OCRM State and Territory Capacity Building and Planning Assistance for the Management of Land-based Sources of Pollution

Project Summaries – Nov 2006

The goal of this project is to provide specialized assistance to coastal managers and other stakeholders to enhance the effectiveness of their local planning and management capability to address a wide range of land-based pollution sources. A key element of this approach involves the provision of technical training and assistance and concept design development to help jurisdictions acquire necessary technical knowledge and to establish a programmatic framework for addressing and controlling land-based sources of pollution using a watershed approach.

Guam and CNMI (Bill Hashim Projects)

One element of this project focused on coordinating watershed management initiatives and provided planning technical assistance to CNMI and Guam. A watershed specialist was hired to work with Guam and CNMI to assist local agencies in updating and improving their coastal Non-point source plans, existing watershed management efforts and Land-based pollution projects. The consultant provided additional training to local staff on watershed planning and project prioritization and community outreach.

In both Guam and CNMI, initial project work consisted of extensive document review and numerous field and local agency visits. This upfront work was critical to understanding and appreciating local issues and agency roles and responsibilities in coastal non point source pollution control and watershed protection.

The main products from the consultant's work in Guam were a revised and updated Coastal Non-point Control Program (CNPCP) document (EPA section 6217) and a summary of responses to NOAA and EPA's conditions for the approval of Guam's CNPCP was prepared as well. The consultant also recommended revising Guam's watershed designations from the previous scale that divided the island into 21 subwatersheds using 14 digit HUC's (the unit used by Guam NRCS as a cataloging unit) to focus future watershed planning efforts on 9 watersheds. This change was based on hydrology and land cover. A watershed planning scope of work was also created as part of the updated CNPCP to serve as a template for the development of watershed plans for the island's 9 watersheds and includes a schedule for planning implementation. In addition, a day long workshop was held with Guam's nonpoint / watershed workgroup to present an overview of Federal nonpoint requirements, emphasizing the need and benefits of developing a true 5/15 year nonpoint plan. The workshop also provided a training module on the concept of comprehensive watershed management planning concept and presented the proposed watershed planning scope of work as well.

In CNMI, the consultant assisted the CNMI CRM and DEQ in streamlining and simplifying their 5/15 year nonpoint plan update. Additionally, a two day workshop was held with CNMI's watershed committee to provide information on EPA and NOAA's joint nonpoint requirements (Sections 319 and 6217), including requirements to address multi-agency environmental milestones and assigning associated outcomes. An overview of the watershed planning process using a watershed management committee was presented and CNMI watershed group formulated an implementable goal statement for their watershed initiative during the workshop as well.

Consultant's Recommendations:

1. Continued assistance in understanding and applying the most current requirements in Federal environmental programs – In remote island areas there seems to be a lack of knowledge of current Federal requirements and expectations – perhaps due to no direct, easy access to Federal partners. The need is not only in not having the most current information and hand, but advice and recommendations on the application of the requirements.

2. Communicating / providing the latest concepts, ideas and techniques in the environmental field to local island staff – The distant location of the islands results in less involvement and interaction with peer groups and mainland working committees which leads to a lack of working knowledge on the newest techniques and ideas for application in the field.

3. Local island staff mentoring in the following concepts.
   a) Basic planning concepts
   b) Watershed planning – including the formation of effective committees (technical advisory and watershed management) and decision making
   c) Group facilitation
   d) Environmental problem solving – developing goals, programs, objectives and actions
   e) Developing and tracking implementation strategies and outcomes
   f) Linking monitoring information to land use problems – determining relative contributions from land-based sources of pollution to water quality impairments

4. CNMI - Refer to Table of actions in Chapter 4 of updated 5/15 year NPS strategy.

Hawaii, Puerto Rico and USVI (CWP Projects)

The Center for Watershed Protection (the Center), a non-profit organization specializing in watershed management planning and urban stormwater management, was contracted to provide customized training and technical assistance services in cooperation with the local CZMP and environmental protection agencies in Hawaii, Puerto Rico, and the U.S. Virgin Islands.

