



View of the Guánica Watershed from the top of the mountains.
 Photo: Harry Maldonado, NRCS

Guánica Bay Watershed Initiative Rio Loco Watershed Project

By Mario Rodriguez, Resource Conservationist

A Tour Around the Watershed

The Guánica Bay/Rio Loco (GB/RL) watershed is located in the southwestern corner of Puerto Rico, approximately 20 miles west of the city of Ponce and 100 miles southwest of San Juan. Due to human alteration, the watershed is approximately 151 square miles and discharges to Guánica Bay near the town of Guánica.

The GB/RL watershed includes the urbanized areas of Yauco and a portion of the Lajas Valley agricultural region. The GB/RL is one of the major riparian discharge points in the southwest coast.

This watershed is highly manipulated. It has been artificially increased in drainage area by a series of inter basin or inter-watershed water transfers, five reservoirs and two hydroelectric plants. This

project, operated by Puerto Rico Electric Power Authority (PREPA), was completed in order to increase and regulate potable water from the high elevation watersheds of the central cordillera (mountain region) for use by the local populations in Yauco, Guánica and the Lajas Valley for irrigation of crops and flood control. So while Guánica Bay receives water directly only from the Rio Loco ("Crazy River"), the actual total drainage area encompasses much more than just the Loco watershed.

This includes the five smaller basins and associated reservoirs: Yahuecas Lake, Guayo Lake, Prieto Lake, Lucchetti Dam, and Loco Dam. Guánica Bay is essentially drained by both the Rio Loco, which receives flow from the four

reservoirs north and upstream of it, as well as by historic Guánica lagoon.

In its initial phase, the purpose of the project is to apply conservation practices in both the upper and lower parts of the watershed especially to address soil erosion, water quality and quantity and wildlife habitat in agricultural lands to benefit the environment and the coral reefs in this part of the Island.

Information obtained from NOAA, Puerto Rico Department of Natural and Environmental Resources, and the Center for Watershed Protection, October 2008, "Guánica Bay Watershed Management Plan, A Pilot Project for Watershed Planning in Puerto Rico".

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Special Points of Interest:

- *The actual total drainage area encompasses much more than just the Loco watershed.*
- *Since 2007, several Inter-agency Agreements have been signed formalizing this partnership and expanding efforts.*
- *The health of living coral reefs is dependent upon superior water quality and clarity.*

Coral Reef Conservation through Farm Bill Programs

The Natural Resources Conservation Service (NRCS) works through the 2008 Farm Bill conservation programs to provide technical and financial assistance and other tools to eligible agricultural producers and other non-federal land managers to address soil erosion and soil

health, water quality and conservation, air quality, healthy plants, energy conservation, global warming issues, and upland and wetland wildlife habitat enhancement.

The health of living coral reefs is dependent upon superior water quality and clarity

allowing effective sunlight penetration. Proper management of surface water along with other related natural resources from agricultural lands can assist in the protection of coral reefs in the Caribbean Area.

From <http://www.pr.nrcs.usda.gov/programs/eqip03/coralreefs.html>

Challenges in Protecting Corals

There are many challenges in the Guánica Watershed. Currently, the two most important challenges are:

1- Communications between the agricultural and non agricultural communities. Perspectives from the different sectors (NGOs, Agriculture, and Industry) in these communities need to come together. Some think that agriculture produces the problems within the watershed, but they also produce the food, so we need to come up with something that works for everyone (people and corals).

2- Funding: NRCS is contributing over

\$2.2 million in EQIP funding to agricultural conservation practices in the Guánica Watershed.

However, NRCS is challenged with finding and securing other funding that can address the other non agricultural sectors. Fulfilling these challenges will help the community and the coral reefs.

It will take time, planning, meetings, discussions and a plan of work that applies for every area in the watershed.

Obtained from the USCRF Guánica Watershed Connector Issue January 2010 in an interview with Jose Castro, ASTC Programs.



Contaminated bay shore line in Guánica. Photo: Mario Rodriguez, NRCS

Partnerships

NRCS Partners in Conservation include Federal agencies, state, local, and non-governmental groups interested in the welfare of Guánica Watershed ecosystems. Through a special allocation of EQIP funds, NRCS has been establishing conservation practices aimed at maintaining or improving the conditions of resources: soil, water, air, plants and wildlife, and reduce energy consumption.

Our largest cooperators include US Fish and Wildlife Service, PR Department of Agriculture, University of PR, PR Land Authority, and the Southwest Soil and

Water Conservation District. These partnerships have been the key to accomplishing work within the watershed by way of collaboration in implementing conservation practices and carrying out outreach efforts with farmers and communities within the watershed.

“Through a special allocation of EQIP funds, NRCS has been establishing conservation practices aimed at maintaining or improving the conditions of resources.”



NRCS Engineer Luis Rosado discussing with PR Land Authority and Southwest SCD Guánica Project Designers. Photo: Mario Rodriguez,

Upper Watershed Coffee Shade Initiative

This habitat restoration initiative was designed to restore the forest cover in the coffee regions of the mountains of the GB/LR upper watershed. NRCS implemented the shade coffee initiative in collaboration with the US Fish and Wildlife Service (FWS) and other partners. Since 2007, several Interagency Agreements have been signed formalizing this partnership and expanding efforts. As part of this agreement, FWS

provided technical assistance to landowners currently participating in Farm Bill Programs and identify new landowners potentially interested in future years. As a result of our efforts, in 2012 NRCS implemented conservation practices on 44 farms; 25 of these are within the watershed.

