

Environmental Security in the Indo-Pacific

CTI-IUU TTX



Mr. Chris Sholes, PMP
Environmental Security Program
August 2018

This brief is classified:
UNCLASSIFIED



Agenda

- ENVSEC at PACOM
- PESF History
- Project Discussion
- Way Forward





BLUF (Bottom Line Up-Front)

- **Pacific Environmental Security Forum (PESF) discusses issues and develops projects to build national capacity**
- **Program Supports maritime collaboration opportunities**



An aerial photograph showing a large, cleared area of land, likely a deforested region. The cleared area is light brown and shows signs of erosion and soil disturbance. It is surrounded by dense green forest. The background shows a hazy horizon under a blue sky.

“Countering vulnerabilities caused by the abundance or scarcity of environmental resources and/or degradation.”

USPACOM Environmental Security Definition

Main Engagement Areas | USPACOM Environmental Security Program



**Humanitarian Assistance
Disaster Relief**



**Counter wildlife
trafficking**



Water security



**Oil-spill response
capabilities (includes
environmental
sensitivity indices)**



Waste Management



**Illegal, Unlawful, and
Unregulated (IUU) fishing**



**Coastal zone
management**



**Engineer solutions to
environmental
challenges**

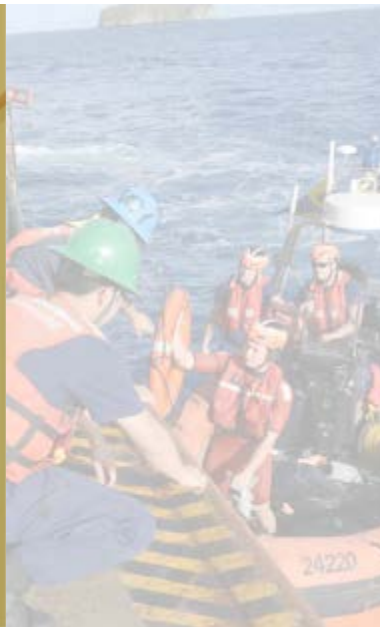
Objectives | USPACOM Environmental Security Program



**Foster Civilian -
Military Collaboration**



**Build Capacity/
Capability of
Partner Nations within
Policy, Training,
and TTP's**



**Increase
Maritime Security/
Maritime Domain
Awareness**



**Advance
Multilateral/
International/
Regional
Collaboration**



**Enhance
Partner Nation/U.S.
Military Relations**



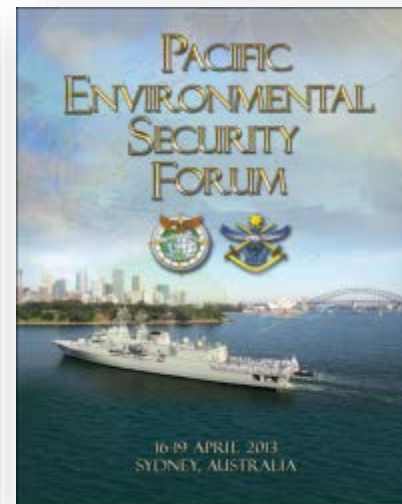
Environmental Security Forum Series



Honolulu '11



Jakarta '12



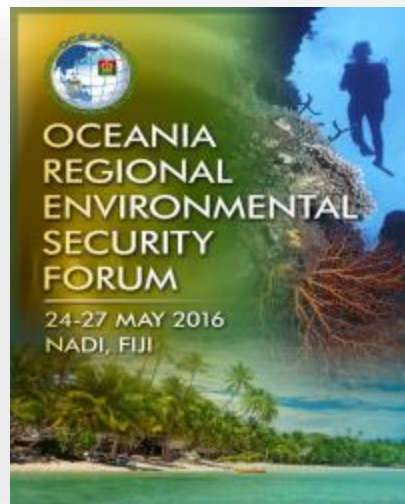
Sydney '13



Male '14



Bangkok '15



Fiji '16



Anchorage '17



Ulaan Bataar '18



South Asia Oil Spill Response Workshop

11-13 November 2014



MNDF Officers engage instructor during a dialogue session



SL Coast Guard Director General discusses future opportunities with U.S. delegation





South Asia Oil Spill Response Workshop

13-16 April 2015



Purpose: To view and train on spill response equipment, learn how the US Navy and US Coast Guard plan with civilian authorities and respond to hazardous materials spills, and observe a spill response exercise at Joint Base Pearl Harbor Hickam. The goal for participants is to better understand what equipment their organizations require in order to meet their spill-response mission requirements and how to store, maintain and deploy that equipment. We also hope to foster enduring relationships by bringing together participants from the region to address common environmental security concerns through responsible civil and military action.

Highlights

- The workshop was attended by Coast Guard and Naval officers from Sri Lanka (5), Bangladesh (2), and Maldives (2)
- Participants also included the Asia-Pacific Center for Security Studies (APCSS), NAVSEA Supervisor of Salvage and Diving (SUPSALV), Emergency Ship Salvage Material (ESSM), Clean Islands Council (CIC), US Army Corps of Engineers (USACE), Mobile Diving and Salvage Unit (MDSU) and US Coast Guard
- Observation of the spill response exercise was conducted aboard vessels from both the CIC and SUPSALV
- Hands-on training with the skimmers and pump operations promoted practical familiarity with equipment.

