

GUAM COASTAL MANAGEMENT PROGRAM
BUREAU OF STATISTICS AND PLANS

DRAFT

SECTION 309 ASSESSMENT AND STRATEGIES
2016 - 2020

FOR PUBLIC REVIEW AND COMMENT
RELEASE DATE: FRIDAY, FEBRUARY 5, 2016

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INSTRUCTIONS FOR SUBMITTING COMMENTS

FORMAT

After reviewing the Section 309 Draft Assessment and Strategies document and you wish to submit comments for consideration, please prepare and format your comments in accordance with the comment matrix template below.

Name: <i>Insert your name here.</i>		
Organization: <i>If you are representing an organization, insert your organization's name here. Otherwise, indicate "None".</i>		
Section No.	Page and Paragraph No.	Comment
<i>Identify the section to which your comment applies.</i>	<i>Identify the page number and paragraph to which your comment applies.</i>	<i>Insert your comment here.</i>

Insert new row for each additional comment.

The purpose of this comment matrix is to ensure that we can review and evaluate your comments in relation to specific areas of the draft document.

WHERE TO SUBMIT COMMENTS

Comments may be submitted either electronically or in person. If you wish to submit your comments electronically, you may email your comment matrix to esther.taitague@bsp.guam.gov or you may send by fax to the Guam Coastal Management Program office at (671) 477-1812.

If you wish to submit your hardcopy comments in person, you may hand deliver to the Guam Coastal Management Program office located at the MVP Business Center, 777 Route 4, Suite 5, Sinajana, Guam 96910 or the Bureau of Statistics and Plans located at the Ricardo J. Bordallo Governor's Complex, 513 West Marine Corps Drive, Hagåtña, Guam 96910. Offices are open Monday to Friday 8:00am to 5:00pm excluding holidays.

WHEN TO SUBMIT COMMENTS

The public comment period is open for 30 calendar days beginning Friday, February 5, 2016 and ending Saturday, March 5, 2016.

WHAT IF I HAVE A QUESTION

If you have a question about submitting your comments or if you have a technical question regarding the Draft Assessment and Strategies document, please contact the GCMP's consultants Galaide Group LLC, Mr. Mark Umagat at (671) 646-3448 or mark@galaidegroup.com.

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Guam Coastal Management Program
Section 309
Assessments and Strategy
2015

Section 309 of the Coastal Zone Management Act (CZMA), as amended, encourages states and territories to develop program changes in one or more of nine coastal zone enhancement areas through a coastal zone enhancement grant program. Rather than just changes to the manner that states and territories implement programs, the changes are made to federally approved CZM programs. These changes may include updates or revisions to state and territory enforceable policies and authorities. Such changes include the following activities that will enhance a state or territory's ability to achieve one or more of the coastal zone enhancement objectives:

1. A change to coastal zone boundaries;
2. New or revised authorities, including statutes, regulations, enforceable policies, administrative decisions, executive orders, and memoranda of agreement/understanding;
3. New or revised local coastal programs and implementing ordinances;
4. New or revised coastal land acquisition, management, and restoration programs;
5. 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,
6. 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.

Introduction

For nearly forty years, the Guam Coastal Management Program (GCMP) has worked to balance natural resources protection with economic growth. The GCMP works with a wide network of partners to manage coastal areas, develop watershed plans and establish outreach programs to address impacts to natural resources while balancing the very real pressures from the demand for increased development.

GCMP previously completed assessment and strategy documents in 1991, 1997, 2001 and 2006, and 2011. During the period from 2011 -2015, major personnel changes within the GCMP have resulting in a new focus with different priorities. Heavy emphasis on development has warranted some priority changes and numerous updates to 309 efforts. This 2015 update reflects this new direction the program is moving toward.

During this period, the Department of Defense issued a Supplemental Environmental Impact Statement (SEIS) that made significant changes to the original plans to relocate 8,000 Marines, their dependents and other military resources. The new plan calls for the relocation of just 5,000 marines with a much smaller footprint extended over a longer period of time.

The recently released Record of Decision (ROD) reduces the activities of the relocation to only construction and operation of a main base (cantonment area), a family housing area, a live-fire training range complex and associated infrastructure to support these efforts. The ROD significantly reduces the scope and potential impact of the relocation compared to what was originally proposed in the *2010 Final Environmental Impact Statement (EIS) Guam and Northern Marianas Island (CNMI) Military Relocation: Relocating Marines from Okinawa, Visiting Aircraft Carrier Berthing, and Army Air and Missile Defense Task Force*. The 2015 action will only consist of a cantonment at Naval Computer and Telecommunication Station (NCTS) Finegayan, family housing at Andersen Air Force Base (AAFB), and the Light Firing Training Range Centers (LFTRC) at AAFB-Northwest Field (NWF). Unlike the 2010 ROD, all the major activities will be located on Federal Property.

The selected alternative for the cantonment and family housing will require 1,751 acres of land. The LFTRC will require 338 acres of fast land and 3,701 acres to include submerged land for the surface danger zone. The facility will be located on federally held property, however a portion of the required land is under the management of the U.S. Fish and Wildlife Service (USFWS) at the Ritidian Unit of the Guam National Wildlife Refuge. The Department of Defense is negotiating with USFWS on continued management of and access to the Ritidian Unit. In addition, mitigation measures will be identified to address the loss of ecologically critical terrestrial resources.

In addition, the Government of Guam is expanding its efforts to attract more tourists from various locations in Asia and Russia. The hope for a China Visa Program has prompted the tourism community, The Guam Economic Development Authority, and the Governor to have a goal of 2 million tourist and add 2000 hotel rooms by 2020. As of October 2015, the Guam Hotel and Restaurant Association's Summary Statistical Report indicates that there were 7,858 total hotel rooms in inventory while the Guam Visitors Bureau's Visitor Arrivals Statistics for the year ended December 31, 2015 listed total arrivals of 1,409,033. To achieve this goal the government has developed new tax incentives to induce more investment in Guam. While the military buildup and increased tourism presents many economic opportunities for the community, they are accompanied by daunting challenges for our island's fragile natural resources. The GCMP will once again take the lead in championing the protection and enhancement of these resources.

Although not fully funded by the U.S. Congress and the Japan Government, efforts have begun to move forward with the projects identified in the 2015 ROD, the details and scope of which are still unclear. As such, GCMP's 2015 assessment reflects both the uncertainty of the immediate future and the need to prioritize 309 efforts to match the major concerns that will

be associated with buildup activities and increase investment opportunities. This work also reflects concerns that arise due to the local government and private sector development that is already in progress.

During this period, the GCMP assessment is focused on the following three high priority areas: **Cumulative and Secondary Impacts, Public Access, and Special Area Management Plans.** Coastal Hazards remain a priority due to increasing concerns about climate change impacts and Guam's vulnerability to seismic, storm and other hazards, but was reduced to a medium priority along with wetlands and ocean resources by group consensus. Energy and Government Facility Siting was considered a high priority during the previous assessment. However during this assessment period, it was considered to be of low priority for the GCMP due to major investments into renewables by the utility agencies. Aquaculture and marine debris remain a low priority.

Climate Change Policy

Addressing impacts due to climate change has led to a significant policy change through a recent Executive Order issued by the Governor. Executive Order 2015-08, established a climate change adaptation policy and the creation of a Climate Change Task Force. Plans are now underway to undertake a vulnerability assessment that will inform a climate change adaptation plan. The U.S. Department of Interior has initially funded a Climate Change Coordinator, who serves as a Special Assistant to the Governor, to support this effort. The Climate Change policy will look prospectively toward the future in developing strategies to address the impacts of climate change predicted for the island. This includes excessive rainfall, stronger tropical storms, drought, ocean acidification, coral bleaching, salt water intrusion, rising sea levels, storm surges, diseases, rising temperatures, increased migration and invasive species.

Cumulative and Secondary Impacts remain a top priority.

With the new leadership and staff at the GCMP, this 2015 update provides an opportunity to review the program's accomplishments as well as develop new strategies for handling challenges based a new perspective. The new tasks should improve GCMP's ability to help protect the island's fragile environment, incorporate sustainable practices and develop adaptive measures to address long range impacts from climate change and the pressure to meet aggressive development targets. Just as past assessments have highlighted continuing growth and development, this assessment will note significant upcoming events and the general concern with cumulative and secondary impacts as projects occur.

In 2013, a GIS tool was developed to assist with assessing cumulative and secondary impacts to the Northern Guam Lens Aquifer. This recently developed tool will provide GCMP and policy makers a better understanding of the effects of activity to Guam's sole aquifer, especially as it relates to clearing and grating of limestone forests.

It is anticipated that the military buildup and private sector development will result in fewer places to recreate. As such, public access also has been elevated to high priority. The buildup

includes both terrestrial and coastal areas that will see some use restrictions due to proposed activities such as a firing range. The loss of use at some of these areas combined with increasing development outside “the fence” will only further compress access that many recreational or subsistence users are already concerned about. The high priority status will allow GCMP to focus its efforts on this important community concern.

Draft Sustainability Policy:

The University of Guam’s Center for Island Sustainability was awarded a grant from NOAA (Grant No. NA11NOS4190115) via the Bureau of Statistics and Plans Guam Coastal Management Program to create a draft policy paper guiding the island of Guam towards the incorporation of best practices for sustainable island development. The Center for Island Sustainability (CIS) subcontracted Romina King and Isa Baza to identify stakeholders; identify topics and issues; gather and analyze relevant data; and present findings in a draft policy paper. This draft policy paper was presented to the stakeholders for feedback and submitted to the GCMP. The policy paper covered topics such as Energy, Transportation, Food Security, Infrastructure, and Water. The Draft Sustainability Policy prompted the conversation within the general public about what the requirements are for residents to satisfy their basic needs and strive toward a better quality of life while preserving our natural resources for the use of future generations.

Digital Atlas for Northern and Southern Guam:

To assist GCMP and other natural resources agencies, the GCMP provided funds to the Water and Environmental Research Institute (WERI), University of Guam to expand its watershed GIS data tool. In 2010, the southern watershed atlas was developed as a repository for all data associated with the southern watershed. This tool proved to be extremely useful in compiling available digital GIS data. It soon became apparent that the Digital Atlas needed to be expanded to encompass the Northern portion of Guam in order to be complete. Having information for the northern watershed is critical. It is expected that the majority of new development will be occurring in the northern portion of Guam. This GIS-based digital repository and geo-database is the mainstay for collecting, digitizing, organizing, modeling and analyzing of data on aquifer and groundwater characteristics. It incorporated physical, environmental and socio-economic information relevant to northern watershed and impacts to the Northern Guam aquifer, its groundwater resources and ultimately the island’s coral reefs resources. The information is available at www.hydroguam.net

Approval of Routine Program Change:

After 10 years of regularly submitting routine program changes, during this assessment period GCMP submitted critical program changes for approval. These changes provided much needed support for GCMP efforts:

1. Guam has enacted laws to establish Marine Preserves and promulgated rules to regulate activities within them. The establishment of the Marine Preserves

enhances Guam's resource policy to preserve fragile areas and protect living marine resources. As such, the submitted changes fall under existing authority within the CMP and are not substantial as to require an Amendment.

2. Guam amended the Guam Environmental Protection Agency's Guam Soil Erosion and Sedimentation Control Regulations to impose requirements on those earth-moving activities which create accelerated erosion or a danger of accelerated erosion and which require planning and implementation of effective soil conservation measures.
3. Guam updated the Guam Environmental Protection Agency's Water Quality Standards
4. Guam authorized the Department of Agriculture to enact schedules for penalties and citations.

Guam Marine Preserves

The submitted routine changes to the Guam CMP appear in Sections 12201-12204 of Article 2 of Chapter 12 of Division 2 of 9 GAR (Public Law No. 24-21); Public Law No. 27-87; Chapter 63, Division 6, Title 5 GCA to Expand the Protection of Guam's Marine Resources (Add new definitions to § 63101 and add new §§ 63116.1 and 63116.2) and address Guam's resource policy Fragile Areas and Living Marine Resources namely the Marine Preserves and regulate activities within the Preserves.

These changes do not substantially change the uses subject to management, the special management areas, boundaries, the authorities and organization of the Guam CMP, or coordination, public involvement and the national interest. Although significant, the submitted changes provided further detail of the Guam CMP consistent with 15 C.F.R. § 923.84. For example, the rules and regulations for the control of fisheries were implemented consistent with the Guam CMP resource policies to better protect fragile areas and living marine resources.

In 1997, after recent information had shown the near shore fishery declining, the Guam Legislature enacted measures to preserve local traditions and to protect the natural resource. The Department of Agriculture ("Agriculture") was delegated the responsibility to control and regulate the fishery resource of Guam. Agriculture revised the fishing regulations to better protect, conserve and preserve Guam's fishing resources.

The rules designate Marine Preserve Areas and apply special regulations to select marine preserves. To regulate activities in a marine preserve, the Guam Legislature delegated rule making authority to the Director of the Department of Agriculture to issue permits for public access and use consistent with the protection of species and habitats on Guam. In 2006,

the Guam Legislature set out to strengthen the Department of Agriculture's regulatory authority to protect the marine preserves by codifying in law the purpose of marine preserves and statutorily banning activities within the marine preserves unless permitted by the Director of the Department of Agriculture.

The submitted routine changes fall within existing Guam authority and included in the Guam CMP and do not substantially change uses subject to management, authorities and organization, or special management areas in the coastal zone. The establishment of marine preserves and regulations to protect fragile areas and living marine resource fall under existing Guam CMP authority to control and regulate fish and game in and about Guam.

Guam Soil Erosion and Sedimentation Control Regulations

The submitted routine changes to the Guam CMP appear in Sections 10100-10114 of Chapter 10 of Division 2 of 22 GAR (Public Law No. 25-152) and address Guam's Development Policy Erosion and Siltation and Resource Policy Water Quality namely Guam's regulations on soil erosion and sedimentation control.

Guam Public Law No. 25-152 amended the Guam Environmental Protection Agency's Guam Soil Erosion and Sedimentation Control Regulations. These changes do not substantially change the uses subject to management, the special management areas, boundaries, the authorities and organization of the Guam CMP, or coordination, public involvement and the national interest. Although significant, the submitted changes provide further detail of the Guam CMP consistent with 15 C.F.R. § 923.84.

The purpose of the amendments is to expand GEPA's responsibilities to encompass the conservation of surface and groundwater resources and to protect, maintain and improve the quality and "potability" thereof. It is also the purpose of these regulations to manage nonpoint source pollution consistent with the latest "Guam Nonpoint Source Program", the Guam Erosion and Sedimentation Manual" guidelines and recommendations, the comprehensive approach set forth in Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990, "Protecting Coastal Waters", codified as 16 U.S.C. § 1455(b), and the "Guidance Specifying Management Measures for Sources of NonPoint Pollution in Coastal Waters" (EPA/840-B-92-002, dated January 1993) issued under the authority of Section 6217(g) of the Coastal Zone Act Reauthorization Amendments of 1990 recommendations.

The regulations provide for permit application contents and authority to deny an application if there is reasonable cause that it may risk or endanger public health or environment. It amends the requirements for Erosion and Sediment Control Plans and provides for the protection of adjoining properties, public utilities, sink holes and other safety precautions. It also requires products to be submitted upon project completion and final inspection and approval. And lastly, it establishes fees, permit expiration timeframes, and defines protocols for stop orders, revocations and suspensions of permits.

The amended Soil Erosion and Sedimentation Control regulations submitted are routine changes that fall within existing Guam authority and included in the Guam CMP and do not substantially change uses subject to management, authorities and organization, or special management areas in the coastal zone.

Guam Environmental Protection Agency Water Quality Standards

The submitted routine changes to the Guam CMP appear in Sections 5101-5106 and its Appendices of Chapter 5 of Division 2 of 22 GAR (Public Law Nos. 26-32 and 26-113); and address Guam's Water Quality of its Resource Policy.

Guam Public Law Nos. 26-32 and 26-113 amended the Guam Environmental Protection Agency's Water Quality Standards. These changes do not substantially change the uses subject to management, the special management areas, boundaries, the authorities and organization of the Guam CMP, or coordination, public involvement and the national interest. Although significant, the submitted changes provide further detail of the Guam CMP consistent with 15 C.F.R. § 923.84.

A Groundwater Protection Zone Map has been developed and designates much of the land surface above Guam's principal source aquifer, the Northern Aquifer, for the protection of Resource Zone (G-1) waters and the Recharge Zone (G-2) waters. The amendment sets the water quality criteria for Groundwater G-1 and G-2. It also sets the numeric water quality criteria for marine and surface waters. It amends the effluent limitations and the petroleum storage facilities regulations. And it adds a new section on Water Quality Certification.

The amended Water Quality Standards submitted are routine changes that fall within existing Guam authority and included in the Guam CMP and do not substantially change uses subject to management, authorities and organization, or special management areas in the coastal zone.

