BORDER 2020: UNITED STATES - MEXICO ENVIRONMENTAL PROGRAM

BORDER 2020
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HIGHLIGHTS REPORT AUTUMN 2018

EPA
United States Environmental Protection Agency

SEMARNAT
SECRETARÍA DE MEDIO AMBIENTE Y RECURSOS NATURALES

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Chisos Mountains, Texas, U.S.A.
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National Commission for Protected Natural Areas of México (CONANP)

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MESSAGE FROM THE NATIONAL COORDINATORS

The Border 2020 Program continues to provide a strong and dynamic basis for our binational partnership providing solutions to environmental and public health challenges in the border region. Collaboration is key to achieving successful, sustainable and long-term results. As National Coordinators, we are committed to working together to advance the mission of the Border 2020 Program: to protect the environment and public health along the United States-Mexico border region.

Our collaborative efforts with the U.S. Border Tribes and United States and Mexican federal, state, and local governments have proven to benefit our shared environment and residents on both sides of the border. We have built partnerships and invested our resources into projects that address topics such as air quality, water quality, wastewater treatment, solid waste management, emergency response, and environmental stewardship.

This report highlights the accomplishments of the Border 2020 Program during the last two years. We present 22 projects that have been implemented and show the progress of our efforts to improve conditions for border communities and our shared environment. Through these projects, we have also been able to perform studies or apply best management practices to achieve successful outcomes of the Program's goals.

Reaffirming our commitment to the Border 2020 Program, we, as National Coordinators, support our partners including government at all levels, U.S. Border Tribes and Mexican indigenous communities. We would like to take this opportunity to express our gratitude to the devoted individuals, communities and organizations that support and participate in Program activities to improve environmental and public health conditions along the border region. We recognize the importance and value of our partners' dedication, commitment, and contribution to the success of the Program.

The United States-México environmental cooperation in our border region is without a doubt a success story and sets an example to the world, which is certainly worth to keep building upon. We welcome you to reflect on our recent accomplishments and ask that you continue to support and engage in finding solutions to the challenges that still exist in the border region.

Thank you!

Jane Nishida
National Coordinator
United States of America

Enrique Lendo
National Coordinator
México

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INTRODUCTION

Reaffirming our commitment, 2017-2018

The United States-Mexico border is a dynamic and unique geographic region facing many environmental challenges including poor air quality, unsafe drinking water and wastewater treatment, and inadequate waste management programs and services. The border is home to over 15 million people where approximately 90% of the population resides in cities, while the remaining population is found in small towns or rural communities. The **Border 2020 Program** is the latest United States-Mexico environmental program implemented under the 1983 La Paz Agreement, focusing on communities 62 miles on either side of the 2000-mile border. The Border 2020 Program encompasses a regional, bottom-up approach for decision making, priority setting, and project implementation to address the environmental and public health challenges in the border region.

The Program is designed to draw from communities and local stakeholders, as well as work directly with federal, state, tribal and international partners to implement environmental projects and solutions. Specifically, the framework goals focus on improving air and water quality, promoting clean land, strengthening preparedness and response, fostering environmental stewardship and advocating for environmental health initiatives along the border. This Accomplishments Report shares a snapshot of our Program successes in the last couple of years (2016-2018) to improve the quality of life and enhance our shared environment.

For more information on the details of the goals and objectives of the Border 2020 Program, we invite you to read the Border 2020 Framework document or if you are interested to know more accomplishments of the Program, please visit its homepage at EPA and/or SEMARNAT internet sites to see past reports and other information of interest.

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IMPROVING AIR QUALITY

Poor air quality can have significant community economic and social impacts, including increased illness, premature death, and lower quality of life. The United States-Mexico border region is vulnerable to the transboundary movement of pollutants, including inhalable particulate matter (soot and dust), ozone (smog), and carbon monoxide. Contributing binational sources include dust from unpaved roads and open areas, smoke from illicit burning of trash and tires, and mobile sources such as heavy freight vehicles, private owned cars, and trucks idling at border crossings. The Border 2020 Program has supported improving air quality by expanding monitoring networks with increased data access, improvement of air quality through State Implementation Plans (U.S. and Mexico) and indoor air quality educational programs.

Energy Efficiency Workshop in Tamaulipas

Participants of the first training workshop on energy efficiency.

Increasing energy efficiency in Mexico has become a strategy at all levels of government to improve and build long-term sustainability within their public buildings and enhance security of their energy supply while minimizing the impact to the environment. The operation and installations of public lighting systems and the consumption of energy in public buildings represents one of the greatest expenses faced by municipalities, sometimes reaching up to 40% of their costs. This factor limits the ability for local governments to focus on other priorities and efforts. Through a Border 2020 Program grant, the State of Tamaulipas' Ministry of Urban Development and Environment held two training workshops on energy efficiency to 10 border municipalities within the state. The workshops' materials provided information on the basic tools needed to achieve greater energy efficiency in lighting public spaces, thus increasing their economic savings.

The workshops were part of a series of actions to improve energy efficiency in the state, including two energy forums: "First State Energy Forum: Tamaulipas, Energy that moves to Mexico" and the third International Congress on Renewable Energies: "Perspectives of Energy in Mexico." Coinciding with the Border project, the State launched a demonstration wind project, which included the start of operations of four wind turbines with the aim to promote the use of renewable energies within the State. The State also distributed over 10,000 booklets, "Practical Guidelines for Energy Savings," to help raise awareness in communities on the benefits of installing environmentally friendly technologies in their homes. As a result of these workshops, 10 municipalities committed to carrying out an energy audit in their buildings, benefitting 1.7 million residents.

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Healthy and Resilient Housing in Ciudad Juarez

Low-income families often have limited resources to implement energy and water saving measures in their homes. This is often due to either a lack of knowledge, technical assistance, or financial resources. The lack of access to financing to help meet their economic needs, limits access to clean energy technologies and services. The Mexican not-for-profit Federation of Private Associations of Health and Community Development (*Salud y Desarrollo Comunitario de Ciudad Juarez, A.C.* [FEMAP]), has been operating a Micro-Credit Program in the region for more than 30 years, during which time it has granted more than 40,000 small loans to low-income residents for home improvements.

With the support of the Border 2020 Program, FEMAP developed a project to identify and implement green infrastructure and energy saving elements to low-income families looking to improve their homes within a rapidly growing area of Ciudad Juarez. The project offered technical and financial assistance to 50 homes (over 200 persons) implementing these energy efficient materials and strategies. In coordination with academic, non-profit and private business, the residents had access to technical experts who guided and educated them on green infrastructure elements that could be incorporated and adopted by them, as well as, access to eco-friendly materials.

The project resulted in an energy cost savings of $630 or 11.249 Kw/hr and water savings of 140,000 gallons of water or $500 following improvements to 45 of 50 homes by installing:

- over 250 LED light bulbs
- 200 windows sealing
- 50 low-flow shower heads
- 50 drinking water filters
- roof and wall insulations

In addition to the improvements made directly to their homes, a catalog of eco-materials was developed with the support from the Architecture Program from the Autonomous University of Ciudad Juarez. This catalog includes information on best practices and an evaluation of each of the selected Eco technologies, identifying those that are viable for implementation in marginalized communities with older housing since the existing catalogs are mainly focused on new housing.

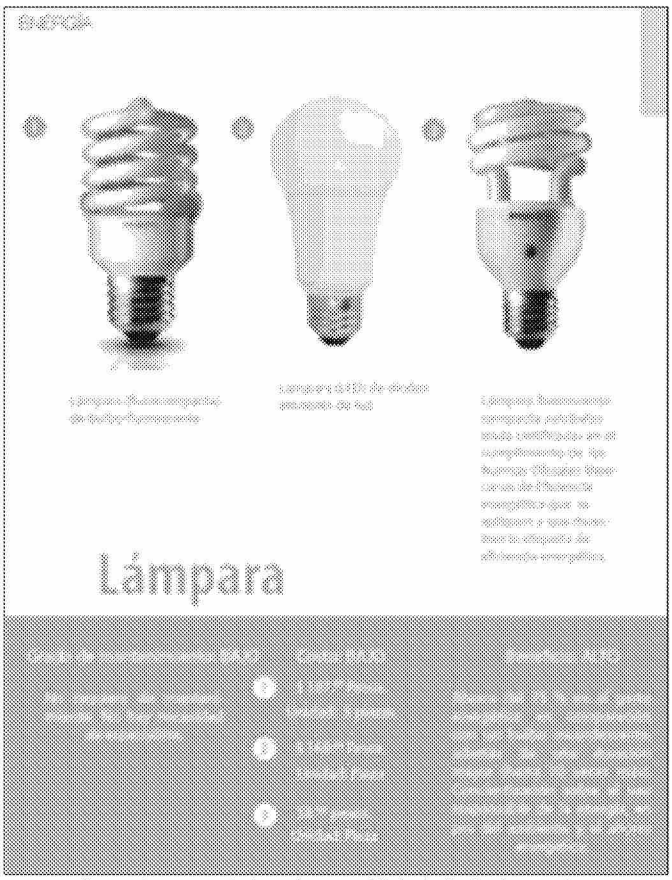

Illustration: Description of types of light bulbs in the catalog.