Hawaii

In Hawaii, the Center staff worked with Hawaii's Land Based Sources of Pollution Local Action Strategy workgroup (HI LBSPLAS) to select community watershed groups in Maui County and Molokai for the focus of this project. Both municipalities have been working closely with the Hawaii's Land Based Sources of Pollution Local Action Strategy workgroup (HI LBSPLAS) to identify priority issues affecting their watersheds and expressed a need for technical assistance in improving local management effectiveness.

Initial project work consisted of extensive review and evaluation of various stormwater, wastewater, and erosion and sediment control regulations and plans as well as current management practices for the Molokai and Maui County locations. Several days were spent at each location conducting site visits and meetings with local agency staff and watershed association representatives prior to holding watershed workshops for local agency staff, community watershed groups.

In Molokai, the tailored watershed workshop provided an overview of eight watershed protection tools then presented erosion and sediment control practice adaptation modules that can be implemented to address the specific needs of island environments. The watershed planning sessions included simple planning methods to forecast the impacts of future changes in watershed land cover on pollutants to coral reef resources, and presented a series of rapid methods to evaluate impacts and pollution sources to use in selecting appropriate stormwater retrofit, stream repair, reforestation and sediment control projects in small watersheds. The final workshop discussion focused on next steps to reduce land-based sources of pollution on Molokai, and develop strategies to implement recommendations of the recent watershed plan.

In Maui County, the theme of the workshop was, "Protecting Island Resources by Enhancing Local Stormwater and Erosion Control Practices". The workshop began with an update of current erosion and stormwater problems on Maui. The session was followed by presentations of customized design guidelines for innovative and simple stormwater practices suited for small island development projects and erosion control practices adapted specifically to work in island environments to control erosion from dirt roads on steep slopes—one of the major sources of sediment harming coral reefs today. The workshop concluded with a session on pollution source control practices including a modified assessment methodology to identify the most serious and preventable pollution

sources, simple pollution prevention practices that can reduce stormwater pollution from island neighborhoods and businesses, and resources on how to develop effective education and enforcement programs to change polluting behaviors.

This workshop prompted Maui County to initiate changes to several ordinances.

Consultant's Recommendations / Next Steps:

Molokai Watershed Recommendations

The link between sediment and the quality of coral reefs is quite strong on Molokai. The following recommendations are suggested to reduce sediment inputs to the reefs on a watershed basis.

The Molokai partnership has advanced the watershed concept, increased watershed and water quality awareness, and recruited active stakeholders to the process. Many of the ingredients exist to go from planning to implementation, and sharply reduce sediment inputs. The stage is set for local stakeholders to develop an early action plan consisting of the ideas developed at the workshop. It is recommended that the partnership develop a grant with specific pilot implementation projects in one or more of the following areas.

Upland reforestation and establishment of native vegetation

- Expand oasis fencing experiments
- Address fire management and ungulate control
- Draft simple guidelines on planting methods and species (and get permitting authorities to approve)
- Establish native tree nursery on the island to provide stock
- Have MLSWCD take lead in coordinating public/private efforts
- Experiment with riparian fence enclosures/piligrass plugs in hillslopes

Reduce Sediment Inputs from Dirt Roads

- Develop standard road design specs to minimize erosion as part of Maui County ESC permit.

Design a prototype sediment basin in target subwatershed

Reduce Erosion from New Development Sites

- Designate a Maui County ESC inspector to regularly deal with construction sites on Molokai and provide technical assistance to private landowners (especially on dirt road drainage)

Maui Recommendations

- Generally improve the ESC program for Maui. The following specific recommendations were submitted to Maui County staff.
  - **Construction Phasing**. Most sites were being cleared property line to property line, with little evidence of phasing or clearly defined limits of disturbance. Several sites appeared to be open for many months without major activity. Suggest dropping the minimum threshold for construction phasing down to 10 acres (from current 15), and/or providing stricter stabilization requirements for these sites (require seeding and irrigation to get grass cover).

