

Border 2012 Accomplishments Report (2010-2012)



U.S.-Mexico Environmental Program



Message from the National Coordinators

In April 2003, the United States Environmental Protection Agency (EPA) and Mexico's Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT) initiated the third bi-national agreement to protect the environment and public health in their shared border region through the signing of the United States-Mexico Environmental Program: Border 2012.

Over the past ten years, the Border 2012 program has brought together federal, state, and local governments; United States border tribes; Mexico's indigenous communities; and stakeholders and border communities of both countries, to address the most pressing environmental issues along our shared border.

Through the Border 2012 Program, we have promoted and fostered a strong bi-national partnership that has allowed us to achieve concrete and measurable results and adopt an effective bottom up approach for decision making and priority setting. The Border 2012 Program has also been instrumental in developing and strengthening the capacity of border communities to become more sustainable and to better address environmental and public health issues.

We are very proud of the achievements made in protecting and improving environmental conditions for millions of residents along the United States-Mexico border, which could not have been possible without the support and commitment of all of our partners. As National Program Coordinators, we acknowledge and celebrate your work, dedication, and commitment, which has been an essential ingredient in the successful accomplishment of our ambitious goals and objectives.

This report highlights key results achieved in the past two years and is also the last report of the Border 2012 Program, which reaches its conclusion this year. Though we are closing the Program, we are excited about the new bi-national border program, Border 2020, which was developed through extensive public input and participation. The new Program, signed in mid-2012, will continue the long standing collaboration and cooperation among the United States and Mexico to improve the environment in our shared border region.

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Border 2012 Wraps up Remarkable 10-Year Effort

The Border 2012 Environmental Program has proved itself a model for bi-national programs aimed at improving conditions at the U.S.-Mexico border. Since its inception in 2003, the program has used a community-based approach that focuses on the environmental needs expressed by people who live and work in the border region. Projects funded by Border 2012 have covered a range of activities including scrap tire removals, watershed cleanups, air quality monitoring, storm water harvesting, soil sampling and community health worker training.

The following pages describe projects that were completed or were near completion by the close of the Border 2012 program. The report is not intended to be a comprehensive listing of all projects, but rather a snapshot of notable achievements during the final years of the program, 2010-2012. Project summaries are categorized under each of the program's six environmental goals. A separate section describes the program's tribal and indigenous communities initiatives. To view additional Border 2012 accomplishments, please visit the program website at: www.epa.gov/border2012/.



A volunteer removes bags of trash during a Border 2012-sponsored cleanup near Tecate in Baja California.

BORDER 2012 GOALS

1. Reduce Water Contamination.
2. Reduce Air Contamination.
3. Reduce Land Contamination.
4. Improve Environmental Health.
5. Enhance Joint Readiness for Environmental Response.
6. Improve Environmental Performance, Compliance and Stewardship.

Cover Photo

Chisos Mountains, Big Bend National Park, Texas.

Program Takes Full Measure of Borderwide Needs

Since its signing in 2003, the Border 2012 U.S.-Mexico Environmental Program has successfully completed more than 400 projects. Most projects were designed to address environmental or public health issues specific to a community. A smaller number of projects were applied to environmental issues that were deemed significant to communities throughout the border region. Under these borderwide projects, Border 2012 posted some of its most noteworthy achievements:

- More than 12 million scrap tires were removed from clandestine dump sites in the U.S. and Mexico.
- Under the EPA's Border Environment Infrastructure Fund and with assistance from agencies in the U.S. and Mexico, an estimated 54,000 homes were connected to safe drinking water systems and more than 500,000 homes were connected to wastewater collection and treatment services.
- Federal and state officials in the U.S. and Mexico collected more than 73 metric tons of unused pesticides and agro-chemicals from rural collection sites on both sides of the border.
- Border 2012 collaborated with the U.S. Department of Defense's Northern Command (USNORTHCOM) to enhance readiness and improve emergency response in the event of a border environmental disaster. The effort resulted in a series of knowledge exchanges, technical trainings, table top exercises and hazardous material equipment transfers in nine sister cities along the U.S.-Mexico border.
- Fifteen (15) sister city emergency-contingency plans were created ensuring a coordinated bi-national response in the event of a border emergency.
- A series of community cleanups resulted in the removal of an estimated 673,300 tons of solid waste from illegal dump sites, watersheds, estuaries and public drain systems in the U.S. and Mexico.
- Approximately 570 tons of e-waste were properly disposed or recycled in communities on both sides of the border.
- Greenhouse gas emissions (GHE) inventories were completed for each Mexican border state.



A Border 2012 project to remove scrap tires from illegal dump sites resulted in the development of regional plans for long-term, sustainable management of waste tires throughout the border region.

