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William M. Castro
Director

Ray Tenorio
Lieutenant Governor

JUN 01 2015

The Honorable Esther Kia'aina
Assistant Secretary of the Interior for Insular Areas
U.S. Department of the Interior
1849 C Street, N.W. Mail-Stop 2429
Washington, D.C. 20240

RE: Opportunity Number: CRI-2015 - Guam's FY 2015 Coral Reef Initiative Program Proposal

Hafa Adai and Greeting Assistant Secretary Kia'aina,

Thank you for making funding available for the Insular Areas to apply for under the Coral Reef Initiative Program.

The Bureau of Statistics and Plans is submitting Guam's FY 2015 Coral Reef Initiative Program proposal for funding consideration under Opportunity Number CRI-2015. Guam's application proposes the following projects by priority to assist Guam in managing and protecting its coral reef:

Priority 1	Coral Reef Management and Conservation Coordination and Support	\$36,200
Priority 2	Coral Reef Conservation Public Outreach and Education	\$28,325
Priority 3	Coral Reef Resilience Coordinator Support Salary (Biologist II, M,1 \$40762) and Fringe Benefits (38% of Salary)	\$57,475
Priority 4	Southern Guam Toguan Watershed Data Collection	\$28,000
Total Request for Fiscal Year 2015		\$150,000

These projects being requested for funding totaling \$150,000 will address priorities for protection and sustainable use of coral reefs in Guam.

The Bureau of Statistics and Plans, the Governor of Guam's Point of Contact agency for coral reef initiatives, and the Office of the Governor will continue to take the lead of promoting awareness to the importance of coral reef ecosystem to the island community and to work

collaboratively with the public and private sectors, non-profit organizations, and educational institutes to encourage best management practices of coral reef conservation efforts identified in Guam's Local Action Strategy and through the collaboration with the U.S. Coral Reef Task Force in partnership with Guam's Natural Resources Agencies.

We hope to receive a favorable response to Guam's submission. Should you have any questions or concerns regarding Guam's proposed application, please contact myself by email at wil.castro@bsp.guam.gov or Ms. Lola E. Leon Guerrero by email at lola.leonguerrero@bsp.guam.gov or by telephone at 671-472-4201/2/3.

Sincerely,



William M. Castro



Guam's FY 2015 Coral Reef Initiative

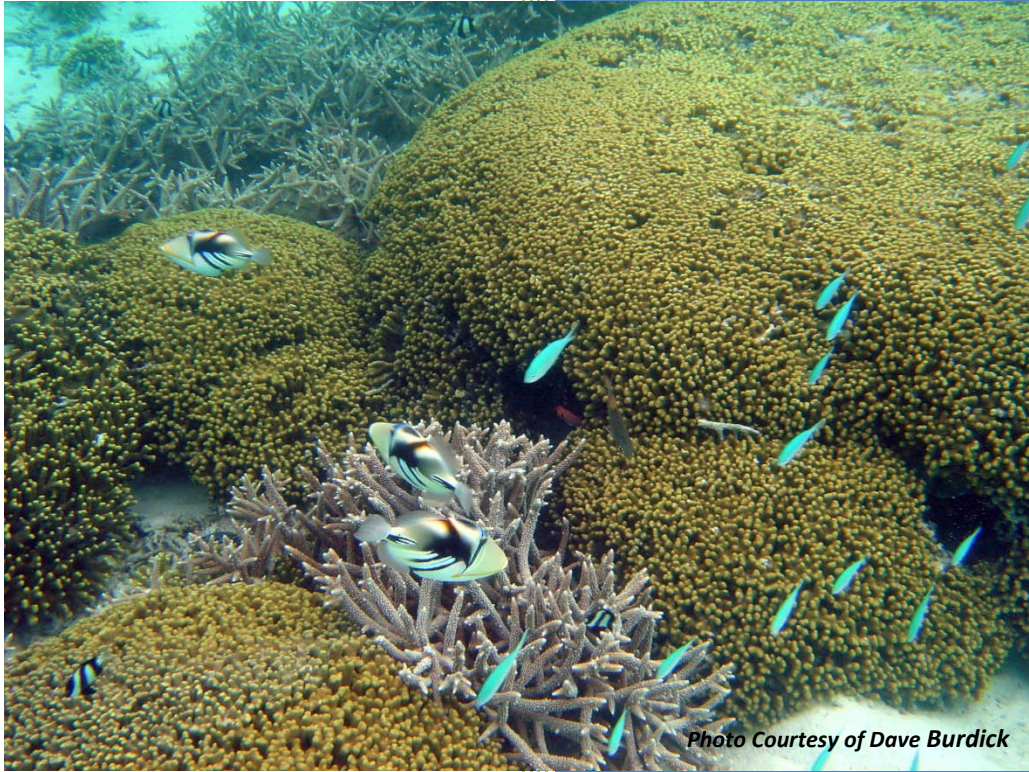


Photo Courtesy of Dave Burdick

Bureau of Statistics and Plans

May 2015

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Grant Recipient Information:

a) Applicant Name and Contact Information:

