PREFACE

This report summarizes the information resulting from an assessment of the possible impact of natural hazards on the lifeline infrastructure in the capital and other major settlements within the six parishes of Grenada.

The information was gathered during field visits to each one of the settlements, first initiated by OAS consultant Leo St. Helene and completed by OAS consultant Vivian Bacarreza. Additional insights were gained from numerous contacts with people in the public and private sectors, and from a one-day workshop attended by government officials and parish representatives involved in emergency management.

Part I of the report contains a brief definition of the objectives, methodology, and terms used in the report. Part II consists of a systematic identification in each one of the six selected settlements, of areas with potential risk from flooding, wave and wind action, earthquake, landslide, erosion, and landfill. The areas are located on topographic maps of scale 1:25,000 (blown up to scale 1:5,000 on separate map sheets). Short-term and long-term recommendations are made to the appropriate technical agencies for reducing or preventing losses in case of hazardous events.

Part III of the report provides an overview of the effects of development on environmental deterioration and the settlements' vulnerability to natural hazards. Possible mitigative actions are identified at the policy and technical levels.

The report received valuable inputs from Mr. Richard Huber, Project Chief for the Department of Regional Development (DRD) in Grenada, and from Mr. Jan Vermeiren, Caribbean Program Coordinator for the Natural Hazards Project. Technical cooperation programs for Grenada are supervised by Mr. Patricio Chellew, Division III Chief of the DRD, and Mr. Stephen Bender directs the Natural Hazards Project. Work was carried out with financial support from the Office of Foreign Disaster Assistance (OFDA) of the U.S. Agency for International Development.

NATURAL HAZARDS RISK ASSESSMENT OF TOWN AND VILLAGES IN GRENADA, WEST INDIES. JUNE, 1988

PART II HAZARD ASSESSMENT IN INDIVIDUAL SETTLEMENTS

ACKNOWLEDGEMENTS

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Carlton Frederick - Physical Planning Development officer.

Geraldine Pitt - Physical Planning Development consultant.

Richard Huber - Project Chief for the OAS Department of Regional Development in Grenada.

NATURAL HAZARDS RISK ASSESSMENT IN TOWN AND VILLAGES OF GRENADA

PART I

OBJECTIVES

The primary objective of the survey of Natural Hazards Risk was concerned with identification of areas prone to natural hazards* in the six mayor towns and two smaller settlements in Grenada; specifically as it relates to lifeline infrastructure, viz: transportation, communications, services, health, education and energy. This report and maps will describe the facilities, hazards, expected type of damage, recommended mitigation measures, responsible agencies and posible actions, at the community level.

METHODOLOGY

Since very little recorded information exists identifying specific hazards in the towns and villages of Grenada, the present study had to rely heavily on local data collection.

To identify and assess those vulnerable sector elements, the following activities were undertaken:

a) Field visits to the settlements; photograhs identifying the problem.
b) Identify elements and record information on map avaible to scales 1:5.000 and 1:12.500. Research on maps, aerial photography, reports.
c) Record information from oral communication with local official and residents to provide valuable selective detail for comparison and judgement.
d) Interviews with resource personnel and agency managers.
e) Systematic evaluation: action: what was the damage? what is the cause?
f) Establishing historical facts of Hurricane Janet 1955 as aide memoire.

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* Hurricanes, Tropical Storms, Floods, Erosion, Landslide, Rockslide, Wave Action, Earthquake, Volcanic Eruptions.

HAZARDS

For the purpose of this study and exercise, NATURAL HAZARD can be described as occasional natural phenomena which have a cumulative perilous effects on the physical, economic and social structure of a country.

NATURAL HAZARDS relevant to Grenada are identified as Hurricanes, Tropical Storms, Floods, Erosion, Landslides, Rockslide, Wave Action, Volcanic Eruptions.

HURRICANES AND TROPICAL STORMS

Grenada is one of the Windwards Islands within the hurricane belt of the Caribbean. The most recent hurricane to strike the island was Janet which wreaked havoc on the island's economy and settlements in 1955. Packing winds of up to 130 miles per hour, the hurricane flattened forestry, tree crops, houses and other buildings, and up-rooted electricity transmission poles. Storm waters caused flooding, landslides, severe erosion; the collapse of bridges and mini-dams, and the disruption of the water supply system. Storm surge destroyed coastal roads and jetties; caused the loss of fishing vessels and did considerable damage to the St. George's Harbour, and to many beaches.

Grenada is one of the more southerly of the chain of volcanic islands of the East Caribbean. The island is volcanic in origin and has an active submarine volcano "Kick-em-Jenny" which has experienced quiet eruptions eight times since it was discovered in 1939.

Volcanic craters and craterlets are to be found throughout the island of Grenada, with the majority occuring in the Northern and Central parts of the island. Several volcanic domes occur in the northern one-third of the island and on the off-shore Levera and Ile de Caille.*

LANDSLIDE AND ROCKSLIDE

Landslides are widespread particularly during the rainy season. Slopes are steep and covered by erodable soils. One of the worst landslide areas in Grenada is that of Mabouya in the Parish of St. John's.

EARTHOUAKE

Grenada's location on the Caribbean Plate margin makes it vulnerable to considerable seismic activity. Earthquake of magnitude 3.2-3.9 on the Richter scale have been recorded with epicentres less than 50 miles to the south of Grenada.*

MAN-MADE HAZARDS relevant to Grenada are identified as: fires, ship or aircraft accidents, explosions, marine pollution, toxic chemical spills on rivers and sea, sewage disposal, garbage disposal and poor housing (health hazard).

* Grenada Preliminary Vulnerability. PCDPPP. Glenford M. Stewart, Eleanor B. Jones. April 1986.

PART I-A

INFRASTRUCTURAL ELEMENTS AT RISK

The infrastructural elements common in Grenada are classified under seven major categories:

Infrastructure	Elements
a) Transportation	Roads, streets, bridges, culverts, airports, seaports, seashore.
b) Communication	Overhead cables (Telephone, television, electricity), radio and television masts, navigational beacons.
c) Services	Water, sewerage, civic (police, fire, ambulance), post office.
d) Public Buildings and facilities	Hospital, community halls, shelters
e) Education	Schools: Infant, primary, secondary, special.
f) Energy	Distribution facilities (for storage, retail) petrol gas.
g) Warehouses	Produce storage for cooperatives, fertilizer and pesticide storage.