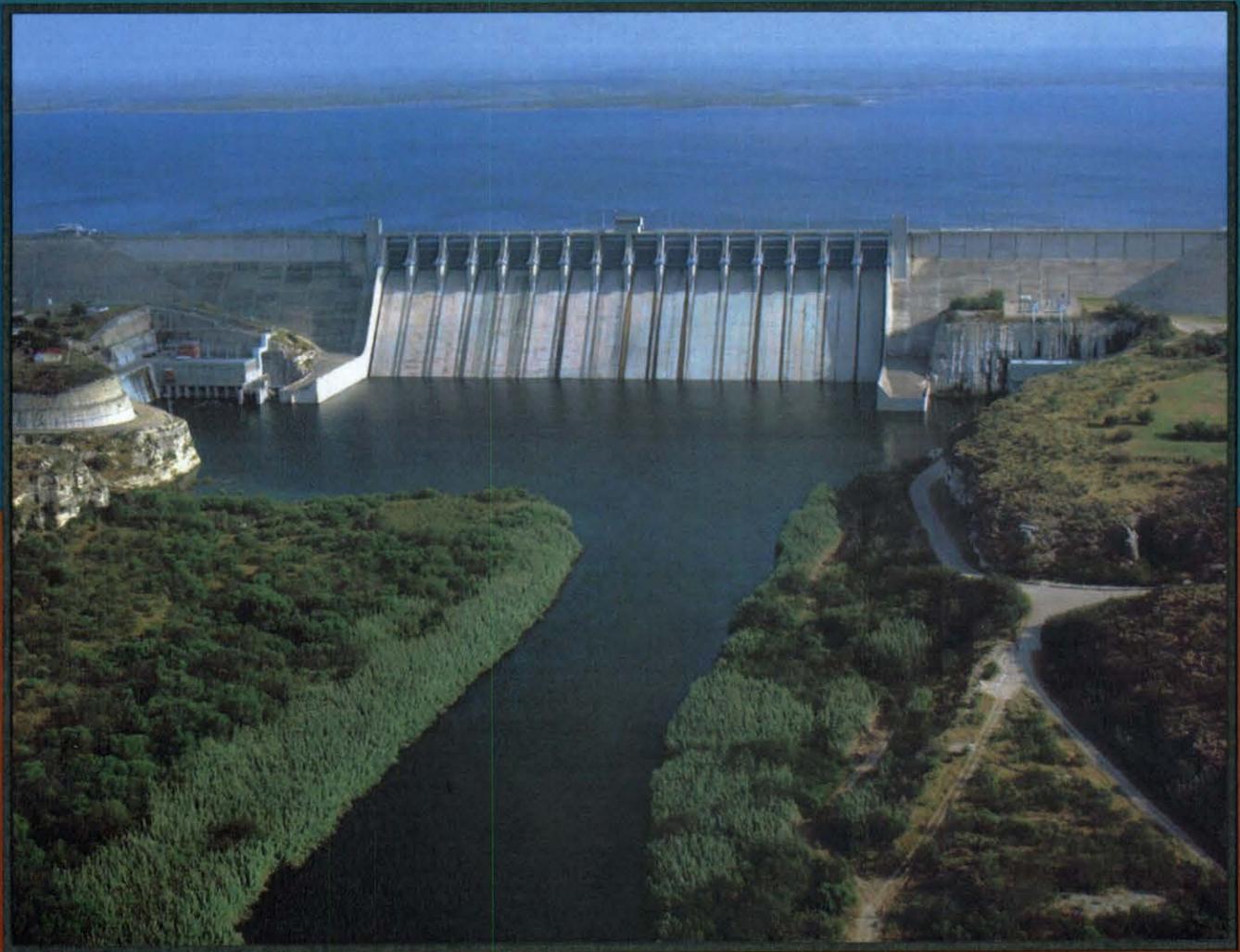


# International Boundary and Water Commission United States and Mexico



## 2007 ANNUAL REPORT



FRONT COVER: Amistad Dam on the Rio Grande

INTERNATIONAL BOUNDARY AND WATER COMMISSION  
UNITED STATES AND MEXICO



*“The jurisdiction of the Commission shall extend to the limitrophe parts of the Rio Grande (Rio Bravo) and the Colorado River, to the land boundary between the two countries, and to works located upon their common boundary, each Section of the Commission retaining jurisdiction over that part of the works located within the limits of its own country.”*

**Article 2, 1944 Water Treaty**



## MESSAGE FROM THE COMMISSION

The International Boundary and Water Commission, United States and Mexico (IBWC), is an international organization created by the two governments to oversee compliance and application of the boundary and water treaties between the two countries and to settle any differences that may arise in their application. In 2007 the IBWC, in compliance with the authorities granted to it by the Treaties, carried out various activities including boundary demarcation, operation and maintenance of international dams, water accounting, maintenance of flood control projects, and operation of international sanitation projects.

Of particular note, in October 2007, with the support of the authorities of both governments, the Commission was able to close the 2002-2007 Rio Grande water delivery cycle for Mexico's water allocation to the United States without a deficit in conformance with the terms of Article 4 of the 1944 Water Treaty.

During 2007, the Commission carried out the Five-Year Safety of Dams Inspection on the Rio Grande in conjunction with its binational group of technical advisors. Stemming from this inspection, the need to develop further studies to verify the structural conditions of Amistad and Falcon Dams was identified. Amistad Dam, which the technical advisors classified as "Potentially Unsafe," will be a priority for further study. Efforts to develop these studies also began in 2007.

In addition, the Commission continued with its work to survey the international boundary monuments using Global Positioning System (GPS) technology, a project it hopes to conclude in 2008. Likewise, significant progress was made on preparing new photomaps for the international boundary line along the Rio Grande; the maps are scheduled to be completed by the end of 2008.

Finally, in 2007 the Commission initiated work to remove sediment from the Rio Grande, particularly in the concrete-lined Chamizal Project channel at El Paso, Texas-Ciudad Juarez, Chihuahua and in other critical reaches in the El Paso-Juarez Valley. To facilitate this work, the Commission signed a Joint Report of the Principal Engineers that distributed responsibility between the two countries for maintenance of the Rio Grande Rectification Project from El Paso-Ciudad Juarez to Fort Quitman, Texas. The Joint Report was expected to be adopted as a Commission Minute in 2008.

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## I. INTERNATIONAL BOUNDARY

### Maintenance of Boundary Demarcation Features

The IBWC is responsible for demarcating the border between the United States and Mexico. This includes installing and maintaining boundary monuments and markers on the land boundary between the two countries and placing appropriate plaques and elements demarcating the boundary on international bridges and at the land ports of entry.



**IBWC workers maintain boundary demarcation features at the Tecate, CA-Tecate, B.C. Port of Entry.**

Consistent with Minute 302, in 2007 the Commission carried out maintenance of the international boundary demarcation features at the international bridges and border crossings. The goal of this program is to clearly maintain the established jurisdictional limits at the ports of entry to assist the authorities on both sides in carrying out their duties.