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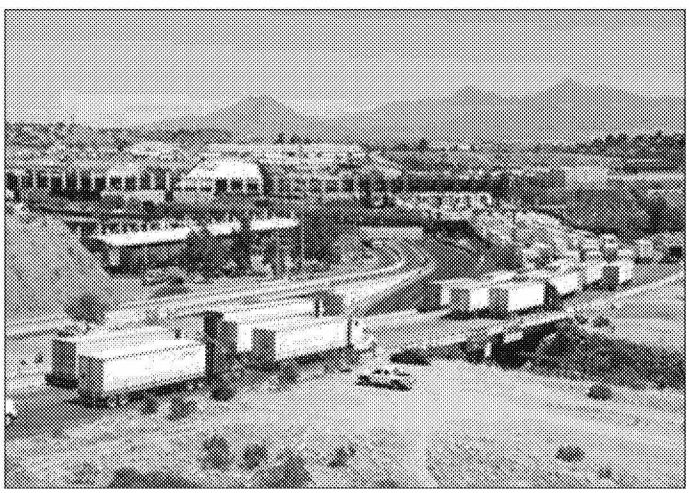
Quantifying Emission Reduction from Reduced Wait Times at Mariposa Port of Entry

The Mariposa Port of Entry (POE) in Nogales, Arizona is an important land port in the United States-Mexico border with over 7 million vehicle crossings per year, including 350,000 truck crossings. The POE is piloting an innovative program to conduct joint inspections in order to reduce commercial truck wait times at the Arizona-Sonora border. This pilot program is expected to significantly reduce wait times, from 8 hours to 1 hour, for northbound cargo trucks. This reduction in wait times will reduce emissions from idling vehicles and accelerate commerce. According to United States regulations Nogales, Arizona, is in non-attainment for PM_{10} and $PM_{2.5}$. These pollutants can cause respiratory and cardiac effects in older adults and young children. The emissions reductions from these mobile sources are expected to improve air quality and public health in the region.

The Border 2020 Program has funded the North American Research Partnership (NARP) to study the amount of emission reduction benefits from this pilot project. Over 400 vehicles were surveyed for information about wait times and vehicle make and model, which allowed researchers to calculate emissions.



Trucks waiting for processing through the Nogales Unified Cargo Facility.

Survey of a truck driver after inspection.

EPA's Motor Vehicle Emissions Simulator (MOVES), a modeling system that estimates emissions for mobile sources at the national, county and project level for criteria air pollutants, is being used by researchers to quantify emission reductions from border wait times. Preliminary data shows that decreased wait times have reduced emissions from idling. In addition, reductions are occurring because vehicles processed through the Unified Cargo Processing Facility tend to be newer and are built with more emission reduction technologies. The NARP is currently working on data analysis of the surveys and emission reduction quantification and the final report will be available in late 2018.

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Reducing Asthma Triggers for Children through In-home Interventions

The children of Imperial County, California, are living with high concentrations of asthma triggers in the indoor and outdoor environment, including cross border air pollution. These factors have contributed to Imperial County experiencing some of the highest rates of asthma emergency room (ER) visits in California.

To address this issue, the Border 2020 Program has partnered with and funded the Imperial Valley Child Asthma Program (IVCAP) from 2015-2017 to conduct in-home asthma interventions and work with housing maintenance workers on implementing healthy homes strategies. During this period, 94% of participants enrolled in the program reported no ER visits or hospitalizations. In addition, IVCAP reached over 2,000 people through outreach and education, program enrollment, and other community engagement activities.

Nurse Aide Fulton doing community outreach at a health fair held at the Seeley Elementary School.

EPA continues to support and positively impact low-income families by funding in-home asthma interventions to IVCAP by a Clean Air Act asthma grant. The 2017 funding has a goal to provide in-home environmental asthma assessments and tools to manage asthma triggers for families and children 17 and under. These home environmental observations will be carried out by *promotoras*, or community health workers.

> *"I enjoy educating parents of asthmatics on what they can do to improve their home environment, such as introducing them to non-toxic cleaning products."*
>
> **Rubi Alvarez**
> **Community Health Worker (*Promotora*)**

To date, IVCAP has enrolled almost 90 additional asthmatics into their program with 80% of them reducing, avoiding, and/or eliminating two or more triggers identified after IVCAP's home environmental assessment. Families received tailored interventions for their unique set of triggers in their homes.

By the end of this 2017-18 effort, IVCAP hopes to reach up to 70 families and to conduct in-home asthma interventions. These interventions will decrease ER visits and hospitalizations. In addition to in-home visits, IVCAP will raise awareness by conducting outreach and educating residents living with asthma on the benefits of improving the indoor home environment to maintain long term control of asthma. For more information on asthma and environmental triggers, please visit EPA's asthma web page.

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ENHANCING WATER QUALITY

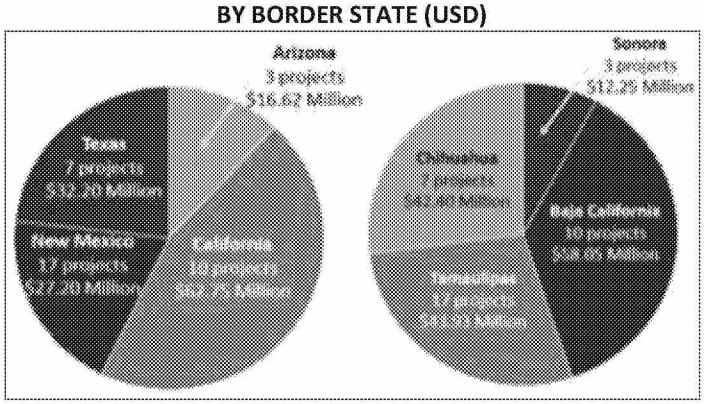
Rivers and watersheds know no boundaries and, in some areas, define the United States-Mexico border. Polluted stormwater and sewage from deteriorated infrastructure and extreme weather events can contaminate transboundary waterways, causing health concerns along the border region. The Border 2020 Program has improved water quality through the financing of stormwater mitigation or management demonstration projects, such as green infrastructure, solid waste reduction programs and research. Funds from the related Border Water Infrastructure Program (BWIP) have been used both to rehabilitate and to build water and wastewater infrastructure.

United States-Mexico Border Water Infrastructure Program

The Environmental Protection Agency's United States-Mexico Border Water Infrastructure Program (BWIP) funds the planning, design, and construction of high priority water and wastewater infrastructure along the border region. BWIP assists disadvantaged communities in identifying and securing available funding sources and addressing funding gaps to ensure access to safe drinking water and adequate sanitation, often for the first time.

BWIP provides hands-on management and technical oversight for communities lacking technical and managerial capacity that can then complete project planning and design requirements, increasing funding opportunities for construction assistance from other programs, such as Texas' Economically Distressed Areas Program, the State Revolving Fund, United States Department of Agriculture's (USDA) Rural Development Water and Environmental Programs, and the North American Development Bank (NADB).

2017 PROJECTS PRIORITIZATION BREAK DOWN BY BORDER STATE (USD)



Rivers along the United States-Mexico border sometimes naturally define the international boundary like the Rio Grande or flow from Mexico into the United States such as the Tijuana River. Projects funded under the BWIP address transboundary sewage discharges between the two countries. Treating raw sewage at the source before it enters shared border water bodies is the most technically feasible and financially viable option to prevent transboundary contamination. As part of this partnership, Mexico matches EPA's project's investments dollar for dollar, which helps protect public health and the environment.

Program Accomplishments

Since 2003, through 108 projects funded, the program has provided access to safe drinking water to 70,000 homes and first-time wastewater collection and treatment to 673,000 homes. In 2017, through the NADB, EPA announced a new project application cycle for BWIP funding. This identified over 60 eligi-

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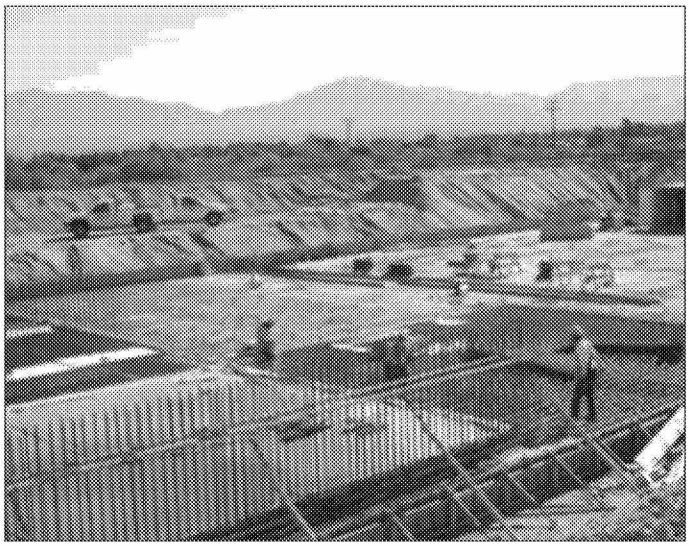
ble drinking water and wastewater projects with a total estimated construction cost of $296 million dollars that address public health and environmental conditions along the border.

Building technical and managerial capacity at Sunland Park, New Mexico through partnerships

The construction of a new treatment plant in Sunland Park, a small and disadvantaged community in New Mexico, started in August 2017. Camino Real Regional Utility Authority (CRRUA), the local wastewater utility, struggled with inadequate and aging infrastructure, environmental compliance, and lack of managerial capacity and resources. For close to two years, EPA, New



Construction activities for the new Sunland Park treatment plant.