Guam Department of Agriculture Authorization to Issue Citations for Fishing and Wildlife Natural Resources Violations

Guam Public Law No. 26-25 authorizes the Guam Department of Agriculture to issue citations. In 2001, the Guam Legislature enacted the legislation for more efficient prosecution of the illegal taking of fish and wildlife, and unlawful clearing of vegetation in order to protect Guam's natural resources.

Public Law No. 26-25 repealed and reenacted the previous penalty for violations. It is a routine change that falls within existing Guam authority and included in the Guam CMP and does not substantially change uses subject to management, authorities and organization, or special management areas in the coastal zone.

The following pages provide a description and analysis of each legislative and regulatory change submitted for incorporation in the Guam CMP. The description and analysis of each change is organized in chart format that identifies the enforceable policies to be added to the management program, describes the nature of each program change, and examines the impact the changes have on the existing management program.

II. Summary of Completed Section 309 Efforts

Setting the background for the upcoming period of rapid changes, GCMP has completed or initiated the following programs. These activities were developed in response to past assessments, including the most recent 2011 document.

1. Development of a Cumulative and Secondary Impact GIS Tool for Guam. Funded under NA11NOS4190115, Section 309.

The tool used GIS-based screening for Cumulative and Secondary Impacts for Development Projects in Northern Guam. Due to the anticipated growth in the local economy, increasing tourist numbers and the military buildup, there is tremendous pressure on the local government agencies to move quickly to approve development projects without carefully considering cumulative and secondary impacts to the environment and to the community. This tool will provide much needed data analysis and a decision-making tool for GCMP and the relevant government of Guam agencies. It will enable them to develop mechanisms to assess cumulative and secondary impacts and to determine the extent of the impacts to the island's natural resources. The GIS tool will also be made available to private developers to assess Cumulative and Secondary Impacts from proposed development. This project will focus on impacts from activities related to water quality from ground water and coastal waters. This project was recently developed and has not yet been made available to other government of Guam agencies and private developers.

2. Public Access Enhancement Funded under NA10NOS4190208

The GCMP staff and GIS Manager worked with multiple networking partners to develop and updated public access maps. Meetings were held with various stakeholders to discuss the inventory of government parcels. A draft map was developed for further review by stakeholders. Meetings are scheduled with appropriate government of Guam Agencies including: the Department of Land Management (DLM); Chamorro Land Trust Commission (CLTC); Guam Ancestral Lands Commission (GALC); and Department of Parks & Recreation/Guam Historic Preservation Office (DPR/GHPO). They will be asked to provide their input in the determination of parcels with cultural and historical significance. Updates to the maps included publicly accessible parks and trails. CMP's Land Use Planning Program (LUPP) continues to update the map. The map produced from this project was to be expanded to develop a policy for Natural and Cultural Resources.

3. Updated Wetland Delineation Funded under NA10NOS4190208

Funds from this grant were used to compile, inventory and examine the various sources of wetlands and other datasets that can be used to accurately delineate and update Guam's GIS wetlands layer. This project would assist the GCMP in developing better policies and advocate for sound property development laws that would better protect, restore and enhance existing wetland areas and minimize development in the immediate surrounding areas. There have been many efforts to reduce sedimentation in coastal waters including the implementation of the soil erosion and sediment control regulations and the numerous reforestation projects in several of Guam's priority watersheds. Continual updates of the wetlands data in a priority watershed will enable the GCMP to evaluate the effectiveness of these management measures.

The latest U.S. Fish and Wildlife Service National Wetlands layer, NOAA's Coastal Change Analysis Program (C-CAP) Land Cover and U.S. Forest Service vegetation cover and 2007 Guam LiDAR Survey data are the sources of data that were utilized to delineate and update the wetlands layer.

2011-2015 Status of Projects funded under section 309:

The following projects were funded by 309 funds but were not completed.

1. Public Access for Natural and Cultural Resources- NA12NOS4190167

This project was approved under NA12NOS4190167, however was not completed. The project proposed to hire a contractor to complete a survey to determine the public's attitudes about the state of public access for natural and cultural resources on Guam. GCMP and NOAA Coastal Specialist discussed the possibilities of changing the 309 program scope to focus on the installation of southern beach access signage, rather than to complete the survey.

The GCMP Administrator, Planner III, and NOAA Liaison met with the State Historic Preservation Officer (SHPO) and her staff on November 17, 2014 regarding the state of public access for natural and cultural resources in order to better understand the requirements of the Section 106 Historic Preservation Review. A list of potential shoreline sites for signage was shared with the SHPO and GIS maps were produced. Upon review of the list, the SHPO offered support by having one of the preservation officers conduct site visits with the GCMP to determine if the sites are historic properties. The SHPO stated that the signage project involved background research on several southern coastal areas and that the Section 106 Page 7 of 7 consultation letter would include a statement as to whether the proposed project would or would not affect historic properties.

The BSP Director instructed GCMP to validate the existing study conducted by Guam Community College to ensure the statistical design, sample size, hypotheses, questions, and appropriate assumptions were utilized. Since GCC could not produce the data and submit to the BSP Director by the end of December 2014, she instructed the GCMP Administrator to proceed with the survey as originally proposed, The draft RFP and scope of work were completed on January 16, 2015. The Administrator worked with the Procurement office of the Attorney General to ensure a smooth process, however, after a month of preparation and work, on February 10, 2015, the BSP Director instructed GCMP to halt the RFP process and proceed to obtain the services via small procurement using the Purchase Order (PO) process. Although the GCMP Administrator strongly objected to this approach due to the PO cost limitation of \$14,999, which was only half of the proposed budget, the Director proceeded with the requisitions. This led to disagreements with government of Guam's General Services Agency (GSA) and BSP on the utilization of PO for services. The PO's were ultimately rejected and returned to BSP by GSA. To date, no further substantial progress has been made to pursue the original RFP procurement approach.

2. Tsunami Study – NA13NOS4190132

During this reporting period, GCMP received proposals from interested contractors for the project. The proposals were evaluated through the local procurement process. However, the procurement agency was unable to complete the awarding of a contractor and returned the documents citing staff shortage. The funds were not spent and the project remains incomplete.

NOAA's Pacific Marine Environmental Laboratory had conducted a Tsunami Hazard Assessment for Guam in 2010. The GCMP grant was intended to complement this initial assessment.

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 Guidance¹ 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 Atlas² or high-resolution C-CAP data³ (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)		
Percent net change in total wetlands (% gained or lost)*	from 1996-2011	from 2006-2011
	Information not available	56%
Percent net change in freshwater (palustrine wetlands) (% gained or lost)*	from 1996-2011	from 2006-2011
	3,797.7*	32%
Percent net change in saltwater (estuarine) wetlands (% gained or lost)*	from 1996-2011	from 2006-2011
	1,394.6*	1.49%

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

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

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

How Wetlands Are Changing*		
Land Cover Type	Area of Wetlands Transformed to Another Type of Land Cover between 1996-2011 (Sq. Miles)	Area of Wetlands Transformed to Another Type of Land Cover between 2006-2011 (Sq. Miles)
Development	500 acres – Dandan	No information available
Agriculture	None	0.03
Barren Land	None	0.03
Water	None	0.04

** 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.

Since the last assessment, 309 funds were used to update the “Wetland Delineation Maps” using multiple data sources. Guam’s wetland maps are developed from a variety of data sources with differing levels of accuracy. This project consolidated these multiple data sets into the same projection using higher resolution data. Previous GIS wetland maps were reviewed and compared to the latest U.S. Fish and Wildlife Service National Wetlands layer, NOAA’s Coastal Change Analysis Program (C-CAP) Land Cover, the U.S. Forest Service vegetation cover and the 2007 Guam LiDAR Survey data. Previous data sets were captured in disparate projections and varied in accuracy. The previous GIS wetland maps were digitized from existing hardcopy maps and from other hardcopy maps submitted by individual surveyors. The GIS data was then transformed to conform to the latest U.S. Fish and Wildlife Service National Wetlands layer and to match the other layers such as land cover and imagery.

The updated wetland maps were included in BSP’s GIS website for distribution and to simplify the process for the GCMP, other government agencies and decision makers in identifying the location of wetlands when reviewing new policies and developing laws that are meant to protect, restore and enhance wetland areas and reduce development in the surrounding areas.

Since the previous assessment period, there have been many efforts to reduce sedimentation into coastal waters including the implementation of the soil erosion and sediment control regulations and the numerous reforestation projects in several of Guam’s priority watersheds. Updating and delineating wetlands in priority watersheds enables the GCMP to evaluate the effectiveness of these management measures. Data is being collected to determine if BMPs are effective in improving the health of Guam’s 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	N
Wetlands programs (e.g., regulatory, mitigation, restoration, acquisition)	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.

Although wetland maps have been updated using recent high resolution data, no significant changes have been made to wetland policy or programs since the last review.

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.

The stakeholders did not feel that the level of priority for wetlands has changed significantly from the rank of the previous assessment. Wetlands remain a medium priority. There has not been any significant change in regulations or policies related to the management of wetlands.

Wetlands are regulated by both the United States Federal Government and the Government of Guam. The Guam Environmental Protection Agency (GEPA) is responsible for the management of wetlands. GEPA’s “Guam Wetland Conservation Plan” was created to promote the national “No Net Loss” initiative of preserving the important value and functions of Guam’s wetland resource. It serves as a wetland-specific guide for wetland conservation. The plan aims to promote conservation through an integrated education and training program for the community. GEPA combines this effort with watershed education that is supported by various federal and local government agencies, educational institutions, nongovernmental organizations and community members. In addition, wetlands are characterized in the

existing Conservation Actions Plans (CAP) and Watershed Management Plans for the priority watershed of Piti-Asan, Manell-Geus and Toguan.

To ensure the protection of Guam’s wetlands, GEPA is responsible for coordinating wetland permits for proposed development. Both the federal and local governments play important roles in wetland permitting and protection. All federal identification, protection, and permitting (enforcement) concerns should be referred to the U.S. Army Corps of Engineers, Guam Office. The Guam Department of Agriculture, Department of Land Management, Bureau of Statistics and Plans and Guam EPA are all involved in local wetland protection and permitting. Field Wetland Identification services may be provided by the Guam Department of Agriculture, and Guam EPA to a limited extent, in that preliminary determination and guidance is offered. The Agency provides this service based on the special circumstances and primarily for enforcement and compliance purposes.

Wetlands are also protected through GEPA’s Environmental Protection Plans (EPPs) and Erosion control permits to ensure clearing and grading does not impact wetlands and the surrounding area and that Best Management Practices are implemented. The EPP include the environmental protection measures that will be employed to reduce, minimize, or eliminate impacts or problems. EPP’s may include erosion and sedimentation control requirements aimed at protecting the water quality of the closest body of water, fresh or marine.

1. In past assessments, Guam’s reefs were included in the “tidal vegetated” category due to the mapping techniques and characterizations at the time. However, in the analysis of the most recent inventory, “reefs” were excluded from the “tidal vegetated” category, resulting in what appears to be a huge loss of acreage. This is due to the methodology and not a loss of actual resources. If reefs are included, the acreage will be comparable to the last assessment figures.
2. This 7.859 acre area of wetlands was included in the 317 acres condemned as part of the government’s new sanitary landfill project. The wetland portion will not be encumbered for landfill cells 1 or 2, such that no Army Corps Section 404 is required.
3. As mitigation for the loss of 37,864 square feet of wetlands at the Ordot dump, 38,758 square feet of previously filled wetlands adjacent to the Hagåtña tennis courts and swimming pool will be restored to create habitat, increase flood storage capacity and improve drainage in the lower area of the Agana River Watershed. Vegetation found in the wetland habitat of the Agana Swamp will be used in this restoration project.

RESOURCES AND TOOLS:

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

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). The tool summarizes wetland change trends and can highlight specific changes of interest (salt marsh losses to open water, for instance). 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 and territories easily aggregate county data into a statewide summary.

Geographic Scope: Contiguous United States and Hawaii

Website: www.csc.noaa.gov/digitalcoast/tools/lca

NOAA Environmental Sensitivity Index Maps

Environmental Sensitivity Index (ESI) maps are designed to provide a concise summary of coastal resources at risk in case of an oil spill or other disaster. They characterize coastal and estuarine shorelines for several wetlands classes, and may be useful for resource characterization and assessment. ESI maps are periodically updated on a state-by-state basis, and are generally available in multiple formats (pdf maps, GIS layers, etc.)

Geographic Scope: All coastal states and territories

Website: <http://response.restoration.noaa.gov/maps-and-spatial-data/environmental-sensitivity-index-esi-maps.html>

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 this product requires desktop GIS and some GIS technical skills, NOAA staff 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

CZMA Performance Measurement System Data

Annual CZMA performance measurement data for government coordination and habitat 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

Coastal Wetland Review Reports

The Environmental Protection Agency-led Interagency Coastal Wetlands Workgroup organized seven Coastal Wetland Review meetings with stakeholders in coastal watersheds throughout the Mid-Atlantic, South Atlantic, North Atlantic, and Gulf of Mexico regions to collect information regarding stressors on coastal wetlands, local protection strategies, and key gaps that, if addressed, could help reverse the trend of wetland loss.

Geographic Scope: Select watersheds in the North Atlantic (Cape Cod Watershed); Mid-Atlantic (Delaware Bay, York River Watershed); South Atlantic (Middle/Lower Neuse River, Indiana River Lagoon); and Gulf Coast (East and West Galveston Bay, Mississippi Coastal Watershed)

Website: <http://water.epa.gov/type/wetlands/cwt.cfm#reports> (navigate to the "Coastal Wetlands Initiative" tab and scroll to the bottom of the page)

National Wetlands Inventory

The National Wetlands Inventory (NWI) is a series of topical maps that show wetlands and deepwater habitats. The goal of the NWI is to provide current geospatially referenced information on the status, extent, characteristics, and functions of wetland, riparian, deepwater, and related aquatic habitats in priority areas in order to promote the understanding and conservation of these resources.

Geographic Scope: Contains information for approximately 82 percent of the conterminous United States, 31 percent of Alaska, 100 percent of the windward islands of Hawaii, 62 percent of Puerto Rico

and the U.S. Virgin Islands, and 100 percent of Guam and Saipan. Requires desktop GIS and some GIS technical skills.

Website: www.csc.noaa.gov/digitalcoast/data/nwi

National Wetlands Status and Trends Report

In 2013, the U.S. Fish and Wildlife Service and NOAA released an updated report, *Status and Trends of Wetlands in the Coastal Watersheds of the Conterminous United States, to document trends in coastal wetland acreage from 2004 to 2009*. The analysis concluded that more than 80,000 acres of coastal wetlands are being lost on average each year, up from about 59,000 acres lost per year in the previous study covering 1998 to 2004. A majority of this loss occurred in freshwater wetlands.

Geographic Scope: Coastal watersheds of the Atlantic, Great Lakes, Gulf of Mexico and Pacific

Website: www.fws.gov/wetlands/Documents/Status-and-Trends-of-Wetlands-In-the-Coastal-Watersheds-of-the-Conterminous-US-2004-to-2009.pdf

NOAA Habitat Priority Planner

The Habitat Priority Planner can be used in any geography to inventory specific habitat relevant to a study area. It assesses target habitat conditions with prepackaged spatial analysis. Analyzes “what if” scenarios, such as the impact of new development or how restoration might change habitat function. The tool creates maps, reports, and data tables to enhance communication and the decision-making process. Although it requires desktop GIS and some GIS technical skills, NOAA staff members are available to provide technical assistance.

Geographic Scope: Appropriate geographic scope should be based on the resolution and complexity of the data. The tool is built upon Esri’s ArcGIS, so it will only run as fast as allowed within that software.

Website: www.csc.noaa.gov/digitalcoast/tools/hpp

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/slviewer

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:

1. **Flooding:** Using data from NOAA’s *State of the Coast* “Population in the Floodplain” viewer⁴ and summarized by coastal county through NOAA’s Coastal County Snapshots for Flood Exposure,⁵ 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 ⁶			Not Available
No. of people in coastal counties ⁷			Not Available
Percentage of people in coastal counties in coastal floodplain			-----

2. **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,”⁸ 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*

⁴ <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.

⁵ www.csc.noaa.gov/digitalcoast/tools/snapshots

⁶ 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.

⁷ 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.

⁸ <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 ¹¹	Percent of Coastline ⁹
Very low (>2.0m/yr) accretion	Not Available	Not Available
Low (1.0-2.0 m/yr) accretion	Not Available	Not Available
Moderate (-1.0 to 1.0 m/yr) stable	Not Available	Not Available
High (-1.1 to -2.0 m/yr) erosion	Not Available	Not Available
Very high (<-2.0 m/yr) erosion	Not Available	Not Available

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",¹⁰ 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 ¹¹	Percent of Coastline
Very low	Not Available	Not Available
Low	Not Available	Not Available
Moderate	Not Available	Not Available
High	Not Available	Not Available
Very high	Not Available	Not Available

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 ¹¹ (H, M, L)
Flooding (riverine, stormwater)	H
Coastal storms (including storm surge) ¹²	H
Geological hazards (e.g., tsunamis, earthquakes)	M
Shoreline erosion ¹³	M

⁹ 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.