At the Mariposa Port of Entry at Nogales, Arizona-Nogales, Sonora, the U.S. Section installed boundary demarcation plaques, which had been requested by officials in both countries to clarify

the location of the border. Additionally, traffic buttons were installed to demarcate the boundary on the new Free and Secure Trade (FAST) lane that was constructed.

The Commission also inspected the demarcation buoys at Amistad Reservoir and reinstalled Buoy No. 18. Demarcation monuments at Falcon Reservoir could not be inspected or maintained because water levels remained too low for access to the top of the pillars.

Consistent with Minutes 244 and 249, the Commission undertook activities to repair or restore boundary monuments on the land boundary. As part of this work, the U.S. Section refurbished eight monuments in the area of Yuma, Arizona-Los Algodones, Baja California. In the month of April, work began on the survey of the international monuments using Global Positioning System

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(GPS) technology with the participation of both Sections of the Commission and INEGI, Mexico's geographical information agency.

In June, the Mexican Section requested through the U.S. Section that the United States government remove a portion of the vehicle barrier fence to the west of Columbus, New Mexico-Palomas, Chihuahua because a section of this U.S. border security fence had encroached into Mexican territory between boundary monuments 29 and 31. Removal of the portion of the fence encroaching into Mexican territory was initiated later that month.

In August, Commission staff determined that a room of a Mexican house, concrete block fence, and several junkyards between monuments 222 and 223 near Calexico, California-Mexicali, Baja California encroached into U.S. territory. The Commission coordinated their removal from the United States.

In September, the two Sections agreed to prepare a report documenting various boundary encroachments affecting both countries, including both public and private fencing and buildings. The report was expected to be completed in 2008.

In accordance with the 1970 Boundary Treaty, the Commission is responsible for preparing maps of the U.S.-Mexico border. Draft Rio Grande boundary photomaps were developed in 2006 and work continued in 2007 to refine both the digital and hard copy photomaps. Final maps are scheduled to be completed in 2008.

## II. RIO GRANDE

### Water Deliveries under the 1944 Water Treaty

The 1944 Water Treaty between the United States and Mexico governs the distribution of the waters of the Rio Grande between the two countries from Fort Quitman, Texas to the Gulf of Mexico. Under this treaty Mexico delivers a minimum annual average of 350,000 acre-feet (431.72 million cubic meters [mcm]) of water to the United States from six Mexican tributaries in cycles of five



**Boundary monument No. 220 at the California-Baja California border.**



years. In 2007, Mexico completed treaty deliveries for the 2002-2007 five-year cycle, delivering a total of 1,750,000 acre-feet (2158.6 mcm). To ensure compliance with treaty obligations, Mexico transferred 224,639 acre-feet (277 mcm) of water from Mexican ownership to U.S. ownership at Amistad Dam at the end of the cycle in conformance with Minute 234 and was credited with the corresponding conveyance losses.

## Convention of 1906

The Convention of May 21, 1906 established an agreement for the equitable distribution of the waters of the Rio Grande for irrigation purposes in the El Paso, Texas-Ciudad Juarez, Chihuahua region. In accordance with the Convention, the United States delivers to Mexico a total of 60,000 acre-feet (74 million cubic meters [mcm]) of water annually, except in the event of extraordinary drought or serious accident to the irrigation system in the United States. The water is stored in the United States at Elephant Butte and Caballo Dams in New Mexico, which are operated by the U.S. Bureau of Reclamation to release water to downstream users in both countries. To complete the deliveries, the Commission operates the American and International Diversion Dams at El Paso-Ciudad Juarez to divert water into each country's irrigation canal system. During 2007, The Commission coordinated the schedule for water deliveries to Mexico, operated the diversion dams, and measured and monitored the volumes delivered in order to provide a final allocation of 58,769 acre-feet (72.5 mcm), equivalent to 98% of a full allotment. Mexico diverted its water allotment through the Acequia Madre Canal for irrigation in the Juarez Valley of Chihuahua.



**American Dam at El Paso, TX-Ciudad Juarez, Chih.**

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To coordinate water deliveries among different users to maximize the efficiency of deliveries, the Commission held monthly meetings in coordination with the U.S. Bureau of Reclamation, Mexico's National Water Commission, Elephant Butte Irrigation District, and El Paso County Water Improvement District No. 1 to exchange information regarding changing runoff and storage conditions.

To ensure the efficient conveyance of waters delivered in accordance with the treaty, the U.S. Section removed sediment in the Upper Rio Grande channel at major arroyo deltas upstream of American and International Dams.

### Flood Control

The Commission continued its efforts to improve the Upper Rio Grande flood control system in the El Paso, Texas-Ciudad Juarez, Chihuahua Valley following flood flows that occurred in August and September 2006. To address maintenance needs, the Commission in September signed the "Joint Report of the Principal Engineers regarding the Division of Maintenance Work in the Rio Grande from the Point Closest to Monument No. 1 to the End of the Rectification Reach in the El Paso-Juarez Valley." In accordance with the report, each country will be responsible for removing sediment from specific river reaches totaling 45.5 miles (73.23 km) each. The works will be carried out by personnel or contractors of the Commission. Each Section will also be responsible for maintaining the floodway and levees in its own country. Priority works identified in the Joint Report include sediment removal and levee repairs in both countries. The Joint Report is expected to be adopted in a Minute in early 2008.



**The Commission removed sediment from the Chamizal channel.**

Both Sections began work at priority sites in 2007. The U.S. Section restored the U.S. river levee between International Dam and the old Riverside Dam location near the Ysleta-Zaragoza International Bridge to the height required to maintain three feet of freeboard during the 100-year flood. The Mexican Section, using funds provided by the U.S. Section, removed sediment from a portion of the concrete-lined Chamizal Project channel through central El Paso-Ciudad Juarez. The Mexican Section, in cooperation with Mexico's National Water Commission, also removed sediment from critical reaches of the river channel in the Juarez Valley and did vegetation removal and clearing along the Mexican levee in the same area.

# International Boundary and Water Commission United States and Mexico



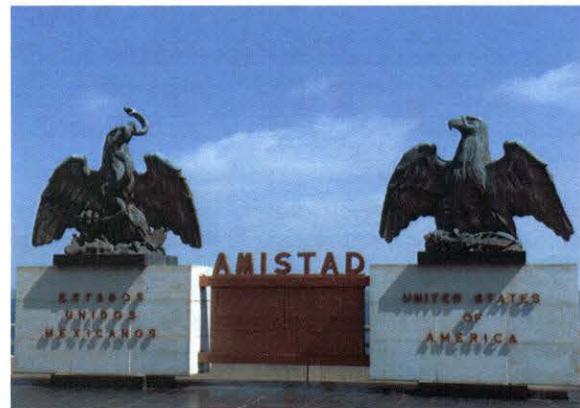
Personnel from both Sections inspected La Montada Dike in Ciudad Juarez and reviewed plans to take the dike out of operation. During storms in 2006, the unreinforced dike filled to overflowing and threatened to collapse, creating a risk of flooding in neighborhoods in Ciudad Juarez and downtown El Paso. In 2007, Mexican authorities cut a channel through the dike to allow water to flow down a drainage channel rather than being stored behind the structurally-deficient dike; this modification was expected to remove the risk of flooding in El Paso and Ciudad Juarez.

