Beguia Community High School

September 2004-April 2005

SandWatch / SIV Youth Project



Promoting Community Awareness of Sustainable Environmental Development

Jeff Gregg Drain Rehabilitation Project



Sandwatch/SIV Youth Team

Rationale

Paget Farm is one of the largest village settlements on the seven square mile island of Bequia in St. Vincent and the Grenadines. The inhabitants of this village are largely fisher folk, depending heavily on fish, lobster and conch for their livelihood.

Prior to 1990 the entire southern coast of Paget Farm and Jellizeau was protected by a fringing reef. In 1955, Hurricane Janet piled up a great deal of coral approximately 75 feet offshore, creating a lagoon, which stretched for almost a mile along the coast, creating a vibrant marine nursery, and unique little beaches along the coast. At that point, one could literally jump from the coastal road, into the sea.



The Paget Farm Anglican Church in 1970. Jeff Gregg's Building is just on the edge of the water, on the far right background. Boats are also visible under the Manchineel tree.



The J. F. Mitchell Airport in Paget Farm, Bequia

Tourism development and a focus on improved communication led to an ultra modern airport constructed entirely offshore along the coast. The lagoon was filled in and extended to provide the runway. In so doing, drainage and runoff from the steep volcanic slopes of the island became an immediate problem. This was exacerbated by the bad throw-away habits of citizens who, to this point in time, have not learnt proper garbage disposal, despite the fact, that we do have a collection system. This results in a build up of garbage in the drain both from the land and the sea. In the late 1960's a resident of Paget Farm, (Jeff Gregg) constructed a beach house and bar on one of the small beaches at the easternmost end of the lagoon. During the construction of the airport, the landfill was diverted sufficiently to leave a narrow channel of water so that Mr. Gregg's boats could have access to his property. This resulted in a cul-de-sac. It would appear, all debris from the south-east coast of the island, is driven by the prevailing winds and currents, and they end up at that point.



Debris builds up at the end of the channel and literally borders the building.



From the land, household debris is just as visible



Students collecting water samples from the blocked drain

The blockage of the drain, caused by the build up of the debris from the points of entry, combined with poor drainage, a buildup of silt from flooding, and vegetative growth, created a major problem for the community.

- It was extremely unsightly.
- Developed a strong odor.
- Caused the area to flood, including the playing field.
- Provided breeding places and food for rodents.
- Provided ready breeding places for mosquitoes, which is unbearable during the rainy season.
- A source of coliform bacteria which seeps into the marine environment.

The Project

The Jeff Gregg Drain Rehabilitation Project

Objectives:

The project is designed to:

- Analyze the water which settles in the drain to establish the levels of coliform bacteria, oxygen levels, Ph values, Nitrogen, BOD etc.
- To advise people of the community about corrective measures through one-on-one discussions and radio and television programmes.
- To clear the area of the build up of debris and erect debris traps that are easy to clean.
- To excavate the silt and trees, to allow the water to flow freely, thus controlling the mosquito population.
- To landscape the area, erecting park benches and planting flowering plants.
- To encourage the use of the area for relaxation and recreation instead of dumping.
- To incorporate the youth of the community in the maintenance of the project, by making it their own.

Execution

The students and teachers of the BCHS Sandwatch, SIV youth group participated on a number of occasions in cleaning the debris from the area, and publicizing the results in the national papers. This also involved a number a volunteers from the community who obviously enjoyed the publicity and community service.



Sandwatch group showcases work

The Bequia Community High School UNESCO Sandwatch/Small Islands Voice Group, last week Thursday evening, despite a decreased attendance due to another function, put on by a local telephone company, showcased its work over the past years to the general public.

The event was dubbed "Youth Visioning for Island Living" - which is also the theme for the youth conference, which is slated to be held in Mauritius in

January 2005.

The audience was amazed at the strides youngsters from the island were making in the preservation and conservation of our marine resources. They were also excited to learn about the world-wide recognition the

group has received as a result of their work.

Speakers at the conference included Mr. Hugh Wyllie - Deputy Chief Education Officer and Mr. Kurt Cordice - Marine Biologist & Environmentalist. The feature speaker was Dr. Gillian Cambers from the University of Puerto Rico - UNESCO Platform for Coastal & Small Islands.

