

VI NPS Update

Nonpoint Source Pollution Committee Newsletter

Vol. 2, No. 1

December 1998

SUCCESSFUL EROSION CONTROL - CARET BAY VILLAS

A fourteen-unit condominium project on 4¾ acres of rocky, steeply sloping land, the Caret Bay Villas project proved a challenge to engineers and contractors. Project engineers from William F. McComb Engineering, Inc. met that challenge by working continuously with DPNR and UVI Cooperative Extension Service (CES) and Eastern Caribbean Center (ECC) to design and install an effective erosion and sediment control plan, along with an extensive monitoring program (see following article).

Caret Bay Villas is located at the bottom of West Caret Bay Road in St. Thomas. The land is steep (40 - 50% slopes) and soils are predominantly Dorothea Series; rocky and overlain with a layer of dark brown clay loam. The parcel lies at the top of a steep 100' cliff that drops to the shoreline. Construction began over 15 months ago, and will be completed by February 1999.

In preparing the CZM Application for the project, McComb designed an extensive erosion and sediment control plan to guide construction from the beginning of clearing through final landscaping. He cited three primary reasons for developing a thorough plan:

- * The site was steep and they wanted to protect the nearby marine environment (the condos special feature);
- * CZM requires a comprehensive erosion and sediment control plan for a permit; and
- * It would not benefit the clients for the project to be shut down or fined for erosion or sedimentation problems.

Before earth-work began, a **sediment control (silt) fence** was installed immediately above the cliff's edge and along the entire western portion of the site. The fence was built using silt fabric laid against 6"x6" wire mesh, anchored with boulders, and fastened to metal fence poles spaced between 3 and 10 feet apart. ***This is the only method of***

installing silt fencing that can successfully control sediment on steep construction sites, states Julie Wright, UVI-CES Natural Resources Specialist. Road excavation, the first **phase** of construction, did not begin until all silt fencing was installed below the work area.



Wire mesh reinforced silt fence with steel posts installed prior to clearing along the downhill side of Caret Bay Villas site.

The building footprints were **hand cleared** prior to excavation, leaving low (1') vegetative growth in place. Wherever possible, cleared brush was placed at the base of road cuts as an additional silt barrier. The use of heavy equipment for excavation was limited to building foundation areas, especially on down hill slopes of buildings. The building **footprints** were cleared in phases just before foundation work began. Throughout the entire earthwork period, which extended over ten months, a two to four-man crew hand cleared sites and **maintained** silt fencing daily.

Additional temporary and permanent erosion and sediment control measures installed include:

- Two **concrete oil separator/sediment basins** to capture runoff (as much as practical) built at the low end of the two roads;
- Rock retaining walls** built on road cut-slopes above the built-out area within the first six months;
- Straw erosion control matting** used in drainage ditches and areas where earthwork was complete; and
- Gabions** installed below another sediment basin to stabilize the existing cliff edge.

TABLE OF CONTENTS

Successful Erosion Control Caret Bay Villas	1
Monitoring Soil Loss from Caret Bay Villas	2
Erosion Control Successes on the Home Front	2
New Salt Pond Video Available Soon!	3
USDA's EQIP Program How Can It Help You?	3
Conservation Data Center to Update V.I. Land Use Inventory .	3
Nominations Sought for EPA Environmental Quality Awards .	3
Upcoming Activities & Events	4

Now that construction is completed, **retaining walls** are being built to stabilize cut-slopes around the buildings. The **landscaping** and final grading have begun - in some areas **straw erosion control matting** will be used to protect slopes until the landscaping plants can take hold. **Geo-Web®**, a heavy grade plastic web used to stabilize steep slopes, will be installed on a few of the steeper areas. This material allows fill to be placed in the openings so vegetation can be planted, while preventing erosion of the slope as runoff passes over and through it.

