FOUR STATI				
Coop AGMT	PROJECT ID	B2020 GOAL	Name	Project Implementer Contact Information
X4-00F59501 (.934)	20258	2	**Determining the Ideal Bioswale Material for South Texas Stormwater Management**	The University of Texas Pan American Jungseok Ho, Ph.D., P.E. (956) 665-3104, hoj@utpa.edu
X4-00F92501 (.335)	20295	3	**Interagency coordination for the management of electronic and electrical waste in Ciudad Acuña and Piedras Negras, Coahuila**	Secretaría de Medio Ambiente del Estado de Coahuila de Zaragoza
	20297	2	**Decision Making Tool (DMT^{G}) for Determining LID Stormwater Detention in Bronwsville, Texas**	Texas A&M University-Kingsville
X4-01F04901 (.805)	20293	5	**Legislative Reform and Environmental Education, Nuevo Laredo, Tamaulipas.**	Universidad Autónoma de Tamaulipas en Nuevo Laredo.
	20286	3	**Comprehensive E-Waste Management in Piedras Negras, Coahuila and Eagle Pass, Texas.**	Grupo Ecológico Green Tec-Osos del Instituto Tecnológico de Piedras Negras
	20290	2	**The Rio Grande/Río Bravo Water Quality Initiative, Laredo Texas**	The University of Texas at Austin
	20291	2	**Fat, Oil and Grease (FOG) Public Outreach Campaign,**	Brownsville Public Utilities Board
	20294	3	**Let's Clean it Up and Green it Up, Pharr, Texas**	Recycling Center

E (TX-COAH-NL-TAMPS) BORDER 2020 PROJECTS

Project Location	State	Amount Approved
Edinburgh	**TEXAS**	**$26,022**
Cd. Acuna	**COAHUILA**	**$16,899**
Brownsville	**TEXAS**	**$38,885**
Nuevo Laredo	**TAMAULIPAS**	**$11,000**
Piedras Negras and Eagle Pass	**COAHUILA / TEXAS**	**$36,054**
Laredo	**TEXAS**	**$58,575**
Brownsville	**TEXAS**	**$25,000**
Pharr	**TEXAS**	**$36,390**

$248,825

STATUS
Project Status: Monitoring will continue and includes a comparison to theoretical calculation of runoff flow rate, comparison with the guidelines and criteria in South Texas, and comparison to independent testing of soil permeability. Project will conclude in the final quarter of 2016, final report is schedule for December 15.
Project Status: The third dissemination campaign was held for the collection of electrical and electronic waste; the campaign was carried out simultaneously in the participating municipalities. Approximately 10,370 kg of electronic waste were collected. Operation of a permanent collection center for used electronic waste in Piedras Negras is in place. Project has collected 57 tons more than the original 25 ton target.
Project Satus: Project sponsor has assured at least twelve (12) local governments are provided with information associated with this project, namely the introduction of the tool. Also assured workshops for continuing education credits for stormwater professionals to encourage attendance at these workshops. Project contract is under review with the new sponsor who is UTRGV.
Project Status: Review of the municipal environmental code and identification of opportunities for improvement. Work on logistics for a workshop between Laredo and Nuevo Laredo on two topics: climate change and environmental binational priorities
Project Status: Project sponsor is completing a material flow analysis and a waste electrical and electronic equipment life cycle analysis. An audiovisual production in Spanish for the town of Piedras Negras is finished. The sponsor is working with the city of Eagle Pass in the e-waste collection campaign's and educational campaign.
Project Status: Stakeholders list updated, and survey draft completed. Meetings will be performed in the first quarter of 2017.
Project Status: FOG workshops ads ran in the Brownsville Herald and El Nuevo Heraldo newspapers in English and Spanish on May 22nd and
Project Status: The city of Pharr promoted the month of November as Texas Recyclers month. It hosted a newspaper contest with all of Pharr's schools, and included a $500 scholarship for school recycling. The city's firefighters joined the efforts by promoting and participating in monthly cleanups. The project is expected to be finished by mid-April 2017.

TRI-STATE (TEXAS-CHI						
Coop Agmt	Project ID	Goal/ Fund. Stategy	Project Name	Project Implementer Contact Information	Project Location	STATE
X4-00F92501 (.335)	20298	3	**Sewage Sludge and Biosolids Agricultural Soils project in the Valle**	Universidad Autónoma de Cd. Juárez	Valle de Juarez	**CHIHUAHUA**
	20303	FS	**Healthy and Resilient Housing in west Ciudad Juarez, Chihuahua**	Federación Mexicana de Asociaciones Privadas de Salud y Desarrollo Comunitario, A.C.	Ciudad Juarez	**CHIHUAHUA**
	20302	FS	**Green Infrastructure in Public Space on Valle del Sol Avenue, Ciudad**	Instituto Tecnológico de Ciudad Juárez	Ciudad Juarez	**CHIHUAHUA**
X4-01F04901	20288	1	**Improvements to Environmental Services in Cattle Ranches via**	Universidad Autónoma de Chihuahua – Facultad de Zootecnia y Ecología	Ascension	**CHIHUAHUA**

HUAHUA-NEW ME
Amount Approved
$48,510
$50,000
$43,204
$41,388
$183,102

XICO) BORDER 2020 PROJECTS
STATUS
Project Status: District Councils meetings w/ Rural Development SAGARPA: information of costs of biosolids spreader was announced, preparation of material for courses and workshops, and attendees were given the proposal for the formation of the rural citizen commission for the use of biosolids . Workshop for government officials was held with the participation of 29 representatives. Next quarter tours to the WWTP and analysis of soil and biosolids
Project Status: The catalog with eco-technologies was developed, and the process for selecting the 20 homes were the eco-technologies will be implemented is under way.
Project Status: An educational and training seminar was given to neighbors. A census of the current status of the plants sowed was taken, resulting in an 85% survival rate. Currently the design for the informational signs is under development.
Project Status: In progress. Project delayed due to change of project sponsor, from the Autonomous University of Chihuahua to Texas A&M – Kingsville. First meeting with ranchers and collaborators complete; partial development of GIS uploaded, monitoring in progress.

FOUR STATI				
Coop AGMT	**PROJECT ID**	**B2020 GOAL**	**Name**	**Project Implementer** **Contact Information**
X4-00F59501 (.934)	20258	2	**Determining the Ideal Bioswale Material for South Texas Stormwater Management**	The University of Texas Pan American Jungseok Ho, Ph.D., P.E. (956) 665-3104, hoj@utpa.edu
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X4-01F04901 (.805)	20286	3	**Comprehensive E-Waste Management in Piedras Negras, Coahuila and Eagle Pass, Texas.**	Grupo Ecológico Green Tec-Osos del Instituto Tecnológico de Piedras Negras
	20290	2	**The Rio Grande/Río Bravo Water Quality Initiative, Laredo Texas**	The University of Texas at Austin
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	20294	3	**Let's Clean it Up and Green it Up, Pharr, Texas**	Recycling Center

E (TX-COAH-NL-TAMPS) BORDER 2020 PROJECTS

Task Force and Project Location	State	Amount Approved
GULF TF Edinburg	**TEXAS**	**$26,022**
AMISTAD TF Cd. Acuna	**COAHUILA**	**$16,899**
GULF TF Brownsville	**TEXAS**	**$38,885**
FALCON TF Nuevo Laredo	**TAMAULIPAS**	**$11,000**

AMISTAD TF Piedras Negras and Eagle Pass	**COAHUILA / TEXAS**	**$36,054**
AMISTAD TF Laredo	**TEXAS**	**$58,575**
GULF TF Brownsville	**TEXAS**	**$25,000**
GULF TF Pharr	**TEXAS**	**$36,390**
		$248,825

STATUS
Project Status: Monitoring will continue and includes a comparison to theoretical calculation of runoff flow rate, comparison with the guidelines and criteria in South Texas, and comparison to independent testing of soil permeability. Project will conclude in the final quarter of 2016, final report is schedule for December 15.
Project Status: The third dissemination campaign was held for the collection of electrical and electronic waste; the campaign was carried out simultaneously in the participating municipalities. Approximately 10,370 kg of electronic waste were collected. Operation of a permanent collection center for used electronic waste in Piedras Negras is in place. Project has collected 57 tons more than the original 25 ton target.
Project Satus: Project sponsor has assured at least twelve (12) local governments are provided with information associated with this project, namely the introduction of the tool. Also assured workshops for continuing education credits for stormwater professionals to encourage attendance at these workshops. Project contract is under review with the new sponsor who is UTRGV.
identification of opportunities for improvement. Work on logistics for a workshop between Laredo and Nuevo Laredo on two topics: climate change and environmental binational priorities. Continue to implement environmental fairs among elementary schools.

Project Status: Project sponsor is completing a material flow analysis and a waste electrical and electronic equipment life cycle analysis. An audiovisual production in Spanish for the town of Piedras Negras is finished. The sponsor is working with the city of Eagle Pass in the e-waste collection campaign's and educational campaign.
Project Status: Stakeholders list updated, and survey draft completed. Meetings will be performed in the first quarter of 2017.
Project Status: FOG workshops ads ran in the Brownsville Herald and El Nuevo Heraldo newspapers in English and Spanish on May 22nd and May 24th. 1,500 door hangers were distributed, work continued on the digital poster boards. PUB staff has performed 47 public presentations with a total 400 people in attendance.
Project Status: The city of Pharr promoted the month of November as Texas Recyclers month. It hosted a newspaper contest with all of Pharr's schools, and included a $500 scholarship for school recycling. The city's firefighters joined the efforts by promoting and participating in monthly cleanups. The project is expected to be finished by mid-April 2017.

TRI-STATE (TEXAS-CHI						
Coop Agmt	Project ID	Goal/ Fund. Stategy	Project Name	Project Implementer Contact Information	Project Location	STATE
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	20302	FS	**Green Infrastructure in Public Space on Valle del Sol Avenue, Ciudad**	Instituto Tecnológico de Ciudad Juárez	Ciudad Juarez	**CHIHUAHUA**
X4-01F04901	20288	1	**Improvements to Environmental Services in Cattle Ranches via**	Universidad Autónoma de Chihuahua – Facultad de Zootecnia y Ecología	Ascension	**CHIHUAHUA**

HUAHUA-NEW ME
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XICO) BORDER 2020 PROJECTS
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Project Status: The catalog with eco-technologies was developed, and the process for selecting the 20 homes were the eco-technologies will be implemented is under way.
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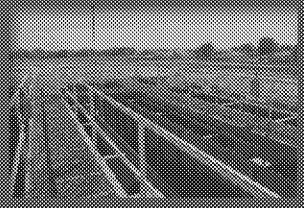
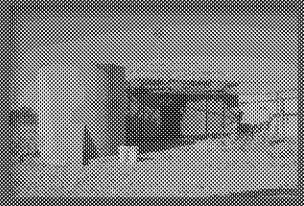
EPA Region 6



QUARTERLY REPORT

January – March 2018

US-MEXICO COOPERATIVE AGREEMENT
Implementation of Border 2020 Program
EPA-Region 6
X4-00F92501



Submitted by:
Javier Torres, Technical Assistance Manager

Banco de Desarrollo de América del Norte
North American Development Bank

QUARTERLY STATUS REPORT

US-MEXICO COOPERATIVE AGREEMENT
Implementation of Border 2020 Program
EPA-Region 6

GRANT: X4-00F92501

Grant Period: Sep. 17, 2004 – Aug. 31, 2019

REPORTING PERIOD:

January – March 2018

TO:
Monica Wilson
U.S. EPA, Region 6 (6PD)
Environmental Protection Specialist

FROM:
Javier Torres
North American Development Bank
Technical Assistance Manager

April 30, 2018, Cd. Juárez, Chihuahua, México

US Mexico Border 2020 Environmental Program - Quarterly Grant Status Report

Grant Title:	**Grant Agreement No.**
US – Mexico Border Cooperative Agreement Implementation of EPA Region-6 Border 2020 Program	X4-00F92501

Contact:

Primary Contact Name: **Javier Torres**
Organization: North American Development Bank
Telephone & Fax: 01-656-688-4600 Email: jtorres@nadb.org

Reporting Period (please check appropriate period):

- ☐ July 1 – September 30, 2017, Reporting period: report due on October 30, 2017
- ☐ October 1 – December 31, 2017, Reporting period: report due on January 30, 2018
- ☒ January 1 – March 31, 2018, Reporting period: report due on April 30, 2018
- ☐ April 1 – June 30, 2018, Reporting period: report due on July 30, 2018
- ☐ July 1 – September 30, 2018, Reporting period: report due on October 30, 2018
- ☐ October 1 – December 31, 2018, Reporting period: report due on January 30, 2019
- ☐ January 1 – March 31, 2019, Reporting period: report due on April 30, 2019
- ☐ April 1 – June 30, 2019, Reporting period: report due on July 30, 2019
- ☐ July 1 – August 30, 2019, Reporting period: report due on September 30, 2019

Check here if this is the final reporting period under your grant ☐

Please explain any current of expected growth of your project. If there is growth potential, have you consulted with other partners for further or future leveraging of funds, for continuing the project after funding from the Environmental Protection Agency ends?

None to report.

Indicate the goal(s) and objective(s) of the Border 2020 Framework Document that this grant is addressing (http://www.epa.gov/border2020)

GOAL 1. - *Reduce Air Pollution*

Objective 1. - By 2020, in accordance with the NAFTA, promote the reduction of the number of vehicles operating in the border region that do not comply with the respective vehicle emissions' standards and reduce vehicle emissions at ports-of-entry through anti-idling and other feasible reduction measures.

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- **Project type 1:** Support the development of vehicle emissions programs in collaboration with governmental entities in order to improve compliance, enhance detection and correction of non-compliance vehicles. In addition, capacity building activities to reduce air pollution, in the border cities or at the Ports of Entry (POE), which may include the enforcement of environmental compliance at the time of used vehicle importation.

Objective 2.- By 2020, reduce pollutant emissions in order to approach attainment of respective national ambient air quality standards (i.e. National Ambient Air Quality Standards (NAAQS) or Norms as they are referred in Mexico) in the El Paso, Texas–Dona Ana County, New Mexico and at State of Chihuahua's border cities' air sheds.

- **Project type 1:** Establish joint collaboration strategies with governmental and/or non-governmental regulatory and planning agencies to identify and implement air pollutant reduction strategies to achieve better air quality in the Paso del Norte region (PdN). Projects should promote, expand, and be consistent with the strategies identified in PROAIREs (Mexico's air shed management plan) or U.S. Clean Air Act (USCAA) State Implementation Plans (SIPs.)

Objective 3. – By 2018, maintain effective Ambient Air Quality Monitoring Network (AAQMN) and provide real-time access to air quality data produced at New Mexico/Texas /Mexico air sheds.

- **Project Type 1:** Initiatives for this objective should aim to ensure the long term sustainability and data quality for the El Paso, Texas – Ciudad Juarez, Chihuahua air quality monitoring network.

GOAL 2: ***Water – Improve Access to Clean and Safe Water***

- **Project type 1:** Efforts under this goal should be targeted to capacity building proposals that incorporate replication strategies, on proper maintenance and/or decommissioning of septic tanks, water conservation and pollution prevention in order to better understand, plan and maintain cleanup sources of drinking water on future groundwater supplies in New Mexico-Texas-Chihuahua border, specifically in Dona Ana County, New Mexico (particularly those communities along the corridor between El Paso, Texas and Las Cruces, New Mexico) and Luna County, New Mexico and El Paso County, Texas.

Objective 2. - Help drinking water and wastewater service providers in the border region to implement sustainable infrastructure practices to reduce operating costs, improve energy efficiency, use water efficiently and adapt to climate change.

- **Project type 1:** Conduct energy and/or water audits on small water drinking systems that serve communities with less than a population of 5,000 users, to identify recommendations on how to improve efficiency and provide cost-savings measures for that system.
- **Project type 2:** Outreach and education to improve water quality within the Gulf Task Force Region.

Objective 3. - Work bi-nationally to identify and reduce surface water contamination in Trans - boundary water bodies and watersheds.

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Objective 3a. - Develop a binational watershed protection plan in the Lower Rio Grande below Falcon International Dam. Initial activities could include partnership building, watershed characterization, definition of goals/identification of solutions, determination of waste load, load allocations for each country, and development of an implementation plan.

- **Project type 1:** Continue to support activities that meet objective 3a– The proposals should address any water quality sampling and collection, data analysis, modeling and surveys still required by the bi-national workgroup on this project. In addition, the work should also support any additional training or workshops needed, among others, by the Amistad and Falcon Task Force, as well by the Texas-Coahuila-Nuevo Leon –Tamaulipas, Regional Work Group.

GOAL 3: ***Promote Materials Management & Waste Management, & Clean Sites***

Objective 1. - By 2020, increase local and state-level institutional knowledge and experience in the area of sustainable material management practices.

- **Project type 1**: Proposals should be aimed to build capacity and establish strategies to improve infrastructure to minimize waste, maximize collections systems, support secondary materials markets, and reduce overall disposal in landfills and open dumps.

Objective 2. - Identify priority waste streams and by 2020 develop sustainable material management practices that strengthen their respective market value.

- **Project type 1:** Identify priority waste streams in the municipalities from Four States region and develop sustainable waste management programs for those municipalities to include strengthening the market value of the waste.
- **Project type 2:** Develop sustainable management practices to address used electronics, household hazardous waste, and tires in the Region which will include an educational component to promote recycling and solid waste practices.

GOAL 4: ***Enhance Joint Preparedness for Environmental Response***

Objective 2. - By 2020, at least eight (8) of the sister city joint contingency plans will be supplemented with preparedness and prevention related activities such as certified training, risk analysis, and/or capacity building

- **Project type 1:** Conduct bi-national training to both U.S. and Mexican local emergency responders, on incidents involving Chemical, Biological, Radiological, Nuclear, or Explosive (CBRNE), and/or all hazards response skills enabling them to respond safely and effectively to these types of incidences.
- **Project type 2:** Conduct bi-national training to U.S. and Mexican local emergency responders, specifically on HAZMAT incidences only.
- **Project type 3:** Conduct bi-national: 1) tabletop drill with functional drill/exercise or 2) Full Scale Drill/Exercises to test local sister city plans. In order to meet the definition of bi-national, the drills/exercises should go beyond a simple notification to the local sister-city pair and demonstrate actual coordination of resources (expertise, equipment, personnel, etc.) between the sister-cities.
- **Project type 4:** Develop a hazardous materials risk analysis.

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GOAL 5. – Enhance *Compliance Assurance and Environmental Stewardship*

Objective 4. - By 2020, implement at least five (5) binational workshops targeted to environmental enforcement professionals, including ports-of-entry customs professionals (i.e. Department of Homeland Security-Customs and Border Protection), to promote the exchange of information and improve understanding of each Country's respective compliance and enforcement programs and tools, including field studies.

- **Project type 1:** Proposals should consider events for information exchange to improve understanding each Country's respective compliance and enforcement programs and tools including field inspections and case development practices.

Fundamental Strategies

Promoting Environmental Health

- **Project type 1:** Projects presented under this fundamental strategy should increase engagement and participation by the community and stakeholders to better manage the environment and public health issues along the border.

Building Capacity towards Climate Change Resiliency

- **Project type 1**: The Border 2020 climate change efforts should focus on reducing greenhouse gas (GHG) emissions and on actions to help border communities become more resilient to the effects of climate change.

Summary of approved Work Plan activities performed during the reporting quarter.

Projects in progress during reporting period:

Project ID	Goal	Objective	Project Name	Status
20298	3	1	Sewage Sludge and Biosolids Agricultural Soils Project in the Valle de Juarez, Chihuahua	Project Status: Attended meetings of District Rural Development Councils convened by SAGARPA to continue the dissemination and activation of the Commission for the Use of Biosolids; collected and analyzed all the information that has been obtained in the activities and supported the Project Director in writing the final report of the project. The final report will be delivered by June 30, 2018
20297	2	2	Decision Making Tool (DMT[G]) for Determining LID Stormwater Detention, Brownsville, Texas	Project Status: Activities for this quarter include the development of a website for the project; the modeling runs for the Tool were completed in 2017, and the DMT will be finalized and rolled out through workshops in Spring 2018. For this reason, a project no-cost extension is recommended and will be requested through July 31, 2018.

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Summary of the Work Plan performance outputs/outcomes achieved during the reporting quarter.

None to report.

Are you on track with your timeline? **Yes** ☒ **No** ☐

A description of problems encountered during the reporting quarter that may affect the project schedule and a discussion of meeting the performance outputs/outcomes.

None

Resolutions to Problems Previously Reported.

None to report.

Activities Anticipated/Planned for Next Three Months and Budgeted Costs.

Continue with the development of active projects.

Discuss what key personnel did on the project.

Briselda Duarte and Jorge Hernandez coordinated project development activities with EPA and sponsors. Marielena Constandse prepared this report and provided Contract Administration. Javier Torres provided Grant Administration coordination with EPA. Joaquin Marruffo supervised the execution of the project activities.

Discuss any changes in key personnel.

No personnel changes have taken place.

Please name any significant partner organizations that you (as the lead organization) have for this project, who are taking responsibility for substantial portions of implementation.

None to report.

BUDGET SUMMARY - Include information on the expenditure of grant agreement funds during the quarter and cumulatively by task in the provided budget tables. The tasks should correspond to the tasks outlined in your approved grant agreement work plan and the tables may be expanded accordingly. In addition, include in your narrative an estimate of funds needed to complete the work required in the grant agreement compared to the funds remaining in the grant agreement. ***Note: This section does not substitute for the annual financial status report (SF-269) required by the grant agreement***.

TABLE 1				
Summary of Quarterly Expenses by Category (Report Period January 1 to March 31, 2018)				
Work Plan Tasks	**Approved Work Plan Budget**	**Previously Expended**	**Expenses this Quarter**	**Total Cumulative Expenses**
Task A- Projects	$ 278,255.00	$192,428	$6,239	$198,667
Task B- Emergency Response	$ 26,290.00	$25,055	$0	$25,055
Indirect Cost	$30,455.00	$21,748	$624	$22,372
TOTAL Cumulative Expenses	**$335,000.00**	**$239,231**	**$6,863**	**$246,094**

TABLE 2			
Budget Categories (programmatic costs only)	**Task A Projects**	**Task B Emergency Response**	**TOTAL Quarterly Expenses**
Personnel	$0	$0	$0
Fringe Benefits	$0	$0	$0
Travel	$0	$0	$0
Equipment	$0	$0	$0
Other (specify)	$6,239.12	$0	$6,239.12
TOTAL Direct Charges	$6,239.12	$0	$6,239.12
Indirect Costs	$623.91	$0	$623.91
TOTAL Cumulative Expenses	$6,863.03	$0	$6,863.03

[1]EPA defines equipment as items that cost $5,000 or more with a useful life of more than one year. Items costing less than $5,000 are considered supplies.
[2]Applicants must comply with the procurement procedures contained in 40 CFR 31.36, or for non-profits, with 40 CFR30.40.

What is the geographic scope of your project implementation? *(Include whether it is within the Tri-State and/or Four-State Region of Border 2020, whether implementation takes place in both the U.S. and Mexico, and any more specific implementation.)*

The geographic scope of this award covers the Tri-State Region, which includes the states of New Mexico, Chihuahua and the West Texas region; and the Four-State Region which includes the rest of Texas, Coahuila, Tamaulipas and Nuevo Leon.

I certify that this report is true and correct, project is on schedule except as noted, and funds are being utilized as planned and agreed to in the award document.

Signature of Project Official:

Printed Name: Javier Torres

Title: Technical Assistance Manager **Date:** April 30, 2018

Within 30 days following the end of each quarter, please submit this report to your EPA Project Officer.

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ATTACHMENT "A"

THREE STATE (TX-CHIH-NM) BORDER 2020 - 2015 PROJECTS

No.	Project ID	Goal/ Fund. Stategy	Objective	Project Name	Project Implementer / Contact Information	BECC Contract Officer & Project Manager	Amount Approved / Amount Disbursed	STATUS
1	20298	3	1	**Sewage Sludge and Biosolids Agricultural Soils project in the Valle de Juarez, Chihuahua**	Universidad Autónoma de Cd. Juárez	Jorge Hernandez (PM)	$ 48,510.00 $ 11,743.08	**Project Status:** Attended meetings of District Rural Development Councils convened by SAGARPA to continue the dissemination and activation of the Commission for the Use of Biosolids; collected and analyzed all the information that has been obtained in the activities and supported the Project Director in writing the final report of the project. The final report will be delivered by June 30, 2018
2	20303	FS	N/A	**Healthy and Resilient Housing in west Ciudad Juarez, Chihuahua**	Federacion Mexicana de Asociaciones Privadas de Salud y Desarrollo Comunitario, A.C.	Briselda Duarte (PM)	$ 50,000.00 $ 47,106.10	**Project Status:** Project progress of 98%; ecological technologies completed in 50 homes, manual on energy savings completed as well. Project will be finished on January 2018, waiting on final report and factsheet.
3	20302	FS	N/A	**Green Infrastructure in Public Space on Valle del Sol Avenue, Ciudad Juarez, Chihuahua**	Instituto Tecnológico de Ciudad Juarez	Joaquin Marrufo (PM)	$ 42,231.02 $ 42,231.02	**Project Status:** Project concluded on December 2017. Some of the most relevant outputs and outcomes are: Monitoring of rain water volume occurred during 17 months, from July 2016 to November 2017, with a total volume collected of 472,502.33 gallons of rainwater. To have a clearer understanding of the results, consider a 12-month period, where precipitation was of 13.79 in, resulting in a capture volume of 436,203 gal. Regarding the contaminants analyses, there was not enough rainwater volume to have a representative sample to be tested. In reference to the vegetation, there was an acceptable surviving index of the planted trees and bushes. The park has not had the need for irrigation, since rainwater does its part. Finally, with the green infrastructure project, the social value of the park increased.
						Amount Approved	$ 140,741.02	
						Amount Disbursed	$ 101,080.20	

FOUR STATE (TX-COAH-NL-TAMPS) BORDER 2020 - 2015 PROJECTS

No.	Project ID	Goal/ Fund. Stategy	Objective	Project Name	Project Implementer / Contact Information	BECC Contract Officer & Project Manager	Amount Approved / Amount Disbursed	STATUS
1	20270	4	2	Hazardous Materials First Responders Binational Training in McAllen, Mission, Pharr, TX and Reynosa, Tamaulipas	City of McAllen Juan Gloria (956)681-2540 jgloria@mcallen.net	Marielena Constandse (CO) / Briselda Duarte (PM)	$ 25,055.00 $ 25,055.00	**Project Status:** Project concluded on February. Some of the significant project contributions are: - Increase hazmat response skills and capabilities to first responders in McAllen, Mission and Pharr Fire Departments and first responders from northern Mexico. - Equipment will also be used in future binational trainings.
2	20255	3	1	Comprehensive Solid Waste Management Project in Rio Bravo and Valle Hermoso, Tamaulipas	Secretaria de Medio Ambiente	Jorge Hernandez (PM)	$ 19,871.16 $ 19,871.16	**Project Status:** The two municipal programs have been completed, and in August 10 and 24 they were presented for approval by the respective city councils. Some of the significant project contributions are: + The generation and waste composition studies allow both communities to know the type and amount of waste generated per inhabitant and could be marketed. The studies also calculate the areas required for the final disposal site according to their generation. + Both programs have been completed, and presented for approval by the respective city councils.
3	20255	3	1	Interagency coordination for the management of electronic and electrical waste in Ciudad Acuna and Piedras Negras, Coahuila	Secretaria de Medio Ambiente del Estado de Coahuila de Zaragoza	Jorge Hernandez (PM)	$ 16,898.67 $ 16,898.67	**Project Status:** The project concluded in March 2017. The results of the project are: Collection of 56 tons of electronic waste (25 tons were targegted), which included 3 campaigns of massive collection of e-waste in several municipalities, 36 public and private organizations were trained and supported the campaign. A permanent collection of electronic waste was opened in Ciudad Acuña.

