ANTIGUA and BARBUDA - Drought

Date: November 1983-August 1984

Location: Islandwide

No. Dead: None reported

No. Affected: 75,000

Damage: Extensive and progressive damage to the agricultural sector; potential threats to health and the economy

The Disaster

Rainfall in Antigua and Barbuda was less than 50% of normal in 1983, totaling only 57.4 cm. Although drought can be expected on the island approximately once every ten years, few measures have been instituted to conserve available water supplies or reduce runoff and waste. At the same time, the need for more water due to increased irrigation and an expanded hotel industry has placed greater demands on the limited supply. December to April are usually the driest months; they are also the peak months for tourism, a critical component of the economy.

As reservoir levels fell to alarmingly low levels in January, the island faced the threat of a serious water shortage, widespread health problems, and a decline in tourism. The shortage also reduced water pressure and limited firefighting capability during the driest months of the year. Use of government water for irrigation was prohibited in December 1983, and yields per acre plummeted. Weight loss and some livestock deaths were attributed to receding and salinized ponds and catchment areas as well as spotty pasturage.

Early measures to conserve water also aggravated the drought's effects. Water rationing during two three-hour periods each day placed severe hardships on water consumers in the outlying portions of the distribution

system: it took several hours to charge the lines fully and deliver water to those areas. Moreover, during periods when the system was not charging, the lines were vulnerable to fecal contamination and intrusion by other harmful substances. As a result, the Ministry of Health recommended that all drinking water be boiled.

While the island relies on a variety of sources for its water supply, Potsworks Dam is the major source for the public water system, serving 80% of the population through house connections or standpipes. By March, the main reservoir at Potsworks Dam contained only a two-week supply, and a secondary reservoir normally used for irrigation was similarly depleted. Groundwater sources were evacuated to such an extent that considerable salt water intrusion was reported all over the island. Frequent power outages limited the operation of major wells which draw from the groundwater supply. By April, the Potsworks Dam reservoir had dried up completely.

Action Taken by the Government of Antigua and Barbuda (GOA)

In December, the GOA prohibited the use of the public water supply to wash cars, water lawns, or fill swimming pools. Water rationing was also introduced. Water consumption in government, school, and hospital facilities was reduced by fifty percent as a result of conservation efforts.

The GOA was reluctant to publicize the water shortage for fear of triggering a decline in tourism, which supplies 75 percent of the country's foreign exchange. In January, however, the GOA requested assistance in reducing the drought's effects in a diplomatic note to the U.S. Charge in Antigua,

In April, shortly after the country's national elections, the new GOA administration established a task force for the drought situation. Participants included representatives from the Antigua Public Utilities Authority (APUA), the Pan Caribbean Disaster Preparedness and Prevention Project (PCDPPP), USAID's Regional Development Office/Caribbean (RDO/C), the U.S. Naval Facility, and Gannett and Fleming Engineers. The PCDPPP agreed to assess the drought and its implications immediately.

The PCDPPP team included Pan American Health Organization (PAHO) water and sanitary engineers, a soils engineer from the Caribbean Agricultural Research and Development Institute, two APUA water engineers, and the chief technical officer of the Ministry of Agriculture. By the end of April the team had produced a report which included short-term recommendations for rehabilitating groundwater wells, expanding utilization of available surface water, increasing conservation, developing more effective rainwater catchments, and barging water as a last resort. Longer-term recommendations included a leak detection and repair program, dam cleaning, well drilling, installation of rainwater gauges at principal catchment areas, and construction of additional rainwater catchments.

Conditions worsened, however, and the GOA decided to barge water to the island. Discussions with the international donor community led to establishment of a fund to finance the water barging operation. APUA developed and implemented a system of graduated surcharges to cover some of the costs, such that water rates for domestic users were doubled and commercial users, including hotels, were charged the full cost of the barged water. Most of those who depend on standpipe connections do not pay direct water rates and so were unaffected by the rate increases.

Assistance Provided by the United States Government

After receiving a request for assistance with water barging on January 10, the U.S. Embassy in Antigua dispatched a three-man team from RDO/C to assess the nature and urgency of the problem. The team met with the Deputy Prime Minister and representatives of APUA and PCDPPP on January 12 and 13 to develop a plan of action. The Director of PCDPPP, which is headquartered in Antigua, agreed to lead a technical assessment team.