  - **Temporary stabilization** will always be problematic in Maui given high ET rates and poor subsoil conditions. Three options should be pursued:

  - Combine crimping with spraying of wood fiber mulch—which is most common practice – but many sites visited had only a very thin layer. It is worth developing an inspection benchmark as to the thickness of wood fiber mulch—and reapplication after two months after it breaks down.

  - Develop a pilot project to develop island-derived organic mulch from shredded coconuts, cane waste, palm and banana leaves and other green wastes. This material could be produced much cheaper than imported wood fiber mulch products, and provide a useful option to reuse these wastes. These materials should be applied together with small quantities of the current wood fiber much to create at least one-half inch thick cover over exposed soils. Consider applying for a grant with the state or EPA to try it out.. Such material may have other beneficial uses within bioretention areas for stormwater treatment.

  - Consider instituting requirement for seeding, soil amendments and temporary irrigation for specially designated exposed soils—for example, areas open at least two months within SMA—and consider dropping any watering requirements for dust control in these areas. At $2000 an acre, the cost to establish grass cover may act as a powerful incentive to close sites rapidly.

  - **Silt fences and dust fences** should be combined into a single unit on the lower downgradient portions of construction sites, so they can help reinforces each other and be more stable with respect to wind and runoff.

  - Coconut or other natural **erosion control fabrics** should be used on all cut or fill slopes greater than 15% as a standard plan requirement.

  - **Installation of stormwater practices in the construction sequence**. While curbs, gutters and storm drain pipes can be installed early in the construction process, they should daylight to a sediment basin or trap on the site that is sized with the same volume as the water quality requirements. The basin can be converted into a stormwater pond facility after the site has been stabilized. Installation of permanent stormwater practices such as bioretention and infiltration (and perforated pipes used for peak discharge control) should only occur after site construction is completed and the site is stabilized. In general, the proposed locations of infiltration and bioretention areas should be

considered outside of the limits of disturbance and fully protected from compaction and sedimentation throughout the entire construction process by silt fence or other means.

- **Develop a better set of benchmarks during inspections** to trigger maintenance and/or enforcement of erosion control practices. These might include quality of temporary stabilization, cleanout depths for sediment basins, silt fence repair, replacement of construction entrances, reapplication of wood fiber mulch, etc. Having clear triggers helps both inspectors and contractors know what and when practices have to be maintained or repaired, and provide a more defensible basis for any enforcement activity.

- **The limits of disturbance** should clearly be shown on plans as well as the means to exclude construction equipment. During the field surveys, there did not appear to be many site areas that were not cleared—stream buffers, steep slopes, wetlands, stormwater BMPs, native forest and other areas should always be protected.

- To take a watershed approach, it might be nice to tie ESC penalties to upland reforestation/revegetation efforts—it will always be tough to sell a stringent ESC control program when there are major non-urban sources of sediment in the watershed. Upland revegetation is a cost effective way to reduce these sources.

- Lastly, consider **a general permit** with a standard set of conditions for single lot construction. Single lots are a real inspection and permitting problem, but a general permit helps improve compliance and can be used to deal with enforcement issues at bad actor sites. More details of general permits for single lot construction are provided in the companion memo.

USVI

For the U.S. Virgin Islands project, the Center staff spent a considerable amount of time assess training and watershed management needs in the USVI through consultation with local staff from the VI DNR and UVI and extensive document review. A week-long on-site reconnaissance visit to the USVI was conducted (all three islands) during Feb 19-23, 2005 to coordinate w/ local DNR staff, and to see and learn about typical island watershed conditions, streams and storm water outfalls, existing ESC and stormwater practices, typical residential and commercial developments and construction sites, chronic erosion or drainage problems, existing restoration projects, etc.

Based on information gathered during site visits and local agency meetings, the general consensus was that the Center's expertise would be most beneficial to help the USVI local agencies create a formal island-wide stormwater management program and explore adaptations of common erosion control practices for island environments. All agreed that the CWP workshop should begin with a facilitated discussion of the various local agency roles and responsibilities in regards to: a) what regulations and programs are currently in place that relate to watershed protection and stormwater management, (2) who is the responsible agency, (3) what are existing challenges to implementation, and (4) what is future goal for stormwater management. The remainder of the workshop sessions would focus on challenges and options to address ESC in the USVI and how best to structure a stormwater management program.