Mexico Environment Department (NMED) and NADB, worked closely with CRRUA to implement a capacity building plan to ensure CRRUA could effectively manage a new wastewater treatment plant. EPA provided more than $816,000 dollars to implement this plan and technical assistance for project planning and design. The plan was successfully implemented; EPA and NMED then funded the construction of a $12.7 million dollars treatment plant. EPA contributed with $9 million and NMED provided the additional $3.7 million in state funding. The treatment plant will improve access to sustainable wastewater treatment services to approximately 6,440 residents of Sunland Park and Santa Teresa and will greatly reduce the risks of untreated or inadequately treated wastewater discharges.

CRRUA's board chair, Josh Orozco, stressed the importance of finally being able to provide adequate wastewater treatment capacity in the community. During the July 2017 groundbreaking ceremony, he said this new plant "…will not only allow more homes and more businesses to be helped, but will also improve the health of our community."

Protecting the Tijuana River Watershed from transboundary contamination

The Tijuana River, originating in Baja California, Mexico, crosses the United States-Mexico border in San Ysidro, California, and empties into the Pacific Ocean just south of Imperial Beach, California. Discharges of raw and poorly treated sewage in Tijuana can impact the economy, health, and environment of United States communities like Imperial Beach and Chula Vista in San Diego County. As part of a multi-stakeholder and long-term effort to address these transboundary spills, a BWIP project is underway to repair some of the deteriorating wastewater collectors. These collectors carry sewage from households to the Tijuana wastewater treatment plant. If these collectors are not repaired, catastrophic collapses could occur, resulting in hundreds of millions of gallons of untreated sewage flowing into the United States and onto San Diego County beaches. The existing partnership between EPA and Mexico's water agencies, provided $7 million dollars for the repair of more than 6 miles of sewage collectors and rehabilitated 30 manholes. A second phase for the construction of 2.5 miles of additional sewage lines is underway. The estimated cost of this project is $3 million dollars with a projected EPA contribution of $1.4 million.

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Fat, Oil and Grease Public Outreach Campaign in Brownsville

The Brownsville Public Utilities Board (BPUB) was awarded a grant of $25,000 dollars from the Border 2020 Program in February, 2016, to provide outreach and education on the impact of Fat, Oil and Grease (FOG) pollution on water quality to the communities in Brownsville, Texas; and Matamoros, Tamaulipas. Historically, at the BPUB, FOG residential and commercial service calls occurred on average five times a week, with increased occurrences during the month of December.

BPUB entered a voluntary reduction program with the Texas Commission on Environmental Quality (TCEQ), Sanitary Sewer Overflow Initiative. This voluntary program requires BPUB to work on reducing unauthorized discharge of untreated or partially treated wastewater from the collection system or its components (e.g. manhole, lift station, or cleanout) before reaching a wastewater treatment facility as a result of FOG issues. Through educational campaign efforts to both the general public and to commercial establishments, the BPUB aimed to reduce the number of FOG related service calls and bring awareness about the proper disposal techniques in dealing with Fat, Oil and Grease.

Marketing and Education efforts

On March 16, 2016, the BPUB officially kicked-off its "Fat, Oil and Grease" public outreach campaign at its monthly public meeting in Brownsville. During the public meeting, they announced their collaboration with the City of Matamoros on the new FOG outreach program. BPUB reached communities from both sides of the border through a number of activities that included advertisements, educational fliers, ad videos, workshops, and press coverage. Social media platforms such as Facebook, Twitter and YouTube were also utilized to target younger audiences and share the educational video and audio campaigns that were developed. Throughout the project period, over 80 public outreach events and trainings with over 1,700 participants were conducted to the public in apartment and housing complexes, churches and educational institutions, as well as, commercial business.

Public outreach event in Brownsville.

More importantly, the BPUB through its outreach efforts has consistently been reducing the number of FOG service calls from 731 in 2013 to 417 in 2016, a 43% reduction in just four years. During the project period, in 2015 and 2016, the BPUB received 477 and 417 services calls related to FOG pollutants, respectively. Overall, the project met its objectives, including reducing the number of FOG related calls 13% or 60 calls. To continue to learn more about BPUB's FOG efforts please visit its web page.

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Building Green Infrastructure in the Valle del Sol Avenue Public Space

The World Health Organization (WHO) established a sustainability indicator of 9 m^2 of green area per inhabitant. The border region of El Paso and Ciudad Juarez lacks urban green spaces, especially in Ciudad Juarez where an estimated 4.5 m^2 of green area per inhabitant exist. Since 2013, Ciudad Juarez has actively been partnering with various organizations to increase green infrastructure and expand green spaces throughout the city. These projects not only can be cost-effective but can address flooding issues associated with a lack of stormwater infrastructure and beautify areas that see high pedestrian traffic.

In 2016, the Border 2020 Program helped fund the rehabilitation of a park situated on Valle del Sol Avenue and Solares Street. Located over a half a mile from the border, the park is the only green space in the area available to the community. Over many years, the park had heavily degraded due to a lack of maintenance and no longer served as an area where the community members could gather. The *Instituto Tecnológico de Ciudad Juárez* (ITCJ, by its acronym in Spanish), the promoter of the project, transformed the park back to a usable space for community members, but also addressed flooding issues that this area experienced during rain events.

Passive rainwater harvesting systems at the park.

With funds granted by the Border 2020 Program, the ITCJ developed this project with the following objectives:

- Establish passive rainwater harvesting systems;
- Conserve water used for watering;
- Protect the soil from wind erosion; and
- Incorporate and take advantage of the existing urban infrastructure.

The project began in June 2016 with the cleaning of the site and the reconditioning of the sidewalk, the construction of passive systems for rainwater collection, as well as the recovery and reconfiguration of existing vegetation. The amount of rainfall monitored from July 2016 to November 2017 (17 months) captured a total volume of 472, 502 U.S. gallons of rainwater.

Presently, the passive water collection systems continue to function effectively and the vegetation is thriving. The park is supported almost entirely with rainwater except in cases of extreme water stress or for the initial support of some new plant seedlings.

Thanks to a donation from the municipal authority, the park soil is protected from wind erosion by a walnut shell cover which allows any moisture in the soil to be conserved.

Finally, surveys conducted in the area showed that the social value of the park increased substantially. Before the project, the space was viewed as a negative area within the community and is now seen as a usable social gathering park.

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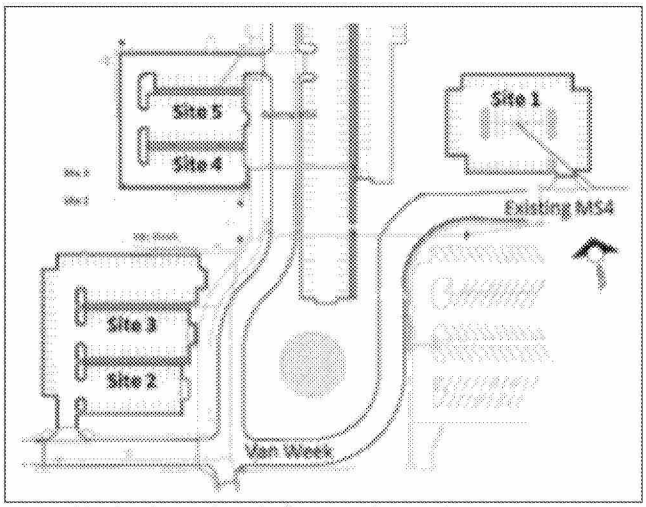
Studying Low Impact Development Methods for South Texas Stormwater Management

A number of communities in the Lower Rio Grande Valley in southern Texas have been evaluating various Low Impact Development (LID) methods to incorporate into their communities. LID provides several advantages over traditional stormwater management practices such as: reducing or eliminating the need for large retention ponds; decreasing pollution to receiving waters; lessening erosion; more visually appealing within the community; flexibility in the layout of projects; and lowering cost. A research team under the direction of Dr. Jungseok Ho, of the University of Texas Rio Grande Valley (UTRGV), evaluated the use of bioswales in parking lots to determine the best performing locally available bioswale porous media material as well as design a standard that could be used by communities in the region. Bioswales are generally designed to manage runoff from large impervious surfaces such as parking lots and incorporate engineered porous soils and/or other landscape elements to remove debris and pollution from surface runoff.

BIOSWALE POROUS MEDIA MATERIALS AND PARKING LOT DRAINAGE SIZE

Sampling Sites	Bioswale	Porous Materials	Drainage Size (acres)
Site 1	No bioswale	No bioswale	.237
Site 2	Bioswale 1	Pumice	.216
Site 3	Bioswale 2	Manufactured sand	.218
Site 4	Bioswale 3	Recycled crushed glass	.209
Site 5	Bioswale 4	Natural Sand	.206

Building on previous studies Dr. Ho conducted, his team evaluated five testing sites that utilized various bioswale porous media (no bioswale, pumice, manufactured sand, recycled crushed glass and natural sand) in parking lots on the UTRGV Edinburg campus.



Parking lots located north of Van Week Street in UTRGV campus.

The project evaluated the hydrological performance of the four different materials used at the five testing sites. Field testing indicated Site 2 with the Pumice material showed the best hydrologic performance taking into account four decision criteria: 1) runoff volume reduction; 2) peak flowrate reduction; 3) peaktime attenuation; and 4) runoff solids filtration. Pumice showed the highest filtration of the materials with 58% and a peaktime attenuation of 64%.

