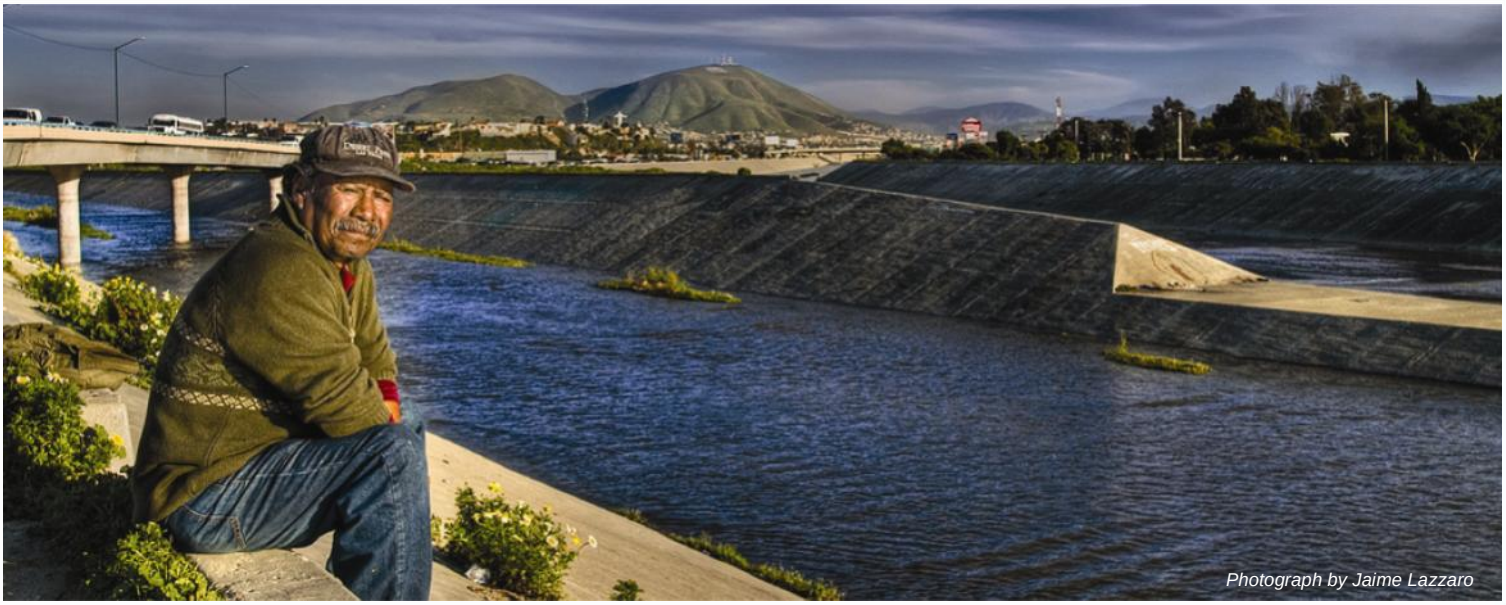

Photograph by Jaime Lazzaro

U.S.-Mexico Border Water Infrastructure Program

The U.S.-Mexico Border Program's bi-national framework is based on the 1983 La Paz Agreement and a subsequent environmental agreement to the North American Free Trade Agreement addressing infrastructure needs and related environmental impacts from the expected trade increase.

Public Health Benefits: Connecting nearly 55,000 homes with safe drinking water and 500,000 with adequate wastewater service has helped reduce the risk of water-borne diseases.

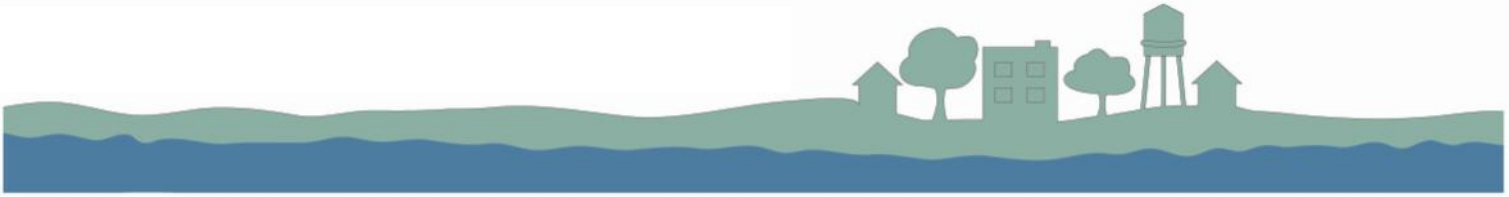
Environmental Benefits: More than 350 million gallons/ day of untreated or inadequately treated wastewater discharges have been eliminated.

