

This chapter highlights the major accomplishments of the nine Border XXI workgroups and provides a brief overview of the program efforts from 1996 to 2000 to preserve the border environment and the health of border residents and to protect the region's natural resources. Although much work remains, the Border XXI Program has made great strides in preventing further environmental deterioration through projects that have fostered improvements in environmental stewardship. This binational cooperation has brought about significant improvements in both the continuity and the uniformity of natural ecosystem and biodiversity preservation.

Following are summaries of some of the most relevant accomplishments of each workgroup.¹

AIR

The Border XXI Air Workgroup has advanced knowledge about air quality conditions in principal border sister cities. The workgroup also has coordinated with other agencies to help monitor, prevent, and control air pollution. In addition, progress has been made in Mexico on identifying significant contamination sources through the establishment of the Emission Inventory Development Program.

The Air Workgroup has initiated and conducted binational air program activities in the sister cities of San Diego County, California-Tijuana, Baja California; Imperial County, California-Mexicali, Baja California; Nogales, Arizona-Nogales, Sonora; Douglas, Arizona-Agua Prieta, Sonora; and El Paso County, Texas-Ciudad Juárez, Chihuahua-Doña Ana County, New Mexico. Recent efforts have concentrated on establishing and operating air quality monitoring networks in Tijuana and Mexicali, similar to those operating in San Diego County, Imperial County, and El Paso County-Ciudad Juárez-Doña Ana County.

In May 1996, the Joint Advisory Committee (JAC) for the Improvement of Air Quality in the El Paso County-Ciudad Juárez-Doña Ana County Air Basin was created to

provide locally-based recommendations to the Air Workgroup on how to manage air quality in the region. In May 1999, the JAC completed a strategic plan that includes 26 priorities for improving air quality.

Other accomplishments of the Air Workgroup include the development of (1) the *Ciudad Juárez Air Quality Management Program 1998-2002* (published in May 1998) and (2) the *Program to Improve Air Quality in Mexicali 2000-2005* (published in February 2000). Both programs were developed with the participation of various community sectors. It is expected that the *Air Quality Program for Tijuana* will be released in 2000.

The Air Workgroup, in collaboration with the Western Governors' Association (WGA), initiated the Emissions Inventory Development Program to strengthen Mexico's capacity for completing this important air quality planning activity. The cornerstone of the program has been the development of a series of 10 guidance manuals that the *Instituto Nacional de Ecología* (INE, or National Institute of Ecology) will use as a reference in the development of its revised emissions inventory program. Currently, five manuals have been completed in both Spanish and English, while, at the time this report was prepared, completion of the other five was expected in 2000. INE, in conjunction with the WGA, selected Mexicali as the first city to produce an emissions inventory under the new program. The pilot program for Mexicali began in 1997. The second pilot program for Tijuana began in 1999. Its completion is expected by the end of 2000.

The U.S.-Mexico Centro de Información sobre Contaminación de Aire (CICA, or Border Information Center on Air Pollution) has been a strong supporter of the workgroup's activities and has provided technical assistance in evaluating air pollution conditions along the border.

In addition, in the spirit of the Border XXI Program, the workgroup formed two specialized subworkgroups to address issues related to (1) energy and (2) vehicle congestion at border crossings.

The U.S.-Mexico Border XXI Workgroups: Key Accomplishments



¹ The subsections of this chapter are listed in alphabetical order by workgroup name. In the translation of this report, the subsections of this chapter appear in alphabetical order by workgroup name in Spanish.

CONTINGENCY PLANNING AND EMERGENCY RESPONSE

The U.S.-Mexico Joint Contingency Plan for responding to hazardous material leaks or spills along the border was modified in June 1999 to reflect the institutional and legislative changes that have occurred in both countries. The modified plan changed the binational notification system to ensure timely notification of the appropriate counterpart officials when a chemical accident occurs in the border region.

The Computer-Aided Management of Emergency Operations (CAMEO) system was translated into Spanish for use in the border region. CAMEO is a software system that facilitates chemical emergency response and planning.