Way Forward

- An After-Action Review report will be prepared for the event and distributed to all of the participants.
- All countries were interested in follow-on training in the Incident Command System (ICS). This can be accomplished through OSRWs in both Bangladesh and Sri Lanka in 2016.
- The Sri Lankans are interested in oil spill response equipment and will work with PACOM and their US Embassy Representatives to explore procurement opportunities.
- Additional training opportunities should be explored, such as incorporating an oil spill response into the annual CARAT exercises.



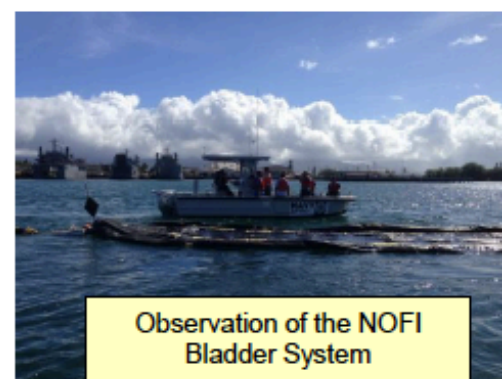
Observation of Oil Spill Response Exercise



Tour of the Clean Islands Council Command Center



Hands-on Training to hot tap ship hull steel



Observation of the NOFI Bladder System

STORYBOARD

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Sri Lanka Oil Spill Response Workshop

12-16 September 2016



Purpose: The Sri Lanka Oil Spill Response Workshop will: 1) Exercise oil spill response equipment in Sri Lankan waters 2) Train Sri Lankans and Maldivians in the Incident Command System (ICS) 3) Conduct a tabletop exercise (TTX) using ICS 4) Develop two capabilities maturity road maps for Sri Lanka and the Maldives 5) Exchange perspectives among the various regional actors, both civilian and military, and share lessons-learned and best practices from recent oil spill response efforts and increase collaborative efforts to protect natural resources and the environment.

Highlights

- Conducted Oil Spill Response/Incident Command System (ICS) training with representatives from Sri Lankan Coast Guard and Navy, Maldivian National Defense Force, Disaster Management Center, South Asia Cooperative Environmental Program, Marine Environmental Protection Authority and Ceylon Petroleum
- Conducted a Field Training Exercise of the Sri Lankan Coast Guard spill response capabilities
- Developed Sri Lanka Capabilities Road Map

Sri Lanka Road Map

- Coordinate with the Sri Lanka government to establish continuous funding for the program
- Training to set up a recurring maintenance program of the equipment
- Training on the methods to establish a continuous supply chain
- Training on additional capabilities/equipment such as small portable skimmers, shoreline booms, open ocean booms, shore seal booms, boom mooring systems and methods to pump/remove fuel from the water.
- Acquisition of new equipment and establishment of an island-wide dispersal plan.



Tabletop Exercise



Sri Lanka Oil Spill Equipment
Storage for Deployment



Sri Lanka Coast Guard oil spill
equipment deployment exercise



Sri Lanka Oil Spill Response Workshop
participants



Environmental Sensitivity Index – Phase II

7-18 November 2016

Purpose: To collect human use, biological and coastal resource data between the Port of Colombo and Negombo Lagoon to prioritize oil spill response; support future disaster management planning and preparedness; and increase environmental awareness of sensitive ecosystems.

Highlights

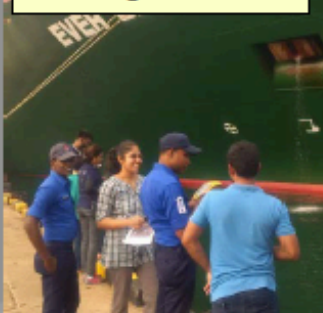
- USACE partnered with the Sri Lanka Navy and multiple civilian institutions to collect 600+ biological resources, 800+ human-use resources, and 207-km of shoreline between the Port of Colombo and Negombo Lagoon.
- Participants utilized a standardized data dictionary to collect ESI features using Global Navigation Satellite System receivers and hardcopy maps.
- Data will be compiled to prepare an oil spill vulnerability atlas.
- Final deliverables will tentatively be presented to stakeholders 21-23 Aug 2017, or sooner if possible.

Team members head out into Negombo Lagoon to conduct a field survey



Participants collect ESI features in Colombo Harbor

An ESI team evaluates a container terminal for biological resources



Mr. Benton Ching (CEPOH) explains how to post-process field data



Participants pose for a group photo



Whole-of-Government Framework Development



REPUBLIC OF MALDIVES

NATIONAL CONTINGENCY PLAN ON OIL AND HAZARDOUS SUBSTANCES POLLUTION (NCP)

October 2016



Maldives Future Road Map

- Educate the Maldivian agencies and concerns on the conventions for legislation to hold the “responsible party” financially liable.
- Define what oil spill response capabilities the MNDF wants to achieve.
- Perform a gap analysis on MNDF capabilities.
- Define a funding source for the MNDF to purchase oil spill response material.
- Develop a National Response Plan (NRP) and base it on the most complicated response and train the Maldivians to develop other plans using the first as a template.
- Conduct Incident Command System (ICS) training

Maldives National Contingency Plan
Development Participants

STORYBOARD

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Oceania Regional Oil Spill Response Workshop #2

26-29 June 2017



Purpose: To enhance regional oil spill response capacity in Oceania, to share equipment capability between regional stakeholders, to promote communication on oil spill response readiness, to share lessons-learned and best practices from recent oil spill response efforts around the world, and to increase collaborative response efforts to protect natural resources and the environment.