We believe that we have substantially reduced the potential for erosion and sedimentation and used the best practices available, said McComb. ***We worked closely with DPNR to resolve issues before they became a problem; the project speaks for itself in the lack of violations to date.*** Although the project has cost the developers a substantial amount of money, monitoring conducted by UVI-ECC has not reported any permit violations nor has the project been stopped or fined. Caret Bay Villas provides a good example of how effective erosion and sediment control can be practiced in the Virgin Islands. *Information on this project can be obtained from William McComb, (340) 774-8547.*

MONITORING SOIL LOSS FROM CARET BAY VILLAS

UVI-ECC's Environmental Research Unit is conducting a 4-year project to examine the effects of construction of Caret Bay Villas, St. Thomas, on the near-shore marine environment. Five permanent underwater transects were established on the coral reef below the construction site to represent a range of potential impact. Over the past 1½ years, student dive assistants from UVI's Marine Biology Program have conducted monthly surveys to document the abundance, condition and growth of corals and measure sedimentation and water quality on Caret Bay reef.

Strict erosion control measures implemented at the construction site (see above article) together with the dynamic sea conditions at Caret Bay have left the reef largely un-impacted from sedimentation. However, unusually heavy rainfall (more than 6 in 48 hrs) during the fall of 1997 resulted in large amounts of sediment entering the coastal waters. Based on the distribution of fine sediments (less than 0.075 mm) collected in sediment traps, the majority of clay and silt eroded from the construction site flowed into the sea via the western gut. By photographing individual corals on a monthly basis UVI documented an increase in coral stress (white spots) in *Montastrea annularis*, an important reef building coral. Fortunately, because this storm was an isolated incident, most of the corals that lost pigment (color) recovered after several months. According to Dr. Rick Nemeth, principal investigator, ***This study provides further evidence that mitigation efforts, environmental assessment and monitoring are essential in promoting responsible development and maintaining healthy marine environments.*** Contact Dr. Nemeth, UVI-ECC, at (340) 693-1389 for project details.

EROSION CONTROL SUCCESSES ON THE HOME FRONT

In June 98, Jan called the UVI Cooperative Extension Service (CES) with a series of landscaping problems and requested assistance. Extension Agent Dale Morton visited her home to evaluate the condition of her property. When he arrived at the site, he was pleased to find the steep slopes densely planted with ground orchids (he told Jan that he had previously photographed the eroded slopes as an example of uncontrolled erosion). As a result, she no longer had any sediment in her driveway.

However, Jan did have a dangerous erosion problem around the footings of her rental unit's porch. This situation actually caused the porch to separate from the rest of the house. ***I advised her that the steep slope needed to be stabilized with at least one terrace built below the structure along the contour in order to prevent further soil loss around the footings,*** reports Morton. He recommended either a solid concrete retaining wall or a cement-reinforced stone wall be built, indicating a preference for a cement-reinforced, well-drained stone wall. Jan quickly took his advice and began installing a cemented stone wall within a month of Morton's initial visit. In a recent follow-up visit to photograph the completed wall, Jan praised Morton and CES for their wonderful help. Said Morton, ***She knew she absolutely needed to do something about the eroding footing and our recommendations were very timely.***

CES client, Anna, requested a home visit to assess a small gut on the edge of her property that was eroding into her land. During the site visit, staff also found a three foot vertical cut adjacent to the driveway behind her house.

We recommended she stabilize the drainage channel with large rock and vegetation, and pointed out that the cut was unstable and could potentially cave into her driveway, according to Morton and Julie Wright. A retaining wall was recommended to prevent landslide risks. Due to cost constraints, a loose stone terrace was built for her by CES client, farmer Elridge Thomas. Anna praised CES staff's assistance: ***Extension Service recommended an inexpensive way to reduce soil loss on my land. I would highly recommend their free service.*** For further information or to request a site visit, contact CES at (340) 693-1080.



Stone terrace built to retain soil on driveway cut in Fortuna, St. Thomas.

USDA s EQIP - How CAN It HELP You?