Matamoros Eliminates Tons of Trash Clogging City Drains

With funding from Border 2012, the Water and Sewer Board of the city of Matamoros successfully



The city of Matamoros suffered from clogged and polluted drains prior to a citywide cleanup and educational campaign sponsored by Border 2012.

eliminated 3,341 tons of municipal garbage and 1,426 scrap tires clogging the city's sewer and drain systems. The unsightly problem promoted a culture of environmental degradation and raised the specter of disease from the standing pools of polluted water. As part of the project, utility crews cleared 32.1 kilometers (about 20 miles) of public drains and sewage canals. Meanwhile, 440 school students enlisted in

the Community Sanitation Brigade to educate residents living near the drains in the importance of maintaining a clean community with sanitary drains. Throughout Matamoros, colorful murals were painted on public walls emphasizing respect for the city's sewer and drain systems. To sustain the program, the city government adopted new regulations for policing the drains to discourage illegal dumping.

Partners Remove Garbage Flowing to Tijuana Estuary

Border 2012 teamed with the nonprofit WiLDCOAST and a partnership of community and government organizations to organize a series of workshops to improve residential waste disposal in Tijuana's Los Laureles Canyon. The canyon

suffers from inadequate collection and disposal of residential solid waste, posing a health risk to the 48,000 residents and polluting the Tijuana Estuary downstream in San Diego. Fundamental to the project was an effort to strengthen the community's

capacity for long-term waste management. The partners improved the community's access to waste collection by installing 100 trash bins and trained six community health workers in promoting behavioral change. The project was part of a long-term effort by Border 2012 that has resulted in the removal of more than 3,800 cubic yards of trash and garbage from the canyon, reducing the risks to residents and removing a standing threat to the estuary on the U.S. side of the border.



Community partners discuss plans for a long-term solution to inadequate waste management in Tijuana's Los Laureles Canyon, thereby reducing the risk of disease and the threat of polluting the Tijuana Estuary downstream.

Border 2012 Invests in Infrastructure, Storm Water Harvesting in Arizona

With funding from Border 2012, the nonprofit Watershed Management Group (WMG) of Tucson has launched an ambitious project to improve the quality of storm water runoff at three locations along the Arizona-Sonora border. The project uses “green infrastructure” landscaping and rain water harvesting to capture polluted runoff from roads and rooftops, allowing for seepage or

storage of the water to support gardening or natural vegetation. WMG estimates the project will allow for capture of 63,500 cubic feet of water annually, reducing runoff into the Nogales Wash and Santa Cruz River. The project includes a series of community education and training workshops to foster use of storm water harvesting and to ensure long-term maintenance of the installed landscaping. The project

is part of a Border 2012 regional effort to promote the capture and reuse of storm water runoff.



A raised, meandering path acts as a berm to retain storm water runoff near the Santa Cruz River in southern Arizona.

Laredo Group Revives *Día del Río* Celebration

With support and encouragement from Border 2012, the Rio Grande International Study Center (RGISC) in Laredo, Texas, successfully revived the *Día del Río* celebration, which had suffered from several years of falling participation. On Oct. 16, 2010, the 16th annual *Día del Río* kicked off with hundreds of activities, attracting thousands of participants to the bi-national event held along the banks of the Rio Grande. Students, educators, environmentalists,

Native Americans, and state and federal officials in the U.S. and Mexico participated in festivities in Colorado, New Mexico, and Texas and the Mexican states of Durango, Coahuila, Nuevo León, and Tamaulipas. An estimated 175 schools, clubs, foundations, governments and environmental organizations in the U.S. and Mexico organized activities that included river cleanups, tree plantings, lectures, art exhibits, kayaking races and street parties. To

maintain interest in the event, organizers formed a watershed network that has served to promote the event each year since.



The Rio Grande International Study Center in Laredo, Texas, engaged in a campaign to promote the 2010 *Día del Río* celebration, reviving participation in the annual event.

Baja California Initiates Vehicle Inspections to Reduce Smog

On-road vehicles in Baja California emit approximately 180,000 tons of airborne pollutants annually.



Air quality studies have found that motorized vehicles account for 54% of nitrous oxide and 92% of carbon monoxide emissions in Tijuana, and 30% and 69% of the same emissions in Mexicali. Beginning in 2012, the state of Baja California with support from Border 2012 instituted a mandatory

vehicle smog-check program. The program requires owners of the state's 1.4 million cars, pickups and vans to have their vehicles inspected annually and, if necessary, to complete any required repairs. Once fully implemented, the program is expected to reduce statewide vehicle emissions by 12-24% annually.

Juárez Combats Air Pollution with 'Green' Paint Sprayers

A "green" paint sprayer is demonstrated to auto body workers in Ciudad Juárez.



With funding from Border 2012, students and faculty at the Autonomous University of Ciudad Juárez distributed 60 low-volume, low-pressure (LVLP) paint sprayers to city auto body workers and urged the operators to retire their older spray guns, a source of high concentrations of volatile organic compounds (VOCs). As part of the project, 28 auto body workers, representing 20% of the city's body shops, participated in a one-day training event that demonstrated how to use the

newer, more efficient LVLP sprayers. University students visited other shop operators in person to promote use of the new sprayers. As part of the project, the researchers measured levels of VOCs released from paints and solvents used in the auto painting process. Using digital maps, the researchers identified the potential for exposure to benzene and toluene, chemical by-products of paint spraying, in several areas of the city where auto shops are located near residential homes.