Authorized Organization Representative: William Castro, Director
Email Address: Wil.castro@guam.gov
Contact Number: 671 472-4201/2/3
Facsimile Number: 671 477-1812

b) Applicant Organization: Bureau of Statistics and Plans, Government of Guam

c) Primary and alternate points of contact: Primary: Mr. William Castro
Alternate: Ms. Lola E. Leon Guerrero

d) Contact information including address, phone number, and e-mail address:

Bureau of Statistics and Plans
PO Box 2950
Hagatna, Guam 96932
Contact Number: 671 472-4201/2/3
Facsimile Number: 671 477-1812
Primary Email Address: wil.castro@bsp.guam.gov
Alternate Email Address: lola.leonguerrero@bsp.guam.gov

e) Recipient Grant Manager:

Lola E. Leon Guerrero
Planner IV, Socio Economic Planning Program
Bureau of Statistics and Plans
PO Box 2950
Hagatna, Guam 96932
Contact Number: 671 472-4201/2/3 and 671 475-9675 (direct)
Facsimile Number: 671 477-1812
Email Address: lola.leonguerrero@bsp.guam.gov

f) Guam's ASAP Identification Number for DOI CRI: 1141617

g) Geographic Location: Guam

h) Federal funding requested: FY 2015 \$150,000

i) Award start date and award period: *October 1, 2015 to September 30, 2017*

Introduction

Guam's coral reef resources are both economically and culturally important to the residents of Guam. It provides numerous goods and services that support Guam's culture and traditions, tourism and recreation, fisheries, and shoreline and infrastructure protection. Approximately 108 km² of shallow coral reef area is found within 3 miles of Guam, with an additional 110 km² occurring between 3 and 200 miles. As a result of Guam's local law creating five Marine Preserves to combat fishery declines, the fish stocks in the preserves have increased significantly. Despite the critical importance of Guam's coral reefs to many aspects of life on Guam, the island's reef still remain under assault from a sedimentation from upland soil erosion, stormwater runoff and associated pollutants, marine debris, coral bleaching, coral disease, recreational misuse, climate change or severe weather condition, and more¹.

The Bureau of Statistics and Plans, the Governor of Guam's Point of Contact agency for coral reef conservation activities, and Guam's Natural Resource Agencies continues to take the lead of promoting awareness to the importance of coral reef ecosystem to the island community and to work and collaborate with the public and private sectors, non-profit organizations, businesses, and educational institutes to encourage best management practices of coral reef conservation efforts in collaboration with our networking natural resource partners. The project tasks being requested for funding will be used to promote sound management and conservation of coral reefs in Guam.

1) Priority Project: Coral Reef Management and Coordination Support

Narrative Description

Funding is needed that will ensure Guam enhances its capacity and continues to address the need for continued resources for the health and protection of Guam's coral reefs at Guam's attendance at the U.S. Coral Reef Task Force meetings, the All Islands Coral Reef Committee meetings, and other jurisdictional, regional and national trainings or workshops focusing on watershed, climate change, mitigation, and enforcement to coral reefs or the impacts to coral reefs and jurisdictional management resources. The funding for this priority project is primarily for travel allocation to address Guam's voice on coral reef initiatives. Travel activities will follow Government of Guam's travel regulations and policies that are in compliance to the federal grant standards and terms including seeking written travel participation approval from the Grantor prior to date of departure.

Statement of Need

A need exist to provide support for the Governor's Legal Counsel, the Governor's Authorized Representative(s), the Bureau of Statistics and Plans Director and staff involved in the Coral Reef grants and initiatives to attend, participate and provide jurisdictional input regarding coral reef resource management, technical support, assistance from Subject Matter Interest at US

¹ Guam, Bureau of Statistics and Plans. *Status of the Coral Reef Ecosystems of Guam*. No.1, December 2009.

Coral Reef Task Force meetings and workshops, All Islands Coral Committee meetings, and other jurisdictional and regional meetings in relations to coral reef issues, impacts by climate change, and management workshops, conferences and meetings to increase Guam's capacity to promote sound management and conservation efforts to protect Guam's coral reef, to network and to learn from our counterparts on their coral reef conservation efforts, and to ensure Guam is heard at the AIC and US Coral Reef Task Force meetings.