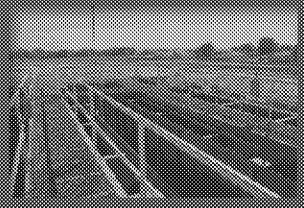
4	20297	4	2	Binational Tabletop and Functional Exercises between Harlingen, TX and Matamoros, Tamaulipas.	City of Harlingen Fire Department	Briselda Duarte (PM)	$ 44,682.30 $ 44,682.30	**Project status:** The project concluded in August. Some of the significant project contributions are: -Training of 19 officers and students from Harlingen (2), Mission (2), Brownsville (1) and Matamoros (14). -Harlingen and Matamoros have established the ability to implement standardized response and real time communication in the event of Hazardous Materials incidents. -A foundation for enhanced emergency response and cooperative incident management has been created
5	20297	2	2	**Decision Making Tool (DMT[G])** for Determining LID Stormwater Detention in Bronwsville, Texas	Texas A&M University-Kingsville	Jorge Hernandez (PM)	$ **38,885.00** $ **15,769.89**	**Project Status:** Activities for this quarter include the development of a website for the project; the modeling runs for the Tool were completed in 2017 and the DMT, will be finalized and rolled out through workshops in Spring 2018. For this reason, a project no-cost extension is recommended and will be requested through July 31, 2018

Updated March 31, 2018

Amount Approved	$	145,392.13
Amount Disbursed	$	122,277.02

Total Approved	$	286,133.15
Total Disbursed	$	223,357.22

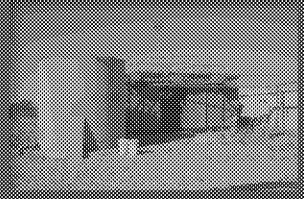
EPA Region 6



QUARTERLY REPORT

January – March 2018

US-MEXICO COOPERATIVE AGREEMENT
Implementation of Border 2020 Program
EPA-Region 6
X4-01F04901



Submitted by:
Javier Torres, Technical Assistance Manager

Banco de Desarrollo de América del Norte
North American Development Bank

QUARTERLY STATUS REPORT

US-MEXICO COOPERATIVE AGREEMENT
Implementation of Border 2020 Program
EPA-Region 6

GRANT: X4-01F04901

Grant Period: August 12, 2015 – October 31, 2019

REPORTING PERIOD:

January - March 2018

TO:

Monica Wilson
U.S. EPA, Region 6 (6PD)
Environmental Protection Specialist

FROM:

Javier Torres
North American Development Bank
Technical Assistance Manager

April 30, 2018, Cd. Juárez, Chihuahua, México

US Mexico Border 2020 Environmental Program - Quarterly Grant Status Report

Grant Title:	**Grant Agreement No.**
US – Mexico Border Cooperative Agreement Implementation of EPA Region-6 Border 2020 Program	X4-01F04901

Contact:

Primary Contact Name: **Javier Torres**
Organization: North American Development Bank
Telephone & Fax: 01-656-688-4600 Email: jtorres@nadb.org

Reporting Period (please check appropriate period):

- ☐ July 1 – September 30, 2017, Reporting period: report due on October 30, 2017
- ☐ October 1 – December 30, 2017, Reporting period: report due on January 30, 2018
- ☒ January 1 – March 31, 2018, Reporting period: report due on April 30, 2018
- ☐ April 1 – June 30, 2018, Reporting period: report due on July 30, 2018
- ☐ July 1 – September 30, 2018, Reporting period: report due on October 30, 2018
- ☐ October 1 – December 30, 2018, Reporting period: report due on January 30, 2019
- ☐ January 1 – March 31, 2019, Reporting period: report due on April 30, 2019
- ☐ April 1 – June 30, 2019, Reporting period: report due on July 30, 2019
- ☐ July 1 – August 30, 2019, Reporting period: report due on October 30, 2019

Check here if this is the final reporting period under your grant ☐

Please explain any current of expected growth of your project. If there is growth potential, have you consulted with other partners for further or future leveraging of funds, for continuing the project after funding from the Environmental Protection Agency ends?

No growth is expected for the projects under-development at this time.

Indicate the goal(s) and objective(s) of the Border 2020 Framework Document that this grant is addressing (http://www.epa.gov/border2020)

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GOAL 1. - *Reduce Air Pollution*

Objective 1. - By 2020, in accordance with the NAFTA, promote the reduction of the number of vehicles operating in the border region that do not comply with the respective vehicle emissions' standards and reduce vehicle emissions at ports-of-entry through anti-idling and other feasible reduction measures.

- **Project type 1:** Support the development of vehicle emissions programs in collaboration with governmental entities in order to improve compliance, enhance detection and correction of non-compliance vehicles. In addition, capacity building activities to reduce air pollution, in the border cities or at the Ports of Entry (POE), which may include the enforcement of environmental compliance at the time of used vehicle importation.

Objective 2.- By 2020, reduce pollutant emissions in order to approach attainment of respective national ambient air quality standards (i.e. National Ambient Air Quality Standards (NAAQS) or Norms as they are referred in Mexico) in the El Paso, Texas–Dona Ana County, New Mexico and at State of Chihuahua's border cities' air sheds.

- **Project type 1:** Establish joint collaboration strategies with governmental and/or non-governmental regulatory and planning agencies to identify and implement air pollutant reduction strategies to achieve better air quality in the Paso del Norte region (PdN). Projects should promote, expand, and be consistent with the strategies identified in PROAIREs (Mexico's air shed management plan) or U.S. Clean Air Act (USCAA) State Implementation Plans (SIPs.)

Objective 3. – By 2018, maintain effective Ambient Air Quality Monitoring Network (AAQMN) and provide real-time access to air quality data produced at New Mexico/Texas /Mexico air sheds.

- **Project Type 1:** Initiatives for this objective should aim to ensure the long term sustainability and data quality for the El Paso, Texas – Ciudad Juarez, Chihuahua air quality monitoring network.

Objective 5. - By 2020, reduce emissions and associated impacts through energy efficiency and/or alternative/renewable energy projects.

Possible projects could include: Border-wide training for border stakeholders in instituting and sustaining urban energy efficiency measures; green building training/workshops; forums in which states, localities, non-governmental organizations (NGOs) and industry can share program information and technologies; and energy efficiency co-benefits through reduction of criteria air contaminant emissions (stationary and vehicle sources)

GOAL 2: *Water – Improve Access to Clean and Safe Water*

- **Project type 1:** Efforts under this goal should be targeted to capacity building proposals that incorporate replication strategies, on proper maintenance and/or decommissioning of septic tanks, water conservation and pollution prevention in order to better understand, plan and maintain cleanup sources of drinking water on future groundwater supplies in New Mexico-Texas-Chihuahua border, specifically in Dona Ana County, New Mexico (particularly those communities along the corridor between El Paso, Texas and Las Cruces, New Mexico) and Luna County, New Mexico and El Paso County, Texas.

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Objective 2. - Help drinking water and wastewater service providers in the border region to implement sustainable infrastructure practices to reduce operating costs, improve energy efficiency, use water efficiently and adapt to climate change.

- **Project type 1:** Conduct energy and/or water audits on small water drinking systems that serve communities with less than a population of 5,000 users, to identify recommendations on how to improve efficiency and provide cost-savings measures for that system.
- **Project type 2:** Outreach and education to improve water quality within the Gulf Task Force Region.

Objective 3. - Work bi-nationally to identify and reduce surface water contamination in Trans - boundary water bodies and watersheds.

Objective 3a. - Develop a binational watershed protection plan in the Lower Rio Grande below Falcon International Dam. Initial activities could include partnership building, watershed characterization, definition of goals/identification of solutions, determination of waste load, load allocations for each country, and development of an implementation plan.

- **Project type 1:** Continue to support activities that meet objective 3a– The proposals should address any water quality sampling and collection, data analysis, modeling and surveys still required by the bi-national workgroup on this project. In addition, the work should also support any additional training or workshops needed, among others, by the Amistad and Falcon Task Force, as well by the Texas-Coahuila-Nuevo Leon –Tamaulipas, Regional Work Group.

GOAL 3: ***Promote Materials Management & Waste Management, & Clean Sites***

Objective 1. - By 2020, increase local and state-level institutional knowledge and experience in the area of sustainable material management practices.

- **Project type 1**: Proposals should be aimed to build capacity and establish strategies to improve infrastructure to minimize waste, maximize collections systems, support secondary materials markets, and reduce overall disposal in landfills and open dumps.

Objective 2. - Identify priority waste streams and by 2020 develop sustainable material management practices that strengthen their respective market value.

- **Project type 1:** Identify priority waste streams in the municipalities from Four States region and develop sustainable waste management programs for those municipalities to include strengthening the market value of the waste.
- **Project type 2:** Develop sustainable management practices to address used electronics, household hazardous waste, and tires in the Region which will include an educational component to promote recycling and solid waste practices.

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GOAL 4: ***Enhance Joint Preparedness for Environmental Response***

Objective 2. - By 2020, at least eight (8) of the sister city joint contingency plans will be supplemented with preparedness and prevention related activities such as certified training, risk analysis, and/or capacity building

- **Project type 1:** Conduct bi-national training to both U.S. and Mexican local emergency responders, on incidents involving Chemical, Biological, Radiological, Nuclear, or Explosive (CBRNE), and/or all hazards response skills enabling them to respond safely and effectively to these types of incidences.
- **Project type 2:** Conduct bi-national training to U.S. and Mexican local emergency responders, specifically on HAZMAT incidences only.
- **Project type 3:** Conduct bi-national: 1) tabletop drill with functional drill/exercise or 2) Full Scale Drill/Exercises to test local sister city plans. In order to meet the definition of bi-national, the drills/exercises should go beyond a simple notification to the local sister-city pair and demonstrate actual coordination of resources (expertise, equipment, personnel, etc.) between the sister-cities.
- **Project type 4:** Develop a hazardous materials risk analysis.

GOAL 5. – Enhance ***Compliance Assurance and Environmental Stewardship***

Objective 4. - By 2020, implement at least five (5) binational workshops targeted to environmental enforcement professionals, including ports-of-entry customs professionals (i.e. Department of Homeland Security-Customs and Border Protection), to promote the exchange of information and improve understanding of each Country's respective compliance and enforcement programs and tools, including field studies.

- **Project type 1:** Proposals should consider events for information exchange to improve understanding each Country's respective compliance and enforcement programs and tools including field inspections and case development practices.

Fundamental Strategies

Promoting Environmental Health

- **Project type 1:** Projects presented under this fundamental strategy should increase engagement and participation by the community and stakeholders to better manage the environment and public health issues along the border.

Building Capacity towards Climate Change Resiliency

- **Project type 1**: The Border 2020 climate change efforts should focus on reducing greenhouse gas (GHG) emissions and on actions to help border communities become more resilient to the effects of climate change.

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Summary of approved Work Plan activities performed during the reporting quarter.
Projects in progress during reporting period:

Project ID	Goal / Fund. Strategy	Objective	Project Name	Status
20288	1	1	Improvements to Environmental Services in Cattle Ranches via Livestock Grazing, Ascensión, Chihuahua.	Project Status: Project delayed, final due date May 2018. Tasks to be finished: groundwater monitoring, air monitoring, and soil carbon monitoring.
20290	2	3	The Rio Grande/Río Bravo Water Quality Initiative, Laredo, Texas.	Project Status: CILA requested a new facilitator to join the team; as a result, focus group meetings will likely occur in May. A project extension request was approved; completion date is June 2018.

Summary of the Work Plan performance outputs/outcomes achieved during the reporting quarter.

There are no performance outputs and outcome to report at the project level.

Are you on track with your timeline? **Yes** ☒ **No** ☐

A description of problems encountered during the reporting quarter that may affect the project schedule and a discussion of meeting the performance outputs/outcomes.

No problems have been reported.

Resolutions to Problems Previously Reported.

No problems have been reported.

Activities Anticipated/Planned for Next Three Months and Budgeted Costs.

- Coordinate with the sponsors the implementation of the active projects in accordance with the approved workplans.

- Nine projects were selected for implementation and funding under this grant. Activities for the next three months include coordinating with the sponsors the implementation of the projects in accordance with the approved workplans.

- Five projects were selected for Three State Region under this grant:
    1. Climate and Air Quality Network UACJ, Ciudad Juarez, CHIH.
    2. Reduction of Emissions Through Collective Transportation Infrastructure, Ciudad Juarez, CHIH / El Paso, TX.
    3. Safe Drinking Water for US/Mexico Border Colonias, El Paso, TX and Ciudad Juarez, CHIH.
    4. RESET 17: Innovation for the Future, El Paso, TX and Ciudad Juarez, CHIH.
    5. Green Infrastructure in the Paso del Norte Region: Seminar, Implementation Guide, Ciudad Juarez, CHIH.

- Three projects were selected for Four States Region under this grant:
    1. Strategy for Reduction and Prevention of Disasters in Ciudad Acuña, COAH.
    2. Agrochemicals and their Risks to Health and the Environment, Frontera de Tamaulipas
    3. Transforming Urban Compacted Land into Infiltration Field, Edinburg, TX

- One project was selected border wide under this grant:
    1. U.S.-Mexico Borderlands GIS Mapping, BORDER WIDE.

Discuss what key personnel did on the project.

Joaquin Marruffo provided overall project coordination as well as the communication with EPA. Briselda Duarte, and Jorge Hernandez manage the implementation of the projects in close coordination with EPA. Marielena Constandse prepared this report. Marielena Constandse, Abril Quiroz and Javier Torres provided RFP coordination and Grant Administration.

Discuss any changes in key personnel.

There are no changes to report.

Please name any significant partner organizations that you (as the lead organization) have for this project, who are taking responsibility for substantial portions of implementation.

N/A

BUDGET SUMMARY - Include information on the expenditure of grant agreement funds during the quarter and cumulatively by task in the provided budget tables. The tasks should correspond to the tasks outlined in your approved grant agreement work plan and the tables may be expanded accordingly. In addition, include in your narrative an estimate of funds needed to complete the work required in the grant agreement compared to the funds remaining in the grant agreement. ***Note: This section does not substitute for the annual financial status report (SF-269) required by the grant agreement.***

TABLE 1

Summary of Quarterly Expenses by Category (Report Period January 1 to March 31, 2018)

Work Plan Tasks	Approved Work Plan Budget	Previously Expended	Expenses this Quarter	Total Cumulative Expenses
Task A - RFP	$108,091	$94,589	$11,676	$106,265
Task B - Projects	$600,584	$152,352	$0	$152,352
Task C – Logistical Support	$23,143	$0	$0	$0
Indirect Cost	$73,182	$24,694	$1,168	$25,862
TOTAL Cumulative Expenses	**$805,000**	**$271,636**	**$12,843**	**$284,479**

TABLE 2

Budget Categories (programmatic costs only)	Task A- RFP	Task B- Projects	Task C- Logistical Support	TOTAL Quarterly Expenses
Personnel	$10,115.19	$0	$0	$10,115.19
Fringe Benefits	$1,560.35	$0	$0	$1,560.35
Travel	$0	$0	$0	$0
Contractual	$0	$0	$0	$0
Other (specify)	$0	$0	$0	$0
TOTAL Direct Charges	$11,675.54	$0	$0	$11,675.54
Indirect Costs	$1,167.56	$0	$0	$1,167.56
TOTAL Cumulative Expenses	$12,843.10	$0	$0	$12,843.10

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What is the geographic scope of your project implementation? *(Include whether it is within the Tri-State and/or Four-State Region of Border 2020, whether implementation takes place in both the U.S. and Mexico, and any more specific implementation.)*

The geographic scope of this award covers the Tri-State Region, which includes the states of New Mexico, Chihuahua and the West Texas region; and the Four-State Region which includes the rest of Texas, Coahuila, Tamaulipas and Nuevo Leon.

I certify that this report is true and correct, project is on schedule except as noted, and funds are being utilized as planned and agreed to in the award document.

Signature of Project Official:

Printed Name: Javier Torres

Title: Technical Assistance Manager **Date:** April 30, 2018

Within 30 days following the end of each quarter, please submit this report to your EPA Project Officer.

ATTACHMENT "A"

THREE STATE (TX-CHIH-NM) BORDER 2020 - 2015 PROJECTS

No.	Project ID	Project Name	Project Implementer / Contact Information	Project Location	BECC Contract Officer & Project Manager	TAA signed / Period Of Performance	Amount Approved / Amount Disbursed	STATUS
1	20288	**Improvements to Environmental Services in Cattle Ranches via Livestock Grazing, Ascensión, Chihuahua.**	Universidad Autónoma de Chihuahua – Facultad de Zootecnia y Ecología	Ascension, Chih.	Briselda Duarte (PM)	7/15/2016	$ 41,388.00	**Project Status:** Project delayed, final due date May 2018. Tasks to be finished: groundwater monitoring, air monitoring, and soil carbon monitoring.
						7/31/2017	$ 23,031.84	

Amount Approved	$	41,388.00
Amount Disbursed	$	23,031.84

FOUR STATE (TX-COAH-NL-TAMPS) BORDER 2020 - 2015 PROJECTS

No.	Project ID	Project Name	Project Implementer / Contact Information	Project Location	BECC Contract Officer & Project Manager	TAA signed / Period Of Performance	Amount Approved / Amount Disbursed	STATUS
1	20283	**Energy Efficiency Workshop for Public Lighting Systems, Reynosa, Tamaulipas.**	Secretaria de Desarrollo Urbano y Medio Ambiente	Reynosa, Tamps.	Briselda Duarte (PM)	2/22/2016 5/2/2016	$ 9,330.33 $ 9,330.33	Project Status: Concluded on August 2016. Technical training provided to 30 technical officials from the municipalities of Nuevo Laredo, Guerrero, Mier, Miguel Aleman, Camargo, Diaz Ordaz, Reynosa, Rio Bravo, Valle Hermoso and Matamoros, Tamaulipas. Thirty (30) energy efficiency guidelines including maintenance recommendations to reduce Kwh electrical consumption were revised.
2	20293	**Legislative Reform and Environmental Education, Nuevo Laredo, Tamaulipas.**	Universidad Autónoma de Tamaulipas en Nuevo Laredo	Nuevo Laredo, Tamps.	Briselda Duarte (PM)	5/26/2016 5/2/2017	$ 11,000.00 $ 9,078.04	Project Status: Project Status: Work Plan activities were completed. Nuevo Laredo upgraded its municipal code. More than 2000 students and 20 inspectors informed.
3	20295	**Comprehensive E-Waste Management in Piedras Negras, Coahuila and Eagle Pass, Texas.**	Grupo Ecológico Green Tec-Osos del Instituto Tecnológico de Piedras Negras	Piedras Negras, Coahuila and Eagle Pass, Texas	Jorge Hernandez (PM)	1/21/2016 7/18/2017	$ 35,054.00 $ 25,270.21	Project Status: Project concluded on August 2017. Some of the project significant contributions are: 47 tons of e-waste collected in Piedras Negras and 15 tons in Eagle Pass. 40,000 inhabitants were visited in 22 colonias in Piedras Negras. A workshop was conducted at ITPN for 55 Green TEC associates. A health and environment conference was held to promote the e-waste recycling. The main promotion of the project was a walk performed in March 2016 with more than 1200 participants. A permanent collection center was established in the public works department at Piedras Negras.
4	20290	**The Rio Grande/Rio Bravo Water Quality Initiative, Laredo Texas**	The University of Texas at Austin	Laredo, TX.	Briselda Duarte (PM)	2/22/2016 8/31/2017	**$58,575.00** **$ 30,260.16**	**Project Status:** CILA requested a new facilitator to join the team; as a result, focus group meetings will likely occur in May. A project extension request was approved; completion date is June 2018.

5	20291	**Fat, Oil and Grease (FOG) Public Outreach Campaign, Brownsville, Texas**	Brownsville Public Utilities Board	Brownsville, TX	Briselda Duarte (PM)	2/22/2016	**$21,471.05**	**Project Status:** Project concluded on May 2017. Some of the project significant contributions are: • 12.58% reduction in service calls received by BPUB related to fats, oil and grease issues • 84 public outreach and trainings • 1713 participating residents and business owners.
						2/2/2017	$ 21,471.05	
6	20293	**Awareness and Discharge Control Rules**	Junta de Aguas y Drenaje de la Ciudad de Matamoros	Matamoros, Tamps	Briselda Duarte (PM)	TBD	$25,000.00	**Project Status:** Cancelled due to an unacceptable legal framework to implement the customer municipal code. It was suggested to reapply for funding in the next RFP, once the municipal program is legally approved.
						TBD		
7	20294	**Let's Clean it Up and Green it Up, Pharr, Texas**	City of Pharr, Recycling Center	Pharr, TX	Jorge Hernandez (PM)	2/22/2016	$ 33,910.47	**Project Status:** Project concluded on May 2017. Some of the project significant contributions are: The city of Pharr participated on over 100 occasions where environmental education was discussed. More than 20 meetings, 40 events and about 50 presentations were given to students and/or residents on environmental issues. During the 14-month period of the project implementation, over 20,000 used tires were collected. The project included the 96-gallon recycling containers for advertising purposes.
						4/2/2017	$ 33,910.47	

Updated March 31, 2018

Amount Approved	$	195,340.85
Amount Disbursed	$	129,320.26

Total Approved	$	236,728.85
Total Disbursed	$	152,352.10

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THREE STATE (TX-CHIH-NM) BORDER 2020 - 2017 PROJECTS

No.	Project ID	Goal / Fund. Strategy	Project Name	Project Implementer / Contact Information	Project Location	BECC Contract Officer & Project Manager	TAA signed / Period Of Performance	Amount Approved / Amount Disbursed	STATUS
1	20325	1	**Climate and air quality network UACJ, Ciudad Juarez, CHIH.**	Universidad Autónoma de Ciudad Juárez Víctor Hernández Jacobo vihernan@uacj.mx	Ciudad Juarez, CHIH.	JH/AQ		$ 29,400.00	**Project Status:**
2	20326	1	**Reduction of Emissions Through Collective Transportation Infrastructure, Ciudad Juarez, CHIH / El Paso TX.**	IMIP Juárez Álvaro Roberto Manuel Mora Palacios/ Alberto Nicolás López Duarte nlopez@imip.org.mx imip@imip.org.mx	Ciudad Juarez, CHIH / El Paso TX	JH/AQ		$ 61,220.00	**Project Status:**
3	20327	2	**Safe drinking water for US/Mexico border Colonias, El Paso TX and Ciudad Juarez CHIH.**	UTEP Ivonne Santiago isantiago@utep.edu	El Paso TX and Ciudad Juarez CHIH.	BD/AQ		$ 79,636.00	**Project Status:**
4	20314	2	**RESET 17: Innovation for the Future, El Paso, TX and Ciudad Juarez, CHIH.**	Fundación AXCEL A.C. Nancy Estrada nancy@funax.org	El Paso, TX and Ciudad Juarez, CHIH.	BD/AQ		$ 29,444.44	**Project Status:**
5	20321	GI	**Green infrastructure in the Paso del Norte Region: Seminar, Implementation Guide, Ciudad Juarez, CHIH.**	Secretaría Técnica del Municipio de Juárez Alejandro César Loaeza Canizales Alejandro.loaeza@juarez.gob.mx aleloaeza2011@hotmail.com	Ciudad Juarez, CHIH.	JM/AQ		$ 31,000.00	**Project Status:**

Amount Approved	$	230,700.44
Amount Disbursed	$	-

FOUR STATE (TX-COAH-NL-TAMPS) BORDER 2020 - 2017 PROJECTS

No.	Project ID	Goal / Fund. Strategy	Project Name	Project Implementer / Contact Information	Project Location	BECC Contract Officer & Project Manager	TAA signed / Period Of Performance	Amount Approved / Amount Disbursed	STATUS
1	20330	2	**Strategy for Reduction and Prevention of Disasters in Ciudad Acuña, COAH.**	Universidad Carolina Cecilia Pelletier Bravo pelletier.cecilia@gmail.com y/o esteban.fish@gmail.com	Ciudad Acuña, COAH.	BD/AQ		**$ 26,035.00**	**Project Status:**
2	20331	FS	**Agrochemicals and Their Risks to Health and the Environment, Tamaulipas Border area**	Secretaría de Desarrollo Urbano y Medio Ambiente Celestino Alanís Leal celestino.alanis@tamaulipas.gob.mx	Tamaulipas Border	SV/AQ		**$21,946.00**	**Project Status:**
3	20329	GI	**Transforming Urban Compacted Land into Infiltration Field, Edinburg, TX**	The University of Texas Rio Grande Valley Andrew Lawler sponpro@utrgv.edu	Edinburg, TX	SV/AQ		**$58,925.00**	**Project Status:**

Amount Approved	$	106,906.00
Amount Disbursed	$	-

BORDER WIDE BORDER 2020 - 2017 PROJECTS

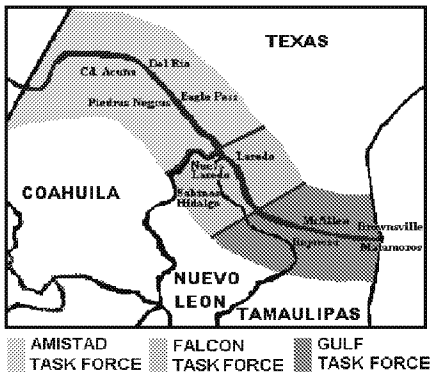
No.	Project ID	Goal / Fund. Strategy	Project Name	Project Implementer / Contact Information	Project Location	BECC Contract Officer & Project Manager	TAA signed / Period Of Performance	Amount Approved / Amount Disbursed	STATUS
1		3	**U.S.-Mexico Borderlands GIS Mapping, BORDER WIDE**	U.S.-Mexico Border Philanthropy Partnership Andy Carey Andy@borderpartnership.org	Border Wide	JM/AQ		$ 25,000.00	**Project Status:**

Updated March 31, 2018

Amount Approved	$	25,000.00
Amount Disbursed	$	-

Total Approved	$	362,606.44
Total Disbursed	$	-

BORDER 2020
2017-2018 Action Plan
TX-COAH-TAMP-NL Regional Workgroup



The Four-State Regional Workgroup is the most complex of the four regional workgroups because of its geographical extension and the number of municipalities. The region includes parts of three states and at least 29 municipalities on the Mexican side and 168 cities and towns on the U.S. side. Recognizing this, the workgroup divided itself into three geographically-based Task Forces—Amistad, Falcon, and Gulf--each of which established subject-specific committees related to its priority concerns.

Border 2020 has five goals and the regional work groups propose projects to implement these goals. These projects are tracked in two-year revolving work plans. The 2017-2018 version is the second of its kind. Several projects have been carried over from the 2016-2016 Action Plan. Due to consensus by the Four State Workgroup, a sixth goal for health and education projects was included. Projects are organized by Border 2020 goals and objectives.

