Successful Experiences in Rio Grande/Rio Bravo Watershed Management

5th World Water Forum
Istanbul, Turkey
March 22-23, 2009

Introduction

- A watershed with many voices – a medley of cultures, customs, and perceptions
- Rio Grande, Rio Bravo or Cheenah are all alike
- A common watershed inhabited by autonomous native communities, as well as twin cities from two different countries that are brought together by sharing the same sourced of supply
- Its geographic and weather conditions make water a scarce resource
- A watershed rich in plant and wildlife species that are characteristic of different climate zones

Overview

- An area of 850,000 km2 shared equally by the United States and Mexico
- The river rises on the U.S. side in the San Juan Mountains of southwestern Colorado
- It flows approximately 3,000 km and discharges into the Gulf of Mexico; it begins marking the international boundary around El Paso-Juarez area
- One of the 20 largest rivers in the world and the 5th largest in the Americas
- A predominantly arid and semi-arid water basin
- On the U.S. side, the main source of runoffs is snow melts from the Rocky Mountains, a major water contributor to the Pecos River, which flows into the Rio Grande around the city of Del Rio, Texas and along the upper Rio Grande, as well as the Paso del Norte region
- On the Mexican side, the main source of runoffs is the Conchos River, which supplies two thirds of the water contribution in the mid and lower portions of the water basin
- The area is home to more than 15 million residents
- 7 million residents in Mexico; water is primarily used for irrigation of 600,000 hectares; water is supplied to more than 20 cities and 9,400 industries

Issues in Mexico

- Irrigation relies on 80% of available surface water, and 68% of groundwater - Low irrigation efficiencies
- Public-Urban uses rely on 11% of surface water and 21% of groundwater. There are system inefficiencies, water losses, leaky water lines, and need for institutional capacity building/increased competitiveness
- 14 overexploited aquifers, some shared with the U.S. without an international agreement as to their management, monitoring, and comprehensive use
- Lack of an efficient water use culture and limited water metering; strong competition among the different uses, users, and federal agencies
- Evident signs of water supply source contamination

International Treaties for Surface Water Distribution

- 1906 Treaty. Provides for the delivery of 74 Mm3 of water from the U.S. to Mexico for the Juarez Valley
- 1944 Treaty. Negotiated since 1867. Provides for the distribution of water from the Rio Grande and Colorado River shared water basins. Mexico must make a minimum annual delivery of 432 Mm3, and the U.S. must deliver 1,850 Mm3 with a 4:1 ratio in favor of Mexico

Institutional Capacity

- IBWC/CILA
- Texas Water Master (State of Texas)
- Comisión Nacional del Agua (Mexico)
- Consejo de Cuenca / Water Council (Mexico)
- Irrigation Districts (both countries)
- Water Utilities (both countries)
- Paso del Norte Water Task Force (binational)
- Texas Water Development Board
- BECC/NADB