Likewise, as part of its operations program, the Commission conducted the annual flood control workshops in June at Falcon and Amistad International Dams and for the Lower Rio Grande Flood Control Project. The purpose of these workshops is to ensure Commission personnel are fully trained to execute the appropriate flood operations at the international dams using the Commission's flood control operations criteria. During this event, personnel from Mexico's National Water Commission and the U.S. National Weather Service actively participated. Additionally, the IBWC coordinated with local authorities in both countries to exchange information, update emergency contact directories, and strengthen preventive measures to address flood emergencies in the Rio Grande.

The U.S. Section worked on environmental studies, geotechnical investigations, and design for improvements to the U.S. Rio Grande flood control levees in Hidalgo and Cameron Counties, Texas. Construction was scheduled to commence in 2008.

## Amistad Dam Operation and Maintenance

Located near Del Rio, Texas-Ciudad Acuña, Coahuila, Amistad Dam was built under the joint supervision of the two Sections of the Commission to comply with the goals of the 1944 Water Treaty to store the greatest quantity of the annual flow of the Rio Grande and to provide for flood control. The dam was inaugurated September 8, 1969 by U.S. President Richard M. Nixon and Mexican President Gustavo Díaz Ordaz. In the 1980s, each country constructed a hydroelectric power plant at the dam. Both Sections of the Commission are responsible for ongoing operation and maintenance of the dam.



**Two eagle sculptures mark the border atop Amistad Dam.**

At the end of 2007, the total storage was 2.827 million acre-feet (3488 million cubic meters [mcm]) or 86% of its conservation capacity of 3.275 million acre-feet (4040 mcm).

In addition, the Five-Year Safety of Dams Inspection was carried out by a binational group of technical advisors from the Commission, the U.S. Army Corps of Engineers, Mexico's National Water Commission, and Mexico's Federal Electricity Commission. The experts determined the dam is able to operate under normal and flood conditions. However, out of five potential classifications, with Dam Safety Action Class I being Urgent and Compelling (Unsafe) and Class V being Normal (Safe), the experts classified Amistad Dam under Class II – Urgent (Potentially Unsafe). Amistad Dam's rating is based largely on engineering judgment of the joint technical advisors regarding the potential impact of naturally-occurring sinkholes and the high risk in terms of the combination of potential loss of life and economic damages. The report recommends that a joint U.S.-Mexico panel of geotechnical consultants be convened to further evaluate and study the entire foundation and the effectiveness of past efforts to treat the sinkholes. The Commission began preparations in 2007 to undertake the additional studies in 2008.

Initiated in 2006, the repair and maintenance of the gages that measure seepage from the springs at Amistad Dam were completed in 2007. Other maintenance work included removal of vegetation and clearing of the crest, access ramps, and inspection roads along the dam curtain.

In September, the Commission adopted the new elevation-area-capacity table for Amistad Dam based on the results of the 2005 silt survey. According to survey results, the total normal conservation capacity increased from 3.151 million acre-feet (3887 mcm) to 3.275 million acre-feet (4040 mcm), an increase of 124,000 acre-feet (153 mcm), based on the calculated amount of silt in the reservoir. The additional amount of water calculated for the reservoir was divided between the two countries based on each country's assigned share of normal conservation capacity at the reservoir. Normally, the amount of silt would be expected to increase over time; however, it was determined that the previous survey, conducted in 1992, did not accurately reflect the amount of silt in the reservoir at that time.



**A silt survey was used to update the capacity of Amistad Reservoir.**

### Falcon Dam Operation and Maintenance

Built in the 1950s, Falcon Dam, located in Falcon Heights, Texas-Nueva Ciudad Guerrero, Tamaulipas, was constructed in accordance with the 1944 Water Treaty to store water for downstream users. Additionally, it plays an important role for flood control and hydroelectric power generation for both countries.



At the end of 2007, joint storage was 1.7 million acre-feet (2097 mcm) or 64% of capacity. Throughout 2007, the normal program of monitoring and maintenance of the structural and mechanical elements of the dam continued. Additionally, the IBWC conducted operational activities to release volumes of water as requested by each country.

The Safety of Dams inspection was performed at Falcon Dam by the binational group of technical advisors, who rated Falcon Dam at Dam Safety Action Class III – High Priority (Conditionally Unsafe). The rating is based on a past history of seepage during higher water levels. The report recommended using current analytical methods to update the seepage and stability analyses so the Commission can confirm or change the classification and undertake any repairs that may be needed. Although additional analysis is required, the inspectors determined that Falcon Dam is able to operate under both normal and flood conditions.



**Downstream view of Falcon Dam.**

The new elevation-area-capacity table for Falcon Reservoir was adopted in August based on the results of the 2005 silt survey. Based on the amount of silt in the reservoir, the volume of water at normal conservation capacity declined slightly between 1992 and 2005, from 2.65 million acre-feet (3273 mcm) to 2.64 million acre-feet (3264 mcm).

## Power Generation at Amistad and Falcon Dams

Both countries operate hydroelectric power plants at Amistad and Falcon Dams, which generate electricity equally for both countries. The Commission held discussions regarding possible modifications to the hydroelectric power plants at both dams in order to allow power generation during periods of low release from the dams. Mexico began work on a study of the type, yield, and cost of installing low-flow generating units. The United States completed a similar study in 2004.

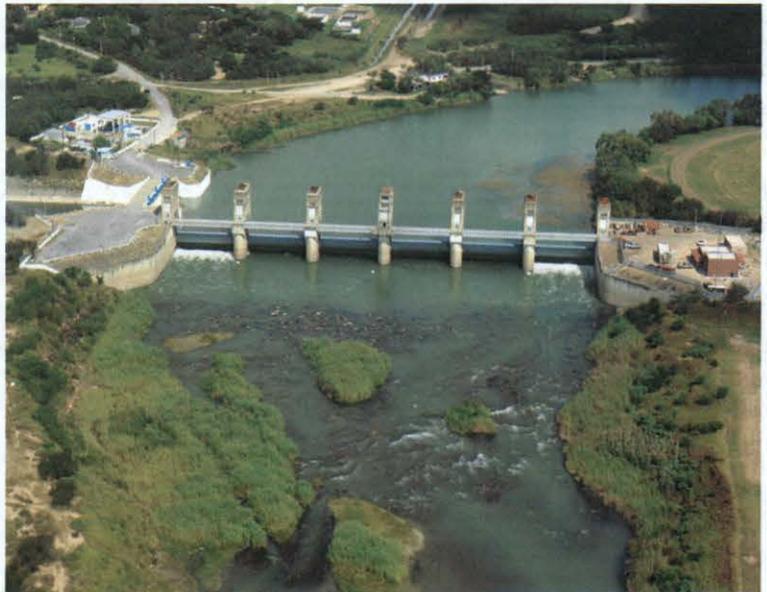
The Commission continued to operate the hydroelectric power plants in conformance with rules drafted in 2006 that provide for the two countries to alternate generation of electricity during the hours of peak demand. Previously, Mexico generated power during the peak evening hours while the United States generated electricity during the morning. The two Sections worked to develop a permanent agreement on this subject, which could be finalized in 2008.

