wetlands. The NWCA is designed to determine the ecological integrity of wetlands at regional and national scales, build state and tribal capacity for monitoring and analyses, promote collaboration across jurisdictional boundaries, achieve a robust, statistically-valid set of wetland data, and develop baseline information to evaluate progress. A report on the 2011 survey will be released in 2015 and next sampling season will occur in 2016.
  - National Wetlands Inventory updates (2009) – in 2009, CRD completed updates to the National Wetlands Inventory of the 6 coastal counties in Georgia. These updates were the first updates through the Federal Geographic Data Committee’s Wetlands Mapping Standard that provides minimum requirements and guidelines for wetlands mapping efforts. The new standard was designed to guide current and future wetlands digital mapping projects and enhance the overall quality and consistency of wetlands data. Georgia’s data can be found at [www.fws.gov/wetlands](http://www.fws.gov/wetlands)
  - National Wetlands Inventory Plus (2011) – Otherwise known as NWI+, this effort is a Fish and Wildlife initiated process by which to use updated NWI polygons and add geomorphic descriptors to predict wetland function. Georgia used the 2009 NWI updates and applied NWI+ throughout the updated coverage area of the 6 coastal counties. The information from both NWI and NWI+ can be found in the report below.
    - “Wetlands of Coastal Georgia” (2012) - This document reports on the methods and the findings of the updated and enhanced wetland inventory. It includes information on wetland status (e.g., acreage of different wetland types) and a preliminary functional assessment of wetlands. The functional assessment highlights wetlands that are predicted to perform eleven functions at significant levels and includes thematic maps showing the location of these wetlands.

**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:

**Statutes, regulations, policies, or case law interpreting these:**

- Georgia Erosion and Sedimentation Act – The Georgia Environmental Protection Division Director released a statement in 2014 clarifying the Division’s interpretation of the Act as it relates to buffers on coastal marshlands. These are non CZM or 309 driven changes but have potential impacts on CZM counties.
- 2008 Wetlands Compensatory Mitigation Rule from EPA and US ACE impacts Georgia’s implementation of wetlands mitigation programs. Non CZM or 309 driven changes but may affect CZM counties.

**Wetlands Program Changes:**

- Wetland Inventory of Coastal Restoration Sites (2013) – CRD produced a document that prioritized wetlands for restoration. These sites are all located on state owned and managed lands. (309 project)
- The Habitat Work Group was established by the CRD Director, in part, to guide wetland restoration as it relates to oysters and living shorelines.
- CRD produced a Wetland Program Plan that is currently being reviewed by the Environmental Protection Agency (EPA). The document is a compatible component to Georgia’s freshwater Wetland Program Plan that was written by GA DNR Environmental Protection Division. CRD collaborated with EPD on this document to have a comprehensive 5 year strategy for the state’s wetland resources. The document is divided into 4 sections: 1) Monitoring and Assessment, 2) Restoration, 3) Regulation, and 4) Water Quality Standards for Wetlands.
- CRD produced at Wetlands Guidance Document in 2012 that is intended to provide a one-stop resource for the Georgia Department of Natural Resources, Coastal Resource Division (CRD) and other agencies in understanding the importance of wetlands restoration, options and techniques, and the regulatory requirements for undertaking wetland restoration programs. (309 project)

These changes are in part 309 and non-CZM driven, but have produced information and guidance that will be utilized by CZM staff and coastal counties in the future. CZM staff have coordinated with and participated in the processes of developing above changes. There have been numerous projects that



have contributed to the development of the wetlands program during the previous assessment period. While these may not be considered actual program changes, they demonstrate the amount of work that has been completed on this subject by CRD staff and partners. A full list of program milestones is attached at the end of this document.

**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.

Wetlands are an extremely important topic in coastal Georgia and have garnered quite a bit of attention from researchers and policy makers. A previous 309 Wetlands Strategy developed the initial program which has grown tremendously over the years through extensive partnerships and funding through EPA Wetlands Program Development Grants. Although this enhancement area can be interpreted as a high priority for the state, there are currently resources allocated to addressing this area from these other sources.

Stakeholder engagement included outreach to the Coastal Advisory Council to the GA Coastal Management Program and while respondents ranked this as a high priority area, the responses indicated that the biggest need to address this enhancement area is research and outreach and education. We feel that these issues are best addressed through the existing Technical Assistance program and wetlands program staff, and through our partnerships with research institutions.

**Coastal Resources Division Wetlands Program Milestones (2009-2014)**

Coastal Habitat Evaluation Study Pilot - McIntosh and Liberty Co. Evaluated degraded/impacted salt and tidal fresh wetlands east of I-95 in two counties. Developed evaluation methodology. Conducted exercises to recommend restoration at 3 sites.
GIS Inventory of Impacted Estuarine and Marine Wetlands - Camden, Glynn, Bryan & Chatham Co. Inventoried saltmarshes only in 4 counties and created database based on type of impact. Field visits were conducted to ground-truth.
National Wetland Inventory Update conducted for 6-coastal counties using 2006 base imagery
NWI Plus for 6 coastal counties. A wetland functional assessment (e.g., stormwater detention, carbon sequestration, etc.) based on landscape & landform characteristics (LLWW)
Sapelo Living Shorelines Demonstration Project. Demonstrated two alternative shoreline stabilization methods as similar sites along Post Office Creek, Sapelo Island. One bank used bagged oyster shell; the other a mix of rock and shell gabions and vegetation. Both sites are monitored annually for success, habitat and water quality improvements.
GIS and Field-based Documentation of Armored Estuarine Shorelines. Identified shoreline segments with stabilized with bulkheads, riprap or other man-made materials, as well as alternative/living shorelines.

Development of a Georgia estuarine Rapid Assessment Methodology, piloted in Chatham County (impacted sites) and adjacent to Sapelo Island (reference sites).
Marsh Wrack Study to quantify and evaluation the impact of marsh wrack accumulation and the impact of man-made structures on the location and duration of wrack. Test plots will be covered with wrack to evaluate impacts on plant and animal species and to monitor recover. Plots that do not naturally recover within 3-years post-project will be restored.
Targeted studies of shoreline erosion - using AMBUR software to calculate/predict erosion rates at archaeological sites on barrier and back-barrier islands.
Prioritization Tool for selecting wetland restoration opportunities
Expansion of GIS Inventory of Impacted Wetlands to tidal fresh wetlands within 6-county area
Wetland Restoration Guidance Document to summarize information collected to date and to set a framework for CRD's restoration program
"Users Guide" for NWI Plus

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## 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: (Must be completed by all states.)

*Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.*

#### Resource Characterization:

- Flooding:** Using data from NOAA’s *State of the Coast* “Population in the Floodplain” viewer<sup>1</sup> and summarized by coastal county through NOAA’s Coastal County Snapshots for Flood Exposure,<sup>2</sup> indicate how many people were located within the state’s coastal floodplain as of 2010 and how that has changed since 2000. You may to use other information or graphs or other visuals to help illustrate.

Population in the Coastal Floodplain			
	2000	2010	Percent Change from 2000-2010
No. of people in coastal floodplain <sup>3</sup>	188652	221674	15%
No. of people in coastal counties <sup>4</sup>	490360	563,987	13%
Percentage of people in coastal counties in coastal floodplain	38%	38%	-----

- Shoreline Erosion** (for all states other than Great Lakes and islands; for Great Lakes and islands, see Question 5): Using data from NOAA’s *State of the Coast* “Coastal Vulnerability Index,”<sup>5</sup> indicate the vulnerability of the state’s shoreline to erosion. You may use other information or graphs or other visuals to help illustrate or replace the table entirely if better data is available. *Note: For New York*

<sup>1</sup> <http://stateofthecoast.noaa.gov/pop100yr/welcome.html>. Note FEMA is in the process of updating the floodplain data. This viewer reflects floodplains as of 2010. If you know the floodplain for your state has been revised since 2010, you can either use data for your new boundary, if available, or include a short narrative acknowledging the floodplain has changed and generally characterizing how it has changed.

<sup>2</sup> [www.csc.noaa.gov/digitalcoast/tools/snapshots](http://www.csc.noaa.gov/digitalcoast/tools/snapshots)

<sup>3</sup> To obtain exact population numbers for the coastal floodplain, download the Excel data file on the State of the Coast “Population in the Floodplain” viewer: <http://stateofthecoast.noaa.gov/pop100yr/welcome.html>. Summary population data for each coastal state is available on the ftp site.

<sup>4</sup> To obtain population numbers for coastal counties, see spreadsheet of coastal population and critical facilities data provided or download directly from <http://www.csc.noaa.gov/digitalcoast/data/stics>. Summary population data for each coastal state is available on the ftp site.

<sup>5</sup> <http://stateofthecoast.noaa.gov/vulnerability/welcome.html> (see specifically “Erosion Rate” drop-down on map). The State of the Coast visually displays the data from USGS’s Coastal Vulnerability Index.

and Pennsylvania that have both Atlantic and Great Lakes shorelines, fill out the table below for the Atlantic shoreline only.

Vulnerability to Shoreline Erosion		
Vulnerability Ranking	Miles of Shoreline Vulnerable <sup>11</sup>	Percent of Coastline <sup>6</sup>
Very low (>2.0m/yr) accretion	318	45%
Low (1.0-2.0 m/yr) accretion	NA	NA
Moderate (-1.0 to 1.0 m/yr) stable	73	10%
High (-1.1 to -2.0 m/yr) erosion	154	21%
Very high (<-2.0 m/yr) erosion	160	22%

3. **Sea Level Rise** (for all states other than Great Lakes and islands; for Great Lakes and islands, see Question 5): Using data from NOAA’s *State of the Coast* “Coastal Vulnerability Index”,<sup>7</sup> indicate the vulnerability of the state’s shoreline to sea level rise. You may provide other information or use graphs or other visuals to help illustrate or replace table entirely if better data is available. *Note: For New York and Pennsylvania that have both Atlantic and Great Lakes shorelines, fill out the table below for your Atlantic shoreline only.*

Coastal Vulnerability to Historic Sea Level Rise		
Vulnerability Ranking	Miles of Shoreline Vulnerable <sup>11</sup>	Percent of Coastline
Very low	0	0
Low	153	21%
Moderate	282	39%
High	271	38%
Very high	0	0

4. **Other Coastal Hazards:** In the table below, indicate the general level of risk in the coastal zone for each of the coastal hazards. The state’s multi-hazard mitigation plan is a good additional resource to support these responses.

Type of Hazard	General Level of Risk <sup>8</sup> (H, M, L)
Flooding (riverine, stormwater)	H
Coastal storms (including storm surge) <sup>9</sup>	H
Geological hazards (e.g., tsunamis, earthquakes)	L
Shoreline erosion <sup>10</sup>	H

<sup>6</sup> To obtain exact shoreline miles and percent of coastline, mouse over the colored bar for each level of risk or download the Excel data file.

<sup>7</sup> <http://stateofthecoast.noaa.gov/vulnerability/welcome.html> (see “Vulnerability Index Rating” drop-down on map). The State of the Coast visually displays the data from USGS’s Coastal Vulnerability Index.

<sup>8</sup> 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*

<sup>9</sup> In addition to any state- or territory-specific information that may help respond to this question, the U.S. Global Change Research Program has an interactive website that provides key findings from the 2014 National Climate Assessment for each region of the country, including regions for the coasts and oceans, and various sectors. The report includes findings related to coastal storms and sea level rise that may be helpful in determining the general level of risk. See <http://nca2014.globalchange.gov/>.

<sup>10</sup> See NOAA State of the Coastal Vulnerability to Sea Level Rise Tool (select “Erosion Rate” from drop-down box) <http://stateofthecoast.noaa.gov/vulnerability/welcome.html>. The State of the Coast visually displays the data from USGS’s Coastal Vulnerability Index.

Type of Hazard	General Level of Risk <sup>8</sup> (H, M, L)
Sea level rise <sup>13,14,15</sup>	H
Great Lake level change <sup>14</sup>	NA
Land subsidence	L
Saltwater intrusion	H
Other (please specify)	

5. 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. The state's multi-hazard mitigation plan or climate change risk assessment or plan may be a good resource to help respond to this question.

The state Hazard Mitigation Plan includes an All-Hazards Assessment section which was used in determining the level of risk for the above hazards.

The GCMP, through the current 309 strategy, has funded a project to map Coastal Georgia historical shorelines (both oceanfront and estuarine shorelines), AMBUR shoreline change transects and erosion/accretion rates and trends, modern shoreline with coastal vulnerability classifications/attributes, historical shoreline change trends and coastal vulnerability classifications of the shoreline. These vulnerabilities were also considered when determining the state's level of risk.

**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) have occurred that could impact the CMP's ability to prevent or significantly reduce coastal hazards risk 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)
<b>Statutes, regulations, policies, or case law interpreting these that address:</b>			
<i>elimination of development/redevelopment in high-hazard areas<sup>11</sup></i>	N	Y	N
<i>management of development/redevelopment in other hazard areas</i>	N	Y	N
<i>climate change impacts, including sea level rise or Great Lake level change</i>	N	Y	N
<b>Hazards planning programs or initiatives that address:</b>			
<i>hazard mitigation</i>	Y	Y	Y
<i>climate change impacts, including sea level rise or Great Lake level change</i>	Y	Y	Y
<b>Hazards mapping or modeling programs or initiatives for:</b>			
<i>sea level rise or Great Lake level change</i>	Y	Y	Y
<i>other hazards</i>			

<sup>11</sup> Use state's definition of high-hazard areas.

2. Briefly state how “high-hazard areas” are defined in your coastal zone.  
 The GCMP recognizes FEMA’s definition of a high-hazard area as an area of special flood hazard extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high velocity wave action from storms or seismic sources. The coastal high hazard area is identified as Zone V on Flood Insurance Rate Maps (FIRMs). Special floodplain management requirements apply in V zones including the requirement that all buildings be elevated on piles or columns.
  