Highlights

- The workshop was attended by 16 participants from eight countries. This including military officers, marine environmental officers, environmental inspectors, and senior chemical and hazardous waste managers.
- Tours were given at the Asia Pacific Center for Security Studies (APCSS), Navy SUPSALV ESSM Base, U.S. Coast Guard Base Honolulu, Hawaii State On-Scene Coordinator for Oil Spill Response Operations, NOAA's Scientific Support Coordinator on oil spill response operations, and Marine Corps Base Hawaii oil spill responders.
- Hands-on training with the skimmers and pump operations promoted practical familiarity with equipment.

Way Ahead

- All countries were interested in follow-on training. Continue to Phase 3 of the Oil Spill Response Workshop in the Oceania region with Table Top Exercise and possible deployment of equipment.
- Assist Oceania nations with conducting a gap analysis to determine which response resources would be most beneficial to their respective nations.
- Oil Spill Contingency Planning Assistance at the National and Operational level.
- Provide training on Freeware, such as GIS and GNOME, to enhance response capacity.



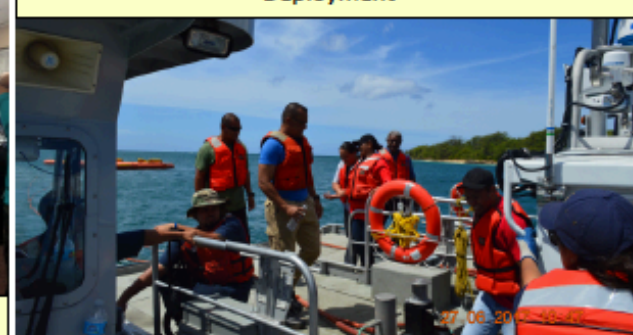
Fiji Rep. Lt Col
Tagicakibau speaking
at APCSS

SUPSALV display of Chemical Dispersant System



CIC Command Post Tour

Observing NOFI High Speed Current Buster System
Deployment



Beach Debris Segregation Bins

Executive Summary

The Ministry of Environment and Energy, have an agenda to establish waste management solutions throughout the Maldives. These projects at various islands will provide a composting pad, area of hazard waste storage, and segregated waste. The challenges in waste management are due to isolation, logistical hurdles, limited land and water security threats. The results of which negatively affect the human health and ecosystems.

Project Details

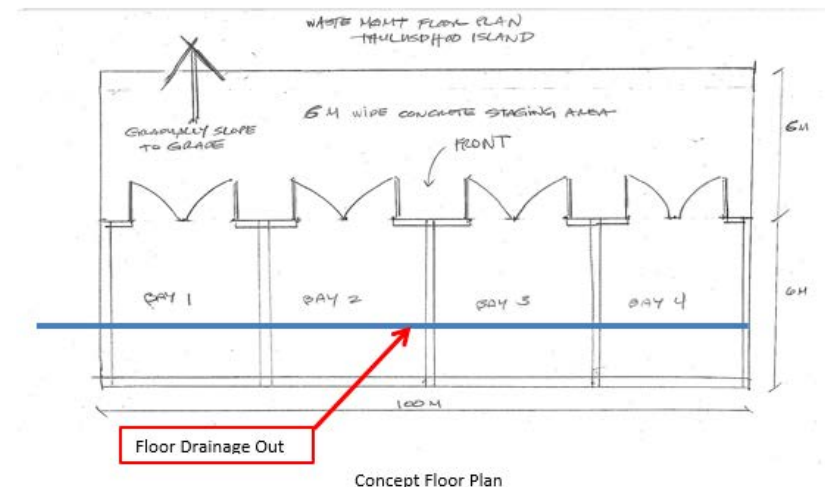
Status: Project design is under review from USPACOM.

Scope: Minimal four (4) bays for segregation of plastic, fiber, metals & paper plus concrete staging area. Project size is scalable to meet requirement.

Location: Thulusdhoo Island, Kaafu Atoll, Maldives



Showing example structure of one (1) bay for consideration. Center should include minimal four (4) bays for plastic, fiber, metals & paper. Approximate size 550 SM with adjoining 550SM staging pad.



STORYBOARD

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Maritime Environmental Security Workshop (MESW)

Day 2: 13 Sep 2017

Purpose: To strengthen regional security and environmental partnerships within Southeast Asia. To increase regional awareness and develop partner-nation capacity by focusing on environmental cooperation as a common tool for improving economic outcomes, enhancing sustainable eco-tourism, and promoting cooperation between nations.

Highlights

- Chris Sholes, USPACOM, began by further explaining the project development method.
- Mr. Augustine Tuuga, Director of Sabah Wildlife Department, and Dr. John Tay, WWF, provided great insight and guidance as moderators.
- Experts from marine wildlife protection fields spoke on improved enforcement, innovative ways to combat poaching, coral rejuvenation, and shared case studies.
- Two work group activities, led by WWF's Monique Sumampouw, gathered wildlife protection and enforcement related needs in the morning session which were then formulated into solution-based strategies during the afternoon session.