There were displays of the students' activities and an overview by the project coordinator, H. L. Belmar and a film outlining the objectives of the Small Islands

Voice programme.

Another highlight of the evening's activities was the announcement of the winners of an environmentally friendly poetry competition organized by the group and a reading of the top two poems. Praise and commendations went out to the management of Roy's Inn, Kingstown Park and the Gingerbread Hotel, Belmont Bequia, which donated weekends and dinners to the top five places in the contest.

Inspired by the quality of work of the group, and realizing the importance of their activities, many business places pledged their support in promoting and developing Sandwatch/Small Islands Voice in SVG.



FRIDAY, December 31, 2004

A.I. REAL ESTATE

bedeen a busin blast on Town agil - Marine to - Harr 1 Section at Townsy Hill on 7-506-uph - \$365,691.00 (424) 11,015 uph at Domentine Hill at 91.00 p. ct - 185225 11.179 sqn at Queene have \$80.00 per - filling

Cabler Millings are wouldable.

Falser, 457,365 lans 455 1562

Inditing Standard 666 178 5751

Inside daught achievations.

White: http://www.achievations.

Price: EC\$1.00

Herman Belmar and Nekesha Gordon of Bequia will make a Hocycling/Reuse of Glass in St. Viacent and the Grenadines during the Small Islands Voice at the Community Villaj at the UN Meeting in Mauritius scheduled for January Recycling/Reuse 10 to 14.

his interest in environ-mental assues, told The Vincentian that Above: A park bench community from the Small coment the ideas to anhance their communities.

He said that the Glass for the size and conjugate their communities.

He said that the Glass proper their community properties of the Small comment the ideas to anhance their communities.

He said that the Glass properties of the Small comment the said that the Glass properties and enjoy a The Bequis Community game on benches made High School, where



Above: A park bench constructed with fregments of glass and Circumon wood salvaged

His noted that the m



R

SA

Ð

NEKESHA/GORDON



HERMAN BELLIAMS

auge was taken up by a some of the participast number of delegates, and ing islands include UNESCO endersed it, and Seychelles, Maldives, Fiji facilitated a Youth Cook Islands, St. Vincent Congress in the Behamme and the Grennlines, in January, to take the Mantitius, Palau and process forward.

The said that the Glass Recycling/Renes programme has guthered international internati

He noted that while
this programme was successful and, won the
Caribbean Sea Science
and Technology award, it
proved to be very labour
intensive.

Belear explained "We
however never gave up on
the idea of removing
unsightly broken glass
from our communitaties and
beaches and developed to
the project to manufacture
decreative and patis tiles.

We later went into a
larger frame of mind, and
constructed park beaches
for later went into a
larger frame of mind, and
constructed park beaches
for listed Living" to the
Connemnity Villay".

Belinar said the UN
Belinar said the UN
Collow up to the
the UNESCO Interest Programme of Action for
Forum "Small Island
Sustainable Development
Vector Which will be held
from January 13 in Mauritius.

The small island vices.

The small island vices will
spread to the last needing of
the field Living" to the
Connemnity Villay".

Belinar said the UN
Collow up to the
the UNESCO Interest Programme of Action for
Small Island
Sustainable Development
Vector Which an emphass on
the Global Forum on
Small Island vices will
disable in the
Caribbean, Partific, and
Islands or Cocana, Conata and
beaches and the UN
Small Island
Vices Which will be held
from January 13 in Mauritius.

The small island vices will be
spread to proviously to the
from January 13 in Mauritius.

The small Island
Vices Which will be held
from January 13 in Mauritius is a
cellitator for meetings of
Collow up to the
the UNESCO Interest Programme of Action for
Small Island
Vices Which will be held
from January 13 in Mauritius.

The small Island
Vices Which will be held
from January 13 in Mauritius.

The small Island
Vices Which will be held
from January 13 in Mauritius is a
cellitator for meetings of Collow up to the
the UNESCO Interest Programme of Action for
Small Island
Vices Which will be held
from January 13 in Mauritius.

The small Island
Vices Which will be held
from January 13 in Mauritius.

The small Island
Vices Which will be held
from January 13 in Mauritius is a
cellitator for meetings of Collow up to the
from Janu for the school yard.