Border 2012 Moves Arizona Gas-to-Energy Project Forward

Santa Cruz County, Arizona, teamed with Border 2012 to complete the second stage of a long-term project to construct an energy recovery platform at the county's Río Rico Landfill. Design, engineering and construction specifications were completed for the gas-to-energy project, which is estimated to recover as much as 500 standard cubic feet per minute in landfill gases, an amount

sufficient to sustain electric generation of more than 7,000,000 kW hours annually for 30 years. The plans were deemed essential to beginning negotiations with the local electric company for a power purchase and interconnection agreement, both necessary to obtain construction financing. Once built, the recovery facility will improve the environmental performance

of the landfill by reducing 10,377 tons of carbon dioxide from escaping annually into the atmosphere and putting electricity back into the grid to facilitate the utility company's renewable energy portfolio. The Border 2012 effort followed an earlier project that identified the feasibility of recovering methane gas at the landfill in amounts sufficient for power generation.



Landfill gases from the Río Rico Landfill, a 60-acre facility located 14 miles north of the U.S.-Mexico border, are deemed sufficient to generate electricity for 30 years.

Viva Verde Shows Homeowners How to Save Energy, Money

In 2010, Border 2012 partnered with the Gila Resources Information Project of Silver City, New Mexico, in a targeted effort to raise awareness about climate change and help



A Viva Verde contractor installs weather stripping to the door frame of a southern New Mexico home.

low-income homeowners save money by reducing their energy bills. Using the Viva Verde Residential Energy Efficiency Program, contractors conducted free in-home audits to determine cost-effective measures for reducing energy use. Sixty-two homes in the communities of Deming and Columbus were weatherized, resulting in estimated annual savings of \$106 to the occupants. The homes were sealed with caulking and weather stripping, and families were introduced to the energy advantages of the new compact fluorescent light bulbs. In addition, project members installed

low-flow showerheads and faucet aerators, and checked for silent leaks from toilet tanks. As part of the project, the partners educated homeowners about climate change and identified actions family members could take to reduce greenhouse gas emissions. At the end of the project, team members estimated their measures had resulted in total savings of 227,710 gallons of water (3,672 gallons per household) and 18,192 kilowatt hours (293 kilowatt hours per household) per year. Team members calculated an overall reduction of 75.6 tons of carbon dioxide emissions annually.

The on-line version of the Viva Verde Guide in both English and Spanish can be accessed by visiting vivaverdenm.com

Mexicali Media Campaign Targets Seasonal Fireworks, Open Burning



Seasonal contaminants pollute the air in Mexicali, Baja California.

For years, Imperial County, California, has been designated “serious” in non-attainment for particulate matter (PM¹⁰). Air quality monitoring in Mexicali, just across the border, indicates that it too likely suffers from non-attainment. A known contributor to the region’s air pollution is the winter holiday tradition in Mexicali of lighting fireworks and the open-air burning of

fuels such as scrap tires and wood. To address this issue, the Imperial County Air Pollution Control District together with the Secretariat for the Environment of the State of Baja California developed a media campaign to educate residents about the environmental and health impacts of fireworks and open burning. Over a two-year period during the holiday weeks of December

and January, more than 2,600 television and radio spots were broadcast. Many of the messages were targeted to the region’s youth, both in the U.S. and Mexico. The project was deemed a success in taking the first step toward raising awareness of seasonal air quality and educating the bi-national community about the risks of exposure to high concentrations of airborne particulates.

Eagle Pass, Piedras Negras Remove 323 Tons of e-Waste

In a joint effort, the border communities of Eagle Pass, Texas, and Piedras Negras, Coahuila, removed 323 tons of scrap computers, appliances and electronics from illegal dump sites on both sides of the border. The cleanup was part of a larger effort to highlight the hazards of illegal dumping of electronics or e-waste, a major environmental problem in both cities, and to develop free collection