The soil test results show that any mixtures containing pumice more than 40% of the volume produced promising results. Three 40% pumice mixtures (with manufactured sand, natural sand, and recycled crushed glass) achieved 30% of specific retention and 52% of filtration on average.

Overall, based on the field testing, pumice performed the best of the bioswale porous medias, with testing showing that at least 40% pumice material mix is the ideal material for this region. However, it should be noted that further studies need to be conducted to consider the local availability, cost of the material and project construction to determine the overall practicality to be used by the communities.

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Green Infrastructure for Sediment Control and Flood Protection in Ambos Nogales

The International Outfall Interceptor (IOI) is an aging pipeline that conveys untreated sewage from Nogales, Sonora, and Nogales, Arizona (Ambos Nogales) to the Nogales International Wastewater Treatment Plant nine miles north of the border in Rio Rico, Arizona. Since the wastewater collection system in Sonora acts as a combined sanitary-stormwater conveyance, over the years sediment inflows and infiltration of stormwater in Sonora have caused failure of the IOI in Arizona. Erosion (scouring) from the sediment has weakened the conveyance system resulting in breaks in the IOI, most recently in July 2017, leading to sewage spills into the Nogales Wash. Repeated failure of the IOI could result in contamination of Arizona groundwater resources.

Rain park designed to harvest rainfall and prevent flood events.

The Watershed Management Group (WMG), a Tucson-based non-profit, led a Border 2020 Program funded project to demonstrate the potential of green infrastructure (GI) to diminish the amount of sediment during flood events that is scouring the IOI. Green infrastructure, according to EPA, uses vegetation, soils, and other elements and practices to restore some of the natural processes required to manage water and create healthier urban environments. The project used a three-pronged approach including:

- Capacity building (community trainings in planning, design and implementation activities);
- Demonstration sites (two projects for sediment control); and
- Policy development (resolution to expand and strengthen GI practices in Nogales, Sonora).

Working with local government and residents of Nogales, Sonora, WMG completed two demonstration sites covering close to 10,000 m^2, similar to the area of a large soccer field. In addition, 88 residents attended a training and over 500 community members were informed about green infrastructure concepts via community events and project participation. One demonstration site is a rain park that now harvests a volume of 50,000-70,000 liters of rainfall per rain event. These GI modifications will nearly eliminate the park's contribution to flood events downstream in the Ambos Nogales area.

The project attracted support from a Nogales member of the Sonora Congress, who is also on the State of Sonora Commission for Energy, Environment and Climate Change. This project moved beyond the local level, spurring the Sonora Congress to adopt a green infrastructure law in April of 2017, the first of its kind approved in Mexico.

This project increased community capacity to use green infrastructure to reduce flooding in the Ambos Nogales area and prompted the local government to support future green infrastructure development.

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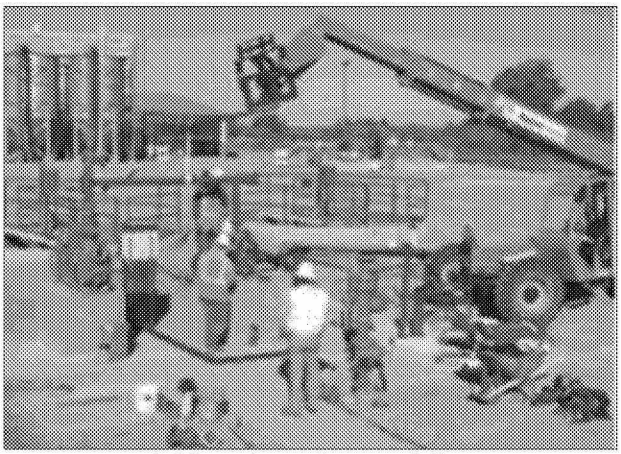
Protecting the City of Holtville's Water Resources in Imperial County

Located in Imperial County, California, the City of Holtville's wastewater treatment plant (WWTP) was not meeting discharge requirements for ammonia and other pollutants that were flowing into the Pear Drain, which feeds the Alamo River and ultimately the Salton Sea in southern California. Thanks to funding from EPA's Border Water Infrastructure Program and the State of California Clean Water State Revolving Fund, the existing WWTP was upgraded and now provides wastewater service to 100% of the service area or 6,594 residents of Holtville.



Building a stormwater pump station.

Already considered an impaired water body, the polluted discharges from Holtville exacerbated the treacherous conditions faced by wildlife and plant communities living in the Salton Sea. Over the years, water levels in the Salton Sea have dropped rapidly due to evaporation and have increased salinity and pollutant concentrations. The exposed lakebed has succumbed to desert winds that now carry polluted dust onto the surrounding communities. These dust particles may contribute to asthma attacks throughout Imperial Valley. The Holtville WWTP that now meets discharge requirements will not only increase the chances of survival for the various organisms dependent on the sea, but the influx of properly treated water will keep dust from being exposed to the wind and away from vulnerable urban residents.

Some of the new components installed in the Holtville WWTP include an automatic bar screen that maximizes the removal of large objects and an activated sludge system enhancing treatment effectiveness and improving the quality of the effluent. A rehabilitated operations building within the treatment plant was also equipped with modern lab equipment, ensuring that tested effluent meets discharge requirements.

> *"EPA is committed to helping communities across Imperial Valley protect the state's vital water resources. Our investments renew aging infrastructure, which can be costly for smaller communities like Holtville."*
>
> **Tomás Torres**
> **Water Division Director**
> **U.S. EPA Region 9 Office**

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PROMOTING CLEAN LAND

In the United States-Mexico border region, solid waste management has not kept pace with increasing population, resulting in unmanaged trash and overburdened waste services and infrastructure; as well as potential valuable materials being lost in landfills or illegally dumped. Poorly managed waste contaminates land and water, and adversely impacts public health such as creating fire hazards and contributing to poor air quality or serving as breeding habitats for mosquitos and the potentially spreading of vector-borne diseases such as Zika. Sustainable Materials Management (SMM) promotes a life cycle approach which begins by optimizing design to final production of goods and services to reduce waste, eliminate toxicity, and maximize reuse. The Border 2020 Program partners have advanced SMM through clean-ups and projects to recycle household hazardous waste, electronics and scrap tires.

Addressing the Binational Challenges of Electronic Waste in Texas and Coahuila

Rapid advancements in technology and the use of electronics by consumers mean that electronic products quickly become obsolete and are disposed. Unlike other recyclable materials, electronic waste (e-waste) is not as easily recyclable due to the toxic metals (lead, mercury, cadmium and arsenic) found in them. The challenge with recycling e-waste is often improper disposal in local landfills and the lack of infrastructure in communities to properly support handling and recycling.

In 2016, through two Border 2020 Program grants, one to the Secretary of Environment of the State of Coahuila (*Secretaría de Medio Ambiente* [SEMA]) and the other to Green Tec-osos, an environmental group within the Technological Institute of Piedras Negras (*Instituto Tecnológico de Piedras Negras*), e-waste recycling projects were launched in the communities of Ciudad Acuña, Piedras Negras and Guerrero, in the state of Coahuila and Eagle Pass, Texas. These projects aimed to prevent the e-waste generated in the municipalities from being illegally dumped in the Rio Grande riverbed, around the Amistad Dam, as well as in streams, vacant lots and sanitary landfills of the region. They also informed and educated the community about the benefits of reusing electronic products.

COLLECTION COMMUNITY EVENTS AT TEXAS AND COAHUILA FEBRUARY, 2016 - MARCH, 2017

Type of Location	E-waste Collected (tons)	Residents Served
22 neighborhoods of Piedras Negras	32.22	45,000-50,000
Schools from Piedras Negras and Nava del Estado municipalities	8.83	5,500
Businesses and others	5.56	2,500
Eagle Pass	14.83	28,765

To improve sustainable practices, 10 permanent e-waste collection centers were established among the four communities. Through community events, the projects yielded the collection of over 113 tons of e-waste. In addition, with the assistance of over 60 partners through workshops, trainings and media outlets, residents were educated on the positive impacts of recycling electronic waste has on the environment.

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Scrap Tires and Solid Waste Management along the United States-Mexico Border

The Border 2020 Program has aimed at building a more sustainable, integrated approach to waste materials management in order to minimize and reduce the impact to the environment and improve public health. However, in a geographic region where population, socio-economic conditions and environmental regulations can vary significantly, different border communities have had to take varying and creative approaches to build sustainable communities.