"From glass enherted around 12. Seamer will also be pre- aut. heard and yet senting to the playing field, we cast been glaying field, we cast been glaying field, we cast been glaying field, we can be senting to the General expected to be the shalters been glay and movers of finners we.



HUMBLE: This women, in an act of famility, apparlaneously "complimented" rether than compelled against Dins E-hours's (right) insulting in ser inscring rendition of "My Redeciment Lives". The combination issue the highlight of the obtaining mornings of this year's Nine Morning. Edwards, a born Vincentian is making bridge in the insuscisaries. She image possition makes and is a farmer member of New Lie Anchessadors. (Photor Kenton Chance).

Published by The VINCENTIAN Publishing Co. Ltd, St. Vincent and the Grenadines; Printed by the Nation Publishing Co. Limited, Barbados



Participants in a cleanup activity took a photo break

On September18, 2004, during Hurricane Ivan, debris from the sea and land blocked the culverts completely, flooded the area and created an unsightly mess. Sandwatch/SIV Youth cleared the area of tons of garbage and involved the solid Waste Management Authorities in the disposal process.



Debris piled up, and blocked the culverts, preventing drainage

With the culverts and seaward exit cleared of debris, a new problem arose. Flotsam--mainly lube oil bottles and plastic soda bottles--washed up and under the culverts, continued to block them again, and repeat the cycle.

ITEMS COLLECTED

Human-made debris, trash and litter...

Think about where all this debris comes from and how we can prevent it!



Please pick up all debris found on the beach. Record information on only the items listed below. Keep a count of your items using tick marks and enter the item total in the box. Example: 8 Beverage Cans ## 111 SHORELINE AND RECREATIONAL ACTIVITIES -(Debris from beach-goers, sports/games, féstivals, litter from streets/storm drains, etc.) 204 Bags (Plastic) 124 Cups, Flates, Forks, Knives, Spoons 6 Balloons 93 Food Wrappers/Containers____ 1.129 Beverage Bottles (plastic) 2 liters or less__ Pull Tabs 6 Beverage Bottles (glass)_ 0 6-Pack Holders Shotgun Shells/Wadding. IBD Boverage Cans 0 900 Caps, Lids Straws, Stirrers 60 OCEAN/WATERWAY ACTIVITIES -(Debris from recreational/commercial fishing and boat/vessel operations) Bait Containers/Packaging Fishing Nets Bloach/Cleaner Bottles 12 1 Light Bulbs/Tubes Buoys/Floats_ Oil/Lube Bottles 43 Crab/Lobster/Fish Traps 0 Crates 2 Plastic Sheeting/Tarps_ Fishing Line Rope_ 24 Fishing Lures/Light Sticks_ Strapping Bands_ 0 DUMPING ACTIVITIES -SMOKING-RELATED ACTIVITIES = Cigarettes/Cigarette Filters Appliances (refrigerators, washers, etc.) Batteries 0 0 Building Materials Cigarette Lighters_ Cars/Car Parts 0 Tobacco Packaging/Waggers MEDICAL/PERSONAL HYGIENE = DEBRIS ITEMS OF LOCAL CONCERN -(Identify and count 3 other items found that concern you) Condoms Diapers___ 10 co conut shells 1 Tampons/Tampon Applicators____

© 2004 The Ocean Conservancy

INTERNATIONAL COASTAL CLEANUP DATA CARD

Data collected during The Ocean Conservancy's International Coastal Cleanup" is used to educate people and create solutions to the problems of solid waste and litter. Through partnerships with business, government, environmental groups, and citizens, we are helping to change the behaviors and practices that create debris. Thank you for being part of this very important process.