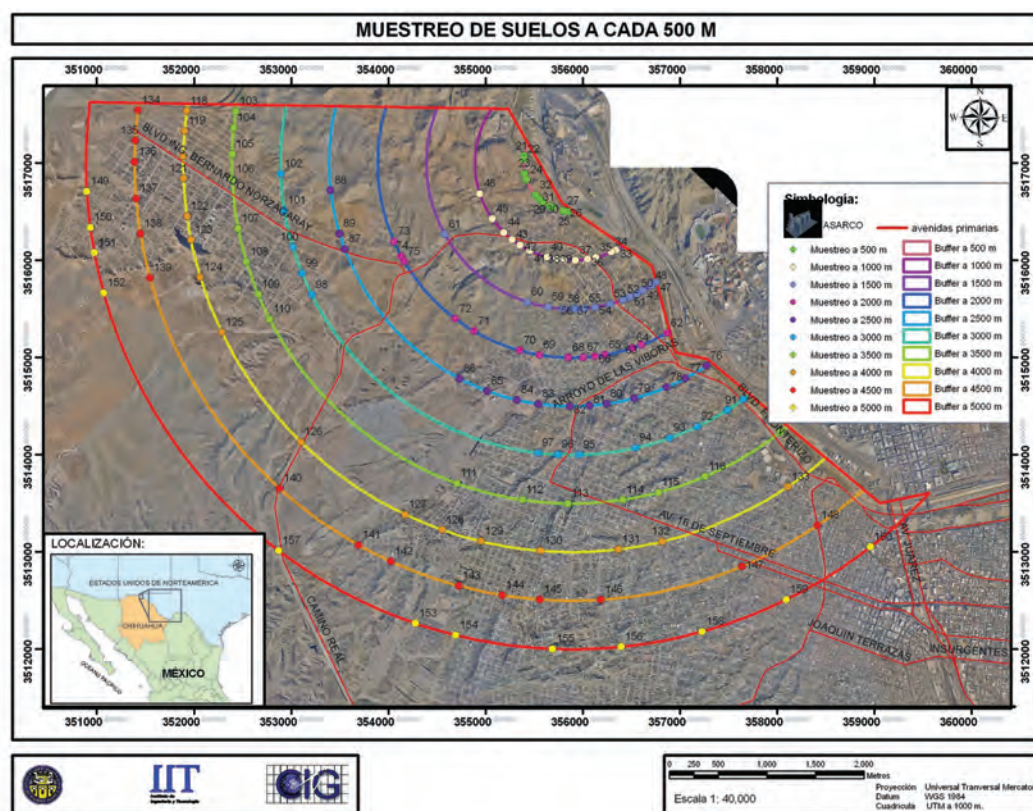
sites to encourage recycling and proper disposal. To support the project, the Texas Commission on Environmental Quality donated funds for the purchase of two kid-size robots used for in elementary school presentations, while students from the Technology Institute in Piedras Negras staged environmental skits, performing as the *Green Tec Osos*. To sustain

the program, the city of Eagle Pass created a waste diversion education program and committed to budgeting annually for citywide cleanup events. In Piedras Negras, students at the Technological Institute agreed to continue performing as the *Green Tec Osos*. In a written report, the cities invited other border communities to use their project as a model for undertaking similar efforts.

Students from the Piedras Negras Technology Institute perform under the name of the *Green Tec Osos*, staging environmental skits for the city's elementary schools.



Researchers Trace Lead, Arsenic to Abandoned Smelter



A map shows the location of concentric rings placed at 500-meter distances from the main chimney of the ASARCO smelter. The rings were used to organize the sampling of soils on the Mexican side of the Rio Grande.

For more than 100 years, the ASARCO smelter on the banks of the Rio Grande in El Paso pumped contaminants into the air from a firing process that separated copper, zinc and lead from raw ore. In the late 1990s, the smelter's owners suspended operations and agreed to pay \$19 million for environmental cleanup on the U.S. side of the border. At the time, little was known about the extent of contamination in Mexico. With funding from Border 2012, engineers from the

Autonomous University of Ciudad Juárez and experts from Chihuahua's Centro de Investigación de Materiales Avanzados tested 320 soil samples taken from the Mexican side of the Rio Grande just across the border from ASARCO's abandoned smokestacks. To plot their findings, the researchers drew concentric rings at 500-meter distances from the smelter's main chimney and displayed the results on digital maps and satellite images. The study found that concentrations of

arsenic and lead generated by the smelter remain in the soil on the Mexican side of the river in Ciudad Juárez. In some samples, arsenic and lead were measured in higher concentrations at depths below the topsoil, raising concerns about the potential for groundwater contamination. The study prompted public discussions about the best measures to remediate the contaminated areas on the Mexican side of the river and how to limit exposure to residents on both sides of the bi-national border.

Border 2012 Partners Stymie Illegal Dumping in Tecate Colonia

In 1999, residents of Colonia Luis Donaldo Colosio near Tecate, Baja California, organized a committee known as Las Mujeres Lluvia del Sur (Women from the Southern Rain) to clean up an illegal dump site. At the time, the committee cleared the land and planted an orchard and an organic garden to discourage future dumping at the site. In

2011, Border 2012 awarded funding to the Fundación La Puerta, a Tecate nonprofit, to strengthen the colonia's existing waste management effort. The Fundación and its colonia partners propose to develop a business plan for sustainable operation of the orchard and plan to sow 950 square meters (a quarter acre) of crops, harvesting 720 kilograms (1,587 pounds)

of produce for the colonia's 15 families. As part of the project, colonia residents have started a small business collecting waste paper and plastics from local businesses and selling the materials to recycling companies. Meanwhile, members of the Mujeres Lluvia del Sur have organized community cleanups of a 2-kilometer stretch of the Tecate River.



An organic produce garden is cultivated in Tecate's Colonia Luis Donaldo Colosio to discourage illegal dumping at the site.