¹⁰ <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.

¹¹ 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*

¹² 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/>.

Type of Hazard	General Level of Risk ¹¹ (H, M, L)
Sea level rise ^{13,14,15}	M
Great Lake level change ¹⁴	N/A
Land subsidence	L
Saltwater intrusion	L
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.

In April 2014 an Update to the State Hazard Mitigation Program Plan was completed. The plan gives managers guidance for reducing the loss of life and property, economic disruption, and disaster assistance costs associated with natural disasters. It also provides a source of pre-disaster mitigation funding to implement measures that will make the community more resilient to those natural disasters.

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)
Statutes, regulations, policies, or case law interpreting these that address:			
<i>elimination of development/redevelopment in high-hazard areas¹⁴</i>	Y	Y	N
<i>management of development/redevelopment in other hazard areas</i>	Y	Y	N
<i>climate change impacts, including sea level rise or Great Lake level change</i>	Y	Y	N
Hazards planning programs or initiatives that address:			
<i>hazard mitigation</i>	Y	Y	Y
<i>climate change impacts, including sea level rise or Great Lake level change</i>	Y	Y	Y
Hazards mapping or modeling programs or initiatives for:			
<i>sea level rise or Great Lake level change</i>	Y	Y	Y
<i>other hazards</i>			

¹³ 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.

¹⁴ Use state’s definition of high-hazard areas.

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

High hazard areas are those areas that are defined and delineated as flood hazard zones by FEMA.

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.

Executive Order 2015-08, established a climate change adaptation policy and the creation of a Climate Change Task Force. Plans are now underway to undertake a vulnerability assessment that will inform a climate change adaptation plan. The U.S. Department of Interior has initially funded a Climate Change Coordinator, who serves as a Special Assistant to the Governor, to support this effort. The Climate Change policy will look prospectively toward the future in developing strategies to address impacts of climate change predicted for the island. This includes excessive rainfall, stronger tropical storms, drought, ocean acidification, coral bleaching, salt water intrusion, rising sea levels, storm surges, diseases, rising temperatures, increased migration and invasive species.

In April 2014 an Update to the State Hazard Mitigation Program Plan was completed. The plan gives managers guidance for reducing the loss of life and property, economic disruption, and disaster assistance costs associated with natural disasters. It also provides a source of pre-disaster mitigation funding to implement measures that will make the community more resilient to those natural disasters.

Enhancement Area Prioritization:

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

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

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

During this assessment period, the GCMP assessment is focused on the following three high priority areas: Cumulative and Secondary Impacts, Public Access, and Special Area Management Plans. Though Coastal Hazards remains a priority due to increasing concerns about climate change impacts and Guam’s vulnerability to seismic, storm and other hazards, it was lowered in rank to a medium priority along with wetlands and ocean resources. Input from stakeholders was a factor in this decision.

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

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

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

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

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

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

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 Rise, Coastal Population in the Floodplain, and Federally Insured Assets in the Coastal Floodplain.

Geographic Scope: Generally all coastal states and territories but a few viewers may have more limited coverage

Website: <http://stateofthecoast.noaa.gov/>

Spatial Hazards Events and Loss Database for the United States (SHELDUS)

SHELDUS is a county-level hazard data set for the United States for 18 different natural hazard event types such as thunderstorms, hurricanes, floods, wildfires, and tornados. For each event, the database includes the beginning date, location (county and state), property losses, crop losses, injuries, and fatalities that affected each county.

Geographic Scope: All states (does not include territories)

Website: <http://webra.cas.sc.edu/hvri/products/sheldus.aspx>

Social Vulnerability Index

The Social Vulnerability Index (SoVI) 2006-2010 measures the social vulnerability of U.S. counties to environmental hazards. The index is a comparative metric that facilitates the examination of the differences in social vulnerability among counties. It shows where there is uneven capacity for

preparedness and response and where resources might be used most effectively to reduce the pre-existing vulnerability. SoVI also is useful as an indicator in determining the differential recovery from disasters.

Geographic Scope: All states (does not include territories)

Website: <http://webra.cas.sc.edu/hvri/products/sovi.aspx>

U.S. Global Change Research Program Scenarios for Climate Assessment and Adaptation

The U.S. Global Change Research Program has developed several interactive scenario maps. Scenarios are ways to help understand what future conditions might be, with each scenario an example of what might happen under different assumptions. Scenarios are not predictions or forecasts, and no probabilities are associated with them. Instead, they provide a range of future conditions to bound uncertainty. Scenarios displayed include climate, sea level change, land use, and socioeconomic conditions. They are based on peer-reviewed, published sources, including materials prepared by the Intergovernmental Panel on Climate Change.

Geographic Scope: National

Website: <http://scenarios.globalchange.gov/content/scenarios>

DRAFT

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 ¹⁵	Changes or Trends Since Last Assessment ¹⁶ (↑, ↓, –, unkwn)	Cite data source
Beach access sites	211	Denial of unpermitted public access by government of Guam agencies. Examples are loss of unpermitted use of Santos Memorial Park Piti and Family Beach on Cabras Islands. Private organizations are able to close down access to public parks for private events.	Observation
Shoreline (other than beach) access sites	99	No updates available	N/A
Recreational boat (power or nonmotorized) access sites	8	Loss of Ylig Boat Launch site in Yona	Common knowledge to local boaters and fishermen
Number of designated scenic vistas or overlook points	14	No updates available	Department of Parks and Recreation
Number of fishing access points (i.e. piers, jetties)	8	No change	Observation
Coastal trails/boardwalks	No. of Trails/boardwalks Not Available	Recent legislation authorizing the sale of bullcart trails to adjacent private property owners may result in the loss of public access.	Guam Legislature website and local news sources

¹⁵ 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.

¹⁶ 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 ¹⁵	Changes or Trends Since Last Assessment ¹⁶ (↑, ↓, -, unkwn)	Cite data source
	Miles of Trails/boardwalks Not Available		
Number of acres parkland/open space	Total sites 211	10,626.911 acres	Department of Parks and Recreation
	Sites per miles of shoreline Not Available		
Other (please specify)		26,872 reef acres, 1,721 lagoon acres	

- 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.¹⁷ There are several additional sources of statewide information that may help inform this response, such as the Statewide Comprehensive Outdoor Recreation Plan,¹⁸ the National Survey on Fishing, Hunting, and Wildlife Associated Recreation,¹⁹ and your state's tourism office.

The population within the state's coastal shoreline counties is projected to increase by six percent between 2010 and 2020. (2010 Census on Population and Housing: Guam) The change in population from 1990 to 2000 (159,358) was 2.9 percent. The current projections will be influenced by the approved Military Buildup. According to the 2015 SEIS for the Guam and Northern Marianas Military Relocation the projected increase in population will be 5.6% for the years 2021-23.

- 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.

The Comprehensive Outdoor Recreation Plan was completed by the Department of Parks and Recreation in 2006. The associated survey of park users did have as a comment need for better access to facilities. Note that facilities, in this case, also includes seashore parks.

Management Characterization:

- 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

¹⁷ See NOAA's Coastal Population Report: 1970-2020 (Table 5, pg. 9): <http://stateofthecoast.noaa.gov/coastal-population-report.pdf>

¹⁸ 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.

¹⁹ 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.

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	Y
Acquisition/enhancement programs	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.

During 2013, public access signs were updated along major public access routes in the Tumon and Tamuning area. Through partnerships with GVB, DPW, and DPR, beach access was mapped and standardized signs were installed at various locations.

The Santos Memorial Park Pavilion in the village of Piti was improved by the installation of a rain garden to reduce flooding and stormwater. This allowed for the preservation of existing beach access.

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?²⁰

Public Access Guide	Printed	Online	Mobile App
State or territory has? (Y or N)	N	N	N
Web address (if applicable)	N/A	N/A	N/A
Date of last update	N/A	N/A	N/A
Frequency of update	N/A	N/A	N/A

²⁰ 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.

Enhancement Area Prioritization:

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

High	<u> H </u>
Medium	<u> </u>
Low	<u> </u>

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

Over the years the issue of public access to the ocean shore has come up on numerous occasions as an important concern. At the stakeholder meeting, members from various government agencies and organizations ranked the issue as holding high priority, especially when considering that the impending military buildup and associated increases in private development will very likely impose further restrictions to the shore.

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

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

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

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

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

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/

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 ²¹ (aesthetic, resource damage, user conflicts, other)	Change Since Last Assessment (↑, ↓, -, unkwn)
<i>Land-based</i>			
Beach/shore litter	H	Aesthetic, Resource damage, health	No change
Dumping	H	Aesthetic, Resource, Health	Increase
Storm drains and runoff	H	Aesthetic, resource damage, health	Increase
Fishing (e.g., fishing line, gear)	M	Aesthetic, Resource damage	No change
Other (please specify)			
<i>Ocean or Great Lake-based</i>			
Fishing (e.g., derelict fishing gear)	L	Resource Damage	No change
Derelict vessels	L	Resource Damage	Decrease
Vessel-based (e.g., cruise ship, cargo ship, general vessel)	L	Resource Damage	No change
Hurricane/Storm	H	Aesthetic, Resource Damage	No change
Tsunami	L	Aesthetic, Resource damage, health	No change
Other (please specify)			

²¹ You can select more than one, if applicable.

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

NOAA’s Marine Debris program has been established. Outreach and education programs have been initiated. Collaboration with the Guam Nature Alliance, an outreach and education group supported by local, federal, NGOs and private citizens.

Data continues to be collected on shoreline debris during the annual International Coastal Cleanup and other shoreline clean-up efforts. The International Coastal Clean Up remains one of the largest volunteer community events for the island with over 4,000 participants. Aluminum cans, cigarette butts and plastics bottles remain the most collected items found at the 20 sites. There has been a reduction in fishing lines from 414 in 2011 to 296 in 2012.

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	N	N	N
Marine debris removal programs	N	N	Y

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

NOAA has supported an outreach and education program for marine debris. In partnership with the UOG Sea Grant program, public service announcements have been aired on local television stations. Guam presently does not have laws that address the removal of derelict vessels. During storm events, coral reefs are susceptible to damage from vessels hitting coral reefs. The concern over the last assessment period is due largely to no local legislation or enforcement methods to address removal.

GCMP funds are not directed to marine debris programs.

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.

Stakeholders expressed their concern over the lack of local legislation to address derelict vessels that contribute to marine debris. Over the last few years, there have been abandon and derelict vessels in increasing numbers. During storm events, these vessel cause damage to coral reefs and the marine environment. There is currently no pending legislation for dealing with abandoned or derelict vessels.

NOAA has funded a Marine Debris education and outreach program. The University of Guam Sea Grant program has developed public outreach material to support the Marine Debris Program.

RESOURCES AND TOOLS:

Below are a few national resources and tools that may be useful in conducting your assessment or developing marine debris 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 marine debris. 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

NOAA Marine Debris Program

The NOAA Marine Debris Program supports national and international efforts to research, prevent, and reduce the impacts of marine debris. The program coordinates and supports marine debris activities within NOAA and with other federal agencies, and uses partnerships to support projects carried out by state and local agencies, tribes, nongovernmental organizations, academia, and industry. The program also provides funding opportunities for projects that address marine debris.

Geographic Coverage: National and international

Website: <http://marinedebris.noaa.gov/>

Ocean Conservancy Marine Debris Monitoring Program Final Report

The National Marine Debris Monitoring Program, conducted by Ocean Conservancy and funded by the Environmental Protection Agency, was designed to standardize marine debris data collection in the United States using a scientifically valid protocol to determine marine debris status and trends. The

study analyzed marine debris from three specific sources: land-based, ocean-based, and general (marine debris that cannot be distinguished as a land-based or ocean-based source). The study was conducted over a five-year period between September 2001 and September 2006.

Geographic Coverage: Regional (except for Great Lakes and Pacific territories)

Website:

http://act.oceanconservancy.org/site/DocServer/NMDMP_Report_April_2008.pdf?docID=4601

West Coast Marine Debris Database

The West Coast Marine Debris Database provides comprehensive access to information on West Coast marine debris including beach cleanups and derelict gear removal.

Geographic Coverage: Washington, Oregon, and California

Website: <http://debris-db.westcoastoceans.org/>

DRAFT

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,²² 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)
2000	154,805	2.85%	47,677	5.72%
2010	159,358		50,567	

Note: National Ocean Economics Program Data is not available for Guam. Data cited in the table above is based on the Census of Population and Housing data published by the Bureau of Statistics and Plans and corresponds to the decennial censuses conducted in 2000 and 2010.

- Using provided reports from NOAA’s Land Cover Atlas²³ or high-resolution C-CAP data²⁴ (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.

²² 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.

²³ www.csc.noaa.gov/ccapatlas/. Summary data on land use trends for each coastal state is available on the ftp site.

²⁴ 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 (Square Miles)	Gain/Loss Since 2006 (Square Miles)
Developed, High Intensity	20.29	1.09
Developed, Low Intensity	N/A	N/A
Developed, Open Space	22.74	0.43
Grassland	41.53	0.25
Scrub/Shrub	18.07	0.33
Barren Land	4.41	-2.00
Open Water	20.40	0.06
Agriculture	0.96	-0.25
Forested	95.17	0.06
Woody Wetland	4.78	0.08
Emergent Wetland	1.53	-0.05

Note that Land Area Coverage is shown in square miles and not acres as originally indicated by the template. Also, the comparison year is 2005 and not 2006. 2006 data for Guam is not available.

- Using provided reports from NOAA's Land Cover Atlas²⁵ or high-resolution C-CAP data²⁶ (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	18.06	18.72	3.67%
Percent impervious surface area	8.35	8.83	5.7%

* 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 (Square Miles)
Barren Land	0.49 square miles
Emergent Wetland	Not Available
Woody Wetland	Not Available
Open Water	0.01 square miles
Agriculture	0.06 square miles

²⁵ www.csc.noaa.gov/ccapatlas/. Summary data on land use trends for each coastal state is available on the ftp site.

²⁶ www.csc.noaa.gov/digitalcoast/data/ccaphighres. Summary data on land use trends for each coastal state is available on the ftp site.

Scrub/Shrub	0.57 square miles
Grassland	0.53 square miles
Forested	1.87 square miles

** 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.*

- Using data from NOAA’s State of the Coast “Shoreline Type” viewer,²⁷ indicate the percent of shoreline that falls into each shoreline type.²⁸ You may provide other information or use graphs or other visuals to help illustrate.

Shoreline Types	
Surveyed Shoreline Type	Percent of Shoreline
Armored	15%
Beaches	35%
Flats	0%
Rocky	44%
Vegetated	6%

- 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.

A recently developed a GIS tool was developed to assist with assessing cumulative and secondary impact to the Northern Guam Lens Aquifer. This tool will provide GCMP and policy makers a better understanding of the impact to Guam’s sole source aquifer especially as it related to clearing and grading of native limestone forest. The Water Environmental Research Institute, University of Guam developed the tool with 309 funds.

The Department of Agriculture, Forestry Division recently updated the forestry data set to determine high value forest area. Information from this data is used to determine critical areas for habitat restoration.

Monitoring is being completed through a comprehensive monitoring program funded by the Coral Reef Initiative Funds. Guam’s monitoring plan builds upon the work already accomplished through past NOAA Coral Reef Ecosystem Monitoring grants. It incorporates existing programs and uses modified versions of techniques developed for the five long-term monitoring sites and coral disease monitoring conducted by researchers at the UOG Marine Lab (funded by CRI Monitoring grant funds). Their objective is to collect comprehensive data from permanent sites around the island of Guam.

The primary goals of the Guam Coral Reef Monitoring Plan are to:

- Determine the status and trends in selected coral reef ecosystem indicators to better inform the resource manager’s decision making process and increase the effectiveness of natural resource management on Guam.

²⁷ <http://stateofthecoast.noaa.gov/shoreline/welcome.html>

²⁸ 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).

- Provide managers with early notice of abnormal conditions of selected resources to encourage effective mitigation measures and reduce the costs of management.
- Provide data to better understand the dynamic nature and condition of the island’s coastal ecosystems.
- Allow natural resource agencies to meet certain legal and congressional mandates related to coastal resource protection.
- Measure progress towards performance goals.

Analysis of collected data is expected in 2016.

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	N	N	N
Guidance documents	Y	Y	Y
Management plans (including SAMPs)	Y	Y	Y

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

The Department of Public Works developed a Draft Guam Road Network Stormwater Implementation Plan to address stormwater issues along Guam’s major highways. BMP for road networks were developed for use on road construction projects.