Also, Guam's attendance at coral resource management, climate change, watershed, and/or reef Resilience workshops, conferences and meetings will ensure Guam enhances its capacity and continues to address Local Action Strategies for the health and protection of Guam's coral reefs. By addressing these resources it will help sustain Guam's tourism industry and balance responsible development along Guam's shorelines.

Project Goals and Objectives

The goal of this project is to increase Guam's capacity to promote sound management and conservation efforts to protect Guam's coral reef, to network and to learn from our counterparts on their coral reef conservation efforts, and to ensure Guam is represented at the AIC and US Coral Reef Task Force meetings. The objectives of this project is to provide resources for Guam's attendance at coral workshops, trainings, conferences and meetings at the US Coral Reef Task Force, All Islands Coral Committee, and jurisdictional, regional, and national activities focusing on watershed, climate change, mitigation, enforcement, and other related matters impacting or benefitting coral reefs.

Task Outcome and Products

- Governor's Authorized Representative, Governor Legal Counsel, BSP Director and staff and Natural Resource Managers involved in Guam's Coral Reef Conservation efforts are represented at the US Coral Reef Task Force meeting.
- Coral Reef staff and Natural Resource Managers increase knowledge on coral reef conservation efforts, and increase networking with other Coral Reef Partners.

Budget and Justification

Task 1	Budget Item	Funding
Travel	(220) US Coral Reef Task Force Meeting (Airfare, Per Diem, & Transportation Cost) for 2 \$2800 airfare x 2 x (\$275 x 5 days) 2 x (\$100 x 2) = \$8550	\$8,550.00
	(220) All Island Committee Meeting (Airfare, Per Diem, & Transportation Cost) for 2 \$2800 airfare x 2 x (\$275 x 5 days) x 2 x (\$100 x 2) = \$8550	\$8,550.00

(220) Coral Resource Management Workshops, Training, Conferences and or Meetings (Airfare, Per Diem, Registration, Transportation Cost) for 2 \$2800 airfare x 2 + (\$275 x 5 days) x 2 + (\$100 x 2) + (\$500 x 2)= \$9550	\$9,550.00
(220) Climate Change, Resilience, Watershed workshop, training, conferences and or meeting (Airfare, Per diem, Registration, Transportation Cost) for 2 \$2800 airfare x 2 + (\$275 x 5 days) x 2 + (\$100 x 2) + (\$500 x 2)= \$9550	\$9550.00
Total Budget:	\$36,200.00
<p>The Governor's Authorized Representative, Governor's Legal Counsel, the Bureau of Statistics and Plans Director and staff involved in the Coral Reef grants, the Coral Reef Conservation Program grant funded staff and or Guam's natural resource managers to attend the U.S. Coral Reef Task Force meeting in February. Two individuals will attend the meeting in February.</p> <p>The Governor's Authorized Representative, Governor's Legal Counsel, the Bureau of Statistics and Plans Director and staff involved in the Coral Reef grants, the Coral Reef Conservation Program grant funded staff and or Guam's natural resource managers to 1 attend the AIC meeting in September. Two individuals will attend the meeting in September.</p> <p>Governor's Authorized Representative, the Bureau of Statistics Director and staff involved in Coral Reef Conservation efforts and or Natural Resource Managers will attend coral reef conservation workshops, training and or conferences pertaining to watershed, reef Resilience, climate change, etc. At this time, the workshops, training and or conferences have not been determined.</p> <p>Travel estimates are based on Guam's formal written travel policy.</p>	

Project Timeline

This project is expected to commence October 1, 2015 and to be completed by September 30, 2017.

Projects/Tasks	Oct Dec15	Jan Mar16	Apr Jun16	Jul Sep16	Oct Dec16	Jan Mar17	Apr Jun17
Establish Grant Award							
US Coral Reef Task Force Meeting in Washington D.C.							
US Coral Reef Task Force Meeting in one of the jurisdiction							

Projects/Tasks	Oct Dec15	Jan Mar16	Apr Jun16	Jul Sep16	Oct Dec16	Jan Mar17	Apr Jun17
Identify coral resource management workshops, conferences and meeting for staff professional development in collaboration with NOAA, DOI and coral reef task force networking partners							
Coral Resource Management Workshops, Conferences, and Meetings							

2) Priority Project: Coral Conservation Awareness and Public Outreach

Narrative Description

In order to manage the protection of coral reefs, engaging the community to being aware and know the importance of coral reefs are to the island’s culture and striving economy must continue. Funding is needed to support and enhance existing coral reef outreach activities as well as related natural resource activities that incorporate the protection and sustainable use of coral reefs.

Statement of Need

A need continues to exist to attain resources to build upon Guam’s educational and outreach efforts to raise public awareness and appreciation for Guam’s coral reef ecosystems, and to promote local education and outreach on coral reef issues in partnership with the Government of Guam’s natural resource managers, local educational institutions, the Federal natural resource managers, and the Guam Nature Alliance. This is important because education and outreach plays a crucial role in protecting our coral reefs.

