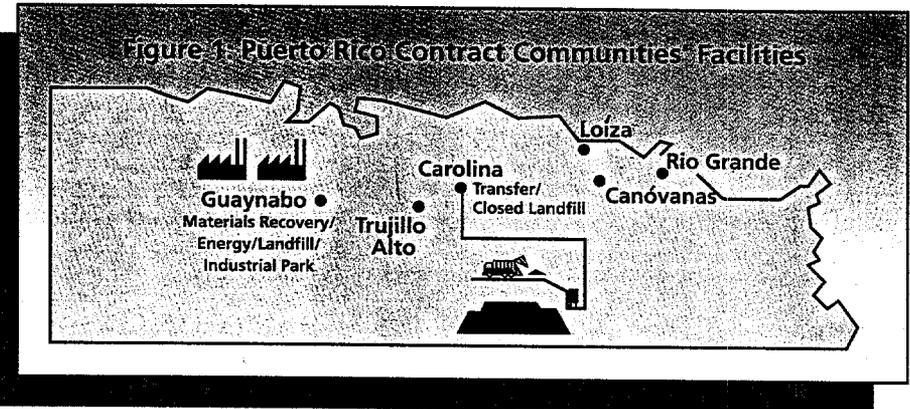


# Puerto Rico Preserves Paradise With Integrated System

By J.A. Davison, Luis R. Pastrana Silva, Joseph W. Schilli and John F. Williams

Communities on the island commonwealth have designed a waste management system to improve the environment and local resource recovery.



Public officials in Puerto Rico are acting to protect their fragile paradise while encouraging industrial development and job creation. A consortium of municipalities has formed the North Eastern Resource Recovery Corp. (NORECORP) to address the complex problems of protecting the groundwater and preserving the island's natural beauty.

In 1989, the Carolina Waste-to-Energy Corp. and the Guaynabo Economic Development Corp. formed the group to help develop and administer an integrated solid waste management system. The late Mayor Alejandro Cruz Jr. of the City of Guaynabo and Mayor Jose Aponte of the City of Carolina, were instrumental in chartering NORECORP which was created to serve the approximately 320,000 residents of the central portion of the Commonwealth.

Puerto Rico's Government Development Bank (GDB) is working with the NORECORP consortium and the six contract communities to fuel development efforts to attract more than \$200 million in investment. The mayors of the different contract communities have charged the corporation with the following goals: to provide waste management self sufficiency; to ensure that environmental improvements are secured; and to achieve maximum resource recovery from materials and

energies that had been previously wasted.

## Trouble In Paradise

Nearly 3.2 million people live in the Commonwealth of Puerto Rico today. Local residents are proud of the 28,000 acre Caribbean National Forest, also known as the El Yunque rain forest, with more than 240 species of 100-foot-high trees and dramatic mountain ranges. Temperatures are consistently comfortable, and as expected in the Caribbean, the island gets a lot of rain. With more than 88 inches of rain annually, drinking water is still considered a precious resource, drawn from groundwater and runoff stored in reservoirs.

Each year the residents of six municipalities — Guaynabo, Carolina, Rio Grande, Loiza, Canóvanas and Trujillo Alto (see Figure 1) — generate 375,000 tons of municipal waste. Interest in environmental conservation and responsible waste management has led to cooperation between communities and political parties that are often in opposition.

Over the life of the 20-year planning period, more than 26 million tons of waste containing significant quantities of recyclable materials will be processed for recovery and energy production. Materials found in the waste stream such as aluminum, ferrous, nonferrous metals, plastics, glass and a range of paper products

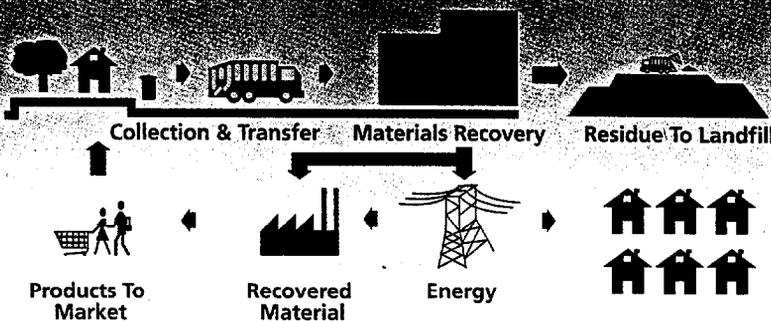
are valuable resources imported to the Caribbean island. Under NORECORP's integrated approach, provisions have been made for the maximum feasible recovery as well as long term, environmentally sound management of reject material and processing residue. For the last two years, the GDB has provided the financial support for securing dozens of permits and approvals for program elements including the development of the Junior Cruz environmental park, a 165-acre facility, designed to support businesses related to recyclable material recovery and remanufacturing.