In October of 2016, the three task forces held meetings to discuss initial priorities for the 2017-2018 Action Plan as well as several conference calls with leaders to develop a consensus of priorities at the local and regional workgroup levels.

Regional Priorities

Goal 1: Reduce Air Pollution

a) Implement atmospheric monitoring programs under the same criteria of analysis and promote the dissemination of results in the four states
b) Set actions in accordance with the public policies of micro and macro-economic analysis of climate change state programs
c) Promote the implementation of the PROAIRE air quality program and its strategies in the border communities

Goal 2: Improve Access to Clean and Safe Water

a) Continue to improve energy efficiency for water operators in border municipalities
b) Continue the water conservation programs and encourage the reuse of treated water for irrigation
c) Strengthen wastewater sanitation programs and actions
d) Disseminate green infrastructure actions for sustainable development of border communities
e) Promote strategies for adequate wastewater management in Tamaulipas border municipalities

Goal 3: Promote Materials Management and Waste Management, and Clean Sites

a) Increase institutional capacity at the local and state levels for sustainable practices in solid waste management
b) Develop collection and comprehensive waste management programs for used electronics for municipalities in the border area

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c) Develop collection and comprehensive waste management programs for proper disposal of household hazardous waste for municipalities in the border area
d) Continue efforts to implement comprehensive scrap tire management programs
e) Strengthen operations of the sanitary landfills in border municipalities, with plans to capture and take advantage of the biogas and convert to energy
f) Develop comprehensive actions to eliminate unauthorized open-air dump sites
g) Encourage municipal programs for holistic waste management
h) Promote the integral waste management in the Mexican municipalities

Goal 4: Enhance Joint Preparedness for Environmental Response

a) Continue the binational relationship in emergency response for training, equipment and drills
b) Promote the creation of risk atlases for waste management and hazardous materials in border communities
c) Carry out the required border studies for the protection of local communities
d) Generate a diagnosis of equipment, training, and ability to respond to an emergency in border municipalities

Goal 5: Enhance Compliance Assurance and Environmental Stewardship

a) Implement binational workshops targeted to environmental enforcement professionals, including ports-of-entry customs professionals, to promote the exchange of information and improve understanding of each country's respective compliance and enforcement programs
b) Promote the updating, sharing and application of municipal environmental regulations in border communities
c) Carry out the land management plans in the states and municipalities along the border region
d) Establish regulatory and operational mechanisms for the control of wild hogs

Promote Cross-Cutting Efforts Related to Environmental Health & Environmental Education

a) Develop a study that identifies the five top main risks on environmental health in border communities

Fundamental Strategies

a) Promote actions and environmental education programs on waste, recycling, water and fauna in the Kickapoo reservation
b) Implement a study related to the handling and disposal of used accumulators and their impact on public health
c) Establish a binational bilingual program for education purposes on environmental and public health topics according to regional priorities.

Amistad Task Force

Goal 1: Reduce Air Pollution

1. Establish and strengthen vehicle emissions programs in Acuña, Piedras Negras and Nava
2. Promote initiatives to develop energy efficiency and reforestation programs in the industrial sector in Acuña and Piedras Negras
3. Promote the implementation of strategies by the SEMARNAT PRO AIRE air quality program in Acuña, Piedras Negras and Nava

Goal 2: Improve Access to Clean and Safe Water

1. Conduct water quality monitoring of tributaries along the Rio Grande in Acuña and Piedras Negras
2. Develop Fats, Oils and Grease (FOG) workshops in Acuña and Piedras Negras, replicating the model in Laredo

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3. Promote and develop green infrastructure projects and water conservation programs in Acuña and Piedras Negras

Goal 3: Promote Materials Management, Waste Management and Clean Sites

1. Promote the implementation of integrated solid, household hazardous waste and used electronic programs in Acuña and Piedras Negras
2. Strengthen scrap tire management programs and promote scrap tire reuse for projects in Acuña and Piedras Negras
3. Promote initiatives to develop plastic bag reduction programs in Acuña and Piedras Negras

Goal 4: Enhance Joint Preparedness for Environmental Response

1. Update the directory of emergency response personnel in the Acuña-Del Rio and Eagle Pass-Piedras Negras and develop a knowledge exchange workshop in Eagle Pass
2. Coordinate two emergency response tabletop exercises and joint response drills between Eagle Pass and Piedras Negras and Del Rio and Acuña

Promote Cross-Cutting Efforts Related to Environmental Health & Environmental Education

1. Develop awareness programs on vector borne illnesses such as Zika and Dengue virus in Acuña and Piedras Negras
2. Launch a binational environmental education program on recycling, energy efficiency and water conservation in Eagle Pass and Piedras Negras using social and broadcast media

Falcon Task Force

Goal 1: Reduce Air Pollution

1. Develop emissions inventory in Tamaulipas border communities and strengthen air quality monitor programs
2. Establish an automatic air quality monitoring station in Nuevo Laredo
3. Incentivize members of industry associations and the Nuevo Laredo chamber of commerce to implement energy efficiency projects
4. Develop climate change programs in Nuevo Laredo and Anahuac
5. Develop air quality mitigation measures by reducing wait times and idling of vehicles, at the Laredo and Nuevo Laredo international bridges
6. Establish a vehicle emissions program for imported vehicles crossing into Nuevo Laredo

Goal 2: Improve Access to Clean and Safe Water

1. Promote and train households on best practices related to the management of Fats, Oil and Grease (FOG) waste in Laredo
2. Conduct an assessment on water and wastewater needs in rural areas in Webb County and provide training to water and wastewater operators in these areas
3. Establish green infrastructure, water conservation and wastewater reuse programs to irrigate green areas in Nuevo Laredo and Laredo

Goal 3: Promote Materials Management, Waste Management and Clean Sites

1. Strengthen compliance and enforcement programs to eliminate illegal dumpsites in Nuevo Laredo
2. Develop an environmental education program to promote solid waste management and recycling tools in Laredo, Anáhuac and Nuevo Laredo
3. Promote and strengthen alternative markets for scrap tire disposal and reuse in Nuevo Laredo, Anáhuac and Laredo
4. Coordinate simultaneous household hazardous waste programs every two years in Laredo and Nuevo Laredo, to increase the level of participation by residents
5. Conduct a study to develop a facility to dispose construction waste in Nuevo Laredo

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6. Promote the integrated solid waste management program and establish a plastic bag reduction program in Nuevo Laredo

Goal 4: Enhance Joint Preparedness for Environmental Response

1. Provide training to Nuevo Laredo emergency responders on hazardous materials and coordinate a binational tabletop and joint contingency exercise between Laredo and Nuevo Laredo

Goal 5: Enhance Compliance Assurance and Environmental Stewardship

1. Provide training to Nuevo Laredo officials on environmental compliance and enforcement tools and work with Tamaulipas officials to update local environmental ordinances

Promote Cross-Cutting Efforts Related to Environmental Health & Environmental Education

1. Develop a binational environmental awareness program on energy efficiency, water conservation, recycling and prevention of vector borne illnesses in Laredo and Nuevo Laredo

Gulf Task Force

Goal 1: Reduce Air Pollution

1. Develop the Climate Change Programs in the Mexican municipalities of Valle Hermoso, Rio Bravo, Reynosa and Matamoros
2. Strengthen the programs of atmospheric monitoring and development of an emission inventory and make operable three PM 10 monitors to collect emission data and compare air quality in nearby areas in Reynosa

Goal 2: Improve Access to Clean and Safe Water

1. Conduct a study regarding the presence of chromium in the management and management of drinking water in the border area
2. Carry out a study and monitoring in the lower Rio Bravo / Rio Grande regarding the salinity of the water and disseminate the results
3. Educate residents and commercial users on industrial, oil and grease wastewater management and local pre-treatment and storm water ordinances
4. Establish actions of green infrastructure and water conservation through educational programs
5. Establish permanent training programs for operators of wastewater treatment plants

Goal 3: Promote Materials Management, Waste Management and Clean Sites

1. Generate comprehensive actions to identify and eliminate illegal trash dump sites
2. Test new equipment to collect waste from government buildings, hospital, schools and characterize and measure waste to properly develop a municipal waste management plan in Reynosa
3. Promote mechanisms for the management of waste tires, looking for alternatives for their recovery

Goal 4: Enhance Joint Preparedness for Environmental Response

1. Conduct 8 hr HAZMAT (29 CFR 1910.120) refresher training for Matamoros and Reynosa firefighters and 40 hour HAZMAT training for Rio Bravo and Valle Hermoso firefighters, tabletop and full mock exercise using skype and drone technology
2. Develop a risk analysis in the Harlingen and Los Indios point of entry
3. Organize a knowledge exchange workshop to assess equipment inventory and training needs, improve communication and emergency response capacity of Hidalgo and Cameron counties and Mexican border municipalities in the Gulf area

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4. Establish a real-time warning system on the water quality conditions of the lower Río Grande / Río Grande with the objective of generating preventive actions in case of a contingency

Promote Cross-Cutting Efforts Related to Environmental Health & Environmental Education

1. Implement a bilingual environmental education program in the area of waste recovery
2. Promote community programs to strengthen public health actions in border municipalities and rural communities, particularly in infants and their risks in their homes

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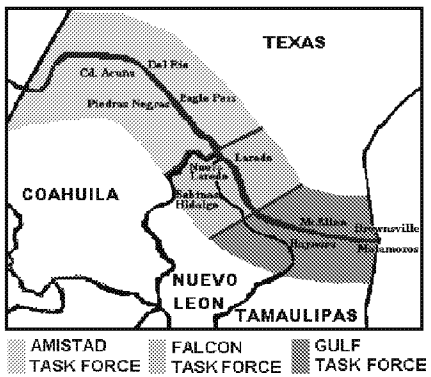
Border 2020

2017-2018 Action Plan Grid
Four-State Regional Workgroup

Legend:

- Activity covers at least two task force areas
- Gulf Task Force
- Falcon Task Force
- Amistad Task Force



GOAL # 1: Reduce Air Pollution

Project N°	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of Funding	Contact(s)	Objective 2017-2018	Progress Towards Target
1.5.01	**Coahuila Climate Action Plan** Initiate Phase 2 of the State Climate Action Plan (PEAC, in Spanish) for Coahuila: quantification of mitigation policies selected in Phase 1.	Coahuila State Government and BECC	$275,000	BECC	Tomás Balarezo, BECC, tbalarezo@cocef.org	Organize meetings with the technical work groups, the advisory group, and the Climate Change Committee.	The project is currently in the Microeconomic and Public Policy Phase for Coahuila. Meetings have been held with the Technical Working Groups, the Advisory Group, and the Climate Change Committee. The Action Plan is ready and is in the process of being published

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							in the Official Journal of the State.
1.5.02	**Air Quality Network in Coahuila** Establish an air quality monitoring network in the areas of Piedras Negras-Nava, Acuña, Sabinas, and Saltillo, Coahuila.	SEMA (Coahuila), Municipalities of Piedras Negras, Acuña, Nava, Sabinas, Saltillo	12 Million Pesos	SEMARNAT	Santiago Barrios, SEMA/Coahuila, santiago.barrios@sema.gob.mx	Initiate the project. It is currently in the review phase prior to bidding.	The project has been authorized and is in the review phase prior to bidding. Three air monitoring stations were installed and have been operating for a year.
1.5.03	**Ambient Air Monitoring System** Strengthen Tamaulipas' ambient air monitoring system.	SEDUMA Tamaulipas		SEDUMA, Border Municipalities	Celestino Alanís, SEDUMA	Install and operate 4 monitors in Matamoros by January 2017.	Currently 8 PM10 units are currently operating. Four in Nuevo Laredo, two in Ciudad Victoria, one in Tampico and one in Ciudad Madero. Budget Management
1.5.04	**Green Infrastructure Workshop**	SEMA, COCEF		SEMA, COCEF	Tomás Balarezo, COCEF, tbalarezo@cocef.org	Train municipalities in border states on Green infrastructure.	

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1.5.05	**ProAire- Tamaulipas**	SEDUMA Tamaulipas, SEMARNAT, Municipalities of Nuevo Laredo, Reynosa, and Matamoros	Tamaulipas State Budget	SEDUMA, SEMARNAT	Ing. Celestino Alanis, SEDUMA Celestino.alanis@tamaulipas.gob.mx	Establish the core committee "ProAire - Tamaulipas" in the first half of 2017 Work in the diagnosis of measures and actions to improve air quality in Tamaulipas during the year 2017 Work in the agreement for the implementation of the "ProAire - Tamaulipas" in the course of 2018	Core Committee "ProAire - Tamaulipas" established. Diagnosis of measures and actions to improve Air Quality in Tamaulipas in process.
15.06	**Mobile Monitoring Stations for the State Monitoring System**	SEDUMA Tamaulipas, SEMARNAT	SEDUMA MXP $1.9 M SEMARNAT MXP $12.6 M	PEF, SEDUMA	Ing. Celestino Alanis, SEDUMA Celestino.alanis@tamaulipas.gob.mx	Establish an Automatic Network of Atmospheric Monitoring that allows to have updated information of the contaminants in the places where the mobile stations are located.	Budget Management
15.07	**Stationary Stations for the State System of Atmospheric Monitoring of Tamaulipas (SEMAT).**	SEDUMA Tamaulipas, SEMARNAT, Municipalities of Nuevo Laredo, Reynosa, and Matamoros	SEDUMA MXP $2.4M SEMARNAT MXP $24.6M	PEF, SEDUMA	Ing. Celestino Alanis, SEDUMA Celestino.alanis@tamaulipas.gob.mx	Establish an Automatic Network of Atmospheric Monitoring with the measurement of parameters of: - NOx (Nitrogen Oxides) - O3 (Ozone)	Budget Management

						- CO (Carbon Monoxide) - SO2 (Sulfur Dioxide) - PM2.5 and PM10 (Particulate Material) New for 2017	

Goal # 2: Improve Access to Clean and Safe Water

Project N°	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Contact(s)	Objective 2017-2018	Progress Towards Target
Objective 2: Help drinking water and wastewater service providers in the border region to implement sustainable infrastructure practices to reduce operating costs, improve energy efficiency, use water efficiently and adapt to climate change.							
2.2.01	**Upgrade Nuevo Laredo Sewer Line Infrastructure** Install new or upgrade selected existing sewer lines and connect them to Nuevo Laredo's wastewater treatment plant to prevent contaminated discharges through the storm water system to the Rio Grande.	COMAPA and Municipio de Nuevo Laredo	$5 Million	NADB	Delfino González C.P., COMAPA, dgcdelfino@comapanuevolaredo.gob.mx	Complete the project.	The BECC certified the project in September 2012. Of the five sewer lines, one was completed during the first half of 2014. The remaining four lines are under repair and discharge about 1.6 MGD to the storm water system. Other discharge points were identified by COMAPA in the arroyos La Joya and Alazanas. Staff repaired a lift station that was not working properly, eliminating more than 2.7 MGD of untreated sewer discharges in Arroyo Las Alazanas.

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							There are some other sewer collectors that are connected to the storm water system, discharging about 3.1 million gallons per day (MGD). One of the collectors is discharging about 1.3 MGD. COMAPA obtained financial support through a program with CONAGUA (Mexico's National Water Commission) to eliminate about 50% of this discharge. COMAPA is seeking funds to repair and connect the rest of the collectors to the wastewater system, with the goal of reducing discharges from 3.1 MGD to 2 MGD to the Rio Grande by December and eliminate all untreated discharges in 2018. The project is still in progress.
2.2.02	**Ideal Biological Filtration Material South Texas Storm Water Management** Identify the best locally available material for use in bio-swale in the Lower Rio Grande Valley and South Texas.	University of Texas RGV	$26,022	Border 2020	Jungseok Ho, Ph.D., P.E. Assistant Professor (956) 665-3104 jungseok.ho@UTRGV.edu	The proto-type bioswale will be tested in a newly constructed parking lot on the Edinburg campus of the University of Texas RGV.	This project has been completed. The pumice stone resulted with the best hydrological performance material, this would be the ideal material to use, however because local availability and cost analysis is not favorable. It's recommended to use the recycled ground glass of medium porosity which also demonstrated a good hydrologic performance in the biological filtration process.
2.2.03	**Decision Making Tool for Determining Storm Water Detention**	Texas A&M University-Kingsville	$38,885	Border 2020	Javier Guerrero, E.I.T., M.S. Texas A&M University-Kingsville	Conduct educational workshops, prepare a quality	A modeling QAP targeting the WinSLAMM surface load allocation model was developed and submitted for EPA approval.

	Promote research and educational topics emphasizing green infrastructure strategies.				(956) 929-7189 Javier.Guerrero@tamuk.edu	assurance project plan. Develop a DMTG model, calibration and implementation.	The WinSLAMM modeling output will be used to generate the GI/LID runoff and pollutant reduction data to be used in the Decision Management Tool (DMT). Percentage of total project complete: 20%
Objective 3: Work bi-nationally to identify and reduce surface water contamination in transboundary waterbodies or watersheds.							
2.3.01	**Lower Rio Grande Binational Water Quality Initiative (LRGWQI)** Implement a binational Lower Rio Grande Water Quality Initiative (from Falcon to the Gulf of Mexico) that characterizes the state of the river, develops a strategic plan to improve environmental conditions, and proposes a monitoring plan to document progress.	TCEQ, EPA, IBWC, CILA, CONAGUA, and federal, state, and local government agencies		TCEQ, EPA, IBWC, and federal, state, and local government agencies	Kelly Holligan ,TCEQ, 512-239-2369, Kelly.holligan@tceq.texas.gov	Complete a watershed characterization report associated with the project.	The LRGWQI's Binational Technical Work Group (BTWG) completed an analysis of historical data (US and Mexican), including the synoptic data collected during the initiative (2014-2016). The results of the analysis is included in a watershed characterization report, which was completed in February of this year (2017). The BTWG also developed 10 different steady-state models (using the LA-QUAL software) for use in the project. All ten models have been calibrated for hydrology and hydraulics; five of the models have been calibrated for water quality. The TCEQ has developed a Geospatial Decision Support System (DSS) capable of running water quality scenarios. The DSS uses the aforementioned LA-QUAL models to simulate water quality under user-specified planning scenarios (i.e.,

							population increases, changes in wastewater treatment levels, etc.). The DSS will be used to develop the Binational Water Quality Based Plan for the Lower Rio Grande/Río Bravo. A preliminary draft of the plan is expected to be completed by August 2018.
2.3.02	**Fat, Oil and Grease (FOG) Public Outreach Campaign** Provide outreach and education to improve water quality through education with commercial users and residents.	Brownsville Public Utilities Board	$25,000	Border 2020	Alicia Gracia, Brownsville Public Utilities Board agracia@brownsville-pub.com (956) 983-6483	Educate at least 250,000 individuals, host four workshops and provide one-on-one assistance to at least 50% of the businesses in need of further education.	A total of 84 "Cease the Grease" training sessions, were performed. A total of 1713 people participated in these trainings. The FOG trouble call history showed a reduction of 12.58% compared to same period in 2015. Bilingual Public service announcements, flyers, social media, TV interviews and digital billboards were created and used to promote the FOG campaign. https://tequilagroup.sharefile.com/share?#/view/s48ce8c0c5304e8d8
2.3.03	**Supporting Local Stakeholder Participation in the Lower Rio Grande/Rio Bravo Water Quality Initiative** Foster a sense of ownership among local stakeholders of a binational plan to restore and protect the water quality in the Lower Rio Grande and establish a sustainable	University of Texas at Austin	$58,575	Border 2020	Dr. David Eaton eaton@mail.utexas.edu	Organize five workshops on local water quality issues. Develop a Memorandum of Understanding (MOU) between stakeholders and binational partnerships.	All focus groups stakeholders along the US-MX border were identified. The five US stakeholder focus groups meetings were completed. Still working with Mexican Federal Agencies (CILA, CONAGUA and IMTA to schedule the focus groups meetings in the Mexican side.

	forum for local information exchange and cooperation among of the binational community of water users in the Lower Rio Grande.						

Goal # 3: Promote Materials Management, Waste Management, and Clean Sites

Project N°	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact(s)	Objective 2017-2018	Progress Towards Target
Objective 1: By 2020, increase local and state-level knowledge and experience in the area of sustainable material management practices.							
3.1.01	**Environmental Ordinance for the Disposal of Construction Waste**	Municipality of Nuevo Laredo, Tamaulipas	Funds paid by residents for the management and processing of waste.	Municipality of Nuevo Laredo, Tamaulipas	Ing. Rubén Ramos Secretary of Public Works, Urban Development & the Environment,	Generate an alternative for the community for the disposal of construction waste and mitigate illegal dumping.	This project has operated continuously and generated an important effect on the community. It charges 123 pesos per cubic meter when the waste is no greater than two cubic meters. If it is three to ten cubic meters, the service costs 88 pesos. If it exceeds 10 cubic meters, 100 pesos are charged per cubic meter. The municipio has a facility in an area of 12 acres where construction waste is stored. It currently is near 80% of its storage capacity. The municipio is looking for another venue to use as a storage facility. Since construction waste is considered special waste and is handled by the state, Nuevo Laredo will be signing a memorandum of cooperation

							with the Secretariat of Urban Development and Environment in Tamaulipas (SEDUMA) to train municipal staff on enforcement procedures related to special waste. The project is still in progress.
3.1.02	**Construction and Equipment of the First Phase of the Type A Landfill in Río Bravo, Tamaulipas**	SEDUMA, Municipio de Río Bravo, Tamaulipas	19.359 Millones Pesos	SEMARNAT PEF 2015	Dra. Silvia Casas González, SEDUMA, silvia.casas757@gmail.com	Process documentation for the adjudication of resources.	Budget Management for 2018
3.1.03	**Construction of and Equipment for Type A Landfill in the Coal Deposit Region**	SEMA, SEMARNAT, Municipalities of Múzquiz and Sabinas	25 Millones Pesos	SEMARNAT PEF 2015	Oscar Flores, SEMA, Oscar.flores@sema.gob.mx	Construction and operation.	Conduct soil studies. Under analysis prior to request for bids. The project is still in progress. The bidding process for the project ended and the technical studies are ready. The construction of the landfill started in September 2017.
3.1.04	**Construction of and Equipment for a Regional Landfill in the Municipalities of Juárez and Progreso, Coahuila**	SEMA, Municipality of Juárez and Progreso	8 Millones Pesos	PEMEX Hydrocarbon Fund	Oscar Flores, SEMA, Oscar.flores@sema.gob.mx	Construction and operation.	Under analysis prior to request for bids. The project is still in progress. The construction of the landfill was completed. Municipalities will receive the equipment in September 2017.
3.1.05	**Construction of and Equipment for Two Urban Solid Waste Transfer**	SEMA, Municipio de Múzquiz	8 Millones Pesos	PEMEX Hydrocarbon Fund	Oscar Flores,		Under analysis prior to request for bids. The project is still in

	Stations in the Municipality of Múzquiz, Coahuila				SEMA, Oscar.flores@sema.gob.mx	Construction and operation.	progress. The transfer stations are currently in the bidding process for funds, and will be installed after the construction of a landfill in the coal region
3.1.06	**RECOLECTRÓN Program** Collection program for used electronics in the municipalities. Inform and educate the population of the benefits of reusing used electronic products.	SEMA, Municipalities of Acuña, Allende, Nava and Sabinas	2 Million Pesos $16,777	SEMA Border 2020	Griselda Salas Alemán, SEMA, griselda.salas@sema.gob.mx Oscar Flores, SEMA, 01152844 698-10-91 ext.7268 oscar.flores@sema.gob.mx	Continue collecting tons of waste. Conduct an assessment as well as training of municipal ecology staff on used electronics and implement actions for adequate disposal.	To date 44.89 tons has been collected. More than 442 tons of used electronics was collected, surpassing the goal of 259 tons that was set by the current six-year administration. The project is in progress.
3.1.07	**Responsible Disposal of Tires** Operation of a scrap tire disposal center. Using three slices, reduce the volume and risk of standing water, a breeding ground for mosquitoes (vectors for dengue fever).	Municipality of Acuña, Coahuila	$12,000	Municipio de Acuña, Coahuila	Biól. Carlos Alejandro Flores Diego, Director of Ecology, floresdiegocarlos@yahoo.com.mx	Continue collecting tons of waste.	A regulatory framework regulates management and a program is underway for storage, but infrastructure is required for final disposal. The municipio created a certification program for auto body shops and generators that manage scrap tires, which requires these establishments to cut the tires in three pieces to properly dispose them, and maintain their operating license. To date more than 58,000 tires were collected, mitigating about 95% of vectors. The project is in progress.

3.1.08	**Disposal of Used Electronic and Hazardous Waste** Create a storage center for the special management of waste, in which small generators can adequately dispose of items according to norms.	Municipality of Acuña, Coahuila	$12,500	Municipality of Acuña, Coahuila	Biól. Carlos Alejandro Flores Diego, Director de Ecología, floresdiegocarlos@yahoo.com.mx	Continue collecting and disposing of electronic and hazardous waste.	The regulatory framework was approved by the city council as well as changes to municipal environmental regulations regarding an approval for an operating license for six months and certification of training workshops. To date 29 tons of waste have been collected. The program is carried out in coordination with SEMA. The municipio made an agreement with Promotora Ambiental (PASA)—a waste services provider-- to pick up hazardous and electronic waste from generators in the community. PASA ships the waste to a storage facility in Piedras Negras and to a refinery for final disposal.
3.1.09	**Let's Clean it Up and Green it Up** Reduce littering and illegal dumping in all areas of the city, and improve the overall aesthetics of the city and offer viable solid waste disposal options for residents.	City of Pharr	$36,390	Border 2020	Grace Gonzalez, Pharr Public Works Department, grace.gonzales@pharr-tx.gov	Offer more solid waste, recyclables and tire disposal events. Install convenient recycling drop off areas. Improve existing residential tire tagging system.	The project conducted various stormwater management and recycling workshops that reached students and residents, Social media and public service announcements were used to promote recycling and storm water activities. City of Pharr made a significant impact in the community by helping to reduce illegal dumping and encourage residents to properly dispose waste.

3.1.10	**Electronic Waste Recycling** Develop an educational campaign aimed at reducing used electronics by creating an integrated electronic waste recycling program and promoting sustainable practices.	Grupo Ecológico Green Tec-Osos del Instituto Tecnológico de Piedras Negras	$36,054	Border 2020	Ing. Víctor Ibarra, Instituto Tecnológico de Piedras Negras, ing_victor_m@prodigy.net.mx	Conduct workshops and campaigns at schools and public events on used electronics.	Public events on used electronics were conducted in Piedras Negras, resulting in the collection of more than 15 tons in the collection centers that were installed by the municipio. The Technological Institute of Piedras Negras organized workshops and awareness campaigns on used electronics in more than 16 schools in Piedras Negras and Eagle Pass, training more than 103,500 residents on the proper management of used electronics, which resulted in the collection of more than 61 tons. The project ended in June.
3.1.11	**United for Reynosa** **Scrap tires program in Reynosa**	SEDUMA, Municipality of Reynosa, Tamaulipas.	Tamaulipas State Budget	SEDUMA	Ing. Celestino Alanís, SEDUMA Celestino.alanis@tamaulipas.gob.mx	Reduction of scrap tires in the municipality of Reynosa to be used as filling material in asphalt, gardens, public spaces or to sell to the public of the shredded material .	Tire crusher installed in the Municipality of Reynosa. Destruction of 4,000 scrap tires giving an equivalent of 36 tons of crushed rims.
3.1.12	**United by Reynosa,** **Sports Venues Reforestation Program**	SEDUMA, Municipality of Reynosa, Tamaulipas.	Tamaulipas State Budget	SEDUMA	Ing. Celestino Alanís, SEDUMA Celestino.alanis@tamaulipas.gob.mx	Reforestation of public spaces, is considered the planting of 2000 trees in sports parks.	Established within the actions of Reynosa's plan the planting of 200 trees.