The Ocean Conservancy

CLEANUP LOCATION	Advanta, for 2014, Martin, Chann
Type of Cleanup: Shoreline/Beach Underwater	Location of Cleanup: State BERVIA Country ST. VINCENT L
Zone or County Cleaned:	Beach Site Name: Paget Farm (New Test Gregg)
Today's Date: Month 18 Day Sept Year 2004	Name of Coordinator: Herman L. BELMAK
Number of People Working on This Card: 20	Distance Cleaned: APP 600 SF miles or km
Number of Trash Bags Filled: OVEV 80	Total Estimated Weight Collected: \$ 70 n.S. lbsor kgs.
If you are interested in becoming a member of The Ocean	UNESCO Sandwatch/Small Island Voices Youth Group. n Conservancy and/or joining our Ocean Action Network (OAN) to make, please check the box(es) below your name and address. Thank you for
Address: Port Elizabeth Po City: BEQUIA State: ST. VINCO Zip Code: Country: W. I. Phone: (784) 458 3514 Email: humpback 1952 Dyahoo I would like information on: The Ocean Conservancy The 2. Name: JOANNA A. STOWE Age: Address: FRIENDSHIP POBOX 47 City: BEQUIA State: ST. VINCO Zip Code: Country: W. I. Phone: (784) 458 - 3454 Email: diveprise begund ive adventures. Con I would like information on: The Ocean Conservancy The ENTANGLED ANIMALS: (Dead or Alive). List is entangled in (fishing line, rope, net, etc.)	Address: PAGET FARM, BEQUIA City: BEQUIA State: ST. VINCENT Zip Code: Country: W · I Phone: (12 +) 453-3+68 Email: Ky-146@ hotmail.com I would like information on: The Ocean Conservancy The OAN ANAME: NEKISHAIR GORDON Age: 20 Address: BELMONT, BEQUIA City: BEQUIA State: ST. VINCENT Zip Code: Country: W · I Phone: (184) 458-3454 Email: Shwab @hotmail · Com
#18 (18 d)	
WHAT WAS THE MOST PECULIAR ITEM YOU CO	LLECTED?
The following national and international organizations endorse and/or support the International Coastal Cleanup: • U.S. Environmental Protection Agency • IUCN – The World Conservation Union • Intergovernmental Oceanographic Commission (IOC) of the U. Nations' Educational, Scientific, and Cultural Organization (UNE)	The Ocean Conservancy Office of Pollution Prevention and Monitoring 1432 N. Great Neck Road, Suite 103 Virginia Beach, VA 23454 USA Phone (757) 496-0920 Fax (757) 496-3207 Coastal
6 2004 The Ocean Conservancy	•



Sandwatch students removing solid waste from the drain

On the land, debris continued to build up. We are however pleased to report that the efforts of Sandwatch/SIV Youth have impressed at least one member of the community to the point where he (Moses Sam) regularly volunteers his time, and keeps the area clean.

The area after the cleanup





The culverts became visible after several hours of work, and tons of garbage removed

To correct the problem of the blockage of the culverts, we have constructed debris traps at both ends of the culverts. The steel mesh of the traps allows water to filter through readily but trap the solid waste. The deposits are then easily collected and disposed of through the Solid Waste Management Unit.



Constructing debris traps



Debris traps completed

In trying to cope with the problem of drainage, it was discovered that an ancillary drain from the adjacent community, which exited under the main road, and into the main drain, was completely clogged by silt and debris. That same drain also caused a major build up of silt across the main drain. The deposit raised the level of the main drain approximately 50 meters from the culverts. The alluvial soil encouraged a dense growth of plants, (Christmas Candle) which was quite attractive when in bloom, but totally restricted the flow of water which traveled the entire length of the airport to reach the sea. The blockage provided ideal mosquito breeding conditions in the stagnant water, polluted by household garbage (from pampers and slippers to discarded dishes and soda bottles) and animal waste washed from the playing field. These conditions also provided ideal breeding places for coliform bacteria.



Trees and soil deposits being excavated

Testing Water Quality

We conducted extensive testing for the presence of coliform bacteria, oxygen level, Ph value, nitrogen, B.O.D, etc. in the area. Samples of water were taken from different settlement points within the drain. The test for each were carried out and repeated on several occasions; the results were recorded and analyzed.



Students testing for Coli form Bacteria



Test showing the presence of Coli form Bacteria in water sample



Teacher testing for Phosphates

From our analysis it showed that coliform bacteria were present. Our observations of the area revealed that the main cause of this was a high level of human and animal faeces being washed into the drain and nearby sea due to their improper disposal by villagers and local fishermen. This runoff has a negative impact on our health, as fishermen usually clean their fish in the area where the coli form bacteria are present, and we then consume these fish. This area is also a holding spot for lobsters prior to marketing and many young children use the area for bathing and recreation, exposing themselves to a number of diseases.