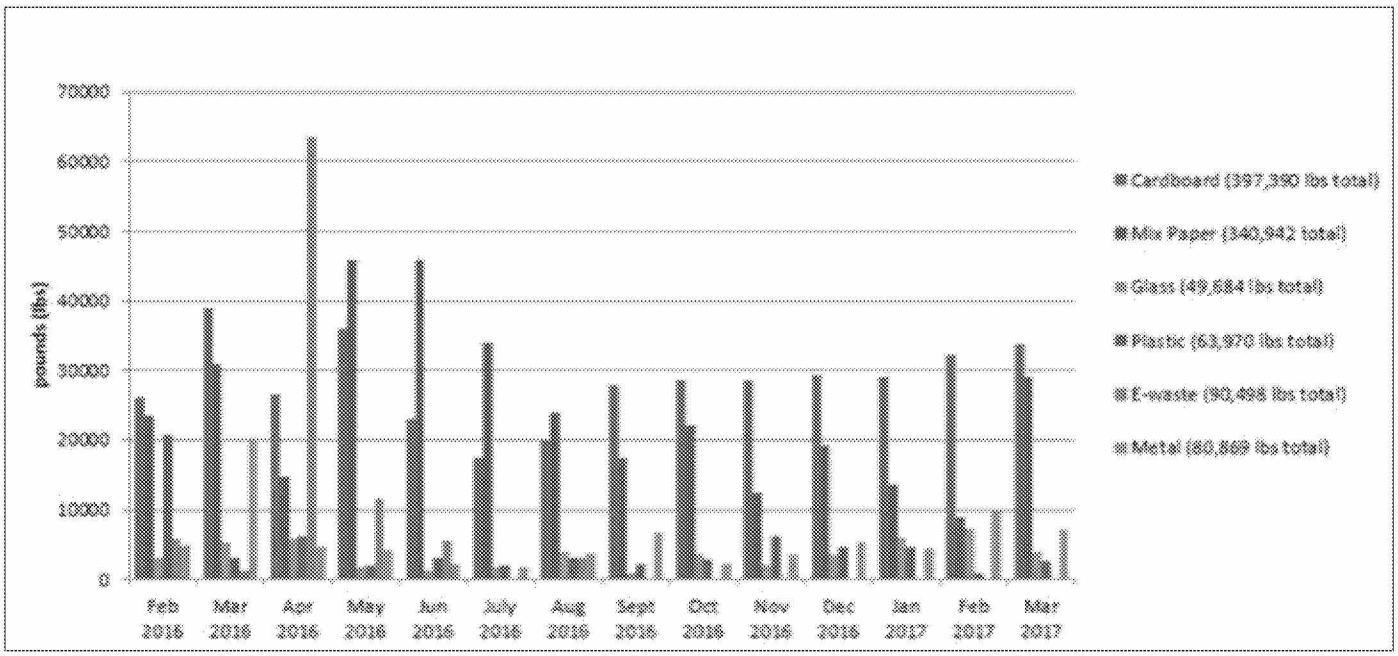
City of Pharr, Texas

Over the years, the city of Pharr has implemented greater sustainability tools within the Public Works Department to make the city one of the cleanest in the Lower Rio Grande Valley. In 2016, Pharr received a Border 2020 Program grant for $36,000 dollars to continue improving their recycling and education efforts within the community to reduce the city's dependency on landfills and build a healthier community. Over a 14-month period, the city collected:

- Over 5,700 scrap tires;
- 60 tons of mixed waste (Figure); and
- 1,023,353 lbs. of recycled material diverted from the landfill.

Staff launched a bilingual public education campaign of the city's recycling and sustainability efforts, stormwater pollution and illegal dumping of scrap tires, through social media, brochures, public service announcements and over 100 outreach activities (20 meetings, 40 events, 50 presentations). The project also increased recycling efforts in some Pharr schools by promoting an environmental education contest and providing 75 recycling bins for school classrooms and dozens of 95-gallon recycling bins within the school district. To learn more about Pharr's Public Work Department and their efforts, please visit its web page.

RECYCLABLE MATERIAL COLLECTED AND DIVERTED FROM LANDFILL AT PHARR, TEXAS. (lbs/month)



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Valle Hermoso and Rio Bravo, Tamaulipas

In 2014, the state of Tamaulipas passed legislation that outlined its Program for Integrated Waste Management and Prevention. Within this program, based on factors such as population growth and solid waste generated per capita, the state prioritized municipalities where it was vital to establish a municipal integrated waste management and prevention program. It also outlined specific strategies and actions that these municipal plans should address including short, medium and long-term implementation as well as associated costs. The implementation of the municipal plans is done in three phases: conducting a diagnostic of current conditions; adoption by the municipality of their plan; and finally implementation, monitoring and evaluation of the municipal program.

The State Secretariat for Urban Development and Environment in Tamaulipas (*Secretaría de Desarrollo Urbano y Medio Ambiente* [SEDUMA]) received a $20,000 dollars grant from the Border 2020 Program to assist the municipalities of *Valle Hermoso* and *Rio Bravo* complete their diagnostic study on local waste management. The diagnostic study, which took place over a two-month period, looked at:

- Current operations, staff, equipment, solid waste collected and classification of waste;
- Specific strategies recommended to be implemented over a short, medium, long-term period;
- Costs associated with implementation of strategies (Table);
- Monitoring program parameters; and
- Potential funding mechanisms.

On August 22, 2016, SEDUMA presented both municipalities with the diagnostic assessment of their current waste management system. In March, 2017, *Valle Hermoso* officially published and registered the diagnostic assessment with the State, moving into the third phase. Next steps include the municipality of Rio Bravo's city council approval of the assessment and registration of the program.

TOTAL COSTS TO IMPLEMENT SHORT, MEDIUM AND LONG TERM STRATEGIES IN *VALLE HERMOSO* AND *RIO BRAVO*, TAMAULIPAS.

Strategy Considered for Municipality	Total Cost for Municipality to implement over short, medium and long term (USD)	
	Rio Bravo	Valle Hermoso
Management/Operations	$4,776,923.00	$1,296,428.00
Recycling	$1,648.00	Not Considered / Not Applicable for Community
General Services	Not Considered / Not Applicable for Community	$10,989.00
Public Outreach & Education	$16,373.63	$17,032.00
Private Industry Participation/ Partnerships	No cost to municipality	Not Considered / Not Applicable for Community
Institutional Building Capacity	$155,495.00	$122,527.00
Finance/Legislative	No cost to municipality	Not Considered / Not Applicable for Community

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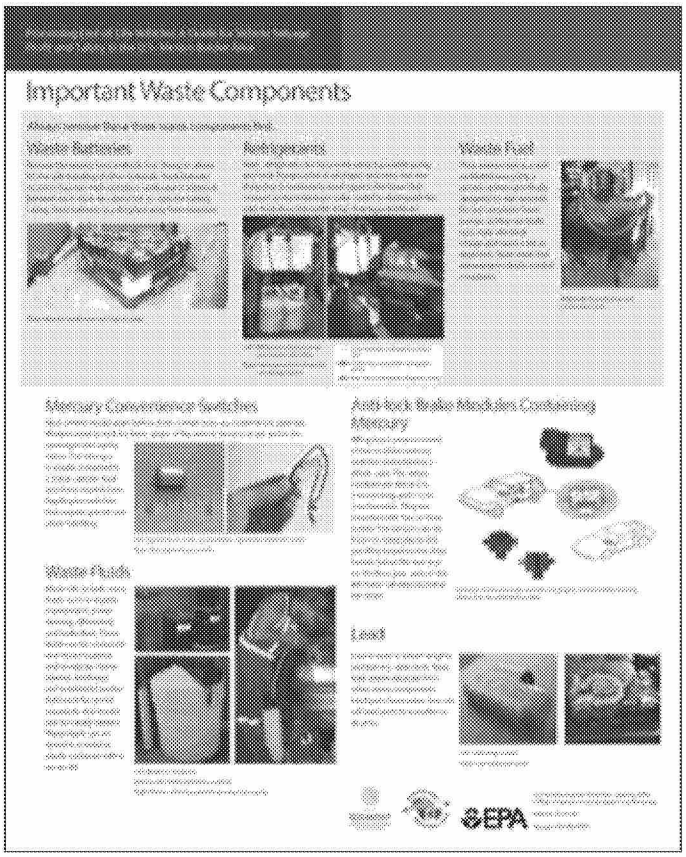
Supporting Auto Recyclers

Every year vehicles are stockpiled along the United States-Mexico border when they reach the end of their useful lives. Often, these stockpiled vehicles have not been processed properly to recover the reusable or recyclable materials nor dispose of hazardous materials these vehicles have. As the discarded vehicles are piled up, they become an eyesore to the local communities and pose a risk to human health and the environment. The vehicles often contain hazardous materials like antifreeze, used oil, or lead and when abandoned, they become a liability to local governments.

In response to address the needs of auto recyclers in the border region, EPA and SEMARNAT have produced an "End-of-life Vehicle Guide" (Guide). The Guide was created to share effective practices for preparing an end-of-life vehicle so that the vehicle can be recycled properly and contribute to the Border 2020 Program's goal to reduce waste through the safe and responsible recovery of materials.

The Guide and other materials form a packet comprising of the guide, a set of quick reference waste cards, and a poster can be used to inform handling facilities and technicians on prepping the vehicles for processing in an environmentally sound manner. Additionally, the Guide discusses responsible disposal, cost recovery, health, safety and security, industry standards, and a listing of vehicles containing mercury switches.

Specific waste streams that pose a high risk to workers and the environment are highlighted in the Guide and on a set of waste cards complete with diagrams. The waste streams included are: lead, mercury switches, refrigerants, waste batteries, waste fluids and waste fuel. Overall, the Guide provides materials that technicians can use to dispose of old vehicles using environmentally sound management practices.



Poster designed to provide quick access to basic information on the proper preparation of vehicles before disassembly.

EPA and SEMARNAT will work together to disseminate the folders to the relevant stakeholders along the border region in fall 2018. Printed copies of the materials are available in Spanish while both English and Spanish versions can be found on EPA's website.