During the last assessment, Watershed Management Plans had been developed for priority watersheds including Piti-Asan and Manell-Geus. Most recently, initial data is in the process of being collected for the Toguan watershed. In addition to watershed plan, Conservation Action Plans are also prepared to identify areas within the watershed that are in need of restoration and mitigation. In addition to identify threats within the watershed, GCMP has also included collection of socioeconomic data to support management decision to facilitate a more cohesive approach to improve watershed health.

In Manell-Geus, the community was interested in reducing flooding caused by bamboo that grows wild in upland areas of the watershed. Currently, a plan is being developed to determine the extent of the problem and ways to reduce the impact.

Enhancement Area Prioritization:

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

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

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

During the meetings with stakeholders, many expressed a high degree of concern about the long-term lack of proactive action regarding stormwater management. Understanding its impacts have become important due to increased development, especially in Tumon, the center for Guam’s tourism activity. Although efforts have been made to educate the construction community in developing post-construction best management practices (BMPs) to address stormwater and erosion impacts, little has been done to improve or enforce existing stormwater management regulations. Additionally, stakeholders were interested in developing education programs on the existing stormwater regulations and their relationship to the local economy and the natural environment.

In addition, Cumulative and Secondary Impacts continue to be a high priority as the island addresses food security concerns by expanding opportunities for farming. The United States Department of Agriculture (USDA) and the Guam Department of Agriculture (DoAg) are taking steps to protect critical agricultural resources to ensure the island can support increased food production. The Natural Resources Conservation Service (NRCS) and National Oceanographic and Atmospheric Administration (NOAA) are working with DoAg to determine soil suitability for farming. Stakeholders agree that a set of policies for incentivizing the preservation of suitable farmland is a growing necessity.

Soil erosion and sedimentation is one of the most serious and neglected sources of nonpoint source pollution on Guam. Its negative effects can be seen throughout Guam’s rivers and streams and have contributed greatly to the degradation of our surrounding reef ecosystem. In the north, it contributes to negative impacts on our sole aquifer system. The recently developed Cumulative and Secondary Impacts tool addresses this nonpoint source pollution in northern Guam.

With the relatively rapid increase in both private and public development from the military buildup, the government of Guam lacks the necessary data to develop policies to address natural resource losses resulting from the cumulative and secondary impacts associated with development from the buildup. It is expected that cumulative impacts will result from the removal of large tracts of native forest. This includes loss or conversion of native habitat. This may negatively impact the recovery of Endangered Species Act (ESA) wildlife, decrease the capacity of the recharge areas of the aquifer, and result in a loss of culturally important terrestrial resources.

RESOURCES AND TOOLS:

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

EPA National Coastal Condition Report IV

The report describes and rates the ecological and environmental conditions in U.S. coastal waters. Information is summarized on a national and regional basis. The latest report, released in 2012, reports on data collected from 2003 to 2006.

Geographic Scope: National and regional

Website: <http://water.epa.gov/type/oceb/assessmonitor/nccr/index.cfm>

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). The tool summarizes land use change trends. 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

NOAA High-Resolution C-CAP Data

Nationally standardized database of land cover information (developed using remotely sensed imagery) for the coastal regions of the U.S. 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 region, and Monterey Bay, California

Website: www.csc.noaa.gov/digitalcoast/data/ccaphighres

NOAA Environmental Sensitivity Index Maps

Environmental Sensitivity Index (ESI) maps are designed to provide a concise summary of coastal resources at risk in case of an oil spill or other disaster. They characterize the type of shoreline (armored, vegetated, beach, etc.) and may be useful for resource characterization and assessment. ESI maps are periodically updated on a state-by-state basis, and are generally available in multiple formats (pdf maps, GIS layers, etc.)

Geographic Scope: All coastal states and territories

Website: <http://response.restoration.noaa.gov/maps-and-spatial-data/environmental-sensitivity-index-esi-maps.html>

NOAA Impervious Surface Analysis Tool

The Impervious Surface Analysis Tool (ISAT), a custom suite of easy-to-use scripts for ArcGIS, is used to calculate the percentage of impervious surface area within user-selected geographic areas, such as watersheds, municipalities, and subdivisions. ISAT uses imperviousness values to categorize areas as having good, fair, or poor water quality. A correlation between an increase in impervious surfaces and a decrease in water quality has been well established, and ISAT users may find the information derived from ISAT helpful in predicting how different management scenarios might impact local water quality. The tool calculates the percent impervious area and total impervious surface area of each selected polygon, categorizes polygons to represent conditions of good, fair, and poor water quality based on calculated imperviousness, and incorporates land cover change scenarios to examine how changes influence impervious surfaces. Although it requires desktop GIS and some GIS technical skills, NOAA staff members are able to help states analyze data to support wetlands assessment.

Geographic Scope: Appropriate geographic scope should be based upon the resolution and complexity of the data. The tool is built on Esri's ArcGIS, so it will only run as fast as allowed within that software.

Website: www.csc.noaa.gov/digitalcoast/tools/isat

NOAA OpenNSPECT Data

OpenNSPECT is the open-source version of the Nonpoint Source Pollution and Erosion Comparison Tool to investigate potential water quality impacts from development, other land uses, and climate change. OpenNSPECT was designed to be broadly applicable. When applied to coastal and noncoastal areas alike, the tool simulates erosion, pollution, and their accumulation from overland flow. The tool provides estimates and maps of surface water runoff volumes, pollutant loads, pollutant concentrations, and total sediment loads, helps users identify areas that might benefit from changes to proposed development strategies, and provides a means to analyze "what if" land use change scenarios. Although it requires desktop GIS and some GIS technical skills, NOAA staff members are available to provide technical assistance.

Geographic Scope: Appropriate geographic scope should be based upon the resolution and complexity of the data. The tool is a plugin for open source MapWindow GIS.

Website: www.csc.noaa.gov/digitalcoast/tools/opennspect

CZMA Performance Measurement System Data

Annual CZMA performance measurement data for coastal community development. 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

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 population, overall coastal health, shoreline type, and nutrient pollution, and others may help inform the cumulative and secondary impacts assessment.

Geographic Scope: Generally all coastal states and territories but a few viewers may have more limited coverage.

Website: <http://stateofthecoast.noaa.gov/>

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
Coral Reefs /Bays/ Lagoons/ Shoreline	Overharvesting, near-shore development, increased recreation, poor fishing practices, storms, shoreline erosion
Aquifer Recharge Area	Agriculture, development, overuse, military build-up,
Fragile Areas (wetlands, limestone forest, wildlife habitats and historic sites)	Development, Military, Ancestral Lands and Chamorro Land Trust needs, water sports and tropical beach recreation, and outright vandalism, graffiti and theft of historic properties in historic sites.
Priority Watersheds (Piti-Asan, Manell-Geus, Pago Bay, Ugum, Fouha, Toguan)	Increase fires and poor land management, increase development, flooding, invasive species

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.

Marine Preserves

Although the EcoPermit was passed into law, the Department of Agriculture with the assistance of GCMP, has not been able to finalize the rules and regulations for the Eco Permit. The intent of the EcoPermit was to monitor and permit all activities other than fishing that occur in the Government of Guam managed MPA. While the marine preserves currently limit direct harvest of fish and other marine species, these areas are currently open to virtually all types of other activity. The intent of the preserves is to protect both species and habitats, so controls on non-harvest activity are intended to become part of the management system for these protected areas. To support the draft rules and regulations, the Department of Agriculture hired a consultant to complete a study on "Limits for Acceptable Change" for the Piti Bomb Holes and Tumon Bay MPA. This study attempted to delineate zones for various levels and types of recreational use within the MPA. Although the study was complete, Department of Agriculture has had a difficult time incorporating the findings into the Eco Permit draft Rules and Regulations.

The Chamorro Land Trust Commission recently completed a master plan for the properties within their inventory. The leases are given for residential and agriculture use by indigenous Chamorros. The period of the lease is 99 years. The CLTC can also lease properties in their inventory for commercial use to fund infrastructure and other administrative cost. Recently the CLTC has completed a master plan for their properties and have started to develop community plans for large tracts of land.

Aquifer Recharge Area: The Northern Guam Lens serves as a source of potable water for 80% of the island's population. Under the Safe Drinking Water Act, the aquifer has been designated a sole source aquifer. After several years of monitoring and research by the University of Guam (UOG) WERI and Guam Waterworks Authority (GWA), Guam EPA has determined that the Northern Guam Lens Aquifer is not qualified for the "Ground Water Under Direct Influence" (GWUDI) program.

Guam Wellhead Protection Plan. The Guam Waterworks Authority completed an inventory and assessment of all of its water wells. The study identified wells that are potentially in high sensitive areas that need close monitoring to ensure that land activities do not impact water extracted from these wells. The plan and GIS maps were provided to the Department of Land Management and the Chamorro Land Trust Commission. Activities from potential development may have contaminated these wells. Recently the Chamorro Land Trust has been issuing agricultural and residential leases. The CLTC and GWA have agreed not to lease properties within 300 feet of the wells.

Imagine Guam. The Governor has assigned a Special Assistant to develop a community plan to develop policies for Guam's future. "Imagine Guam" is a 50-year strategic vision for Guam. The strategic vision includes strategic plans for social services, food security, cultural and historic, transportation, economy, environment, green space and sustainability.

Concepts from the 2009 "North and Central Land Use Plan" are incorporated in the land development portion of the Imagine Guam.

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	Y	Y	N
SAMP plans	Y	Y	Y

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

Historic district of Hagåtña. The Hagåtña Redevelopment Authority recently completed a master plan for Hagåtña, the capital of Guam. The plan identified commercial tourist districts and includes improvements to the area as part of the preparation for the 2016 Festival of Pacific Arts. Some of these improvements include developing the Agana River, the construction of the new Guam Museum, upgrades to the Chamorro Village complex, walkways and infrastructure.

The Guam Waterworks Authority finalized the Wellhead Protection Plan. The plan assessed all existing GWA well locations and determine risk factors from poor land use practices. It was determined that majority of GWA’s wells are in high risk areas. As a result, discussions have begun with the Chamorro Land Trust Commission to ensure that vacant government property within 300 feet radius of the wells will no longer be leased out.

Continued implementation of the Watershed Plan. The Piti-Asan and Manell-Geus watershed management plans were completed during the previous assessment. Work to address threats in the watershed continues. NOAA is also implementing extensive watershed management action as part of the Habitat Blue Print for the Manell-Geus watershed.

Enhancement Area Prioritization:

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

High X
 Medium
 Low

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

During the stakeholder meeting we learned that the SAMP continues to be a high priority. Community planning continues to be important to ensure that sensitive environmental areas are better managed and protected. During this assessment, watershed management, including stormwater management was of critical concern. In addition, protection of native forest habitats is critical to ensuring that Guam's sole source aquifer is sufficiently protected.

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

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

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

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),²⁹ 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	N/A	N/A	N/A	N/A
Marine Construction	N/A	N/A	N/A	N/A
Marine Transportation	N/A	N/A	N/A	N/A
Offshore Mineral Extraction	N/A	N/A	N/A	N/A
Tourism & Recreation	N/A	N/A	N/A	N/A
All Ocean Sectors	N/A	N/A	N/A	N/A

Change in Ocean and Great Lakes Economy for Coastal Counties (2005-2010)				
	Establishments (% change)	Employment (% change)	Wages (% change)	GDP (% change)
Living Resources	N/A	N/A	N/A	N/A
Marine Construction	N/A	N/A	N/A	N/A
Marine Transportation	N/A	N/A	N/A	N/A
Offshore Mineral Extraction	N/A	N/A	N/A	N/A
Tourism & Recreation	N/A	N/A	N/A	N/A
All Ocean Sectors	N/A	N/A	N/A	N/A

²⁹ 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.

Guam's ocean economy is derived from fishing, tourism and recreation. There are no marine construction, marine transportation, or off shore mineral extraction activities and industries on Guam.

The Coral Reef Valuation Study was completed in 2007. The objective of the study was to determine the comprehensive economic valuation of the Guam's coral reefs and associated resources. The study looked at how Guam's economy benefits directly and indirectly from ocean resources. Data was collected for fisheries, others non-extractive activities such as water recreation and tourism, cultural and traditional uses, and education and research. Finally, some are indirect uses, such as shoreline and infrastructure protection.

The study has helped decision makers and the public gain a better understanding of the importance of coral reefs to Guam's economy. This information can also be used to assist in determining mitigation activities for coral damage. The study reported that Guam's reefs contribute \$127 million toward Guam's economy. The report has not been updated since 2007.

Type of reef-related value	Economic value (million \$/year)	Economic value (% of total)
Tourism	\$94.63	74.30%
Diving and snorkeling	\$8.69	6.80%
Fishery	\$3.96	3.10%
Amenity	\$9.60	7.50%
Coastal protection	\$8.40	6.60%
Biodiversity	\$2.00	1.60%
Total Economic Value	\$127.28	99.90%

Source: Table E.5 Economic Value of Guam Coral Reefs. University of Guam Marine Laboratory Technical Report No. 116. March 2007

Guam's economy is heavily dependent on its Tourism economy. Guam has had record tourist arrivals from Japan, Korea, China, and Russia. This year it is expected that Guam 1.3 million tourists will visit Guam.

Fishing is another ocean industry that supports the economy of Guam. Below are tables from the latest fishing related industry both offshore and inshore. There has been an increase in the catch levels over the last year of data collected compared to previous years.

Annual Offshore and Inshore Creel Survey, Guam: Fiscal Years 2003 to 2013 [Metric Tons]

Bureau of Statistics and Plans, Government of Guam, 2013 Statistical Yearbook

Description	2013	2012	2011	2010	2009	2008	2007	2006	2005	2004	2003
Total	597.2	340.1	553.8	431.2	425.8	354.6	300.7	332.2	233.6	428.7	432.2
Offshore Fisheries	424.5	257.1	405.4	399.4	402.3	313.4	253.2	271.4	194.0	385.2	367.0
Trolling	367.6	202.4	264.1	329.3	322.3	247.1	204.8	215.5	139.6	311.7	272.0
Bottom fishing	26.4	22.7	40.3	25.0	39.3	27.6	29.3	40.9	28.6	28.2	38.0
Nighttime Jigging	3.1	8.5	8.1	4.5	5.8	1.3	0.9	0.8	1.0	1.2	1.0
Spearfishing	19.5	10.5	42.5	31.0	27.2	26.0	14.3	8.7	20.1	38.0	37.0
Hand/Gill Net Fishing	7.4	9.1	42.3	7.9	7.0	7.4	3.8	5.0	4.0	5.3	18.0
Other	0.5	4.0	8.1	2.0	0.7	4.1	0.1	0.5	0.7	0.8	1.0
Inshore Fisheries	82.7	83.1	48.4	31.8	23.5	41.2	47.5	60.8	39.6	43.5	65.2
Hook and Line	20.1	43.4	72.6	2.6	5.6	13.2	16.2	16.5	11.0	14.3	21.9
Cast net	44.6	14.9	64.4	3.5	5.8	6.4	3.2	20.1	3.8	5.4	8.7
Gillnet	12.1	16.1	4.6	23.9	2.9	9.8	9.8	7.3	10.0	3.5	5.8
Surround/Drag Net	10.3	2.7	0.1	3.2	1.3	2.0	1.4	2.4	2.6	3.1	1.7
Spearfishing	2.9	3.0	3.0	0.8	1.0	7.8	11.7	10.9	7.5	15.3	25.9
Hooks and Gaffs	1.9	3.3	0.6	0.3	6.4	1.5	4.0	2.5	4.1	0.6	0.3
Other	0.1	0.1	0.5	0.5	0.2	0.6	1.2	1.1	0.6	1.3	0.9

Source: Division of Aquatic and Wildlife Resources, Department of Agriculture, Government of Guam

Table 2-23. Annual Transshipment, Guam: CY 2009 to 2013

Bureau of Statistics and Plans, Government of Guam, 2013 Statistical Yearbook

Species	2013		2012		2011		2010		2009	
	No. Pieces	Kilograms								
TOTAL	76,154	2,046,956	74,554	2,411,046	62,208	2,016,602	60,937	1,897,760	85,012	2,904,242
Tuna (Total)	72,070	1,862,998	70,319	2,222,150	59,724	1,897,447	57,419	1,726,062	82,453	2,782,058
Albacore	2,604	47,684	1,738	29,111	1,271	22,037	1,262	23,179	262	5,234
Bigeye	47,174	1,379,499	44,212	1,691,446	35,948	1,343,368	26,948	987,638	43,668	1,826,634
Blue Fin Tuna	0	0	0	0	0	0	0	0	2	248
Yellow Fin	22,292	435,815	24,369	501,593	22,505	532,042	29,209	715,245	38,521	949,942
Non-Tuna (Total)	4,084	183,958	4,235	188,896	2,484	119,155	3,518	171,698	2,559	122,184
Black Marlin	0	0	69	2,968	785	36,265	767	36,645	633	31,043
Blue Marlin	2,379	103,136	1,743	78,517	1,106	53,517	2,077	98,240	1,209	59,642
Other	0	0	0	0	35	760	0	0	0	0
Other Non Tuna	35	640	235	3,552	0	0	5	105	237	4,546
Red Marlin	0	0	0	0	0	0	0	0	3	127
Striped Marlin	0	0	0	0	0	0	0	0	1	60
Swordfish	959	49,663	885	45,844	359	19,166	34,893	34,893	453	25,612
Wahoo	0	0	19	911	0	0	0	0	1	47
White Marlin	711	30,519	1,284	57,104	199	9,447	1,815	1,815	22	1,107

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)
Resource	
<i>Benthic habitat (including coral reefs)</i>	Increase
<i>Living marine resources (fish, shellfish, marine mammals, birds, etc.)</i>	Increase
<i>Sand/gravel</i>	Unknown
<i>Cultural/historic</i>	Increase
<i>Other (please specify)</i>	
Use	
<i>Transportation/navigation</i>	No Change
<i>Offshore development³⁰</i>	Unknown
<i>Energy production</i>	Unknown
<i>Fishing (commercial and recreational)</i>	Increase
<i>Recreation/tourism</i>	Increase
<i>Sand/gravel extraction</i>	Unknown
<i>Dredge disposal</i>	Unknown
<i>Aquaculture</i>	No Change
<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>Fishing (commercial and recreational)</i>	X		X		X							Overfishing
<i>Recreation/tourism</i>	X		X									

³⁰ Offshore development includes underwater cables and pipelines, although any infrastructure specifically associated with the energy industry should be captured under the "energy production" category.