Gavin Jolis from World Wildlife Fund - Malaysia engaging the audience



Great conversation during the coffee breaks



Workgroup session formulating wildlife protection and enforcement strategies



Post Day 3 facilitator meeting to discuss the day's workgroups



Project Template: *Melekeok Rainwater Harvesting*

- **Project Location:** Melekeok, Republic of Palau
- **Problem Statement:** El Nino has caused significant drought throughout the country, limiting the availability of freshwater for basic necessities.
- **Project Description:**
 - **Partners:** US Army Corps of Engineers, US Army Civil Affairs Team, and the Palau Ministry of Environment
 - **Scope:** To prepare a drought contingency plan using shared vision planning techniques.
 - **Magnitude:** District Level
- **Point(s) of Contact:** Mr. Belau Palau, belau.palau@palau.gov, +680 222-2222; **Secondary POC:** Ms. Delau Palau, delau.palau@palau.gov , +680 222-2233



OHASIS Form: Environmental Security Project - Low Tech Wastewater Treatment System (ID 34239)

HA BASIC INFO: 1. Project, Name, Summary

Project Name*		Type*	User Project Number
Environmental Security Project - Low Tech Wastewater Treatment System		Humanitarian Assistance	EXWC001
Country/COCOM*	Disaster Operation	Related Projects	
Sri Lanka - PACOM	none	none	
Executive Summary*			
Demonstrate a small scale low tech low cost wastewater treatment system to improve sanitation in villages and small communities. As a deliverable the project will include standard operating procedures and design guidance that will allow the host nation to perform wide scale technology transfer throughout the nation. The system will be constructed of local materials and by local labor. The proper treatment of wastewater will lead to reductions in source water contamination and related disease.			
Sector*	Lead Sub-sector*	Plan Type*	Fiscal Year for Funding*
Basic Infrastructure	Drainage/Sewage	Out of cycle - Project Not in CCMD Budget Request for 2018	2018
Other relevant sub-sectors	Out of Cycle Justification		
• Drainage/Sewage • Global Health • Latrines • Resource Management - energy, water, waste	[required for out of cycle projects]		



OHASIS Form: Environmental Security Project - Low Tech Wastewater Treatment System (ID 34239) – cont.

HA BASIC INFO: 2. Project Contact

Project Created By

Shawn Christensen, (7204545728) flyhishawnpc@yahoo.com

Primary Component/Implementing Organization

NAVFAC

Points of Contacts

Primary: **Ken Kaempffe** (Supv Environmental Engineer, NAVFAC) Phone: 805-982-4893 ken.kaempffe@navy.mil

Primary: **Go Ryan** (Program Manager, NAVFAC) Phone: 1-808-472-1397 ryan.go@navy.mil

Secondary: **Shawn Christensen** (Joint Engineer, US PACIFIC COMMAND) Phone: 8084779420

shawn.christensen@pacom.mil

Secondary: **Chris Sholes** (Program Manager, US PACIFIC COMMAND) Phone: 8084779420 christopher.sholes@navy.mil

HA BASIC INFO: 3. Date Range, Cost

Project Time Frame*	Time-Sensitive Events
10/1/2017 to 9/30/2018	
Estimated Cost*	Basis for Cost Estimate*
\$225,500	Detailed cost estimate developed in MS Excel, will attach to project if possible: Labor: Two EXWC Environmental Engineers x 1410 hrs TOTAL x \$100 /hr = \$141,000 Construction Materials (for two sites): \$30,000 (estimated on high side due to uncertainty) Printing and shipping: \$1,500 Travel, three trips: \$53,050 TASKS: Task 1 - Project Planning, Preparation and Management: 30 hrs Task 2 - Preliminary System Engineering and Site Identification (for two sites), 120 hrs Task 3 - TRAVEL: (2 EXWC and PACOMEV Head) Pre-construction visit to collect site specific data and investigate and validate local construction techniques and materials (for two sites) - 200 hrs Task 4 - Develop Design for Selected Sites Including Plans and Specifications - 220 hrs Task 5 - TRAVEL (2 EXWC and PACOMEV Head): Construction site visit - Oversee work of host nation military at two sites - 300 hrs Task 6 - Develop guidance to transition technology for wide-spread use in host nation - 360 hrs Task 7 - TRAVEL (one person) - Follow-up site visit to evaluate performance after 6 months (two sites) - 140 hrs Task 8 - Final After Action Report - 40 hrs