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Campo Band Advances Zero Waste Practices

In the border region, unmanaged trash causes potential transboundary impacts such as impairing water quality, clogging streamflow, and creating habitat for disease vectors. In 2015, the Campo Band Tribe, located in California, raised concerns about transboundary solid waste issues to representatives implementing the Border 2020: U.S.-Mexico Environmental Program. In 2016, the Program provided funds to conduct a solid waste assessment and prepare a zero-waste plan. The zero-waste plan lays the foundation for developing a zero-waste program, setting a goal to significantly reduce waste and establish diversion practices to eventually eliminate waste sent to the landfill.

The zero-waste plan was completed in January 2018. Along with the recommendations in this plan, the Campo Band is actively exploring other materials management activities including short and long-term goals to develop a self-sustaining waste and recycling program and transfer station. This plan was an important first-step/tool for the Tribe to accomplish their solid waste goals and improve the Tribe's and border region's health. The Campo Band continues to leverage other resources such as EPA's General Assistance Program (GAP) to address their solid waste goals, creating practices that makes sense for their community, and using the zero-waste plan as a valuable tool to accomplish their needs. The Campo Band Tribe is estimated to be funded by GAP for $18,000 USD for the Fiscal Year 2019 to continue to move forward with the zero-waste plan.

Campo Band Tribe members sorting and identifying types of waste.

Campo Band Tribe members weighing types of waste.

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Composting Diverts Valuable Organic Materials from Landfills

Compost donated to Ecoparque program participants.

Compost is a valuable resource made from food waste, landscape cuttings or other organic material. However, based on the 2018 study "Characterization and Management of Organic Waste" released by the Commission on Environmental Cooperation (CEC), organics in the United States and Mexico are predominantly sent to landfills. The Border 2020 Program has worked to increase diversion rates, estimated to be 32% for the United States and 7% for Mexico, by working with government, academic, nonprofits, and industry stakeholders to improve the management of organic waste through compost practices and EPA's food recovery hierarchy practices.

In 2012, the Border 2020 Program awarded the organization *"Tijuana Calidad de Vida"* a grant resulting in the first border municipal landscape compost pilot program that produces compost and educates future composters. In 2016, EPA Region 9's Environmental Finance Center funded a grant to identify compost niche markets in Tijuana for businesses needing to achieve waste reduction goals for their corporate social responsibility ratings. In 2017, the *Colegio de la Frontera Norte* (COLEF, by its acronym in Spanish) conducted a pilot program working with nearly 120 households in Tijuana and training them in a total of 27 workshops. This resulted in the diversion of 10,067 kg of household food scraps. The compost created was used at *Ecoparque*, a campus program to model and teach sustainable practices and 107 sacks of compost were donated to household participants. The findings of these grants were included in the CEC's 2018 report.

On June 13, 2018, the University of Arizona (UA) Compost Cats celebrated the award of a $91,000 dollars grant from the Border 2020 Program to establish the Santa Cruz County (SCC) Compost Center, a much-needed alternative to landfilling waste produce. Nearly 3,000,000 tons of produce crosses the nearby Mariposa-Nogales Port of Entry, one of the busiest land crossings along the U.S.-Mexico border, bound for markets across the United States each year. About 8,000 tons of waste produce are generated yearly, equivalent to two dump trucks per day for an entire year, and is then disposed of in the Rio Rico Landfill, so the new SCC compost center is expected to offer both environmental and economic benefits to the region (Press release for compost-center). In its first year, SCC Compost Center will compost 3,000 tons of waste produce, creating 9,000 cubic yards of compost. This is equivalent to 4.3 football fields covered with one foot of compost. The goal is to compost the 8,000 tons produced annually.

The SCC Compost Center will be modeled after the successful UA Compost Cats program in Tucson, which not only composts but works with local food banks to divert good food from campus to hungry people. In 2015, their work was acknowledged with EPA's "Food Recovery Challenge" award for reducing food waste on the UA main campus and in the City of Tucson. Similarly, the SCC Compost Center will serve as an agricultural learning center for high school and college students and recover this valuable resource from taking up space in the landfill.

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STRENGTHENING EMERGENCY PREPAREDNESS AND RESPONSE

Recognizing that chemical hazardous events and other environmental emergencies, regardless of an international border, can threaten both local and binational communities, the United States and México continue to work together to enhance preparedness and response for international emergencies. The Border 2020 Program and partners support binational training, exercises, essential equipment and emergency plan updates, which have increased communication and response capability. Together, we have reduced the magnitude of incidents and enhanced safety in the border region.

Binational Training Reduces Danger and Impacts to Border Communities

The Border 2020 Program had allowed to strengthen the cooperation between federal, state and local agencies on both sides of the border to provide exercises and training as well as to ensure that first responders have proper personal protective gear to respond safely and effectively. Since its inception, over 10,500 firefighters, emergency management officials, police, military, industry representatives, medical staff and other relevant community leaders have received training through: 153 training courses, 32 binational exercises and 245 drill notifications between the U.S. and Mexico throughout the Arizona-Sonora and California-Baja California border region.

Firefighters from both countries responding to the December fire.

> *"Thanks to EPA, as well as the firefighters of the city of Douglas, Arizona, who have participated as instructors to enrich our HAZMAT knowledge. With this we are prepared for any emergency. Our aim is to protect the communities in our sister cities. Thanks to EPA for providing us with the equipment since, due to its high cost, it is out of our reach. Thanks for trusting and believing in the firefighters of Agua Prieta."*
>
> **Lieutenant Jose Romero**
> **H. Fire Department of Agua Prieta**

Getting equipment and personnel in a timely manner across an international border crossing to help respond to fires has always been a challenge. It requires a coordinated effort among a wide range of agencies and organizations. Binational training and exercises with first responders, customs officials, other government agencies, military, industry and the public have laid the groundwork for efficient responses in real-life emergencies.

Binational Fire Response in Winter 2017

When a major tire fire sent dangerous billows of smoke from Agua Prieta, Sonora, into Douglas, Arizona, in December 2017; Douglas firefighters crossed the border and helped put it

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Participants in the HAZMAT Tech training.

out in four hours. Binational training and tabletop exercises conducted four months prior to the fire greatly assisted in increasing the efficiency of the response and reducing the scale and impact of the incident. Additionally, border patrol at the port of entry on both sides provided timely crossings to the binational firefighters.

The binational collaboration with the addition of the Douglas firefighters prevented the fire from growing larger and potentially crossing into the U.S. and reduced the amount of smoke that can cause respiratory problems for sensitive populations such as children, elders and those with asthma along the border.

Training Tested by a Tire Fire

A 200-hour HAZMAT Tech training for Douglas and Agua Prieta firefighters has been ongoing on weekends and will finish up by Fall 2018. As a result of this training, the Fire Department of Douglas will have additional HAZMAT techs and the Fire Department of Agua Prieta will have its first full HAZMAT Tech team. This firefighters will be better trained and equipped to respond to incidents and assist each other in cross border emergencies.

On May 26th, 2018, the training course was interrupted and postponed due to a binational response to a tire fire in Agua Prieta. The recently updated Sister City Contingency Plan was activated and utilized for the response where the Douglas Fire Department assisted in getting the fire under control in under three hours.

Gerardo Romo, a firefighter of the Douglas Fire Department, commented: "Thanks to the binational efforts and the HAZMAT class being presented to Agua Prieta Firefighters, they have been able to respond to incidents in a more prompt and efficient way. In the past, Agua Prieta Fire Department had willingly attended to fire emergencies and showed their best efforts; however, now that they are receiving the HAZMAT training by Douglas Fire Department, they understand the need of proper personal protective equipment to respond and face the risk of each event such as the tire fires. I personally saw the firefighters using the proper respiratory protection equipment during the tire fire that occurred on May 26th".

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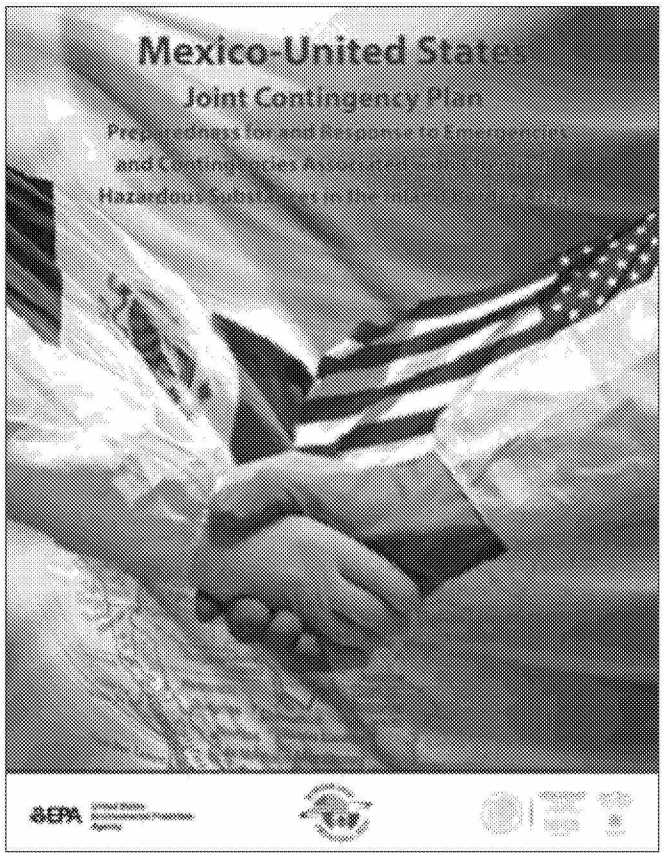
Enhance Joint Preparedness for Environmental Response under the Border 2020 Program

Chemical and other hazardous substances emergencies do not respect international boundaries, so maintaining an adequate preparation for a possible emergency in the border region is essential to improve the ability to respond to incidents and protect the environment and public from hazards that could result in serious environmental and health impacts.