4. 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.

Guam has not updated the Status of the Reefs Report since the 2008. The Coral Reef Monitoring Program has a few years' worth of data for several established monitoring sites and baseline data for several new ones. The monitoring team will first focus on a comprehensive analysis of that data. However, it will require a much larger effort to then coordinate a Status of the Reefs Report update that incorporates all available data since 2008.

While there isn't an official Status of the Reefs Report, there was significant mortality associated with coral bleaching events in 2013 and 2014 and low tide exposure associated with the ongoing El Niño event appears to have resulted in some mortality as well. The analysis of a substantial amount of data collected during the 2013 bleaching event is complete, but the final numbers will not be available for several months. Preliminary numbers indicate that over 80% of all species were affected, nearly half of all colonies were affected, and that some corals that are dominant in shallow, wave-exposed waters around much of the island (e.g., Acropora, Pocillopora, and Montipora) were hit particularly hard, with 30-50% mortality. A subset of the locations surveyed during the 2013 bleaching event, will be analyzed in an effort to get an idea of how much additional mortality may have occurred during the 2014 bleaching event and to see if there are any sign of recovery.

In addition, the staghorn thickets around the island were assess to determine how they were impacted by the bleaching events. It is estimated that approximately 50-60% of all of Guam's staghorn corals perished as a result of those events. Anecdotally, much of that mortality occurred during the 2014 event, which, while of a lower severity and duration, seemed to have caught the corals in a much weakened state after powering through the 2013 event. It didn't take more than 2-3 weeks of unusually warm water to desolate them.

When analysis has been completed, Guam's monitoring data should be able to support a concerning trend in fishery. Increased reports of fishing in the MPAs have triggered efforts to increase enforcement. Unfortunately, there are a limited number of Conservation Officers. There is a major concern that very heavy fishing activity is being carried out by a well-organized and apparently well-funded group of fishermen. This combined with inadequate enforcement activity may have impacted the preserves. Nonetheless, even if the preserves have not been heavily targeted, the rest of the island has been substantially impacted by commercial fishing.

Guam Water Quality Standards for Recreational Waters. Guam EPA submitted revised standards that were based on data for tropical environments. The water quality standards for recreational waters are monitored by Guam EPA. Approval is pending.

Management Characterization:

1. 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?

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
Regional comprehensive ocean/Great Lakes management plans	Y	N	Y
State comprehensive ocean/Great Lakes management plans	Y	N	Y
Single-sector management 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.

Pacific Islands Regional Planning Body. Guam is a member of the Pacific Island Regional Planning Body. A regional plan is presently in draft form. The plan’s goal is intended to assist with regional management of coastal and marine areas of the Pacific. The plan will address issues related to economic, social, environmental, security, conservation, and sustainable use of natural and cultural resources for the region.

Meetings with the members and stakeholders were held in 2013 and 2014. A Stakeholder Engagement Plan and a Charter have been developed. A workshop was held on Foundation for Ocean Planning, Human Use and Habitat Characterization for stakeholders. The “Practitioners Guide to Managing Ocean Resources through Coastal and Marine Spatial Planning” is also available.

Guam Marine Protected Areas (MPAs): Limits of Acceptable Change. The Department of Agriculture conducted a study to determine impacts on non-fishing areas for the Tumon MPA and Piti Bombholes MPA. This effort was to support the Eco Permit progress. The Limits of Acceptable Change identified areas for marine activities other than fishing within the MPA.

Western Pacific Regional Fisheries Management Council: the Western Pacific Regional Fisheries Management Council (WesPac) is a federal organization tasked with managing and implementing laws governing fishing within the exclusive economic zone of U.S. Pacific jurisdictions, including Guam and

the Commonwealth of the Northern Marianas in Micronesia. During this assessment period, WesPac was working with the community of Merizo in developing a community-based management plan.

Micronesia Challenge: Governor Calvo continues to support the regional conservation initiative. During this assessment period, marine, terrestrial and social economic measures groups have met to agree on the data that will be collected to show progress for the Micronesia Challenge (MC) in each jurisdiction. Guam developed a communication and marketing plan for the MC. A partnership with Guam Hotel and Restaurant Association will help raised funds for the MC endowment. The endowment will provide sustainable funding for required conservation work.

Other regional management programs include: The U.S. All Island Coral Reef Initiative Coordinating Committee, Micronesian Chief Executive Council, Pacific Island Regional Ocean Body and the Western and Central Pacific Fisheries Commission are regional coordinating bodies.

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

Comprehensive Ocean/Great Lakes Management Plan	State Plan	Regional Plan
Completed plan (Y/N) (If yes, specify year completed)	N	N
Under development (Y/N)	N	Y
Web address (if available)	N/A	www.pacificislandsrpb.org
Area covered by plan	N/A	Pacific Islands

Enhancement Area Prioritization:

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

- High
- Medium
- Low

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

Ocean resources are essential to the continuance of the community. Although oceans are critical, stakeholder did not consider it a high priority for 309 funding. Issues of concern included legislation to address bio-prospecting, Government of Guam ownership of mineral extraction rights, transparency in ocean disposal data, impact from wastewater and stormwater, and GIS data for ocean mapping.

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/

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

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; 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

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

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

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

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)31

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.

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)
<i>Energy Transport</i>				
Pipelines ³²	Y	Unknown	N	Unknown
Electrical grid (transmission cables)	Y	Unknown	N	Unknown
Ports	Y	N	N	N
Liquid natural gas (LNG) ³³	N	N	Y	Y
Other (please specify)				
<i>Energy Facilities</i>				
Oil and gas	Y	Y	N	N
Coal	N	N	N	N
Nuclear ³⁴	N	N	N	N
Wind	N	N	N	N
Wave ³⁵	N	N	N	N
Tidal ³⁶	N	N	N	N

³¹ 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.

³² For approved pipelines (1997-present): www.ferc.gov/industries/gas/indus-act/pipelines/approved-projects.asp

³³ For approved FERC jurisdictional LNG import/export terminals: www.ferc.gov/industries/gas/indus-act/lng/exist-term.asp

³⁴ The Nuclear Regulatory Commission provides a coarse national map of where nuclear power reactors are located as well as a list that reflects there general locations: www.nrc.gov/reactors/operating/map-power-reactors.html

³⁵ For FERC hydrokinetic projects: 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)
Current (ocean, lake, river) ³⁶	N	N	N	N
Hydropower	N	N	N	N
Ocean thermal energy conversion	N	N	N	N
Solar	Y	Y	Y	Y
Biomass	N	N	N	N
Other (please specify)	N	N	Y	Y

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.

The Guam Power Authority's (GPA's) Integrated Resource Plan of 2013 provides a comprehensive report on the status and trends of energy facilities for Guam. The plan proposes utilizing Liquid Natural Gas (LNG) as an alternative fuel. LNG was considered as an alternative fuel type for both GPA's existing oil-fired facilities (which would be converted to burn natural gas) as well as new combined cycle options. However, when the additional costs to develop the waterfront and other necessary infrastructure for the storage and delivery of LNG were taken into consideration, the Public Utilities Commission (PUC), which establishes rates, were not in support of GPA's proposed switch to LNG. Additionally, a new Consolidated Commission on Utilities (CCU) was elected and have also not supported GPA's LNG proposal unlike the past CCU members. The matter of LNG use is still under consideration by both the PUC and CCU.

GPA's Tanguisson power plant was mothballed in 2014. Additionally, in mid-2015, Cabras power plants 3 and 4 experienced a catastrophic explosion rendering them unusable. Plans for repair or alternatives have not yet been finalized.

The "other" type of energy facility listed above includes GPA's proposed combined cycle generators intended to utilize multiple types of fuel and incorporates newer technologies to run more efficiently.

3. Briefly characterize the existing status and trends for federal government facilities and activities of greater than local significance³⁶ in the state's coastal zone since the last assessment.

According to the SEIS, the approved Military Relocation to Guam will develop facilities to support the 5000 marines and 1300 dependents being relocated to Guam over the course of 12 years. Much of the development for housing and training will occur in northern Guam. The increased demand in power is predicted to be 5.7 megawatts.

³⁶ 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	N	Y
State comprehensive siting plans or procedures	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.

Legislation was introduced in 2008 that required Guam's utility agencies to shift 25% of its power sources toward renewable energy sources. Guam's first solar power plant opened for business in October 2015 by NRG Renew LLC. The Plant is located on a 160 acre site in the Layon area of Inarajan village. It is capable of producing 25.6 megawatts of power with full direct sunlight. This is supposed to be enough to power 6000 to 10,000 homes. However, when the sun sets there is no power storage capacity for the energy produced from the plant. This fact is being addressed by another project that will add storage capacity. Another similar solar power plant that was planned for development is still under consideration.

Additionally, the Guam Power Authority has completed the installation of a 60-m meteorological monitoring tower in Cotal, Yona. Its purpose is to collect wind data for one year, presumably to aid in studying the feasibility of harvesting wind for power generation.

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.

In the past Energy and Government Facility Siting was considered a high priority. However during this assessment period, this issue has not been a priority for the GCMP due to major investments into renewables by the utility agencies.

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/

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

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

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

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

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>

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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.³⁷

Type of Facility/Activity	Status and Trends of Aquaculture Facilities and Activities		
	# of Facilities ³⁸	Approximate Economic Value	Change Since Last Assessment (↑, ↓, -, unkwn)
Current data not available but a survey by Dept. of Agriculture is ongoing.	3 (In 2013 State Statistical Yearbook, BSP)	\$460,500 (In 2013, State Statistical Yearbook, BSP)	According to interviews with government officials the number of large farms may have decreased but smaller backyard operations have increased.

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.

Management Characterization:

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

³⁷ While focused on statewide aquaculture data rather than just within the coastal zone, the *Census of Aquaculture* (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.

³⁸ 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.

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

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

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.

At the initial stakeholder meeting the results of voting on the areas of enhancement areas that should be considered a priority did not rank as a high priority issue.

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

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/

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Appendix B: Phase II Assessment Templates

Complete Phase II assessments, using the templates in this section, only for enhancement areas that are identified as high priority for the CMP after the Phase I (high-level) assessments.

Note: Identifying an enhancement area as a high priority does not necessarily mean the CMP would be required to develop a strategy for the enhancement area given other priority enhancement areas and available resources.

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Public Access

In-Depth Resource Characterization:

Purpose: To determine key problems and opportunities to improve the CMP's ability to increase and enhance public access opportunities to coastal areas.

1. Use the table below to provide additional data on public access availability within the coastal zone not reported in the Phase I assessment.

Public Access Status and Trends			
Type of Access	Current number ³⁹	Changes or Trends Since Last Assessment ⁴⁰ (↑, ↓, -, unkwn)	Cite data source
Access sites that are ADA compliant ⁴¹	No. of Sites (A survey is underway to capture this information)	Most major parks and formally established shoreline access trails have ADA compliant parking stalls. In general shoreline access parks and trails lack wheelchair ramps and other ADA compliant infrastructure.	Observation of parks and phone conversation with director of Dept. of Integrated Services for Individuals with Disabilities
	Percent of Sites		

2. What are the three most significant existing or emerging threats or stressors to creating or maintaining public access 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 private development (including conversion of public facilities to private); non-water-dependent commercial or industrial uses of the waterfront; increased demand; erosion; sea level rise or Great Lakes level change; natural disasters; national security; encroachment on public land; or other (please specify). When selecting significant stressors, also consider how climate change may exacerbate each stressor.

	Stressor/Threat	Geographic Scope (throughout coastal zone or specific areas most threatened)
Stressor 1	National Security	Adjacent to Department of Defense (DOD) Facilities and Commercial Port of Guam
Stressor 2	Private Development	Throughout the coastal zone
Stressor 3	Local Government agencies denial or closure of public access	Various locations, eg. Santos Memorial Park, Port Authority Beach, Family Beach Cabras Island, Loss of Ylig Bay Yona Boat Launch access

³⁹ 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.

⁴⁰ 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/unchanged since the last assessment, note that with a ↑ (increased), ↓ (decreased), – (unchanged). If the trend is completely unknown, simply put "unkwn."

⁴¹ For more information on ADA see www.ada.gov.

- Briefly explain why these are currently the most significant stressors or threats to public access within the coastal zone. Cite stakeholder input and/or existing reports or studies to support this assessment.

Military facilities occupy about a third of the island and this loss of public access to the general public is significant. In addition, when government of Guam agencies deny public access it exacerbates the problem. This includes the Port Authority of Guam restricting parts of the Commercial port of Guam not essential for National Security or port operations. Also, in the village of Piti where the Commercial Port is located, the Mayor of Piti denies access to a seashore park without a permit. No passive recreational use occurs in this park.

- 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.

Local Government agencies denial of use or closure of public access is an emerging trend that is alarming considering that a local public access statute exists. For many years access to Apra Harbor via Family Beach was a given. Apra Harbor is the largest sheltered body of water where recreational water and subsistence activities such as sailing, snorkeling, diving, gleaning and fishing normally occur.

The Mayor of Piti has continually closed a seashore park for use unless a permit is obtained for use. This park was once under the jurisdiction and authority of the Department of Parks and Recreation (DPR). DPR is also the agency tasked with enforcing local Public Access to the Ocean shore law. The Piti Mayor was given jurisdiction and authority of the park. Previously, DPR had left the park open for passive recreational use without a permit.

Other seashore parks in Merizo and Yona have also been subsequently transferred to their respective mayors. Fortunately these parks have not been closed to passive recreational use under their current village mayors. However, if one considers the Piti Mayor's actions despite local statutes, it is not a guarantee that they or a future mayor will not close the parks unless permit is obtained.

Loss of public access to certain ocean areas due to military training activities are also another emerging issue. This is especially relevant now due to increased military activities associated with the buildup and other anticipated military training.

Emerging Issue	Information Needed
Local Government agencies denial or closure of public access	Legal determination that the actions of the Piti Mayor to close park to passive recreational use is not violation of local public access to the ocean shore statute
Loss of public access to certain ocean areas due Military training	How to reduce number and times of training days to reduce adverse effects on the local community

In-Depth Management Characterization:

Purpose: To determine the effectiveness of management efforts to address identified problems related to the public access enhancement objective.

1. For each additional public access management category below that was not already discussed as part of the Phase I assessment, indicate if the approach is employed by the state or territory and if significant changes (positive or negative) have occurred at the state- or territory-level since the last assessment.

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)
Comprehensive access management planning	Y	Y	Y
GIS mapping/database of access sites	Y	Y	Y
Public access technical assistance, education, and outreach (including access point and interpretive signage, etc.)	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.

Comprehensive Public Access Management Planning

A public access plan was under development by the GCMP between 2012-13. A draft final was developed for review by the administrator, however, large attrition of GCMP staff had stalled the plan's finalization and eventual implementation. The plan should be either finalized or revised and eventually implemented.

As part of the planning effort a public opinion survey and more detailed inventory and mapping of public access sites and trails was undertaken. The results and data have not yet been published.