A three day workshop was held on August 14-16, 2006 in St. Croix, U.S. Virgin Islands to provide capacity building support for addressing land-based pollution sources. The Center for Watershed Protection (CWP) conducted these workshops in conjunction with the U.S. Virgin Islands Department of Planning and Natural Resources (DPNR). The workshop focused on building effective erosion and sediment control (ESC) and stormwater programs in the USVI, adapting ESC and stormwater practices to island environments, and reviewing and evaluating USVI regulatory and programmatic capacity to apply priority watershed protection tools.

Workshop participants included primarily DPNR staff from the Division of Coastal Zone Management and Department of Environmental Protection, as well as representatives from Building and Permits, CCZP, and Department of Fish and Wildlife. Non-DPNR staff in attendance included representatives from SHPO, NOAA and USDA. Day 1 of the workshop introduced a variety of regulatory and programmatic tools for watershed protection, and discussed the feasibility of applying these tools in the USVI. The first half of Day 2 focused on improving the current erosion and sediment control program and identified key practices to be installed on construction sites and dirt roads. Strategies for implementing a post-construction stormwater program and adapting structural practices to the USVI were discussed in the afternoon. Effective watershed planning and better site design techniques for new island development were covered on Day 3. The group worked through a ranking exercise to develop criteria for prioritizing watersheds for future planning efforts, and critiqued and redesigned two local development plans.

A comprehensive workshop summary was prepared and distributed to workshop participants. The summary report includes a list of findings and recommendations to strengthen effectiveness of existing programs and move DPNR forward in watershed management efforts. Additional detail on approaches to managing stormwater (during construction and post- construction phases) and watershed planning based on site visits by CWP and consultation with local staff was provided to workshop participants in the PowerPoint presentations prepared for the workshop.

Consultant's Recommendations / Next Steps:

Recommendations for DPNR to improve implementation of erosion and sediment control, stormwater, and overall watershed protection and planning were outlined in detail in the workshop summary report. In summary, immediate next steps may include:

- Include the site inspection process and enforcement mechanisms for ESC and stormwater management as part of current effort to map out the departmental permitting process for both Tier 1 and Tier 2 developments. Use information derived from this workshop as a basis for that flowchart.
- DPNR staff and managers need to actively support adoption of comprehensive plan by identifying benefits of planning for water resource management, predicting departmental staffing and budgetary needs, and empowering CCZP. Use the upcoming Coral Reef Task Force meeting as one of many opportunities to publicly demonstrate the link between land use planning, watershed management and coral reef protection. This effort can also be assisted by conducting a rudimentary build out analysis by CCZP, which would help illustrate the need for comprehensive planning.
- If additional permit requirements or enforcement authority for erosion and sediment control at construction sites cannot be obtained in the short-term, at least re-establish ESC training/education program for reviewers, inspectors, enforcement officers, and operators. This would help to ensure that plan reviewers are recommending more adequate ESC controls, inspectors are on the same page in evaluating site conditions, and operators are aware of their responsibilities. Test the waters to see if a private certification program is feasible which would shift a large part of the inspection burden back onto the development community.
- Finalize and adopt new stormwater ordinance, and update stormwater design manual with island specific design adaptations.
- DPNR inter-agency watershed working group needs to meet and begin to answer the questions posed in Section 4.0. This group may want to begin compiling and summarizing watershed data, identify watershed priorities, and complete a detailed 8 tools audit to identify tools available (as well as gaps) for watershed management. A family-tree outlining departments, divisions, and other agency roles relevant to watershed protection would be useful, particularly for VITEMA, Waste Management and Environmental Health, Enforcement, and Public Works who were missing from the workshop discussion.