Annex II of the 1983 La Paz Agreement established the United States-Mexico Joint Contingency Plan (JCP). The JCP provides a binational coordination mechanism for protecting human health and the environment and responding to significant chemical and oil contingencies or emergencies that affect the inland border area between both countries. Two previous versions of the JCP have been revised and updated. Most recently, on November 17, 2017, in Mexico City, the most up-to-date version of the JCP was signed by the Secretariat of Environment and Natural Resources (*Secretaría de Medio Ambiente y Recursos Naturales* [SEMARNAT]), through the Office of the Federal Deputy Attorney of Industrial Inspection (*Procuraduría Federal de Protección al Ambiente* [PROFEPA]) and the National Coordination for Civil Protection within the Secretariat of Interior (*Secretaría de Gobernación* [SEGOB]). Previously, for the United States, EPA's Office of Emergency Management (OEM) signed the updated JCP.

The updated JCP has a robust binational notification system that has been restructured to reflect lessons learned from actual emergencies and notification drills. The changes to the notification system were coordinated with the U.S. National Response Center (NRC), Mexico's National Communications Center / National System of Civil Protection (*Centro Nacional de Comunicaciones / Sistema Nacional de Protección Civil* [CENACOM]) and PROFEPA as well as with EPA's Regional Offices 6 and 9. Extensive reviews were conducted by EPA's Office of General Counsel regulation experts, the International Law office and the Office of International and Tribal Affairs, in addition to the Department of State.



Cover of the Joint Contingency Plan.

The ability to plan and prepare binationally improves the probability of adequately responding to incidents and protecting the environment and public from exposure to harmful contaminants and possible serious environmental or health impacts. This binational partnership is also increasing emergency response capacity through training events designed to enhance cooperation, strengthen binational contingency plans at the local, tribal, state, regional and national levels to reduce the risks of emergencies and disasters throughout the border region.

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FOSTERING ENVIRONMENTAL STEWARDSHIP

The United States-Mexico Border is a vibrant economic region with daily cross-border movement of a myriad of consumer goods and hazardous materials destined for recycling or disposal. When mismanaged, the hazardous materials pose an immediate transboundary environmental health threat. In response, federal, state, and local entities are partnering to conduct north and south-bound surveillance, provide cross-border compliance assistance, and improve access to information about potential industry sources of toxic substances through trainings and workshops. These actions increase transboundary compliance, foster environmental stewardship, and reduce overall risks posed by hazardous waste and materials.

Legislative Reform and Environmental Education in Nuevo Laredo

The Autonomous University of Tamaulipas (UAT, by its acronym in Spanish) received a Border 2020 Program grant to continue educating border communities on the environmental challenges (i.e. water pollution, urban solid waste, fats-oils-grease) that persist in this geographic region. The project focused on the following objectives:

Web page of the UAT with the documents of the generic environmental regulations that can be adapted by the municipalities of the states of Tamaulipas and Nuevo León.

- Educate school students and environmental municipal inspectors about the most common environmental challenges in the region.
- Update the municipal environmental legislation for environmental protection in Nuevo Laredo and some of the surrounding municipalities and present it to the city for adoption.
- Create an online database with the existing environmental regulations or ordinances of all the municipalities within Tamaulipas' border region.

The project resulted in environmental conservation training to over 2,300 students, 50 public school directors, and 20 environmental inspectors of the city of Nuevo Laredo. Additionally, the project aided in the development and delivery to municipal authorities a proposed new ordinance of "Territorial Ecological Planning" of the Municipality of Nuevo Laredo, Tamaulipas. Lastly, the municipalities of Ciudad Mier, Camargo, Jiménez and Jaumave in Tamaulipas adopted environmental ordinances that will benefit approximately 300,000 residents.

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Port of Entry Inspectors Safeguarding Communities

Enforcing the Resource Conservation and Recovery Act's (RCRA) import/export regulations protects public health and the environment by providing safeguards against hazardous waste and materials being mishandled and spilled. It also reduces the amount of binational "scam" businesses who implement illegal practices, creating unfair business competition. EPA funds California's Department of Toxic Substances (DTSC), a Border 2020 partner, to safeguard the California-Mexico border.

DTSC and San Diego County inspectors work closely with Customs and Border Patrol (CBP) to conduct surveillance and enforce compliance to ensure hazardous materials and waste products are safely transported across the Ports of Entry (POE) and onward to their final destination between the United States and Mexico. These HAZMAT trained inspectors work with U.S. Customs HAZMAT inspectors and serve as part of the emergency response team, a first line of defense in the event of a hazardous spill or accident at the POE. DTSC and the San Diego County, upon request from CBP, also participate in special operations such as inspections of cargo outside of days and hours allowed for hazardous materials. To increase compliance, the two countries provide compliance assistance outreach and training to facilitate both countries industries to understand regulatory requirements.

On June 20, 2018, with funding from the Border 2020 Program and RCRA program, DTSC hosted an import/export workshop in Tijuana, Baja California, in coordination with SEMARNAT, PROFEPA, and Baja California's Secretariat of Environmental Protection (SPA, by its acronym in Spanish), for Mexican hazardous waste and special waste industrial generators operating in Baja California. The workshop focused on import/export requirements including: transport, new electronic manifest system and verification, defining hazardous waste and materials, and differences between federal and state requirements. Nearly 200 people representing industry, government, and academia attended, demonstrating the demand for this type of information and industry willingness to comply.

Attendees of the import/export workshop held in Tijuana.

Based on the last report of the United States-Mexico Consultative Mechanism, 33 Mexican businesses are permitted by SEMARNAT to treat, store or dispose hazardous waste generated by the hundreds of businesses in the region. Offering these hazardous waste compliance workshops in Tijuana assists industry and informs key stakeholders on compliance requirements for United States regulations, ultimately protecting public health and the environment.

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ADVOCATING ENVIRONMENTAL HEALTH

Environmental health focuses on how the natural and built environment affect human health and how it can be managed to improve quality of life. Our most vulnerable populations such as children, the elderly and those with respiratory issues are often the most impacted by the combination of poor indoor and outdoor air quality, contaminated water, unmanaged waste and other environmental conditions. The Border 2020 Program and its partners have supported binational environmental health conferences, train-the-trainer activities for promotoras (community health workers), interactive mapping applications to identify environmental challenges and implement solutions and other key media strategies to improve public health along the United States-Mexico border.

Teaming up to Address *Zika* Disease in Brownsville

In 2016, the *Zika* outbreak in the continental United States emerged as a significant threat to the public. In November of that year, the City of Brownsville, Texas, reported the first case of the *Zika* virus transmitted by a mosquito within the state. The City worked with the Center for Disease Control (CDC), the Texas Department of State Health Services (TDSHS), Cameron County and Brownsville's Health Departments to learn more about the transmission and precautions for the public to take.

In 2017, EPA partnered with the City of Brownsville Health Department to identify hotspots and the factors that led to the spread of the *aedes aegypti* mosquito. The project took a holistic approach to identify the underlying conditions that allow mosquito breeding and how to prevent it. The project mapped the risk areas within the city by looking at existing environmental data coupled with socioeconomic and mosquito data. To date, the city is using a crowdsource application platform in which residents can report potential mosquito breeding sites and upload georeferenced photos. The website also provides recommended actions that residents can take to combat mosquito risk.

The City of Brownsville Health Department is also working with *promotoras*, who serve as public community liaisons, to educate residents through a train-the-trainer model. The project is ongoing and researchers at EPA have presented their initial findings at a conference and recently published a literature review.

> *"We combined environmental data (land cover, precipitation, and temperature) with socioeconomic and mosquito activity data in order to paint a more accurate picture of risk. To our knowledge, this is the first vector mitigation study to take into account both 1x1 meter land cover data and socioeconomic determinants."*
>
> **Pai-Yei Whung, Ph.D.**
> **Project's lead and EPA senior scientist**

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EPA Engages Communities to Target Children's Environmental Health

Jacobo Sandoval at an environmental health outreach event in Nogales, Arizona.

> *"Families in Nogales, Arizona, are very happy with the healthy homes evaluation and especially with the smoke alarms installed by Sonora Environmental Research Institute, Inc. (SERI) staff. Many families mentioned that Nogales does not have many children's environmental health programs available to low-income families, and they are grateful for this opportunity to participate in the program."*
>
> **Jacobo Sandoval**
> **SERI Program Manager**

According to the World Health Organization, in 2012 it was estimated that 1.7 million children under the age of five died due to environmental factors. Children living along the United States-Mexico border are particularly vulnerable due to the region having higher than the United States national average rates for children living in poverty, being uninsured, and having chronic diseases (Pan American Health Organization, 2014).

Over the past several years, partnerships between EPA's Office of Children's Environmental Health, the Border 2020 Program, the United States-Mexico Border Health Commission under the U.S. Department of Health and Human Services and local organizations, have worked on collaborative projects to identify environmental

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health needs and provide opportunities for local action to improve the lives of children living along the border. These opportunities have included three children's health symposiums from south Texas to California, as well as federal grants to educate families, community health workers, educators and medical professionals on how to address children's health needs.