On completion, 1,200 tons of material will be routed daily to the environmental park, where it will be processed for the recovery of ferrous metals, nonferrous and other materials to provide feed stock for businesses in the park. Soiled waste and reject material will be used to produce electricity for more than 16,000 homes (see Figure 2 on page 38).

In Carolina, 10 to 12 miles from the park, a load consolidation and transfer facility will be built to improve the economics of waste transport to the material recovery facility. A landfill on the Carolina site will be upgraded, operated for approximately five years, then closed and monitored by the consortium.

The last element in an integrated system has to provide for bypass waste and processing residue from

Figure 2: NORECORP System Waste Flow



the recycling and energy recovery facilities. A state-of-the-art landfill will be built in the park, and the consortium plans to operate the facility over its 20- to 25-year life. A methane recovery system is planned for the closed sections of the Guaynabo landfill, as well as future cells in the new Subtitle D facility.

#### Implementing The Plan

Emphasis on maximum recycling and close communication with local residents, regulatory authorities and the financial community have helped to advance the project. Planning, permitting, financing, construction

and operations are all being approached on an integrated system basis. Substantial progress has been made through a competitive process to identify a private, full service vendor to provide key material and energy recovery elements. Work is underway to provide for the eventual closure and monitoring of existing landfills in Guaynabo and Carolina.

The corporation's financing plan will be structured as a system credit to provide for the issuance of one or more series of bonds on a parity basis. The system will be funded in multiple phases as specific facility permitting and design steps are completed. As the plan is implemented, intermunicipal agreements will be executed and bond documentation (including a system feasibility study) will be completed, as will a master bond indenture and an official statement.

NORECORP will finance the system in two phases. The first phase will include:

- Selected infrastructure development at the Junior Cruz Environmental Park;
- The upgrades and eventual closure of the Carolina landfill;
- Upgrades of the Guaynabo landfill; and
- The construction of the load consolidation and transfer facility in Carolina.

The second phase financing will include construction of remaining portions of the environmental park, and permitting and construction of the recycling/material and energy recovery facility.

Interim financing has been provided by the contract communities and the GDB. The initial bond offering is expected before the end of 1993.

Meanwhile, the regulatory process has proved extensive. Three major efforts are being advanced simultaneously in order to secure the needed permits:

- Design plans for the Carolina landfill upgrade and eventual clo-

sure, the transfer facility at the Carolina landfill and for the upgrade and expansion efforts associated with the Guaynabo landfill;

- Environmental impact statements for the Carolina transfer station, the Guaynabo landfill and the recycling/material and energy recovery facility; and

- Permit applications required for each component of the program. For the recycling/material and energy recovery facility alone, more than 15 individual permits are required by the Commonwealth, and the federal government requires a Prevention of Significant Deterioration permit. Comparable efforts are underway for the rest of the system.

The mayors have directed the project team to evaluate the entire system to ensure environmental compatibility. The consortium is working with a task force of regulators and municipal officials and expects that the process, which began in the latter part of 1992, will require approximately 18 to 20 months.

#### Progress To Date

Initial planning and procurement for the recycling/material and energy recovery facility is complete. The Montenay Power Corp. has been selected as the vendor and negotiations are underway. Site investigations and early design efforts are in progress at the Guaynabo landfill, and permit applications should be completed by the third quarter of this year. At the Carolina landfill, site investigations are underway and detailed design should be complete this summer.

The mayors of Guaynabo, Carolina, Rio Grande, Loiza, Canóvanas and Trujillo Alto have put in place a flexible organization with an experienced project team. The GDB is playing a crucial role to maintain progress toward the initial NORECORP bond offering. The system is the product of determination to find the best environmental response to a problem that, if not addressed, could spoil paradise for generations to come. ■

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