- Consider completing a pilot assessment and planning project in one or two watersheds as a means of informing DPNR's strategic watershed planning process. In 3-6 months, field assessments, mapping analyses, and preliminary public involvement could be completed. This effort could be used to test potential for integrating APC, WRAS, TMDL processes as well as inter-agency implementation.
- Continue to increase public and elected official education efforts on water resource protection topics through media campaigns, utilizing watershed/community groups as education providers, site visits, and demonstration projects.

Puerto Rico

Training and watershed management needs in the Puerto Rico were also assessed through consultation with local staff from the Puerto Rico DNER and the review of numerous relevant documents. A three day on-site reconnaissance visit to Puerto Rico was conducted on January 30-February 1, 2006. Two days were spent touring the island looking at and learning about typical island watershed conditions, typical residential and commercial developments and construction sites, existing ESC and stormwater practices, implementation of BMP's, chronic erosion or drainage problems and existing restoration projects.

An important meeting was also held with the Secretary of DNER and PR's Secretary Agriculture along with local staff in several agencies that are involved with sediment and erosion control and stormwater management regulations in Puerto Rico to discuss improving interagency cooperation and coordination on watershed initiatives. Meeting participants included representatives from DNER, PR Environmental Quality Board, ACOE, and USEPA. During this meeting, the following points of agreement were reached:

- Sediment and Erosion Control (SEC) implementation and compliance with rules and regulations is a top priority for all agencies
- Incentives in the permit process (length of time to obtain permit, complexity) would probably be of interest to developers, and could potentially be used to accomplish E&S implementation.
- It's important to put the message of better environmental protection in economic and business terms to "speak the language" of the developers.
- It may be good to begin better E&S implementation at a demonstration (watershed) scale, and see what tools can be translated to a higher scale and other watersheds /throughout PR.
- Local officials (mayors) and key community leaders are an important audience to educate because they can start to implement measures at the local level.
- Better agency coordination and the development of a unified message is an important early step.

Based on information gathered during site visits and local agency meetings the Center conducted 2 separate workshops in Puerto Rico during the week of June 27-29, 2006 to assist with the development of a long-term inter-agency strategy and action plan for addressing ESC implementation and compliance in a pilot watershed.

Workshop 1 – Interagency ESC Strategy Planning (1 day)
The goal of the first workshop, held on June 27, 2006 at the La Plata Reservoir, was to facilitate a process among local agencies to improve coordination and develop some common goals for ensuring implementation and compliance with existing erosion control rules and regulations. Workshop participants included numerous Commonwealth and Federal agencies with responsibilities related to addressing land-based sources of

pollution, including the Puerto Rico DNER, EQB, Planning Board, and Aquaducts Authority, and the U.S. EPA, Army Corps of Engineers, NOAA and NRCS. The outcome of the workshop was an initial outline for long-term inter-agency strategy and recommendations for a more coordinated approach to addressing ESC implementation and compliance in Puerto Rico.

Workshop 2 – ESC Implementation Pilot Project (2 days)

The second workshop took place on June 28-29 and brought together staff from nine municipalities in the Caguas-Loiza watershed as well as representatives from homebuilders associations, local design consultants, and contractors. The goal of this workshop was to initiate a pilot project to identify and plan for the implementation of select erosion and sediment control practices in the watershed. The first day of the workshop consisted of a series of presentations focusing on understanding key erosion control implementation issues in Puerto Rico and discussions on priority practices to improve erosion and sedimentation control in PR. A half day field trip was held on the second day of the workshop followed by breakout group discussions to develop specific action strategies for ESC implementation and compliance in Caguas-Loiza. A small "Implementation Team" was established to continue working towards actual on-the-ground actions for the select ESC implementation and compliance measures.

Recommendations for Follow-Up and Next Steps

- Work with Caguas on model ordinance for construction and post-construction. Use this as model for other municipalities in Caguas/Rio Grande Watershed.
- Develop fact sheet(s) for use by EQB, DNER, municipalities to promote certain implementation tools – performance bonds, etc.
- Develop (and deliver?) inspector training course
- Develop conservation certification training/materials
- Work with EQB & NRCS to develop some CAD ready details of specifications in Handbook that could easily be transferred onto plan sheets, so that designers and reviewers have common specs.