# **Beguia Community High School** September 2004-April 2005

# SandVateh / SIV Youth Project



## Promoting Community Awareness of Sustainable Environmental Development

## <u>Jeff Gregg Drain</u> <u>Rehabilitation Project</u>



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.



The Vincentian, Friday, July 2, 2004. 19.

## 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.



Above: A park bench constructed with fragments of glass and Cinr

Result that the Glass<br/>Recycling/Reuse<br/>pro-<br/>the said that the Glass<br/>rame has gathered pro-<br/>the said that the Glass<br/>recreation and protec-<br/>the service and protec-<br/>to component.The service and protec-<br/>service and protect-<br/>of liter to inseaded of Using<br/>be re-used to produce said<br/>carbage to construction<br/>of liter to inseaded of Using<br/>Garbage to Collect<br/>carbage to construction<br/>of using beach.The Bequia Community<br/>High School, where<br/>Belmar is a teacher, has<br/>produce the participant over<br/>involves the construction<br/>of liter to inseaded of Using<br/>Garbage to Collect<br/>carbage.The Bequia Community<br/>High School, where<br/>Belmar is a teacher, has<br/>play to carbage the<br/>produce said to robust and<br/>and won the<br/>said that the winitidity<br/>instead of using beach<br/>to rese in construction<br/>of the to robust and won the<br/>for use in construction<br/>of the UNESCO Interest.The Bequia Community<br/>High School, where<br/>Belmar will also to the<br/>school, and won the<br/>and the choology award,<br/>promour communities at<br/>foro use communities at<br/>foro use communities at<br/>foro use communities at<br/>literation community 13 in Mauritius.<br/>The and listand for the and histones<br/>or shall Islands in the<br/>carbage.The Bequia Community<br/>High School, where<br/>Belmar will also to the<br/>school and and<br/>bequing field, we carbo<br/>school and and<br/>to lasse collect<br/>to school yard.The section communities at<br/>for literation for<br/>Statinable Development<br/>to lasse collect<br/>to and the school and and<br/>to lasse collect<br/>to school yard.The section communities at<br/>to and the school and and<br/>to lasse collect<br/>to and the school and and<br/>to lasse collect<br/>to school yard.The section communities at<br/>to lasse collect<br/>to lasse collect<br/>to and the school and and<br/>to lasse collect<br/>to lasse

He noted that th

NEKESHA GORDON HERMAN BELMAR

sage was taken up by a Some of the participat-number of delegates, and ing islands include UNESCO endorsed it, and Seychelles, Maldives, Fiji, facilitated a Youth Cook Islands, St. Vincent Congress in the Bahamas and the Grenadines, in January, to take the Mauritius, Palau and process forward. Trinidad and Tobago.





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 life	tter
<ul> <li>Harms the environment &amp; wildlife</li> <li>Threatens human health &amp; safety</li> </ul>	<ul> <li>Causes communities to lose money</li> <li>Looks badl</li> </ul>
Think about where all this debris cor	mes from and how we can prevent it!



The Ocean

www.oceanconservancy.org

Conservancy

Keep a count of your items using tick marks and enter the item total in the box. Example: 8 Beverage Cans\_\_\_\_\_\_

	RELINE AND RECREATIONAL ACTIVITIES	Real Property of	a draina ata)		
204	and the second	- 124	Las all all as a basis many lister in the second second		
6	Balloons	93	Food Wrappers/Containers		
1,129		- []3			
191-1		0	Pull Tabs		
139	Beverage Bottles (glass)	0	6-Pack Holders		
_	Beverage Cans	0	Shotgun Shells/Wadding		
900		86	Straws, Stirrers		
60	Glothing, Shoes	3	Toys		
	AND TRIMES PERSON AND AND AND AND AND AND AND AND AND AN	GUT I			
	N/WATERWAY ACTIVITIES from recreational/commercial fishing and boat/vessel of	1 1 1 1 1 1	이 말을 들어 있는 것 같아요. 이 것 같아요. 이 것 같아요. 이 집에 있는 것 같이 집에 있는 것 같아요. 이 집에 있는 것 같아요. 이 집에 있는 것 같아요. 이 집에		
	Bait Containers/Packaging		Fishing Nets		
12	Bleach/Cleaner Bottles	1	Light Bulbs/Tubes		
43	Buoys/Floats	576			
9	Crab/Lobster/Fish Traps	0	Pallets		
2	Crates	6	Plastic Sheeting/Tarps		
2	Fishing Line	24	Rope		
0	Fishing Lures/Light Sticks	0	Strapping Bands		
SMOR					
3	Cigarettes/Cigarette Filters		Appliances (refrigerators, washers, etc.)		
2		5	Batteries		
		0	Building Materials		
	Cigarette Lighters	0	Cars/Car Parts		
	Cigar Tips	0	55-Gal Drums		
3	Tobacco Packaging/	12	Tires		
	<b>3 3 4 1</b>		a na series de la companya en la manager de la companya de la companya de la companya de la companya de la comp Companya de la companya de la company		
MEDI	CAL/PERSONAL HYGIENE		IS ITEMS OF LOCAL CONCERN		
12	Condoms	(Identify	(Identify and count 3 other items found that concern you)		
10	Diapers	21			
100	Svringes	84	co conut shells		
2	Tampons/Tampon Applicators	4	Diving fins		
		United to see a strain of the			

© 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 The Ocean and practices that create debris. Thank you for being part of this very important process. Conservancy



1.