Promote Cross-Cutting Efforts Related to Environmental Health & Environmental Education

Project N°	Project Title Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact(s)	Objective 2017-2018	Progress Towards Target
Projects potentially related to some combination of air quality, water quality, water conservation, or waste management							
6.0.01	**Strengthening School Networks and Global Climate Change Surveillance "Casa de Tierra"**	SEDUMA, Municipal Government of Reynosa	$ 66 Million	Gobierno del Estado de Tamaulipas, SEMARNAT	Celestino Alanís, SEDUMA	Build, equip, and operate a "Casa de Tierra" in Nuevo Laredo.	Budget management for Casas de la Tierra in Nuevo Laredo and Matamoros
6.0.02	**Environmental Education and Legislative Action Reforms** Improve the implementation of environmental legislative reforms by exchanging information on environmental education and enforcement regulations that will improve air quality, environmental compliance and solid waste management in Laredo and Nuevo Laredo.	Universidad Autónoma de Tamaulipas, Facultad de Comercio, Administración y Ciencias Sociales de Nuevo Laredo	$11,000	Border 2020	Dr. Juan Herrera Izaguirre, Universidad Autónoma de Tamaulipas, 0115286719-42-50 jaherrera@uat.edu.mx	Update Nuevo Laredo's environmental regulations in accordance with state and federal regulations. Organize a conference about the role of inspectors, their administrative duties and how it relates to the environment.	Training was held for staff in the Environment and Climate Change Division regarding environmental legislation, the protection of water and recycling. The sessions expanded on topics related to federal, state, and municipal law Similarly, they learned to identify the jurisdiction in the three areas mentioned above. A conference was held about the role of inspectors, their administrative duties and how it relates to the environment. As a result of these workshops staff trained more than 1,000 people on water conservation, grease waste

							management and the effects of climate change. Additionally, staff drafted and delivered nine environmental regulations to Nuevo Laredo and four other municipalities in the state. The project ended in June.

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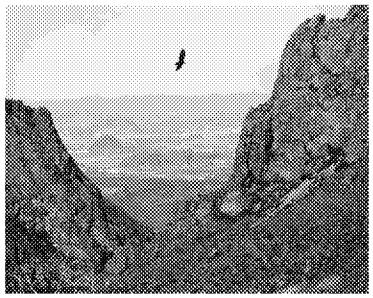
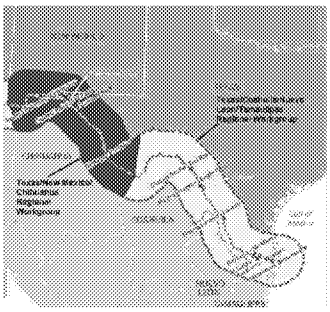


Border 2020 Program
Four State Region Overview



Summary of EPA and BECC Border 2020

The Environmental Protection Agency (EPA) Border Program is a bi-national collaborative effort whose mission is to protect human health and the environment in underserved communities that may be disproportionately impacted by environmental risks. The Border Environmental Cooperation Commission (BECC) is an international organization established for the purpose of preserving, protecting, and enhancing the environment in the U.S. – Mexico border region. To further the program goals and objectives the BECC and the EPA have established a partnership wherein the BECC that has administers, receives, and reviews proposals, the BECC also coordinates project selections, monitor project performance, and manage the Program funds provided by EPA for projects along the US Mexico Border Regions.

The BECC provides support in the implementation of projects that are significantly improving the environment and public health in the U.S.-Mexico border region, consistent with the principles of sustainable development and in accordance with the priorities and objectives of the program. To that end, the BECC is using its experience in assisting local communities and other project sponsors to develop and implement environmental projects. To ensure that the Border program reflects the environmental needs of the border community as articulated by border residents, the BECC implements specific activities outlined in the work plans that will increase public knowledge, public participation, training, and education to the region's residence to assure the goals of the EPA are met and the continuous improvement of the water, land, and air are the priority of this partnership with EPA.

EPA Border 2020 - Region 6 Logistical Support

PURPOSE
The Border Environment Cooperation Commission (BECC) will administer the Environmental Protection Agency (EPA) grant funds under this Cooperative Agreement. The funds provided under this agreement will be used to support logistics for the bi-national Border 2020 U.S. - Mexico Environmental Program (B2020). BECC's institutional strengths will be used to support the logistical activities of the program.

The mission of the B2020 Program is to protect public health and the environment in the U.S.-Mexico border region consistent with the principles of sustainable development. As part of its mission, the BECC has the capacity to promote, administer, and implement projects and provide logistical support conducive to improving the environment and the living conditions along the US-Mexico border region. In addition, the BECC has a history of successful coordination with the EPA and other stakeholders to promote the mission of the EPA long the border.

OBJECTIVES
BECC will provide the support for collaboration between federal, state, local, and private interests on both sides of the border, and a forum for broad public dialogue on environmental infrastructure issues and projects. The BECC will provide logistical support in program activities conducive to improve the environment and public health in the U.S.-Mexico border region, consistent with the principles of sustainable development and in accordance with the priorities and objectives of the Border 2020 Program. To ensure that the Border 2020 program reflects the environmental needs of the border community as articulated by border residents, the BECC will implement specific activities outlined in this work plan that will increase public knowledge and public participation.

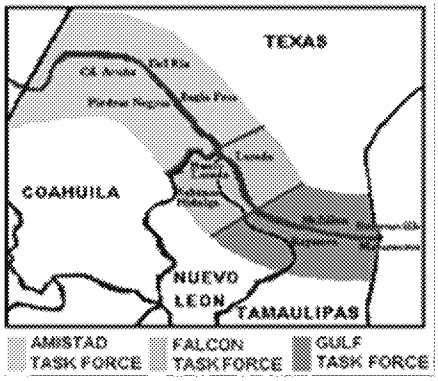
BECC PRESENCE and SUPPORT DURING TASK FORCE EVENTS
The BECC will use its expertise on border issues, institutional strengths and working knowledge for coordination with bi-national stakeholders in the implementation of Border 2020 Program. The BECC will coordinate with EPA Region 6 for logistical activities and the need for presence of BECC staff at task force events, and public outreach. The proposed activities to be undertaken in these three areas are described below.

Regional Workgroups Overview

The Four-State Regional Workgroup is the most complex of the four regional workgroups because of its geographical extension and the number of municipalities.

The region includes parts of three states and at least 29 municipalities on the Mexican side and 168 cities and towns on the U.S. side. Recognizing this, the workgroup divided itself into three geographically-based Task Forces---Amistad, Falcon, and Gulf--each of which established subject-specific committees related to its priority concerns.

Border 2020 has five goals and the regional work groups propose projects to implement these goals. These projects are tracked in two-year revolving work plans. Projects are organized by Border 2020 goals and objectives.



Regional Workgroup Overview

RWG is separated into three regions (806 miles or 1,296 km) or task forces:

Amistad

- Waste, Env. Education & Health, Emergency Response Preparedness Committees

Falcon

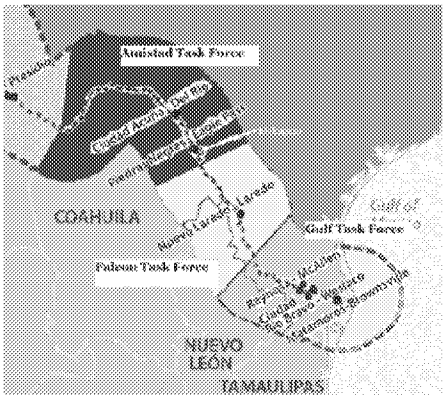
- Waste, Water, Env. Education & Health, Emergency Response Preparedness Committees

Gulf

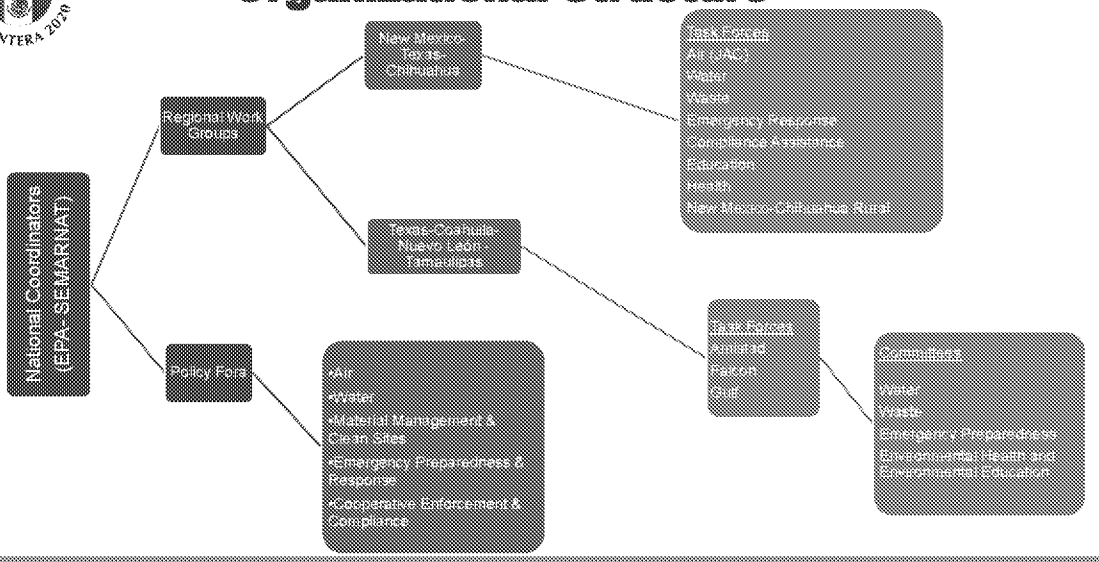
- Waste, Water, Env. Education & Health, Emergency Response Preparedness Committees

Key community populations

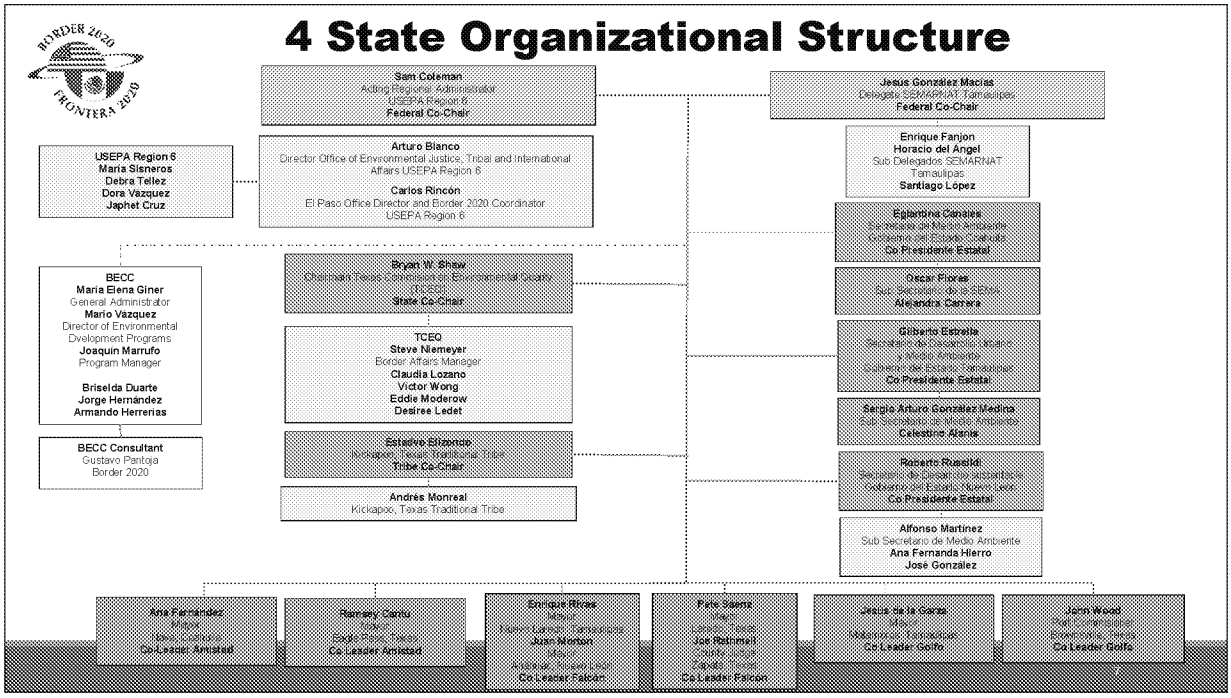
- 168 Cities and Towns on the U.S.
- 29 Municipalities on the Mexican Side



Border 2020 Region 6 Organizational Structure



4 State Organizational Structure



Border 2020 Leadership Roles
4-State Regional Workgroup

Texas-Coahuila-Nuevo Leon-Tamaulipas

Co-Chair: Regional Workgroup

- Prioritize regional environmental issues and recommend issues beyond regional scope to be addressed by Border 2020 policy fora
- Help facilitate projects when necessary, by convening local, state, and tribal governments, academia, NGOs, and the public
- Represent the regional workgroup at the Border 2020 national coordinators meeting and in formal communication with partner organizations

Amistad

Falcon

Gulf

Co-Leader: Task Force

- Act as a spokesperson for the task force and answer questions from the public or media
- Convene public task force meetings a minimum of once per calendar year and additional meetings as necessary
- Coordinate and communicate with local leaders in the task force area to encourage their input
- Identify environmental issues within the task force area following the Border 2020 goals and objectives and use the Border 2020 tools to address task force priorities
- Assist the staff of the federal and state agencies in identifying co-facilitators for each of the established committees
- Attend an annual meeting of the four-state regional workgroup and share information about the task force's progress with the co-chairs and fellow co-leaders
- Lead the committees in working with federal and state agencies to draft the 2-year action plan

Water

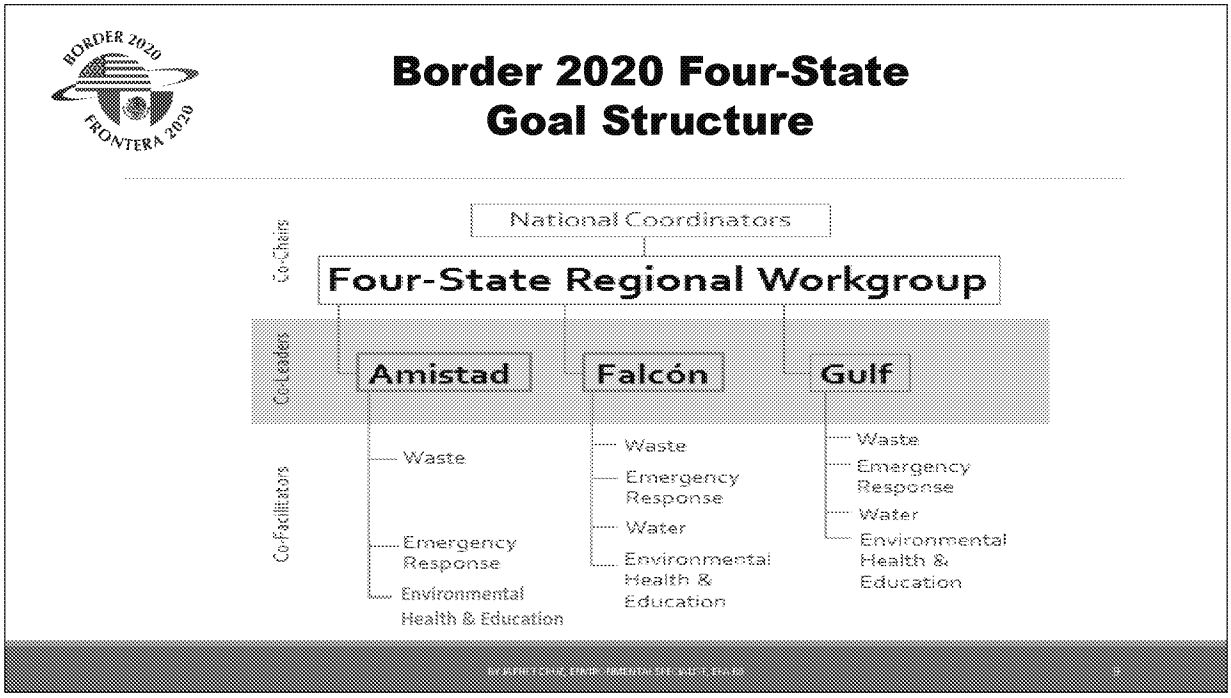
Waste

Environmental Health and Environmental Education

Emergency Preparedness

Co-Facilitator: Committee

- Ensure adequate representation of regional specialists and stakeholders in committee activities
- Provide leadership inspiring consensual identification of priority activities or projects that will help the committee fulfill the goals and objectives of Border 2020, as outlined in the framework booklet
- In cooperation with their counterpart co-facilitator, agree on dates and places for committee meetings, engage in public outreach to achieve strong attendance at those meetings, and preside over those meetings (at least once each year)
- Serve as a technical advisor to the local, state, and federal authorities on issues in which your committee is involved
- Serve as a liaison between local, state, and federal participants to effectively communicate the priorities and strategies to the task force co-Leaders and the staff of federal and state agencies
- Work with federal and state agencies to draft the 2-year action plan



Above you we will visualize the structure of the Four State Regional Workgroup
(Tamaulipas, Nuevo Leon, Coahuila and Texas)

We have the Co chairs that we will discuss in the next slide

Each Task Force has one US and one Mexican Co leader

The Amistad Task Force has two Committees: Waste and Emergency Response
The Falcon Task Force has four committees: Waste, Emergency Response, Water and Environmental Health and Education
The Gulf Task Force has four committees: Waste, Emergency Response, Water and Environmental Health and Education

Each of these committees has a US and Mexican Co facilitator.

Amistad Task Force

MEXICO COMMITTEE

Lic. Ana Gabriela Fernández Osuna
Presidente Municipal
Nava, Coahuila
CO-LEADER

Ing. Jesús Flores de la Garza
Director de Ecologia
Nava, Coahuila
LIAISON

WASTE COMMITTEE
Ing. Alfredo Lucero Montemayor
Director of Ecology
Piedras Negras, Coahuila
Co Facilitator

EMERGENCY PREPAREDNESS COMMITTEE
Lic. Brigido Iván Moreno Carrera
Director of Civil Protection
Acuña, Coahuila
Co Facilitator

ENVIRONMENTAL EDUCATION AND HEALTH COMMITTEE
Ing. Victor Ibarra
Technological Institute of Piedras Negras
Club TEC OSOS
Coahuila
Co Facilitator

UNITED STATES COMMITTEE

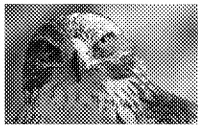
Ramsey Cantú
Mayor
Eagle Pass, Texas
CO-LEADER

WASTE COMMITTEE
Isaak Ruiz
Co Facilitator

EMERGENCY PREPAREDNESS COMMITTEE
Manuel Mello
Fire Chief
Eagle Pass, Texas
Co Facilitator

ENVIRONMENTAL EDUCATION AND HEALTH COMMITTEE
VACANT
Co Facilitator

FALCON TASK FORCE



MEXICO COMMITTEE

CP. Oscar Enrique Rivas Cuellar
Municipal
Nuevo Laredo, Tamaulipas
CO-LEADER

Lic. Juan Manuel Morton González
Presidente Municipal
Anáhuac, Nuevo León
CO-LEADER

Lic. Luis Maía Bernal
Director of Environment and Climate Change
Nuevo Laredo, Tamaulipas
Liaison

Lic. Francisco Martínez Rentería
Secretary of the R. Ayuntamiento
Anáhuac, Nuevo León
Liaison

WASTE COMMITTEE
Ing. Alfano Ramírez Solano
Environmental Consultant
Co Facilitator

WATER COMMITTEE
Ing. Agustín Boone González
CILA Section Mexico, Nuevo Laredo
Co Facilitator

EMERGENCY PREPAREDNESS COMMITTEE
Ing. Juan Pablo Reyes Villarreal
UT & UAT Professor, Instructor and Specialist
Co Facilitator

ENVIRONMENTAL EDUCATION AND HEALTH COMMITTEE
Ing. Mario Garza Delgado
UT Linking
Co Facilitator

UNITED STATES COMMITTEE

Pete Saenz
Mayor
Laredo, Texas
CO-LEADER

Joe Rathmell
County Judge
Zapata, Texas
CO-LEADER

WASTE COMMITTEE
John Porter
Environmental Services Director
Laredo, Texas
Co Facilitator

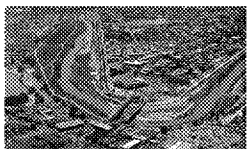
WATER COMMITTEE
José Garza
Frank Tejeda Center, TAMU
Laredo, Texas
Co Facilitator

EMERGENCY PREPAREDNESS COMMITTEE
Steve Landin
Fire Chief
Laredo, Texas
Co Facilitator

ENVIRONMENTAL EDUCATION AND HEALTH COMMITTEE
Dr. Hector González
Health Director
Laredo, Texas

Ing. Iván Sanfoye
Department of Environmental Services
Laredo, Texas
Co Facilitator

GULF TASK FORCE



MEXICO COMMITTEE

Lic. Jesús de la Garza Díaz del Guante
Municipal President
Government of Matamoros
CO-LEADER

Lic. Humberto Gutiérrez
River President Committee
on the Endangered
Matamoros, Tamaulipas
Liaison

WASTE COMMITTEE
Lic. Martha García Fortanery
Director of Ecology
Valle Hermoso, Tamaulipas
Co Facilitator

WATER COMMITTEE
Ing. David Negrete
CILA Reynosa, Tamaulipas
Co Facilitator

EMERGENCY PREPAREDNESS COMMITTEE
Ing. Manuel Montiel
Local Mutual Aid Committee (CLAM)
Matamoros, Tamaulipas
Co Facilitator

ENVIRONMENTAL EDUCATION AND HEALTH COMMITTEE
Ing. Alfredo Hassanía
Maquiladora Asociación(INDEX)
Matamoros, Tamaulipas
Co Facilitator

UNITED STATES COMMITTEE

John Wood
Port Commissioner
Brownsville, Texas
CO-LEADER

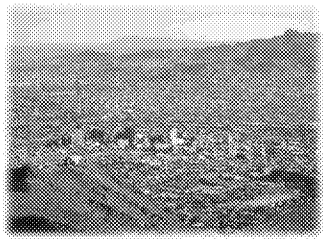
WASTE COMMITTEE
Art Rodriguez
Health Director
Brownsville, Texas
Co Facilitator

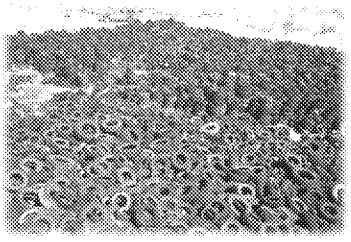
WATER COMMITTEE
Joe Hinojosa
Santa Cruz, Distrito de Riego #15
Edinburg, Texas
Co Facilitator

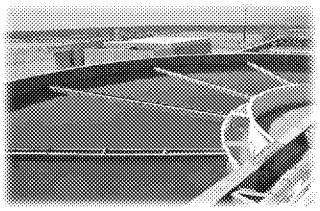
EMERGENCY PREPAREDNESS COMMITTEE
Ricardo Sabalza
Hidalgo Co. EMC
Hidalgo, Texas
Co Facilitator

ENVIRONMENTAL EDUCATION AND HEALTH COMMITTEE
Beatriz Tapia
University of Texas, Science Health Center
Rio Grande Valley, Texas
Gerry Cantko
Texas A&M
Mc Allen, Texas
Co Facilitator

Regional and Local Priorities







Regional Priorities for 2017-2018

Goal 1: Air

i. Implement atmospheric monitoring programs under the same criteria of analysis and promote the dissemination of results in the four states

ii. Set actions in accordance with the public policies of micro and macro-economic analysis of climate change state programs

iii. Promote the implementation of the PROAIRE air quality program and its strategies in the border communities

Note: Air is included in the Regional and Task force priorities for the Mexican States, **not for the US – Texas** (Amistad, Falcon and Gulf Task Forces), smoke pollution of old cars without catalyst, dust, unpaved roads and trash/tire fires in the Mexican border cities is a concern for air quality.

Goal 2: Water

i. Keep improving energy efficiency for water operators in border municipalities

ii. Continue the water conservation programs and encourage the reuse of treated water for irrigation

iii. Strengthen wastewater sanitation programs and actions

iv. Disseminate green infrastructure actions for sustainable development of border communities

Regional Priorities for 2017-2018

Goal 3: Materials & Waste Management

i. Increase institutional capacity at the local and state levels for sustainable practices in solid waste management

ii. Develop collection and comprehensive waste management programs for used electronics for municipalities in the border area

iii. Improve collection and comprehensive waste management programs for proper disposal of household hazardous waste for municipalities in the border area

iv. Continue efforts to implement comprehensive scrap tire management programs

v. Strengthen operations of the sanitary landfills in border municipalities, with plans to capture and take advantage of the biogas and convert to energy

vi. Develop comprehensive actions to eliminate unauthorized open-air dump sites

vii. Encourage municipal programs for holistic waste management

Regional Priorities for 2017-2018

Goal 4: Emergency Preparedness & Response

i. Continue the binational relationship in emergency response for training, equipment and drills

ii. Promote the creation of risk atlases for waste management and hazardous materials in border communities

iii. Carry out the required border studies for the protection of local communities

iv. Generate a diagnosis of equipment, training, and ability to respond to an emergency in border municipalities

Goal 5: Compliance & Environmental Stewardship

i. Implement binational workshops targeted to environmental enforcement professionals, including ports-of-entry customs professionals, to promote the exchange of information and improve understanding of each country's respective compliance and enforcement programs

ii. Promote the updating, sharing and application of municipal environmental regulations in border communities

iii. Carry out the land management plans in the states and municipalities along the border region

iv. Establish regulatory and operational mechanisms for the control of wild hogs

Note: TCEQ and PROFEPA (in Mexico) are in charge of the inspection, compliance and enforcement of environmental laws. This is being accomplished by performing outreach and workshops.

Fundamental Strategies

Border 2020 has Six fundamental strategies which complement and inform the work undertaken to achieve the mission and goals of the Border 2020 Program.