In addition, six contingency plans were signed for the following sister city pairs: Eagle Pass, Texas-Piedras Negras, Coahuila; Brownsville, Texas-Matamoros, Tamaulipas; Laredo, Texas-Nuevo Laredo, Tamaulipas; San Luis, Arizona-San Luis Río Colorado, Sonora; McAllen, Texas-Reynosa, Tamaulipas; and Nogales, Arizona-Nogales, Sonora. The plans address international coordination requirements for responding to emergencies involving hazardous substances.

COOPERATIVE ENFORCEMENT AND COMPLIANCE

The Cooperative Enforcement and Compliance Workgroup formed five regional subworkgroups to strengthen enforcement and compliance strategies and improve coordination among local, state, and federal agencies on both sides of the border. The first three subworkgroups were established for Texas, New Mexico, and Chihuahua; California and Baja California; and Arizona and Sonora. In 1998, two additional subworkgroups were established for Coahuila and Texas and Nuevo León, Tamaulipas, and Texas.

The regional subworkgroups have cooperated binationally on various investigations, joint inspections, and other specific incidents. Such binational cooperation occurred on the following occasions: (1) an incident involving the import to Mexico of a material identified as enhanced soil; (2) a case involving Alco Pacífico of Mexico; and (3) an incident involving the import to Mexico of empty drums that formerly contained hazardous materials or waste. In addition, the exchange of information has facilitated the detection of illegal shipments to and from the United States and Mexico.

The workgroup has supported a capacity-building training program designed to educate border personnel on environmental enforcement programs. Federal, state, and local environmental officials from Mexico and the United States have participated in the program, along with customs personnel from both countries. As a result, hundreds of individuals have been trained on the legal aspects related to cross-border transportation of hazardous substances, chemicals, and pesticides and the illegal commerce in ozone-depleting substances and flora and fauna.

The U.S. Environmental Protection Agency (EPA), Mexico's *Procuraduría Federal de Protección al Ambiente* (PROFEPA, or Federal Attorney General for Environmental Protection), and the border states have collaborated to promote environmental auditing. Since its inception, Mexico's National Environmental Audit Program has enlisted more than 1,345 businesses, 395 of which are located in Mexico's northern border states and 81 of which represent the maquiladora industry. In addition, PROFEPA issued 412 Clean Industry Certificates from 1997 to 1999. The certificates were issued to those companies that exhibited timely compliance with action plans established as a result of environmental audits. Each certificate is valid for two years and is renewable for another two-year period.

EPA has worked with PROFEPA to promote environmental auditing efforts among the U.S. parent companies of *maquiladoras*. For example, EPA issued letters to parent companies encouraging them to take part in PROFEPA's environmental audit program. EPA also has distributed an informative video that presents environmental auditing as a tool for ensuring compliance and identifying pollution prevention opportunities. Acknowledging the globalization of today's industries, EPA and PROFEPA held a conference for twin plants in March 1999 to promote increased levels of environmental compliance and pollution reduction.

ENVIRONMENTAL HEALTH

Some adverse health effects seen along the U.S.-Mexico border appear to be caused by contamination of air, water, and soil by chemical and biological pollutants. The Environmental Health Workgroup has established numerous activities to address these issues and improve the quality of life on the border. Highlights of those activities include:

The Lower Rio Grande Valley Cross-Border Air Pollution Project found that transboundary transportation of emissions originating in Mexico did not appear to cause noticeable deterioration of air quality on the U.S. side of the lower Rio Grande Valley border.

As part of the **Pediatric Lead Exposure Initiative**, a laboratory for blood lead analysis was established at the *Hospital Municipal de Tijuana* (Tijuana Municipal Hospital). Local personnel and community members were trained to recognize symptoms of lead poisoning. As a result, not only are children with elevated blood lead levels receiving care, but also the sources of the lead exposure are being determined. A separate Centers for Disease Control and Prevention-National Center for Environmental Health study in the Arizona-Sonora border region in March 1998 identified no major sites of concern on the basis of the sample population.