Water content generates interest



Children playing in polluted water



Fishermen with their lobster traps using the area for storage

In addition to restoring this area and making it a recreational spot, our aim is to try and stem the problem. Thus we have arrived at a number of approaches--some we have done already; some we are in the process of implementing. These include:

• Students from all the schools on Bequia were taken on an educational tour to the site being restored, where the correlation of both solid and liquid pollution was discussed as it relates to the negative impact on the marine and terrestrial (land) environment.



Students from Bequia schools discuss environmental issues on the site

• The long-term effect on tourism and economic sustainability, the impact on the fishing industry, damage to the coral reef, and algal growth, the use of scuba diving and snorkeling were also discussed.



Coral bleaching

• The tour (in collaboration with the Central Water and Sewage Authority, the Solid Waste Management Unit and the Tourism Association of St.Vincent and the Grenadines) also took the students to visit the sanitary landfill.



Students visited the Landfill site to discuss garbage disposal methods

• While on the site, villagers--in particular the fishermen--were educated on a one- to-one basis as to the dangers of improper disposal of waste. A television documentary was also aired highlighting the issues. This we noticed has led to a change in attitude of the fishermen, who now try to dispose of their lube oil bottles without throwing them in the sea; however there is a need for the placement of bins in the area, in which empty bottles and other garbage can be placed. Our plan is to construct concrete bins to put on the site, using broken glass.



Garbage bin made of crushed/discarded bottles

- A public-awareness campaign as to the importance of proper disposal of garbage and other waste was presented via the local television media. The presence of coliform bacteria, the causes and the dangers were also discussed.
- Some community members are assisting us manually in the restoration of the site by helping to clean the area. We have had volunteers from church groups, and a pledge of support from the Apostolic Faith Mission Youth Group, and a request from the principal of the Paget Farm Primary School to bring the Sandwatch programme to them.

• Students are being taught in Science class how to test for the different substances and are using them to develop hypotheses for their planning and design experiment for their SBA's at the regional CXC level.



Students making a comparative analysis of their samples

Beautifying the Area

We are of the opinion, that the area can be transformed into a recreational and relaxation area, which can be of greater importance to the community than it is presently, and by involving people of the community in the rehabilitation process, we can help to foster a sense of pride which in itself would help to sustain the project.

- To do this, we set out to grade and landscape the area above the level of the drain.
- To fill the eroded area with topsoil.
- To construct park benches for relaxation.
- To plant grass to retain the soil. and
- To plant trees which would provide shade.

To accomplish this, we used a tractor to excavate the ancillary drain and the main drain, and the trees and silt deposit were removed.



Large boulders were used to create a retaining wall and the excavated soil used as filling to reclaim an area around the existing almond tree, and the area behind the retaining wall.



Derelict boats were removed from the area,



The main drain was graded at a constant angle, to allow the water to flow freely to the sea without impediment, and encouraging the tidal flow to flush the culverts. By the next rainy season, we are anticipating a reduction in the mosquito population and the levels of coliform bacteria.



More top soil was trucked in to fill the reclaimed area and it was landscaped to create a functional and recreational area.





Students and volunteers removing stones, and preparing for grassing

One park bench is currently erected to encourage relaxation under the shady almond tree. More will be erected later. (The benches are made from bottles and glass which are discarded in the community, broken into small pieces, and mixed with cement and reinforcement steel, and cast into moulds to form benches) These environmentallyfriendly benches provide seating, and demonstrate the process of reducing, reusing, and recycling.





Relaxation after work



Discarded bottles to be crushed, left on the school steps by people of the community, who recognize our reuse programme.



Casting the broken glass into moulds for the benches

The process of beautifying the area will be completed with the planting of trees and grass to enhance the entire appearance. The decision to use Neem trees for that purpose came from a senior citizen of the community. He is intrigued by the effort we have made, and is appalled by the destruction caused by the number of goats and sheep that roam the area. He believes that the Neem is too bitter to encourage foraging; it has a prolific growth rate, keeps its leaves all year, provides excellent shade, and has medicinal properties. Therefore, it should have number one choice.