### Proposed Laredo, Texas-Nuevo Laredo, Tamaulipas Weir

The U.S. Section held meetings during the year with representatives from the City of Laredo, Congressman Henry Cuellar, and the U.S. Department of Homeland Security regarding a proposal to construct a weir on the Rio Grande in the vicinity of Laredo, Texas-Nuevo Laredo, Tamaulipas. The weir would store water for use by the community and would provide a lake for recreational opportunities. The U.S. Section forwarded information about the proposal to the Mexican Section and advised stakeholders of the need to involve Mexico in the early planning for the proposed weir.

### Anzalduas Dam Operation and Maintenance

Anzalduas Dam, located near McAllen, Texas-Reynosa, Tamaulipas, is operated to divert water from the Rio Grande to Mexico's irrigation canal, the Anzalduas Canal, and to divert floodwaters into the U.S. interior floodway. In May 2007, Gates 1 and 6 underwent maintenance prior to hurricane season. As part of the maintenance activities, the Gate 6 stoplog was removed and placed in Gate 1. The Commission also completed a project to upgrade the control panels for the dam while the U.S. Section constructed a new administration and shop building, storage building, and prefabricated radio building. Perimeter fencing and an automatic control gate were also installed to secure the facilities and dam. Other activities included clearing and grubbing the parking lot area, the bank of the Mexican floodway, and the islands downstream of the dam.



**Anzalduas Dam diverts water for irrigation and flood control in the Lower Rio Grande Valley.**

The Safety of Dams inspection conducted during 2007 gave Anzalduas Dam a Dam Safety Action Class rating of IV – Priority (Marginally Safe), the second best rating. The inspectors made various recommendations for maintenance and electrical upgrades, which were already underway. They also recommended that sediment and sandbars near the dam be removed.



## Retamal Dam Operation and Maintenance

Retamal Dam, located 38 miles (61 Km) downstream from Anzalduas Dam near Donna, Texas-Rio Bravo, Tamaulipas, was built specifically for flood control purposes. The dam is able to divert flood flows into Mexico's interior floodway and to limit flood flows downstream at Brownsville, Texas-Matamoros, Tamaulipas. As part of its maintenance program, the Commission cleaned and painted both sides of the lateral gates in each country, lubricated and greased the gate motors, and removed debris near the central gate.

The Safety of Dams inspection conducted at Retamal Dam resulted in a rating of Dam Safety Action Class III – High Priority (Conditionally Unsafe). The binational team of inspectors cited a problem with center gate oscillation during flood events, which has caused problems in regulating flow and has the potential to damage the gate and/or hoist components. The inspectors recommended that the gate lifting system be replaced with a different type of system. Until that work is accomplished, flood operating procedures should be modified to minimize use of the center gate. They also recommended that a sandbar downstream of the dam be removed.



**IBWC performed maintenance on Retamal Dam.**

## Water Conservation Projects in the Mexican Irrigation Districts

Minute 309, a 2003 Commission agreement, provides for Commission review of volumes of water conserved through irrigation district modernization projects in Mexico and conveyance of conserved waters to the Rio Grande beginning in January of each year.

In 2007, the IBWC reviewed the 2005-2006 Annual Report of Mexico's National Water Commission regarding water conservation projects in the irrigation districts in the Conchos River basin and volumes of water conserved. Mexico released conserved waters totaling 112,000 acre-feet (138 mcm) from Luis Leon Dam on the Conchos River to the Rio Grande during the periods of March 9-30, 2007 and July 6-August 19, 2007. Water arriving in the Rio Grande was allotted to each country in accordance with the 1944 Water Treaty and Minute 309.

### El Morillo Drain Operation and Maintenance

El Morillo Drain is a binational water quality project of the IBWC designed for salinity control purposes. Extending for 75 miles (121 km) through Tamaulipas, the drain diverts saline irrigation return flows to the Gulf of Mexico, preventing degradation of Rio Grande water quality. During the year, the Mexican Section completed construction along a 1,000-foot (300-meter) segment of the drain, enclosing it in a 6-foot (1.83-meter) diameter pipe in a high-bank area near Anzalduas Dam that is subject to erosion and resulting siltation of the drain. The pipe project, carried out using \$625,000 in funding from the United States, will reduce maintenance requirements in this reach.



**A section of El Morillo Drain was encased.**

Periodic binational meetings involving both Sections of the IBWC and Mexico's National Water Commission were held to provide oversight of operation and maintenance of the project. In accordance with Minutes 223 and 303, maintenance work was performed throughout the year and water quality was monitored daily by taking samples at four points along the Rio Grande and in the drain itself. The Commission's goal is for salinity in the river to remain below 800 parts per million; for most of 2007, this goal was met.

In June, Commission personnel participated in a ceremony hosted by the Lower Rio Grande Water Committee for the public unveiling of a display about the history of El Morillo Drain. The exhibit is located at the Old Hidalgo Pumphouse Museum in Hidalgo, Texas. The Lower Rio Grande Water Committee is the entity that funds a portion of the operation and maintenance costs of El Morillo Drain on behalf of water interests in the Lower Rio Grande Valley of Texas who benefit from the project.

### Proposed Brownsville, Texas-Matamoros, Tamaulipas Weir

In June 2007, the U.S. Section of the Commission communicated to its Mexican counterpart its interest in moving forward with the evaluation of the Brownsville Public Utilities Board's (BPUB) proposal to construct the Brownsville-Matamoros Weir and Reservoir on the Rio Grande as a binational project under the auspices of the Commission. The BPUB proposed a site approximately 7 miles (11 km) downstream of the Gateway International Bridge between the two border cities. The project would provide a reservoir for storage of excess flows on the Lower Rio Grande that would



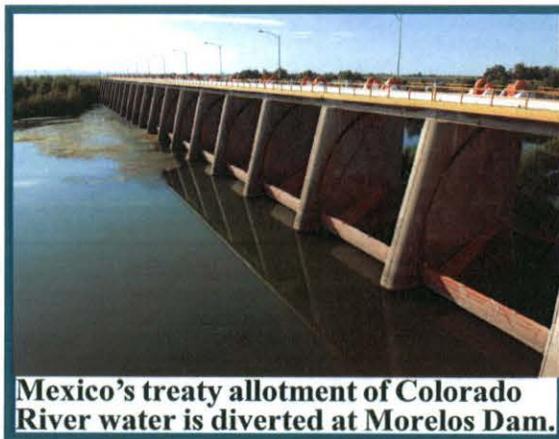
increase the water supply capacity of both Brownsville and Matamoros. The project would also result in reduced releases from Falcon Reservoir, thereby conserving water to the benefit of water users in the region. The proposed project would create a reservoir with a capacity of approximately 6,000 acre-feet (7.4 mcm).

Mexico's interest in this project would be to ensure the water supply for the City of Matamoros as well as to make use of surplus Mexican Rio Grande flows that currently go into the ocean. Nonetheless, Mexico observed potential adverse impacts from the project on the groundwater levels on the Mexican side that could cause an increase in the water table, resulting in damages to the infrastructure in the City of Matamoros and to agricultural lands adjacent to the river unless preventive measures are implemented. To address this concern, Mexico proposed studying the impacts of the weir and reservoir on the urban and agricultural infrastructure of the region. Such studies would permit the Mexican government to determine whether it would participate in the construction of the weir and would also lay the foundation for potential future Commission discussions regarding planning, design, construction, and operation and maintenance of the weir. The United States provided Mexico with a hydraulic model of weir impacts and Commission meetings were planned for early 2008 to discuss the details of Mexico's request for additional studies.