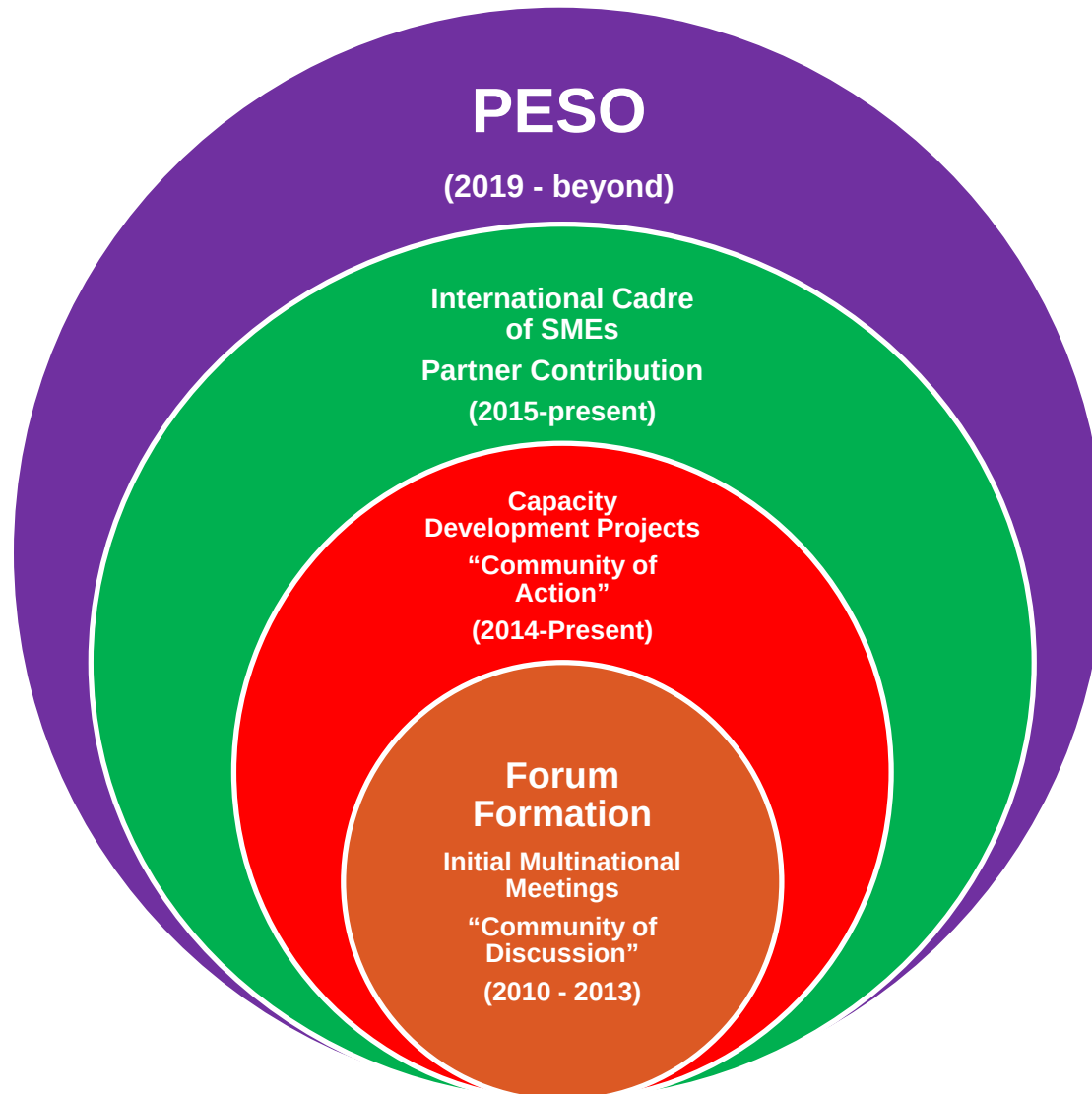


OHASIS Coordination Portal

Task	Assigned To	Reqd	Response	Responded By	Role
LDCR Ng, Respectfully request you review and coordinate on this HA project on behalf of the Country Team. v/r MAJ Towle <i>created by: James Towle on 5/15/2018</i> <i>response requested by: 6/5/2018</i>	Wendy Ng ODC Chief - ODC Sri Lanka & Maldives [Team]	Yes			
J5 staff officers, please provide review on this HA/HMA project. v/r MAJ Towle <i>created by: James Towle on 5/15/2018</i> <i>response requested by: 5/25/2018</i>	J5 Desk Officers	Yes			
Sir, Respectfully request review on behalf of J44 engineers. <i>created by: Ryan Go on 2/16/2018</i> <i>response requested by: 3/2/2018</i>	Bradley VanSlyke ERC Program Manager - US PACIFIC COMMAND [Field]	Yes	Concur: Yes Date: 2/21/2018	Bradley VanSlyke ERC Program Manager - US PACIFIC COMMAND [Field]	
Ms Tansey, Respectfully request you review and coordinate on this HA project for Sri Lanka or Maldives. vr Tiger <i>created by: Tiger Hession on 7/8/2017</i> <i>response requested by: 7/29/2017</i>	Alena Tansey USAID [Field]	Yes	Please connect with Nihani in Colombo, as USAID has another waste treatment project. Concur: Yes Date: 1/24/2018	Alena Tansey USAID [Field]	USAID
Alena, Respectfully request review. Also I spoken to Ebony T. about this project and would like to discuss locations with you. <i>created by: Ryan Go on 5/24/2017</i> <i>response requested by: 6/30/2017</i>	Alena Tansey USAID [Field]	Yes	Please connect with Nihani in Colombo, as USAID has another waste treatment project. Concur: Yes Date: 1/24/2018	Alena Tansey USAID [Field]	USAID
Office of General Counsel, Respectfully request legal				John Hafemann	



Transition to an Organization





QUESTIONS?



Environmental Security Program

Chris Sholes

christopher.sholes@pacom.mil

808-477-9420



BACKUP SLIDES





Why is Environmental Security Important for Military Operations?

- Achieve operational objectives while minimizing the impact
- Shape a positive image both internationally and domestically
- **Failure** to consider the environmental impacts may adversely affect the operation
 - Delay operation start
 - Limited future use of exercise or HN areas
 - Adverse public opinion





Groundwater Modeling Training

Phase 1 Storyboard (30 Mar-3 April 2015)

Purpose: To deliver a groundwater modeling and monitoring training workshop on groundwater principles; aquifer characterization; and data acquisition needed to design, construct, and use groundwater models with case study application for the Tuul River Basin in Mongolia and to present the interim model products to decision-makers for consideration in future water-related planning activities.