The Advanced Training Project is part of a binational program to strengthen environmental health capabilities of individuals and institutions in the areas of environmental and occupational toxicology, epidemiology, engineering, and risk communication in the U.S.-Mexico border region. To date, four scholarships have been awarded to public health workers to obtain masters degrees in environmental epidemiology, and several short courses covering epidemiological themes have been conducted.

The Environmental Health Alert and Communication Project facilitates access to quality health and environmental information for border communities, health providers, and health officials. In collaboration with the four U.S. border states, the *Environmental Health Yellow Pages*, a resource tool to help identify agencies responsible for specific environmental health issues, have been compiled.

The Retrospective Study on Pediatric Asthma and Air Quality focused on children between the ages of 1 and 17 residing in the Paso del Norte airshed who visited an emergency room for asthma treatment. The study showed that there was a positive correlation between levels of particulate matter less than 10 microns in diameter (PM-10) and the incidence of asthma.

The Toxicology Center Development Project helps strengthen the ability of Mexican regional, state, and local toxicology centers to respond to environmental emergencies and the clinical needs of poisoned patients. The project also helps improve the capacity of environmental health officials to identify potentially hazardous places and industries. To

date, toxicology centers have been established in Hermosillo, Sonora and Ciudad Juárez, Chihuahua. A third center is being established in Reynosa, Tamaulipas.

Identifying priorities for the Environmental Health Workgroup and cross-referencing those priorities with those of other workgroups, particularly those for Water, Air, Hazardous and Solid Waste, and Environmental Information Resources, has allowed Border XXI to ensure that the protection of human health remains the most important goal of the program.

As an example, the Environmental Health Workgroup, together with the Water Workgroup, developed the pilot *Agua Limpia en Casa* (Clean Water in Homes) program, in some border communities in Chihuahua and Sonora. The objective was to improve the health conditions of residents of small, impoverished communities that lack basic infrastructure. Such communities often have a high infant mortality rate (rates for children under one year) because of gastroenteritis.

Major accomplishments of the program include:

- A decrease (13.2 percent) in enteric diseases
- An increase (13 percent) in water purification awareness
- An increase (between 3.5 and 20 percent) in water purification practices
- An increase (between 3 and 5 percent) in vegetable disinfection

The external assessment conducted by the *Fundación de México-Estados Unidos para la Ciencia* (FUMEC, or Mexico-United States Foundation for Science) concurred with the program by noting the significant decrease in gastrointestinal diseases in the community.

The program has been highly successful, achieving good results with few resources. The current plan is to extend the program to both sides of the border on a permanent basis.

ENVIRONMENTAL INFORMATION RESOURCES

With respect to environmental information, the Border XXI Program has made significant progress in developing information systems to facilitate a deeper understanding of the environment. The systems also have helped promote better-informed public participation.

Following is an overview of several projects the Environmental Information Resources Workgroup has implemented.

The **border environmental indicators** are used to measure environmental performance and provide a basis for assessing both the progress of Border XXI activities and their impacts on the environment. The indicators also are used to help inform the public about conditions of and pressures on the environment and natural resources and the effectiveness of actions taken to address those concerns. The *1997 United States-Mexico Environmental Indicators Report (1997 Indicators Report)* was developed with input from the public. An update of the information published in that report is provided in the individual workgroup chapters of this document.

The **Border EcoWeb** is an environmental inventory being developed for use on the Internet. The multiyear project was undertaken in response to the growing demand for environmental information in the border communities. The Border EcoWeb includes environmental information, project lists, and points of contact for environmental border activities.

The *Reporte del Estado Ambiental y de los Recursos Naturales en la Frontera Norte de México* (Report on the State of the Environment and Natural Resources in the Northern Border of Mexico) describes the economic, social, demographic, natural, environmental, and institutional conditions in Mexico's northern border region. The report also establishes an objective baseline of scientific information related to these parameters.

A **geographic information system** (GIS), developed cooperatively between Mexico's *Instituto Nacional de Estadística, Geografía, e Informática* (INEGI, or National Institute of Statistics, Geography, and Information) and the U.S. Geological Survey (USGS), produces aerial photographs and specialized maps of the border region. To date, aerial coverage of the U.S. border region has been completed, while aerial coverage of regions in Mexico is still underway. A binational digital map, as well as a variety of GIS applications, will be developed on the basis of the results of the project.