They are incorporated in each task force priorities in the:

"Promote cross-cutting efforts related to environmental health and environmental education"

- Working to Improve Children's Health
- Building Capacity towards Climate Change Resiliency
- Protecting Disadvantaged & Underserved Communities
- Promoting Environmental Awareness
- Promoting Environmental Health *(The committee on education and environmental health addresses issues related to air quality (asthma, respiratory diseases, health in children)*
- Strengthening Tribal, State, Federal and International Partnerships

Amistad Task Force Priorities

Goal 1: Reduce Air Pollution

i. Establish and strengthen vehicle emissions programs in Acuña, Piedras Negras and Nava

ii. Promote initiatives to develop energy efficiency and reforestation programs in the industrial sector in Acuña and Piedras Negras

iii. Promote the implementation of strategies by the SEMARNAT PRO AIRE air quality program in Acuña, Piedras Negras and Nava

Goal 2: Improve Access to Clean and Safe Water

i. Conduct water quality monitoring of tributaries along the Rio Grande in Acuña and Piedras Negras

ii. Develop Fats, Oils and Grease (FOG) workshops in Acuña and Piedras Negras, replicating the model in Laredo

iii. Promote and develop green infrastructure projects and water conservation programs in Acuña and Piedras Negras

Amistad Task Force Priorities

Goal 3: Promote Materials Management, Waste Management and Clean Sites

i. Promote the implementation of integrated solid, household hazardous waste and used electronic programs in Acuña and Piedras Negras

ii. Strengthen scrap tire management programs and promote scrap tire reuse for projects in Acuña and Piedras Negras

iii. Promote initiatives to develop plastic bag reduction programs in Acuña and Piedras Negras

Goal 4: Enhance Joint Preparedness for Environmental Response

i. Conduct water quality monitoring of tributaries along the Rio Grande in Acuña and Piedras Negras

ii. Develop Fats, Oils and Grease (FOG) workshops in Acuña and Piedras Negras, replicating the model in Laredo

iii. Promote and develop green infrastructure projects and water conservation programs in Acuña and Piedras Negras

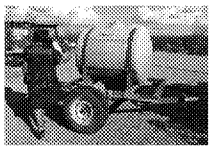
Amistad Task Force Priorities

Promote Cross-Cutting Efforts Related to Environmental Health & Environmental Education

i. Develop awareness programs on vector borne illnesses such as Zika and Dengue virus in Acuña and Piedras Negras

ii. Launch a binational environmental education program on recycling, energy efficiency and water conservation in Eagle Pass and Piedras Negras using social and broadcast media

Falcon Task Force Priorities



Goal 1: Reduce Air Pollution

i. Develop emissions inventory in Tamaulipas border communities and strengthen air quality monitor programs

ii. Establish an automatic air quality monitoring station in Nuevo Laredo

iii. Incentivize members of industry associations and the Nuevo Laredo chamber of commerce to implement energy efficiency projects

iv. Develop climate change programs in Nuevo Laredo and Anahuac

v. Develop air quality mitigation measures by reducing wait times and idling of vehicles, at the Laredo and Nuevo Laredo international bridges

vi. Establish a vehicle emissions program for imported vehicles crossing into Nuevo Laredo

Goal 2: Improve Access to Clean and Safe Water

i. Promote and train households on best practices related to the management of Fats, Oil and Grease (FOG) waste in Laredo

ii. Conduct an assessment on water and wastewater needs in rural areas in Webb County and provide training to water and wastewater operators in these areas

iii. Establish green infrastructure, water conservation and wastewater reuse programs to irrigate green areas in Nuevo Laredo and Laredo

Falcon Task Force Priorities

Goal 3: Promote Materials Management, Waste Management and Clean Sites

i. Strengthen compliance and enforcement programs to eliminate illegal dumpsites in Nuevo Laredo

ii. Develop an environmental education program to promote solid waste management and recycling tools in Laredo, Anáhuac and Nuevo Laredo

iii. Promote and strengthen alternative markets for scrap tire disposal and reuse in Nuevo Laredo, Anáhuac and Laredo

iv. Coordinate simultaneous household hazardous waste programs every two years in Laredo and Nuevo Laredo, to increase the level of participation by residents

v. Conduct a study to develop a facility to dispose construction waste in Nuevo Laredo

vi. Promote the integrated solid waste management program and establish a plastic bag reduction program in Nuevo Laredo

Goal 4: Enhance Joint Preparedness for Environmental Response

i. Provide training to Nuevo Laredo emergency responders on hazardous materials and coordinate a binational tabletop and joint contingency exercise between Laredo and Nuevo Laredo

Falcon Task Force Priorities

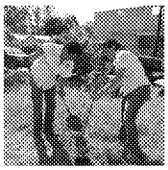
Goal 5: Enhance Compliance Assurance and Environmental Stewardship

- Provide training to Nuevo Laredo officials on environmental compliance and enforcement tools and work with Tamaulipas officials to update local environmental ordinances

Promote Cross-Cutting Efforts Related to Environmental Health & Environmental Education

- Develop a binational environmental awareness program on energy efficiency, water conservation, recycling and prevention of vector borne illnesses in Laredo and Nuevo Laredo

Gulf Task Force Priorities



Goal 1: Reduce Air Pollution

i. Develop the Climate Change Programs in the Mexican municipalities of Valle Hermoso, Rio Bravo, Reynosa and Matamoros

ii. Strengthen the programs of atmospheric monitoring and development of an emission inventory and make operable three PM 10 monitors to collect emission data and compare air quality in nearby areas in Reynosa

Goal 2: Improve Access to Clean and Safe Water

i. Conduct a study regarding the presence of chromium in the management and management of drinking water in the border area

ii. Carry out a study and monitoring in the lower Rio Bravo / Rio Grande regarding the salinity of the water and disseminate the results

iii. Educate residents and commercial users on industrial, oil and grease wastewater management and local pre-treatment and storm water ordinances

iv. Establish actions of green infrastructure and water conservation through educational programs

v. Establish permanent training programs for operators of wastewater treatment plants

vi. Promote strategies for adequate wastewater management in Tamaulipas border municipalities

Gulf Task Force Priorities

Goal 3: Promote Materials Management, Waste Management and Clean Sites

i. Generate comprehensive actions to identify and eliminate illegal trash dump sites

ii. Test new equipment to collect waste from government buildings, hospital, schools and characterize and measure waste to properly develop a municipal waste management plan in Reynosa

iii. Promote the integral waste management in the Mexican municipalities

iv. Promote mechanisms for the management of waste tires, looking for alternatives for their recovery

Goal 4: Enhance Joint Preparedness for Environmental Response

i. Conduct 8 hr HAZMAT (29 CFR 1910.120) refresher training for Matamoros and Reynosa firefighters and 40 hour HAZMAT training for Rio Bravo and Valle Hermoso firefighters, tabletop and full mock exercise using skype and drone technology

ii. Develop a risk analysis in the Harlingen and Los Indios point of entry

iii. Organize a knowledge exchange workshop to assess equipment inventory and training needs, improve communication and emergency response capacity of Hidalgo and Cameron counties and Mexican border municipalities in the Gulf area

iv. Establish a real-time warning system on the water quality conditions of the lower Rio Grande / Río Grande with the objective of generating preventive actions in case of a contingency

Gulf Task Force Priorities

Promote Cross-Cutting Efforts Related to Environmental Health & Environmental Education

i. Implement a bilingual environmental education program in the area of waste recovery

ii. Promote community programs to strengthen public health actions in border municipalities and rural communities, particularly in infants and their risks in their homes

iii. Develop a study that identifies the five top main risks on environmental health in border communities

Border 2020 Active Grants

AVAILABLE FUNDS REGION 6 B2020 Coop Agmts (as of December 2016)							
COOP AGMTS	Amount (thousands)	$934k	$974k	$805k	$108k	$335k	Balance
	Awarded	Sept 2012	Sept 2011	Aug 2015	Jan 2014	Sept 2014	
	Expires	Dec 2017	Feb 2017	Aug 2017	Dec 2017	Aug 2017	
TASKS	RFP	$3,585	$0	$33,117	$0	$0	$36,702
	Projects	$119,658	$0	$382,846	$0	$16,565	$519,069
	Logistics	$16,036	$4,829	$65,000	$22,281	$0	$108,146
	BECC Presence	$5,556	$0	$0	$1,818	$0	$7,374
	Indirect Cost	$14,484	$482	$48,096	$2,410	$1,656	$67,129
Total		$159,320	$5,311	$529,059	$26,509	$18,221	$738,420

The box shaded in red-reflects the current funding that BECC has available for sub-award projects

4 State Region Border Goal 1 Projects

Name	Description	Goal	Status	Workgroup	Community	State	Country	Total_Cost	Approved_Amount	Leverage_Amount
Characterization of drayage activities and emissions in Laredo-Nuevo Laredo airshed	A detailed characterization of the activity of the trucks in the region of Laredo-Nuevo Laredo. provide an understanding of the regional activity of the trucks and their implications for air quality, responsible for state and local transportation agencies border and air quality. With this information, decision makers and planners can develop strategies and policies that address the needs of transportation and air quality in the region as a binational regional level. The data, methodologies and information generated by the project could potentially be used to characterize the activities of trucks in other locations along the border.	Goal 1	Concluded	R6 TX- NL - COAH - TAMPS	Laredo	TX	USA	$89,750	$89,750	-
Workshop on Energy Efficiency in Public Lighting Systems in Tamaulipas	Train at least 30 public officials from 10 municipalities with basic tools to achieve greater energy efficiency and that this is reflected in a decrease in the emission of greenhouse gases into the atmosphere and in turn into economic savings for municipal utilities		Concluded	R6 TX- NL - COAH - TAMPS	Reynosa	TAMPS	MEX	$17,497	$9,535	$7,962.00

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4 State Region Border Goal 2 Projects

Name	Description	Goal	Status	Workgroup	Community	State	Country	Total_Cost	Approved_ Amount	Leverage_Amount
Conservation: Arroyo Las Vacas in Acuña, Coahuila, Mexico	This project involves the conservation and recovery of Arroyo Las Vacas, this being a tributary of the Rio Grande river which crosses the border city of Acuna.	Goal 2	Concluded	R6 TX- NL - COAH - TAMPS	**Cd. Acuna**	**COAH**	MEX	$39,875.00	$39,875.00	-
Planning Model for an Environmental and Health Texas/Mexico Border Information Exchange Program	The overall goal of this project is to develop the framework for a system, including processes in phases and specific steps, required for the development of a bi-national environmental and health tracking system		Concluded	R6 TX- NL - COAH - TAMPS	**Piedras Negras**	**COAH**	MEX	$47,663.00	$39,875.00	$7,788.00
Determining the Ideal Bioswale Porous Material for South Texas Stormwater Management	To evaluate performance of parking lot bioswale by comparing its stormwater discharges and solids against those of conventional parking lot with no bioswale,to develop the best performing bioswale mixture from the materials tested in the prototype bioswales.		In Progress	R6 TX- NL - COAH - TAMPS	**Edinburg**	**TX**	USA	$32,350.00	$26,022.00	$6,328.00
The Rio Grande/Rio Bravo Water Quality Initiative	The University of Texas at Austin (UT), proposes to advance on Goal 2, Objective 3 by providing information to local binational stakeholders, about sources of water pollution to the Rio Grande and by gathering information from key stakeholders about potential local solutions to the river's water quality problems in the portion of the river between Falcon Dam and the Gulf of Mexico. The project proposes to organize 5 workshops and develop MOU among stakeholders.		In Progress	R6 TX- NL - COAH - TAMPS	**Laredo**	**TX**	USA	$78,422.00	$58,575.00	$19,847.00
Fat, Oil and Grease (FOG) Public Outreach Campaign in Brownsville, Texas	The Brownsville Public Utilities Board, a government entity, proposes to advance on Goal 2, Objective 2 by implementing a public FOG campaign, targeting businesses with violations and reaching out to them. It will also provide education through community outreach and public awareness through 4 quarterly workshops. The grant will help leverage funds of $49,561 from the City.		In Progress	R6 TX- NL - COAH - TAMPS	**Brownsville**	**TX**	USA	$49,561.00	$25,000.00	$24,561.00
Public Awareness Program for the FOG Program in Matamoros	The Junta de Aguas y Drenaje from the City of Matamoros, proposes to advance on Goal 2 Objective 2 by providing training to businessess and industries about the control of wastewater discharges in Matamoros. There will be 10 workshops and wastewater testing. The goal is to train 50% of the users involved in the implementation of this Regulation Program to control discharges and perform wastewater FOG testing to 10% of users.		Concluded	R6 TX- NL - COAH - TAMPS	**Matamoros**	**TAMPS**	MEX	$50,000.00	$25,000.00	$25,000.00
Decision Making Tool (DMTG) for Stormwater in The lower Rio Grande Valley in Texas	The project will promote specific research and educational topics emphasizing how green infrastructure strategies can be utilized to mitigate stormwater runoff.		In Progress	R6 TX- NL - COAH - TAMPS	**Hidalgo County**	**TX**	USA	$45,885.00	$38,885.00	$7,000.00

4 State Region Border Goal 3 Projects

Name	Description	Goal	Status	Workgroup	Community	State	Country	Total_Cost	Approved_ Amount	Leverage_Amount
Keeping Pharr Beautiful...Starts at Home	Increase outreach and awareness surrounding illegal dumping, also help the cities beautification efforts by increasing volunteer opportunities and encouraging the labors of community cleanup programs such as Operation Clean Sweep	Goal 3	Concluded	R6 TX- NL - COAH - TAMPS	**Pharr**	**TX**	USA	$102,060.00	$20,000.00	$82,060.00
Waste generation Diagnostic in the Noresat border region	Implement a comprehensive management plan for the management of hazardous solid waste, special handling waste in medium-sized communities in the northeastern state of Nuevo León		Concluded	R6 TX- NL - COAH - TAMPS	**Sabinas**	**COAH**	MEX	$21,798.00	$21,798.00	-
Management of Fat, Oil and Grease in Nuevo Laredo	Disseminate to all generators of fats and oils as well as proper disposal retainer cleaning grease traps and the consequences that brings pour fats and oils down the drain		Concluded	R6 TX- NL - COAH - TAMPS	**Nuevo Laredo**	**TAMPS**	MEX	$47,161.00	$32,533.00	$14,628.00
Alamo's recycling solid waste systems improvements through a holistic approach	Increase the volume of collected recyclables, create environmental stewardships through education, create an identifiable solid waste mascot, and bring together all identifiable stakeholders to bring about holistic change within the community		Concluded	R6 TX- NL - COAH - TAMPS	**Alamo**	**TX**	USA	$61,836.00	$54,836.00	$7,000.00
Scrap Tire Collection Program, City of Pharr	The City of Pharr will implement a scrap tire collection event during their monthly Operation "Clean Sweep", community clean up event		Concluded	R6 TX- NL - COAH - TAMPS	**Pharr**	**TX**	USA	$35,500.00	$15,000.00	$20,500.00
Comprehensive management project of solid waste in Rio Bravo and Valle Hermoso, Tamaulipas	The project consists in conduct a Basic Diagnosis on the Comprehensive Management of Municipal Solid Waste in the municipalities of Rio Bravo and Valle Hermoso		Concluded	R6 TX- NL - COAH - TAMPS	**Rio Bravo**	**TAMPS**	MEX	$20,866.00	$20,866.00	-
Comprehensive management of electronic waste project in Piedras Negras and Eagle Pass, Texas	The project consists of a program of environmental education and health to join efforts in collecting electrical and electronic solid waste in the city of Piedras Negras, Coahuila e Eagle Pass in Texas		In Progress	R6 TX- NL - COAH - TAMPS	**Piedras Negras**	**COAH**	MEX	$36,054.00	$36,054.00	-
Clean in up program at City of Pharr, Texas	The project consists in educate City of Pharr residents on environmental sustainability and related proper solid waste disposal methods.		In Progress	R6 TX- NL - COAH - TAMPS	**Pharr**	**TX**	USA	$120,762.00	$36,390.00	$84,372.00
Electronic Waste Management project in Ciudad Acuna, Piedras Negras and Guerrero in Coahuila	Inform and educate residents about the benefits of reusing electronics, the need to practice responsible consumption, as well as the importance of giving an appropriate final destination for these wastes		In Progress	R6 TX- NL - COAH - TAMPS	**Cd. Acuna**	**COAH**	MEX	$79,345.00	$16,777.00	$62,568.00

4 State Region Border Goal 4 Projects

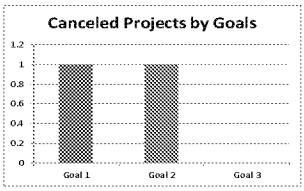
Name	Description	Goal	Status	Workgroup	Community	State	Country	Total_Cost	Approved_ Amount	Leverage_Amount
Promotora-Led Environmental Health Education for Children, Eagle Pass, Texas	The promotora (community health worker) model will be used for reaching out to parents and care givers, school teachers and child care providers with the aim of improving environments in and around the home, school and childcare facility.	Goal 4	Concluded	R6 TX- NL - COAH - TAMPS	**Eagle Pass**	**TX**	USA	$79,463.00	$69,000.00	$10,463.00
McAllen-Mission-Pharr/Reynosa Hazards in Transportation Binational Training and Exercise	The project objective is to strength the response capacity providing proper training and equipment to hazmat first responders in the areas of McAllen-Mission-Pharr-Reynosa. More than 100 hazardous-material carrying trucks travel through the ports of entry in South Texas. The McAllen Fire Department staff in conjunction with the Mission and Pharr Fire Departments will join forces to work together to update the emergency notification related to hazmat emergencies		Concluded	R6 TX- NL - COAH - TAMPS	**McAllen**	**TX**	USA	$213,810.00	$70,510.00	$143,300.00
Binational Tabletop and Functional Exercises between the cities of Harlingen and Matamoros	The City of Harlingen Fire Department, proposes to advance on Goal 4, Objective 2 by the implementation of a hazmat training, a tabletop, and a functional exercise. Proposed Scenario consists of a tanker trailer roll-over accident carrying a petro product spilling into Mexico waterways. The City of Harlingen presents a sister city agreement since 2014 to support mutual emergency response aid. Project will involve partnering with first responders from Matamoros and Cameron County. The project will help to promote sustainability by practicing the last update of the sister contingency plan to evaluate its reliability		Concluded	R6 TX- NL - COAH - TAMPS	**Harlingen**	**TX**	USA	$44,683.00	$44,683.00	-

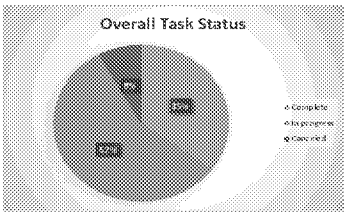
4 State Region Border Goal 5 Projects

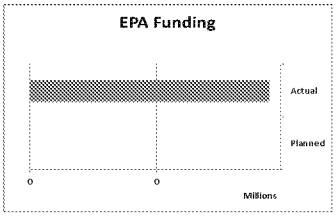
Name	Description	Goal	Status	Workgroup	Community	State	Country	Total_Cost	Approved_ Amount	Leverage_Amount
Law Reform and Environmental Education in Nuevo Laredo	The Universidad Autónoma de Tamaulipas, proposes to advance on Goals 2, 3 and 5 by improving the implementation of environmental legislation, strengthen the environmental cooperation and exchange of information between Nuevo Laredo, Tamaulipas and Laredo, Texas, and train environmental inspectors and staff of the municipal environmental unit. The grant will help leverage funds with $5,500 from Universidad Autónoma of Tamaulipas	Goal 5	In Progress	R6 TX- NL - COAH - TAMPS	**Nuevo Laredo**	**TAMPS**	MEX	$16,500.00	$11,000.00	$5,500.00
Energy Efficiency Workshop for Municipal Public Lighting Systems in Tamaulipas	The Secretaria de Desarrollo Urbano y Medio Ambiente, from the government of Tamaulipas, proposes to advance on Goal 1, Objective 2 by the implementation of a integral training program.The objective is to train 30 municipal officers from 10 municipalities in energy efficiency (municipal street lighting and energy efficiency on building and facilities), as well as the implementation of a train the trainer program.		Canceled	R6 TX- NL - COAH - TAMPS	**Matamoros**	**TAMPS**	MEX	$14,310.00	$9,385.00	$4,925.00

4 State Region Border Project Status

Region	Completed projects completely approved by EPA	Completed projects partially approved by	Funding to be completed	Canceled Projects	Status
R6 TX- NL - COAH - TAMPS	5	8			Completed
R6 TX- NL - COAH - TAMPS			13		In Progress
R6 TX- NL - COAH - TAMPS				2	
Totals	**5**	**8**	**8**	**2**	**23**







4 State Region Border Projects without EPA funding

The United States plays a leadership role in working with other nations to protect the global environment

UNITED STATES OF AMERICA and MEXICO Signed La Paz Agreement on August 14, 1983

- ARTICLE 1 The United States of America and the United Mexican States, hereinafter referred to as the Parties, agree to cooperate in the field of environmental protection in the border area on the basis of equality, reciprocity and mutual benefit. The objectives of the present Agreement are to establish the basis for cooperation between the Parties for the protection, improvement and conservation of the environment and the problems which affect it, as well as to agree on necessary measures to prevent and control pollution in the border area, and to provide the framework for development of a system of notification for emergency situations. Such objectives shall be pursued without prejudice to the cooperation which the Parties may agree to undertake outside the border area.

The Border XXI Program

- Was a binational, interagency program aimed at protecting and improving the environment and environmental health, while fostering sustainable development in the U.S.-Mexico border area. The objectives of the Border XXI Program included public involvement, decentralization of border decision making, and increased cooperation between the different governmental agencies operating in the border region. The program was implemented through nine binational Workgroups that integrated the efforts of other participating entities and defined specific projects that achieved the Program's objectives.

Border 2012 Program

- Was based on a bottom-up, regional approach, which relies heavily on local input, decision-making, priority-setting, and project implementation to best address environmental issues in the border region. The bi-national program focused on cleaning the air, providing safe drinking water, reducing the risk of exposure to hazardous waste, and ensuring emergency preparedness along the U.S.-Mexico border. From to 2005 to 2012, the U.S.-Mexico Border 2012 Program achieved its goals and objectives by completing approximately 200 environmental projects.

Border 2020:Program

- Is a collaborative effort of the United States and Mexico to improve the environment and protect the health of the nearly 12 million people living along the border. The binational program focuses on cleaning the air, providing safe drinking water, reducing the risk of exposure to hazardous waste, and ensuring emergency preparedness along the U.S.-Mexico border.

Border Environment Infrastructure Fund

Funded by EPA, this program offers grant financing exclusively for the implementation of high-priority municipal drinking water and wastewater infrastructure projects located within 100 kilometers of the U.S.-Mexico border.

NADB established the BEIF to administer grant resources provided by EPA for the implementation of high-priority municipal drinking water and wastewater infrastructure projects in the border region.

The objective of the BEIF program is to make infrastructure projects affordable by combining grant funds with loans and other forms of financing for communities along the border. It is designed to reduce project debt to a manageable level in cases where utility customers would face undue financial hardship and projects could not be implemented.

Project Development Assistance Program

The Project Development Assistance Program (PDAP), for project development and design, and the Border Environment Infrastructure Fund (BEIF), for construction, are programs funded by the U.S. Congress through EPA and are administered by BECC and NADB, respectively.

The PDAP grant funds, supported by EPA's US-Mexico Border Program are available for public water and wastewater infrastructure projects identified through a program-specific prioritization process.

Thank You

May 10, 2013

REGION 6
2013-2014 Action Plan
Texas-Coahuila-Tamaulipas-Nuevo Leon Regional Workgroup
(TX/COAH/TAM/NL RWG)

The **Four-State Regional Workgroup** is the most complex of the four regional workgroups, because of its geographical expanse and the number of municipalities. The region includes parts of three states and a total of at least 29 municipios on the Mexican side, and 168 cities and towns on the U.S. side. Recognizing this, the workgroup divided itself into three geographically based Task Forces—Amistad, Falcon, and Gulf, each of which has established subject-specific committees related to its priority concerns.

During the first half of 2012, the various committees have held meetings to discuss initial priorities for the Border 2020 program, and a regional meeting of leaders was held in June to develop a consensus of priorities at the task force and regional workgroup levels.

Regional Priorities

1. Improve air quality through the following approaches:
   a. Analyze emissions and emission sources in specific airsheds
   b. Engage in both road-paving and reforestation (using native species)
   c. Establish or improve vehicle inspection programs in those cities where the respective federal governments require them
   d. Increase energy efficiency at the consumption level and the use of renewable energy at all appropriate levels
2. Improve water quality by taking the following actions:
   a. Evaluate the portion of the Rio Grande watershed that is in the region
   b. Reduce contamination by providing wastewater treatment to unserved communities in the watershed
   c. Improving the existing treatment facilities by applying the most effective technologies and providing training to operators
   d. Develop more applications for the re-use of water
   e. Reduce non-native species in the water bodies
   f. Continue and expand environmental education efforts such as "Adopt the River" and "Day of the River"
3. Address problems of improper waste disposal:

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a. Develop comprehensive plans for solid waste management, including special wastes (such as sludge from wastewater treatment plants, scrap tires, and used electronic products) and hazardous wastes (residues from pesticides, extraction of fossil fuels, and medical facilities), looking for economic/productive uses of wastes whenever possible
b. Expand environmental education related to waste issues
c. Close and remediate open dumps wherever required by regulation

4. Assure that each project includes a component of environmental education (such as teacher training or building an environmental library), at least one indicator related to public health, and inspection and surveillance

Individual Task Force Priorities

Amistad Task Force

1. Reduction of energy consumption in buildings and street lighting
2. Increased use of alternate and renewable energy sources (such as landfill gas and solar energy)
3. Construction of sanitary landfills
4. Attention to waste disposal in gas drilling operations
5. Continuing attention to emergency response
6. Harmonization of protocols related to coal mining and remediation and to petroleum materials
7. Improvement of vehicle inspection programs in Coahuila
8. Joint programs in communication and environmental education, and development of an environmental educators group

Falcon Task Force

1. Re-use of treated water
2. Monitoring of drilling operations in the Eagle Ford Shale
3. Finalizing the cross-border contingency plan

Gulf Task Force

1. Improvement of water-related infrastructure, and increased attention to wáter conservation and re-use
2. Increased recycling
3. Continuing capacity-building at the local, state, and federal levels of government
4. Technical exchanges, including best practices and lessons learned

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Two Year Action Plan (TX/COAH/TAM/ML RWG)

Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: Activity covers at least two task force areas				Gulf Task Force	Falcon Task Force		Amistad Task
GOAL # 1: Reduce Air Pollution							
Objective 1: By 2020, reduce the number of vehicles operating in the border region that do not comply with the respective vehicle emissions standards, and reduce vehicle emissions at ports-of-entry through anti-idling and other feasible measures							
1	Continue to develop Coahuila's vehicle inspection program, partly in consultation with Texas regarding the latter's experience.	SEMA (Coahuila), COMIMSA, Municipio de Piedras Negras, Municipio de Acuña, TCEQ	$700,000	SEMA Coahuila	Miguel Ángel Leal Reyes (SEMA) [HYPERLINK "mailto:miguel.reyes@sema.gob.mx"]	Inspect 40% of the vehicles in Acuña, Piedras Negras, Monclova, Saltillo and Ramos Arizpe	Planning in progress
Objective 5: By 2020, reduce emissions and associated impacts, through energy efficiency and/or alternative/renewable energy projects							
2	Design and implement vehicle emission verification programs or campaigns	SEDUMA	To be defined	SEDUMA/ SEMARNAT	Ing. Salvador Treviño seduma@tamaulipas	Vehicle verification in the border area	By November 2012
3	Promote and encourage the use and exploitation of renewable energy sources and alternative energy potential	SEDUMA	To be defined	SEDUMA/ SEMARNAT	Ing. Salvador Treviño seduma@tamaulipas.gob.mx	Action plan for 9 wind power projects and state's strategic energy program	Baseline information is being collected
4	Strengthen the state's atmospheric monitoring system	SEDUMA	Por definirse	SEDUMA/ EPA/COCEF	Ing. Salvador Treviño [HYPERLINK "mailto:seduma@tamaulipas.gob.mx"]	By 2014, the system operating at 100% with programmatic consistency standards	Federal resources will be requested

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May 10, 2013

Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: Activity covers at least two task force areas				Gulf Task Force	Falcon Task Force	Amistad Task	
5	Implementation of a environmental management system as a strategy for energy efficiency	SEDUMA/Municipios	$ 100,000	SEDUMA/ EPA/COCEF	Ing. Salvador Treviño [HYPERLINK "mailto:seduma@tamaulipas.gob.mx"]	By 2014, train 100% of the border municipalities	Develop a strategy
[redacted]	Implement a competitive grants program aimed at local governments, dedicated to improvements in energy efficiency	University of Texas at Austin, LBJ School	$175,000	EPA and TCEQ	David Eaton (LBJ School), [HYPERLINK "mailto:eaton@mail.utexas.edu"]	Complete all projects by August 2013	RFP will be issued in October 2012
7	Initiate Phase 2 of the State Climate Action Plan for Coahuila (PEAC): Quantification of the mitigation ~~public~~ policies selected in Phase 1.	Coahuila State Government and BECC	$275,000	BECC	Tomás Balarezo, BECC	Econometric evaluation of mitigation ~~public~~ policies selected in Phase 1.	In early coordination with the state government
8	Initiate Phase 1 of the State Climate Action Plan for Tamaulipas (PEAC): Quantification of the mitigation public policies selected in Phase 1.	Tamaulipas State Government and BECC	$100,000	BECC	Tomás Balarezo, BECC	Selection of a number of prioritized mitigation public policies for climate change.	Work of five technical groups began on July 2012
9	Initiate Phase 1 of the State Climate Action Plan for Chihuahua (PEAC): Quantification of the mitigation public policies selected in Phase 1.	Chihuahua State Government and BECC	$100,000	BECC	Tomás Balarezo, BECC	Selection of a number of prioritized mitigation public policies for climate change.	In early coordination with the state government
10	Research the potential for harnessing wind power for electricity	SEMARNAT and SEDUMA		SEMARNAT - ill be seeking	[HYPERLINK "mailto:normaara	Conduct research and explore business opportunities	Late October 2012 – Forum in Reynosa

Commented [rp1]: Unclear what this language in column 1 means--Quantification of policies?