The funding will support the following public outreach and educational activities such as launching media campaigns to educate residents and visitors about Guam’s coral reef ecosystem and coral reef conservation efforts through print, TV and or radio campaigns, jointly support the Guardians of the Reef Program by training 11th and 12th grade high school students to educate 3rd and 4th grade students on Guam’s coral reef ecosystems, and jointly support the Guam Nature Alliance (GNA) outreach on coral reef awareness. Also, the funding will support coral reef interactive outreach displays and materials with local events such as the Micronesia Challenge activities, Guam’s Pig Hunting Derby and Pork in the Park Cook-Off, and Guam’s wildland fire campaign.

Project Goal and Objectives

The goal of this project is to build upon Guam’s educational and outreach efforts to raise public awareness and appreciation for Guam’s coral reef ecosystems. The objectives of this project are to provide support for public outreach and education activities through the coordination of the Guardians of the Reef Program, Guam Nature Alliance outreach events, launch media campaigns on Guam’s coral reef ecosystem, and support other related activities that promote coral reefs.

Task Outcome and Products

- Printed, TV and or Radio Educational Media Campaigns.
- Successful implementation of the Guardians of the Reef Program Review and Evaluation.
- Successful support provided to Guam Natural Alliance.
- Successful support and implementation of coral reef conservation outreach and education efforts, reef resilience outreach and education efforts, and environmental education outreach efforts.

Budget and Justification

Task 2	Budget Item	Funding
Supplies	(240) Outreach and Educational Supplies and Training Materials to include display boards for the Reef Resilience Outreach and Education efforts \$1000	\$500.00
Contractual	(230) Outreach and Educational Items, Interactive Display, and Printing of Outreach Materials to include posters, brochures, fact sheets, banners	\$17,000.00
Contractual	(230) 2015-2016 Guardian of the Reef Review and Evaluation: Entrance Fee to Under Waterworld for Guardians \$25 per person x 65 Guardians and 10 Chaperone (4 teachers and 6 former Guardians)	\$1,825.00
Contractual	(230) UoG Center for Island Sustainability Annual Conference - Highlight of Coral Project	\$5,000.00
Contractual	(230) Print, TV and or Radio Media Campaign	\$2,500.00
	Total Budget:	\$26,825.00
<p>Outreach and Educational Supplies and Training Materials are needed for the program to develop and to maintain outreach and education materials for events to educate the community, and to conduct training and workshop on Reef Resilience. The supplies will include a tri board display, laminate sheets, copier paper.</p> <p>Outreach and Educational Contractual Items are needed to develop and to maintain outreach and educational materials for events to educate and to increase public awareness, appreciation and community support for Guam’s coral reef conservation efforts. The contractual items will have message displayed to promote the protection and conservation of Guam's coral reef.</p>		

Project Timeline

This project is expected to commence October 1, 2015 and to be completed by September 30, 2017.

Projects/Tasks	Oct Dec15	Jan Mar16	Apr Jun16	Jul Sep16	Oct Dec16	Jan Mar17	Apr Jun17
Establish Grant Award							
Obtain price quotations, encumber funds for supplies and contractual services and contractual items							
Receive and implement supplies and contractual services and contractual items							
Implement public outreach and education activities							

3) Priority Project: Coral Reef Resilience Coordinator Support

Narrative Description

Guam’s natural resource managers seek to reduce the impacts of climate change by building reef resilience. Resilience is referred to coral reefs that are able to bounce back or recover after experiencing a stressful event such as bleaching caused by elevated temperatures. It can also be defined as the ability of systems to absorb, resist or recover from disturbances or to adapt to change while continuing to maintain essential functions and processes is the essence of ecological resilience.² To accomplish this, Guam formed a coral reef response team to address impacts from coral bleaching, *Acanthaster* or “crown of thorn” outbreaks, ship groundings, and coral disease. The coral reef response team is composed of the UOG Marine Lab, Guam Environmental Protection Agency, Department of Agriculture, and NOAA Fisheries. With funding made available under the FY 13-14 Coral Reef Conservation Program, Guam has hired a full time Reef Resilience Coordinator to assist the coral reef response team to develop and implement a Reef Resilience Strategy. The funding for the Reef Resilience Coordinator will end on September 30, 2015.

Statement of Need

A need exist to continue to fund the coral reef resilience coordinator beyond September 30, 2015 to lead the development and implementation of Guam’s Reef Resilience Strategy, to facilitate

² “Reef Resilience.” The Nature Conservancy. 2007-2014. Web. 7 March 2014.

training activities, and to further development standard operating procedures and plans for each component of Guam’s draft residency plan; to update coral reef managers on new and emerging reef resilience information; to support efforts to examine community resilience to climate change; to conduct education and outreach related to reef resilience.