Researchers Divert Waste Paper from Nogales (Sonora) Landfill

The University of Arizona, through a project funded by Border 2012, is demonstrating the feasibility of using waste paper intended for the Nogales, Sonora, landfill in the production of fibrous concrete. The purpose of the project is to reroute waste paper, a significant problem at the landfill, for use in the production of a mixture that dries into fibrous blocks, walls and roof panels. The project team has opened a collection station in central Nogales for donated

paper. Satellite stations around the city provide facilities for educational workshops and for testing different types of paper and other inputs in the mixing and drying of fibrous blocks. The project team is tracking the costs of materials to estimate the savings in building a typical, one-room structure. The team hopes to increase acceptance among regional builders, engineers and architects for using fibrous blocks in small-scale home construction, avoiding

the need to dispose and transfer waste paper to the landfill.



Workshop participants learn how to make fibrous concrete blocks using a mixture of waste paper, cement and sand.

To date, the most structurally resistant mixture is a ratio of 1 kilogram paper, 0.5 kilogram cement, and 0.5 kilogram sand.

Tijuana Colonia Reroutes Commercial Trucks to Bypass School

With support from Border 2012, the Environmental Health Coalition, a bi-national nonprofit, partnered with a team of Tijuana community groups to organize an effort to reduce exposure to diesel truck emissions at schools in the city's low-income neighborhoods. The coalition and its partners met with public officials, distributed written materials, and

held press conferences to raise awareness of the health dangers from diesel exhaust and to advocate for restrictions on semi-trucks passing in front of schools. The partners achieved success when traffic signs were placed at six locations prohibiting semi-trailers from driving past an elementary school and entering Colonia Chilpancingo, a community

of 15,000 residents adjacent to the city's largest industrial park. As a follow up to the project, the partners plan to monitor enforcement of the truck restricted zone in Colonia Chilpancingo. Ultimately, the coalition and its partners hope to advance a city ordinance that will protect all Tijuana school children and residential neighborhoods from diesel emissions.



A street map shows areas near Tijuana's Colonia Chilpancingo that are now prohibited to commercial diesel traffic.

Arizona Delivers Health Training, Targeting Vulnerable Communities

With funding from Border 2012, researchers with the University of Arizona's Binational Center designed, developed and tested modular training courses on environmental science topics for community health workers, or *promotoras*, in the Arizona-Sonora border region. The purpose of the project was to improve the lack of access to information by vulnerable or difficult-to-reach border populations traditionally

served by *promotoras*. To initiate the project, the university researchers met with the health workers to determine their training needs. The workers identified gaps in Spanish-language information on pesticides, arsenic, environmental toxicology and contaminants. With this information, the university team developed courses on the four topics and then tested the content seeking input from more than 70 *promotoras* during

scheduled pilot sessions. The university team plans to refine the training modules, which are designed to be used by health workers to train other border health workers, eventually reaching out to hundreds of families throughout the U.S.-Mexico border region. Once the modules are distributed, the researchers estimate the potential for informing more than two million individuals from vulnerable populations throughout the border.



University of Arizona researchers test Spanish-language modular training courses with the help of regional community health workers, or *promotoras*

Aqua XXI Improves Health, Sanitation in Rural Colonias



A puppet theater presentation for children living on the outskirts of Ciudad Juárez highlights the benefits of sanitation and personal hygiene.

From 2009 through 2010, the Aqua XXI program of Ciudad Juárez collaborated with Border 2012 to organize workshops, lectures, home visits and children's puppet performances to educate rural residents on the risks of exposure to pesticides and household chemicals. As

part of the effort, Aqua XXI highlighted the advantages of drinking purified water, increasing hand washing and improving personal hygiene to address a high incidence of gastrointestinal infection among the participants. At the end of the project, participant

surveys found improvements in knowledge of water purification methods with 36.6% of the 150 participants citing an increase in how often they washed their hands. Notably, 11.5% of participants reported they no longer suffered from stomach illnesses.

The Aqua XXI project conducted three puppet theater presentations for 150 children and adults.

Border 2012 Partners Collect 73 Tons of Unused Pesticides

In a bi-national effort, federal and state officials in the U.S. and Mexico partnered with Border 2012 to collect 73 metric tons of unused pesticides and agro-chemicals from rural locations at the U.S.-Mexico border. In some areas, the border partners declared “amnesty” days for farm operators to dispose of their unused or obsolete pesticides. In other areas, officials developed collection centers for farmers and ranchers to drop off unused chemicals and pesticide containers. The borderwide effort is credited

with significantly reducing the risk to human health and the environment from accidental exposure or release of pesticides and agro-chemicals into the soil or water.



Barrels of bulk liquid pesticide are collected at a drop-off site during the Border 2012 collection drive in San Luis Río Colorado, Sonora.

Border 2012 Instructs Families in Home Safety

The Ben Archer Health Center of southern New Mexico teamed up with Border 2012 in an ambitious project to conduct 500 in-home environmental visits and educate families on home safety. The project was especially significant given the findings of a Home Safety Council study that identified southern New Mexico as reporting the highest incidents of deaths annually

in the United States from unintentional home injuries (13.03 deaths per 100,000 persons compared to the lowest rate of 3.33 deaths per 100,000 persons in Massachusetts). The Border 2012 effort targeted low-income families living in four New Mexico counties. Community health workers, also known as *promotoras*, visited the families in their homes, offering handouts and materials on topics such

as food storage, pesticide use and home safety. The health workers identified areas of a home that needed attention such as unsecured medicine cabinets. Follow-up visits were conducted to determine changes in behavior and, where necessary, to remove barriers to improvement. An evaluation of the project found significant increases in participant knowledge on a variety of environmental and home safety topics.