Education and Outreach

Also as part of GCMP's efforts public access signs were installed in the villages of Tumon and Tamuning. These areas are the island's most developed and populated areas. Many of the public access easements needed to have adequate signage for the public to be aware of their existence. The project was CZM funded and directed.

GCMP has been involved in these access issues during the past assessment periods by developing a plan, mapping and inventorying access, installing signage and conducting an opinion survey. A change in

authority or legislation to adequately address concerns about public coastal access that may be necessary to prevent further erosion of public access to coastal sites.

Increasing capacity at the DPR to truly enforce Public Access laws should be the first strategy to be explored. The other option would be to revise policy and introduce legislation to transfer that responsibility to the GCMP. Additionally, proposals for more stringent penalties for violations of existing access laws and clearer regulations specifying how public access laws are applied should be a consideration.

Better enforcement and clearer penalties for violations are essential to preserving and enhancing public access. The GCMP will continue to work with the Guam Visitors Bureau, the Guam Hotel and Restaurant Association and the Department of Parks and Recreation to improve enforcement and monitor these efforts.

3. Identify and describe the conclusions of any studies that have been done that illustrate the effectiveness of the state's management efforts in providing public access since the last assessment. If none, is there any information that you are lacking to assess the effectiveness of the state's management efforts?

There have been no formal studies conducted to illustrate the effectiveness of the state's management efforts in providing public access since the last assessment. There was an informal one designed as part of the comprehensive planning undertaken by the GCMP but, unfortunately, the information was not formalized into a published document.

Identification of Priorities:

1. Considering changes in public access and public access 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 respond to the most significant public access stressors. (*Approximately 1-3 sentences per management priority.*)

Management Priority 1: Complete and Implement Public Access Plan

Description: The Public Access plan that GCMP was working on should be completed and implemented. This should also include an opinion survey on the issue and other recommendations to either strengthen enforcement or revise policy.

Management Priority 2: Introduce Legislation that strengthens public access law and provides funding for some improvements

Description: The local Public Access law needs to be strengthened to prohibit denial of public access by government of Guam agencies to individuals or groups without a reasonable justification. Boat launch sites should be included as public access points. Public access without a permit for recreational uses should be allowed. Additionally, recent legislation introduced recently allows for the sale and/or deletion of "bull cart trail easements" to adjacent private property landowners. Some of these are public access paths. These should be identified and protected.

Management Priority 3: Engage the Department of Defense in programs that allow more public access

Description: There are many ocean shore areas adjacent to DOD facilities that are of cultural and natural significance to the local community. Programs that allow locals conditional access to these areas should be developed. Additionally, public access to certain oceans areas is closed by DOD for training purposes. Large ocean areas off Ritidian Point where the Military Buildup firing range will be located will be closed to public access while in use. The military should be engaged to reduce the frequency and scheduled times of closure to reduce negative impacts for the local users, who are predominantly fishermen.

- 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	Opinion Survey of perception of public access should be conducted
Mapping/GIS	Y	Continual updates to the status of public access sites needed
Data and information management	Y	Scheduled updates to the status of public access sites needed
Training/Capacity building	Y	DPR and other agencies need more capacity and training on addressing the community's public access needs and keeping an updated access plan and inventory.
Decision-support tools	N	
Communication and outreach	Y	There seems to be a need to communicate and outreach with government agencies and the legislature more on the importance of public access. This includes opposing or revising legislation like the sale of bull cart trails that may result in the loss of public access trails
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.

Public access to the ocean shore is one of those quality of life indicators that a community values its natural resources and therefore their access to those resources. There is a need to address some of the emergent issues affecting public access to protect the public's right to access their ocean shore and its associated resources.

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.

	Stressor/Threat	Coastal Resource(s)/Use(s) Most Threatened	Geographic Scope (throughout coastal zone or specific areas most threatened)
Stressor 1	Stormwater Runoff	Coral reef, aquatic resources, water quality	Throughout the island
Stressor 2	Coastal Development	Habitat (Shorelines) native forest, public access, aquifer	Throughout CZ, especially Northern Guam and Tumon MPA
Stressor 3	Invasive Species	Native forest- terrestrial habitat	Northern portion of island

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.

The most significant cumulative and secondary stressors are primarily due to increase in development activity. Unfortunately, as the military buildup progresses and as the Asia economy continues to improve, pressure to approved development projects will continue to increase. This has the potential to yield negative effects ranging from loss of water quality to loss of coral reef and terrestrial habitats.

Due to the comparatively small size of Guam's geography, any development is likely to produce cumulative and secondary impacts.

Over the last few years, Guam has seen an increase in invasive species. Although, Guam is already well-known for the Brown Tree Snake, the Coconut Rhino Beetle and the Fire Ants have become established nuisances that are systematically destroying our coconut trees and native forest.

Recently, the lack of upgrades to the stormwater infrastructure necessary to support continued development in Tumon became increasingly evident with the unprecedented flooding that occurred in Tumon during the heavy rainfall experienced in the summer of 2015. This is a result of outdated stormwater rules and regulations and lack of enforcement. The Guam Economic Development Authority is supporting augmenting the existing ponding basin capacity and diverting the overflow to a culvert that discharges directly into the Tumon MPA. This issue demonstrates the importance of understanding CSI from increase in impervious surfaces. In addition, the decision makers need evidence that corals will be impacted from this project.

During the stakeholder meeting, especially as a result of stormwater management issues, CSI was rated almost unanimously as a high priority.

- 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
Impact from stormwater runoff to corals	Scientific studies, historic information, data translated
Impact from invasive species to native forest	Scientific studies, historic information, data translated

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.

- 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	N
CSI research, assessment, monitoring	Y	Y	N
CSI GIS mapping/database	Y	Y	Y
CSI technical assistance, education and outreach	Y	Y	N
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.

Through a Memorandum of Understanding with WERI, GCMP utilized 309 funds to develop a management tool that will determine Cumulative and Secondary Impacts (CSIs) on the northern part of the island's environment due to present and future activities. The management tool includes a GIS Land Development Assessment Tool using Life Cycle Assessment modeling with an Inventory Analysis. The GIS Land Development Assessment Tool compiles all land information and produces a report as a preliminary assessment. Sustainable development is pursued through a method called Life Cycle Assessment with an Inventory Analysis of environmental burdens and their toxicity potentials. The project focused on impacts from activities related to the quality of groundwater.

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?

A better understanding how to properly evaluate Cumulative and Secondary Impacts is sorely needed. It is difficult for decision makers and developers to understand the need to determine potential impacts to marine and terrestrial resources from a single proposed development. CSIs are not addressed in current permitting processes. However, CSI will continue to be problematic until mechanism to assess CSIs and enforceable regulations are implemented.

Guam also needs: updates for its fishery and harvest regulations based on more current sources of information about populations and ecosystem health; a tool to measure impact from loss native forest and habitats; effective training for contractors and workers on best practices for specific local conditions; and more outreach programs for existing regulations, impacts on habitat, and BMPs or alternatives.

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: Data collection and analysis tool for marine resources

Description: To determine impact, data collection and analysis for marine resources needs to be performed. The CSI tool developed by WERI addressed CSI based on terrestrial resources and the

impact to the northern Guam aquifer. A similar CSI tool to address impacts to marine resources is also needed.

Management Priority 2: Policy for Incorporating CSI into Development Review Applications

Description: Determining the CSI for development projects must be considered during the review process. Knowing the potential problems that would result from the construction of a project would require a change in policy. To accomplish this management’s priority should be to require training for consultants and contractors to be completed and a comprehensive analysis report of the CSI impact from a project be included with the development application.

Management Priority 3: Determining the economic impacts from lack of enforcement of regulations

Description: It has been difficult to explain to decision makers the importance of understanding CSI resulting from a project. When considering the impact, it may be helpful to determine the economic impact in addition to the impacts to the resource.

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.

Priority Needs	Need? (Y or N)	Brief Explanation of Need/Gap
Research	Y	Research impact of stormwater to marine ecosystems
Mapping/GIS	Y	Critical data layers needed are required
Data and information management	Y	Data plan to ensure data is available in formats critical for analysis
Training/Capacity building	Y	Training for planners and engineers for determining CSI
Decision-support tools	N	WERI developed a CSI GIS tool
Communication and outreach	Y	Education to policy makers and decision makers on what is CSI and importance when considering impact.
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.

This was the most important priority reflected in the comments from the stakeholders. As development pressures increase, Guam’s development policies lack any requirement to assess CSI from proposed development. In addition, education of CSI is critical. Having updated data to support analysis of CSI is essential to mitigating loss of habitat. A strategy that leads to a policy change will be developed based on identified management priorities.

See Phase I of assessment for CSI for more detail.

DRAFT

Special Area Management Planning

In-Depth Resource Characterization:

Purpose: To determine key problems and opportunities regarding the preparation and implementation of special area management plans for important coastal areas.

1. What are the one to three most significant geographic areas facing existing or emerging challenges that would benefit from a new or revised special area management plan (SAMP) or better implementation of an existing SAMP? For example, are there areas where existing management approaches are not working and could be improved by better coordination across multiple levels of government? What challenges are these areas facing? Challenges can be a need for enhanced natural resource protection; use conflicts; coordinating regulatory processes or review; additional data or information needs; education and outreach regarding SAMP policies; or other (please specify). When selecting significant challenges, also consider how climate change may exacerbate each challenge.

	Geographic Scope (within an existing SAMP area (specify SAMP) or within new geographic area (describe new area))	Challenges
Geographic Area 1	Coral Reefs including Guam’s MPA	Lack of enforcement, shore development, increased recreation, poor fishing practices, storms, outdated stormwater regulations
Geographic Area 2	Fragile Areas (limestone forest and terrestrial habitat)	Development, limited areas for reforestation efforts, use conflict, coordinating regulatory processes
Geographic Area 3	Priority Watersheds	Additional data needed to complete watershed plans for remaining priority watersheds, need for enhanced natural resource protection, education and outreach

2. Briefly explain why these are currently the most significant challenges that may require developing a new SAMP, or revising or improving implementation of an existing SAMP. Cite stakeholder input and/or existing reports or studies to support this assessment.

Coral Reefs: The issues and challenges to coral reef areas have been identified repeatedly from stakeholders throughout this assessment. Regulations and enforcement of existing MPAs remain a challenge. A new approach needs to be explored to identify more effective enforcement practices and management of the MPAs to ensure the protection of aquatic habitat. To provide for additional management, the “Limits of Acceptable Change” policies need to be implemented.

Fragile Areas: As the economy improves, valued forest and other fragile areas require establishing a SAMP. This will require coordination among the agencies tasked with reviewing and approving development projects. The Guam Department of Agriculture has already completed an inventory identifying high valued forests. This needs to be accompanied by a new SAMP that puts into place proper management practices to conserve these forests including reforestation and habitat recovery measures.

Priority Watersheds: Although a watershed plans have been completed for Piti-Asan and Manell-Geus, the remaining watershed plans remain pending. Additional data is needed to complete those plans in order to enhance the protection of these natural resources. In addition, watershed plans can include identifying areas that contain suitable soil for farming.

- 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
Identifying farm land	Land ownership, soil information
Stormwater management in urban areas	Updated regulations, system-wide approach to determine solution to stormwater management

In-Depth Management Characterization:

Purpose: To determine the effectiveness of management efforts to address identified problems related to the special area management planning enhancement objective.

- For each additional SAMP management category below that was 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)
SAMP research, assessment, monitoring	Y	Y	N
SAMP GIS mapping/database	Y	Y	Y
SAMP technical assistance, education, and outreach	Y	Y	N
Other (please specify)			

- 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.
 - Describe significant changes since the last assessment;
 - Specify if they were 309 or other CZM-driven changes; and
 - Characterize the outcomes or likely future outcomes of the changes.

During this assessment period, Guam Waterworks Authority completed its Well Head Protection Plan. This plan included GIS maps and land use activity data for 121 of its wells. The data that was collected for each well was utilized to conduct a risk assessment which concluded that most of GWA’s wells used for drinking water were located in areas where land use activities and nonpoint source pollution may

cause contamination. This plan was shared with the Chamorro Land Trust Commission for reference when leasing properties for residence and agricultural activities. 309 funds were not used for this project.

3. Identify and describe the conclusions of any studies that have been done that illustrate the effectiveness of the state's or territory's special area management planning efforts 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?

Stormwater management is an emerging issue. We need a better understanding the hydrodynamics of developed areas in order to design better stormwater infrastructure solutions and implement more effective management practices.

In order to determine whether existing BMPs are effective, there is a need for baseline historical data digitized into a GIS platform with analysis tools and updated remote sensing data.

Identification of Priorities:

1. Considering changes with coastal resource protection or coastal use conflicts within defined geographic areas, special area management planning activities 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 their ability to prepare and implement special area management plans to effectively manage important coastal areas. (*Approximately 1-3 sentences per management priority.*)

Management Priority 1: Developing Special Area Management Plans for Tumon to manage stormwater.

Description: Stormwater management was the topic stakeholders were most concerned with during this assessment. This management priority would develop a SAMP for Tumon that seeks to better manage stormwater in this urban area and resolve current flooding issues.

Management Priority 2: Developing Special Area Management Plans for agricultural properties under the management of the Chamorro Land Trust.

Description: An emerging issue is the protection and management of valuable farm land. To ensure food security, a SAMP would be developed for properties under the Chamorro Land Trust Commission that are determined to be most suitable for farming.

Management Priority 3: Develop watershed plans for additional priority watersheds.

Description: Watershed plans for priority watersheds needs to be completed. This effort will provide opportunities for communities to have input into managing natural resources in their watershed. Basic land use information and historic data are needed to improve the development of watershed plans.

- 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	Innovative Stormwater solutions, effective BMPs
Mapping/GIS	Y	Update GIS data to include land use
Data and information management	Y	Historic data. Access to GIS data. Better data management that include scheduled updates to data sets.
Training/Capacity building	Y	Training on stormwater BMP for contractors
Decision-support tools	Y	GIS based tools
Communication and outreach	Y	Information translated for the public to understand
Other (Specify)		

Enhancement Area Strategy Development:

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

Yes X
 No

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

Stormwater and watershed planning were issues that were highly important to the stakeholders. The Governor’s Executive Order on Climate Change requires a Vulnerability Assessment to be completed within one year. It is unclear what the results this assessment will yield, however, managing stormwater as a means to protect our coral reefs and marine habitat is critical.

Serious attention needs to be paid to stormwater management in urban areas, especially in areas where water accumulates on paved roads and discharges directly into the ocean. Unlike the current controversial project in Tumon, proposed solutions need to consider more than just the cost of the project and should not create new problems elsewhere. The SAMP will advocate and support proper long-term or permanent solutions rather than temporary and short-sighted projects that ignore the broader impacts they may have.

Watershed planning for priority watersheds was also an issue stakeholders thought was ripe for community engagement. They also wanted more focus on unique problems within each watershed. Watershed planning allows for the community to have input into how they can participate in managing their resources. This involvement can yield a sense of “pride of ownership” and encourage them to be mindful and proactive in helping to resolve issues like erosion, flooding, and invasive species.

Guam Coastal Management Program

Section 309 Strategy

Summary

The Guam Coastal Management Program has participated in numerous “309 Assessment and Strategies Development” efforts; however the 2015 assessment and strategy may be one of the most critical periods since the program’s conception. This assessment and strategy is part of a larger initiative to evaluate the effectiveness of the program. The long range goal is to determine whether the GCMP should continue to remain a networking program or if it is better suited to meet the demands of its stakeholders by engaging in permitting functions. The current strategies will give the GCMP an opportunity to address critical issues with a new and different approach to strengthening the coastal program and pave the way for changes that will benefit the community.

The GCMP recognized that many areas in the assessment are critical. For this Assessment and Strategy, the Guam Coastal Management Program has identified strategies for three high priority areas, three medium priority areas and two low priority areas. The high priority areas include **Public Access, Cumulative and Secondary Impacts and Special Area Management**. The medium priority areas are **Coastal Hazards, Wetland, and Ocean Resources**. Low priority areas are **Energy and Government Siting and Aquaculture**.

Not all strategies identified in the 2011’s 309 effort were completed, however they still remain relevant and important to the program. Through discussions with stakeholders, previous projects identified in the Public Access strategy and the Cumulative and Secondary Impacts strategies remain important to the overall goals of the GCMP and its networking partners. Many of the gaps identified in priorities are difficult to address due to limited personnel, the reduction of federal funds, but more particularly, by nearly complete change in personnel at GCMP and its networking partners.

The projects identified in the strategy will be phased over several years and over several grant cycles. The strategy will concentrate on the high priority areas listed above. GCMP section 309 funds will not be used for projects under Coastal Hazards, Wetland, and Ocean Resources, Energy and Government Siting and Aquaculture.