Project Goal and Objective

The goal of Coral Reef Resilience Coordinator Support is to coordinate Guam’s efforts to integrate reef resilience principles into coral reef management and education efforts.

The objective of the Coral Reef Resilience Coordinator Support are the following: to work closely with the Bureau’s Coastal Zone Management Program, Department of Agriculture, Guam EPA, UOG Marine Laboratory and NOAA Fisheries in the development and implementation of Guam’s Reef Resilience strategy; and to work with local and federal natural resource agencies, educators, and scientists to build resilience in Guam’s reefs through targeted management, research, and education.

Task Outcome and Products

- Development of Coral Reef Resilience Outreach and Educational Materials
- Final Guam Reef Resilience Strategy

Budget and Justification

Task 3	Budget Item	Funding
Personnel	(111) Coral Reef Resilience Salary (M,1)	\$40,762.00
Fringe Benefits	(113) Coral Reef Resilience Fringe Benefits: Retirement \$12167, DDI \$495, Medicare \$591, Life \$153, Medical \$2583, Dental \$224	\$16,213.00
	Total Budget:	\$56,975.00

BSP requests for one critical personnel under this submission for a Coral Reef Resilience Coordinator that will be hired as a Biologist II. The budget for personnel is to cover BSP Coral Reef Resilience Coordinator (Biologist II) personnel cost for 26 pay periods. The Reef Resilience Coordinator salary is critical to continue to lead the development and implementation of Guam’s Reef Resilience Strategy, to coordinate the response team to include facilitation of training activities, and to further develop standard operating procedures and plans, to update coral reef managers on new and emerging reef resilience information, to support efforts to examine community resilience to climate change, and to conduct education and outreach related to reef resilience.

The budget for fringe benefits is to cover BSP Coral Reef Resilience Coordinator (Biologist II) fringe benefits cost for 26 pay periods. BSP Coral Reef Resilience Coordinator (Biologist II) fringe benefits include retirement, medical, dental, medicare and life.

Project Timeline

This project is expected to commence October 1, 2015 and to be completed by September 30, 2017.

Projects/Tasks	Oct Dec15	Jan Mar16	Apr Jun16	Jul Sep16	Oct Dec16	Jan Mar17	Apr Jun17
Establish Grant Award							
Reef Resilience Coordinator position transitions to the FY 2015 CRI grant immediately upon establishment of parent account							
Reef Resilience Coordinator continues to lead the development and implementation of Guam's Reef Resilience Strategy							
Reef Resilience Coordinator continues to coordinate the response team to include facilitation of training activities							
Reef Resilience Coordinator continues to further develop standard operating procedures and plans to update coral reef managers on new and emerging reef resilience information							
Reef Resilience Coordinator continues to support efforts to examine community resilience to climate change							
Reef Resilience Coordinator continues to conduct education and outreach related to reef resilience							
Development of Coral Reef Resilience Outreach and Educational Materials; Final Guam Reef							

Resilience Strategy							
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4) Priority Project: Developing Hydrological data for Toguan Watershed Management

Area of Focus: This project will focus on the assessment of the hydrological conditions of the Toguan watershed located in Southern Guam. The plan will include: (1) a review of existing physical and environmental characteristics of the watersheds; (2) acquiring measurements of rainfall in the watershed; (3) hydrologic data parameters including the turbidity in the river; (4) performing data analysis; and (5) to develop management strategies for the watershed.

Narrative Description

The Toguan watershed is comprised of dense forest, some savanna, some wetlands at the lower reaches, and a small amount of badlands along the surrounding ridges. The village of Merizo is situated along the coast south of the Toguan watershed and the village of Umatac is to the north. There is little development within this watershed, with the exception of residential coastal developments along the island’s primary coastal road and the GWA wastewater treatment plant. As GWA continues to provide resources for upgrading the wastewater infrastructure and mitigate impacts to the environment, there is increasing interest concerning hydrology of the areas affected. In addition, the importance of coastal resource management continues to assess areas that could benefit from watershed “restoration.” For a restoration project to be deemed successful it is of great importance to: (1) determine the physical condition of the watersheds prior to the restoration, and (2) establish the nature of the pristine condition toward which the restoration aims. The Toguan watershed is a great place to establish the physical conditions of a watershed and the interior portion of the watershed among the most pristine areas now exists on Guam. A further benefit of the study would be to establish a baseline for the Toguan watershed for comparison to any future improvements in GWA operations or other significant developments within this watershed. Future plans affiliated with this project would be a GIS-based management plan with recommendation on how to preserve the water quality of this watershed.