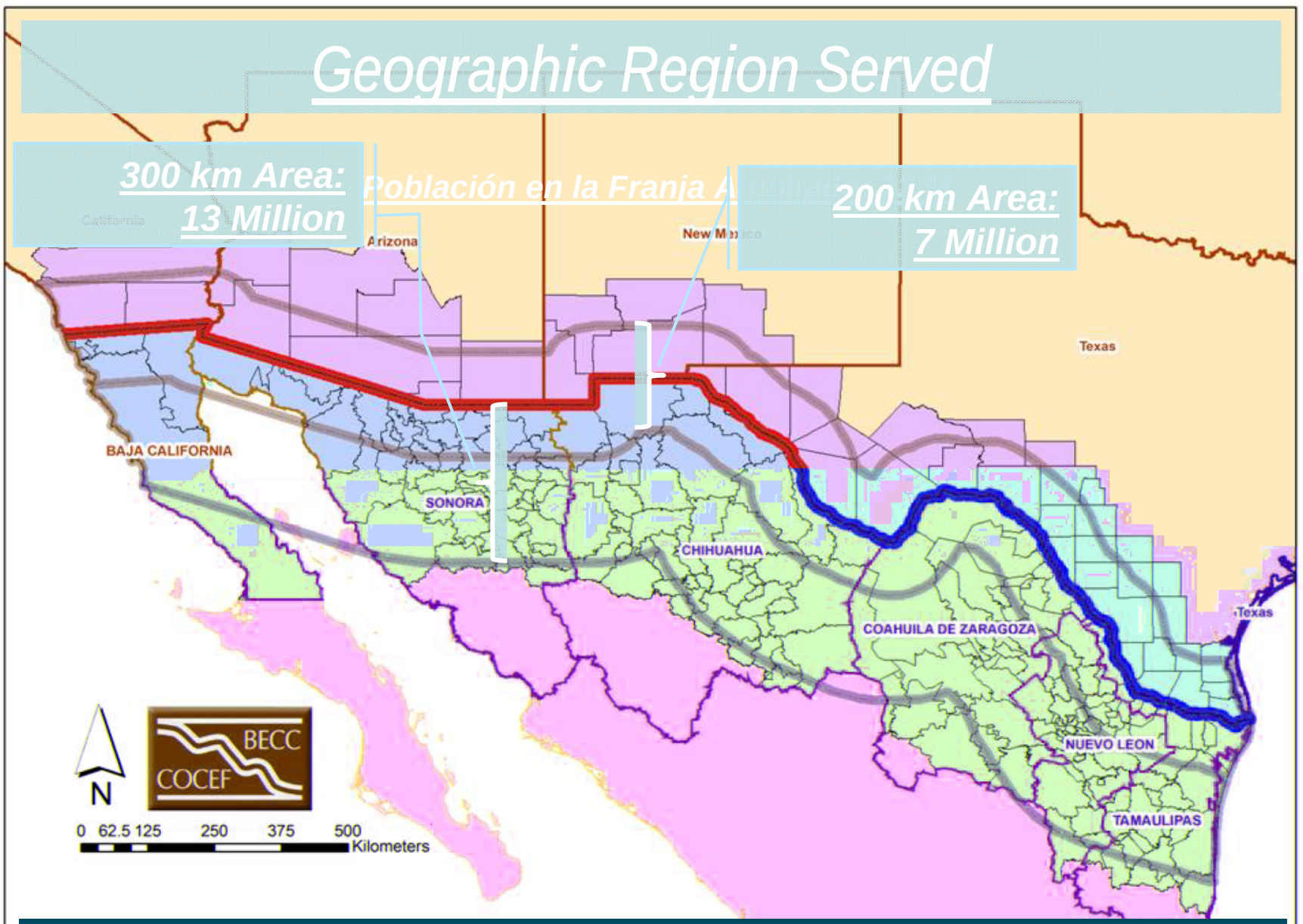
Public Participation and BECC Certification of the Project for the Modernization of ID 005-Delicias

Geographic Region Served

300 km Area: 13 Million

Población en la Franja A

200 km Area: 7 Million



The border area served by BECC and NADB encompasses 30% of the Mexican territory

OUTCOMES

CERTIFIED PROJECTS	152	MX 68 US 76
TOTAL INVESTMENT (US millions)	$3,119	
POPULATION SERVED (M)	11.9	
FUNDED PROJECTS	129	MX 61% US 39%
FUNDING AMOUNT (MD)	$968	

ID 005 is located south of the capital of the State of Chihuahua.

It is the largest of the three districts located in the Conchos watershed

As a result of the drought, the cultivated surface area was reduced from 87,205 Has. To 46,000 Has.