Some data obtained from 2013 Wildlife Conservation in the Caribbean, Edwin Muñiz, USFWS CESFO. . <http://www.fws.gov/caribbean/2013CESFO.html>



Shade trees established within coffee and plantain crops. Photo: Harry Maldonado, NRCS

Lower Watershed Initiative

The conversion of sugar cane production to vegetable production brought changes in the management of resources; primarily water and soil. Among other things, the existing drainage system was replaced with conveyed water irrigation, which uses water from deep wells, intensified land use and intense tillage. This has had its adverse impact on natural resources, not only farms but also spreading to adjacent areas. The effects of agricultural practices add to the effects caused by urban development, thus affecting the quality of the natural resources of the area; particularly impact-

ing marine species habitat in Guánica Bay . With this project, the state and federal Departments of Agriculture, are a step closer to achieving immediate solutions to halt the deterioration of these resources.

This project, known as Rio Loco 2010, is in its first phase. To date, the Southwest Soil and Water Conservation District has received a total of \$801,685 in funds from the NRCS Environmental Quality Incentive Program (EQIP) and over \$267,225 from the PR Department of Agriculture (PRDA); plus assistance with administration and support.



Sediment Control Basin recently finalized on Santa Rita Fam, Guánica. Photo: Mario Rodriguez, NRCS

For the second phase, known as Guánica

2011, NRCS contributed \$793,601 and PRDA contributed \$264,531. The project aims to protect, preserve and improve the quality and quantity of agricultural resources through the construction, installation and establishment of measures and practices to control and minimize the effects of external agents that act on those resources.

River Restoration Efforts

Erosion of the banks of the Loco River have cause unstable slopes to invade land that was formerly used for agriculture and thus changing the course of the river. Tons of sediment are transported downstream after each rain event to be deposited in the Guánica Bay adversely affecting existing ecosystems; particularly coral reefs.

This project, in its first phase, includes the restoration of 600 linear feet of slope towards the Las Latas Community in Susúa Baja, and a second phase of another 600 feet near the community of La

Joya in the same neighborhood.

The stabilization of these banks will be achieved through the use of bio-engineering practices which have proven effective and completely environmentally friendly.



Implemented bio-engineering project completed in 1998 by NRCS in Arroyo, PR. Photo: Luis H Rosado, NRCS



Rio Loco degraded shoreline in Las Latas Sector, Guánica. Photo: Luis H Rosado, NRCS

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Community Grant Program with NFWF

The National Fish and Wildlife Foundation (NFWF), in partnership with members of the U.S. Coral Reef Task Force (USCRTF), specifically NRCS and the National Oceanic and Atmospheric Administration (NOAA), have made grant funding available in 2010 and 2011 to

projects that will help restore natural resources in the Guánica/Rio Loco watershed. More than \$1.1 million have gone to twelve local non-governmental organizations, individuals and academic researchers in the watershed to support on-the-ground conservation, community education, and capaci-

ty building. One major success from this grant program has been the establishment of the non-profit Protectores de Cuencas (Watershed Protectors) as a 501c3; the first of its kind in the area to focus on issues in this watershed.



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"Helping People, Help the Land"

The Natural Resources Conservation Service (NRCS) is a natural resources and environmental agency of the U.S. Department of Agriculture. NRCS in the Caribbean Area provides services to Puerto Rico and the U.S. Virgin Islands. NRCS manages and administers several programs and initiatives, and works in partnership with 17 Soil Conservation Districts in Puerto Rico and one in the U.S. Virgin Islands. NRCS provides technical assistance, free of cost, to private land users to solve their natural resource challenges and assist them in maintaining and improving their economic viability.



West Coast Shoreline near Cabo Rojo. Photo: Mario Rodríguez, NRCS

"USDA is committed to helping improve the health of our oceans and ensuring the continued existence of diverse and plentiful coral reefs" *Ann Mills, USDA Deputy Under Secretary for Natural Resources and Environment*

The United States Coral Reef Task Force (USCRTF)

The United States Coral Reef Task Force (USCRTF) was established in 1998 by Presidential Executive Order 13089 to lead U.S. efforts to preserve and protect coral reef ecosystems. The USCRTF has been instrumental in building partnerships and strategies for on-the-ground action to conserve coral reefs. The USCRTF works in cooperation with State, territorial, commonwealth, and local government agencies, nongovernmental organizations, the scientific community, and commercial interests to further the understanding and conservation of coral reef ecosystems.

In 2002, the USCRTF identified the need for action at the local level to reduce key threats to coral reefs in each of the seven states and territories which possess significant coral reef resources. Local action

strategies were developed by Puerto Rico's local and federal agency representatives in 2003.

The Río Loco Watershed Project began in 2009 as a multiagency effort to support the USCRTF Local Action Strategies (LAS) as identified in the Guánica Bay Watershed Management Plan. NRCS work seeks to address LAS in the Río Loco related to land based sources of pollution by reducing loss of coral reef cover through the promotion and application of integrated watershed and land use management practices on agricultural lands.



Measuring the health of the coral reef near La Parguera. Photo courtesy of NOAA

PLAN OF WORK
A Cooperative Conservation effort by: US Department of Agriculture Natural Resources Conservation Service, National Oceanic and Atmospheric Administration, US Fish and Wildlife Service, PR Department of Natural and Environmental Resources, PR Department of Agriculture, PR Land Authority, Center for Watershed Protection, Ridges to Reefs, and Protectores de Cuencas.

Information obtained from the NRCS, RIO LOCO WATERSHED PROJECT