Mexico and U.S. Practice Joint Response to Border Disasters

Since 2007, Border 2012 has partnered with the U.S. Department of Defense Northern Command (USNORTHCOM) to strengthen emergency

response and enhance readiness along the border. USORTHCOM has been instrumental in supporting numerous training, knowledge exchanges and equipment transfers for emergency responders throughout the border region. The latest effort in this important collaboration was a two-day emergency response exercise in San Diego with participation from more than 100 individuals from U.S.

and Mexican federal agencies. On the first day, officials from the U.S. EPA, Mexico's Procuraduría Federal de Protección al Ambiente (PROFEPA) and the U.S. Coast Guard reviewed their preparedness and the ability to respond to a variety of hazardous incidents. On the second day, a mock emergency was initiated in which participants responded to a simulated oil spill, both at sea and on land.

Border 2012 partnered with the U.S. Department of Defense Northern Command to practice cross-border emergency response to a mock exercise that simulated an oil spill on the California-Baja California coast.



Sonora Maquiladora Workers Train for Emergency Response

In the event of a hazardous materials incident at the U.S.-Mexico border, employees of Mexico's manufacturing plants, or *maquiladoras*, are likely to be among the first on the scene. With training, *maquiladora* workers may also be in the best position to minimize the potential for loss of life and reduce environmental degradation. With funding from Border 2012, Arizona State University provided four 3-day Emergency

Response courses for 167 workers at manufacturing facilities in the Sonora-Arizona border. Three courses were held at facilities in Nogales (Sonora); a fourth course was conducted in Agua Prieta. The curriculum, which was delivered in Spanish, included lectures, videos and hands-on group activities. The training focused on hazard awareness, personal protective equipment, instrumentation, emergency response planning

and included information on relevant Mexican laws and regulations. Emphasis was placed on potential terrorist activities and natural disasters. Local firefighters participated in the courses, demonstrating their response capabilities and coordinating with the host *maquiladoras* in the case of a future incident. All four courses received positive evaluations, and several participants asked about the possibility for additional training in the future.

Border 2012 Updates Sister City Plans in Texas-Coahuila



A bridge over Amistad Dam, upstream from the border sister cities of Del Rio-Ciudad Acuña, serves as an example of important infrastructure for cross-border emergency preparedness and response.

The Rio Grande Institute in Austin, Texas, has served in a variety of roles demonstrating expertise in the areas of emergency preparedness and response. In 2011, the Border 2012 program contracted with the Institute to update and improve the Sister City Emergency Preparedness and Response Plans currently in place for Eagle Pass-Piedras Negras and Del

Rio-Ciudad Acuña. The existing plans were cited as outdated and in need of revision to address changes in demographics, transportation and community services. In preparing the new plans, the Institute proposes to assess the risk for disasters, both natural and manmade, that may impact each of the sister city pairs. The new plans will include digital maps

showing evacuation routes and describing procedures for response. Once completed, the plans will be submitted to each sister city for adoption. This Border 2012 effort is a direct response to the goals of the U.S.-Mexico Border Program and is designed to reduce the risk to lives, property and the natural environment within the boundaries of the sister cities.

There is a long list of risks, both natural and manmade, that have the potential to impact lives and property on both sides of the Texas-Mexico border.

Border 2012 Sharpens Accuracy of Tijuana GHG Emissions

Prior to assessing the risks of air pollution on human health and ecosystems, an accurate measurement is required of emissions, pollutants and chemical transfers. Border 2012 provided support to the city of Tijuana to strengthen reporting of GHG emissions and update the city's existing chemical registry (RETC). The project provided a written report explaining

how businesses and policy makers might improve the accuracy of their emission, pollutant and transfer measurements. To initiate the project, the city supplied a list of commercial firms under its jurisdiction. Key to the success of the project was the development of a statistical method for estimating emissions and chemical transfers by industry sector. A project deliverable included

a guide with instructions on how to prepare Tijuana's annual Municipal Operation Certificate, or COAM, a key document required by the Mexican federal government. In addition to assisting the city of Tijuana, the project provided guidance to businesses on how to identify and reduce environmental inefficiencies, thereby minimizing releases and lowering industrial costs.