Economic Benefits: Water infrastructure investments generate large economic benefits due to reduced health care costs and gains in productivity. Infrastructure construction stimulates local economies and creates jobs.

The U.S.-Mexico Border Region is a dynamic area where public health and environmental challenges are interconnected, populations intermingle, and water resources are shared by both countries. The EPA U.S.-Mexico Border Water Infrastructure Program works collaboratively to address critical public health and environmental problems at the source by providing often first-time drinking and wastewater services to underserved communities.

Since 1997, EPA investments of $571 million in grant funding have leveraged more than $1.1 billion in funding from other sources. Through cross-agency collaboration, the Border Program has funded 97 projects with total construction costs of more than $1.7 billion, benefiting 8.5 million people. Seventy eight projects have been completed, including 13 completed in fiscal year 2011 (FY11).

The program protects public health and the environment by providing essential drinking water and wastewater services to underserved communities, funding projects that otherwise would be financially infeasible. The program has helped border communities gain access to these basic and essential services; yet, the documented need for additional assistance remains critical.



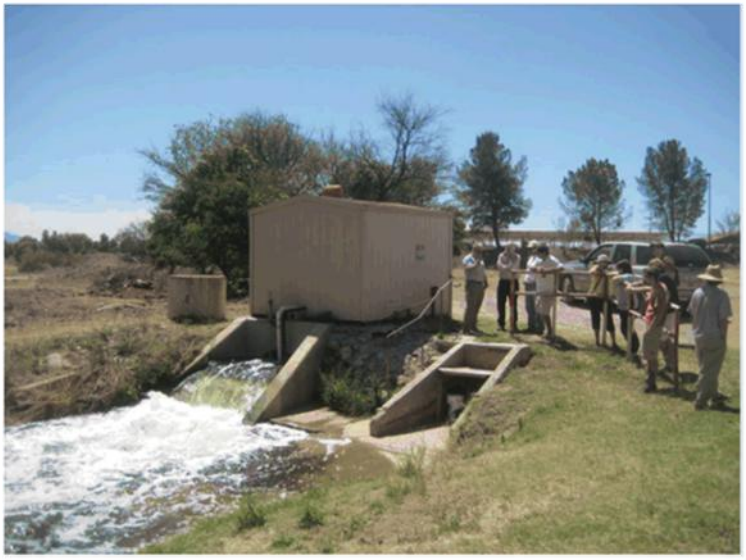
Every new household connected to a collection and treatment system prevents approximately 200 gallons per day of raw sewage from flowing into the rivers, lakes, and streams of the United States.

As part of the FY11/12 funding cycle, EPA sponsored a series of workshops to help communities evaluate funding options to support their infrastructure needs. Federal and state agencies, including US Departments of Agriculture (USDA) and Housing and Urban Development (HUD), participated in these workshops and provided information about their funding programs. EPA received 200 applications with a total estimated construction cost of $800 million.

Through EPA's prioritization process, 23 of these projects have been selected as candidates to receive funding for planning and development. As construction funds become available, EPA will fund those projects that address the most urgent public health and environmental needs.

Benefits to U.S. Border Communities

Many rivers along the U.S.-Mexico Border, like the Tijuana River in California, originate in Mexico and flow northward into the United States, while the Rio Grande in Texas forms a natural border between both countries. The shared use and ownership of border surface waters requires unique environmental, technical and political solutions to ensure that U.S. citizens are protected from exposure to untreated sewage and disease outbreaks from unsafe drinking water. EPA works closely with U.S. federal, state and local partners and with Mexican water agencies and state governments to reduce discharges of raw sewage into these precious waters. Treating this pollution at its source is the most effective way to protect public health and water quality; treating these waters after they have been contaminated and crossed the border into the United States is neither technically nor financially feasible.



Treated wastewater from the Nogales International Treatment Plant in Arizona flows to the Santa Cruz River.