Problems Encountered

- The dry season (December to June) is particularly harsh in this area. As nothing grows during this time, we were unable to grass the area and plant the desired trees at this time. This phase of the project will be done as soon as the seasonal rains set in.
- Goats and sheep, which are numerous in the area, are also a problem, not only because they eat the plants, but they uproot young trees with their chains which are often dragged behind them.
- Some persons in the area are skeptical about the project and may continue to be negative about the use of the facility.
- The debris that drifts ashore from the sea is a major problem that recurs as often as it can be cleared.
- Some residents are expecting us to be the watch dogs of the environment, and to be responsible for clearing the area.

List of Participants:

School: Bequia Community High School P. O. Box 75BQ, Port Elizabeth Bequia, St. Vincent, West Indies

> Telephone: 1-784-458-3385 Fax: 1-784-458-3153 Email: <u>bahs@vincySurf.com</u>

Coordinator: Mr. Herman Belmar

Port Elizabeth Post Office, Bequia

St. Vincent, West Indies Telephone: 1-784-458-3514

Email: <u>humpback_1952@yahoo.com</u>

Participating Teachers

Mr. Herman Belmar

Ms. Nekishair Gordon

Ms. Marsha Gregg

Mrs. Joanna Stowe

Mrs. Michelle Stowe

Mr. Teronzo McKree

Ms. Kerry-Ann Hamilton

Ms. Gaynor Kydd

Mr. Jermaine Tannis

Mrs. Elaine Ollivierre – Principal

Participating Students

Names	Age (yrs)	Names	Age (yrs)
Nadia Adams	16	Lesroy Lewis	15
Keon Adams	19	Gordon Leonard	17
Jemecia Adams	13	Jenson Ollivierre	16
Denika Compton	15	Kari Ollivierre	16
Tara Corea	16	Floyde Patterson	16
Xavier Glynn	17	Tamisha Nicholls	16
Cherian Gordon	14	Kevin Stephenson	16
Farand Gordon	17	Cregg Williams	15
Rosann Gordon	17	Reece Ollivierre	15
Renroy Gordon	19	Junius Lewis	16
Dwayne Gregg	18	Monecia Ollivierre	14
Uwinana Gregg	15	Mallika Ollivierre	17
Karine Hazell	16	Shirlann Ragguette	14
Delian Hazell	16	Elgitha Sam	17
Khanya King	15	Karel Simmons	15
Kamala Kydd	16	Veshka Telemaque	13
Gabriella Kydd	14	Orinella Telemaque	13
Valisa Williams	17	Kaleena Williams	18
Shion Davis	19	Vivian ollivierre	17

Participating Community Members

Conrad Bess Bevon Stowe Rosann Hazell Moses Sam Goddrick Foyle Franklyn Joyette

Acknowledgement

We would like to acknowledge the contributions of the following, without which this project could never be a success, and would not be sustainable:

First of all, we would like to thank every student listed, as active participants in the project, as well as those who provided moral support throughout, and those who continue to make request to be an active part of the group.

All the teachers who contributed their time, energy, and finances also, to make us happy, for watching over us, and guiding this project to a finished state. It has been an enjoyable learning experience.

A special thanks to our Principal, Mrs. Ollivierre, who we are sure sometimes turned a blind eye to allow us to proceed with this project. We have enjoyed this experience, and appreciate her allowing us to do it.

Thanks to all the parents who allowed their sons and daughters to join Sandwatch, and permitted them to work without making a fuss. For lending us tools like cutlasses, rakes, shovels, buckets and wheelbarrows. Even for the water that we were given when we became thirsty.

Thanks to members of the general public who volunteered to help with the heavy task, when we needed them most. We still need them to watch over and help maintain the project. Our gratitude to those who simply gave advice; we believe we could always tap into that source of knowledge.

A hearty thanks to the Little Giant Construction Company who really did the giant's work to lift and push and drag what we could not.

To Sustainable Grenadines Project Coordinators, our profound thanks for helping us to make this project possible, without your approval and financial award, it could not have happen.

To Mc Krees Construction, for directing the construction details, and helping us to work out estimates.

Above all we thank Mr. Belmar for his seemingly endless energy, in planning, organizing, helping, advising, and doing the lion's share of the work. Thanks to his family for allowing him to give so much of his time ungrudgingly.

Thanks to all those who donate their bottles--even those who leave them on the school's steps without the need for credit.

Last of all, thanks to those who would use and take care of the facilities.