### III. COLORADO RIVER

#### Water Deliveries under the 1944 Water Treaty

In accordance with the stipulations of the 1944 Water Treaty, the United States delivered just over 1.5 million acre-feet (1,868.657 mcm) of Colorado River water to Mexico, fulfilling the yearly allotment stipulated in the treaty. To track this activity, periodic operational meetings were held with the participation of the U.S. Bureau of Reclamation, Mexico's National Water Commission, and the two Sections of the IBWC.



**Mexico's treaty allotment of Colorado River water is diverted at Morelos Dam.**

### Wellton-Mohawk Drain Operation and Maintenance



**Wellton-Mohawk Drain**

The Wellton-Mohawk Drain bypasses saline irrigation return flows from the United States to improve the quality of Colorado River water delivered to Mexico. In accordance with Minute 284, maintenance works were carried out in the lined concrete channel, including clearing and vegetation removal, repair of concrete panels, and structural inspection of the weirs, bridge piers, and siphons. In addition, sediment was removed from the settling basin in the earthen canal that serves as a silt retention basin in Mexican territory, and then a topographic survey of the area was performed.

### Salinity

In accordance with Minute 242, the salinity of Colorado River water delivered to Mexico must be similar to that of water delivered to U.S. users at Imperial Dam as indicated by a salinity differential established in that agreement. Specifically, the waters delivered to Mexico upstream of Morelos Dam shall have an annual average salinity of no more than 115 parts per million (ppm)  $\pm$  30 U.S. count (121 ppm  $\pm$  30 Mexican count) over the annual average salinity of waters arriving at Imperial Dam.

The two Sections carry out continuous monitoring of the salinity of the waters that arrive at Morelos Dam; this data is then exchanged and a monthly report is signed documenting the monthly salinity differential between Imperial Dam and Morelos Dam. Since 2003, there have been variations in the salinity values calculated by Mexico and the United States, which has led to considerable differences in the salinity values and the differentials between Morelos Dam and Imperial Dam.

To address this issue, technical meetings have been held with the participation of the U.S. Bureau of Reclamation and Mexico's National Water Commission, including visits to the laboratories in both countries, joint sampling, and the exchange of information regarding the methodology used in each country to calculate salinity. The IBWC determined the need to prepare a joint report of the Commission including the results of the joint sampling carried out in 2006 and 2007, and on that basis make recommendations to the binational technical group.

For 2007, the salinity differential between Imperial Dam and Morelos Dam was 154 ppm according to the Mexican standards and 130 ppm according to United States standards.



The U.S. Bureau of Reclamation operated the long-idle Yuma Desalting Plant from March through May at 10% capacity to test the plant. The plant was built to help the U.S. meet salinity requirements for Colorado River water delivered to Mexico by desalting and salvaging drainage water that otherwise would be too saline to deliver to Mexico.

## All-American Canal Lining

Construction began in 2007 on the project to line a reach of the All-American Canal to conserve water for U.S. users. Construction proceeded after various court challenges were thrown out. The All-American Canal, located near the international boundary in the United States, conveys U.S. Colorado River water for irrigation in California. It is operated by the Imperial Irrigation District. Mexico has opposed the lining project out of concern for potential negative impacts on the Mexican aquifer.



**View inside the Yuma Desalting Plant.**

The two Sections agreed to convene a meeting of a binational work group related to the All-American Canal. The U.S. Section indicated the purpose of the meeting would be to discuss a proposal to convey a portion of Mexico's Colorado River allotment through the lined reach of the canal as a means to conserve Mexican water. The Mexican Section proposed discussing issues related to the All-American Canal in a broader context as part of a comprehensive vision for the Colorado River Basin.

## United States-Mexico Joint Cooperative Actions

During 2007, high-level U.S.-Mexico discussions related to the Colorado River led to a Joint Statement released by the U.S. Department of the Interior and Mexico's Ministry of Foreign Relations in which federal authorities from both countries agreed that the International Boundary and Water Commission should be utilized to expedite discussions on Colorado River cooperation. Among the issues expected to be discussed:

- continued needs of both nations for water for urban, agricultural and environmental purposes, the study of the hydrological system and potential impacts of climate change, including the effects of the ongoing historic Colorado River drought;
- environmental priorities, including Colorado River Delta habitat protection and enhancement;
- opportunities for water conservation, storage and supply augmentation, such as seawater desalination and reuse; strategies aimed to ease variations in the Colorado River system;
- potential opportunities for more efficient Colorado River water deliveries to Mexico.

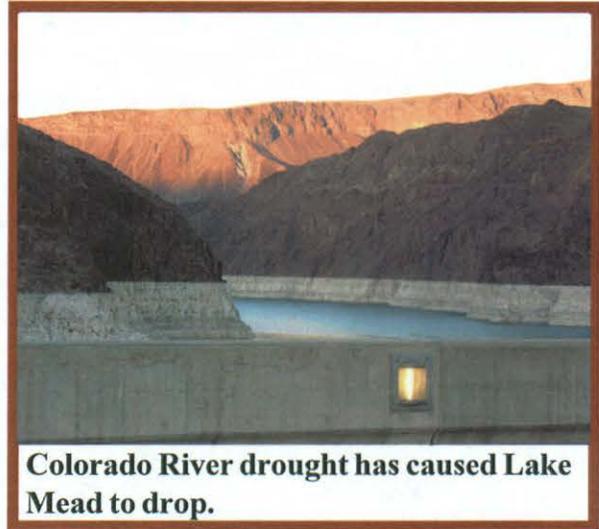
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In follow-up to the Joint Statement, the two Sections of the Commission initiated discussions with the goal of establishing in early 2008 a formal process for Colorado River cooperation involving stakeholders from both countries.

### Lower Colorado River Shortage Criteria

The U.S. Bureau of Reclamation prepared an Environmental Impact Statement (EIS) for Colorado River Interim Guidelines for Lower Basin Shortages and Coordinated Operations for Lake Powell and Lake Mead. The document discusses alternatives for managing water in the United States in the event of low reservoir conditions. The Commission exchanged information and conducted binational meetings for the purpose of informing Mexico of the actions under consideration in the United States and receiving Mexico's comments on the EIS.



### Environmental Preservation of the Delta

Given the interest of both countries in preserving the ecology of the Colorado River Delta, the IBWC formed a Work Group on environmental issues and in 2001 signed Minute 306, "Conceptual Framework for United States-Mexico Studies for Future Recommendations Concerning the Riparian and Estuarine Ecology of the Limitrophe Section of the Colorado River and its Associated Delta," which established a framework for developing cooperative projects, including possible approaches for water use for environmental purposes. The Binational Advisory Group established in accordance with Minute 306 undertook the following activities in 2007:

- Met in February 2007 to discuss environmental issues and conducted binational technical meetings as follow-up.
- Identified and evaluated 18 environmental projects for the conservation and the restoration of the Colorado River.
- Supported a study to monitor the Santa Clara Slough in Mexico during the test phase of the Yuma Desalting Plant at 10% capacity. While the plant was operating, a portion of the saline drainage waters that normally flow to the Slough were instead treated at the plant with the resulting brine then discharged to the Slough.
- Identified a need to establish a conservation and protection baseline for the ecosystem.