In the Virgin Islands, the most limiting production factors for many farmers are water and soil loss. Poor water management and soil loss result in increased costs and decreased yields. If you're a farmer with erosion, animal waste, or water management problems, USDA s EQIP may be just what you're looking for.

The Environmental Quality Incentives Program (EQIP) is a USDA cost-share program run by the Farm Service Agency (FSA) and the Natural Resources Conservation Service (NRCS). EQIP provides technical, educational, and financial assistance to farmers to address soil erosion, water management, waste disposal, over-grazing and other resource conservation problems.

Interested farmers can apply at FSA only during the one-month sign-up period (usually in May). Your application should include the conservation practice(s) required. Most approved practices (interior fencing, water troughs, irrigation systems) are contracted for five to ten years. Therefore you must show control of the property for the duration of the contract by submitting a lease or deed.

All eligible applications are ranked according to the environmental impact and cost of their project. Projects providing the greatest benefit at least cost are given higher priority. NRCS provides technical assistance for each project and develops a conservation plan from which the contract is based. Once approved the farmer can then install the practice(s) and be reimbursed for up to 75% of the cost of the project. *To find out if you qualify for EQIP call FSA at (340) 773-9146, NRCS at (340) 692-9662, or visit the USDA Service Center at 5030 Anchor Way, Suite #2 in Gallows Bay, St. Croix.*

CONSERVATION DATA CENTER TO UPDATE V.I. LAND USE INVENTORY

The UVI Conservation Data Center (CDC) will be automating and updating the 1989 Virgin Islands Land Use Inventory under a recent agreement entered into with the Department of Planning and Natural Resources (DPNR). This CDC project will:

- * Incorporate the 1989 Land Use Inventory into a Geographic Information System;
- * Prepare a 1998 digital land-use overlay;
- * Prepare hard-copy maps for DPNR s Planning and Nonpoint Source Pollution programs; and
- * Prepare an updated report comparing the 1989 survey to the findings of this inventory.

It is vital for DPNR to have a clear understanding of current land uses and trends in the Virgin Islands in order to determine how these uses may contribute to nonpoint source pollution and water quality degradation. This study will provide an invaluable tool to help DPNR staff members prepare watershed management plans. These

management plans are required by the President's new Clean Water Action Plan and will provide the frameworks for appropriate uses of resources within the Territory's watersheds. *For further information on this project or other CDC activities, contact Mr. Dayle Barry at (340) 693-1030.*

NOMINATIONS SOUGHT FOR EPA ENVIRONMENTAL QUALITY AWARDS

Do you know a special person or group that deserves recognition for their work to protect the Virgin Islands environment? Are you aware of an effective, unique project that protects, preserves or conserves our natural resources?

If so, the U.S. Environmental Protection Agency (EPA) wants to hear from you! The Virgin Islands Office of the U.S. EPA, Region II, is encouraging environmental organizations, other civic groups, and community members to submit the names and descriptions of on-going projects and/or programs in the territory that are working towards the betterment of environmental quality in the Virgin Islands. EPA would like to consider persons, projects, and/or programs that you feel merit national recognition for nomination for a **1999 Environmental Quality Award**.

Forward suggestions of projects and/or programs that you feel are deserving of attention to Jim Casey at (340) 714-2333. Casey can also provide you with further information regarding EPA s Environmental Quality Awards program. All nominations should be received by **December 31, 1998**.

UPCOMING ACTIVITIES & EVENTS

Soil Losses in the US Virgin Islands Due to Rainfall Runoff St. John Case Study. **December 10, 1998**, 9:30 - 11:00 a.m., Room 713 UVI St. Croix, simulcast to Room T101 (Teacher s Education Building), UVI St. Thomas. Part of a series sponsored by UVI Water Resources Research Institute. Speaker is Mr. Carlos Ramos, Colorado State University. Contact WRRI, (340) 693-1064, for further information.