In 2006, Guam was preparing for the large scale military buildup which would relocate an estimated 8,000 Marines, their dependents and other military personnel to Guam. However in 2015, that military buildup was drastically reduced to only 5,000 marines over a longer period of time. Although not as large as once expected, the increase in military development has added to additional opportunities for Guam’s economy to grow. Our current administration does not want to rely solely on military develop to boost the island’s economy, and has made concerted effort to market Guam to Asian investors to diversify our tourism based economy. The Administration’s goal is to have an additional 2,000 hotel rooms constructed by 2020. Our highest priorities reflect the impacts and concerns that are associated with these activities, which will have tremendous effects on coastal resources during this phase of increased development and population growth.

Public Access to cultural and natural resources remains a top priority. Stakeholders were concerned with lack of polices or confusion on authority for enforcement of existing policies that ensure access to natural resources for recreation, subsistence and cultural practices. As such, GCMP will undertake a

project to develop and implement a comprehensive Public Access Management Plan (PAMP). The PAMP shall complete an inventory of existing Public Access (PA) corridors which shall also be added to GCMP's GIS map archive. The PAMP shall incorporate an inventory and analysis of all current statutes, programs and policies and provide recommendations for revisions that will strengthen the protection and enhancement of current PA corridors and development of new corridors as opportunities arise. Presently there is much debate as to who is responsible for enforcement of public access. Although the Department of Parks and Recreation can enforce access along beaches, the Departments of Land Management and the Public Works also have enforcement authority. It is expected that the work done through this strategy will lead to clarification of who is responsible and update the enforcement of access.

Although recommended during the last assessment period, a GIS tool to assist with determining impact from development was completed, however, new policy to integrate it into regulatory permitting was not done. The government of Guam currently has no mechanism in place requiring private developers to consider these impacts and submit to the local regulatory processes. Given the many pressures on the island's limited natural resources, such a policy remains long overdue. Before this can be done, a complete assessment of the application development review and the building permit process will be performed. At a minimum, the new policy will include a method to assess cumulative and secondary impacts, as well as best management practices to provide a mechanism to prevent such impacts to the greatest extent possible. The second phase of this strategy will provide direction for future goals of the GCMP.

The third strategy will provide policy direction and technical assistance to create a Special Area Management Plan (SAMP) for urban areas susceptible to flooding especially in coastal areas identified for the protection of natural resources such as coral reefs. Tumon will be considered for this SAMP. Tumon Bay has been designated as a Marine Preserve Area (MPA), however in 2015 there was a project that would have diverted stormwater into the Tumon MPA. Outcry from the public resulted in the project to be re-evaluated. The Fujita Culvert Diversion Project highlighted issues related to stormwater management and Cumulative and Secondary Impacts. This strategy will be a one year project that will highlight the need to develop specific policies for particular geographic areas. The SAMP will be developed for Tumon as a mechanism to better manage flooding in urbanized areas.

These projects and ongoing work through both GCMP programs and our network of partners will help carry Guam through the next several years, as the program evolves and additional staff are brought into the program. As such, GCMP's 2015 Section 309 Assessment and Strategies focuses on projects that are critically needed in their respective enhancement areas.

Task 1

“Development of Comprehensive Public Access Management Plan (PAMP)”

I. Issue Area(s)

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

- | | |
|--|---|
| <input type="checkbox"/> Aquaculture | <input type="checkbox"/> Cumulative and Secondary Impacts |
| <input type="checkbox"/> Energy & Government Facility Siting | <input type="checkbox"/> Wetlands |
| <input type="checkbox"/> Coastal Hazards | <input type="checkbox"/> Marine Debris |
| <input type="checkbox"/> Ocean/Great Lakes Resources | <input checked="" 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 and Implement a comprehensive Public Access Management Plan (PAMP). The PAMP shall complete an inventory of existing Public Access (PA) corridors which shall also be added to GCMP's GIS map archive. The PAMP shall incorporate an inventory and analysis of all current statutes, programs and policies and provide recommendations for revisions that will strengthen the protection and enhancement of current PA corridors and development of new corridors as opportunities arise.

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

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

Thus far, public access statutes and regulations have largely been ineffectual. We surmise that this may be due in part to the lack of a singular authority for oversight and enforcement, insufficient resources to enforce existing laws, and inconsistency in the application of public access laws. However, the issue has reached a point that makes the time ripe for the introduction of new and comprehensive legislation.

To address these issues and to provide a more thorough analysis of the defects of the existing statutes and regulations, the first priority will be to complete a comprehensive Public Access Management Plan (PAMP). This task was part of the previous Section 309 Assessment but was not completed due to intervening circumstances. This plan will need to be re-initiated and the work that was done will likely need to be updated or revised to address the findings from the analysis that will be conducted.

A crucial part of the PAMP development will be to inventory and analyze the effectiveness of existing local public access statutes, regulations and programs. Persistent issues with public access are clear indicators that more needs to be done to safeguard these rights. For the most part, compliance is lackluster and evidences the fact that preserving public access to the ocean shore is not a shared priority that the community values. Identifying all applicable laws and regulations, understanding how they implemented, and analyzing the gaps will go a long way toward designing a more effective approach.

Additionally, it is a well-known fact that the enforcement of existing public access laws suffers due to a lack sufficient funding and resources. As part of the development of the PAMP new and adequate sources of funding need to be identified so that a comprehensive, well-designed plan can be submitted to the Governor of Guam for eventual submittal to the Guam Legislature. After all, a plan is only as good as its ability to be executed.

One issue whose resolution may be beyond the scope of the PAMP or at least its ability to influence a positive outcome, is the issue of public access use restrictions. Traditionally, public access has referred to a land easement which provides access to the ocean shore. However, this definition has been found to be lacking in light of ongoing federal activities.

One example of this is found in the loss of use of ocean resources proposed by the military's live fire training range which would create a surface danger zone over ocean area beyond the physical training area. While not specifically a land easement issue, the restriction of use in the proposed ocean area deprives the public from the enjoyment of that ocean area for periods of time that will be defined unilaterally by the Department of Defense. There is no requirement for coordination of those live fire training schedules with the local government or the general public and there is no guarantee that the training schedule will provide for the least amount of public deprivation.

While the PAMP or indeed any local legislation will likely have no force and effect without court proceedings, it would behoove the PAMP to at least identify the issue and proffer some recommended course of action that would start the process of resolution.

The second priority in this strategy is to obtain stakeholder input on the status of public access to the ocean shore. Ideally this survey would be conducted before the PAMP so that the information is available to the plan developers. The Department of Parks and Recreation, currently mandated to enforce compliance with the local public access statutes, should be invited as a partner with GCMP in the PAMP development. A previously approved public opinion survey of on the availability and accessibility of public access corridors and recommendations for strengthening enforcement and improving policy was never completed and should be re-initiated at this juncture as public perception is an important component in understanding how to design a better management plan.

The third priority if this strategy would be to develop a public outreach and education program. This part of the strategy should follow the completion of the PAMP. Maps of the locations of access corridors, a catalogue of the benefits of public access to the community, and a simplified summary of the PAMP should be made available to the public for free. This would include both printed material distributed at relevant locations and digital materials posted on an easily accessible website. It should include information regarding whom to call to report a violation, contact information for various private advocacy groups, and any other related information that will help the public to better advocate for themselves. The printed and digital maps of public access corridors are critical to educating the public about their locations. Especially since signs do not exist to identify the lesser known corridors and trails. And while this may not result in a net gain of public access corridors, it would almost assuredly result in a net increase in the utilization and enjoyment of existing ones.

To augment this public information campaign, the PAMP should include a 5-year plan that will prioritize the installation and maintenance of standardized signage in a conspicuous place marking the location of public access easements. Where no existing development is in place, the government will be required to pursue funding in their budgets to install such standardized signage.

Finally, the Department of Defense (DoD) should be engaged in an effort to mitigate the adverse impacts of their activities on the local community's ability to access and enjoy to the ocean shore and ocean area. DoD has developed a public access program for historical and cultural sites located on military property, however the plan has not been met with much enthusiasm since it requires a bureaucratic and cumbersome application process that can take a long time to approve. Additionally, the plan only allows for the accommodation to a list of 25 cultural and historical sites. It does not necessarily allow for access to the ocean shore. In this case, access highly controlled and the tedious process is a formidable disincentive for the use of those areas.

Finally, a training program for relevant government agencies, engineers, developers and other interested organizations and individuals should be initiated to ensure that those involved in the various processes of public access compliance are aware of the new rules and proposed laws.

III. Needs and Gaps Addressed

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

The first part of the strategy addresses the need for an up-to-date Public Access Management Plan and a map of where those public access corridors exist. This is necessary in order to revamp the existing statutes, regulations, and programs into a comprehensive law that can be better enforced and that can be disseminated for public consumption so that everyone has easy access to the information necessary for them to be aware of their own public access rights.

Additionally, the PAMP and subsequent legislation will serve to address the gap in compliance by the government of Guam itself. As cited in the assessment, various instrumentalities of the government of Guam have in the past or continue to violate public access laws by restricting access periodically or perpetually to the ocean shore for reasons significantly less critical than national security. Often times, these restrictions are employed for the convenience of one or more government parties.

The local community has long felt that a consistent program that allows the public to freely access areas of cultural significance within DoD property should be made available. While the strategies proposed in this plan may have little capacity to directly resolve this issue, it will serve to educate the public and inform them of all the natural resources from which they are prohibited from enjoying. And quite possibly, if enough of public truly wish to have their inherent rights restored, the local government will be incentivized to do much more to compel the DoD to reduce or remove its restrictions.

IV. Benefits to Coastal Management

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

If successful, the strategies employed to enhance Public Access, will help to bring the GCMP to the forefront of fight for the preservation of ocean resources. In the past, issues related to the loss of public access have been the clamor of a few activists and special interest groups. This is, in part, the reason there has been little improvement in the laws over the years and the enforcement thereof.

By collaborating with stakeholders, researching existing laws and developing a PAMP to address its shortcomings and drafting comprehensive legislation complete with funding identification, the GCMP will demonstrate that it does have the capacity and clout to influence the proper management of our island resources.

Additionally, when engaging the DoD on public access to ocean resources, GCMP through the Coastal Management Act can exert its legal muscle to be able to compel the DoD to change or reduce its adverse impacts on public access. In general this improves the perception of GCMP as an agency that not only works to preserve the environment and the enjoyment of its use, but that also has the juridical authority to impose its mandate.

V. Likelihood of Success

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

The development of the Public Access Management Plan (PAMP) and possible revisions to local statutes can be considered low-hanging fruit that has a high likelihood of success. The GCMP staff's previous attempt to develop in-house a Public Access Plan with associated mapping was stalled during the last assessment period at the draft completion stage. Unfortunate circumstances resulted in the loss of multiple GCMP staff, including the former administrator, at a critical time in the plan's development. This resulted in the Plan not being completed. At this time however, the current management and staff have made a commitment to completing this strategy.

It is anticipated that there will be a high degree of local community support from fishermen, sports and fishing organizations, and casual recreational users. Additionally, the Department of Parks and Recreation (DPR), the government of Guam agency mandated with public access compliance, is in support of the completion of this strategy.

Possible critics would be the violators within the government of Guam, private property developers, and the DoD. One common argument made by these critics is that restriction results in preservation. They cite that many of the well-utilized public access corridors are littered with trash and often neglected. While the statement is certainly true in many cases, it addresses a separate concern of the GCMP. The right of every member of the public to enjoy the common resources of the land, and in this case, the ocean shore, is not contingent on the public's ability to care for and maintain that access. This argument is tantamount to the government restricting household family size commensurate to its household income. While this practice has been employed in other countries around the world, it is certainly not an American ideology and would not pass constitutional muster.

Instead, one solution would be for the PAMP to not only identify funding for enforcement, it might look further to finding a permanent funding source to sustain an ongoing public education and outreach program and a separate public access maintenance program that would include the maintenance of appropriate signage.

VI. Strategy Work Plan

Using the template below, provide a general work plan that includes the major steps that will lead toward or achieve a program change or implement a previously achieved program change. If the state intends to fund implementation activities for the proposed program change, describe those in the plan as well. The plan should identify a schedule for completing the strategy and include major projected milestones (key products, deliverables, activities, and decisions) and budget estimates. If an activity will span two or more years, it can be combined into one entry (i.e., Years 2-3 rather than Year 2 and then Year 3). While the annual milestones are a useful guide to ensure the strategy remains on track, OCRM recognizes that they may change somewhat over the course of the five-year strategy unforeseen circumstances. The same holds true for the annual budget estimates. Further detailing and adjustment of annual activities, milestones, and budgets will be determined through the annual cooperative agreement negotiation process.

- A. Strategy Goal:** Develop and Implement the Public Access Management Plan (PAMP), including: inventorying and analyzing existing statutes, regulations and programs; map all known public access corridors; recommended revisions to public access laws; identifying funding source for enforcement and maintenance of public access corridors.

Total Years: 2

Total Budget: \$140,000.00

Year: 1

Description of activities: Public Opinion Survey Procurement

Major Milestone(s):

Milestone	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr
SOW and RFP completed and published	X			
Contract awarded	X			
First draft of survey design submitted for review and comment	X			
Survey conducted and information compiled	X			
First draft of survey results submitted for review and comment	X			
Final Draft of survey results submitted	X			

Budget: \$15,000.00

Year: 1

Description of activities: Develop Public Access Management Plan (PAMP)

Major Milestone(s):

Milestone	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr
SOW and RFP completed and published		X		
Contract awarded		X		
Establish government steering committee for statutes, regulations and program review		X	X	
Draft PAMP submittals			X	
Final PAMP accepted by GCMP				X

Budget: \$55,000.00

Year: 2

Description of activities: Develop Public Education and Outreach Program

Major Milestone(s):

Milestone	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr
SOW and RFP completed and published	X			
Contract awarded	X			
Contractors submits plan with budget and quantities for various media types		X		
Draft design of products (written/digital/website) submitted for review;		X		
Government approval of designs for production		X		
Collateral materials delivered and/or installed		X		
Website goes live			X	
After action report delivered and all items accepted by government			X	

Budget: \$45,000.00

Year: 2

Description of activities: Develop and conduct campaign for revising PA statutes and program as recommended in the PAMP

Major Milestone(s):

Milestone	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr
SOW and RFP completed and published		X		
Contract awarded		X		
First Draft of campaign plan and designs submitted for review and comment			X	
Final campaign plan approved together with designs for any required collateral material			X	
Campaign for statute or program revision begins			X	
Contract period of performance comes to an end (ideally resulting in successful changes to the law)				X

Budget: \$25,000.00

DRAFT

VII. Fiscal and Technical Needs

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

309 funds will be used for this strategy. To reduce the cost, the GCMP will provide data support and coordination with the consultant. In addition, some of the work including the GIS map of public access easements has largely been completed in previous years. To be effective GCMP will be responsible for networking with government of Guam agencies and networking partners to develop recommendations for improving statutes, policies, and regulations.

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

It is expected that the GCMP will hire a consultant to perform the work specified in the strategy. The GCMP staff will provide coordination and logistic support for the evaluation and assessment phase. The GCMP will assist with the required public outreach to obtain public support for any Public Access policy changes that may result from this strategy.

VIII. Projects of Special Merit (Optional)

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

Task 2

“Cumulative and Secondary Impact in the Development Review and Permitting Process”

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 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: This strategy will be completed in two phases over a period of two years. The goal of phase 1 is to complete a thorough assessment and evaluation of the existing permitting processes to present a more in-depth understand of the process flows and to identify the gaps which ultimately result in cumulative and secondary impacts. When this study has been completed, the second phase of the strategy can commence. The goal of phase 2 is to determine how those gaps identified in phase 1 can be mitigated. As has already been described in the assessment, any changes to the permitting process which introduces more burden to an already over-burdened system, will most likely be met with criticism by both property developers and permitting agencies whom are already struggling to meet the current demand. Ideally phase 2 will not only fill the gaps in the process, but will also identify ways to streamline the permitting process. Our objective is not necessarily to discourage new development, but to ensure that the developments incorporate the necessary measures to avoid undesirable cumulative and secondary impacts to our natural resources. To implement this policy change, a methodology for assessing CSI will be developed.**

State the goal of the strategy for the five-year assessment period. The goal should be the specific program change to be achieved or be a statement describing the results of the project with the expectation that achieving the goal would eventually lead to a program change. For strategies

that implement an existing program change, the goal should be a specific implementation milestone. For example, work with three communities to develop revised draft comprehensive plans that consider future sea level rise or, based on research and policy analysis, present proposed legislation on wetland buffers to state legislature or consideration. Rather than a lofty statement, the goal should be achievable within the time frame of the strategy.

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

This strategy will be completed in two phases over a period of two years. During the first phase, an in-depth evaluation will be conducted of the development review process and the existing development review and the building permit processes. This phase will require extensive data collection and analyses of approved development applications that have been reviewed under the Application Review Committee (ARC) and developments that were approved through the building permit process.