Highlights

1. Delivered training on groundwater principles and modeling to 37 professional hydrogeologists and hydrologists.
2. Conducted exercises with USGS-supported groundwater modeling software--Model Muse and MODFLOW, including data import from GIS.
3. Provided preliminary Tuul River Basin MODFLOW model framework and development plan.

Way Forward

- Refine the Tuul River Basin MODFLOW groundwater model and integrate results into the Tuul River Basin IWRM/SVP decision model for water security planning.
- Next workshop in September 2015 on Tuul River Basin model refinement and use in decision-making.
- MEGDT requested subsequent training on the application of groundwater modeling in the Gobi Region, including use of geophysics for estimating aquifer storage change.



37 participants learn groundwater modeling using MODFLOW software



Dr. Batsuk receives a Modis satellite image of Mongolia



Ms. Carter, USGS, presents on groundwater modeling techniques



Strengthened cooperation with MEGDT, FWI, USGS, and USACE

Groundwater Modeling Training

Phase 2 Storyboard (15-17 Sept 2015)



Purpose: To deliver more advanced groundwater modeling and monitoring training workshop on groundwater principles; aquifer characterization; and data acquisition needed to design, construct, and use groundwater models with case study application for the Tuul River Basin in Mongolia and to present the interim model products to decision-makers for consideration in future water-related planning activities.

Highlights

- Over 20 participants trained in use of MODFLOW to build a transient groundwater model
- Decision-maker session with Ministry of Environment, Green Development, and Tourism (MEGDT) on groundwater modeling and artificial recharge options
- Site visit to upper Tuul River watershed to examine the monitoring equipment and geophysical characteristics
- Preliminary analysis of varying withdrawal and recharge scenarios to enhance water security options

Way Forward

- Continue development of Tuul River Basin MODFLOW model to deliver calibrated model for use in decision-making for water security
- Begin groundwater model for the Gobi region
- Work with an interagency model development team from MEGDT, RBAs, university professors, and FWI
- Request from MEGDT for USACE to assist with technical review of feasibility studies for Tuul Water Complex (series of 3 dams proposed)



Mr. Anderson presenting on groundwater modeling



Discussing groundwater modeling equipment with Dr. Dorjsuren's team



Examining aquifer materials from a recently drilled observation well



Dr. Dorjsuren, Ms. Bulgan, Dr. Haynes, Mr. Davis, and Mr. Anderson

Waste Management Centers, Maldives

Executive Summary

The Ministry of Environment and Energy, have an agenda to establish waste management solutions throughout the Maldives. These projects at various islands will provide a composting pad, area of hazard waste storage, and segregated waste. The challenges in waste management are due to isolation, logistical hurdles, limited land and water security threats. The results of which negatively affect the human health and ecosystems.

Project Details

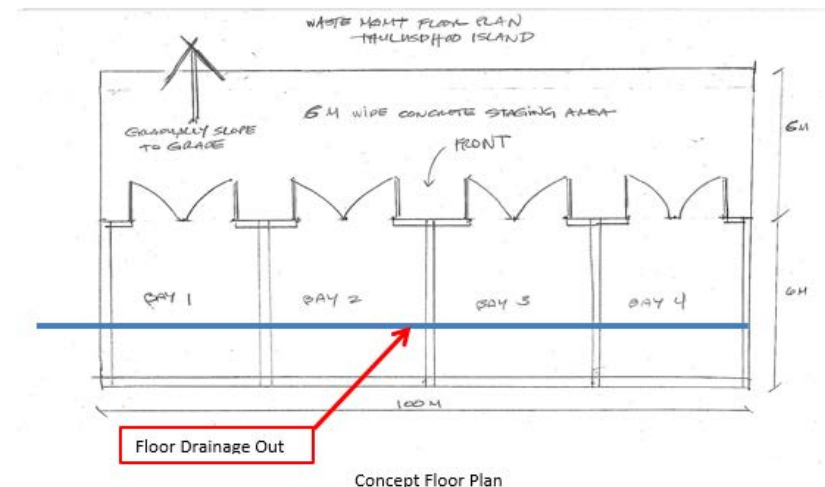
Status: Project Concept is currently being developed as funding is expected and being pursued from USPACOM.

Scope: Minimal four (4) bays for segregation of plastic, fiber, metals & paper plus concrete staging area. Project size is scalable to meet requirement.

Location: Thulusdhoo Island, Kaafu Atoll, Maldives



Showing example structure of one (1) bay for consideration. Center should include minimal four (4) bays for plastic, fiber, metals & paper. Approximate size 550 SM with adjoining 550SM staging pad.