In 2018, EPA awarded more than $214,000 dollars to fund five projects aimed at addressing children's environmental health in border communities in Texas, New Mexico and Arizona. These five projects addressed environmental health issues related to lead-based paint, indoor air quality, and integrated pest management.

Many of these projects are establishing new ways of improving current environmental health programs and initiatives for agencies who work within communities located in the border region. These projects will train nearly 350 specialists, including community health workers, childcare givers and medical providers, and reach over 2,000 community members on environmental health topics such as improving indoor air quality, reducing lead-based paint exposure and implementing integrated pest management strategies. Through these projects, and continued leadership from border communities, children's environmental health will continue to improve.

"Chronic diseases such as asthma, cardiovascular diseases, and diabetes are linked to air pollution. We will provide education on a variety of environmental hazards to Promotoras, parents at elementary and middle schools, and pregnant women. The education will provide participants the knowledge needed to identify indoor and outdoor pollutants, harmful chemicals in pesticides used at home, and how they can change or control them without exposing their children to the damaging effects."

Genny Carrillo, M.D.
Texas A&M University
School of Public Health

"Mariposa Community Health Center is excited to have been awarded this funding. Protecting our children by ensuring a healthy living environment is essential to their long-term health and well-being. These funds will provide education to Community Health Workers along the U.S.-Mexico border to assist them in identifying environmental pollutants and train parents and caregivers in appropriate methods to reduce or eliminate exposure within their homes."

Ed Sicurello
CEO, Mariposa Community Health Center

"The Southwest Center for Pediatric Environmental Health is very pleased to hear that we have been awarded this grant. It will serve to augment outreach to disadvantaged children on the border from El Paso to Brownsville. Based at Texas Tech University Health Sciences Center in El Paso, we have partnered with colleagues from the University of Texas Rio Grande Valley School of Medicine to extend our reach. The funds will go to production of training guides for Promotoras, as well as two Promotora workshops. It will likewise support the development of e-learning modules to be used in their new senior medical student elective on pediatric environmental health."

Director Stephen Borron, M.D.
Southwest Center for Pediatric
Environmental Health

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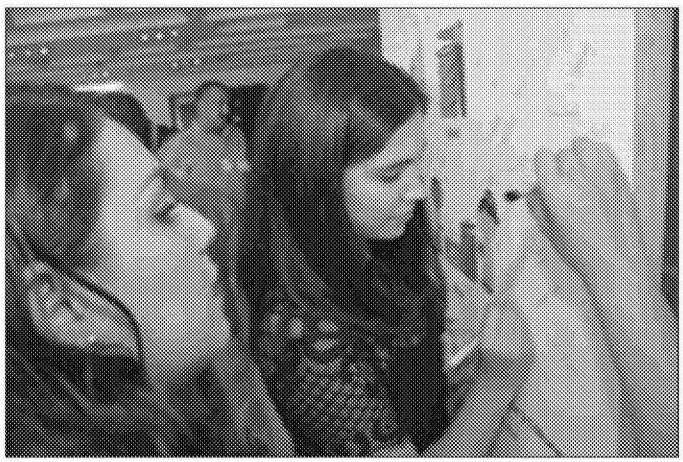
Responding to *Zika* Threat Along the Border

Besides the shared environment between the United States and Mexico along the border, the Border 2020 Program also recognizes that, "[t]he movement of people and products between the two countries creates a unique binational environment for preventing and controlling diseases spread through food and water, from insects or animals, and between people" (Center for Disease Control, 2018). In response to these risks, the Border 2020 Program has supported efforts to increase awareness and provide training on the use of integrated pest management to prevent the spread of vector-borne diseases, like *Zika* transmitted by mosquitos.

In Fall 2016, two binational environmental health conferences on vector-borne diseases were held in Mexicali, Baja California, and Nogales, Sonora. Partners included: the Autonomous University of Baja California (UABC, by its acronym in Spanish), the Technical Institute of Nogales (ITN, by its acronym in Spanish), *El Colegio de la Frontera Norte* (COLEF), the Center for Disease Control (CDC) and their Mexican counterpart, the National Center for Preventive Programs and Disease Control (CENAPRECE, by its acronym in Spanish), among others.



Participants commit to addressing sources of vectors by keeping their homes and environment clean and free of trash and standing water.

Over 360+ people attended, such as medical students, faculty, health practitioners, government officials, and 30 vector borne disease experts. Key topics included preventive measures to combat *Zika* and other vector-borne diseases, integrated pest management strategies, and the appropriate usage of insect repellants.

In 2017, to confirm long-term impact of the events, the venue hosts (UABC and ITN) contacted the attendees and learned three key findings:

- After the symposia, three out of four respondents shared the environmental and public health information they learned with people they knew.
- In addition, more than half of all respondents reported they now read the label prior to using insect repellents.
- Of critical importance, nearly half of attendees have started pouring standing water out of flower pots to eliminate mosquitos' eggs, thereby reducing breeding habitats.

As seen by the evaluation, the conferences have increased knowledge and influenced behavior. To learn more about these events, please visit the U.S.-Mexico Border 2020 webpage.

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Visit our webpages!
www.epa.gov/border2020
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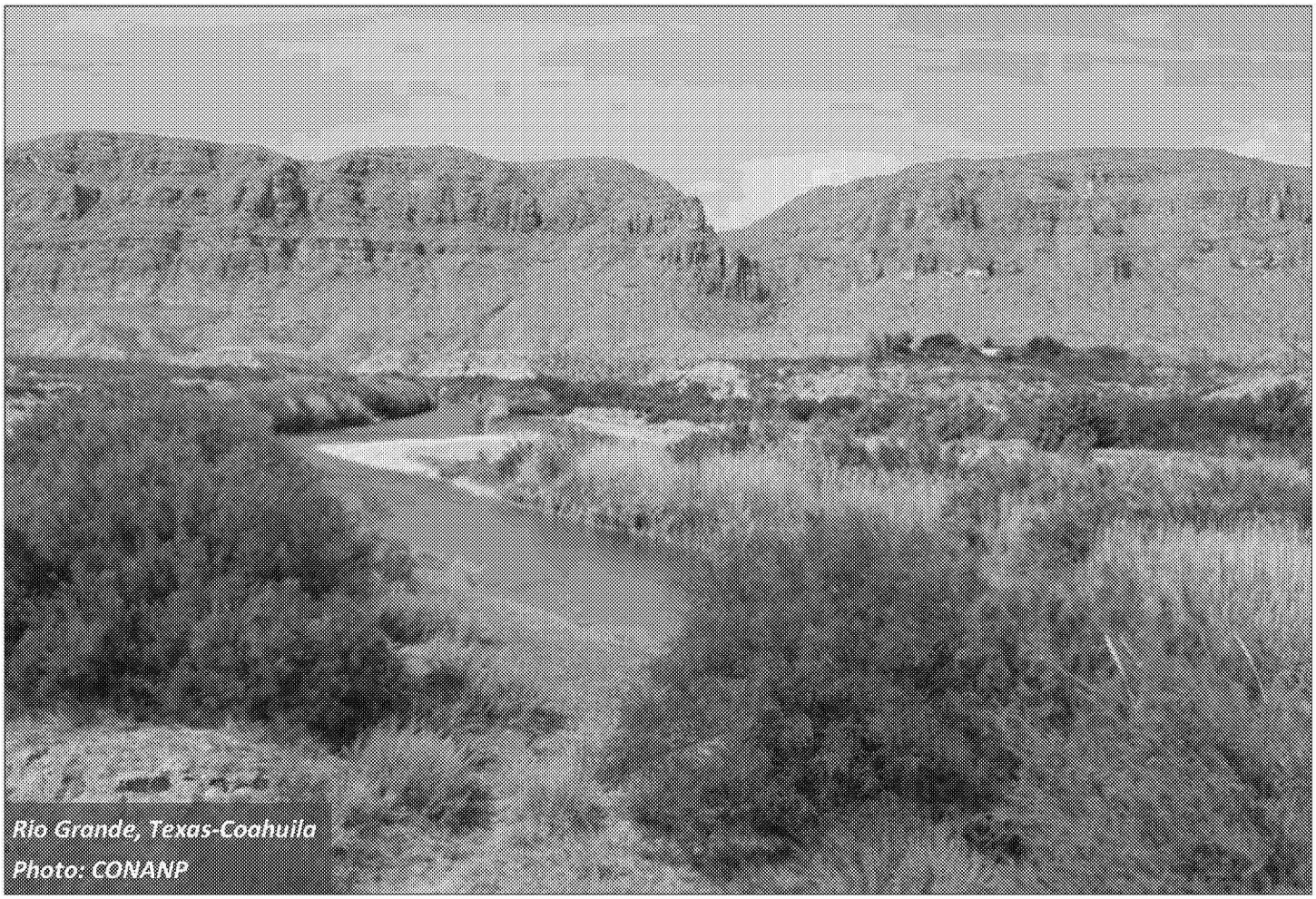
MISSION STATEMENT

As a result of the partnership among U.S. Border Tribes and federal, state and local governments in the United States and Mexico, the mission of the Border 2020 Program is to:

Protect the environment and public health in the U.S.-Mexico border region, consistent with the principles of sustainable development.



Rio Grande, Texas-Coahuila
Photo: CONANP