The evaluation will identify the roles, responsibilities and authorities of each agency required under each step of the development review and permitting process. In addition, trend and impact studies from subsequently approved projects will be analyzed to provide real correlation data between the development specifications and the resulting impacts. These case studies and analyses will better inform phase II of this strategy. The end result of phase I is to have a comprehensive understanding of the permitting process and to identify the gaps in those processes that have resulted in cumulative and secondary impacts.

Phase II of this strategy is for GCMP to assist networking partners in identifying solutions for filling those gaps and other defects in the permitting processes that can be reported to the relevant authorities for implementation. This can include recommendations to the legislature for enacting changes to the existing statutes. This effort will support the long term GCMP goal of becoming a more active partner in the building permit process that includes providing recommendations for mitigation. Additionally phase II will include the following:

- Outreach education tasks necessary to enhance probability of adoption
- Proposed Adoption of New Law or policy
- Training for Guam Coastal program staff to understand and use methodology to implement policy

As identified in 309 Assessment-phase2, stakeholders were very concerned about the lack of understanding of CSI and its lack of meaningful consideration in the current review of proposed developments. Stakeholders identified this strategy as *Management Priority 2: Policy for Incorporating CSI into Development Review Applications*
Description: Determining the CSI for development projects must be considered during the review process. Knowing the potential problems as a result of the construction of a project would require a change in policy. To accomplish this management priority would require training for consultants and contractors to complete and analyze the impact from a project.

The strategy will create a mechanism to assess CSI and collect data that will support new permitting requirements. Because it would be a new process for the permitting review agencies, and because many developers are sensitive about changes to this process, additional data collection to justify the need for these steps will be required.

III. Needs and Gaps Addressed

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

CSI was the most important priority reflected in the comments from the stakeholders. As development pressures increase, there is a need to better understand the development review and permitting process. Permitting is already a complicated process even for experienced developers and for those involved with reviewing the applications. Little, if any, data is collected on the impacts both to the nature resources and to the economy. Moreover, developments are often reviewed based on their individual impacts with no consideration for the systemic and cumulative impacts of surrounding developments. For example, a single large development that would generate two acres of impervious surface, may be required to set aside an area for a ponding basin. But eight separate one-quarter acre developments constructed over a period of time in the same area may not trigger the same requirement for a ponding basin, even if the same amount of impervious surface is created.

Current policies lack any requirement to assess CSI from proposed developments. Although a GIS tool that identifies CSI impacts to the Northern Guam Lens Aquifer has been developed, it is not widely used. By changing these policies to require developers to conduct CSI studies, we can gather more data and possibly be the impetus for newer and better CSI tools to be developed.

CSI is not very well understood yet because it involves many “moving parts” and for which there is little available historical data. By mandating CSI as a permitting consideration, we can begin the process of gathering data, changing mindsets and in time, the GCMP and its networking partners can help develop guidelines for truly sustainable development, even in light of climate change.

IV. Benefits to Coastal Management

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

The strategy will provide the GCMP and its networking agencies an opportunity to rethink the way we have traditionally approached the development and permitting process. As GCMP changes its

focus, this strategy will provide an opportunity to better support networking agencies involved in permitting, identify opportunities to incorporate CSI into the process, and establish appropriate land use controls and mitigation measures to protect valuable coastal resources.

Understanding how to evaluate CSI is needed. It is difficult for decision makers and developers to understand the need to determine impact to natural resources from a single proposed development. This strategy will lead to incorporating CSIs into the current permitting process and define new methodologies for assessing them.

V. Likelihood of Success

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

The creation of policies that may affect developers and private landowners will always be the subject of criticism and, to some degree, controversy. However, given the increase in flooding and the reduction of native forest, the need to identify an entity within the government who can adequately provide analysis of impacts from development is reflected in the concerns of stakeholders. CSI has never been more apparent than today and the public will likely support the effort to protect resources, particularly with the current increase in variance request for major developments.

To build wider support for the proposed strategy, GCMP will work with existing partners, including community groups. Further, more local groups are becoming actively involved in environmental protection projects and many youth groups are taking a new interest in resource conservation. Additional public outreach and education will allow GCMP to build on this interest and garner support for measures to conserve natural resources.

VI. Strategy Work Plan

Using the template below, provide a general work plan that includes the major steps that will lead toward or achieve a program change or implement a previously achieved program change. If the state intends to fund implementation activities for the proposed program change, describe those in the plan as well. The plan should identify a schedule for completing the strategy and include major projected milestones (key products, deliverables, activities, and decisions) and budget estimates. If an activity will span two or more years, it can be combined into one entry (i.e., Years 2-3 rather than Year 2 and then Year 3). While the annual milestones are a useful guide to ensure the strategy remains on track, OCRM recognizes that they may change somewhat over the course of the five-year strategy unforeseen circumstances. The same holds true for the annual budget estimates. Further detailing and adjustment of annual activities, milestones, and budgets will be determined through the annual cooperative agreement negotiation process.

Strategy Goal: Determine how CSI can be incorporated into the permitting process

Total Years: 2

Total Budget: \$140,000

Year: 3

Description of activities: Evaluation of Permitting Process

Major Milestones:

Milestones/Activities	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr
Develop scope of work and RFP that includes evaluating the effectiveness of the existing permitting process, determining gaps including data, policy, procedures, etc in the development review and building permit process. Work with networking agencies to include their needs into the final scope of work.	X			
Select contractor and finalize contract	X			
Work with networking agencies and other stakeholders to gather appropriate data. Develop process flow diagrams that include all steps required for development review and building permits. Look for opportunities to improve the process and support mechanism to determine CSI for development.		X		
Engage all stakeholder in discussions for recommendations to improve the development review and permitting process.			X	
Assessment of the permitting process that includes identification of problems with the existing system and recommendations for data collection, enforcement and monitoring of permit conditions to improve the process.			X	X
Output: Updated building permit guidance				X

document that the public can understand that reflections improvements to the permitting process.				
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Budget: \$70,000

Budget Category	Amount
Contractual Report on evaluation of existing development application process and permitting process	\$60,000
Contractual Outreach and printing of updating application development and permitting guidance	\$10,000
Total	\$70,000

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Year: 4

Description of activities: Incorporation of CSI in permitting process

Major Milestones:

Milestones/Activities	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr
Develop scope of work and RFP that includes incorporating CSI into the permitting	X			
Select contractor and finalize contract	X			
Work with networking agencies and other stakeholders to identify roles and authorities for each of the permitting agencies		X		
Develop policy regarding how CSI can be incorporated into the permitting process. Determine what gaps in the permitting process GCMP would be appropriate to fill including role in CSI		X	X	
Develop CSI policy that integrates cumulative and secondary impact concepts in the evaluation of project review and land-use planning including: <ul style="list-style-type: none"> • Outreach education tasks necessary to enhance probability of adoption • Training for Guam Coastal Management Program staff to understand and use methodology to implement policy (if necessary) • Proposed Adoption of New Law or policy 			X	X

Budget: \$70,000

Budget Category	Amount
Contractual – Consultant services to help network partners and GCMP determine how CSI can be incorporated into permitting process.	\$70,000
Output: Draft permitting policy and methodology to incorporate CSI into development review and permitting.	
Total	\$70,000

VII. Fiscal and Technical Needs

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

309 funds will be used for this strategy. To reduce the cost, the GCMP will provide data support and coordination with the consultant. In addition, a CSI tool has already been developed in 2014. GCMP will start using the GIS tool to support this effort. To appropriately review various projects, the outreach and education of the CSI GIS tool will be initiated by GCMP. To be effective GCMP will be responsible for networking with government of Guam agencies and networking partners to actively be engaged in the development of the CSI policy that will be incorporated into the permitting process.

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

It is expected that the GCMP will hire a consultant to develop the strategy with experience in CSI. The GCMP staff will provide coordination and logistic support for the evaluation and assessment phase. The GCMP will conduct all the required public outreach to obtain public support for the CSI policy and permitting requirements that may result from this strategy.

VIII. Projects of Special Merit (Optional)

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

Task 3

“Special Area Management Plan for Urban Flooding Areas”

I. Issue Area(s)

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

- | | |
|--|---|
| <input type="checkbox"/> Aquaculture | <input type="checkbox"/> Cumulative and Secondary Impacts |
| <input type="checkbox"/> Energy & Government Facility Siting | <input type="checkbox"/> Wetlands |
| <input type="checkbox"/> Coastal Hazards | <input type="checkbox"/> Marine Debris |
| <input type="checkbox"/> Ocean/Great Lakes Resources | <input type="checkbox"/> Public Access |
| <input checked="" 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: The goal of this strategy is to provide policy and technical assistance for creating Special Area Management Plans (SAMP) for urban areas susceptible to flooding, especially in coastal areas identified for the protection of natural resources such as coral reefs. The strategy will call for the evaluation of existing enforceable policies and other mechanisms necessary for implementing Best Management Practices and for developing new policies, authorities and regulations to address flooding in urbanized areas.**

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

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

Unusually heavy rainfall in recent years has highlighted serious flooding issues in urbanized areas throughout the island. This was most notable in the northern half of hotel row in Tumon. Stakeholders were very concerned with the effectiveness of existing zoning and stormwater regulations. The initially proposed solution for the Tumon flooding was to construct a spillway for overflow from the Fujita Ponding Basin into Tumon Bay, which is also one of our island's most utilized MPAs. There is a need for geographically specific policies and regulations for areas of particular concern (APC), especially in low laying areas, to ensure the protection of critical marine and aquatic resources. Stormwater and watershed planning were issues that were very important to the stakeholders. Managing stormwater as a means to protect coral reefs and other marine resources is critical. Serious attention needs to be made to lack of enforcement of stormwater management best management practices in urban areas, especially in areas where water sheets of the road straight into the ocean.

The strategy proposed to utilize the Tumon area as a case study to gather data about the problem, including studies performed as part of the Fujita Culvert project, in order to better understand how the heavy development in this area has contributed to the current flooding problem. From there GCMP can work with stormwater experts to analyze ways to improve management policies.

III. Needs and Gaps Addressed

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

During stakeholder meeting, the flooding in the Tumon, the tourist and commercial district of Guam was of high concern. Developing a stormwater management policies specific to geographic areas was suggested as something that the coastal program should investigate.

During phase II of the assessment, gaps were identified to support the development a SAMP that will protect critical natural resources such as coral reefs and other aquatic and marine resources. Gaps include lack of research on impact to coral reefs and marine communities from stormwater discharge into the Tumon Bay, inadequate mapping and GIS data of point source and non-point source pollution and impervious surfaces that may contribute to flooding, lack of data and information management, lack of training and capacity building of policy makers and construction professionals, and most especially lack of communication and outreach to engage the community in understanding the need for SAMP in urbanized areas.

From the assessment, developing a SAMP related to areas susceptible to flooding was considered a priority for management.

Management Priority 1: Developing Special area management plans for Tumon to manage stormwater.

Description: Stormwater management was the topic stakeholders were most concerned with during this assessment. This management priority would develop a SAMP for Tumon that seeks a managing stormwater in an urban area.

IV. Benefits to Coastal Management

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

The development of the SAMP for urban areas susceptible to flooding, especially in the Tumon MPA may lead to better enforcement of stormwater policies during the construction of highways and residential and commercial developments with the goal of protecting areas of particular concern such as coral reefs and marine resources. This strategy will improve development standards, stormwater policies, and engage with communities in implementing innovative approaches to reducing threats to the marine resources by managing stormwater in areas of where there are increases in impermeable surfaces. This strategy will provide for additional requirements when building in flood prone areas close to marine resources. Additional design criteria may need to be incorporated into plans of individual development as well as upgrades to infrastructure.

The project will allow the Government of Guam to critically evaluate the need for incorporating more innovative solutions such as the Guam Tropical Building code, incorporating permeable concrete into building specifications, increasing green space requirements, and enforcing existing regulations that require individual developments to contain its own stormwater on site. Further, new development could be regulated to address flooding in Tumon by contributing to upgrades in the infrastructure in the Tumon area or a requirement to retrofit existing hotels and commercial structure to better manage stormwater on site.

This strategy will also support Guam's efforts to be more adaptive to impacts from climate change related to increase in rainfall and sea level rise.

V. Likelihood of Success

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

Changing any development requirement is always subject to criticism and, to some degree, controversy. However, given the increase in flooding and the increase demand for additional hotel and commercial activity in the Tumon area, stakeholders are concern that influence from business will prevail over the need to protect the Tumon Bay MPA and other areas of particular concern.

With the increase in impervious surfaces in commercial districts adjacent to ocean resources, it is critical that a SAMP be considered for Tumon and other areas susceptible to flood in order to protect coral reefs and other marine resources.

The outcry of the public has never been more apparent than during the past years. Public outcry against the Fujita Culvert project in Tumon which proposed to discharge stormwater into the Tumon MPA, resulted in a march on Adelup and calls for the project to cease and desist. This led to cancellation of the project and now other alternative remedies are being explored. The public will likely support the effort to protect resources as the community see the increase in variance request for major development.

GCMP will engage with existing partners such as the Department of Public Works, the Guam Environmental Protection Agency and new partners including community groups, the Guam Hotel and Restaurant Association, the Guam Visitors Bureau and the Chamber of Commerce to generate ideas for resolving stormwater issues in flood prone areas and establish guidelines beyond those stated in existing building permit and stormwater requirements. Further, more local groups are becoming involved in environmental protection projects and support, and many youth groups are taking a new interest in resource conservation. Additional public outreach and education will allow GCMP to build on this interest and garner support for measures to protect natural resources by creating new development standards for areas susceptible to flooding.

Studies related to the flooding issues are presently available, as part of the Fujita Culvert project a study was completed, however, this strategy will also engage with a stormwater experts such as Horsely Witten to review any existing studies and provide recommendations.

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VI. Strategy Work Plan

Using the template below, provide a general work plan that includes the major steps that will lead toward or achieve a program change or implement a previously achieved program change. If the state intends to fund implementation activities for the proposed program change, describe those in the plan as well. The plan should identify a schedule for completing the strategy and include major projected milestones (key products, deliverables, activities, and decisions) and budget estimates. If an activity will span two or more years, it can be combined into one entry (i.e., Years 2-3 rather than Year 2 and then Year 3). While the annual milestones are a useful guide to ensure the strategy remains on track, OCRM recognizes that they may change somewhat over the course of the five-year strategy unforeseen circumstances. The same holds true for the annual budget estimates. Further detailing and adjustment of annual activities, milestones, and budgets will be determined through the annual cooperative agreement negotiation process.

Strategy Goal: Develop new SAMP for Tumon and other flood prone areas

Total Years: 1

Total Budget: \$70,000

Year: 5

Description of activities: Development of SAMP for Tumon

Major Milestones:

Milestones/Activities	1 st Qtr	2 nd Qtr	3 rd Qtr	4 th Qtr
Develop scope of work and RFP that includes data collection including infrastructure and hydrology data, historic data , to assessment the current problems in Tumon	X			
Select contractor and finalize contract	X			
Work with networking agencies and other stakeholders to identify appropriate stormwater BMPs, existing rules and regulations, etc. Work with organizations such as Horsely Witten to assist with the assessment of the flooding issues in Tumon and other flood prone areas to provide recommendations.		X		
Outreach and education to community including policy makers, contractors and developers and land owers.		X	X	
Develop a new SAMP for Tumon. Draft any new regulation for adoption by the legislature or GEPA to better manage stormwater in urbanized areas.			X	x

Budget: \$70,000

Budget Category	Amount
Contractual – Consultant services to develop the SAMP	\$70,000
Output: Draft legislation and policies to support SAMP	
Total	\$70,000

VII. Fiscal and Technical Needs

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

309 funds will be used for this strategy. To reduce the cost, the GCMP will provide data support and coordination with the consultant. In addition, GCMP will work with NOAA and GEPA to seek technical assistance. GCMP will also coordinate with Guam’s coral program to determine if coral funds could be programmed to support this effort.

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

It is expected that the GCMP will hire a consultant to develop the SAMP strategy with experience in stormwater management and engineering. The GCMP staff will provide coordination and logistic support for data collection. The GCMP will conduct all the required public outreach to obtain public support for the SAMP policy and implementation of BMPs that may result from this strategy.

VIII. Projects of Special Merit (Optional)

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

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.

Strategy Title	Year 1 Funding	Year 2 Funding	Year 3 Funding	Year 4 Funding	Year 5 Funding	Total Funding
Task 1: "Public Access Strategy"	\$70,000	\$70,000				\$140,000
Task 2: "Cumulative and Secondary Impact in the Development Review and Permitting Process"			\$70,000	\$70,000		\$140,000
Task 3: SAMP-Flooding Areas					\$70,000	\$70,000
Total Funding						\$350,000

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