## Water Supply for the City of Tijuana, Baja California

Minute 310 is a Commission agreement to provide the City of Tijuana with emergency deliveries of Colorado River water allotted to Mexico in the 1944 Water Treaty through the Southern California Aqueduct System for a period of five years starting in 2003. The deliveries assist Tijuana during periods when Mexico's conveyance and distribution infrastructure has inadequate capacity or is temporarily out of service. In accordance with Minute 310, Mexico compensates the affected entities in the United States for all costs associated with the emergency deliveries.

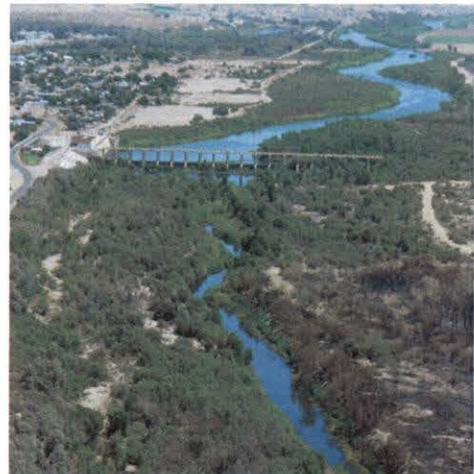
Under this agreement, 1189 acre-feet (1.466 mcm) of water was delivered between 2003 and 2006 through the Otay emergency connection to the city of Tijuana, B.C. In 2007, provisions were put in place for the delivery of water; however, in the end the City of Tijuana did not need any emergency deliveries.

With Minute 310 scheduled to expire in November 2008, the Mexican Section requested that the Commission initiate work on a plan to extend the Minute into subsequent years. The Mexican Section advised that Tijuana will have a need for emergency deliveries after Minute 310 expires. The Commission began discussions on the terms of a new Minute that would allow the emergency deliveries to continue.

## Lower Colorado River Boundary and Capacity Preservation Project

The Lower Colorado River Boundary and Capacity Preservation Project is an effort to study and implement a channel configuration that preserves the Colorado River international boundary line, ensures sufficient capacity to convey floodwaters through the river's international reach, and considers environmental impacts. Over the years, the international river channel has shifted from that indicated on boundary maps adopted by the Commission in Minute 253, dated September 23, 1976. In accordance with the 1970 Boundary Treaty, the Commission is responsible for maintaining the Colorado River as the international boundary.

In order to proceed with the Boundary and Capacity Preservation Project, the Commission requires a flood flow study so that the two Sections can confirm or amend the current design capacity of the flood control system. Work on this study by the U.S. Section in cooperation with the U.S. Bureau of Reclamation stalled in 2007 due to funding limitations.



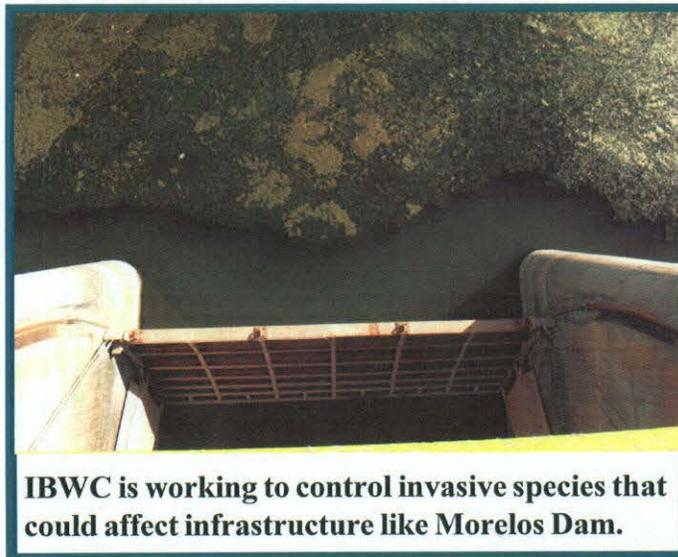
**The Colorado River channel is poorly defined in some reaches.**

### Colorado River Invasive Species

The Commission worked to address problems with two invasive species — giant salvinia (*Salvinia molesta*), an aquatic weed, and Quagga Mussels (*Dreissena bugensis*), a freshwater mollusk. Actions were taken to control and eradicate giant salvinia, which clogs water intakes, degrades water quality for aquatic species, and impedes recreational activities. In the United States, the Bureau of Reclamation engaged in various control efforts, including hand removal for three months at the Imperial National Wildlife Refuge; distribution of the salvinia weevil, a biocontrol agent, and monitoring of the weevils; and spraying of herbicide.

In 2007, Quagga Mussels were detected in Lake Mead on the Colorado River, the reservoir near Las Vegas, Nevada that stores water for use by both countries. The U.S. Section in March informed its Mexican counterpart of the presence of this species, which is noted for its ability to colonize hard surfaces causing obstructions in a hydraulic system's pipelines and infrastructure. The two Sections held consultations and exchanged information about the species' origin, characteristics, effects, conditions required for its development, sightings and degree of infestation in the basin, results of inspections done in the United States, and methodology applied for its control and eradication. Reclamation and the Imperial Irrigation District placed survey plates on which Quaggas colonize in order to monitor the mussels at various locations.

The Aquatic Nuisance Species Task Force conducted meetings every four months to discuss the invasive species problem in the Lower Colorado River basin. Based in the United States, this interagency group includes participation by the Mexican Section of the Commission and other affected Mexican entities as technical advisors.



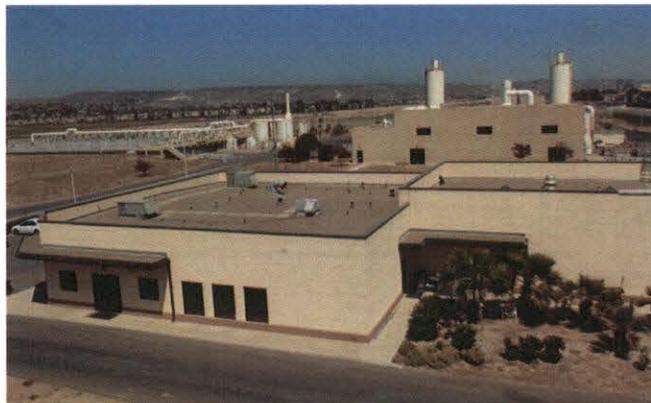
**IBWC is working to control invasive species that could affect infrastructure like Morelos Dam.**



## IV. SANITATION AND WATER QUALITY

### Sanitation at San Diego, California – Tijuana, Baja California

During 2007, the IBWC continued with its activities to resolve sanitation issues in San Diego, California-Tijuana, Baja California. The Commission operates the South Bay International Wastewater Treatment Plant (SBIWTP) in San Diego, which provides advanced primary treatment of wastewater generated in Tijuana. In accordance with Minute 296, each Section of the Commission contributes to the plant's operation and maintenance costs.