U.S. EPA, Region II Administrator s Open-Forum Meetings. **December 9, 1998**, Sidney Lee Theater, Island Center, St. Croix from 6:30 - 8:30 p.m. and **December 10, 1998**, Dept. of Education Curriculum Center, Tutu from **6:30 - 8:30 p.m.** Ms. Jeanne Fox, EPA Region II Administrator, invites all environmental organizations and other interested groups and individuals having concerns regarding the Virgin Islands environment to meet with her to discuss these concerns and

Coral World Rehabilitates Hawksbill Hatchlings

Two hawksbill turtles brought by area residents to Coral World marine park for rehabilitation have been released. One hatchling was found lost and covered in oil at Sapphire Marina and another struggling in waves at Coki Beach. The turtles were quarantined and fed shrimp and fish dusted with turtle vitamins prior to their release. *As an approved Sea Turtle Rehabilitation Facility, we are happy to help give these turtles a second chance and possibly boost local turtle populations*, said Dr. Donna Nemeth, Coral World Curator.

share what EPA has been doing to address environmental issues in the Territory. Contact Jim Casey, (340) 714-2333, for further details.

Erosion & Sediment Control for Livestock Farmers. January 20, UVI St. Croix and January 21, UVI St. Thomas. Free workshop on soil conservation for livestock farmers, sponsored by UVI-CES, V.I. Dept. of Agriculture, and USDA-NRCS. Contact Julie Wright, UVI-CES, (340) 693-1082, Dr. Bethany Brandford, VIDA, (340) 774-5182, or Rudy G. O'Reilly, Jr., USDA-NRCS, (340) 692-9662 for details.

To have your event included in VI NPS Update, send the event title, date and time, location, contact person and other relevant information to the Editor at the address listed in the box below.

VI NPS Update is a quarterly newsletter published by the University of the Virgin Islands Cooperative Extension Service, Kwame Garcia, State Director, and produced by the Virgin Islands Nonpoint Source Pollution Committee to inform the public about projects funded by U.S. EPA Nonpoint Source Pollution Management (§319) grants and other NPS pollution control/prevention projects in the territory, and to provide information and material regarding the control/prevention of NPS pollution. No endorsement of products or firms is intended, nor is criticism implied of those not mentioned. Issued by the Virgin Islands Cooperative Extension Service and the U.S. Department of Agriculture in furtherance of the acts of May 8 and June 30, 1914. Extension programs and policies are consistent with federal and state laws and regulations on non-discrimination regarding race, color, national origin, religion, gender, age, disability or gender preference. *Funding for VI NPS Update provided by the U.S. Environmental Protection Agency, Nonpoint Source Pollution Management Program through the Virgin Islands Department of Planning and Natural Resources, Beulah Dalmida-Smith, Commissioner.*

Nonpoint source (NPS) pollution results from rain water flowing over and through the ground, picking up pollutants and depositing them into guts, salt ponds, beaches, coastal waters, and ground water.

VI NPS UPDATE SUBSCRIPTION FORM

* ☐ **YES**, please add me to the **VI NPS Update** mailing list.

Name: _____

Organization: _____

Address: _____

City: _____ State: _____ Zip: _____

Phone: _____ Fax: _____

Email: _____

RETURN TO: **VI NPS Update** at the address/fax number listed to the right.

VI NPS Update wants to hear from you. Send flyers, news-letters, articles, letters or story ideas to the editor, care of UVI-CES, #2 John Brewers Bay, St. Thomas, VI 00802-9990, (340) 693-1082, fax (340) 693-1085, email jwright@uvi.edu

Editor & Designer:

Julie Wright, UVI-CES

Reviewers:

Dayle Barry, UVI-CDC

Clarice Clarke, UVI-CES,

Janice Hodge, DPNR-CZM,

Rudy G. O'Reilly, Jr., USDA-NRCS

Photographers:

Dale Morton, UVI-CES

Julie Wright, UVI-CES



Postage and Fees Paid
U.S. Department of Agriculture
AGR 101