At the request of RDO/C, and based in part upon the PCDPPP recommendations, OFDA procured and sent to Antigua ten submersible six-inch pumps with motors to be used in ten wells recently rehabilitated by APUA.

In March, the U.S. Charge requested U.S. Naval Facility assistance in cleaning up Potsworks Dam reservoir. The extremely low water level provided a unique opportunity to remove debris, deepen the reservoir, and rebuild earthen containment walls. Because all APUA equipment was being used to repair water line breaks, a bulldozer was borrowed from the Antigua air station. The work was completed in seven days.

At the same time, the USG and the GOA were considering other options to alleviate the drought's effects. A team from RDO/C visited Antigua on March 12 and 13 to consult with GOA and APUA officials. The need to import water from external sources was established and necessary preparations were initiated.

On April 13, the U.S. Charge in Antigua declared that the drought constituted a disaster warranting USG assistance. The USG offered to join other international donors in financing the cost of barging a one-week supply of water to Antigua. One hundred thousand dollars was transferred to a multidonor fund established by the GOA and administered by UNDP in Barbados. Three days later, OFDA dispatched a Sanitary Engineer from A.I.D.'s Water and Sanitation for Health project to assess GOA resources and assist APUA in

establishing and operating an emergency water distribution program. As preparations for barging water to the island began, it was discovered that shore facilities to transfer, receive, and distribute the imported water were inadequate. The Commanding Officer of the U.S. Naval Facility in Antigua, who had participated in many of the drought planning meetings, volunteered to provide the service and expertise at his command to address the problems.

To enable barges to discharge water at Crabbs Penninsula, the optimum location for effective distribution, the Seabees built a 200-ft long floating pipeline to discharge water into a storage tank and a 600-ft alternative pipeline. They also marked a safe channel to the discharge site and placed two 9,000-lb. blocks to anchor the buoy and floating pipeline. In addition, they installed a major pump to move the barged water through the lines. When serious leaks developed in the old pipelines leading away from the discharge site, the Seabees worked with the Antiguans to install 2.5 km of 12-inch PVC water main. They set up an alternate barge discharge point at the High Point pier and laid new 6-inch PVC pipe from the pier to the reservoir.

Supplies to repair and lay the pipeline, including PVC hose and couplings, were provided by OFDA, which also sent 5,000 five-gallon collapsible water jugs and 20 nylon/canvas 3,000 gallon collapsible water storage tanks to be used for distribution. Most of the water storage tanks were set up in the greater St. John's area and served as secondary distribution sites, while several were set up at the main Port Authority pier to receive water directly from the incoming barges.

Assisted by a team of five welders and five steel workers from the COMNAVFORCARIB in Roosevelt Roads, Puerto Rico, the Seabees constructed 40 one-thousand gallon steel tanks. Most were used to convert regular trucks into water tankers, while others served as village water distribution points.

In May the Seabees began repair of the 2.5 million-gallon water storage tank at Crabbs Peninsula, which had been weakened by rust and years of disuse. The tank was completely cleaned, reconstructed, and reinforced by June 19.

Summary of USG Assistance

Ambassador's authority, used to repair Crabbs Peninsula water tank and replace old lines.....$25,000

Administrative support.....$5,000

Ten submersible water pumps with motors.....$15,105

Airfreight of pumps.....$1,484

Airfreight of OFDA water tanks and jugs.....$6,721

Contribution to water barging effort.....$100,000

Assorted pumps, couplings, and hoses.....$20,451

Transport of pumps, couplings, and hoses.....$10,995

DOD costs of Seabee support and welding equipment from Puerto Rico.....$15,000

TDY of WASH Sanitary Engineer (April - $2,937, July - $1,060).....$3,997

TOTAL $203,753

Assistance Provided by U.S. Voluntary Agencies

None reported.

Assistance Provided by the International Community

International Organizations

EEC - provided $73,317 to support the multilateral emergency fund to finance water barging operations and to purchase small tanks for distribution to outlying areas. The contribution was coordinated with those of other donors by the PCDPPP.

PCDPPP - conducted a technical assessment of the drought, coordinated many aspects of the relief effort, and developed a public service announcement to encourage water conservation.

UNDP - conducted an extensive water supply study, with special focus on groundwater sources, quality, evacuation rates, and maintenance; developed recommendations for future action.

Governments

Canada - contributed $78,678 to the water barging effort.

United Kingdom - contributed $80,000 to the water barging effort.

TOTAL $231,995