**Plans are underway to upgrade the South Bay International Wastewater Treatment Plant.**

In the context of Minute 311, the Commission held various meetings regarding the proposal to construct in Mexico a secondary treatment plant to provide a higher level of treatment for SBIWTP effluent and to treat additional raw sewage from Tijuana. The private company that had a Development Agreement with the U.S. Section to undertake the project issued a Request for Qualifications in late 2006 for companies interested in the design-build-operate contract for the new treatment plant; the companies' proposals were evaluated in early 2007. In April, the U.S. Section suspended all activities under the Development Agreement after the company indicated it would be unable to meet deadlines established in the Development Agreement. The U.S. Section subsequently began work in 2007 to update an existing design to provide secondary treatment at the SBIWTP.

The two Sections also coordinated international efforts for the timely attention to occurrences of transboundary runoff and wastewater discharge in the Tijuana River, which flows north into the United States near the SBIWTP. To that end, preventive maintenance was performed on the CILA Pump Station and the Tijuana River pilot channel. These actions minimized the threat to public health and the environment by controlling dry-weather sewage flows into the United States.

### Sanitation at Calexico, California-Mexicali, Baja California

The Mexicali II sanitation project, which was substantially completed in 2006, was brought online in 2007. The project is a wastewater collection and treatment project in Mexicali. For decades, the lack of adequate sanitation infrastructure in Mexicali has contributed to contamination of the New River, which flows north into the United States at Calexico, California. Water quality data from the New River after the plant went into operation show improvement although ongoing problems with fecal coliform bacteria and dissolved oxygen remained a concern.

In 2007 the monthly sanitation inspection visits of the New River continued; IBWC coordinated the visits, in which various agencies from the United States and Mexico participated. These field visits are conducted for the purpose of observing the water quality conditions on the river and its tributaries, the existence of uncontrolled wastewater discharges, and the sanitation issues in these canals and the surrounding area.

### Sanitation at Nogales, Arizona – Nogales, Sonora

The Nogales International Wastewater Treatment Plant (NIWTP), located in Rio Rico, Arizona, was constructed in 1972 within the framework of IBWC Minute 227 to treat wastewater from the sister cities of Nogales, Arizona and Nogales, Sonora. In 1988, Minute 276 provided for the expansion of the NIWTP and allocated to Mexico 9.9 million gallons per day (434 liters/second) in treatment capacity at the plant.



**Aerial view of the Nogales International Wastewater Treatment Plant**

In this context, IBWC issued a signed report in 2007, which indicated that for the October 2006 thru September 2007 period, the NIWTP treated a total volume of 5,586.7 million gallons (21,148,136.4 cubic meters), 22% from the United States and 78% from Mexico, including 741.6 million gallons (2,807,299.9 cubic meters) in excess of Mexico's allotted capacity at the plant. Under Minute 276, the Mexican federal government paid for its share of costs associated with treatment of Mexican sewage; in addition, arrangements were made for the Nogales, Sonora utility to pay for the treatment of flows in excess of the capacity assigned to Mexico. The plant is owned by the U.S. Section and the City of Nogales, Arizona and is operated by the U.S. Section of the IBWC.

## International Boundary and Water Commission United States and Mexico



In May, IBWC Commissioners Carlos Marin and Arturo Herrera attended a groundbreaking ceremony for the upgrade of the NIWTP. The upgrade is being funded largely through a \$59 million grant from the U.S. Environmental Protection Agency to the City of Nogales, Arizona. A major



**Construction began at the Nogales International Wastewater Treatment Plant.**

overhaul of the plant is necessary to meet updated water quality standards in the United States. The upgraded plant, slated for completion in 2009, will have a treatment capacity of 14.74 million gallons per day (646 liters per second [lps]), a decrease from the current capacity of 17.2 million gallons per day (754 lps). The U.S. Section advised the Mexican Section that once the new plant comes online, there will not be sufficient capacity to treat Mexican sewage in excess of the capacity assigned to Mexico in Minute 276 and urged the Mexican Section to take immediate action to prevent excess flows from arriving in the United States.

The IBWC organized and held several binational meetings to further the implementation of the Mexican portion of the Ambos Nogales comprehensive sanitation project, which includes the design, construction, and operation of the lift stations, force main, and wastewater treatment plant in Los Alisos, Sonora. In that context, the IBWC tracked the preparation of the construction drawings for those project elements, which are being developed by the Border Environment Cooperation Commission and Mexico's National Water Commission.

In addition, throughout the year the IBWC coordinated delivery to the Nogales, Sonora utility of calcium hypochlorite to disinfect the surface water in the Nogales Wash. Similarly, field visits were conducted along the Nogales Wash for the purpose of inspecting the water quality conditions of the wash and its tributaries, the existence of uncontrolled wastewater discharges, and the sanitation conditions in adjacent areas.

Pretreatment meetings were held on a quarterly basis attended by Commission personnel and representatives of the local utilities in Mexico and the United States. Pretreatment refers to the effort to control the discharge of contaminants into the sewer system – contaminants that can disrupt the treatment process at the NIWTP. Advances were made in the Nogales, Sonora pretreatment program.

### Sanitation at Naco, Arizona - Naco, Sonora

In 2007 the IBWC conducted quarterly joint inspections of the lagoon wastewater treatment system in Naco, Sonora with the objective of observing the current conditions of the east side lagoons and the pumping plant that conveys wastewater to the west side lagoons.

### Sanitation at Douglas, Arizona-Agua Prieta, Sonora

In 2007 the IBWC conducted quarterly joint inspections of the Douglas, Arizona wastewater treatment plant to observe the current treatment conditions at the plant that conveys effluent to Mexican territory. In that context, data on the quality of the effluent from the plant was exchanged during 2007. It was then routinely sent to the pertinent Mexican governmental agencies.



**IBWC inspected the pumping plant in Naco, Sonora.**

### Sanitation at El Paso, Texas-Ciudad Juarez, Chihuahua

During 2007, the IBWC reviewed plans for proposed wastewater treatment plants for the Guadalupe and Porfirio Parra communities in the Municipality of Guadalupe, Chihuahua and for Praxedis G. Guerrero, El Porvenir, and Colonia Esperanza in the Municipality of Praxedis G. Guerrero, Chihuahua, located in the Juarez Valley. The progress of the construction of these projects and the Rancho Anapra Wastewater Treatment Plant in Ciudad Juarez were tracked.

In 2007, the IBWC, through the Mexican Section, requested that Mexico's National Water Commission (Conagua) take actions to prevent the presence of foam and foul odors in the Rio Grande caused by discharge of wastewater from Ciudad Juarez. To address the issue, Conagua implemented operational procedures that were monitored by the IBWC.

In February 2007, personnel from both Sections of the Commission met with the Ciudad Juarez water and sanitation utility (JMAS) and the Texas Commission on Environmental Quality (TCEQ) to discuss problems with odors near the Ciudad Juarez North Wastewater Treatment Plant. In response, the JMAS undertook operations and maintenance actions regarding this matter, which were then monitored by the Commission.