Auto Businesses Offered Compliance Training

With funding from Border 2012, San Diego County's Department of Environmental Health partnered with the Environmental Training Center at Cuyamaca College to educate automotive shop owners in environmental laws and regulations and introduce the shop owners to pollution prevention strategies. Going door to door, two Cuyamaca College student interns canvassed more than 350 automotive businesses, recruiting more than 100

operators for participation in pollution prevention and environmental management workshops. As part of the project, San Diego County granted "no fault" hazardous waste audits for businesses identified as chronic violators of California's environmental or waste regulations. To reward businesses for participating in the project, 37 operators were offered free admission to a 40-hour HAZWOPER certification course, and a subset of those received free training and certification in

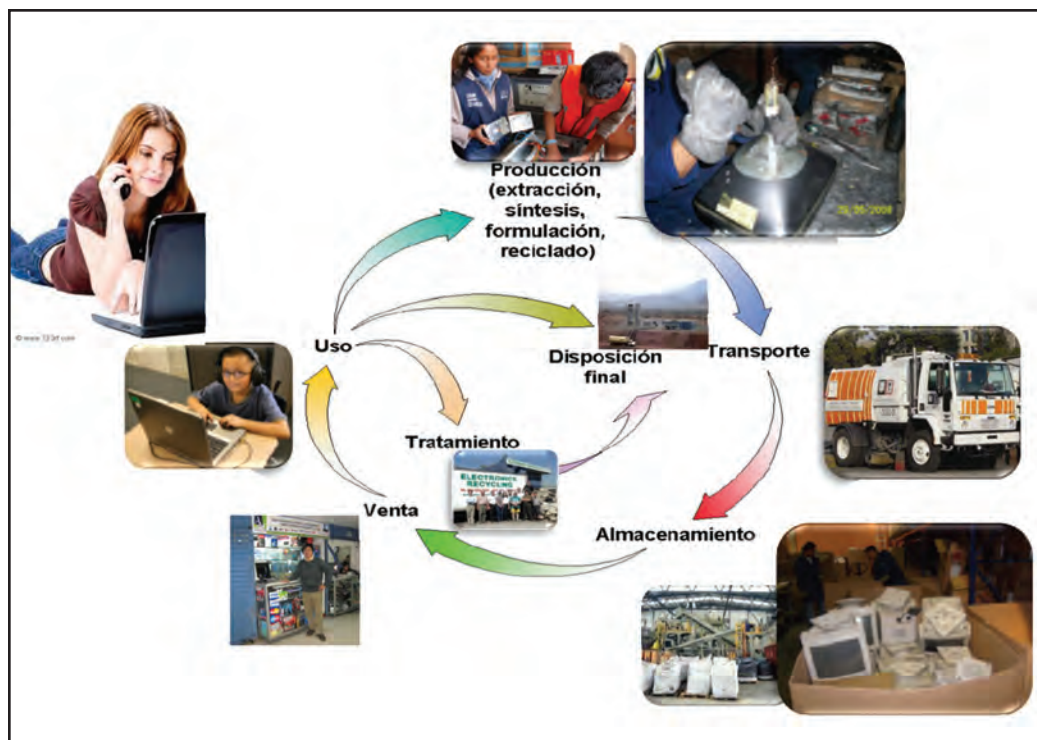
Environmental Management Systems. The student interns, in turn, earned college credit toward completion of their associate degrees in Environmental Health and Safety Management. Of note, this Border 2012 project—titled Border Area Development & Growth of Environmental Responsibility, or BADGER—received California's prestigious Community Development Award at the state's annual environmental regulatory and training conference.

COLEF Examines Solutions for Managing Mexico's e-Waste

In 2006, the Colegio de la Frontera Norte (COLEF) published the first inventory of Mexico's electronic waste, or e-waste. At the time, COLEF identified the need for disposal of between 180,000 and 250,000 tons of obsolete Mexican electronics, based on market and lifecycle trends for appliances. As a follow up, Mexico's National Institute of Ecology (INE) developed an inventory of electronic waste in Mexico's northeastern states, estimating the need

for proper disposal of 19,600 tons of e-waste in Nuevo León, 11,914 in Coahuila and 16,817 in Tamaulipas. The INE report cited a lack of infrastructure for handling e-waste in Mexican border communities. More recently, Border 2012 teamed with COLEF to update these estimates for border towns in Tamaulipas, Nuevo León and Coahuila and to assess options for improved management of the region's e-waste. As part of the project, COLEF

characterized and tracked the current generation of e-waste (computers, cell phones, televisions, and audio and video players). Outcomes of the project included a waste management guide for border communities and an assessment of infrastructure needs for handling future waste. The assessment is intended to encourage private sector investment in recycling and waste management, providing a long-term solution for disposal of Mexico's e-waste.



An image of the lifecycle of electronic devices is pictured on the cover of the "Municipal Guide for Integrated Management of Electronic Waste and Electronic Equipment for Northeast Mexico," published by the Colegio de la Frontera Norte and Mexico's National Institute of Ecology under a project sponsored by Border 2012.

Tarahumara Celebrate Educational Workshops in Song and Dance

With funding from Border 2012, the indigenous people of Colonia Tarahumara on the outskirts of Ciudad Juárez conducted 26 environmental education and health workshops. Some 160 individuals representing the Tarahumara or Rarámuri

culture attended educational sessions on groundwater contamination, soil contamination and health lectures on topics chosen by the colonia residents. A public ceremony was held at the close of the workshops that included songs written for the

occasion, dancing and food. Women celebrated the event wearing the colorful skirts that are a hallmark of the Tarahumara culture. A sign-in sheet at the close-out event identified 133 participants, a number representing 38% of the colonia's total population.