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.

*Hazard Mitigation/climate change impacts, including sea level rise or Great Lake level change*

- a. The Georgia Emergency Management Agency addressed this issue for the first time in our enhanced portion of the state plan. In Section 6.1.2 INTEGRATION WITH REGIONAL PLANNING INITIATIVES, we determined that Sea Level Rise is not an immediate natural hazard, however, over the next 100 years, its effects on Georgia’s coastline and natural habitats could be detrimental.
- b. These changes were a result of the GCMP staff acting as a stakeholder in the update process and providing relevant information.
- c. It is anticipated that local governments will now be encouraged to recognize the potential impacts of Sea Level Rise in their local hazard mitigation plans now that the state has included it at the state level.

**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.

Preparedness for coastal hazards is essential for tourism, economy and sustainability of Georgia’s natural resources. At this time our state is actively working on those planning steps and is seeking the opportunity to enhance the tools needed to be a more resilient state and to assist coastal local governments in reducing their risk.

Based on data gathered through stakeholder input, Coastal Hazards is the 3<sup>rd</sup> highest coastal management priority. Stakeholder input was gathered from Coastal Advisory Council members and their constituents.

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## **RESOURCES AND TOOLS:**

*Below are a few national resources and tools that may be useful in conducting your assessment or developing coastal hazards strategies. States likely have other state-specific resources, tools, and data that would be useful as well.*

### **Climate.gov**

NOAA's Climate.gov provides science and information for a climate-smart nation. The "Supporting Decisions" is a clearinghouse of reports, resources, and decision-support tools for planners and policy leaders who want authoritative climate science information to help them understand and manage climate-related risks and opportunities.

*Geographic Scope:* Various by resource

*Website:* [www.climate.gov](http://www.climate.gov)

### **CZMA Performance Management System Data**

Annual CZMA performance measurement data for coastal hazards measures. Online database can be used to synthesize existing state and territory data reported during the assessment period.

*Geographic Scope:* All coastal states and territories

*Website:* [www8.nos.noaa.gov/PMD/Login.aspx?ReturnUrl=%2fPMD%2fdefault.aspx](http://www8.nos.noaa.gov/PMD/Login.aspx?ReturnUrl=%2fPMD%2fdefault.aspx)

### **National Climate Assessment Web Tool**

The U.S. Global Change Research Program provides an interactive web tool to quickly view key findings from the 2014 National Climate Assessment. Data are summarized by region (including ones for oceans and coasts) and sector.

*Geographic Scope:* Entire United States (including territories)

*Website:* <http://nca2014.globalchange.gov/>

### **NOAA C-CAP Coastal Land Atlas**

Online data viewer provides user-friendly access to regional land cover and land cover change information developed through NOAA's Coastal Change Analysis Program (C-CAP). Users can investigate how land cover changed between 1996, 2001, 2006, and 2011. Although data are provided by county, NOAA staff members are able to help states easily aggregate county data into statewide summary.

*Geographic Scope:* Contiguous United States and Hawaii

*Website:* [www.csc.noaa.gov/digitalcoast/tools/lca](http://www.csc.noaa.gov/digitalcoast/tools/lca)

### **NOAA Coastal County Snapshots: Flood Exposure**

Assesses a county's exposure and resilience to flooding. Analyzes a county's dependence on the ocean or Great Lakes for a healthy economy. Examines the benefits a county receives from its wetlands. Compares counties to each other or for regional analysis. Allows users to download a PDF report for the snapshot of their choice.

*Geographic Scope:* Coastal states only. Currently not available for territories.

*Website:* [www.csc.noaa.gov/digitalcoast/tools/snapshots](http://www.csc.noaa.gov/digitalcoast/tools/snapshots)

### **NOAA High-Resolution C-CAP Data**

Nationally standardized database of land cover information (developed using remotely sensed imagery) for the coastal regions of the United States. C-CAP products provide inventories of coastal intertidal areas, wetlands, and adjacent uplands. High-resolution C-CAP products focus on bringing NOAA's national mapping framework to the local level by providing data relevant for addressing site-specific management decisions. Although the data require desktop GIS and some GIS technical skills, NOAA staff members are able to help states analyze data to support wetlands assessment.

*Geographic Scope:* Targeted watershed and other hotspots in the Caribbean, Pacific Islands, and Monterey Bay, California

*Website:* [www.csc.noaa.gov/digitalcoast/data/ccaphighres](http://www.csc.noaa.gov/digitalcoast/data/ccaphighres)

### **NOAA Sea Level Rise Viewer**

Displays potential future sea levels and provides simulations of sea level rise at local landmarks, including modeling potential marsh migration due to sea level rise. Overlays social and economic data onto potential sea level rise. Examines how tidal flooding will become more frequent with sea level rise.

*Geographic Scope:* Select regions currently available. More coming soon so check back.

*Website:* [www.csc.noaa.gov/digitalcoast/tools/slrviewer](http://www.csc.noaa.gov/digitalcoast/tools/slrviewer)

### **NOAA Spatial Trends in Coastal Socioeconomics**

The Spatial Trends in Coastal Socioeconomics recompiles socioeconomic data to estimate demographic and economic attributes for a variety of important coastal management jurisdictions like watersheds, floodplains, coastal counties, and place-based coastal management programs. Currently available data sets include Demographics Trends (1970-2011) from the U.S. Census Bureau; Economic Trends (1990-2011) from the Bureau of Labor Statistics and Bureau of Economic Analysis; Demographic Projections (1970-2040) from Woods and Poole Economics, Inc.; and Critical Facilities (2012) from the Federal Emergency Management Agency.

*Geographic Scope:* Varies by data

*Website:* <http://csc.noaa.gov/digitalcoast/data/stics>

### **NOAA State of the Coast**

The State of the Coast website fosters an increased awareness of the crucial importance of healthy coastal ecosystems to a robust U.S. economy, a safe population, and a sustainable quality of life for coastal residents. The site offers quick facts and more detailed statistics through interactive indicator visualizations. Visualizations focused on coastal hazards issues include Coastal Vulnerability to Sea Level



## 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:** *(Must be completed by all states.)*

*Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.*

**Resource Characterization:**

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

Public Access Status and Trends			
Type of Access	Current number <sup>1</sup>	Changes or Trends Since Last Assessment <sup>2</sup> (↑, ↓, -, unkwn)	Cite data source
Beach access sites	114	-	Previous Assessment
Shoreline (other than beach) access sites	Not currently tracked	Unknown	Has not been surveyed
Recreational boat (power or nonmotorized) access sites	88	↑	CRD water access inventory database
Number of designated scenic vistas or overlook points	Not currently tracked	Unknown	
Number of fishing access points (i.e. piers, jetties)	39	-	CRD water access inventory database
Coastal trails/boardwalks	No. of Trails/boardwalks Have not been counted	↑	Previous assessment

<sup>1</sup> Be as specific as possible. For example, if you have data on many access sites but know it is not an exhaustive list, note “more than” before the number. If information is unknown, note that and use the narrative section below to provide a brief qualitative description based on the best information available.

<sup>2</sup> If you know specific numbers, please provide. However, if specific numbers are unknown but you know that the general trend was increasing or decreasing or relatively stable or unchanged since the last assessment, note that with a ↑ (increased), ↓ (decreased), – (unchanged). If the trend is completely unknown, simply put “unkwn.”

Public Access Status and Trends			
Type of Access	Current number <sup>1</sup>	Changes or Trends Since Last Assessment <sup>2</sup> (↑, ↓, -, unkwn)	Cite data source
	Miles of Trails/boardwalks  363		
Number of acres parkland/open space	Total sites  327 sites 504,359 acres Sites per miles of shoreline: 11 (3,744 miles of shoreline)	↑	2012 Conservation Lands of Georgia GIS layer.
Other (please specify)			

- 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.<sup>3</sup> There are several additional sources of statewide information that may help inform this response, such as the Statewide Comprehensive Outdoor Recreation Plan,<sup>4</sup> the National Survey on Fishing, Hunting, and Wildlife Associated Recreation,<sup>5</sup> and your state's tourism office.

Georgia's coastal population was ranked 28<sup>th</sup> in population and 26<sup>th</sup> in density among coastal states in 2010 according to NOAA's State of the Coast National Population Report. From 1970 -2010, Georgia experienced an 82% population increase with a projected increase of 19% by 2020. Tourism is an economic driver in coastal Georgia and having only three beaches accessible by car puts pressure on those islands to maintain adequate beach access. As for boating and fishing access a recent analysis was completed to assess access distribution and gaps. The spatial analysis showed that 47% of the coastal population was within 5 miles of a public water access point and 99% of the population was within 20 miles of a water access site. New demands from paddle sports show a need for more kayak/canoe specific facilities. Efforts in coastal Georgia continue to conserve important habitats, provide open space, and recreational opportunities.

- 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. No recent data or reports specific to coastal Georgia have been completed since the last assessment.

<sup>3</sup> See NOAA's Coastal Population Report: 1970-2020 (Table 5, pg. 9): <http://stateofthecoast.noaa.gov/coastal-population-report.pdf>

<sup>4</sup> Most states routinely develop "Statewide Comprehensive Outdoor Recreation Plans", or SCROPs, that include an assessment of demand for public recreational opportunities. Although not focused on coastal public access, SCROPs could be useful to get some sense of public outdoor recreation preferences and demand. Download state SCROPs at [www.recpro.org/scorps](http://www.recpro.org/scorps).

<sup>5</sup> The National Survey on Fishing, Hunting, and Wildlife Associated Recreation produces state-specific reports on fishing, hunting, and wildlife associated recreational use for each state. While not focused on coastal areas, the reports do include information on saltwater and Great Lakes fishing, and some coastal wildlife viewing that may be informative and compares 2011 data to 2006 and 2001 information to understand how usage has changed. See [www.census.gov/prod/www/fishing.html](http://www.census.gov/prod/www/fishing.html).

**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.

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	Y	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.
3. Indicate if your state or territory has a publically available public access guide. How current is the publication and how frequently it is updated?<sup>6</sup>

Public Access Guide	Printed	Online	Mobile App
State or territory has? (Y or N)	Y	Y	N
Web address (if applicable)	<a href="http://www.coastalgadnr.org/sites/uploads/crd/pdf/Access/ACCESS_Guide.pdf">http://www.coastalgadnr.org/sites/uploads/crd/pdf/Access/ACCESS_Guide.pdf</a>	<a href="http://georgiaoutdoormap.com/">http://georgiaoutdoormap.com/</a>	
Date of last update	2008	2014	
Frequency of update	As needed	As needed	

**Enhancement Area Prioritization:**

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

<sup>6</sup> Note some states may have regional or local guides in addition to state public access guides. Unless you want to list all local guides as well, there is no need to list additional guides beyond the state access guide. However, you may choose to note that the local guides do exist and may provide additional information that expands upon the state guides.

High	_____
Medium	__X__
Low	_____

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

Access to natural resources remains a priority for the Coastal Management Program. The results of a recent stakeholder survey of Coastal Advisory Council members and their constituents reflected that respondents thought beach access was adequate but boat access sites and open space/conservation was lacking. Respondents also answered unsure on several of the public access questions. These responses demonstrate a need for better dissemination of information related to coastal public access and efforts of the Coastal Management Program.

\*\*\*\*\*

**RESOURCES AND TOOLS:**

*Below are a few national resources and tools that may be useful in conducting your assessment or developing public access strategies. States likely have other state-specific resources, tools, and data that would be useful as well.*

**CZMA Performance Measurement System Data**

Annual CZMA performance measurement data for public access. Online database can be used to synthesize existing state or territory data reported during the assessment period.

*Geographic Scope:* All coastal states and territories

*Website:* [www8.nos.noaa.gov/PMD/Login.aspx?ReturnUrl=%2fPMD%2fdefault.aspx](http://www8.nos.noaa.gov/PMD/Login.aspx?ReturnUrl=%2fPMD%2fdefault.aspx)

**EPA Swimming Season Statistics**

The Environmental Protection agency (EPA) tracks annual beach monitoring and closure information through its beach program. The most recent data available is for the 2012 season.

*Geographic Scope:* All coastal states and territories

*Website:* [http://water.epa.gov/type/oceb/beaches/2012\\_season.cfm](http://water.epa.gov/type/oceb/beaches/2012_season.cfm)

**National Survey on Fishing, Hunting, and Wildlife Associated Recreation**

The U.S. Census partners with the U.S. Fish and Wildlife Service to present information on individuals involved in fishing, hunting, and other wildlife-associated recreation, such as wildlife observation, photography, and feeding. Data include states in which these activities occurred; number of trips taken; days of participation; and expenditures for food, lodging, transportation, and equipment. While not focused on coastal areas, the reports do include information on saltwater and Great Lakes fishing and some coastal wildlife viewing. The 2011 reports compare 2011 data to 2006 and 2001 survey results to understand how usage has changed.

*Geographic Scope:* All states (territories not included)

*Website:* [www.census.gov/prod/www/fishing.html](http://www.census.gov/prod/www/fishing.html)

**Outdoor Recreation Trends and Futures**

The U.S. Forest Service routinely conducts a national study of outdoor recreation trends as part of the Renewable Resources Planning Act Assessment. The 2010 study (released in 2012) reviews past trends

in outdoor recreation participation by Americans, describes current outdoor recreation participation patterns, compares patterns across regional and demographic strata, describes recreation activity participation on public and private lands, and provides projections of outdoor recreation participation out to the year 2060.