## Sanitation at Presidio, Texas-Ojinaga, Chihuahua

During the months of April and October 2007, personnel from the Mexican Section of the IBWC visited the wastewater treatment plant in Ojinaga to inspect the conditions and the quality of the effluent being discharged into the Rio Grande, finding that the plant was being properly operated and that the quality of the discharged waters in that area had improved.

## Sanitation at Laredo, Texas-Nuevo Laredo, Tamaulipas

Constructed in the 1990s within the framework of the Commission, the Nuevo Laredo International Wastewater Treatment Plant (NLIWTP) is a binational project to address concerns about Rio Grande water quality in the area of Laredo, Texas-Nuevo Laredo, Tamaulipas. During the year, it treated an average volume of 20,610,675 gallons (78,019.89 cubic meters) per day. Pursuant to the agreements in Minute 297, the IBWC reached agreement on the United States share of the operation and maintenance (O & M) costs for the NLIWTP for the year; the U.S. share was determined to be \$150,000 USD out of total O & M costs for the year of \$2,408,369.83 USD. Likewise, personnel from both Sections conducted joint inspections of the NLIWTP and prepared the associated reports.

## Water Quality Monitoring

During 2007, the Commission continued with routine observation and exchange of data on water quality in the international and transboundary rivers, as well as the effluent from the wastewater treatment plants that discharge into those bodies of water in San Diego, California-Tijuana, Baja California; Calexico, California-Mexicali, Baja California; Nogales, Arizona-Nogales, Sonora; Douglas, Arizona-Agua Prieta, Sonora; El Paso, Texas-Ciudad Juarez, Chihuahua; Del Río, Texas-Ciudad Acuña, Coahuila; Eagle Pass, Texas-Piedras Negras, Coahuila; and Laredo, Texas-Nuevo Laredo, Tamaulipas. The information was distributed to the responsible authorities in each country.

The U.S. Section's Texas Clean Rivers Program for the Rio Grande conducted more than 300 routine samplings of Rio Grande water quality and prepared quarterly and annual water quality reports.

In 2007, the IBWC coordinated the Binational Water Quality Data Base Workshop for the United States-Mexico border, which was held in December in Ciudad Juarez, Chihuahua and included the participation of agencies and organizations from both countries. The purpose of the workshop was to discuss the framework and database design. EPA has provided the U.S. Section with funds to develop an internet portal to provide the data to stakeholders.

## V. OTHER PROJECTS

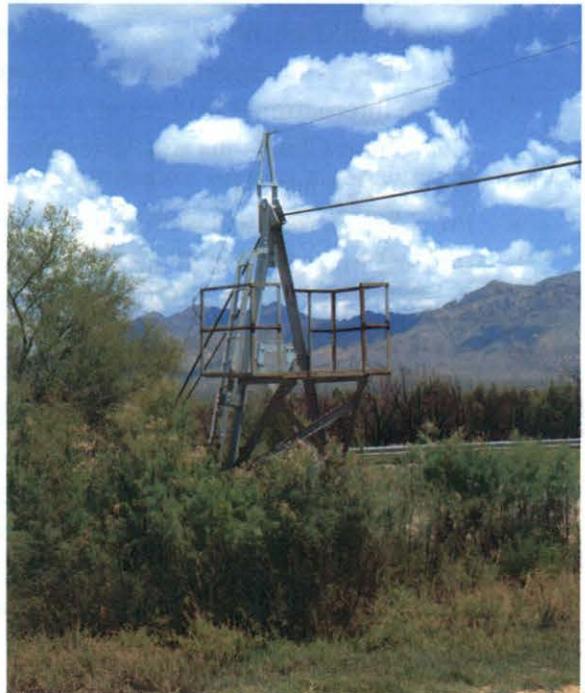
### Shared Groundwaters

The IBWC exchanged data on Yuma Valley wells in Arizona and the San Luis Rio Colorado Aquifer in Sonora. In addition, quarterly drilling was done in water table sample wells in the area of Amistad Dam.

In November, Commission personnel met with the staff from the Arizona Department of Water Resources and Mexico's National Water Commission to discuss Commission support for the Transboundary Aquifer Assessment Program. This initiative is being spearheaded and funded by the U.S. Geological Survey in cooperation with water resources research institutes in the U.S. border states of Arizona, New Mexico, and Texas. U.S. funding is available for Mexican researchers to participate in the study of prioritized aquifers that span the U.S.-Mexico border.

### Water Gaging and Weather Observation Network

To fulfill its treaty obligations to account for the national ownership of waters of the boundary rivers, the Commission operates and maintains more than 60 gaging stations on the Colorado River, Rio Grande, and their tributaries. Each Section operates and maintains the gaging stations on tributaries in its country. Most stations use satellite telemetry to provide near real-time flow data. The Commission collects hydrometric and weather data, which is processed and used in binational water accounting computations, dam operations, and real-time flood operations. The data is compiled and published in the annual Water Bulletins – the Rio Grande Water Bulletin and the Western Boundary Water Bulletin. During the year, the Commission published the 2004 Rio Grande Water Bulletin and completed work on the 2005 Rio Grande and Western Boundary Water Bulletins, which were expected to be published in early 2008.



**Cableway of the Ft. Quitman gaging station.**



### Flood Control at Nogales, Arizona-Nogales, Sonora

An intense rainstorm in late August sent high flows into the Nogales Wash, damaging the concrete channel which runs from Mexico into downtown Nogales, Arizona and leaving the portion of the International Outfall Interceptor (IOI) in the wash at risk of rupture. The IOI is the pipe that conveys sewage from the border to the Nogales International Wastewater Treatment Plant in Rio Rico, Arizona. U.S. Section personnel responded to the emergency and assisted with repairs.



**A bulldozer clears damaged concrete panels from the Nogales Wash in Arizona.**

### Columbus, New Mexico-Palomas, Chihuahua Stormwater

A binational meeting was held in October to discuss drainage problems near the Columbus, New Mexico-Palomas, Chihuahua port of entry. To address transboundary stormwater flows affecting the community, an earthen berm in Palomas was relocated 50-100 feet (15-30 meters) away from the international boundary line and drainage improvements are being incorporated into the design of expanded port facilities in Columbus.

### Tijuana River Flood Control Project

The IBWC continued to operate the binational Tijuana River Flood Control Project, which includes a concrete-lined river channel, levees, and a related flood warning system. The Tijuana River flows north from Tijuana, Baja California into San Diego County, California. The U.S. Department of Homeland Security (DHS) continued to maintain the U.S. levee roadway surface and clear vegetation from the U.S. portion of the Tijuana River Flood Control Project in accordance with its agreement with the U.S. Section.

### Minute 312, Commission Identifications

In January, the Commission signed Minute 312, "Official Means of Identification of Personnel, Vehicles, and Other Equipment Crossing the International Boundary on Official Business of the Commission or of either Section." The Minute establishes a new format for the Commission identification card incorporating additional security features. The card enables personnel to conduct their work legally along the U.S.-Mexico border.

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# International Boundary and Water Commission United States and Mexico



## Projects of the International Boundary and Water Commission Included in the 2007 Annual Report