HAZARDOUS AND SOLID WASTE

EPA and Mexico's INE operated the Hazardous Waste Tracking System (HAZTRAKS) for several years. In 1998, HAZTRAKS was replaced in Mexico with INE's version of a

hazardous waste tracking system, known as *Sistema de Rastreo de Residuos Peligrosos* (SIRREP). The use of both systems has considerably improved the ability to monitor transboundary hazardous waste shipments in the U.S.-Mexico border region. It is worth noting that a 1999 study conducted by the Texas Natural Resources Conservation Commission (TNRCC) determined that the operation of SIRREP and the HAZTRAKS systems is the most effective way to track the movement of hazardous wastes between the two countries.

Another relevant accomplishment of the Border XXI Hazardous and Solid Waste Workgroup was the negotiation and recent agreement on the *Consultative Mechanism for the Exchange of Information on New and Existing Facilities for the Management of Hazardous and Radioactive Waste within 100 Kilometers of the U.S.-Mexico Border*. This mechanism addresses public concern on both sides of the border related to the siting and operation of hazardous and radioactive waste facilities in the border region. The agreement will allow the two countries to exchange data and other information about new and existing treatment, storage, and disposal facilities in the border region that handle hazardous or radioactive wastes.

NATURAL RESOURCES

The Natural Resources Workgroup has implemented multiple activities related to biodiversity and natural protected areas. The principal activities were carried out under a letter of intent (LOI) signed in June 1997 between Mexico's *Secretaría de Medio Ambiente, Recursos Naturales, y Pesca* (SEMARNAP, or Secretariat of Environment, Natural Resources, and Fisheries) and the U.S. Department of the Interior (DOI). The LOI broadened cooperation to preserve contiguous natural protected areas along the border in two pilot regions, the Sonoran Desert and the Chihuahua Desert. The agreement established a basis for managing the areas as shared ecosystems. Compatible management systems provide the continuity needed for protection activities and research efforts on both sides of the border. Several projects of common interest already have been implemented in these shared protected natural areas, including: (1) exchange of personnel; (2) capacity building through training; (3) development of species inventories; and (4) cooperation on cultural resources.

In June 1999, SEMARNAP and DOI signed a joint declaration to increase binational cooperation on the upper San Pedro River basin. The declaration focuses on improving and conserving the basin's natural and cultural resources, including the river and its riparian zone. The agreement includes provisions for policy coordination, instrument formulation, research, transboundary species study, and information exchange.

One of the foremost accomplishments achieved in Mexico has been the establishment of a management system for six natural protected areas in the border region. The system provides for the development of management plans and ensures the availability of personnel, equipment, vehicles, and financial resources for the natural protected areas. In addition, Mexico has identified habitats for species that require special protection, such as the bighorn sheep, the black bear, the pronghorn, the ironwood, and various cacti.

POLLUTION PREVENTION

The Pollution Prevention Workgroup has worked to establish pollution prevention, energy efficiency, and recycling as practical methods of achieving economic growth and environmental protection along the U.S.-Mexico border. The INE has established a pollution prevention office within the agency; partnerships have been initiated among INE, EPA, the states, industry, and educational institutions along the border. EPA and the states have worked with PROFEPA to promote pollution prevention as a means of achieving compliance. Highlights have included pollution prevention workshops, held with the cooperation of local governments, industry, and educational institutions, on topics that best suit the needs of the communities.

Three pollution prevention roundtables have been initiated to further promote pollution prevention and energy efficiency as a cost-effective and sustainable way to achieve economic growth while preserving the border environment. Roundtable members consider the concerns and needs of the *maquiladora* industry and view local academic institutions as a way to address those needs through the establishment of sustainable cooperative programs.

By increasing efficiency and promoting pollution prevention as a cost-effective environmental compliance tool, workgroup members have joined together to provide tech-

nical assistance along the border. In California-Baja California, technical assistance was provided through a series of workshops targeting the electronics and textile sectors. The workshops educated the industries on methods that would reduce air pollution.