Commented [rp2]: If this is intended to be Phase 1, then the language in column 2 after the colon doesn't make sense. Same comment on project #9.

Commented [rp3]: This wording in column 10 for projects 8 and 9 is awkward. With all this money, they're going to "select" policies? Should this instead say "Promulgate and implement a prioritized set of policies related to climate change"?

Commented [rp4]: Whenever this was written, was it an intention or an accomplishment?

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May 10, 2013

Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: Activity covers at least two task force areas				Gulf Task Force	Falcon Task Force	Amistad Task	
	in Tamaulipas			for funds	ngel@gmail.com"][HYPERLINK "mailto:Delfino.ramirez@semarnat.tamaulipas.gob.mx"]		
11	Research the potential for harnessing wind power for electricity generation in Nuevo León	Secretaría de Desarrollo Sustentable de Nuevo León	$10,000	Fondos Federales/CONACYT	[HYPERLINK "mailto:normaarangel@gmail.com"]	Establish wind monitors in selected areas of the state by the end of 2013, and begin generating wind maps in 2014.	
12	Construct and operate a facility that extracts methane gas from the Nuevo Laredo landfill and burns it to generate electricity for the municipality	Municipio de Nuevo Laredo and Setasa (Servicios de Tecnologia Ambiental S.A.)	$3.5 million	Private sector; a company will be selected and then will build and operate the plant, selling the electricity to CFE and giving a portion of revenues from carbon credits to the	Sergio Martinez López [HYPERLINK "mailto:sergiomartinezlopez@hotmail.com"]	Have the facility in full operation by the end of 2014.	A feasibility study was completed 2008 with funding from USAID. An RFP for a builder-operator will be issued in early 2013.

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May 10, 2013

Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: Activity covers at least two task force areas				Gulf Task Force	Falcon Task Force	Amistad Task	
				municipio.			
13	Implement a pilot program to diagnose the existing Mexican fleet of heavy-duty commercial trucks in cross-border trade in the Laredo - Nuevo Laredo area, identify retrofit technologies that would reduce emissions, and share information on those technologies, their costs, and suppliers at a binational forum	SEMARNAT and the Municipio of Nuevo Laredo	$50,000	EPA Border Grant thru BECC	Ing. Eduardo Olivares (SEMARNAT-Clean Transportation Program) [HYPERLINK "mailto:eduardo.olivares@semarnat.gob.mx"], and Osvaldo Valencia (Municipio de Nuevo Laredo—Ecology Program) [HYPERLINK "mailto:valencia_osvaldo@hotmail.com"]	Complete the project by the end of 2014.	
14	Establish an air quality monitoring network in Piedras Negras-Nava Region, Acuña, Sabinas Region and Saltillo Region, Coahuila	SEMA (Coahuila), Municipio de Piedras Negras, Acuña, Nava, Sabinas, Saltillo	1,400,000	SEMA Coahuila	Miguel Ángel Leal Reyes (SEMA Coahuila) [HYPERLINK "mailto:miguel.reyes@sema.ob.mx"]	Have air quality monitoring network in operation for Piedras Negras-Nava Region, Acuña, Sabinas Region and	Planning in progress

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May 10, 2013

Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: ☐ Activity covers at least two task force areas ☐ Gulf Task Force ☐ Falcon Task Force ☐ Amistad Task							
						Saltillo Region, Coahuila	
15	Apply retrofit technologies to public buildings in Piedras Negras and Acuña, Coahuila that will reduce energy consumption	SEMA (Coahuila), Municipio de Piedras Negras y Municipio de Acuña	$500,000	SEMA Coahuila	Olga Rumayor (SEMA Coahuila) [HYPERLINK "mailto:olga.rumayor@sema.gob.mx"]	Involve municipal agencies through a series of workshops and select at least 10 buildings to pilot retrofit technologies.	Planning in progress
Goal # 2: Improve Access to Clean and Safe Water							
General							
16	Build and begin operation of a desalination plant in Nuevo León, using renewable energy as the energy source for the plant	Servicios de Agua y Drenaje de Monterrey (SADM, Nuevo León's water utility)		SADM, BECC, and National Water Commission	[HYPERLINK "mailto:normaarangel@gmail.com"] y [HYPERLINK "mailto:carlos.avila@sadm.gob.mx"]	Have the plant in operation by the end of 2014	
Objective 2: Help drinking water and wastewater service providers in the border region to implement sustainable infrastructure practices to reduce operating costs, improve energy efficiency, use water efficiently and adapt to climate change.							
17	Provide Teacher Training Workshop(s) and/or on-site facilitators to implement educational water quality monitoring events in conjunction with 2012/13 World Water Monitoring Challenge.	Texas Partnership for Water Education (TPWE): EPA, WEAT, TAWWA Scout Troops, ISDs, informal environmental	Funding needed varies with # of participants: Testing Kits $25/	Various funding possibilities will be explored	Karen Bick, EPA, Region 6 (214) 665-7539 [HYPERLINK "mailto:bick.karen@epa.gov"]	Teachers &/or students, as well as interested community members will have identified monitoring site. Sampling results are submitted to TPWE's	

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May 10, 2013

Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: Activity covers at least two task force areas				Gulf Task Force	Falcon Task Force	Amistad Task	
		education (EE) providers	30 individuals / site.			WWMC Program Coordinator.	
18	Promote energy management practices among water and wastewater utilities from Laredo to Brownsville, Texas. Conduct quarterly meetings on energy management planning, training on Pumping System Assessment Tool, and on-site energy efficiency assessments. Key cities include Laredo, Roma, Mission, Agua Specialty Utility District, Edinburg, McAllen, Pharr, Weslaco, Mercedes, Harlingen, and Brownsville	Partner with a university to conduct meetings, trainings and on-site energy assessment involving engineering students. 2012 partners are the Texas Manufacturing Assistance Centers at the University of Texas at Arlington and University of Texas Pan American.	Funding sought: $75,000/yr or $150,000	Various funding possibilities will be explored	David Reazin, EPA Region 6 (214) 665-7501	Hold quarterly meetings to develop energy management plan and benchmark energy use and costs, 1 PSAT training, and 2 on-site assessments.	
19	Organize a workshop in Laredo for water utilities and the restaurant industry to discuss best practices related to abatement of discharges of fats, oils, and grease (will also involve Nuevo Laredo)	City of Laredo water utility, Webb County, and Nuevo Laredo	$23,000	EPA Border Grant through the BECC	Karla Robles (City of Laredo Utilities) [HYPERLINK "mailto:krobles@ci.laredo.tx.us"]	Hold the workshops by the spring of 2013	Planning in progress

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Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: Activity covers at least two task force areas			Gulf Task Force		Falcon Task Force	Amistad Task	
20	Conduct training for small business on best practices related to discharges of fats, oils, and grease (will include before and after measures)	Municipio of Reynosa	$16,000	EPA Border Grant through the BECC	Mauricio Chalons (Municipio of Reynosa), 899 263-3798 [HYPERLINK "mailto:ecologiareynosa@hotmail.com"]	Training to be held???	Workplan is being developed
21	Implement a public campaign to increase awareness of problems of non-point -source pollution in the Lower Rio Grande Valley of Texas, through signs posted on roadways and at public facilities, messages on a school district television station, presentations at numerous public events and meetings, and newsletters of various organizations.	Fifteen cities in the Lower Rio Grande Valley (LRGV) that are members of the Texas Pollution Discharge Elimination System Stormwater Task Force, Texas A&M Kingsville, school districts, and NGOs	$40,000	EPA Border 2012 Grant Program through the BECC	Javier Guerrero (Lower Rio Grande Valley TPDES Stormwater Task Force, Texas A&M University-Kingsville), 956- 457-3023 [HYPERLINK "mailto:jguer0351@rgv.rr.com"]	Complete the project by the end of 2013.	As of May 2012, the project team had begun scheduling presentations at events in rural areas.
22 Sub-Obj. 3a	Implement a binational Lower Rio Grande Water Quality Initiative (from Falcon to the Gulf) that characterizes the state of the river, develops a strategic plan to improve environmental conditions, and proposes a monitoring plan to document progress	TCEQ, EPA, IBWC, CONAGUA, and federal, state, and local government agencies		TCEQ, EPA, IBWC, and federal, state, and local government agencies	Kelly Holligan (TCEQ), 512-239-2369, [HYPERLINK "mailto:Kelly.holligan@tceq.texas.gov"]	Establish the collaborative partnership by early 2013, and make substantive progress on objectives by the end of 2014.	Efforts are being made in 2012 to form the partnership

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Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: ☐ Activity covers at least two task force areas ☐ Gulf Task Force ☐ Falcon Task Force ☐ Amistad Task							
23 Sub-obj. 2b	Install/upgrade new sewer lines connected to Nuevo Laredo's wastewater treatment plant to prevent contaminated discharges to the Rio Grande	COMAPA and Municipio de Nuevo Laredo	$5,000,000	North American Development Bank (NADB)	Carlos Montiel Saeb (Comision Municipal de Agua Potable y Alcantarillado—COMAPA) [HYPERLINK "mailto:carlosmontielsaeb@hotmail.com"]	Complete the project by summer 2013.	The project was certified by the BECC in July 2012
Objective 3: Work binationally to identify and reduce surface water contamination in transboundary waterbodies or watersheds.							
24	Develop and produce region-specific supplemental materials necessary to produce a *Waters to the Sea*- Rio Grande module. (*Place- based education with comprehensive watershed focus)*	Center for Global Environmental Education (CGEE)- Hamline University. Harte Research Institute @ A&M-Corpus Christi. EPA R6, WEAT, AWWA.	Approx $100,000 in 2013 $ 50,000 in 2014	Various funding possibilities will be explored	CGEE- Tracy Fredin Karen Bick, EPA, Region 6 (214) 665-7539 [HYPERLINK "mailto:bick.karen@epa.gov"]	Recruit and establish an advisory board, produce videos and other materials, identify one or two ISDs to pilot program, and conduct training for at least 25 teachers in 2014.	Exploratory discussions are underway
25	Conduct feasibility studies for wastewater treatment plants in the municipalities of Hidalgo and Guerrero, Coahuila	CEAS Coahuila, SEMA Coahuila	$15,000	CNA, Coahuila	Alejandra Carrera (SEMA Coahuila), alejandra.carrera@sema.gob.mx	Complete the studies by early 2014	
26	Design and implement local public conservation campaigns and land conservation agreements for Rio San Rodrigo and Arroyo Las Vacas	SEMA Coahuila, Municipio de Piedras Negras and Municipio de Acuña	$400,000	Coahuila will fund first part and will be seeking funding for	Alejandra Carrera (SEMA Coahuila), alejandra.carrera@sema.gob.mx	Begin implementing the campaigns and conclude the agreements by the end of 2014.	

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Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: ☐ Activity covers at least two task force areas ☐ Gulf Task Force ☐ Falcon Task Force ☐ Amistad Task							
				the rest			
27	Implement a program to remove invasive plant m in the Rio Grande	SEMA Coahuila, CONANP, Profauna	$85,000	SEMA Coahuila, CONANP, Profauna – and will sekk for other funding sources	Alejandra Carrera (SEMA Coahuila) alejandra.carrera@sema.gob.mx	By the end of 2014, increase the invasive species plant removal program in the Rio Grande	
28	Organize a regional workshop to disseminate "best practices" related to water conservation policy, programs (such as EPA's Water Sense), and public education, and implement enhanced programs in at least one pair of sister cities.	City of Laredo, EPA, TCEQ, TX Water Development Board, Piedras Negras Technological Institute	$6,000	City of Laredo, EPA, TCEQ, and local sponsors,	Miguel A. Pescador [HYPERLINK "mailto:mpescador@ci.laredo.tx.us"] Debora Browning EPA, Region 6 [HYPERLINK "mailto:Browning.debora@epa.gov"]	Hold a regional workshop in Laredo by spring 2013, and implement a new campaign in two sister cities by 2014. Enlist 10 new WaterSense Partners.	
Goal # 3: Promote Materials Management, Waste Management and Clean Sites							
General							
Objective 1: By 2020, increase local and state-level knowledge and experience in the area of sustainable material management practices.							
29	Extend the state's environmental management system program (SIMA) to private institutions,	SEDUMA	$ 300,000	EPA/SEDUMA/SEMARNAT	Ing. Salvador Treviño [HYPERLINK	Reach out to 100% of the border cities	A strategy will be developed

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Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: Activity covers at least two task force areas				Gulf Task Force	Falcon Task Force	Amistad Task	
	schools and shops				"mailto:seduma@tamaulipas.gob.mx"]		
30	Redesign and extend coverage of the E-conexion Newsletter as strategy to share best practices	SEDUMA	$ 30,000	SEDUMA	Ing. Salvador Treviño seduma@tamaulipas.gob.mx	Extend the dissemination of the E-Conexion to 100% of the Tamaulipas municipalities	A strategy will be developed
31	Link and promote the Mexican federal program "Green Schools" in all three Mexican states in the region and explore possible use in Texas	SEMARNAT/Tamaulipas and state agencies in Tamaulipas, Nuevo León, and Coahuila	??	SEMARNAT	Delfino Ramirez (SEMARNAT/Tamaulipas), [HYPERLINK "mailto:Delfino.ramirez@semarnat.tamaulipas.gob.mx"]	Reach 150 schools in the 3 Mexican States by July 2013 Hold an information exchange meeting w/Texas 2014	First phase is complete
32	Design and implement a bilingual campaign against illegal dumping in Cameron County, Texas, using billboards, newspapers, and workshops at schools	Cameron County and the Valley Proud Environmental Council	$10,000	LRGVDC, TCEQ	Marcie Oviedo (Lower Rio Grande Development Council), [HYPERLINK "mailto:moviedo@lrgvdc.org"] (956) 682-3481	Finish the project by the end of 2014.	In progress
33	Through purchase of equipment, enhance the recycling programs in three local jurisdictions and composting operations in two jurisdictions, and develop and implement a public education	The Cities of Pharr, Mission, McAllen, and Mercedes, the Town of Bayview, and Cameron County	$160,000	Lower Rio Grande Valley Development Council, TCEQ, and	Marcie Oviedo (Lower Rio Grande Development Council), [HYPERLINK "mailto:moviedo@lr	Finish the six separate but related projects by the end of 2014.	In progress

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Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: ☐ Activity covers at least two task force areas ☐ Gulf Task Force ☐ Falcon Task Force ☐ Amistad Task							
	campaign regarding illegal dumping in a sixth jurisdiction			individual local government	gvdc.org"] (956) 682-3481		
34	Establish an environmental organization to develop environmental awareness and clean-up programs in Nuevo Laredo.	Keep Laredo Beautiful, Keep America Beautiful, and the Municipio de Nuevo Laredo	$5,000	The Gateway Rotary Club and Keep America Beautiful	Lynne Nava (Keep Laredo Beautiful) [HYPERLINK "mailto:lnava1@ci.laredo.tx.us"]	Recruit reps of non-profit organizations and school officials as members and name a board of directors in 2013.	In progress (Need a leader in Nuevo Laredo)
35	Expand a municipal recycling program started in March 2012 in Nuevo Laredo and currently consisting of placing public bins in parks, to include all elementary schools in Nuevo Laredo	Municipio de Nuevo Laredo	???	Municipio de Nuevo Laredo	Osvaldo Valencia (Municipio de Nuevo Laredo—Ecology Program) [HYPERLINK "mailto:valencia_osvaldo@hotmail.com"]	Install the bins at all elementary schools in 2013 and start relevant environmental education programs for students.	In progress
Objective 2: By 2014, identify priority waste streams and by 2020 develop sustainable material management practices that strengthen their respective market value.							
36	Design and implement a state scrap tire management program that includes valuation	SEDUMA	$400,000	SEDUMA/SEMARTANT/EPA	Ing. Salvador Treviño seduma@tamaulipas.gob.mx	Design of public policy and management plan for scrap tires	A study will be conducted
37	Evaluate and take advantage of energy potential of waste in Matamoros landfills	SEDUMA	$ 300,000	SEDUMA/EPA	Ing. Salvador Treviño seduma@tamaulipa	Complete action plan	Information will be gathered

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Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: Activity covers at least two task force areas				Gulf Task Force	Falcon Task Force	Amistad Task	
					s.gob.mx		
38	Assess the feasibility of using scrap tires for heavy-duty road-bed construction in Brownsville, TX	Texas A&M University – Kingsville	$15,000	EPA Border Grant thru BECC	Dr. Kim Jones [HYPERLINK "mailto:kfkdj00@tamuk.edu"]	Goals for 2013-2014???	In Progress
39	Build capacity in scrap-tire management throughout the region	Sustainable Development Secretariat, State of Nuevo León	$35,000	EPA Border Grant thru BECC	Lic. Norma a. Rangel Sevilla	Prepare a "best practices" manual and perhaps hold a regional workshop	Funding already approved by BECC – In progress
40	Use organic waste generated in Sabinas Hidalgo, Nuevo León to make compost and then apply it to agricultural uses and urban gardening	Sustainable Development Secretariat, SEMARNAT-Municipio of Sabinas Hidalgo, Nuevo León	Mexican federal funds $67,000	Municipio of Sabinas Hidalgo Nuevo León	[HYPERLINK "mailto:normaarangel@gmail.com"] y [HYPERLINK "mailto:chel1977@live.com.mx"]	By the end of 2014, compost 100% of organic waste collected by the municipality from large waste generators.	Under discussion. New administration may pose roadblocks
41	Develop a composting operation in Nuevo Laredo using sludge from the wastewater treatment plant and yard wastes, and apply the product in municipal parks as well as in homes (through sales to homeowners).	COMAPA and Municipio de Nuevo Laredo	$30,000 ¿?	Municipio de Nuevo Laredo	Carlos Montiel Saeb (Comisión Municipal de Agua Potable y Alcantarillado—COMAPA) [HYPERLINK "mailto:carlosmontieisaeb@hotmail.com"]	The program, including applications and sales, is expected to be in full operation by sometime in 2013.	As of April 2012 the equipment had been purchased, and process is being tested.
42	Implement a collection program for used electronic products	Municipio of Reynosa	$30,000	EPA Grant Program	Mauricio Chalons (Municipio of	The project will be in full operation by	First steps tp initiate program were taken in

Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: Activity covers at least two task force areas				Gulf Task Force	Falcon Task Force	Amistad Task	
				thru the BECC	Reynosa), 899 263-3798 [HYPERLINK "mailto:ecologiareynosa@hotmail.com"]	spring 2013	August 2012
Objective 3: By 2020, improve knowledge in every level of government (federal, state, local) to characterize and remediate contaminated sites.							
43	Complete the remediation of old oxidation lagoons	Municipio de Piedras Negras and State of Coahuila environmental agency (SEMA)	$300,000	State of Coahuila environmental agency (SEMA)	Alfredo Lucero (Piedras Negras), [HYPERLINK "mailto:aalm68@hotmail.com"]	Complete the remediation of the remaining 10.3 acres will by the end of 2013, after which the municipality will develop a road extension to and a green area at the site.	Prior to 2012, 19.7 acres of the 30-acre site had been remediated.
44	Clean up an old waste disposal site near the river banks of the Rio Grande in Eagle Pass	City of Eagle Pass	$3.5 million	City of Eagle Pass plus an additional funding source to	Hector Chavez (Eagle Pass) [HYPERLINK "mailto:hchavez@eaglepasstx.us"]	Finish the remediation in 2013, if supplementary funding can be identified, and then	Prior to 2012, five acres had been cleaned up and a protective cap constructed.

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Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: ☐ Activity covers at least two task force areas ☐ Gulf Task Force ☐ Falcon Task Force ☐ Amistad Task							
				be determined		develop a green area on the site.	
45	Establish a sustainable management plan for scrap ties in Piedras Negras, Coahuila	SEMA, Municipio de Piedras Negras	$400,000	¿?	Miguel Angel Leal (miguel.leal@sema.gob.mx)	Develop plan and place in full operation by the end of 2014	
Goal #4: Enhance Joint Preparedness for Environmental Response							
Objective 2: By 2020, at least eight (8) of the sister city joint contingency plans will be supplemented with preparedness and prevention related activities such as certified training, risk analysis, and/or capacity building.							
46	Develop an emergency response plan for the maquiladoras in Brecha E-99 in Reynosa,Tamaulipas	CAMPIR (Comite de Ayuda Mutua del Parque Industrial Reynosa) (Reynosa Industrial Park Mutual Aid Committee)	$10,000	EPA Border Grant thru BECC	Dr. Emilio Sonderegger Arriola emilio.sonderegger@landisgyr.com	???	Project On-Hold
47	Hold a second "knowledge exchange" on risk mapping for first responders on both sides of the Lower Rio Grande Valley in Texas-Tamaulipas, for the purpose of identifying and gaining access to existing sources of data on hazmat	Fire departments from Texas and Mexican municipalities in the Gulf Task Force area, EPA, TCEQ, Civil Protección	$30,000(?)	EPA and NORTHCOM	Paige Delgado (EPA), [HYPERLINK "mailto:Delgado.paige@epa.gov"] EPA Region 6	Hold the exchange during the first half of 2013	A first exchange was held in July 2012 In-progress

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Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: Activity covers at least two task force areas			Gulf Task Force		Falcon Task Force		Amistad Task
	storage and determining additional needs s	Tamaulipas and Mexico Civil Protección					
48	Hold a binational chemical-spill exercise at Bridge III between Nuevo Laredo, Tamaulipas and Laredo, Texas	Civil Protection and Fire Department of Nuevo Laredo, Tamps., and the City of Laredo Fire Department	$5,000	EPA Border Grant thru BECC	Lic. Juan Ernesto Rivera Gómez (Civil Protección de Nuevo Laredo), [HYPERLINK "mailto:proteccionciviinuevolaredo@hotmail.com"] or [HYPERLINK "mailto:ernestorivera5775@hotmail.com"]	???	No permit to cross yet – on hold – Bridge #3
49	Develop a joint contingency plan for the Solidarity Bridge that involves first responders from Colombia (Nuevo León), Nuevo Laredo (Tamaulipas), and Laredo (Texas), recognizing that Colombia, which is upstream from the other two cities, is much smaller and yet shipments of hazardous materials in the area are currently directed to this bridge	Civil Protección and fire departments for both Colombia and Nuevo Laredo, CODEFRONT, and the City of Laredo	$5,000 - will be looking for funders	EPA, COCEF, PROFEPA, and Protección Civil	[HYPERLINK "mailto:normaarangel@gmail.com"] Camacho, Protección Civil)	Add appropriate information related to the Solidarity Bridge to the Joint Contingehcy Plan for Laredo and Nuevo Laredo by the end of 2013.	Joint mock exercises have taken place.
50	Finish updating the 1998 Cross-Border Contingency Plan between the sister cities of Laredo, Texas and	Laredo Fire Department, Protección Civil de	No cost	City of Laredo and Nuevo	Eloy Vega (City of Laredo Fire Department)	Hold new meetings of the staff of the two cities in 2013 in	A draft version of the plan was completed, but the Laredo City

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Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: ☐ Activity covers at least two task force areas ☐ Gulf Task Force ☐ Falcon Task Force ☐ Amistad Task							
	Nuevo Laredo, Tamaulipas, in order to improve emergency response communication and protocols.	Nuevo Laredo, and CILA		Laredo	[HYPERLINK "mailto:evega@ci.laredo.tx.us"] Ernesto Rivera (Protección Civil de Nuevo Laredo) [HYPERLINK "mailto:proteccioncivilnuevolaredo@hotmail.com"]	order to re-visit the language of the draft revision and possibly develop alternative language.	Council has postponed approval because of security and personnel concerns
51	Update and improve the Cross-Border Contingency Plans for emergency response for the sister-city pairs of (a) Eagle Pass, Texas and Piedras Negras, Coahuila and (b)and Del Rio, Texas and Ciudad Acuna, Coahuila, which will include risk analysis and development of risk maps.	City of Eagle Pass, Municipio de Piedras Negras, City of Del Rio, Municipio de Ciudad Acuña, BECC, and the Rio Grande Institute	$130,000	EPA Border Grant thru BECC	Bill Skeen (Rio Grande Institute), [HYPERLINK "mailto:Bskeen@apttx.com"]	Finalize and sign both revised plans by the end 2013.	In the first half of 2012 the Rio Grande Institute conducted two workshops to seek input on cross-border emergency response protocols and identify transboundary risks.
Multi-Goal Projects							
Projects Potentially related to Air Quality, Water, Water Quality, and Waste Management							
52	Organize educational campaigns featuring training sessions for health professionals, health students, and promotoras followed by community	The University of Texas Health Science Center in	$50,000	EPA Border 2012 Grant Program thru BECC	Claudia Miller, M.D., MillerCS@uthscsa.	Complete the project by the end of 2013.	In Progress

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Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: ☐ Activity covers at least two task force areas ☐ Gulf Task Force ☐ Falcon Task Force ☐ Amistad Task							
	outreach in the Laredo and Harlingen areas in Texas, addressing how to reduce pre-natal and childhood exposure to pesticides, lead, solvents, second-hand tobacco, and diesel exhaust	San Antonio			edu or [HYPERLINK "mailto:steer@uthscsa.edu"]		
53	Conduct educational workshops on safe handling and disposal of pesticides for farm workers in the Lower Rio Grande Valley of Texas	Migrants in Action – Weslaco, Texas	$20,000	EPA Border Grant thru BECC	Noemi Ochoa (Association of Farmworker Opportunity Programs), [HYPERLINK "mailto:ochoa@afop.org"]	Complete the project by the end of 2013.	In progress – 1st presentations will take place in Laredo on October 18
54	Identify the sources of environmental health hazards through a "knowledge exchange" workshop and establish a binational database on epidemiological data related to these hazards	Texas A&M Health Science Center, School of Rural Public Health, PAHO, BECC, HIDA-REY COBINA, Hidalgo County Health Dept.	$50,000	EPA Border 2012 Grant Program thru BECC	Genny Carrillo (Texas A&M Health Science Center, School of Rural Public Health), [HYPERLINK "mailto:gcarrillo@srph.tamhsc.edu"]	Hold the "knowledge exchange" workshop and establish the database by the end of 2013.	The project began on April 1, 2012.
55	Address children's environmental health issues in Laredo, Texas by surveying a sample of homes and identifying health risks, tracking reported exposures through selected hospitals and clinics, developing and	Laredo Health Department	$50,000	EPA Border 2012 Grant Program thru BECC	Waldo Lopez (City of Laredo Health Department) [HYPERLINK "mailto:wlopez@ci.laredo.tx.us"]	Complete the project by the end of 2014.	As of May 2012, the project team had started the survey of homes and the tracking of data from hospitals and clinics.