EPA's U.S.-Mexico Border Water Infrastructure Program has the authority to work directly with Mexican agencies to prevent untreated sewage discharges into our shared waterways. Such efforts are a key step to improving coastal water quality by reducing pollutant loadings to the rivers flowing into the Gulf of Mexico near Brownsville, Texas, and Matamoras, Tamaulipas (Mexico), and into the Pacific Ocean near San Diego, California and Tijuana, Baja California (Mexico).

Every new household connected to a collection and treatment system prevents approximately 200 gallons per day of raw sewage from flowing into the rivers, lakes, and streams of the United States. To date, EPA's infrastructure projects have dramatically reduced contamination of border surface waters by treating more than 350 million gallons per day of previously untreated or inadequately treated sewage discharges. For example, a wastewater conveyance and treatment facility in Mexicali, Baja California, reduced by more than 15 million gallons per day the amount of raw sewage flowing via the New River into Calexico, California, and on to the Salton Sea.

Public Health Benefits

In the border region, the close proximity and significant intermingling of populations poses a serious risk of disease exposure and transmission as a result of unsafe drinking water and sanitation. Upgrading drinking water systems to meet EPA, Mexican, and state drinking water standards reduces the risk of water-borne illnesses, particularly gastro-intestinal diseases such as bacterial and amoebic dysenteries, viral gastroenteritis, hepatitis A, and *Ascariasis*.

Since program inception, the border water infrastructure program has provided nearly 55,000 homes with safe drinking water and more than 500,000 with adequate wastewater services. EPA's investment in drinking water and wastewater projects in these underserved communities benefits U.S. border populations by reducing the potential for cross-border disease exposure.

Environmental Benefits

EPA's border wastewater infra-structure projects have reduced discharges of organic waste by more than 100 million pounds per year.

Discharges of raw sewage contaminate rivers and streams with pathogens and excessive nutrients that poison and choke aquatic life. These waterways, which are extremely valuable in the desert southwest, become dead zones that are unsafe for consumption and recreation. EPA's border wastewater infrastructure projects have reduced discharges of organic waste by more than 100 million pounds per year. Removal of other contaminants, such as suspended solids, toxic ammonia, nutrients and pathogens, has improved water quality at beaches and in rivers throughout the border region.

Some states and local organizations are documenting environmental improvements across the border region. These areas include the Santa Cruz River in Arizona, the New River in Imperial Valley, California and the Rio Grande near Ojinaga, Mexico and Presidio, Texas. Documented improvements in water quality include reduced contaminant loads of organic waste, ammonia, pathogenic bacteria, and total suspended solids. For example, populations of the long-fin dace, a native fish, have returned to the Santa Cruz River, increasing from zero reported in 2007 to 500 in 2011 following completion of the International Wastewater Treatment Plant in Nogales, Arizona.

Sherry Sass, president of the local organization *Friends of the Santa Cruz River*, commented before the Nogales project was even complete, "I can't believe the fish are back already. That's just astounding. It's very heartening that the government has been responsive and that so many different agencies and groups have been working together towards cleaning up what's really the heart of the valley."

Stream surveys in the Santa Cruz River, downstream of the Nogales Treatment Plant

Fish found in the Santa Cruz River during surveys by the Sonoran Institute.

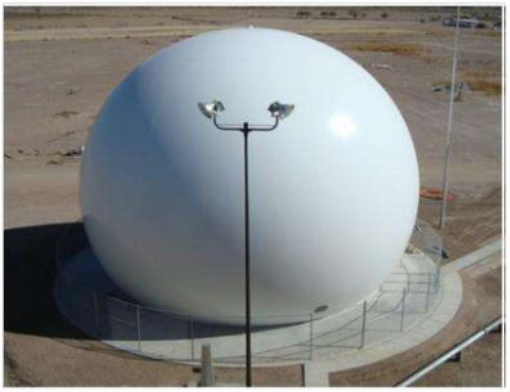
Economic Benefits

The U.S.-Mexico Border Water Infrastructure Program implements projects that stimulate local economies through public health-related economic gains, job creation and increased demand for goods and services. EPA investments in infrastructure projects generate substantial economic benefits through public health improvements. Studies have shown that investing one dollar in improvements to water and wastewater infrastructure has an estimated economic return of eight to twelve dollars. Safe drinking water and sanitary sewer services increase economic productivity by reducing the risk of water-borne illnesses, such as diarrheal diseases and other gastro-intestinal diseases. Gains in productivity from improved health, reduced health care costs, and convenience time savings to individuals provide additional economic benefits. A Clean Water Council study in the border region concluded that a $2.6 million investment in infrastructure in Doña Ana County, New Mexico, created a demand for products and services of approximately $4 million and more than 40 jobs. This project is representative of the projects financed by EPA's border program.