*Geographic Scope:* National summaries only (no state-specific data provided)

*Website:* [www.srs.fs.usda.gov/pubs/gtr/gtr\\_srs150.pdf](http://www.srs.fs.usda.gov/pubs/gtr/gtr_srs150.pdf)

### **Outdoor Recreation for Northern United States**

Presents more regionally-specific data from the Outdoor Recreation Trends and Futures survey but also compares to other regions.

*Geographic Scope:* Focused on Northeast, Mid-Atlantic (Maryland north), and Great Lakes, although includes information on entire country as well.

*Website:* [www.fs.fed.us/nrs/pubs/gtr/gtr\\_nrs100.pdf](http://www.fs.fed.us/nrs/pubs/gtr/gtr_nrs100.pdf)

### **Statewide Comprehensive Outdoor Recreation Plans**

Most states regularly develop Statewide Comprehensive Outdoor Recreation Plans (SCORPs). While each SCORP varies by state, at a minimum, the plan must (1) identify outdoor recreation issues of statewide importance; (2) evaluate demand, i.e., public outdoor recreation preferences; and (3) evaluate the supply of outdoor recreation resources and facilities.

*Geographic Scope:* All states (territories not included)

*Website:* <http://www.recpro.org/scorps>

### **TrailLink**

The Rails-to-Trails Conservancy includes an interactive map interface that identifies rail trails, including mileage, for each state. While not limited to the coastal zone, or even coastal counties, this information could be useful to get a sense of the other types of trails and walkways that exist in the coastal zone.

*Geographic Scope:* All states (territories not included)

*Website:* [www.traillink.com/](http://www.traillink.com/)

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## 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:** *(Must be completed by all states.)*

*Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.*

**Resource Characterization:**

1. 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, unkwn)	Type of Impact <sup>1</sup> (aesthetic, resource damage, user conflicts, other)	Change Since Last Assessment (↑, ↓, -, unkwn)
<i>Land-based</i>			
Beach/shore litter	Seasonally Significant	Various, including aesthetic, personal injury, ecological impacts (ingestion by or entanglement of fish and wildlife)	-
Dumping	Varies from Low to Moderate	Impacts have been associated unauthorized bank stabilizations projects, sunken and derelict vessels, illegal dumping of materials in coastal marshlands, and dumping of materials that are in violation of ACOE Nationwide Permit 13.	Unknown
Storm drains and runoff	Low	Impacts limited to specific locations. Impacts are limited to sedimentation, and trash/garbage	-
Fishing (e.g., fishing)	Low	Impacts limited to	

<sup>1</sup> You can select more than one, if applicable.

line, gear)		specific locations, boat ramps and public dock sites.	–
Other (please specify)	Abandoned derelict vessels	Impacts limited to specific locations, boat ramps and public access points.	↑
<i>Ocean or Great Lake-based</i>			
Fishing (e.g., derelict fishing gear)	Low to Moderate	Impacts are localized to traditional commercial fishing communities along the coast of Georgia, destruction of salt marsh, degradation of habitat, navigational hazards, threatening human safety, and ruining aesthetics.	–
Derelict vessels	Moderate to High	Types of impact can vary from leaking pollutants such as oil and other toxins, navigation hazards, degrading habitat; destruction of salt marsh; entrapping animals and nesting birds; financial burden to local government; threatening human safety; ruining aesthetics, and potential homeland security problem used for illegal activities.	↑
Vessel-based (e.g., cruise ship, cargo ship, general vessel)	Moderate	Impacts are limited to specific areas such as Savannah and Brunswick; these impacts include prop agitation, impacts to fisheries, sewage spills, contaminated bilge discharge, oil release, and litter.	–
Hurricane/Storm	Moderate to High	Impacts are dependent upon storm strength	–



		and storm surge. Potential damage could cripple economic, environmental, human, and wildlife.	
Tsunami	Low	Potential damage could cripple economic, environmental, human, and wildlife.	–
Other (please specify)	High	Impacts to water quality from sewage release within the 3-mile limit, littering, increase in derelict vessels, increase in criminal activity along and near the waterway, water hazards, and general marine debris.	↑

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.

*Lee, R.F., Sanders, D.P. The amount and accumulation rate of plastic debris on marshes and beaches on the Georgia coast. Mar. Pollut. Bull. (2014)*

**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.

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

**Enhancement Area Prioritization:**

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

<b>High</b>	_____
<b>Medium</b>	_____X_____
<b>Low</b>	_____

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

There currently exists numerous community-based litter/debris programs throughout the coastal zone. These groups, in partnership with or with funding from the Coastal Management Program, these programs have highlighted marine debris issues and work to foster better stewardship by coastal users. Debris resulting from abandoned and derelict vessels continues to be a problem. While funding is generally not available to facilitate the removal of vessels, creative management strategies are working to remove some vessels from coastal waterways.

Stakeholders, including Coastal Advisory Council members and their constituents, ranked Marine Debris amongst the lowest of priorities but did cite public education and local government resources as the biggest gaps in addressing this issue.

Based on ongoing community programs, a lack of significant change in the amounts or types of marine debris being experienced on the GA coast, and stakeholder opinion, we have ranked this area as a medium priority.

## 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:** *(Must be completed by all states.)*

*Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.*

**Resource Characterization:**

- Using National Ocean Economics Program Data on population and housing,<sup>1</sup> please indicate the change in population and housing units in the state’s coastal counties between 2012 and 2007. You may wish to add additional trend comparisons to look at longer time horizons as well (data available back to 1970), but at a minimum, please show change over the most recent five year period (2012-2007) to approximate current assessment period.

Trends in Coastal Population and Housing Units				
Year	Population		Housing	
	Total (# of people)	% Change (compared to 2002)	Total (# of housing units)	% Change (compared to 2002)
2007	591,268	10.26%	259,891	8.83%
2012	651,910		282,834	

- Using provided reports from NOAA’s Land Cover Atlas<sup>2</sup> or high-resolution C-CAP data<sup>3</sup> (Pacific and Caribbean Islands only), please indicate the status and trends for various land uses in the state’s coastal counties between 2006 and 2011. You may use other information and include graphs and figures, as appropriate, to help illustrate the information. Note that the data available for the islands may be for a different time frame than the time periods reflected below. In that case, please specify the time period the data represents. Also note that Puerto Rico and the Commonwealth of the Northern Mariana Islands (CNMI) currently only have data for one time point so will not be able to report trend data. Instead, Puerto Rico and CNMI should just report current land use cover for developed areas and impervious surfaces.

<sup>1</sup> [www.oceaneconomics.org/](http://www.oceaneconomics.org/). Enter “Population and Housing” section. From drop-down boxes, select your state, and “all counties.” Select the year (2012) and the year to compare it to (2007). Then select “coastal zone counties.” Finally, be sure to check the “include density” box under the “Other Options” section.

<sup>2</sup> [www.csc.noaa.gov/ccapatlas/](http://www.csc.noaa.gov/ccapatlas/). Summary data on land use trends for each coastal state is available on the ftp site.

<sup>3</sup> [www.csc.noaa.gov/digitalcoast/data/ccaphighres](http://www.csc.noaa.gov/digitalcoast/data/ccaphighres). Summary data on land use trends for each coastal state is available on the ftp site.

Distribution of Land Cover Types in Coastal Counties		
Land Cover Type	Land Area Coverage in 2011 (Acres)	Gain/Loss Since 2006 (Acres)
Developed, High Intensity	34403.6	5260.1
Developed, Low Intensity	98645.5	10522.8
Developed, Open Space	65724.6	10059.4
Grassland	164058.7	-15781.8
Scrub/Shrub	431445.9	67491.5
Barren Land	30972.5	3417.3
Open Water	485508.9	1319.2
Agriculture	121577.5	-4268.9
Forested	1001843.8	-70662.2
Wetlands	1658932.0	-7338.1

3. Using provided reports from NOAA's Land Cover Atlas<sup>4</sup> or high-resolution C-CAP data<sup>5</sup> (Pacific and Caribbean Islands only), please indicate the status and trends for developed areas in the state's coastal counties between 2006 and 2011 in the two tables below. You may use other information and include graphs and figures, as appropriate, to help illustrate the information. Note that the data available for the islands may be for a different time frame than the time periods reflected below. In that case, please specify the time period the data represents. Also note that Puerto Rico and CNMI currently only have data for one time point so will not be able to report trend data. Unless Puerto Rico and CNMI have similar trend data to report on changes in land use type, they should just report current land use cover for developed areas and impervious surfaces.

Development Status and Trends for Coastal Counties			
	2006	2011	Percent Net Change
Percent land area developed	172931.4 (4.2%)	198773.7 (4.9%)	25842.3 (14.9%)
Percent impervious surface area	51060.8 (1.2%)	58564.0 (1.4%)	7503.2 (14.7%)

\* Note: Islands likely have data for another time period and may only have one time interval to report. If so, only report the change in development and impervious surface area for the time period for which high-resolution C-CAP data are available. Puerto Rico and CNMI do not need to report trend data.

How Land Use is Changing in Coastal Counties	
Land Cover Type	Areas Lost to Development Between 2006-2011 (Acres)
Barren Land	1825.6
Wetland	5706.9
Open Water	45.1
Agriculture	712.3
Scrub/Shrub	4646.7
Grassland	6920.0
Forested	8292.0

\* Note: Islands likely have data for another time period and may only have one time interval to report. If so, only report the change in land use for the time period for which high-resolution C-CAP data are available. Puerto Rico and CNMI do not report.

<sup>4</sup> [www.csc.noaa.gov/ccapatlas/](http://www.csc.noaa.gov/ccapatlas/). Summary data on land use trends for each coastal state is available on the ftp site.

<sup>5</sup> [www.csc.noaa.gov/digitalcoast/data/ccaphighres](http://www.csc.noaa.gov/digitalcoast/data/ccaphighres). Summary data on land use trends for each coastal state is available on the ftp site.

4. Using data from NOAA’s State of the Coast “Shoreline Type” viewer,<sup>6</sup> indicate the percent of shoreline that falls into each shoreline type.<sup>7</sup> You may provide other information or use graphs or other visuals to help illustrate.

Shoreline Types	
Surveyed Shoreline Type	Percent of Shoreline
Armored	1
Beaches	4
Flats	6
Rocky	1
Vegetated	88

5. If available, briefly list and 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 and habitat fragmentation, since the last assessment to augment the national data sets.
- NWI updates for 6 ocean facing counties using 2006 aerial imagery data.
  - Coastal GA Land Conservation Initiative-Vegetative Community inventory and mapping using Natureserve classification system in all 11 coastal counties.
  - Armored shoreline inventory for 6 ocean facing counties.

**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	Y	N
Guidance documents	Y	Y	Y
Management plans (including SAMPs)	N	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:
- Describe the significance of the changes;

There are two guidance documents that have been updated or enhanced during this assessment time period. The Coastal Stormwater Supplement (CSS) was developed and released in 2009 and can be

<sup>6</sup> <http://stateofthecoast.noaa.gov/shoreline/welcome.html>

<sup>7</sup> Note: Data are from NOAA’s Environmental Sensitivity Index (ESI) Maps. Data from each state was collected in different years and some data may be over ten years old now. However, it can still provide a useful reference point absent more recent statewide data. Feel free to use more recent state data, if available, in place of ESI map data. Use a footnote to convey data’s age and source (if other than ESI maps).

found at <https://epd.georgia.gov/georgia-epd-coastal-stormwater-supplement-stormwater-management-manual>. The CSS provides Georgia’s coastal communities with comprehensive guidance on an integrated, green infrastructure-based approach to natural resource protection, stormwater management and site design that can be used to advance protection of coastal Georgia’s unique and vital natural resources as the region grows and develops. Since the release of the first edition additional trainings and user input sessions have been held, which has contributed to several updates to the Site Planning and Design Worksheet and Spreadsheets in 2013 and 2014.

The Green Growth Guidelines is a guidance document for coastal developers that outlines the environmental, social, and economic benefits from use of LID strategies when compared to today’s conventional development approach. This document was updated in 2014 to be consistent with the Coastal Stormwater Supplement and reference that document in the appropriate places.

b. Specify if they were 309 or other CZM-driven changes;

The CSS was in part a CZM-driven change. The GA Coastal Management Program (GCMP) staff were involved in project development, trainings and participated as a member of the Technical Advisory Committee. The subsequent updates were driven by user feedback and carried out by original partners including The Center for Watershed Protection, The Savannah- Chatham Metropolitan Planning Commission and local engineers.

The Green Growth Guidelines update was also in part a CZM-driven change. GCMP staff participated in project development and outreach.

c. Characterize the outcomes or likely future outcomes of the changes.

The updates to both of these guidance documents fulfilled a need to address stormwater (and other development issues) on a coastal specific basis. GCMP staff will continue to work with partners to provide continued education, outreach and training on these guidance documents throughout the next assessment period.

**Enhancement Area Prioritization:**

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

<b>High</b>	<input checked="" type="checkbox"/>
<b>Medium</b>	<input type="checkbox"/>
<b>Low</b>	<input type="checkbox"/>

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

GCMP staff identifies the need for CSI to be addressed in more detail in the coastal region. Predicted coastal population growth coupled with inappropriate growth strategies and increasing coastal hazards puts coastal Georgia at risk for potential impact to our unique and sometimes rare coastal habitats. Stakeholder engagement included outreach to the Coastal Advisory Council to the GA Coastal Management Program and 75% of respondents agree that CSI should be considered a high priority.

## 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:** *(Must be completed by all states and territories.)*

*Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.*

**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 special area management plan (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
Offshore	Unclear state authorities, conflicting uses
Tidal Marsh	Sea level rise response, surrounding development
Shellfish Areas	Climate change impacts, management
River Corridors	Upland conversion to development, buffers, water quality
Developed Beachfronts	Coastal hazards, sea level rise, turtle nesting habitat
Port of Savannah	Decreased water quality
Coastal Floodplains	Sea level rise, development, habitat loss

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.