The efficiency rate was 33% due to its deteriorated infrastructure

Predominant crops include alfalfa, pecans, peanuts, and chile peppers

Significance of ID 005

- La Boquilla Reservoir is the head structure for the Irrigation District
- It was built in the middle of the Mexican Revolution period
- This structure was critical to begin small and large-scale irrigation in Mexico
- It involved a major technological breakthrough with the use of concrete for the curtain
- The combination of water and irrigation infrastructure have helped this district become one of the most productive ones in the country

Project Significance

- Increased efficiency from 33% to 56%
- Reduce the volume of water used by 343 Mm3
- Technology upgrades in 76,700 Has.
- Includes the lining of 12 km of the main canal; lining of 518 km of lateral canals; 250 km of low-pressure piping; grading of 32,500 ha.; installation of a system of high-pressure lines, and low pressure pumping facilities and irrigation
- Cost is US $140 million, funded with US $30 million from NADB's water conservation fund and the rest by CNA

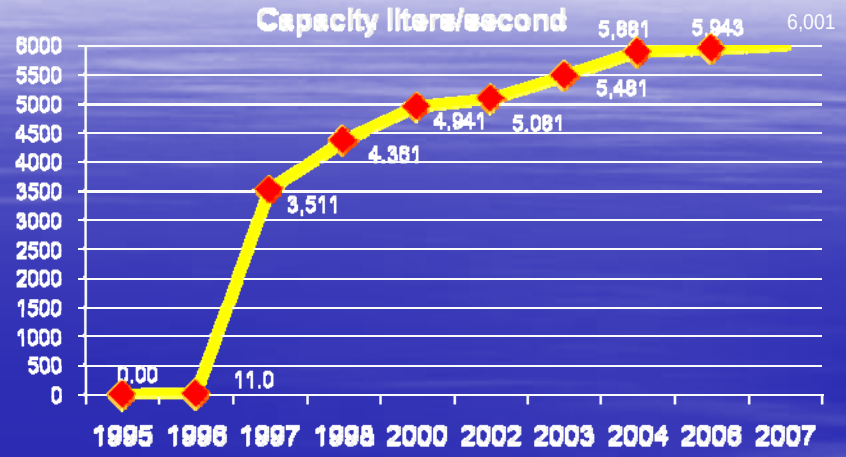
BECC/NADB Water Conservation Program in U.S. irrigation districts within the watershed (Texas-New Mexico border)

- 19 technical improvement projects in Texas and New Mexico irrigation districts
- Estimated cost: US $71.64 million
- Annual savings of 127,081 acre-feet of water, equivalent to 156.066 million cubic meters

Impact of BECC efforts on Wastewater Treatment Coverage increases on the Mexican Side of the Rio Grande/Rio Bravo Watershed

New Wastewater Treatment Facilities 1995-2007

City	State	Capacity Liters/sec.	Certification Date	Investment (million dollars)
Matamoros	Tamps.	11.0	1996	31.16
Cd. Juárez,	Chih.	3,500.0	1997	57.4
Reynosa	Tamps.	850.0	1998	1.1
Cd. Acuña	Coah.	120.0	2000	82.9
Piedras Negras	Coah.	360.0	2000	20.98
Región 5 Manantiales	Coah.	100.0	2000	5.18
Ojinaga	Chih.	140.0	2002	5.28
Matamoros	Tamps.	400.0	2003	6.24
Nuevo Laredo	Tamps.	400.0	2004	57.7
Anapra, Cd. Juárez	Chih.	62.0	2006	76.6
Porfirio Parra	Chih.	5.0	2007	2
Guadalupe	Chih.	18.0	2007	3.4
Colonia Esperanza	Chih.	5.6	2007	2.18
Praxedis Guerrero	Chih.	14.7	2007	4.28
El Porvenir	Chih.	15.2	2007	2.27
		6,001		**358.67**



Evolution of Wastewater Treatment Coverage in Mexico along the Rio Grande/Rio Bravo River Bank

1995= 0%
2008= >90%

Between 1995 and 2007 BECC has certified 16 projects involving wastewater treatment facilities along the Rio Grande/Rio Bravo. Mexican communities disposed of 100% of their raw wastewaters by discharging them into the river; nowadays, more than 6,000 liters per second receive treatment, which represents a 0% to 90% in crease in wastewater treatment coverage with a capital investment of US $358.6 million.