Statement of Need

A need exist to capture baseline hydrologic information of the Toguan watershed as erosion and associated sedimentation poses one of the primary threats to Guam’s terrestrial and aquatic environments. Soil erosion is a major environmental problem as it degrades soil quality and the eroded soil particles adversely affect stream and marine water quality and coral reefs. Upland erosion rates on Guam, among the highest reported in the literature, are the result of a complex interaction of fire, vegetation and climate. Erosion and sedimentation rates are altered by anthropogenic activities such as wildfires, poorly managed development, off-roading, construction and agriculture (Minton 2005). The Toguan watershed is of interest because it discharges into waters between the minimally developed regions of Umatac and Merizo. However, the stream is also affected by activities from the Guam Waterworks Authority (GWA) Merizo-Umatac Wastewater Treatment Plant. The upper reaches of the Toguan River and tributaries are largely forested, grading to grasslands and some badlands on the surrounding high slopes. There is very

little off-roading in this watershed, with some four-wheel traffic (mainly hunters) along the ridges on the north and east sides of the Toguan watershed boundaries. There are likely a very large number of ungulates (wild pigs and deer) inhabiting the area. Wildfires are common in the dry season, and occur primarily in the grassy areas located on the steep slopes and highest terrain of the surrounding mountains.

The programmatic implementation of the Guam Coastal Nonpoint Pollution Control Program (GCNPPCP), in accordance with the requirements of Section 6217 of the Coastal Zone Act Reauthorization Amendment (CZARA) of 1990, requires the development of a multi-year watershed restoration strategy. According to the guidance of Section 6217, the Watershed Restoration Action Strategies should include watershed assessment and identification of opportunities to reduce nonpoint source pollution.

Benefits and Feasibility of the proposed project

The result of this project will be the establishment of baseline hydrologic information for the Toguan watershed. This information is critical to any management plan to ensure an environmentally and economically healthy watershed. In their pristine state and rugged location, the back valley of the Toguan watershed is difficult to access. Strenuous hiking is required through dense jungle, steeply sloped terrain and complex streambeds that feature small canyons, boulders, waterfalls, and low-hanging vegetation. The project Principal Investigator and student help are capable of field work in these difficult conditions.

In a recent similar projects, Dr. Sh. Khosrowpanah, Dr. Lander and a team of WERI graduate students conducted similar studies in the Piti-Asan Watersheds (2010 – 2012) and the Geus Watershed in Merizo (2013 – 2015). For both studies, a network of rain gauges, stream level, streamflow, and turbidity measuring equipment were set up in the respective watersheds and data was collected during dry and rainy season conditions. After extensive field work the data record was nearly 100% complete. Recommendations were made for managing each watershed based on their unique condition; the Piti-Asan watersheds being an area threatened by significant development, and the Geus Watershed requiring management under more natural conditions to sustain natural resources that remain important to the local community of Merizo.



Figure: Toguan Watershed Location

Description of the proposed work (results of the project)

The overall objective of this project is to establish baseline information on hydrological condition and turbidity for the Toguan watershed. The specific goals are:

1. To collect available information about the watershed's current condition from previous studies as well as field visitations.
2. To perform a watershed assessment of the existing condition in order to determine what degraded or impaired areas may exist in the watershed and why.
3. To set up equipment to monitor rainfall, streamflow and turbidity in the Toguan watershed.
4. To generate baseline information on hydrological condition of the watershed, develop a stage discharge curve, and develop watershed management strategy.

Method, procedure, theory:

The project will be divided into three phases. Phase I will be a watershed assessment using all available physical and environmental information. Phase II will be field data collection, which includes reviewing, assessing, and ranking the environmental issues within the watershed. Phase III will be analysis of the rainfall and turbidity data and provide recommendation on management of the watershed.

Phase I. Watershed Assessment.

Information about the current condition of the Toguan watershed will be obtained from previous studies supplemented with field visits and aerial photographs. This information includes physical characteristics, geography, climate, hydrology, soils, biological resources, and socio-cultural resources.

Phase II. Data Collection

The following data will be collected at the sites:

- (1) hourly rainfall data at two selected sites; and
- (2) stream level change, turbidity, and cross-flow data in the Toguan River.

Phase III. Data Analysis

Phase III of this project focuses analysis of the field data and preparation of the final report.