Through the Arizona-Mexico International Green Organization (AMIGO) program, manufacturers, trade associations, and government agencies in the Arizona-Sonora region are invited to participate in AMIGO activities, including information-sharing on successful waste reduction activities and technology transfer. For their participation in the program, *maquiladora* facilities were presented with awards for environmental excellence.

Along the Texas-Mexico border, TNRCC, in conjunction with PROFEPA's voluntary auditing program, completed 21 on-site technical assistance visits to *maquiladoras*. Reports from participating *maquiladoras* indicated annual reductions of 9,600 tons of hazardous waste, 88,600 pounds of volatile organic compounds (VOC), and 57,400 tons of nonhazardous waste. Further, 37 million gallons of water and 77 million kilowatt hours of electrical energy had been conserved. Through pollution prevention and energy conservation methods, the *maquiladoras* had realized annual savings of almost \$10.1 million.

Rather than leaving costly remediation for future generations, the Pollution Prevention Workgroup works to achieve economic growth and a healthy environment through the prevention of environmental problems. The workgroup relies heavily on the work of and its partnership with the border states as they continue to collaborate with industry and educational institutions in local communities to carry out pollution prevention efforts.

WATER

After five years, the Border XXI Program has made significant progress in implementing infrastructure that addresses water needs in the border region.

The main improvement in Mexico has been the increase in potable water services between 1995 and 2000 from 88 percent of the population served to 93 percent served. The availability of sewage services also has increased from 60 percent served in 1995 to 75 percent served in 2000, while wastewater treatment improved from 34 percent to 75 per-

cent served. Most border communities in the United States now have 100 percent water and sewage coverage, with the exception of the communities known as *colonias*. However, in most of the *colonias*, as well as in other areas, funds already have been allocated for improving systems operations in the *colonias* and for increasing water and sewage coverage.

The three levels of government in both countries, as well as binational agencies, have participated in the program. The United States-Mexico Border Infrastructure Cooperation Committee includes participants from EPA, Mexico's *Comisión Nacional del Agua* (CNA, or National Water Commission), both sections of the International Boundary Water Commission (IBWC), the Border Environment Cooperation Commission (BECC), and the North American Development Bank (NADB). Through the committee, the partners work closely to develop policies to implement potable water and sanitation projects in the region, thereby increasing institutional coordination, streamlining decision making, and optimizing available resources.

The BECC and the NADB were created to collaborate on the preparation, development, implementation, and funding of border infrastructure projects. During the period since 1995, the BECC has certified 36 water or sanitation projects in communities on both sides of the border.² Some of the projects already have been completed, while others are in progress or still in the planning stage. Certified projects might receive funding from the EPA Border Environmental Infrastructure Fund (BEIF). The BEIF, which is managed by the NADB, provides grants equal to those provided by federal, state, and local governments. To date, the BEIF has provided significant funding for several certified

projects. In addition, loans are available through the NADB.

Among the many projects in the planning stages are specific programs to provide services to *colonias* and various Indian tribes on the U.S. side of the border. In addition, Indian tribes in the U.S. border area have received funding for sewage and potable water projects through both the Environmental Infrastructure Program for Indian Tribes and the Border Grant Program.

EPA, the CNA, the BECC, the NADB, the IBWC, and FUMEC have collaborated on various studies focused on strengthening water utilities. The studies have assisted the utilities in improving the design and planning of various projects, as well as in watershed monitoring.

Special emphasis also has been placed on border watershed management, mainly of the Colorado River and the Rio Grande. Binational committees have been established to address technical problems and collaboration issues. The committees have worked to characterize water quality, with the goal of determining the correlation between the development and maintenance of environmental infrastructure and the water quality of the two rivers.

In addition, the Water Workgroup has helped build capacity in communities on both sides of the border. Most notably, EPA has provided resources to support workshops and the development of training manuals for utility operators.

Described above are only a few of the principal accomplishments of the U.S.-Mexico Border XXI workgroups. A detailed list of each workgroup's activities and achievements is provided in the chapter of this document that focuses on that workgroup.

² Number of projects certified as of March 2000.