Tarahumara women—wearing the brightly colored, billowing clothing traditional to their culture—listen during one of several environmental education workshops sponsored by Border 2012.

Border 2012 Pilots Water Filter for Removing Arsenic, Nitrates

With support from Border 2012, Arizona State University (ASU) is conducting an experiment to determine whether a small, inexpensive water treatment system can successfully remove high concentrations of arsenic and nitrates from groundwater found in the U.S.-Mexico border region. With approval from the Tohono O'odham Nation, the ASU team installed

a pilot test at a well site in the Tohono O'odham community of Sikul Himatk, Arizona. The pilot system uses inexpensive synthetic media for filtering contaminants from drinking water. The ASU researchers are conducting tests to determine whether the system can operate in the realistic conditions of the border. Many small communities in the border

region lack the financial and technical capabilities to construct, maintain and operate expensive water treatment systems capable of removing multiple contaminants. A successful outcome of this project could improve environmental health in small or poor border communities by reducing exposure to high concentrations of arsenic and nitrate from drinking water.



Researchers from Arizona State University test a low-cost treatment system for removing arsenic and nitrates from groundwater on Tohono O'odham lands near Sikul Himatk, Arizona.

Tohono O'odham Tribe Replaces Faulty Water Main

The Tohono O'odham Nation was awarded a grant under the EPA's Border Tribal Infrastructure Fund

to replace 6,500 feet of a faulty water main in Sells, Arizona. The old water line suffered from frequent

breaks and several nearby homes had never been connected. Funding from the grant allows the tribe to replace the old line with poly-vinyl chloride (PVC) pipe and connect 38 new homes and structures to the new main. To improve the delivery system, the grant also provides for installation of 33 water meters, 14 hydrants and 76 water taps. Planning, design and construction of the new main and distribution system is being conducted in phases through an interagency agreement with the Tucson Area Indian Health Service. The grant is an example of the collaboration between Border 2012 and the Border Tribal Infrastructure Fund to support the environmental infrastructure needs of the 26 U.S. federally recognized border tribes.



Utility workers in Sells, Arizona, plot the location of a water main, a practice known as "potholing."

***Tohono O'odham Nation
requested funding to replace
6,500 feet of a leaky water main
and install service lines to 38
underserved homes and buildings.***

1. Auto Businesses Offered Compliance Training
2. Partners Remove Garbage Flowing to Tijuana Estuary
3. Tijuana Colonia Reroutes Commercial Trucks to Bypass School
4. Border 2012 Sharpens Accuracy of Tijuana GHG Emissions
5. Border 2012 Partners Stymie Illegal Dumping in Tecate Colonia
6. Mexicali Media Campaign Targets Seasonal Fireworks, Open Burning
7. Baja California Initiates Vehicle Inspections to Reduce Smog
8. Border 2012 Partners Collect 73 Tons of Unused Pesticides
9. Border 2012 Pilots Water Filter for Removing Arsenic, Nitrates
10. Tohono O'odham Tribe Replaces Faulty Water Main
11. Border 2012 Moves Arizona Gas-to-Energy Project Forward
12. Researchers Divert Waste Paper from Nogales (Sonora) Landfill
13. Sonora Maquiladora Workers Train for Emergency Response
14. Border 2012 Invests in Infrastructure, Storm Water Harvesting in Arizona
15. Arizona Delivers Health Training, Targeting Vulnerable Communities
16. Viva Verde Shows Homeowners How to Save Energy, Money
17. Border 2012 Instructs Families in Home Safety
18. Researchers Trace Lead, Arsenic to Abandoned Smelter
19. Tarahumara Celebrate Educational Workshops in Song and Dance
20. Juárez Combats Air Pollution with 'Green' Paint Sprayers
21. Aqua XXI Improves Health, Sanitation in Rural Colonias
22. Mexico and U.S. Practice Joint Response to Border Disasters
23. Border 2012 Updates Sister City Plans in Texas and Coahuila
24. Eagle Pass, Piedras Negras Remove 323 Tons of e-Waste
25. COLEF Examines Solutions for Managing Mexico's e-Waste
26. Laredo Group Revives *Día del Río* Celebration
27. Matamoros Eliminates Tons of Trash Clogging City Drains

UNITED STATES

MÉXICO

United States-Mexico Border
México - Estados Unidos Frontera

Legend / Leyenda

	Water / Agua		Border Region / Región Fronteriza
	Air / Aire		City or Municipality / Ciudad o Municipio
	Land / Tierra		Community Project / Proyecto Comunitario
	Environmental Health / Salud Ambiental		Regional or Borderwide Project / Proyecto Regional o a lo largo de la Frontera
	Emergency Response / Respuesta a Emergencias		
	Environmental Stewardship / Administración Ambiental		
	Tribe / Tribu		