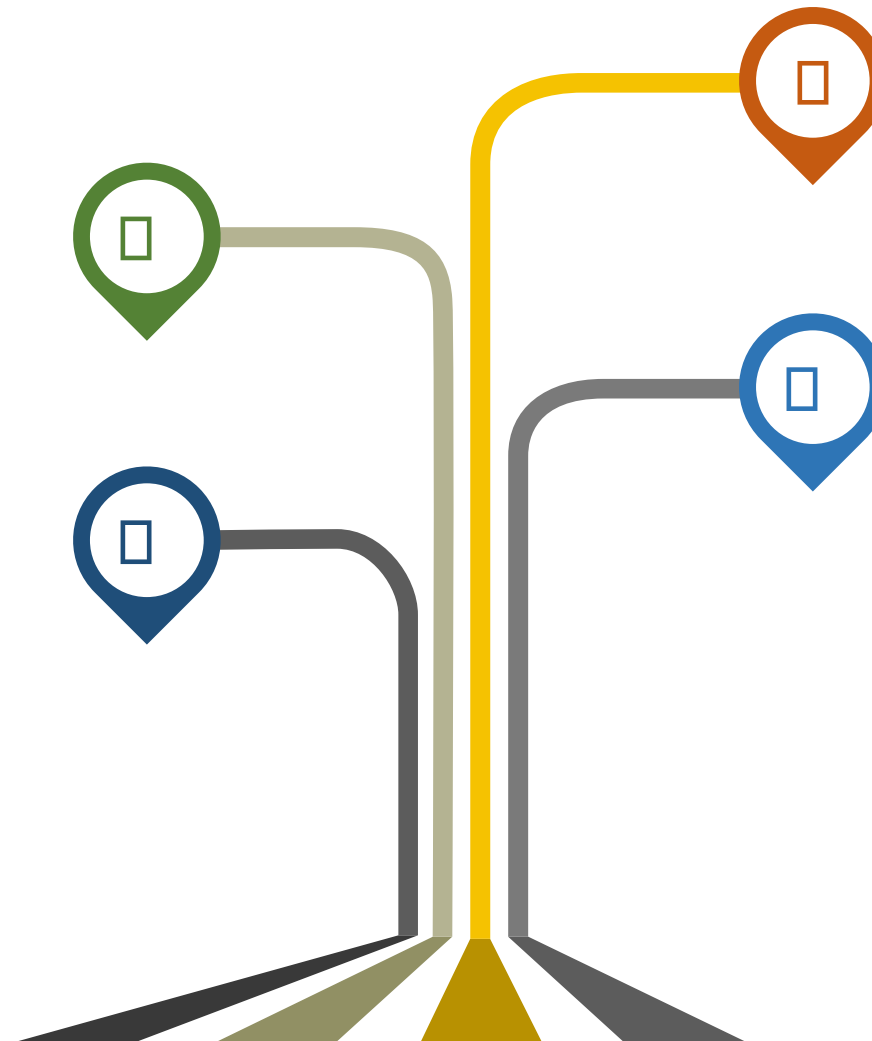
Organization Themes

Network

The PESO advances environmental security partnerships, networks, and mentorship opportunities throughout the Indo-Pacific Region.

Education

Through education and capacity development, the PESO advances capabilities to strengthen environmental security measures.



Mitigation

Through environmental security projects, the PESO mitigates threats and vulnerabilities.

Policy

By helping shape regional environmental security policy, the PESO identifies common terminology, standards, and procedures to allow members to collaborate more efficiently.

Waste Management Treatment, Sri Lanka

Executive Summary

Partner with a Sri Lankan Organization to demonstrate a small scale low tech low cost wastewater treatment system to improve sanitation in villages and rural areas. Project will include standard operating procedures and design guidance that will allow the host nation to perform wide scale technology transfer throughout the nation. Intention is for the system to be constructed with local materials and by the Partner Nation (PN) with design guidance, material procurement and construction oversight by the USG.

Project Details

Status: Project Concept is currently being developed as funding is expected and being pursued from USPACOM.

Location(s): The host nation should propose sites which will be evaluated by US Navy engineers based on technical performance factors. Final site determinations will be made in concurrence with the Partner Nation.

Intent: PN will construct the systems. PN staff will be provided with detailed plans and specifications and guidance that will allow them to construct similar systems through the nation.

CONCEPT WASTE TREATMENT SCHEMATIC

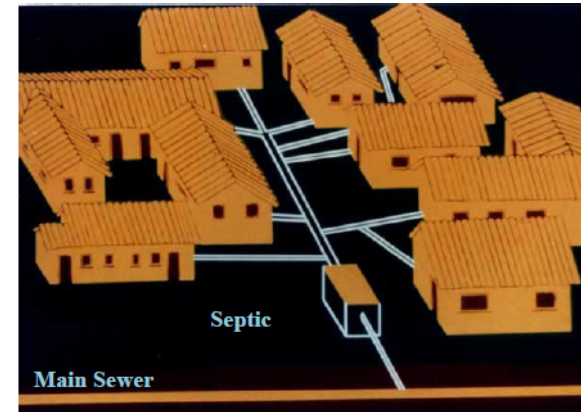


Figure 1: Sample of small bore system in a community².

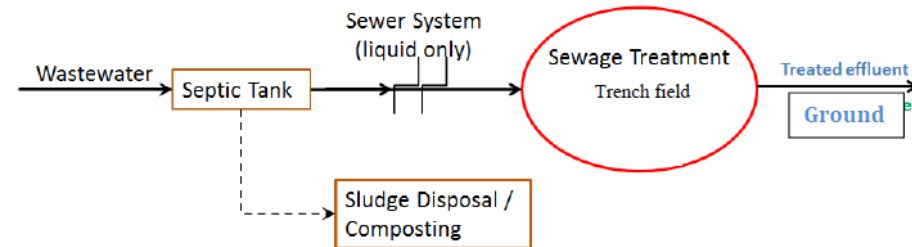


Figure 2: Schematic of small bore system.