En W 2.

Type of Cleanup: 🗹 Shoreline/Beach 🔲 Underwater	Location of Cleanup: State BEQUIA Country ST. UINCENT W.
Zone or County Cleaned:	Beach Site Name: Paget Farm (New Jeff Gregg)
Today's Date: Month 18 Day sept Year 2004	Name of Coordinator: Herman L. BELMAR
Number of People Working on This Card: 20	Distance Cleaned: App 600 SF miles or km
Number of Trash Bags Filled: 01ev 80	Total Estimated Weight Collected: 3 70ns lbs-orkgs.

## NAMES OF PARTICIPANTS IN YOUR GROUP UNESCO Sandwatch / small Island voices youth

If you are interested in becoming a member of The Ocean Conservancy and/or joining our Ocean Action Network (OAN) to make your voice heard on important ocean conservation issues, please check the box(es) below your name and address. Thank you for helping to protect our oceans!

1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
1. Name: HERMAN L. BELMAR Age: 52	3. Name: Gaunor J. KYDD Age: 20
Address: Port Elizabeth Po	Address: PAGET FARM, BEQUIA
City: BEQUIA State: ST. VINCENT	City: BEQUIA State: ST. UINCENT
Zip Code: Country:V	Zip Code: Country: V · T
Phone: (784) 458 3514	Phone: (184) 458-3468
Phone: (754) 458 3514 Email: humpback _ 1952 @ Yahoo: com	Email: Kutt 45@ hotmail.com
I would like information on: The Ocean Conservancy The OAN	I would like information on: The Ocean Conservancy I The OAN
2. Name: JOANNA A. STOWE Age: 27	4. Name: NEKISHAIR GORDON Age: 20
Address: FRIENDSHIP P.O. BOX 47	Address: BELMONT, BEQUIA
City: BEQUIA State: ST. VINCENT	City: BEQUIA State: ST. VINCENT
Zip Code: Country: W. I	Zip Code: Country: V.I
Phone: (784) 458-3454	Phone: (184) 458-3454
Email: divepros@ beguadive adventures. com	Email: Shugb @ hotmail. Com
I would like information on: The Ocean Conservancy The OAN	I would like information on: I The Ocean Conservancy I The OAN
ENTANGLED ANIMALS: ( Dead or Alive). List all entar	ngled animals found during the Cleanup. Tell us what they were
entangled in (fishing line, rope, net, etc.)	And a second
	· · · · · · · · · · · · · · · · · · ·
WHAT WAS THE MOST DECILIAD ITEM YOU COLLECT	ED2

#### W

The following national and international organizations endorse and/or support the International Coastal Cleanup:

U.S. Environmental Protection Agency

© 2004 The Ocean Conservancy

- IUCN The World Conservation Union
- Intergovernmental Oceanographic Commission (IOC) of the United Nations' Educational, Scientific, and Cultural Organization (UNESCO)

Please return this card to your area coordinator or mail it to: The Ocean Conservancy Office of Pollution Prevention and Monitoring

International

Cleanup

Coastal

3

1432 N. Great Neck Road, Suite 103 Virginia Beach, VA 23454 USA Phone (757) 496-0920 Fax (757) 496-3207 www.oceanconservancy.org



#### 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



<u>The culverts became visible after several hours of</u> <u>work, and tons of garbage removed</u> 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.



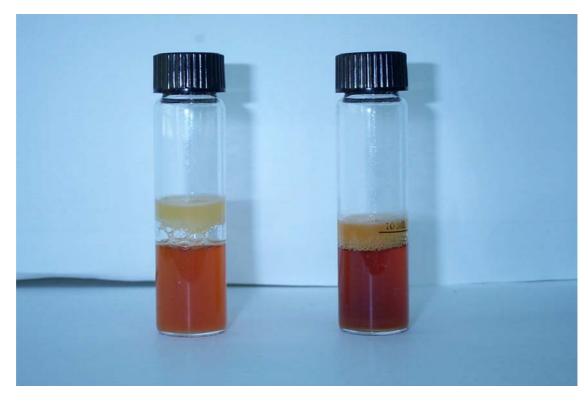
Trees and soil deposits being excavated

#### 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

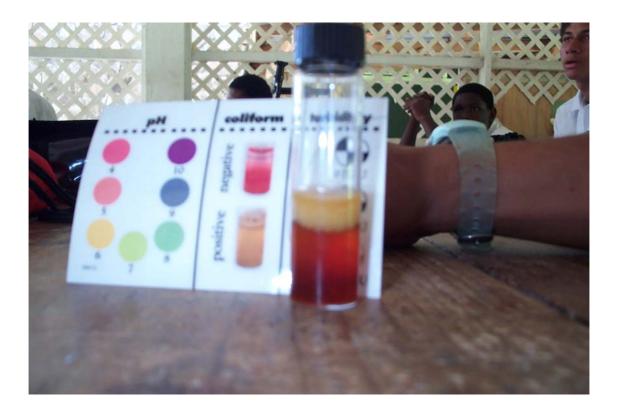
• While on the site, villagers--in particular the fishermen--were educated on a one- toone basis as to the dangers of improper disposal of waste. A television documentary was also aired highlighting the issues. This we noticed has led to a change in attitude of the fishermen, who now try to dispose of 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.