Task Outcome and Products

- Baseline Toguan Watershed Hydrological Report

Budget and Justification

Task 4	Budget Item	Funding
Personnel	(111) Dr. Mark Lander 2 weeks \$1819	\$3,638
	(111) Dr. Shahram Khosrowpanah 3 weeks \$2673	\$8,019
	(111) Graduate Student 600 hours @ \$14 per hour	\$8,400
Fringe		
Benefits	(113) Dr. Mark Lander (7.65% x \$3638)	\$278
	(113) Dr. Shahram Khosrowpanah (1.25% x \$8019)	\$100
	(113) Graduate Student (7.65% x \$8400)	\$643
Supply	(240) Supplies (PVC pipes, clamps, steel wire, drill bits, etc)	\$413
	Equipment	
Equipment	(250) Two raingage @ \$600 each	\$1,200
	(250) One turbidometer @ \$800 each	\$800
	(250) Hexacopter with accessories @ \$2800	\$2,800
Other		
Misc	(230) Report preparation and printing	\$1,800

Task 4	Budget Item	Funding
	(220) Transportation for mileage	\$500
	(290) Administrative Cost	\$1,409
	Total Budget:	\$30,000
<p>Principal Investigator will be responsible for site visits, collecting data, supervising student, quarterly report, and preparing the final report.</p> <p>Co Principal Investigator will be assisting the project PI in data analysis and the final report preparation.</p> <p>A graduate student will be responsible in assisting the PI in data collection and data analysis.</p> <p>Supplies include PVC pipes, clamps, steel wire, drill bits, etc. are necessary to install the raingage, and other equipments to capture the data from the watershed.</p> <p>Two raingage and one turbidometer will be used to capture the data at the project sites. More specifically, the raingage will gather and measure the amount of liquid precipitation over a set period of time; and the turbidimeter will be used to measure turbidity in the water sample.</p> <p>A hexacopter with accessories will be used to capture aerial photographs of the Toguan watershed condition.</p> <p>Transportation for mileage will be used to cover fuel cost for roundtrip travel to and from the Toguan Watershed for the research.</p> <p>Funding for the report preparation and printing that will be submitted to the funding agency. A technical report will be produced after project completion.</p>		

Project Timeline

This project is expected to commence October 1, 2015 and to be completed by September 30, 2017.

Projects/Tasks	Oct Dec15	Jan Mar16	Apr Jun16	Jul Sep16	Oct Dec16	Jan Mar17	Apr Jun17	Jul Sep 17
Establish Grant Award								
Establish MOU between BSP and UOG WERI								
Obtain and implement three price quotations for supplies and equipment								
Submit progress and								

Projects/Tasks	Oct Dec15	Jan Mar16	Apr Jun16	Jul Sep16	Oct Dec16	Jan Mar17	Apr Jun17	Jul Sep 17
financial report to BSP								
Conduct watershed assessment through field visit, capture of aerial digital photo and collect data from existing studies								
Submit progress and financial report to BSP								
Set up and install equipment and supplies								
Collect hourly rainfall data, streamflow data and turbidity data								
Submit progress and financial report to BSP								
Complete data analysis for final report								
Publish final report and submit final progress and financial report to BSP								

Project Manager or Principal Investigator (PI)

Principle Investigator: Dr. Mark A. Lander
 University of Guam/WERI
 UOG Station
 Mangilao, Guam 96923
 Tel: (671) 735-2695
 Fax: (671) 734-8890

Co-Principal Investigators: Dr. Shahram Khosrowpanah
 University of Guam/WERI
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 Mangilao, Guam 96923
 Tel: (671) 735-2695
 Fax: (671) 734-8890

Overall FY 2015 Detailed Project Timeline

MONTH	ACTIVITIES
October to December 2015	<ul style="list-style-type: none"> ▪ Establish Grant Award (Parent). Anticipated establishment date (3 months) • Prepare MOU between BSP and UOG WERI for Baseline Toguan Watershed Hydrological Report ▪ Reef Resilience Coordinator position transitions to the FY 2015 CRI grant immediately upon establishment of parent account ▪ Reef Resilience Coordinator continues to lead the development and implementation of Guam's Reef Resilience Strategy, to coordinate the response team to include facilitation of training activities, and to further develop standard operating procedures and plans, to update coral reef managers on new and emerging reef resilience information, to support efforts to examine community resilience to climate change, and to conduct education and outreach related to reef resilience. ▪ Obtain price quotation and encumber funds for the Public Outreach and Education Support ▪ Identify professional development training, workshops and conferences that the watershed coordinator and reef Resilience coordinator can attend as it pertains to conservation and protection of coral reef ecosystem from climate change, watershed, land based sources of pollution in collaboration with NOAA and DOI as well as coral reef networking partners ▪ Research interactive outreach display items that is portable, easy to transport and set up at public outreach and education events such as watershed display, climate change
January to March 2016	<ul style="list-style-type: none"> ▪ Prepare travel authorization for staff to attend U.S. Coral Reef Task Force meeting in Washington D.C. in February 2016 ▪ Implementation of public outreach and education supplies, and contractual services. ▪ Reef Resilience Coordinator continues to lead the development and implementation of Guam's Reef Resilience Strategy, to coordinate the response team to include facilitation of training activities, and to further develop standard operating procedures and plans, to update coral reef managers on new and emerging reef resilience information, to support efforts to examine community resilience to climate change, and to conduct education and outreach related to reef resilience. • MOU between BSP and UOG WERI for Baseline Toguan Watershed Hydrological Report implemented
April to June 2016	<ul style="list-style-type: none"> ▪ Prepare travel authorization for staff to attend professional development training, workshops, and conferences identified in collaboration with NOAA and DOI and coral reef networking partners ▪ Reef Resilience Coordinator continues to leads the development and implementation of Guam's Reef Resilience Strategy, to coordinate the response team to include facilitation of training activities, and to further develop standard operating procedures and plans, to update coral reef managers on new and emerging reef resilience information, to support efforts to examine community resilience to climate change, and to conduct education and outreach related to reef resilience. ▪ Assessment of Toguan Watershed. ▪ BSP (SAA) prepares and submits the CRI semiannual progress report to