No SAMPs have been completed for Georgia.

**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	N	N	N
SAMP plans	N	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.

**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.

This enhancement area was given a low priority by GCMP because the potential SAMP areas listed above are either being addressed through other 309 strategies or have longstanding issues and groups working on them. Stakeholder input received from Coastal Advisory Council members and their constituents suggested this area as a medium priority and identified several of the priority areas listed above in Question 1.

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**RESOURCES AND TOOLS:**

*Below are a few national resources and tools that may be useful in conducting your assessment or developing SAMP strategies. States likely have other state-specific resources, tools, and data that would be useful as well.*



Davis, Braxton. 2004. "Regional Planning in the U.S. Coastal Zone: A Comparative Analysis of 15 Special Area Plans." *Ocean and Coastal Management*. Volume 47, Pages 79 to 94.

*Geographic Scope:* National

*Website:* [www.sciencedirect.com/science/article/pii/S0964569104000225](http://www.sciencedirect.com/science/article/pii/S0964569104000225)

Imperial, Mark. 1999. "Analyzing Institutional Arrangements for Ecosystem-Based Management: Lessons from the Rhode Island Salt Ponds SAM Plan." *Coastal Management*. Volume 27. Pages 31 to 56.

*Geographic Scope:* Rhode Island, but lessons broadly applicable

*Website:* [www.ingentaconnect.com/content/tandf/ucmg/1999/00000027/00000001/art00002?crawler=true](http://www.ingentaconnect.com/content/tandf/ucmg/1999/00000027/00000001/art00002?crawler=true)

Lane Council of Governments. 1992. "Hints on Preparing a Comprehensive Wetland Management Plan." Lane Council of Governments, Lane, Oregon.

*Geographic Scope:* National

*Website:* [www.rice.edu/wetlands/Reports/R12\\_1.html](http://www.rice.edu/wetlands/Reports/R12_1.html)

DRAFT

## 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:** *(Must be completed by all states and territories.)*

*Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.*

### 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),<sup>1</sup> indicate the status of the ocean and Great Lakes economy as of 2010, as well as the change since 2005, in the tables below. Include graphs and figures, as appropriate, to help illustrate the information. Note ENOW data are not available for the territories. The territories can provide alternative data, if available, or a general narrative, to capture the value of their ocean economy.

Status of Ocean and Great Lakes Economy for Coastal Counties (2010)				
	Establishments (# of Establishments)	Employment (# of Jobs)	Wages (Millions of Dollars)	GDP (Millions of Dollars)
Living Resources	76	691	22.5	69
Marine Construction	20	136	.5	11.7
Marine Transportation	147	6342	245	453
Offshore Mineral Extraction	11	35	1.3	1.9
Tourism & Recreation	828	14094	236	522.7
All Ocean Sectors	1106	22036	535.9	1094.3

Change in Ocean and Great Lakes Economy for Coastal Counties (2005-2010)				
	Establishments (% change)	Employment (% change)	Wages (% change)	GDP (% change)
Living Resources	-21	-28	-31	-62
Marine Construction	-20	-44	-51	-54
Marine Transportation	16	37	37	43
Offshore Mineral Extraction	-18	-83	-56	-64
Tourism & Recreation	10	-5	2	-4
All Ocean Sectors	7	-1	8	1

<sup>1</sup> [www.csc.noaa.gov/enow/explorer/](http://www.csc.noaa.gov/enow/explorer/). If you select any coastal county for your state, you receive a table comparing county data to state coastal county, regional, and national information. Use the state column for your responses.

2. 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 (↑, ↓, -, unkwn)
<b>Resource</b>	
<i>Benthic habitat (including coral reefs)</i>	-
<i>Living marine resources (fish, shellfish, marine mammals, birds, etc.)</i>	-
<i>Sand/gravel</i>	↑
<i>Cultural/historic</i>	-
<i>Other (please specify)</i>	
<b>Use</b>	
<i>Transportation/navigation</i>	↑
<i>Offshore development<sup>2</sup></i>	↑
<i>Energy production</i>	↑
<i>Fishing (commercial and recreational)</i>	-
<i>Recreation/tourism</i>	-
<i>Sand/gravel extraction</i>	↑
<i>Dredge disposal</i>	-
<i>Aquaculture</i>	-
<i>Other (please specify)</i>	

3. For the ocean and Great Lakes resources and uses in Table 2 (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.

Major Contributors to an Increase in Threat or Use Conflict to Ocean and Great Lakes Resources												
Resource	Major Reasons Contributing to Increased Resource Threat or Use Conflict (Note All that Apply with “X”)											
	Land-based development	Offshore development	Polluted runoff	Invasive species	Fishing (Comm & Rec)	Aquaculture	Recreation	Marine Transportation	Dredging	Sand/Mineral Extraction	Ocean Acidification	Other (Specify)
<i>Example: Living marine resources</i>		X	X	X	X	X		X	X			
<i>Sand/gravel</i>	X				X		X					
<i>Transportation/navigation</i>		X		X				X	X	X		
<i>Offshore development<sup>3</sup></i>	X	X			X		X	X	X	X		

<sup>2</sup> Offshore development includes underwater cables and pipelines, although any infrastructure specifically associated with the energy industry should be captured under the “energy production” category.

<sup>3</sup> Offshore development includes underwater cables and pipelines, although any infrastructure specifically associated with the energy industry should be captured under the “energy production” category.

<i>Energy production</i>	X	X			X		X	X	X	X		
<i>Sand/gravel extraction</i>	X				X		X			X		

- 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.

**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?

<b>Management Category</b>	<b>Employed by State or 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>
Statutes, regulations, policies, or case law interpreting these	Y	Y	N
Regional comprehensive ocean/Great Lakes management plans	N	N	N
State comprehensive ocean/Great Lakes management plans	N	N	N
Single-sector management plans	N	N	N

- 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)	N	N
Under development (Y/N)	N	N
Web address (if available)	N/A	N/A
Area covered by plan	N/A	N/A

**Enhancement Area Prioritization:**

- 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.

The Ocean Resources Enhancement Area remains a high priority for the Georgia Coastal Management Program. The Coastal Management Program is currently addressing Ocean Resources through a 309 strategy and due to emerging federal policy and procedures as well as conflicting uses the Program thinks continued efforts are needed.

Stakeholders, including Coastal Advisory Council members and their constituents, also felt that Ocean Resources was a top priority, citing the threats to living marine resources from offshore development as their primary concern.

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**RESOURCES AND TOOLS:**

*Below are a few national resources and tools that may be useful in conducting your assessment or developing strategies for ocean and Great Lakes Resources. States likely have other state-specific resources, tools, and data that would be useful as well.*

**BOEM Environmental Studies Program**

The Bureau of Ocean and Energy Management’s (BOEM) Environmental Studies Program develops, conducts, and oversees world-class scientific research specifically to inform policy decisions regarding development of Outer Continental Shelf energy and mineral resources. Research covers physical oceanography, atmospheric sciences, biology, protected species, social sciences and economics, submerged cultural resources, and environmental fates and effects.

*Geographic Scope:* Specific to each study  
*Website:* [www.boem.gov/Studies/](http://www.boem.gov/Studies/)

**MarineCadastre.gov Viewer**

This data viewer provides the baseline information needed for ocean planning efforts, particularly those that involve finding the best location for renewable energy projects. Users pick the ocean geography of their choosing and quickly see the applicable jurisdictional boundaries, restricted areas, laws, critical habitat locations, and other important features. With the national viewer, potential conflicts can be identified and avoided early in the planning process, and users can visually analyze and explore geospatial data for marine spatial planning activities and find direct access to authoritative marine cadastral data from federal and state sources.

*Geographic Scope:* National  
*Website:* [www.csc.noaa.gov/digitalcoast/tools/mmc](http://www.csc.noaa.gov/digitalcoast/tools/mmc)

**NOAA Assessment of Existing Information on Atlantic Coastal Fish Habitats**

This project reviewed over 500 published sources of information on habitat condition indicators, threats, and conservation actions for U.S. Atlantic coastal waters and watersheds. Results are available via web query tools and a published NOAA technical memo.

*Geographic Scope:* Atlantic coastal waters, from Maine to Florida

*Websites (query tools):* [www8.nos.noaa.gov/bhv/spatbibindex.html](http://www8.nos.noaa.gov/bhv/spatbibindex.html); tech memo: <http://ccma.nos.noaa.gov/publications/nccostechmemo103.pdf>

### **NOAA Coastal County Snapshots: Ocean Jobs**

Provides a snapshot of the economic value of ocean and Great Lakes jobs within a coastal county.

*Geographic Scope:* Coastal states only. Currently not available for territories.

*Website:* [www.csc.noaa.gov/digitalcoast/tools/snapshots](http://www.csc.noaa.gov/digitalcoast/tools/snapshots)

### **NOAA Economics: National Ocean Watch Data (ENOW)**

The effective management of coastal resources requires an understanding of the ocean and Great Lakes economy. This tool allows users to interact with ENOW data, which describe six economic sectors that depend on the oceans and Great Lakes: living resources; marine construction; marine transportation; offshore mineral resources; ship and boat building; and tourism and recreation. Users can discover which sectors are the largest in various parts of the county, which sectors are growing and declining, and which account for the most jobs, wages, and gross domestic product. They can view up to four counties, states, or regions to compare trends or the makeup of their ocean and Great Lakes economies. The ENOW Explorer's interface is designed to allow users who are familiar with economic data to interact with and view data and trends. The tool provides the highest level of interaction with ENOW data short of downloading the full data set.

*Geographic Scope:* National and regional

*Website:* [www.csc.noaa.gov/digitalcoast/tools/enow](http://www.csc.noaa.gov/digitalcoast/tools/enow)

### **NOAA Essential Fish Habitat Mapper**

The Essential Fish Habitat Mapper is an online tool that displays essential fish habitat, and habitat areas of particular concern, established under provisions in the Magnuson-Stevens Fishery Conservation and Management Act. The tool also includes areas where steps have been taken to minimize the impact that fisheries have on essential fish habitat, including anchoring restrictions, required fishing gear modifications, and bans on certain types of gear. Users can query information from multiple fishery management plans at once to view habitat maps and lists of species for a specific location. The tool displays habitat maps and species lists for specific locations, queries spatial information from multiple fishery management plans at once, and provides links to text descriptions and data inventories, including related fishery management plans, federal regulations, and data and metadata download.

*Geographic Scope:* National and regional

*Website:* [www.csc.noaa.gov/digitalcoast/tools/efhmapper](http://www.csc.noaa.gov/digitalcoast/tools/efhmapper)

### **OceanData.gov**

The National Ocean Council's portal for data, information, and decision tools to support people engaged in regional marine planning for the future use of the ocean, coasts, and Great Lakes.

*Geographic Scope:* National and regional

*Website:* <http://www.data.gov/ocean/community/ocean>

### **U.S. Marine Protected Areas Mapping Tool**

The U.S. Marine Protected Areas (MPAs) mapping tool is an online application designed to help users visualize MPA boundaries and provide access to MPA Inventory data. This mapping tool provides data on over 1,600 MPAs nationwide, offering easy access to spatial boundaries, conservation-based classification data, and site management information. Managers, scientists, and the public will find a detailed picture of the type, abundance, and distribution of MPAs throughout the United States, gaining an increased understanding and technical capacity for ocean resource protection, management, and stewardship. The tool visualizes patterns and characteristics of MPAs throughout the United States and filters the MPA Inventory in various ways to show only certain MPAs with specific attributes.

*Geographic Scope:* National and regional

*Website:* [www.csc.noaa.gov/digitalcoast/tools/mpaviewer](http://www.csc.noaa.gov/digitalcoast/tools/mpaviewer)

DRAFT

## 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)1

**PHASE I (HIGH-LEVEL) ASSESSMENT:** *(Must be completed by all states and territories.)*

*Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.*

**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. The MarineCadastre.gov may be helpful in locating many types of energy facilities in the coastal zone.

<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 (↑, ↓, -, unkwn)	(# or Y/N)	Change Since Last Assessment (↑, ↓, -, unkwn)
<i>Energy Transport</i>				
Pipelines <sup>2</sup>	2	-	N	-
Electrical grid (transmission cables)	Y	Unkwn	Y	-
Ports	2	-	N	↑ (SHEP)
Liquid natural gas (LNG) <sup>3</sup>	1	-	N	-
Other (please specify)				
<i>Energy Facilities</i>				
Oil and gas	Y	-	Y	↑
Coal	Y	-	N	-
Nuclear <sup>4</sup>	Y (kings bay)	-	N	-
Wind	N	-	Y	↑
Wave <sup>5</sup>	N	-	N	-

<sup>1</sup> CZMA § 309(a)(8) is derived from program approval requirements in CZMA § 306(d)(8), which states:

“The management program provides for adequate consideration of the national interest involved in planning for, and managing the coastal zone, including the siting of facilities such as energy facilities which are of greater than local significance. In the case of energy facilities, the Secretary shall find that the State has given consideration to any applicable national or interstate energy plan or program.”

NOAA regulations at 15 C.F.R. § 923.52 further describe what states need to do regarding national interest and consideration of interests that are greater than local interests.