Infrastructure improvements and increased managerial and financial capabilities gained through the program support local economies and help communities attract investments. Fiscal discipline and realistic user fees required for project funding help create self-sufficient utilities such as the Tijuana, Tecate and Mexicali water utilities, which are recognized for their production- and commercial-efficiencies and have been awarded top ratings for credit worthiness. As a result of EPA assistance, these self-sufficient water utilities are able to maintain their drinking and wastewater infrastructure, with tangible benefits such as cleaner and safer water entering the United States via the Tijuana and New Rivers, which originate in Mexico.

Moving forward

Capacity building, operator competency, long-term operation and maintenance, climate readiness and water scarcity are some of the challenges these communities face in securing water and wastewater services. The border program's challenge moving forward is to help these communities incorporate effective utility management practices and cost-effective, climate-ready components into the planning, design and long-term operation and maintenance of their water and wastewater infrastructure projects.



A methane capture system in Mexico at Ciudad Juarez's South Wastewater Treatment Plant harvests methane from the anaerobic digestion treatment process.

New solar panels in Mexico at San Benito's drinking water treatment plant reduce energy costs, which are a major expense for most water utilities.

CASE STUDIES

On the Ground Results, Nogales International Wastewater Treatment Plant

Nogales, Arizona International Wastewater Treatment Plant

Along the U.S.-Mexico Border, the Ambos Nogales region is home to the sister cities of Nogales, Arizona and Nogales, Sonora, where waters flow north from Mexico through the Nogales Wash into the Santa Cruz River and on towards Tucson, Arizona. With rapid population growth, and aging infrastructure, both cities were at risk from the public health hazards associated with frequent sewage spills. Technical limitations at the Nogales International Wastewater Treatment Plant (NIWTP), located in Rio Rico, Arizona were resulting in discharges of toxic ammonia, excessive nutrients, and an odorous murky sludge into the Santa Cruz River.

The NIWTP serves both U.S. and Mexican citizens, roughly 21,000 and 300,000 respectively, and is co-owned by the City of Nogales, Arizona, and the International Boundary and Water Commission (IBWC). In 2009, the rehabilitation of the NIWTP was completed with funding from the EPA, City of Nogales, Arizona, and the IBWC. The impact of this project on the U.S.-side of the border has been immediate and substantial. Levels of toxic ammonia in the river have been reduced by more than 90%. Populations of the long-fin dace, a native fish, have grown from zero in 2007 to 500 in 2011, and Santa Cruz Watershed scientists expect the Gila topminnow, an endangered species that lives in tributaries to the Santa Cruz River, will begin to repopulate its former range.

Comprehensive Wastewater Collection and Treatment: City of Reynosa, Mexico

Secondary sedimentation basin at the new 5.7 MGD Reynosa wastewater treatment plant.

The City of Reynosa in Tamaulipas, Mexico, is a quickly growing city of 600,000 located on the U.S.-Mexico Border directly across from Hidalgo and McAllen, Texas. Before the completion of new wastewater infrastructure projects, only 57% of Reynosa's population had wastewater collection services; the population was served by an old, inoperable wastewater treatment lagoon. Much of the 36.5 million gallons per day (MGD) of raw sewage produced by the city was being discharged into the Rio Grande without treatment, contaminating the river with pathogens and excessive nutrient loading and exposing populations on both sides of the border to raw sewage discharges.

To improve environmental health and sanitation, the city developed a comprehensive wastewater collection and treatment project at a cost of $83.4 million, of which EPA's border program funded $33.5 million. The project, which included a collection system and two new wastewater treatment plants, was completed in May 2011. Now, 90% of Reynosa's residents are connected to a wastewater collection system and approximately 83% of residential wastewater is being adequately treated. The treatment systems have the combined capacity to treat 28.5 MGD of wastewater before it is discharged into the Rio Grande, improving the river water quality and diminishing U.S. citizens' exposure to raw sewage discharges. A planned expansion to the wastewater system will fully treat the additional raw sewage discharges associated with the city's rapid growth.

For more information, please visit:

http://www.epa.gov/usmexicoborderwaterinfrastructure

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