MONTH	ACTIVITIES
	<p>DOI for October 2015 to March 2016 reporting period</p> <ul style="list-style-type: none"> ▪ BSP Administrative Services Officer prepares and submits the CRI FFR 425 to DOI October 2015 to March 2016 reporting period
July to September 2016	<ul style="list-style-type: none"> ▪ Reef Resilience Coordinator continues to leads the development and implementation of Guam's Reef Resilience Strategy, to coordinate the response team to include facilitation of training activities, and to further develop standard operating procedures and plans, to update coral reef managers on new and emerging reef resilience information, to support efforts to examine community resilience to climate change, and to conduct education and outreach related to reef resilience. ▪ Installation of supplies and equipment for Toguan Watershed and collection of data ▪ Prepare travel authorization for staff to attend U.S. Coral Reef Task Force meeting scheduled for September 2016
October to December 2016	<ul style="list-style-type: none"> ▪ Reef Resilience Coordinator continues to leads the development and implementation of Guam's Reef Resilience Strategy, to coordinate the response team to include facilitation of training activities, and to further develop standard operating reef procedures and plans, to update coral reef managers on new and emerging reef resilience information, to support efforts to examine community resilience to climate change, and to conduct education and outreach related to reef resilience. ▪ Toguan Watershed data collection. ▪ BSP (SAA) prepares and submits the CRI semiannual progress report to DOI for April 2016 to September 2016 reporting period by no later than October 30, 2016 ▪ BSP Administrative Services Officer prepares and submits the CRI FFR 425 to DOI for the April 2016 to September 2016 reporting period by no later than October 30, 2016
January to March 2017	<ul style="list-style-type: none"> ▪ Reef Resilience Coordinator continues to leads the development and implementation of Guam's Reef Resilience Strategy, to coordinate the response team to include facilitation of training activities, and to further develop standard operating procedures and plans, to update coral reef managers on new and emerging reef resilience information, to support efforts to examine community resilience to climate change, and to conduct education and outreach related to reef resilience. ▪ Toguan Watershed data collection.
April to June 2017	<ul style="list-style-type: none"> ▪ Reef Resilience Coordinator develops and implements Guam's Reef Resilience Strategy, Guam's Reef Resilience standard operating procedures and plans complete, coral reef managers are updated on new and emerging reef resilience information. ▪ Toguan watershed data assessment. ▪ BSP (SAA) prepares and submits the CRI semiannual progress report to DOI for October 2016 to March 2017 reporting period ▪ BSP Administrative Services Officer prepares and submits the CRI FFR 425 to DOI October 2016 to March 2017 reporting period
July to September 2017	<ul style="list-style-type: none"> ▪ Reef Resilience Coordinator develops and implements Guam's Reef Resilience Strategy, Guam's Reef Resilience standard operating procedures and plans complete, coral reef managers are updated on new and emerging reef resilience information. ▪ Toguan Watershed Data Analysis complete. Prepare draft report. Finalize report for submission to BSP.
October to December 2017	<ul style="list-style-type: none"> ▪ Process grant project for closure, prepare final financial and close out narrative reports

Priority Listing for Multiple Projects

Priority 1	Coral Reef Management and Conservation Coordination and Support	\$36,200
Priority 2	Coral Reef Conservation Public Outreach and Education	\$26,825
Priority 3	Coral Reef Resilience Coordinator Support Salary (Biologist II, M,1 \$40762) and Fringe Benefits (38% of Salary)	\$56,975
Priority 4	Developing Hydrological data for Toguan Watershed Management	\$30,000
Total Request for Fiscal Year 2015		\$150,000.00