<sup>2</sup> For approved pipelines (1997-present): [www.ferc.gov/industries/gas/indus-act/pipelines/approved-projects.asp](http://www.ferc.gov/industries/gas/indus-act/pipelines/approved-projects.asp)

<sup>3</sup> For approved FERC jurisdictional LNG import/export terminals: [www.ferc.gov/industries/gas/indus-act/lng/exist-term.asp](http://www.ferc.gov/industries/gas/indus-act/lng/exist-term.asp)

<sup>4</sup> The Nuclear Regulatory Commission provides a coarse national map of where nuclear power reactors are located as well as a list that reflects their general locations: [www.nrc.gov/reactors/operating/map-power-reactors.html](http://www.nrc.gov/reactors/operating/map-power-reactors.html)

<sup>5</sup> For FERC hydrokinetic projects: [www.ferc.gov/industries/hydropower/gen-info/licensing/hydrokinetics.asp](http://www.ferc.gov/industries/hydropower/gen-info/licensing/hydrokinetics.asp)



Status and Trends in Energy Facilities and Activities in the Coastal Zone				
Type of Energy Facility/Activity	Exists in CZ		Proposed in CZ	
	(# or Y/N)	Change Since Last Assessment (↑, ↓, -, unkwn)	(# or Y/N)	Change Since Last Assessment (↑, ↓, -, unkwn)
Tidal <sup>36</sup>	N	-	N	-
Current (ocean, lake, river) <sup>36</sup>	N	-	N	-
Hydropower	N	-	N	-
Ocean thermal energy conversion	N	-	N	-
Solar	Y	↑	Y	↑
Biomass	Y	-	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.

Georgia Environmental Finance Authority, which houses the State’s Energy Office, issues an annual “Georgia Energy Report” which discusses the statewide status and trends of energy production and consumption. This report would include a summary of any significant changes occurring in the coastal zone on an annual basis.

Currently, BOEM is evaluating a lease application by Southern Company who proposes to lease 3 areas offshore from Georgia to install meteorological devices to test wind resources for future commercial energy production (<http://www.boem.gov/State-Activities-Georgia/>). Commercial-scale wind farms have not been proposed at this time.

The Obama Administration and BOEM have recently lifted a moratorium against offshore oil and gas exploration adjacent to Georgia’s coast. Currently, BOEM is including Georgia’s offshore area in their 2017-2021 Offshore Continental Shelf (OCS) Leasing Program (<http://www.boem.gov/five-year-program/>). This is a significant change in proposed uses of the offshore environment. Currently, there are several permits for geological and geophysical activities related to oil and gas exploration being reviewed by the GCMP for consistency with state policies. Of particular concern are impacts to fisheries and sea turtles. Should further activities be proposed, additional reasonably foreseeable effects may impact Right Whales, and other commercial and recreational uses of Georgians.

3. Briefly characterize the existing status and trends for federal government facilities and activities of greater than local significance<sup>6</sup> in the state’s coastal zone since the last assessment.

There have been no significant changes in federal government facilities or activities in the coastal zone since the last assessment.

<sup>6</sup> The CMP should make its own assessment of what Government facilities may be considered “greater than local significance” in its coastal zone, but these facilities could include military installations or a significant federal government complex. An individual federal building may not rise to a level worthy of discussion here beyond a very cursory (if any at all) mention).

**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	Y	N
State comprehensive siting plans or procedures	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.

Note: GCMP, through an ongoing Section 309 strategy is working to improve state procedures for the siting of energy activities in coastal and ocean waters.

**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.

At this time, there is growing interest in energy exploration and production in Georgia’s coastal zone. Most notably is the recent interest in wind, oil and gas in Georgia’s offshore areas. Other interests onshore include solar and wind energy production. While this is of great importance to the GCMP, our primary concern is ensuring that information regarding our coastal natural resources are represented in siting and permitting decisions. We feel this need is best addressed through the Ocean Resources enhancement area, thus justifying the “medium” ranking.

A survey of Coastal Advisory Council stakeholders and their constituents revealed support for this ranking. While this is mounting concern over the emerging interest in offshore energy development, the greatest concern is related to cumulative impacts on living marine resources and wetlands.

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## RESOURCES AND TOOLS:

*Below are a few national resources and tools that may be useful in conducting your assessment or developing energy and federal government facilities strategies. States likely have other state-specific resources, tools, and data that would be useful as well.*

### **BOEM Environmental Studies Program**

The Bureau of Ocean and Energy Management's (BOEM) Environmental Studies Program develops, conducts, and oversees world-class scientific research specifically to inform policy decisions regarding development of Outer Continental Shelf energy and mineral resources. Research covers physical oceanography, atmospheric sciences, biology, protected species, social sciences and economics, submerged cultural resources, and environmental fates and effects.

*Geographic Scope:* Specific to each study

*Website:* [www.boem.gov/Studies/](http://www.boem.gov/Studies/)

### **U.S. Energy Information Administration**

The U.S. Energy Information Administration collects, analyzes, and disseminates independent and impartial energy information to promote sound policy making, efficient markets, and public understanding of energy and its interaction with the economy and the environment. The site includes a wealth of information on energy demand, use, and production (nationally, by region, and by energy sector).

*Geographic Scope:* National and regional

*Website:* [www.eia.gov](http://www.eia.gov)

### **FERC Projects**

The Federal Energy and Regulatory Commission (FERC) has authority over electricity, natural gas (including LNG), and hydropower and hydrokinetic projects. The site has information on current and pending projects as well as market demands.

*Geographic scope:* National

*Website:* [www.ferc.gov/for-citizens/projectsearch/SearchProjects.aspx](http://www.ferc.gov/for-citizens/projectsearch/SearchProjects.aspx)

### **GSA Lists of Federally Owned and Leased Facilities**

The Government Services Agency (GSA) maintains a national list of all federally owned and leased facilities in each state.

*Geographic scope:* National

*Website:* [www.iolp.gsa.gov/iolp/NationalMap.asp](http://www.iolp.gsa.gov/iolp/NationalMap.asp)

### **MarineCadastre.gov Viewer**

This data viewer provides the baseline information needed for ocean planning efforts, particularly those that involve finding the best location for renewable energy projects. Users choose an ocean geography and quickly see the applicable jurisdictional boundaries, restricted areas, laws, critical habitat locations, and other important features. With the national viewer, potential conflicts can be identified and avoided early in the planning process, and users can visually analyze and explore geospatial data for marine spatial planning activities and find direct access to authoritative marine cadastral data from federal and state sources.

*Geographic Scope:* National

*Website:* [www.csc.noaa.gov/digitalcoast/tools/mmc](http://www.csc.noaa.gov/digitalcoast/tools/mmc)

**NOAA Economics: National Ocean Watch Data (ENOW)**

The effective management of coastal resources requires an understanding of the ocean and Great Lakes economy. This tool allows users to interact with ENOW data, which describe six economic sectors that depend on the oceans and Great Lakes: living resources; marine construction; marine transportation; offshore mineral resources; ship and boat building; and tourism and recreation. Users can discover which sectors are the largest in various parts of the county, which sectors are growing and declining, and which account for the most jobs, wages, and gross domestic product. They can view up to four counties, states, or regions to compare trends or the makeup of their ocean and Great Lakes economies. The ENOW Explorer's interface is designed to allow users who are familiar with economic data to interact with and view data and trends. The tool provides the highest level of interaction with ENOW data short of downloading the full data set.

*Geographic Scope:* National and regional

*Website:* <http://www.csc.noaa.gov/digitalcoast/data/enow>

DRAFT

## 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:** *(Must be completed by all states and territories.)*

*Purpose: To quickly determine whether the enhancement area is a high priority enhancement objective for the CMP that warrants a more in-depth assessment. The more in-depth assessments of Phase II will help the CMP understand key problems and opportunities that exist for program enhancement and determine the effectiveness of existing management efforts to address those problems.*

**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. Your state Sea Grant Program may have information to help with this assessment.<sup>1</sup>

Type of Facility/Activity	Status and Trends of Aquaculture Facilities and Activities		
	# of Facilities <sup>2</sup>	Approximate Economic Value	Change Since Last Assessment (↑, ↓, -, unkwn)
Public	7		-
Commercial-State	12	\$845,625*	↑
Commercial-Private	8		↑

\*Dollar Value combined for confidentiality

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.

GCMP directly manages the use of state water bottoms for the harvest of wild and cultivated oyster, clams and other shellfish. Through our efforts, clam and oyster farming are on the rise in coastal Georgia. Our goal is to aid farmers in increasing their production, subdividing available state waterbottoms to encourage the entry of new farmers into the industry, aid in creating/enhancing commercial markets and consumer demand for Georgia-grown shellfish, and overall increasing the economic bottom line.

**Management Characterization:**

<sup>1</sup> While focused on statewide aquaculture data rather than just within the coastal zone, the *Census of Aquaculture* ([www.agcensus.usda.gov/Publications/2002/Aquaculture/](http://www.agcensus.usda.gov/Publications/2002/Aquaculture/)) may help in developing your aquaculture assessment. The 2002 report, updated in 2005, provides a variety of state-specific aquaculture data for 2005 and 1998 to understand current status and recent trends. The next census is scheduled to come out late 2014 and will provide 2013 data.

<sup>2</sup> Be as specific as possible. For example, if you have specific information of the number of each type of facility or activity, note that. If you only have approximate figures, note “more than” or “approximately” before the number. If information is unknown, note that and use the narrative section below to provide a brief qualitative description based on the best information available.

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	Y	Y	N
Other aquaculture statutes, regulations, policies, or case law interpreting these	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.

**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.

While growing the Mariculture industry is a high priority for the State and GCMP, we currently believe we have the tools, resources, and partnerships with growers and researchers to accomplish our goals through a managed approach. Stakeholder input was gathered from Coastal Advisory Council members and their constituents. Their input suggests that we need to continue our focus on research, which we do through our Section 306 grant program (we are currently supporting the start-up of an university-based oyster hatchery which may exponentially increase oyster farming if successful) and through partnerships with Sea Grant. Stakeholders also cited environmental concerns as the biggest challenge facing the aquaculture industry, which we absolutely concur with, as shellfish can only be harvested from areas with superior water quality. Finally stakeholders indicated Aquaculture to be the 3<sup>rd</sup> lowest ranked priority for the GCMP, thus supporting our ranking of “medium” priority.

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## **RESOURCES AND TOOLS:**

*Below are a few national resources and tools that may be useful in conducting your assessment or developing aquaculture strategies. States likely have other state-specific resources, tools, and data that would be useful as well.*

### **NOAA Office of Aquaculture**

The Office of Aquaculture fosters sustainable aquaculture that will create employment and business opportunities in coastal communities; provide safe, sustainable seafood; and complement NOAA's comprehensive strategy for maintaining healthy and productive marine populations, species, and ecosystems and vibrant coastal communities.

*Geographic Coverage:* National and regional

*Website:* [www.nmfs.noaa.gov/aquaculture/index.htm](http://www.nmfs.noaa.gov/aquaculture/index.htm)

### **USDA Census of Aquaculture**

The U.S. Department of Agriculture publishes the Census of Aquaculture. The census provides a variety of state-specific aquaculture data for 2005 and 1998 to understand current status and recent trends. The next census is scheduled to come out late 2014 and will provide 2013 data.

*Geographic Coverage:* National

*Website:* [www.agcensus.usda.gov/Publications/2002/Aquaculture/](http://www.agcensus.usda.gov/Publications/2002/Aquaculture/)

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## Phase II Assessments

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## 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.*

- 1a. **Flooding In-depth** (for all states besides territories): Using data from NOAA's *State of the Coast* "Population in the Floodplain" viewer<sup>1</sup> and summarized by coastal county through NOAA's Coastal County Snapshots for Flood Exposure,<sup>2</sup> indicate how many people at potentially elevated risk were located within the state's coastal floodplain as of 2010. These data only reflect two types of vulnerable populations. You can provide additional or alternative information or use graphs or other visuals to help illustrate or replace the table entirely if better data are available. *Note: National data are not available for territories. Territories can omit this question unless they have similar alternative data or include a brief qualitative narrative description as a substitute.*

2010 Populations in Coastal Counties at Potentially Elevated Risk to Coastal Flooding <sup>3</sup>				
	Under 5 and Over 65 years old		In Poverty	
	# of people	% Under 5/Over 65	# of people	% in Poverty
Inside Floodplain	29567	13	29510	13
Outside Floodplain	36658	11	58144	17

- 1b. **Flooding In-depth** (for all states besides territories): Using summary data provided for critical facilities, derived from FEMA's HAZUS<sup>4</sup> and displayed by coastal county through NOAA's Coastal County Snapshots for Flood Exposure,<sup>5</sup> indicate how many different establishments (businesses or employers) and critical facilities are located in the FEMA floodplain. You can provide more information or use graphs or other visuals to help illustrate or replace the table entirely if better information is available.

Critical Facilities in the FEMA Floodplain <sup>44</sup>						
	Schools	Police Stations	Fire Stations	Emergency Centers	Medical Facilities	Communication Towers
Inside Floodplain	66	13	25	1	2	13
Coastal Counties	268	52	117	7	10	50

2. Based on the characterization of coastal hazard risk, what are the three most significant coastal hazards<sup>6</sup> within the coastal zone? Also indicate the geographic scope of the hazard, i.e., is it prevalent throughout the coastal zone or are specific areas most at risk?

<sup>1</sup> <http://stateofthecoast.noaa.gov/pop100yr/welcome.html>

<sup>2</sup> <http://www.csc.noaa.gov/digitalcoast/tools/snapshots>

<sup>3</sup> To obtain exact population numbers for the coastal floodplain, download the excel data file from the State of the Coast's "Population in Floodplain" viewer.

<sup>4</sup> <http://www.fema.gov/hazus>; can also download data from NOAA STICS <http://www.csc.noaa.gov/digitalcoast/data/stics>. Summary data on critical facilities for each coastal state is available on the ftp site.

<sup>5</sup> <http://www.csc.noaa.gov/digitalcoast/tools/snapshots>

<sup>6</sup> See list of coastal hazards at the beginning of this assessment template.