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Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: ☐ Activity covers at least two task force areas ☐ Gulf Task Force ☐ Falcon Task Force ☐ Amistad Task							
	implementing a public outreach campaign regarding the identified risks, and identifying and publicizing two relevant online courses available for physicians						

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REGION 6
2013-2014 Action Plan
Texas-Coahuila-Tamaulipas-Nuevo Leon Regional Workgroup
(TX/COAH/TAM/NL RWG)

The **Four-State Regional Workgroup** is the most complex of the four regional workgroups, because of its geographical expanse and the number of municipalities. The region includes parts of three states and a total of at least 29 municipios on the Mexican side, and 168 cities and towns on the U.S. side. Recognizing this, the workgroup divided itself into three geographically based Task Forces—Amistad, Falcon, and Gulf, each of which has established subject-specific committees related to its priority concerns.

During the first half of 2012, the various committees have held meetings to discuss initial priorities for the Border 2020 program, and a regional meeting of leaders was held in June to develop a consensus of priorities at the task force and regional workgroup levels.

Regional Priorities

1. Improve air quality through the following approaches:
   a. Analyze emissions and emission sources in specific airsheds
   b. Engage in both road-paving and reforestation (using native species)
   c. Establish or improve vehicle inspection programs in those cities where the respective federal governments require them
   d. Increase energy efficiency at the consumption level and the use of renewable energy at all appropriate levels
2. Improve water quality by taking the following actions:
   a. Evaluate the portion of the Rio Grande watershed that is in the region
   b. Reduce contamination by providing wastewater treatment to unserved communities in the watershed
   c. Improving the existing treatment facilities by applying the most effective technologies and providing training to operators
   d. Develop more applications for the re-use of water
   e. Reduce non-native species in the water bodies
   f. Continue and expand environmental education efforts such as "Adopt the River" and "Day of the River"
3. Address problems of improper waste disposal:

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a. Develop comprehensive plans for solid waste management, including special wastes (such as sludge from wastewater treatment plants, scrap tires, and used electronic products) and hazardous wastes (residues from pesticides, extraction of fossil fuels, and medical facilities), looking for economic/productive uses of wastes whenever possible
b. Expand environmental education related to waste issues
c. Close and remediate open dumps wherever required by regulation

4. Assure that each project includes a component of environmental education (such as teacher training or building an environmental library), at least one indicator related to public health, and inspection and surveillance

Individual Task Force Priorities

Amistad Task Force

1. Reduction of energy consumption in buildings and street lighting
2. Increased use of alternate and renewable energy sources (such as landfill gas and solar energy)
3. Construction of sanitary landfills
4. Attention to waste disposal in gas drilling operations
5. Continuing attention to emergency response
6. Harmonization of protocols related to coal mining and remediation and to petroleum materials
7. Improvement of vehicle inspection programs in Coahuila
8. Joint programs in communication and environmental education, and development of an environmental educators group

Falcon Task Force

1. Re-use of treated water
2. Monitoring of drilling operations in the Eagle Ford Shale
3. Finalizing the cross-border contingency plan

Gulf Task Force

1. Improvement of water-related infrastructure, and increased attention to wáter conservation and re-use
2. Increased recycling
3. Continuing capacity-building at the local, state, and federal levels of government
4. Technical exchanges, including best practices and lessons learned

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Two Year Action Plan (TX/COAH/TAM/ML RWG)

Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: Activity covers at least two task force areas Gulf Task Force Falcon Task Force Amistad Task							
GOAL # 1: Reduce Air Pollution							
Objective 1: By 2020, reduce the number of vehicles operating in the border region that do not comply with the respective vehicle emissions standards, and reduce vehicle emissions at ports-of-entry through anti-idling and other feasible measures							
1	Continue to develop Coahuila's vehicle inspection program, partly in consultation with Texas regarding the latter's experience.	SEMA (Coahuila), COMIMSA, Municipio de Piedras Negras, Municipio de Acuña, TCEQ	$700,000	SEMA Coahuila	Miguel Ángel Leal Reyes (SEMA) [HYPERLINK "mailto:miguel.reyes@sema.gob.mx"]	Inspect 40% of the vehicles in Acuña, Piedras Negras, Monclova, Saltillo and Ramos Arizpe	Planning in progress
Objective 5: By 2020, reduce emissions and associated impacts, through energy efficiency and/or alternative/renewable energy projects							
2	Design and implement vehicle emission verification programs or campaigns	SEDUMA	To be defined	SEDUMA/ SEMARNAT	Ing. Salvador Treviño seduma@tamaulipas	Vehicle verification in the border area	By November 2012
3	Promote and encourage the use and exploitation of renewable energy sources and alternative energy potential	SEDUMA	To be defined	SEDUMA/ SEMARNAT	Ing. Salvador Treviño seduma@tamaulipas.gob.mx	Action plan for 9 wind power projects and state's strategic energy program	Baseline information is being collected
4	Strengthen the state's atmospheric monitoring system	SEDUMA	Por definirse	SEDUMA/ EPA/COCEF	Ing. Salvador Treviño [HYPERLINK "mailto:seduma@tamaulipas.gob.mx"]	By 2014, the system operating at 100% with programmatic consistency standards	Federal resources will be requested

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Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: Activity covers at least two task force areas				Gulf Task Force	Falcon Task Force	Amistad Task	
5	Implementation of a environmental management system as a strategy for energy efficiency	SEDUMA/Municipios	$ 100,000	SEDUMA/ EPA/COCEF	Ing. Salvador Treviño [HYPERLINK "mailto:seduma@tamaulipas.gob.mx"]	By 2014, train 100% of the border municipalities	Develop a strategy
[redacted]	Implement a competitive grants program aimed at local governments, dedicated to improvements in energy efficiency	University of Texas at Austin, LBJ School	$175,000	EPA and TCEQ	David Eaton (LBJ School), [HYPERLINK "mailto:eaton@mail.utexas.edu"]	Complete all projects by August 2013	RFP will be issued in October 2012
7	Initiate Phase 2 of the State Climate Action Plan for Coahuila (PEAC): Quantification of the mitigation ~~public~~ policies selected in Phase 1.	Coahuila State Government and BECC	$275,000	BECC	Tomás Balarezo, BECC	Econometric evaluation of mitigation ~~public~~ policies selected in Phase 1.	In early coordination with the state government
8	Initiate Phase 1 of the State Climate Action Plan for Tamaulipas (PEAC): Quantification of the mitigation public policies selected in Phase 1.	Tamaulipas State Government and BECC	$100,000	BECC	Tomás Balarezo, BECC	Selection of a number of prioritized mitigation public policies for climate change.	Work of five technical groups began on July 2012
9	Initiate Phase 1 of the State Climate Action Plan for Chihuahua (PEAC): Quantification of the mitigation public policies selected in Phase 1.	Chihuahua State Government and BECC	$100,000	BECC	Tomás Balarezo, BECC	Selection of a number of prioritized mitigation public policies for climate change.	In early coordination with the state government
10	Research the potential for harnessing wind power for electricity	SEMARNAT and SEDUMA		SEMARNAT - ill be seeking	[HYPERLINK "mailto:normaara	Conduct research and explore business opportunities	Late October 2012 – Forum in Reynosa

Commented [rp1]: Unclear what this language in column 1 means--Quantification of policies?

Commented [rp2]: If this is intended to be Phase 1, then the language in column 2 after the colon doesn't make sense. Same comment on project #9.

Commented [rp3]: This wording in column 10 for projects 8 and 9 is awkward. With all this money, they're going to "select" policies? Should this instead say "Promulgate and implement a prioritized set of policies related to climate change"?

Commented [rp4]: Whenever this was written, was it an intention or an accomplishment?

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Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: ☐ Activity covers at least two task force areas ☐ Gulf Task Force ☐ Falcon Task Force ☐ Amistad Task							
	in Tamaulipas			for funds	ngel@gmail.com"][HYPERLINK "mailto:Delfino.ramirez@semarnat.tamaulipas.gob.mx"]		
11	Research the potential for harnessing wind power for electricity generation in Nuevo León	Secretaría de Desarrollo Sustentable de Nuevo León	$10,000	Fondos Federales/CONACYT	[HYPERLINK "mailto:normaarangel@gmail.com"]	Establish wind monitors in selected areas of the state by the end of 2013, and begin generating wind maps in 2014.	
12	Construct and operate a facility that extracts methane gas from the Nuevo Laredo landfill and burns it to generate electricity for the municipality	Municipio de Nuevo Laredo and Setasa (Servicios de Tecnologia Ambiental S.A.)	$3.5 million	Private sector; a company will be selected and then will build and operate the plant, selling the electricity to CFE and giving a portion of revenues from carbon credits to the	Sergio Martinez López [HYPERLINK "mailto:sergiomartinezlopez@hotmail.com"]	Have the facility in full operation by the end of 2014.	A feasibility study was completed 2008 with funding from USAID. An RFP for a builder-operator will be issued in early 2013.

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Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: Activity covers at least two task force areas				Gulf Task Force	Falcon Task Force	Amistad Task	
				municipio.			
13	Implement a pilot program to diagnose the existing Mexican fleet of heavy-duty commercial trucks in cross-border trade in the Laredo - Nuevo Laredo area, identify retrofit technologies that would reduce emissions, and share information on those technologies, their costs, and suppliers at a binational forum	SEMARNAT and the Municipio of Nuevo Laredo	$50,000	EPA Border Grant thru BECC	Ing. Eduardo Olivares (SEMARNAT-Clean Transportation Program) [HYPERLINK "mailto:eduardo.olivares@semarnat.gob.mx"], and Osvaldo Valencia (Municipio de Nuevo Laredo—Ecology Program) [HYPERLINK "mailto:valencia_osvaldo@hotmail.com"]	Complete the project by the end of 2014.	
14	Establish an air quality monitoring network in Piedras Negras-Nava Region, Acuña, Sabinas Region and Saltillo Region, Coahuila	SEMA (Coahuila), Municipio de Piedras Negras, Acuña, Nava, Sabinas, Saltillo	1,400,000	SEMA Coahuila	Miguel Ángel Leal Reyes (SEMA Coahuila) [HYPERLINK "mailto:miguel.reyes@sema.ob.mx"]	Have air quality monitoring network in operation for Piedras Negras-Nava Region, Acuña, Sabinas Region and	Planning in progress

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Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: Activity covers at least two task force areas				Gulf Task Force	Falcon Task Force	Amistad Task	
						Saltillo Region, Coahuila	
15	Apply retrofit technologies to public buildings in Piedras Negras and Acuña, Coahuila that will reduce energy consumption	SEMA (Coahuila), Municipio de Piedras Negras y Municipio de Acuña	$500,000	SEMA Coahuila	Olga Rumayor (SEMA Coahuila) [HYPERLINK "mailto:olga.rumayor@sema.gob.mx"]	Involve municipal agencies through a series of workshops and select at least 10 buildings to pilot retrofit technologies.	Planning in progress
Goal # 2: Improve Access to Clean and Safe Water							
General							
16	Build and begin operation of a desalination plant in Nuevo León, using renewable energy as the energy source for the plant	Servicios de Agua y Drenaje de Monterrey (SADM, Nuevo León's water utility)		SADM, BECC, and National Water Commission	[HYPERLINK "mailto:normaarangel@gmail.com"] y [HYPERLINK "mailto:carlos.avila@sadm.gob.mx"]	Have the plant in operation by the end of 2014	
Objective 2: Help drinking water and wastewater service providers in the border region to implement sustainable infrastructure practices to reduce operating costs, improve energy efficiency, use water efficiently and adapt to climate change.							
17	Provide Teacher Training Workshop(s) and/or on-site facilitators to implement educational water quality monitoring events in conjunction with 2012/13 World Water Monitoring Challenge.	Texas Partnership for Water Education (TPWE): EPA, WEAT, TAWWA Scout Troops, ISDs, informal environmental	Funding needed varies with # of participants: Testing Kits $25/	Various funding possibilities will be explored	Karen Bick, EPA, Region 6 (214) 665-7539 [HYPERLINK "mailto:bick.karen@epa.gov"]	Teachers &/or students, as well as interested community members will have identified monitoring site. Sampling results are submitted to TPWE's	

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Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: Activity covers at least two task force areas				Gulf Task Force	Falcon Task Force	Amistad Task	
		education (EE) providers	30 individuals / site.			WWMC Program Coordinator.	
18	Promote energy management practices among water and wastewater utilities from Laredo to Brownsville, Texas. Conduct quarterly meetings on energy management planning, training on Pumping System Assessment Tool, and on-site energy efficiency assessments. Key cities include Laredo, Roma, Mission, Agua Specialty Utility District, Edinburg, McAllen, Pharr, Weslaco, Mercedes, Harlingen, and Brownsville	Partner with a university to conduct meetings, trainings and on-site energy assessment involving engineering students. 2012 partners are the Texas Manufacturing Assistance Centers at the University of Texas at Arlington and University of Texas Pan American.	Funding sought: $75,000/yr or $150,000	Various funding possibilities will be explored	David Reazin, EPA Region 6 (214) 665-7501	Hold quarterly meetings to develop energy management plan and benchmark energy use and costs, 1 PSAT training, and 2 on-site assessments.	
19	Organize a workshop in Laredo for water utilities and the restaurant industry to discuss best practices related to abatement of discharges of fats, oils, and grease (will also involve Nuevo Laredo)	City of Laredo water utility, Webb County, and Nuevo Laredo	$23,000	EPA Border Grant through the BECC	Karla Robles (City of Laredo Utilities) [HYPERLINK "mailto:krobles@ci.laredo.tx.us"]	Hold the workshops by the spring of 2013	Planning in progress

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Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: Activity covers at least two task force areas				Gulf Task Force	Falcon Task Force	Amistad Task	
20	Conduct training for small business on best practices related to discharges of fats, oils, and grease (will include before and after measures)	Municipio of Reynosa	$16,000	EPA Border Grant through the BECC	Mauricio Chalons (Municipio of Reynosa), 899 263-3798 [HYPERLINK "mailto:ecologiareynosa@hotmail.com"]	Training to be held???	Workplan is being developed
21	Implement a public campaign to increase awareness of problems of non-point -source pollution in the Lower Rio Grande Valley of Texas, through signs posted on roadways and at public facilities, messages on a school district television station, presentations at numerous public events and meetings, and newsletters of various organizations.	Fifteen cities in the Lower Rio Grande Valley (LRGV) that are members of the Texas Pollution Discharge Elimination System Stormwater Task Force, Texas A&M Kingsville, school districts, and NGOs	$40,000	EPA Border 2012 Grant Program through the BECC	Javier Guerrero (Lower Rio Grande Valley TPDES Stormwater Task Force, Texas A&M University-Kingsville), 956- 457-3023 [HYPERLINK "mailto:jguer0351@rgv.rr.com"]	Complete the project by the end of 2013.	As of May 2012, the project team had begun scheduling presentations at events in rural areas.
22 Sub-Obj. 3a	Implement a binational Lower Rio Grande Water Quality Initiative (from Falcon to the Gulf) that characterizes the state of the river, develops a strategic plan to improve environmental conditions, and proposes a monitoring plan to document progress	TCEQ, EPA, IBWC, CONAGUA, and federal, state, and local government agencies		TCEQ, EPA, IBWC, and federal, state, and local government agencies	Kelly Holligan (TCEQ), 512-239-2369, [HYPERLINK "mailto:Kelly.holligan@tceq.texas.gov"]	Establish the collaborative partnership by early 2013, and make substantive progress on objectives by the end of 2014.	Efforts are being made in 2012 to form the partnership

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Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: ☐ Activity covers at least two task force areas ☐ Gulf Task Force ☐ Falcon Task Force ☐ Amistad Task							
23 Sub-obj. 2b	Install/upgrade new sewer lines connected to Nuevo Laredo's wastewater treatment plant to prevent contaminated discharges to the Rio Grande	COMAPA and Municipio de Nuevo Laredo	$5,000,000	North American Development Bank (NADB)	Carlos Montiel Saeb (Comision Municipal de Agua Potable y Alcantarillado—COMAPA) [HYPERLINK "mailto:carlosmontielsaeb@hotmail.com"]	Complete the project by summer 2013.	The project was certified by the BECC in July 2012
Objective 3: Work binationally to identify and reduce surface water contamination in transboundary waterbodies or watersheds.							
24	Develop and produce region-specific supplemental materials necessary to produce a *Waters to the Sea*- Rio Grande module. (*Place- based education with comprehensive watershed focus)*	Center for Global Environmental Education (CGEE)- Hamline University. Harte Research Institute @ A&M-Corpus Christi. EPA R6, WEAT, AWWA.	Approx $100,000 in 2013 $ 50,000 in 2014	Various funding possibilities will be explored	CGEE- Tracy Fredin Karen Bick, EPA, Region 6 (214) 665-7539 [HYPERLINK "mailto:bick.karen@epa.gov"]	Recruit and establish an advisory board, produce videos and other materials, identify one or two ISDs to pilot program, and conduct training for at least 25 teachers in 2014.	Exploratory discussions are underway
25	Conduct feasibility studies for wastewater treatment plants in the municipalities of Hidalgo and Guerrero, Coahuila	CEAS Coahuila, SEMA Coahuila	$15,000	CNA, Coahuila	Alejandra Carrera (SEMA Coahuila), alejandra.carrera@sema.gob.mx	Complete the studies by early 2014	
26	Design and implement local public conservation campaigns and land conservation agreements for Rio San Rodrigo and Arroyo Las Vacas	SEMA Coahuila, Municipio de Piedras Negras and Municipio de Acuña	$400,000	Coahuila will fund first part and will be seeking funding for	Alejandra Carrera (SEMA Coahuila), alejandra.carrera@sema.gob.mx	Begin implementing the campaigns and conclude the agreements by the end of 2014.	

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Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: Activity covers at least two task force areas				Gulf Task Force	Falcon Task Force	Amistad Task	
				the rest			
27	Implement a program to remove invasive plant m in the Rio Grande	SEMA Coahuila, CONANP, Profauna	$85,000	SEMA Coahuila, CONANP, Profauna – and will sekk for other funding sources	Alejandra Carrera (SEMA Coahuila) alejandra.carrera@sema.gob.mx	By the end of 2014, increase the invasive species plant removal program in the Rio Grande	
28	Organize a regional workshop to disseminate "best practices" related to water conservation policy, programs (such as EPA's Water Sense), and public education, and implement enhanced programs in at least one pair of sister cities.	City of Laredo, EPA, TCEQ, TX Water Development Board, Piedras Negras Technological Institute	$6,000	City of Laredo, EPA, TCEQ, and local sponsors,	Miguel A. Pescador [HYPERLINK "mailto:mpescador@ci.laredo.tx.us"] Debora Browning EPA, Region 6 [HYPERLINK "mailto:Browning.debora@epa.gov"]	Hold a regional workshop in Laredo by spring 2013, and implement a new campaign in two sister cities by 2014. Enlist 10 new WaterSense Partners.	
Goal # 3: Promote Materials Management, Waste Management and Clean Sites							
General							
Objective 1: By 2020, increase local and state-level knowledge and experience in the area of sustainable material management practices.							
29	Extend the state's environmental management system program (SIMA) to private institutions,	SEDUMA	$ 300,000	EPA/SEDUMA/SEMARNAT	Ing. Salvador Treviño [HYPERLINK	Reach out to 100% of the border cities	A strategy will be developed

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Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: Activity covers at least two task force areas				Gulf Task Force	Falcon Task Force	Amistad Task	
	schools and shops				"mailto:seduma@tamaulipas.gob.mx"]		
30	Redesign and extend coverage of the E-conexion Newsletter as strategy to share best practices	SEDUMA	$ 30,000	SEDUMA	Ing. Salvador Treviño seduma@tamaulipas.gob.mx	Extend the dissemination of the E-Conexion to 100% of the Tamaulipas municipalities	A strategy will be developed
31	Link and promote the Mexican federal program "Green Schools" in all three Mexican states in the region and explore possible use in Texas	SEMARNAT/Tamaulipas and state agencies in Tamaulipas, Nuevo León, and Coahuila	??	SEMARNAT	Delfino Ramirez (SEMARNAT/Tamaulipas), [HYPERLINK "mailto:Delfino.ramirez@semarnat.tamaulipas.gob.mx"]	Reach 150 schools in the 3 Mexican States by July 2013 Hold an information exchange meeting w/Texas 2014	First phase is complete
32	Design and implement a bilingual campaign against illegal dumping in Cameron County, Texas, using billboards, newspapers, and workshops at schools	Cameron County and the Valley Proud Environmental Council	$10,000	LRGVDC, TCEQ	Marcie Oviedo (Lower Rio Grande Development Council), [HYPERLINK "mailto:moviedo@lrgvdc.org"] (956) 682-3481	Finish the project by the end of 2014.	In progress
33	Through purchase of equipment, enhance the recycling programs in three local jurisdictions and composting operations in two jurisdictions, and develop and implement a public education	The Cities of Pharr, Mission, McAllen, and Mercedes, the Town of Bayview, and Cameron County	$160,000	Lower Rio Grande Valley Development Council, TCEQ, and	Marcie Oviedo (Lower Rio Grande Development Council), [HYPERLINK "mailto:moviedo@lr	Finish the six separate but related projects by the end of 2014.	In progress

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Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: ☐ Activity covers at least two task force areas ☐ Gulf Task Force ☐ Falcon Task Force ☐ Amistad Task							
	campaign regarding illegal dumping in a sixth jurisdiction			individual local government	gvdc.org"] (956) 682-3481		
34	Establish an environmental organization to develop environmental awareness and clean-up programs in Nuevo Laredo.	Keep Laredo Beautiful, Keep America Beautiful, and the Municipio de Nuevo Laredo	$5,000	The Gateway Rotary Club and Keep America Beautiful	Lynne Nava (Keep Laredo Beautiful) [HYPERLINK "mailto:lnava1@ci.laredo.tx.us"]	Recruit reps of non-profit organizations and school officials as members and name a board of directors in 2013.	In progress (Need a leader in Nuevo Laredo)
35	Expand a municipal recycling program started in March 2012 in Nuevo Laredo and currently consisting of placing public bins in parks, to include all elementary schools in Nuevo Laredo	Municipio de Nuevo Laredo	???	Municipio de Nuevo Laredo	Osvaldo Valencia (Municipio de Nuevo Laredo—Ecology Program) [HYPERLINK "mailto:valencia_osvaldo@hotmail.com"]	Install the bins at all elementary schools in 2013 and start relevant environmental education programs for students.	In progress
Objective 2: By 2014, identify priority waste streams and by 2020 develop sustainable material management practices that strengthen their respective market value.							
36	Design and implement a state scrap tire management program that includes valuation	SEDUMA	$400,000	SEDUMA/SEMARTANT/EPA	Ing. Salvador Treviño seduma@tamaulipas.gob.mx	Design of public policy and management plan for scrap tires	A study will be conducted
37	Evaluate and take advantage of energy potential of waste in Matamoros landfills	SEDUMA	$ 300,000	SEDUMA/EPA	Ing. Salvador Treviño seduma@tamaulipa	Complete action plan	Information will be gathered

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Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: Activity covers at least two task force areas				Gulf Task Force	Falcon Task Force	Amistad Task	
					s.gob.mx		
38	Assess the feasibility of using scrap tires for heavy-duty road-bed construction in Brownsville, TX	Texas A&M University – Kingsville	$15,000	EPA Border Grant thru BECC	Dr. Kim Jones [HYPERLINK "mailto:kfkdj00@tamuk.edu"]	Goals for 2013-2014???	In Progress
39	Build capacity in scrap-tire management throughout the region	Sustainable Development Secretariat, State of Nuevo León	$35,000	EPA Border Grant thru BECC	Lic. Norma a. Rangel Sevilla	Prepare a "best practices" manual and perhaps hold a regional workshop	Funding already approved by BECC – In progress
40	Use organic waste generated in Sabinas Hidalgo, Nuevo León to make compost and then apply it to agricultural uses and urban gardening	Sustainable Development Secretariat, SEMARNAT-Municipio of Sabinas Hidalgo, Nuevo León	Mexican federal funds $67,000	Municipio of Sabinas Hidalgo Nuevo León	[HYPERLINK "mailto:normaarangel@gmail.com"] y [HYPERLINK "mailto:chel1977@live.com.mx"]	By the end of 2014, compost 100% of organic waste collected by the municipality from large waste generators.	Under discussion. New administration may pose roadblocks
41	Develop a composting operation in Nuevo Laredo using sludge from the wastewater treatment plant and yard wastes, and apply the product in municipal parks as well as in homes (through sales to homeowners).	COMAPA and Municipio de Nuevo Laredo	$30,000 ¿?	Municipio de Nuevo Laredo	Carlos Montiel Saeb (Comisión Municipal de Agua Potable y Alcantarillado—COMAPA) [HYPERLINK "mailto:carlosmontieisaeb@hotmail.com"]	The program, including applications and sales, is expected to be in full operation by sometime in 2013.	As of April 2012 the equipment had been purchased, and process is being tested.
42	Implement a collection program for used electronic products	Municipio of Reynosa	$30,000	EPA Grant Program	Mauricio Chalons (Municipio of	The project will be in full operation by	First steps tp initiate program were taken in

Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: Activity covers at least two task force areas				Gulf Task Force	Falcon Task Force	Amistad Task	
				thru the BECC	Reynosa), 899 263-3798 [HYPERLINK "mailto:ecologiareynosa@hotmail.com"]	spring 2013	August 2012
Objective 3: By 2020, improve knowledge in every level of government (federal, state, local) to characterize and remediate contaminated sites.							
43	Complete the remediation of old oxidation lagoons	Municipio de Piedras Negras and State of Coahuila environmental agency (SEMA)	$300,000	State of Coahuila environmental agency (SEMA)	Alfredo Lucero (Piedras Negras), [HYPERLINK "mailto:aalm68@hotmail.com"]	Complete the remediation of the remaining 10.3 acres will by the end of 2013, after which the municipality will develop a road extension to and a green area at the site.	Prior to 2012, 19.7 acres of the 30-acre site had been remediated.
44	Clean up an old waste disposal site near the river banks of the Rio Grande in Eagle Pass	City of Eagle Pass	$3.5 million	City of Eagle Pass plus an additional funding source to	Hector Chavez (Eagle Pass) [HYPERLINK "mailto:hchavez@eaglepasstx.us"]	Finish the remediation in 2013, if supplementary funding can be identified, and then	Prior to 2012, five acres had been cleaned up and a protective cap constructed.