Visible Infrared Imaging Radiometer Suite (VIIRS)



Visible Infrared Imaging Radiometer Suite - VIIRS

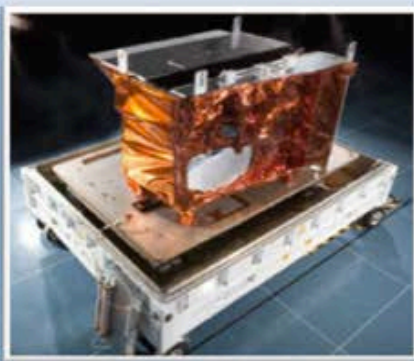
VIIRS is a no-cost boat detection system that utilizes low light imaging to detect illegal, unreported, and unregulated (IUU) fishing boats that appear lit at night.

The National Oceanic and Atmospheric Administration (NOAA) is offering VIIRS training to fishing agencies and maritime/coastal law enforcement agencies in Indo-Asia-Pacific countries.

NOAA successfully implemented two-day VIIRS training workshops in Indonesia (2015) and the Philippines (2016).

At the 2016 Pacific Environmental Security Forum (PESF), several Oceania countries expressed interest in receiving VIIRS training, including Fiji, Vanuatu, Nauru, Timor Leste, and Papua New Guinea.

NOAA compiled boat detection data summaries for Oceania; higher boat detection rates may indicate more significant issues with illegal fishing.



Nightly low-light imagery data collected via satellite



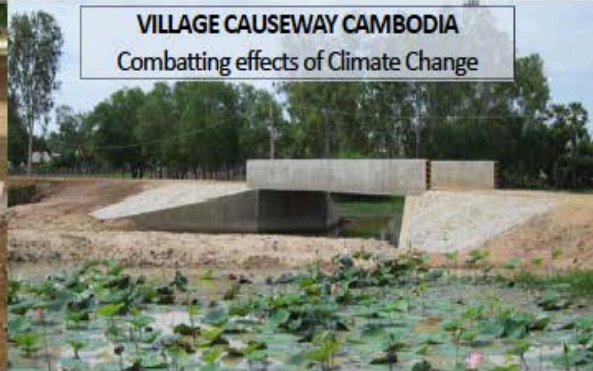
Highly lit fishing boats detected by VIIRS software



Graphical and tabular boat detection data can identify illegal fishing activities

Naval Facilities Engineering Command (NAVFAC) Pacific – Theater Engagement

VILLAGE CAUSEWAY CAMBODIA
Combating effects of Climate Change



FALEOLO DISTRICT HOSPITAL
New construction in Samoa



COMMUNITY WATER WELL
Impactful, affordable
SOLAR WATER TANK

NAVFAC PACIFIC - Theater Engagement

Who we are: Department of Defense engineering service provider for PACOM mission areas and US Navy / Marine Corps infrastructure.

What we do: Provide full suite of engineering and construction services and capabilities throughout the Pacific.

Why we're here: Support Indo-Asia-Pacific stability through engineering, development, infrastructure, and construction projects.

UNIVERSITY HEALTH LABORATORY – EAST TIMOR
Community and health advancement



PHU YEN HEALTH CLINIC
Health projects in Vietnam





Naval Facilities Engineering Command Pacific

Subject Matter Expertise Exchanges (SMEE)



BRINGING INDUSTRY PROFESSIONALS TO YOU

In addition to construction and engineering services, NAVFAC invests in engineering expertise to present topics of infrastructure readiness to host nations. This is accomplished with technical experts from partnered universities and within the NAVFAC enterprise to serve the mission of strengthening international relationships and building a culture of learning and action. Our network includes:

- University of Hawaii at Manoa
- California Polytechnic Institute
- National Disaster Preparedness Training Center (NDPTC) in Hawaii
- Navy Expeditionary Warfare Center
- And an array of NAVFAC & US Army Corps professionals...



Dr. Karl Kim – Director of the National Disaster Preparedness Training Center (NDPTC) speaking in Padang, Indonesia Speaking on Disaster Planning.

TOPICS OF EXPERTISE

Engineering and Design

- Water and Waste Water Resources
- Sustainable Infrastructure / Urban Planning
- Transportation / Pedestrian Engineering
- Safety Culture Implementation
- Utility Development / Population Planning

Humanitarian Assistance and Disaster Relief (HADR)

- Natural Disaster Planning and Resilience
- Hurricane / Tsunami Post Disaster Response
- Disaster Recovery Planning
- Oil Spill Response
- Environmental Security / Cleanup

Climate Change (CC)

- Coastal Protection Erosion Control, SLR
- CC Adaptability Projects
- Vulnerability / Resilience Assessments
- Impacts of CC and Weather on Transportation

Let us know your needs and we can source speakers, help identify funding, and bring you the experts!!!

WHAT ARE YOUR NEEDS?

Q: Does your host nation want to improve vehicle and pedestrian safety? Better Road Design?

Q: Develop a solid waste and recycling program?

Q: Urban planning in preparation for the effects of climate change?

NAVFAC brings tailored engineering expertise and provides subject matter expertise exchanges (SMEE) in various technical/engineering fields.



SMEE group photo, Malaysia University of Engineering, Kuantan – Pacific Partnership 2016. Dr. Prevedouros and Dr. Francis from University of Hawaii.