	Type of Hazard	Geographic Scope (throughout coastal zone or specific areas most threatened)
Hazard 1	Shoreline Erosion	Six coastal ocean-facing counties shoreline and back barrier shoreline
Hazard 2	Sea Level Rise	Six coastal counties
Hazard 3	Flooding	All eleven coastal counties

3. 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.

Based on data gathered through stakeholder input, Coastal Hazards is the overall 3<sup>rd</sup> highest coastal management priority. However, within this realm, shoreline erosion and sea level rise are considered by stakeholders to pose the highest risk in coastal Georgia. GCMP has commissioned several studies to evaluate shoreline vulnerability to erosion and sea level in Georgia. Most recently, a study by C. Jackson (2015) revealed that just over half of estuarine (non-beach) shorelines are erosional based on historic patterns of shoreline movement. It may be assumed that these shorelines will be additionally vulnerable to rises in sea level. Management efforts are only just now beginning to focus on estuarine shorelines and how to minimize loss of personal upland property adjacent to eroding shorelines without sacrificing the ecological (habitat) benefits of shorelines.

As more coastal lands are converted to development and impervious surfaces, localized flooding from precipitation events are becoming more common, as is shallow coastal flooding caused by high and higher tides. Existing management strategies exist to help minimize flooding through stormwater management but fall short in addressing flooding from high river flows and rising tides. A recent assessment of coastal hazards in Chatham County, GA revealed shallow coastal flooding as one of their top concerns. Several other coastal communities have received Coastal Incentive Grant funding (Section 306) to update their stormwater management plans to improve their capacity to manage rainfall to minimize flooding.

4. 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
None identified	

**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.

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)

<b>Statutes, Regulations, and Policies:</b>			
<i>Shorefront setbacks/no build areas</i>	Y	Y	N
<i>Rolling easements</i>	N	NA	N
<i>Repair/rebuilding restrictions</i>	Y	Y	N
<i>Hard shoreline protection structure restrictions</i>	Y	Y	N
<i>Promotion of alternative shoreline stabilization methodologies (i.e., living shorelines/green infrastructure)</i>	Y	Y	Y
<i>Repair/replacement of shore protection structure restrictions</i>	Y	Y	N
<i>Inlet management</i>	Y	N	N
<i>Protection of important natural resources for hazard mitigation benefits (e.g., dunes, wetlands, barrier islands, coral reefs) (other than setbacks/no build areas)</i>	Y	Y	Y
<i>Repetitive flood loss policies (e.g., relocation, buyouts)</i>	Y	Y	N
<i>Freeboard requirements</i>	N	Y	N
<i>Real estate sales disclosure requirements</i>	N	Y	N
<i>Restrictions on publicly funded infrastructure</i>	N	N	N
<i>Infrastructure protection (e.g., considering hazards in siting and design)</i>	N	Y	N
<i>Other (please specify)</i>			
<b>Management Planning Programs or Initiatives:</b>			
<i>Hazard mitigation plans</i>	Y	Y	Y
<i>Sea level rise/Great Lake level change or climate change adaptation plans</i>	Y	Y	Y
<i>Statewide requirement for local post-disaster recovery planning</i>	Y	Y	Y
<i>Sediment management plans</i>	Y	Y	N
<i>Beach nourishment plans</i>	Y	Y	N
<i>Special Area Management Plans (that address hazards issues)</i>	N	N	N
<i>Managed retreat plans</i>	N	Y	N
<i>Other (please specify)</i>			
<b>Research, Mapping, and Education Programs or Initiatives:</b>			
<i>General hazards mapping or modeling</i>	Y	Y	Y
<i>Sea level rise mapping or modeling</i>	Y	Y	Y
<i>Hazards monitoring (e.g., erosion rate, shoreline change, high-water marks)</i>	Y	Y	Y
<i>Hazards education and outreach</i>	Y	Y	Y
<i>Other (please specify)</i>			

- 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?

Management efforts specifically addressing coastal hazards is relatively new in Georgia and is the focus of a current 309 strategy. The GCMPs success in developing an effective strategy can be assessed in time.

**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: Identifying the costs and benefits of resilient built and green infrastructure to manage flooding and shoreline erosion*

*Description:* It is important to demonstrate to local governments the economic benefits of resilient infrastructure (Low Impact Development, wetland protection) to manage flooding issues. A local comparison of action vs. inaction would be beneficial for coastal managers in relaying the importance of post disaster planning.

*Management Priority 2: Providing hazard resilience resources to local decision makers*

*Description:* Providing technical assistance to local governments so that they can make better informed decisions has always been the GCMP’s most important goal.

*Management Priority 3: Education and outreach to communities, businesses and industry, state and local governments*

*Description:* Local governments have always been the GCMP’s priority audience; however, businesses, industry, and private entities will play just as an important role in post disaster recovery and redevelopment planning.

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 addressed through a Section 309 strategy but should include any items that will be part of a strategy.

Priority Needs	Need? (Y or N)	Brief Explanation of Need/Gap
Research	Y	There is still a need to understand the costs associated with a major storm and how that amount may be reduced by smart and resilient growth.
Mapping/GIS/modeling	Y	There is a need for a more comprehensive GIS program in order to adequately handle existing requests, be knowledgeable of new software and technology, increase Program capabilities, and adequately distribute spatial

		information to stakeholders
Data and information management	Y	Data management is limited do to internal Information Technology challenges. In order to overcome challenges, other means of data storage and dissemination are continuing to be explored. This gap is being temporarily addressed but long-term solutions need to be investigated further.
Training/Capacity building	Y	Need to train stakeholders on the results of tools and research so that they can make decisions based on the most current relevant data. As well as receive the most up to date information coming out of the federal agencies and the current administration so that it can be implemented at the state and local level.
Decision-support tools	Y	There is an abundance of tools for local governments; however, there doesn't seem to be a great deal of information on the costs of action vs. inaction to resiliency. This would be extremely useful for decision-makers when presenting their choices to the general public and for coastal managers to relay the same information to local elected officials.
Communication and outreach	Y	Coastal Hazards is a topic that will always require outreach at all levels. Currently Coastal Georgia has not been hit by a major storm (Hurricane) in over 100 years; therefore, keeping the possibility in their minds will allow for a better prepared coast.
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.

Through the current 309 strategy of developing Disaster Recovery and Redevelopment Plans in Georgia's coastal counties, it is clear that local governments also need guidance on how to make their community more resilient. The current 309 provides the state and local governments with a framework to develop a plan for what must happen after rescue and recovery operations are completed in order to return the community to normal or perhaps rebuild an even better community. A new strategy will be developed to provide resources and specific guidance to local governments as to how and why they can and should consider resilient infrastructure. This will enhance the current 309 strategy b addressing the importance of resilient green infrastructure from a flooding and coastal hazards perspective.

## Cumulative and Secondary Impacts

### In-Depth Resource Characterization:

*Purpose: To determine key problems and opportunities to improve the CMP's ability to address cumulative and secondary impacts of coastal growth and development.*

1. What are the three most significant existing or emerging cumulative and secondary stressors or threats within the coastal zone? Indicate the geographic scope of the stressor, i.e., is it prevalent throughout the coastal zone or are there specific areas that are most threatened? Stressors can be coastal development and impervious surfaces; polluted runoff; agriculture activities; forestry activities; shoreline modification; or other (please specify). Coastal resources and uses can be habitat (wetland or shoreline, etc.); water quality; public access; or other (please specify). When selecting significant stressors, also consider how climate change may exacerbate each stressor.

	<b>Stressor/Threat</b>	<b>Coastal Resource(s)/Use(s) Most Threatened</b>	<b>Geographic Scope</b> (throughout coastal zone or specific areas most threatened)
Stressor 1	Polluted Runoff	Habitats; Water Quality	In developed and developing areas
Stressor 2	Coastal Development	Habitats; Water Quality	In developed and developing areas
Stressor 3	Shoreline Modification	Habitats	Throughout coastal zone

2. Briefly explain why these are currently the most significant cumulative and secondary stressors or threats from coastal growth and development within the coastal zone. Cite stakeholder input and/or existing reports or studies to support this assessment.

Polluted runoff is a main stressor and threat in coastal Georgia. The most common source of polluted runoff is from nonpoint source pollution and primarily stormwater runoff. As Coastal Development (a related stressor/threat) has begun to increase again in recent years stormwater management has become a growing concern. The GCMP has encouraged local governments to adopt the Coastal Stormwater Supplement (CSS) which provides comprehensive guidance on an integrated, green infrastructure-based approach to natural resource protection, stormwater management and site design that can be used to better protect coastal Georgia's unique and vital natural resources from the negative impacts of land development and nonpoint source pollution. In step with the national trend, the focus of the CSS shifts post-construction stormwater management efforts to the prevention of stormwater runoff. Not only does polluted runoff negatively affect water quality but it can also impact coastal habitats including freshwater wetlands, salt marshes, estuaries and the organisms these habitats support. Polluted runoff can alter water temperature, turbidity, salinity, DO levels, and bacteria levels etc. which can all lead to an impact on associated habitats.

Shoreline Modification is also a concern due to our highly active shorelines and the common action to armor these shorelines in response to encroachment from erosion. GCMP staff has been working over several years to research the applicability of Living Shorelines as an alternative to armored shorelines in coastal Georgia and have supported several demonstration sites as part of that process. Living shorelines can provide a natural habitat resource as compared to the bulkheads and

other armoring techniques commonly seen in coastal Georgia which remove that habitat from the equation.

The GCMP has funded several Coastal Incentive Grant projects that have identified these issues through research and analysis in coastal Georgia and these issues were also identified as main stressors/threats through our stakeholder group.

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
N/A	

**In-Depth Management Characterization:**

*Purpose: To determine the effectiveness of management efforts to address identified problems related to the cumulative and secondary impacts enhancement objective.*

1. For each additional cumulative and secondary impact management category below that is not already discussed as part of the Phase I assessment, indicate if the approach is employed by the state or territory and if significant state- or territory-level changes (positive or negative) 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)
Methodologies for determining CSI impacts	Y	Y	Y
CSI research, assessment, monitoring	Y	Y	Y
CSI GIS mapping/database	Y	Y	Y
CSI technical assistance, education and outreach	Y	Y	Y
Other (please specify)			

2. For management categories with significant changes since the last assessment, 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 significant changes since the last assessment;
  - b. Specify if they were 309 or other CZM-driven changes; and
  - c. Characterize the outcomes or likely future outcomes of the changes.

**Methodologies:** In 2010, Coastal Resources Division was awarded a federal grant from NOAA for the development of a new permitting database framework using a web-based platform that is site-specific, rather than action-specific. This allows for staff to better track, manage, and assess cumulative

environmental impacts and land use changes for coastal impacts as well as to make that information available to networked agencies and the general public via the internet. This was a CZM-driven change.

**Research; Assessment; Monitoring:** The GCMP also funds projects annually through the Coastal Incentive Grant Program (NOAA Section 306 funding). There have been several recent projects to research or address through management cumulative and secondary impacts of development in coastal Georgia. Examples of projects include the Georgia Coastal Research Council's Marsh Wrack research, Viral tracers in septic systems, coastal county septic inventory, City of Thunderbolt Stormwater Management Plan; Department of Community Affairs Tools for Sustainability community assistance; Garden City Stormwater Planning for Disaster Resilience, Chatham County Development of Land Management Plans, City of Bloomingdale Master Plan for Future Growth and Chatham County Greenway Implementation Plan Development.

**GIS Mapping/Database:** GCMP staff has been involved in several projects either acquiring or analyzing new GIS layers that can be used to assess cumulative and secondary impacts in coastal Georgia. These are CZM-driven changes. The following are some examples of most recent projects:

- Orthoimagery was acquired for the coastal counties of Chatham, Effingham, Bryan, Liberty, McIntosh, and Glynn in December 2012/January 2013. The imagery is 6 inch resolution with 4 bands (infra-red) and was flown at low tide conditions. The high resolution imagery made it possible to derive planimetrics on docks/structures located in the marsh. These structures have been largely unaccounted for due to inadequate imagery and pre-permit constructed facilities. Having a GIS polygon layer, managers can calculate potential debris fields, waterway hazards, associated redevelopment costs, and have a regional snapshot of existing conditions. The regional imagery and dock structures provide a regional baseline that can be referenced in the event of a coastal hazard. Prior to this project, imagery was available but inconsistent timing and resolutions made it difficult to address coastal hazard impacts regionally.
- The Coastal Georgia Elevation Project was completed in 2010 to acquire highly accurate LiDAR (Light Detection and Ranging) data for Charlton, Camden, Brantley, Wayne, McIntosh, Bulloch and Screven Counties. It was a joint effort with partners including the GCMP of GADNR, Coastal Regional Commission, USGS, FEMA, NOAA and SAGIS. Elevation data from this project was combines with previously acquired data in Glynn, Chatham, and Liberty Counties to provide a coast wide digital elevation layer. Elevation data gathered from flying LiDAR has a variety of uses and applications. LiDAR is used in sea level rise and storm surge modeling, hydrodynamic modeling, shoreline mapping, watershed assessments, habitat identification, and vulnerability analysis.

**Technical Assistance; Outreach; Education:** In 2012 the GCMP partnered with The Coca Cola Company and the Sapelo Island National Estuarine Research Reserve Coastal Training Program to begin a Build Your Own Rain Barrel Workshop series. The workshop provides participants with an overview of the basics of stormwater and nonpoint source runoff, the importance of water conservation and an introduction to rainwater harvesting. The participants then build their own rain barrel out of supplied parts and plastic drums donated by Coca Cola. Since the program began, over 300 people have participated in the workshops.

GCMP staff has also facilitated several Low Impact Development Demonstration Sites on campus. These have included the construction of a bioswale, a native garden irrigated through drip irrigation from rain barrels, and a 6,000 gallon capacity cistern system utilizing filtration and UV sterilization



for outdoor water use. Staff has also assisted several coastal schools in installing rainwater harvesting systems for the students to utilize.

In 2006 the Green Growth Guidelines (G3) were published to serve as a guide for environmentally sensitive development in Georgia's coastal zone. In 2013 the G3 was updated to incorporate a Green Infrastructure approach into the guidance for coastal land use and development. This update incorporated a lot of the information and technical guidance created in the Coastal Stormwater Supplement.

The above were all CZM-driven changes.

The Georgia Coastal Regional Commission (CRC) in partnership with the Georgia Forestry Commission, the GCMP, GA Department of Community Affairs, Nature Serve, and the Heart of Georgia and Southern Regional Commissions created a document titled *Green Infrastructure Planning Guidelines for Coastal Georgia*. This guide identifies a regional green infrastructure network while providing a background and framework from which to launch a regional Green Infrastructure program in Coastal Georgia. The CRC has also created an online Green Infrastructure Planning Tool which was designed to aid communities in their planning efforts while keeping green infrastructure in mind. The website provides users with tools to create plans with land use categories, to review their impact and share those plans. The CRC also created a Coastal Georgia Green Infrastructure story map to summarize the planning guidelines document and introducing the Green Infrastructure Planning Tool Web site. This was driven by non-CZM efforts.

3. Identify and describe the conclusions of any studies that have been done that illustrate the effectiveness of the state's or territory's management efforts in addressing cumulative and secondary impacts of development since the last assessment. If none, is there any information that you are lacking to assess the effectiveness of the state and territory's management efforts?

With the development of the permitting database, the acquisitions of imagery, and staff technical training on analyzing the data the GCMP is in a great position to utilize this data to look at evaluating CSI in the future. Staff is also available to provide assistance to local governments in utilizing the new data for managing CSI in their communities.

#### **Identification of Priorities:**

1. Considering changes in cumulative and secondary impact threats and 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 the effectiveness of its management effort to better assess, consider, and control the most significant threats from cumulative and secondary impacts of coastal growth and development. (*Approximately 1-3 sentences per management priority.*)

*Management Priority 1: Identifying the Costs and Benefits Associated with Smart Growth*

*Description:* Local developers are often resistant to certain LID techniques due to upfront costs without understanding the long term benefits. A study utilizing *local* data specific to coastal Georgia would be helpful.

*Management Priority 2: Building Local Capacity in Addressing Smart Growth*

*Description:* Many of the larger companies with experience in green building, LID installation and other smart growth applications are located out of state or in Atlanta. Technical training and capacity building for coastal Georgia companies and local governments is needed.

*Management Priority 3: Continuing with Education and Outreach Efforts*

*Description:* There is an ongoing need for education and outreach, especially to our local governments as frequent turnover creates a gap in understanding.

- Identify and briefly explain priority needs and information gaps the CMP has to help it address the management priorities identified above. The needs and gaps identified here do not need to 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.

Priority Needs	Need? (Y or N)	Brief Explanation of Need/Gap
Research	Y	Cost/Benefit Analysis of Smart Growth Implementation in Coastal GA
Mapping/GIS	Y	Mapping areas compatible for different LID BMPs based on soil data, water tables, available lands etc.
Data and information management	N	
Training/Capacity building	Y	There is always a need to train <i>local</i> contractors in green building techniques
Decision-support tools	N	
Communication and outreach	Y	There is an ongoing need to educate local officials on the benefits of smart growth to address CSI
Other (Specify)		

**Enhancement Area Strategy Development:**

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

Yes              Y    
 No                   

- Briefly explain why a strategy will or will not be developed for this enhancement area.  
 The GCMP plans to address CSI through a strategy under Coastal Hazards. One of the biggest issues coastal Georgia faces is impacts from stormwater runoff and recent publications such as the Coastal Stormwater Supplement have highlighted the need to manage stormwater through utilizing green infrastructure (GI) and other LID techniques. The GCMP is in need of more information on the costs and benefits associated with local governments implementing such techniques in order to properly garner support from local communities. There have been numerous recent studies looking at the benefits of green infrastructure from a hazards perspective, as GI can increase watershed storage and infiltration capacity and reduce impacts associated with flooding. These reduced impacts can be demonstrated as reduced costs through flood modeling software such as Hazus. Showing local communities the positive impact that GI can have on flooding, especially when looking at costs

associated with flood damage, can have a great impact on their understanding of the overall benefits of GI. By addressing the importance of resilient green infrastructure from a flooding and coastal hazards perspective the GCMP feels the strategy project will be embraced by our local communities.

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## Ocean and Great Lakes Resources

### In-Depth Resource Characterization:

*Purpose: To determine key problems and opportunities to enhance the state CMP to better address cumulative and secondary impacts of coastal growth and development.*

1. What are the three most significant existing or emerging stressors or threats to ocean and Great Lakes resources within the coastal zone? Indicate the geographic scope of the stressor, i.e., is it prevalent throughout the coastal zone or are specific areas most threatened? Stressors can be land-based development; offshore development (including pipelines, cables); offshore energy production; polluted runoff; invasive species; fishing (commercial and/or recreational); aquaculture; recreation; marine transportation; dredging; sand or mineral extraction; ocean acidification; or other (please specify). When selecting significant stressors, also consider how climate change may exacerbate each stressor.

	<b>Stressor/Threat</b>	<b>Geographic Scope</b> (throughout coastal zone or specific areas most threatened)
Stressor 1	Offshore energy development and related activities, Renewable and Nonrenewable	Offshore and areas immediately onshore
Stressor 2	Minerals/sand extraction	Offshore, developed beaches of Tybee, Sea, St. Simons and Jekyll Islands
Stressor 3	Shipping/Ports	Savannah River and estuary

2. Briefly explain why these are currently the most significant stressors or threats to ocean and Great Lakes resources within the coastal zone. Cite stakeholder input and/or existing reports or studies to support this assessment.

#### **Offshore Energy Development**

Since 2010, a number of advances toward energy production in waters offshore from Georgia have been made. First, Southern Company, a large power utility company, applied to BOEM for use of three lease blocks for the installation of met towers and/or floating LiDAR instrumentation to measure hub-height wind speed to evaluate areas for future wind farm potential. This is the first lease application for offshore production that the GCMP has experienced. In 2014, BOEM announced intentions to allow geological and geophysical (G&G) activities to be conducted in the South Atlantic region for the purpose of locating deposits of oil and gas. BOEM received numerous applications to conduct G&G activities in waters offshore of Georgia ranging from 3nm – 200nm. Georgia, through Federal Consistency, has reviewed these applications to help minimize conflicts among proposed G&G activities, sea turtles and marine fisheries. Other potential conflicts with marine mammals, for example, remain to be addressed. Finally, BOEM announced the inclusion of areas offshore of Georgia in its draft 2017-2021 oil and gas lease plan. This is the first time in decades that the South Atlantic has been included in BOEM’s 5-year leasing plan. This sudden flurry of activity related to offshore energy development has generated a lot of confusion among citizens and the stakeholders surveyed perceive emerging conflicts with living marine resources and traditional uses of Georgia’s ocean waters.

#### **Minerals/Sand Extraction**

Since Superstorm Sandy, a lot of attention has been placed on the value of beaches and dunes as a protective element against hurricanes and damaging storms. Georgia has 4 developed barrier islands and each is experiencing beach erosion to varying degrees. Currently, two have been nourished with sand from offshore deposits. Two others have or are currently evaluating options for beach nourishment as a means of storm protection for upland property. BOEM has awarded millions of dollars to companies and researchers to locate, quantify and characterize offshore deposits of beach quality sand. Georgia is depending upon the availability of this resource for future nourishment projects. However, there is concern that sand located in federal waters could be allocated to beaches outside of Georgia. Coastal managers are working with BOEM and researchers to understand the sand resource in Georgia's near- and offshore environment to help ensure that they are available for local beach projects.

**Shipping/Ports**

The dredging of the Port of Savannah was authorized in 2014 with dredging from the outer bar upstream scheduled to begin in Fall 2015. Though extensive mitigation measures are in place, dredging yet may pose a threat to water quality (DO, salinity) and have negative impacts on estuary inhabitants and salt marsh platforms. Increased traffic and larger ships pose strike risks to endangered species such as the Right whale and sea turtles. Release of ballast water increases the threat of invasive species. Slower speed limits have been placed on commercial shipping but increased numbers and size of ships have the potential for more incidents.

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
Ocean Acidification	Research/data on likelihood and severity of impacts on ocean and coastal resources, particularly shellfish.
Effects of energy development on living marine resources	Research/data on impacts of geophysical exploration on marine mammals and fish, effects of wind turbines on sea birds and underwater animals, effects of oil/gas extraction on marine resources.

**In-Depth Management Characterization:**

*Purpose: To determine the effectiveness of management efforts to address identified problems related to the ocean and Great Lakes resources enhancement objective.*

1. For each of the additional ocean and Great Lakes resources management categories below that were not already discussed as part of the Phase I assessment, indicate if the approach is employed by the state or territory and if significant state- or territory-level changes (positive or negative) 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)
Ocean and Great Lakes research,	Y	N	N

assessment, monitoring			
Ocean and Great Lakes GIS mapping/database	Y	N	Y
Ocean and Great Lakes technical assistance, education, and outreach	Y	Y	Y
Other (please specify)			

2. For management categories with significant changes since the last assessment, 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 significant changes since the last assessment;
  - b. Specify if they were 309 or other CZM-driven changes; and
  - c. Characterize the outcomes or likely future outcomes of the changes.

**Ocean GIS Mapping & Technical Assistance**

The GCMP is currently in its 4<sup>th</sup> year of an Ocean Resources strategy specifically to create and Ocean GIS map, called the Georgia Coastal and Marine Planner (GCAMP), and to provide technical assistance to state and local agencies potentially affected by ocean development activities. The GCAMP data portal is a web-based GIS viewer (public release date in Spring/Summer 2015) that incorporates numbers of fine-scale datasets most important for site selection in coastal and marine waters (state and federal waters). Tools associated with the GCAMP viewer will allow a user to spatially view possible conflicts of an offshore activity with critical habitat areas, important benthic resources, fisheries and recreational activities and other human commercial uses of the ocean. A legislative atlas of state and federal policies is also included.

The GCAMP viewer is a product of a larger effort by the GCMP to coordinate state and local agency efforts in regards to offshore activities. Using an offshore wind farm as a hypothetical scenario, GCMP and partners have identified the roles of each agency (e.g., leases, authorizations, permits, licenses, etc.) and will develop a process for a coordinated statewide response to offshore project applications.

3. Identify and describe the conclusions of any studies that have been done that illustrate the effectiveness of the state’s or territory’s management efforts in planning for the use of ocean and Great Lakes resources since the last assessment. If none, is there any information that you are lacking to assess the effectiveness of the state’s or territory’s management efforts?

Georgia needs to evaluate whether to add certain listed activities to our Program, and to determine if data are available to establish geographic location descriptions for certain ocean resources of economic, environmental and/or social interests of the state.

**Identification of Priorities:**

1. Considering changes in threats to ocean and Great Lakes resources and 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 effectively plan for the use of ocean and Great Lakes resources. *(Approximately 1-3 sentences per management priority.)*

*Management Priority 1: Update GCMP Enforceable Policies*

*Description:* The GCMP needs to ensure enforceable policies are updated, particularly those most applicable to ocean resources that might be reasonably affected by offshore development activities. Pursuing relevant updates will help the state with a more effective Federal Consistency review process and will help ensure that the state’s most current standards for resource protection are met.

*Management Priority 2: Review GCMP List of Federal Actions Subject to Federal Consistency*

*Description:* Since the start of the GCMP, there have been very few proposed ocean development activities offshore of Georgia, and those that have been proposed largely dealt with port dredging and disposal, military activities and beach nourishment. The sudden surge in interest in ocean energy development is pushing the Program into new aspects of coastal management. A thorough evaluation of the state’s listed activities in comparison to emerging and future ocean activities is warranted to determine if any changes would enhance Georgia’s effectiveness in managing ocean resources.

*Management Priority 3: Update GCMP Uses Subject to Management and/or prepare Geographic Location Descriptions related to Ocean Resources*

*Description:* While evaluating listed activities as described above, the GCMP can better identify the extent to which resources and interests of the State extend into federal waters and which enforceable policies apply to state resources and interests and can thus be extended offshore. If there are known geographic limits of state interests, it may be in feasible to develop Geographic Location Descriptions for certain types of federal activities.

2. Identify and briefly explain priority needs and information gaps the CMP has to help it address the management priorities identified above. The needs and gaps identified here do not need to 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	Need a better understanding of possible impacts of offshore development activities on marine mammals and birds
Mapping/GIS	Y	Need better mapping of benthic habitat, sand resources, and other oceanographic features necessary for living marine resources, as well as improved mapping of commercial, recreational and military uses of ocean
Data and information management	Y	Need resources to continue to maintain and update GCAMP web portal
Training/Capacity building	Y	Need increased capacity to apply Federal Consistency to ocean activities with reasonably foreseeable effects to state resources
Decision-support tools	N	
Communication and outreach	Y	Need better coordination with federal agencies, researchers and state managers

Other (Specify)		
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**Enhancement Area Strategy Development:**

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

Yes              N    
No                   

2. Briefly explain why a strategy will or will not be developed for this enhancement area.  
While there are several priority needs that could be addressed through a 309 strategy, we feel that, at this time, the issues are either too complex or not appropriate for Section 309 funding.

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## 2016 – 2020 Strategy

### Enhancing Coastal Resilience with Sustainable Infrastructure

#### 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 checked="" type="checkbox"/> Cumulative and Secondary Impacts |
| <input type="checkbox"/> Energy & 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:

Develop economic incentives and policy recommendations to encourage coastal local governments to adopt ordinances related to sustainable infrastructure practices as a means to enhance resilience to coastal hazards, especially flooding.

#### C. Strategy Description:

The Georgia Coastal Management Program works with coastal communities to foster awareness and understanding of the role of natural resources in protecting communities and citizens from the effects of natural disasters such as tropical storms/hurricanes, riverine flooding events and long-term hazards including sea level rise. Despite recent improvements in local efforts to use low impact development and nature-based infrastructure practices, collectively referred to as “sustainable infrastructure,” many communities have yet to take steps to reduce their vulnerability to flooding from major weather events or long-term climate events.

This strategy is inspired by a recent NOAA study, “Economic Assessment of Green Infrastructure Strategies for Climate Change Adaptation: Pilot Studies in The Great Lakes Region,” in which the economic benefits of green infrastructure (GI) were assessed as a method of reducing the negative

effects of flooding. GCMP will facilitate a similar study in Liberty County, Georgia. This location was selected as a pilot because of its broad range of coastal resources (inland to beach) that are representative of most other coastal counties. The Liberty County pilot will demonstrate the practicality and cost-effectiveness of replacing traditional storm water management practices, such as retention ponds and pipes, with green infrastructure (GI) approaches that utilize or mimic natural land processes. Computer models (Hanus) will provide risk assessments and damage cost estimates from extreme precipitation-based flooding, within priority watersheds, using present-day stormwater management scenarios, scenarios with GI practices, and sea level rise scenarios both with and without GI practices. The results will be used in an economic analysis of GI versus traditional stormwater practices and will examine the installation and long-term operations and maintenance costs of both types of designs. A process guide for the modeling and economic analyses so that other communities in coastal Georgia and beyond can conduct their own evaluations of GI versus traditional designs.

The GCMP will prepare model ordinances to incentivize and facilitate the use of GI practices throughout the coastal region, along with other nature-based solutions such as land conservation beach/dune nourishment or living shorelines. A first set of model ordinances will be specifically targeted toward the findings from the Liberty County pilot following an ordinance audit to identify gaps preventing or dis-incentivizing sustainable infrastructure practices. We expect that ordinances related to sea level rise adaptation, localized flooding, floodplain siting and/or building models will be developed. Further, we will evaluate the potential for earning Community Rating System (CRS) credits through the adoption or implementation of the ordinances. Using these resources, the GCMP will then generate a coast-wide sustainable infrastructure and resilience resource document that compiles pilot study results, CRS credit potential, other resilient development strategies used in coastal communities and recommendations for making the hard-built strategies more resilient into a single resource (printed or website is yet to be determined) that will be available to local governments throughout coastal Georgia and beyond.

Throughout the duration of the strategy, GCMP will be communicating with Liberty and coordinating stakeholder involvement. Several partners are expected to participate in this project including the Liberty County Water Resources Council, which is comprised of representatives from all five municipalities in Liberty County, Department of Defense/Ft. Stewart, and the University of Indiana Polis Center. GCMP will also coordinate with local university experts, regional planning commission(s), and the state floodplain management office to get their input and assistance on various aspects of this strategy. Pre- and post-pilot study stakeholder workshops will be held with Liberty County representatives and two coast-wide workshops will be held at the conclusion of the study to facilitate the transfer of information.

Lastly, GCMP will provide assistance to other coastal communities on priorities related to coastal hazards and sustainable development practices. The GCMPs previous work under a 309 Coastal Hazards strategy will be continued throughout to assist coastal communities in post-disaster redevelopment and work to incorporate sustainable infrastructure into redevelopment plans. Similarly, GCMP will work with community planners and engineers to encourage and pursue sustainable infrastructure practices and floodplain management throughout the coastal zone. The GCMP believes that working with communities throughout the duration of this strategy will lay the groundwork for the adoption and implementation of the model ordinances. The pilot study results and CRS findings will provide incentives to further compel local government participation in flood resilience.

The specific outcomes of this strategy are:

- Liberty County Pilot Study
  - Flooding Risk Assessment for Liberty County watersheds
  - Economic Analyses of green infrastructure for Liberty County
  - Process Guide for the above activities
  - Stakeholder coordination
- Local ordinance audits related to sustainable infrastructure and hazard resilience
- Model ordinances for flood resilience using sustainable infrastructure
- Sustainable infrastructure and hazard resilience resource document
- Coast-wide outreach on sustainable infrastructure, hazard resilience and redevelopment planning
  - Years 3-5 will specifically implement findings from Liberty County Pilot Project
- Two workshops targeting entire coastal region and beyond
- Adoption of flood resilience ordinances by coastal communities

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

For many years, the GCMP has attempted to assess the costs of community action vs. inaction when it comes to preparing for coastal hazards, both immediate and long term. An understanding of the economics of green infrastructure is a tremendous incentive to local communities to begin prioritizing hazard resilience through every-day planning activities related to stormwater management. Further, the GCMP has been working with communities for years to encourage the utilization of sustainable infrastructure techniques in local site design and development for the purposes of habitat and water quality, but lacked the economic incentives to compel change on a large scale. This proposed strategy perfectly blends the gaps in two 309 Enhancement Areas by providing a meaningful and direct example of how sustainable infrastructure can work in coastal Georgia not only to reduce communities' vulnerability to flood risk, but also as an economic investment.

Mentioned only briefly above, another need that this project will address is the transfer of technology of the Hazus modeling that produces the cost of damages from different scenarios. Currently, Georgia's coastal managers only have a very limited capacity to do studies of this sort. A process guide would serve as a training guide so that other communities throughout Georgia could similarly evaluate the costs/benefits of traditional versus sustainable infrastructure.

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

This strategy has clear and direct benefits to the mission and function of Georgia's coastal management program. Since 1998, the GCMP has engaged with coastal local governments to offer training, tools and resources to encourage the prioritization of natural resource protection in coastal development. The development of a Technical Assistance program was among the GCMP's first 309 strategies. More recently, the GCMP worked with partners along the coast to implement a new coastal stormwater design manual that prioritizes the use of green infrastructure, the adoption of which has been lacking due to it not being specific enough to fit communities' needs and also since there are few incentives to do so. Finally, the GCMP's most recent 309 strategy related to Coastal Hazards is resulting in a concentrated effort to promote hazard resilience through post-disaster redevelopment planning. The results of this project will be directly applicable to the GCMP's efforts in this regard.

Likewise, this strategy has clear and direct benefits to coastal communities. Implementation of the resulting model ordinances will serve to increase community resilience while at the same time protect or enhance coastal natural resources

**V. Likelihood of Success**

Over the past several years, the GCMP has witnessed a significant rise in community engagement in coastal hazards planning. Several coastal communities have conducted hazards planning processes and are implementing plans when opportunities rise. Other efforts supported by the GCMP (non-309 related to onsite disposal systems) have resulted in the adoption of ordinances in many communities as well. Additionally, Liberty County and the City of Hinesville have expressed their firm support and interest in this project. Thus, we believe that our coastal communities will be receptive to this planning effort and many have already shown a willingness to implement findings and recommendations of plans and to adopt ordinances. This strategy will provide not only the model ordinances and technical assistance necessary to educate decision makers on the need for policy changes but also economic information and other incentives (e.g. CRS credits) to garner community-wide support for these changes. The last two years of the strategy will involve GCMP hosting workshops and working with coastal communities to share the results of the pilot project and to help them identify the appropriate policy changes to strengthen resilience in their community. This strategy will also involve partnership with other organizations with proven track records of working effectively with local governments.

**VI. Strategy Work Plan**

**Strategy Goal:** Develop economic incentives and policy recommendations to encourage coastal local governments to adopt ordinances related to sustainable infrastructure practices as a means to enhance resilience to coastal hazards, especially flooding.

**Total Years: 5**

**Total Budget: \$1,375,000**

**Year: One**

**Description of activities:**

Liberty County Pilot Project:

- Kickoff meeting with pilot communities and project partners
- Collect data (mostly existing) for inclusion in Hazus modeling
- Contract with Polis Center to run models (with and without GI, and sea level rise)

Coastal Community Assistance:

- Develop and implement a 5-year strategic plan for engagement with coastal communities to increase awareness and action related to coastal hazard and flood resilience

**Major Milestones:**

- Liberty County Risk Assessment = Hazus model outputs
- Technical assistance Strategic Plan

**Budget: \$275,000**

**Year: Two****Description of activities:**Liberty County Pilot Project:

- Risk Assessment Results Report Out Liberty County and project partners
- Contract for Economic Benefit Analysis
- Develop Process Guide(s) for modeling and economic analyses
- Liberty County Ordinance Audit (partner with CVIOG)

Coastal Community Assistance:

- Provide technical assistance in accordance with Strategic Plan

**Major Milestones:**

- Economic analysis of use of sustainable infrastructure versus traditional
- Technology transfer via process guide(s) for Hazus modeling and economic analyses
- Technical assistance provided

**Budget:** \$275,000

**Year: Three****Description of activities:**Liberty County Pilot Project:

- Contract for development of model ordinances
- Evaluate Community Rating System credits associated with sustainable infrastructure
- Hazus training for coastal planners
- Wrap-up meeting with Liberty County and project partners

Coastal Community Assistance:

- Provide technical assistance to Liberty County to adapt and adopt model ordinances
- Provide technical assistance to Liberty County on implementation of sustainable infrastructure techniques
- Provide technical assistance to all coastal counties in accordance with Strategic Plan

**Major Milestones:**

- Suite of model ordinances for flood resilience
- Community Rating System incentives for use of sustainable infrastructure
- Technical assistance to Liberty County to implement pilot project results

**Budget:** \$275,000

**Years: Four and Five****Description of activities:**

- Develop a Sustainable Infrastructure-Resilience Resource Document (via contract) to include:
  - Sustainable practices for hazards resilience
  - Built infrastructure modification recommendations for hazards resilience
- Host two workshops for coastal stakeholders to share results from pilot project
- Meet with individual coastal communities to provide technical assistance related to adoption of model ordinances

- Collect/pre-package data needed by other coastal communities to conduct own Hazus modeling projects
- Provide general technical assistance to coastal communities in accordance with Strategic Plan

**Major Milestones:**

- GI-Resilience Resource Document
- Two workshops for coastal stakeholders
- Implementation of model ordinances
- Expansion of pilot project to another community(s)
- Technical assistance provided

**Budget:** \$550,000

**VII. Fiscal and Technical Needs**

**A. Fiscal Needs:** We anticipate that all fiscal needs can be met with 309 funding.

**B. Technical Needs:** The GCMP does not have the technical expertise to carry out several aspects of this strategy and will contract with project partners to see those activities done. Specifically, we will contract with University of Indiana Polis Center for the Hazus modeling, process guide and training model to build the technical capacity for Georgia, specifically at the Coastal Regional Commission. Similarly, the GCMP is not able to assess the economics of green infrastructure but will contract out those analyses along with a process guide so that we can do that for other communities in the future. Finally, GCMP does not have experience in drafting model ordinances so those will be prepared for GCMP staff to implement in local governments.

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

The GCMP has identified two additional projects that may be successful project of special merit. Both would provide additional data to help support implementation of sustainable infrastructure and flood resilience ordinances in coastal communities.

***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.

<b>Strategy Title</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>
Enhancing Coastal Resilience with Green Infrastructure	\$275,000	\$275,000	\$275,000	\$275,000	\$275,000	\$1,375,000

<b>Total Funding</b>	\$275,000	\$275,000	\$275,000	\$275,000	\$275,000	\$1,375,000
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## Georgia Section 309 Assessment and Strategy 2016 to 2020 Cycle

### Stakeholder Engagement

In accordance with NOAA's Section 309 Program Guidance, the Georgia Coastal Management Program recently solicited the input and advice of stakeholders prior to initiating its 2016-2020 assessment and strategy development process. In fall 2014, the GCMP identified its Coastal Advisory Council (CAC) as the primary stakeholder group to engage in the 309 process due to their existing familiarity with the GCMP and past and current 309 activities. At the CAC's quarterly meeting in November 2014, the GCMP introduced the 2016 to 2020 309 Cycle, noted the new requirements for Phase I and Phase II assessments, and highlighted the role of stakeholder input in ranking the nine 309 Enhancement Areas and identifying emerging threats and opportunities.

Following the meeting in November 2014, GCMP opened an online survey (Survey Monkey) for Coastal Advisory Council members to respond to various considerations under each of the nine 309 Enhancement Areas. The survey was directly issued to 31 Council members (<http://www.coastalgadnr.org/cm/about/cac>) who were then invited to share the survey with their constituents. Twenty-five responses were received. The survey assessed stakeholder opinions on the following topics: adequacy of public access in the coastal zone; challenges in siting government and energy facilities; greatest threats to coastal resources from coastal development and greatest needs to protect resources; vulnerability of coastal Georgia to natural hazards; significant challenges facing aquaculture development on the coast; opportunities to develop special areas management plans; greatest threats to coastal wetlands and needs for protecting them; greatest threats to and conflicts with ocean resources and activities; and management of marine debris.

Finally, respondents were asked to rank the priority (high, medium, low) of each 309 Enhancement Area, with the following results in order of stakeholder priority:

- |                                       |                                   |
|---------------------------------------|-----------------------------------|
| 1 – Cumulative and Secondary Impacts  | 6 – Special Area Management Plans |
| 2 – Wetlands                          | 7 – Aquaculture                   |
| 3 – Ocean Resources                   | 8 – Marine Debris                 |
| 4 – Coastal Hazards                   | 9 – Public Access                 |
| 5 – Government/Energy Facility Siting |                                   |

Stakeholder responses are cited throughout the Phase I and Phase II assessments.