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Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: ☐ Activity covers at least two task force areas ☐ Gulf Task Force ☐ Falcon Task Force ☐ Amistad Task							
				be determined		develop a green area on the site.	
45	Establish a sustainable management plan for scrap ties in Piedras Negras, Coahuila	SEMA, Municipio de Piedras Negras	$400,000	¿?	Miguel Angel Leal (miguel.leal@sema.gob.mx)	Develop plan and place in full operation by the end of 2014	
Goal #4: Enhance Joint Preparedness for Environmental Response							
Objective 2: By 2020, at least eight (8) of the sister city joint contingency plans will be supplemented with preparedness and prevention related activities such as certified training, risk analysis, and/or capacity building.							
46	Develop an emergency response plan for the maquiladoras in Brecha E-99 in Reynosa,Tamaulipas	CAMPIR (Comite de Ayuda Mutua del Parque Industrial Reynosa) (Reynosa Industrial Park Mutual Aid Committee)	$10,000	EPA Border Grant thru BECC	Dr. Emilio Sonderegger Arriola emilio.sonderegger@landisgyr.com	???	Project On-Hold
47	Hold a second "knowledge exchange" on risk mapping for first responders on both sides of the Lower Rio Grande Valley in Texas-Tamaulipas, for the purpose of identifying and gaining access to existing sources of data on hazmat	Fire departments from Texas and Mexican municipalities in the Gulf Task Force area, EPA, TCEQ, Civil Protección	$30,000(?)	EPA and NORTHCOM	Paige Delgado (EPA), [HYPERLINK "mailto:Delgado.paige@epa.gov"] EPA Region 6	Hold the exchange during the first half of 2013	A first exchange was held in July 2012 In-progress

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Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: Activity covers at least two task force areas			Gulf Task Force		Falcon Task Force		Amistad Task
	storage and determining additional needs s	Tamaulipas and Mexico Civil Protección					
48	Hold a binational chemical-spill exercise at Bridge III between Nuevo Laredo, Tamaulipas and Laredo, Texas	Civil Protection and Fire Department of Nuevo Laredo, Tamps., and the City of Laredo Fire Department	$5,000	EPA Border Grant thru BECC	Lic. Juan Ernesto Rivera Gómez (Civil Protección de Nuevo Laredo), [HYPERLINK "mailto:proteccionciviinuevolaredo@hotmail.com"] or [HYPERLINK "mailto:ernestorivera5775@hotmail.com"]	???	No permit to cross yet – on hold – Bridge #3
49	Develop a joint contingency plan for the Solidarity Bridge that involves first responders from Colombia (Nuevo León), Nuevo Laredo (Tamaulipas), and Laredo (Texas), recognizing that Colombia, which is upstream from the other two cities, is much smaller and yet shipments of hazardous materials in the area are currently directed to this bridge	Civil Protección and fire departments for both Colombia and Nuevo Laredo, CODEFRONT, and the City of Laredo	$5,000 - will be looking for funders	EPA, COCEF, PROFEPA, and Protección Civil	[HYPERLINK "mailto:normaarangel@gmail.com"] Camacho, Protección Civil)	Add appropriate information related to the Solidarity Bridge to the Joint Contingehcy Plan for Laredo and Nuevo Laredo by the end of 2013.	Joint mock exercises have taken place.
50	Finish updating the 1998 Cross-Border Contingency Plan between the sister cities of Laredo, Texas and	Laredo Fire Department, Protección Civil de	No cost	City of Laredo and Nuevo	Eloy Vega (City of Laredo Fire Department)	Hold new meetings of the staff of the two cities in 2013 in	A draft version of the plan was completed, but the Laredo City

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LEGEND: ☐ Activity covers at least two task force areas ☐ Gulf Task Force ☐ Falcon Task Force ☐ Amistad Task							
	Nuevo Laredo, Tamaulipas, in order to improve emergency response communication and protocols.	Nuevo Laredo, and CILA		Laredo	[HYPERLINK "mailto:evega@ci.laredo.tx.us"] Ernesto Rivera (Protección Civil de Nuevo Laredo) [HYPERLINK "mailto:proteccioncivilnuevolaredo@hotmail.com"]	order to re-visit the language of the draft revision and possibly develop alternative language.	Council has postponed approval because of security and personnel concerns
51	Update and improve the Cross-Border Contingency Plans for emergency response for the sister-city pairs of (a) Eagle Pass, Texas and Piedras Negras, Coahuila and (b)and Del Rio, Texas and Ciudad Acuna, Coahuila, which will include risk analysis and development of risk maps.	City of Eagle Pass, Municipio de Piedras Negras, City of Del Rio, Municipio de Ciudad Acuña, BECC, and the Rio Grande Institute	$130,000	EPA Border Grant thru BECC	Bill Skeen (Rio Grande Institute), [HYPERLINK "mailto:Bskeen@apttx.com"]	Finalize and sign both revised plans by the end 2013.	In the first half of 2012 the Rio Grande Institute conducted two workshops to seek input on cross-border emergency response protocols and identify transboundary risks.
Multi-Goal Projects							
Projects Potentially related to Air Quality, Water, Water Quality, and Waste Management							
52	Organize educational campaigns featuring training sessions for health professionals, health students, and promotoras followed by community	The University of Texas Health Science Center in	$50,000	EPA Border 2012 Grant Program thru BECC	Claudia Miller, M.D., MillerCS@uthscsa.	Complete the project by the end of 2013.	In Progress

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Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: Activity covers at least two task force areas			Gulf Task Force		Falcon Task Force	Amistad Task	
	outreach in the Laredo and Harlingen areas in Texas, addressing how to reduce pre-natal and childhood exposure to pesticides, lead, solvents, second-hand tobacco, and diesel exhaust	San Antonio			edu or [HYPERLINK "mailto:steer@uthscsa.edu"]		
53	Conduct educational workshops on safe handling and disposal of pesticides for farm workers in the Lower Rio Grande Valley of Texas	Migrants in Action – Weslaco, Texas	$20,000	EPA Border Grant thru BECC	Noemi Ochoa (Association of Farmworker Opportunity Programs), [HYPERLINK "mailto:ochoa@afop.org"]	Complete the project by the end of 2013.	In progress – 1st presentations will take place in Laredo on October 18
54	Identify the sources of environmental health hazards through a "knowledge exchange" workshop and establish a binational database on epidemiological data related to these hazards	Texas A&M Health Science Center, School of Rural Public Health, PAHO, BECC, HIDA-REY COBINA, Hidalgo County Health Dept.	$50,000	EPA Border 2012 Grant Program thru BECC	Genny Carrillo (Texas A&M Health Science Center, School of Rural Public Health), [HYPERLINK "mailto:gcarrillo@srph.tamhsc.edu"]	Hold the "knowledge exchange" workshop and establish the database by the end of 2013.	The project began on April 1, 2012.
55	Address children's environmental health issues in Laredo, Texas by surveying a sample of homes and identifying health risks, tracking reported exposures through selected hospitals and clinics, developing and	Laredo Health Department	$50,000	EPA Border 2012 Grant Program thru BECC	Waldo Lopez (City of Laredo Health Department) [HYPERLINK "mailto:wlopez@ci.laredo.tx.us"]	Complete the project by the end of 2014.	As of May 2012, the project team had started the survey of homes and the tracking of data from hospitals and clinics.

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May 10, 2013

Project#	Description of Project	Collaborating Organizations	Anticipated Cost	Source(s) of funding	Points of Contact	2013-2014 Target	Progress Towards Target
LEGEND: Activity covers at least two task force areas				Gulf Task Force	Falcon Task Force	Amistad Task	
	implementing a public outreach campaign regarding the identified risks, and identifying and publicizing two relevant online courses available for physicians						

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OFFICE OF REGIONAL AND BILATERAL AFFAIRS (ORBA) WEEKLY REPORT: September 29 – October 3, 2018

ISSUES OF NOTE

MEXICO CHAIRS ALTERNATAIVE REPRESENTATIVES (ALT REPS) MEETING OF THE COUNCIL FOR THE COMMISSION ON ENVIRONMENTAL COOPERATION (CEC)

- Last June, the EPA Administrator chaired and hosted the CEC Council Session in Oklahoma. At the conclusion of the session, Mexico's Secretary for Environment and Natural Resources assumed the chairmanship of the Council. In July, Mexico elected a new government that will be in place in December. Mexico's new Secretary for Environment will serve as Council Chair.
- On October 3, Mexico hosted a Alt Reps call to initiate planning for the 2019-2020 operations of the CEC.
- U.S. Alt Rep Jane Nishida, Canada Alt Rep Isabelle Berard, and Mexico Alt Rep (Chair) Enrique Lendo, discussed strategic planning, government transitions, and budgets.
- The Alt Reps instructed the CEC Secretariat and the General Standing Committee to continue implementation of the 2017-2018 Operational Plan (OP) projects through June 2019. This approach restores the original OP project implementation period to 2019 but maintains the 2018 reduced project budgets. [TROCHE]

EPA HOSTS 11TH U.S.-CHINA REGIONAL AIR QUALITY MANAGEMENT (RAQM) CONFERENCE

- On Oct. 1, OAQPS hosted the 11th U.S.-China RAQM Conference between EPA and the Ministry of Ecology and Environment (MEE) to exchange technical and policy strategies to advise China's ozone management and VOC emission control strategies.

- Mr. Liu Bingjiang, Director General of the Ministry of Ecology and Environment's Department of Air Environment Management, emphasized the importance of U.S.-China cooperation on air quality in addressing international and transboundary air pollution. DG Liu highlighted China's progress on air pollution initiatives since strengthening collaboration with the U.S. through exchanges and forums such as the U.S.-China RAQM.

- Topics covered during the conference included many components of air quality management, including monitoring, modeling, emissions inventories, air quality trends and

regional cooperation. The Chinese delegation described their effective PM control programs and their concern about rising levels of ozone.

- Within the past decade, China has established a network of over 5000 air monitors to provide real-time hourly air quality data for many major Chinese cities and the most polluted regions.

- Since 2005, EPA and MEE have coordinated and participated in ten RAQM conferences, which have been successful in educating national and provincial environmental officials in the various aspects of air quality management and reducing transboundary air pollution. This was only the second RAQM in the United States and the first one in RTP. ORBA Director Mark Kasman and OAQPS Director Peter Tsirigotis helped welcome the delegation to EPA. [Kasman, Almodovar, Voorhees, Chen]

AIR QUALITY MANAGEMENT REGIONAL DIALOGUE REVIEWS PROGRESS

- ORBA Deputy Director, Lisa Almodovar and Orlando Gonzalez, CAFTA-DR Program Manager, participated in the air quality management regional dialogue in CAFTA-DR countries (El Salvador, Honduras, Costa Rica, Guatemala, Nicaragua, and Dominican Republic), October 2-3, 2018.
- The purpose of the dialogue was to:
    - Have a face-to-face review of the key concepts and homework from the first two of four air quality management webinars delivered: QA/QC and Technical and Analytical Capacity.
    - Engage in a discussion and information exchange among countries based on lessons learned thus creating leveraging opportunities
    - Identify best practices and/or challenges on QA/QC and technical analytical capacity in specific countries or cases.
    - Conduct hands-on training with air monitoring instruments, including air sensors.

- In addition, the dialogue provided a platform to discuss the deployment of the remaining two air quality management (AQM) webinars: emission inventories and air quality management standards.
- The participants' feedback on the effectiveness (e.g. deployment and materials and information) of the first two AQM webinars helps EPA and Battelle Institute (collaborating partner through the EPA-Battelle cooperative agreement) with the development of the remaining two AQM webinars. The third webinar--emission inventories-- is expected to be delivered in November 2018. The fourth webinar will be deployed in early 2019. [Gonzalez, Almodovar, Guen-Murray].

OITA AND OLEM FACILITATE INTERNATAIONAL E-WASTE MANAGEMENT NETWORK WORKSHOP

- On September 24-29, 2018, the U.S. EPA and Taiwan Environmental Protection Administration sponsored the 8th International E-Waste Management Network (IEMN) Workshop in Manila, Philippines to increase the implementation of environmentally sound management of electronic waste.
- According to the United Nations, the growing volume of electronic waste, including mobile phones, laptops, televisions, refrigerators and electrical toys, poses a major threat to the environment and human health. In 2016, only about 20 percent of all e-waste globally was recycled. Certain components of electronic products contain materials that are hazardous when not disposed of correctly and can leach lead and other substances into soil and groundwater. Many of these products can be reused, refurbished, or recycled in an environmentally sound manner so that they are less harmful to the ecosystem and reduce the need to extract or manufacture virgin materials to fabricate new products.
- Government officials from 11 countries (Argentina, Brazil, Chile, Colombia, Egypt, Indonesia, Malaysia, Philippines, Thailand, Tuvalu and Vietnam) enhanced their capacity to: assess downstream markets for e-waste materials; understand the opportunities and impacts of major market changes; examine the benefits and barriers involved with new processes and technologies; identify effective ways of building relationships and working with industry; and describe the elements of a facility audit to protect worker health and safety and the environment.
- Throughout the workshop, participants identified individual actions to enhance their comprehensive programs for the collection, reuse and recycling of e-waste, as well as, collective and IEMN team actions to achieve our shared mission of increasing the implementation of environmentally sound management of e-waste.
- This workshop was an activity of the International Environmental Partnership. [Doroski, Adrian, Johnson, Pollard]

EPA MEETS WITH VIETNAMESE DELEGATION TO DISCUSS CHEMICALS MANAGEMENT

- On Tuesday October 3rd, OPPT hosted a meeting with the Vietnam Chemicals Agency (Vinachemia) to share information about the implementation of the Toxic Substances Control Act.
- The six-person delegation, which was headed by the Director General of Vinachemia, also included officials from the Ministry of Natural Resources and Environment. This meeting was part of a 10-day visit to the U.S. to learn more about chemicals management in the U.S. to help inform future revisions to Vietnam's chemicals law.
- During the discussion, EPA presented the key components of the chemical review process for both new and existing chemicals. Vietnam asked questions regarding the challenges of banning chemicals and inter-agency cooperation for chemical risk management. (Kasat)

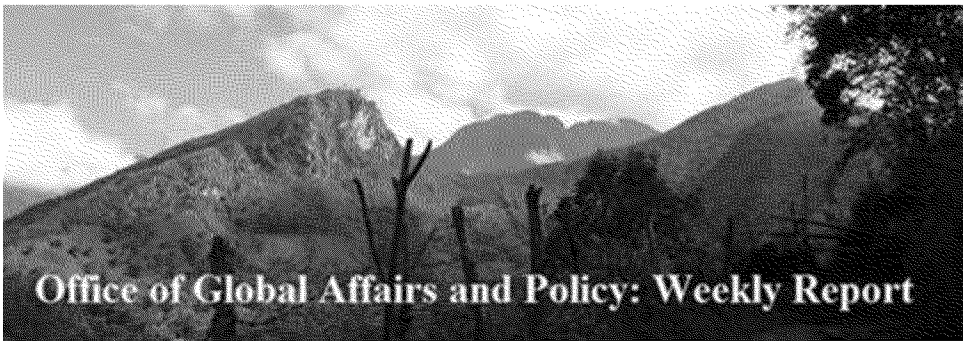
"ESCAZÚ AGREEMENT" ON ACCESS TO INFORMATION, PUBLIC PARTICIPATION AND JUSTICE IN ENVIRONMENTAL MATTERS OPENS FOR SIGNATURE

- Fourteen Latin American and Caribbean countries -- Antigua and Barbuda, Argentina, Brazil, Costa Rica, Dominican Republic, Ecuador, Guatemala, Guyana, Haiti, Mexico, Panama, Peru, Saint Lucia, and Uruguay -- signed the Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean at a 9/27 ceremony on the margins of the UN General Assembly.
- Better known as the "Escazú Agreement" for the Costa Rican city where it was signed, the Agreement seeks to ensure that all people have access to timely and reliable information, can participate effectively in the decisions that affect their lives and their surroundings, and have access to justice in environmental affairs so they can contribute to the fulfillment of the UN Sustainable Development Goals (SDGs).
- It is the first environmental treaty among Latin America and Caribbean countries and the only of its kind in the world to emerge from the Rio + 20 United Nations Conference on Sustainable Development.
- Eleven countries must complete their national ratification processes for the Agreement to enter into force. [Hill-Macon, Gonzalez, Hong, Mercurio]

UPCOMING EVENTS

October 11-12, PDAA Jane Nishida will deliver a keynote speech at the Yushan Forum in Taiwan and hold meetings with authorities in Taiwan.

OFFICE OF GLOBAL AFFAIRS AND POLICY
October 4, 2018



U.S., Mexico, Canada Agreement (USMCA)
After a series of high level trade negotiations over the weekend, the United States and Canada resolved remaining issues, enabling Canada to join the United States and Mexico in a modernized and comprehensive trilateral trade agreement. The agreement contains the most progressive environment chapter we have negotiated to date. Text of the agreement has been published and is now publicly available. Heads of State are anticipated to sign it in late November, possibly at the margins of the G-20 meeting. At that point, it will be submitted to Congress for approval. A Congressional vote is not expected until February or March of next year. (Ferrante)

U.S. Delegation Meeting for the Intergovernmental Review Meeting (IGR-4) on the Implementation of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (GPA)
OITA staff participated in a pre-meeting of the IGR-4 GPA delegation team to discuss draft position papers that include US positions on the implementation of the GPA during the period of 2018-2022. The GPA's work going forward will include global cooperation to address marine litter through the Regional Seas programs in order to enhance the effectiveness of national, regional and international actions to mitigate land-based marine pollution. IGR-4 is scheduled for October 31-November 1. Department of State will lead the delegation, which will include NOAA and EPA staff. [Sims]

8th Annual International E-waste Management Network Workshop
Last week, EPA, Taiwan EPA and the Philippines Department of Environment and Natural Resources (DENR) hosted government representatives from 10 countries to share expertise and tools that could help them improve their e-waste management. The workshop took place in Manila, Philippines where experts on recycling, reuse and extended producer responsibility presented knowledge and advice to the IEMN members. Participating countries included Thailand, Indonesia, Malaysia, Vietnam, Colombia, Argentina, Chile, Brazil, Egypt, and Tuvalu. Experts from industry included Sims Recycling, Cascade Asset Management, Blue Whale, Acer, E & E Recycling and SOLAR, with additional experts in auditing and certifications. United Nations University and the Partnership in Environmental Management for the Seas of South Asia shared Circulate Capital's innovative finance mechanism for solid waste management. OITA and OLEM coordinated for EPA. [Doroski, Guen-Murray, Pollard, Johnson, Adrian]

Action to address air pollution as a major risk factor for non-communicable disease successfully incorporated into new Political Declaration at UNGA

On September 27 the UN General Assembly (UNGA) 3rd High Level Meeting on Non-communicable Diseases (NCDs) adopted a Political Declaration in support of the Sustainable Development Goal target to cut by one-third NCD deaths globally by 2030. NCDs currently account for seven in ten deaths around the world, primarily from cardiovascular diseases, chronic respiratory diseases, cancer, and diabetes. A Global Action Plan on NCDs (2013-2020) identifies actions to reduce four major NCD risk factors, including unhealthy diet, tobacco use, harmful use of alcohol, and physical inactivity to data. Missing from this global action agenda is the recognition and response aimed reducing air pollution as a major NCD risk factor (second only to unhealthy diet). To address this neglect, the U.S. was successful in incorporating air pollution as a fifth main NCD risk factor, with EPA providing to State Department negotiators background and text that has resulted in the inclusion of the following action item in the Political Declaration: "OP15. Increase global awareness, action and international cooperation on environmental risk factors to address the high number of premature deaths from non-communicable diseases attributed to human exposure to indoor and outdoor air pollution, and underscoring the particular importance of cross-sectoral cooperation in addressing these public health risks." [MacDonald]

OGAP meets with UN on International Lead Paint Activities

Last week OGAP attended a series of meetings with UN Environment and the World Health Organization to discuss international efforts under the Global Alliance to Eliminate Lead Paint (Lead Paint Alliance) in Geneva, Switzerland. OGAP chaired a meeting of the Advisory Council of the Lead Paint Alliance, which is comprised of Alliance partner representatives from government, industry, international organizations, and health and environmental NGOs. Participants reported out on their activities to eliminate lead paint, UN Environment announced new partners (such as NYU School of Medicine, the Government of Vietnam) and briefed the Council on the upcoming GEF Project on Lead Paint. OGAP also co-chaired a meeting with the Lead Paint Alliance Secretariat, jointly led by UN Environment and WHO, where discussions centered on how to increase momentum toward lead paint laws through an effective GEF Project. UN Environment also hosted a planning meeting of the partners of the GEF Lead Paint Project, which include EPA, the International Paint and Printing Ink Council (representing the international paint industry), Pacific Paints (a large paint company from the Philippines), WHO, and IPEN (an international environmental NGO). The GEF Project is set to launch in early 2019 with regional workshops to be held in each UN region of the world. [Smith, Bandemehr]

Upcoming Events

International Lead Poisoning Prevention Week of Action, October 22-27 – Organizations around the world will hold events to raise awareness on lead using a WHO resource package: http://www.who.int/ipcs/lead_campaign/en/

Office of Management & International Services Weekly Report for October 1 - 5, 2018

FY 2019 Continuing Resolution: On Tuesday, September 18, 2018, the Senate passed H.R. 6157, the Department of Defense and Labor, Health and Human Services, and Education Appropriations Act, 2019 and Continuing Appropriations Act, 2019 by a vote of 93-7.

- On Wednesday, September 26, 2018, the House of Representatives passed the bill by a vote of 361-61.
- The President sign this legislation on Friday, September 28, 2018. This enacted bill includes a continuing resolution that provides the EPA with funding starting today through December 7, 2018, using the Consolidated Appropriations Act 2018 (Public Law 115-141) as the base.
- The House of Representatives and Senate are scheduled to return from a recess on November 13, 2018. Once the House and Senate return, they may continue conference negotiations on H.R 6147, Department of the Interior, Environment, and Related Agencies Appropriations Act, 2019. (See M. Weckesser)

Safe Disposal of Expired Medications: On Wednesday, Oct. 24, from 10 a.m. to 1 p.m., bring unwanted or expired prescription medications to the Ronald Reagan Building Health Unit room G1-20 or the Potomac Yard Health Unit room S-1400 for safe, free and anonymous disposal.

- This event will be held in conjunction with the Drug Enforcement Administration's National Prescription Drug Take-Back Initiative to prevent drug abuse and theft by ridding homes of expired or unwanted medications. For more information about prescription drug disposal, visit the EPA intranet.
- If you have questions about the event, please contact SeVera Wilson at 202-564-0097.

GAD Policy Changes: The Office of Grants and Debarment (OGD) has issued the following Policy changes effective October 1, 2018:

- Grants Policy Issuance (GPI) 18-03: EPA Electronic Payment and Proper Payment Drawdown Policy (ASAP Policy). The ASAP Policy is now available on the GPI Topics Intranet page, along with helpful resources, such as supplemental internal guidance and training. Also included is a list of those EPA assistance agreement recipients not enrolled is ASAP. This list will be updated monthly so that prior to award EPA grants personnel can verify those recipients not enrolled in ASAP.
- OGD also issued a public facing Recipient/Applicant Information Notice, RAIN-2018-G06 to notify applicants an recipients of the ASAP Policy requirements. Applicants or recipients who cannot satisfy one or both requirements of the policy may request exceptions to the policy requirements prior to or after award if they demonstrate that compliance will impose undue administrative or financial management burdens on the recipient or that granting the waiver is otherwise in the public interest. Policy exceptions are detailed in the external facing RAIN-2018-G06.
- Rescission of GPI 08-02 and Revision of GPI 11-01; Notice 2018-G12 has been posted to the Policy Notice Library intranet page
- Grants Policy Issuance 14-01 (GPI 14-01), *Electronic Submission of Initial Grant Applications,* to require that all initial proposals include all forms necessary for award.
- Revised GPI 13-02, *Streamlining Tribal Grants Management,* and rescinds GPI 08-01, *Bundling of Grant Application Assurances/Certifications for Regionally-awarded Grants to State agencies under 40 CFR Part 35,* to discontinue the allowance of bundling grants application assurances and certifications by tribal and state applicants, respectively.
- 18-01, *Suspension and Debarment*, with an effective date of October 1, 2018.This GPI outlines the responsibilities of EPA personnel involved in the administration and management of covered transactions as described in Attachment A of the GPI and funds-out IAs that fund covered transactions.
- Updated Assistance Agreement Terms and Conditions have been updated for FY2019 (https://www.epa.gov/grants/epa-general-terms-and-conditions-effective-october-1-2018. In addition, several T&Cs that were previously in IGMS have been moved to the General T&Cs, including #9. *Foreign Travel and* #10. *Fly America Act and Foreign Travel.* The new T&Cs are:
    - #4. ASAP and Proper Payment Drawdown Term and Condition,
    - #15. Indirect Cost Rate Agreements,
    - #18. Suspension and Debarment,
    - #19. Representation by Corporations Regarding Delinquent Tax Liability or a Felony Conviction under any Federal Law (replaces previous T&C Unpaid Federal Tax Liabilities and Felony Convictions for Non-Profit and For-Profit Organizations),
    - #22. *Transfer of Funds,*
    - #34. Scientific Integrity

Quarterly Performance Review: OCFO provided guidance for the development of the Q4 Quarterly Performance Review (QPR) for the Acting Administrator; scheduled for November 1, 2018.

- Similar to the last QPR (FY18 Q2), OCFO is taking a close look at
  - Missed targets for our 26 long-term performance goals in our strategic plan and
  - Reform plan priority areas
- In addition, OCFO will develop slides on overall measure improvements, progress toward the Agency-wide measures, and a single slide on long-term performance goals with data gaps.
  - Measure Discussion Template

Missed Target: [Measure Short Tittle]

Long-Term Performance Goal Owner: [Office] Lead: [Metric Owner's Name]

[PG Goal.Objective.Measure Number: Long-term Performance Goal, full measure text]

Results

Target: [XX, unit of measure]
Actual: [XX, unit of measure]

Root cause

[The root cause is the action, behavior, or system element that is leading to the visible problem. The 5 Whys approach will help you get much closer to the root cause of the problem. A resource with examples on the 5 Whys approach can be found here.]

Progress Made in FY18

* 1-3 bullets on result(s) of actions taken to address the root cause of the missed target (including relevant responses to the Q2 QPR Follow Up Actions).
* Include progress identified in APG Actions Plans if applicable.

Actions Planned through *End of 1st Quarter FY19*

* A maximum of three specific actions that will be taken in FY 2019 to improve performance.
* Please provide specific timeframes/dates where possible.
* Include reference to Reform Plan Priority Area/ A3 / Kaizen/ Lean events/ APG Action Plans/ etc. (as appropriate).

  - OITA does not have any measures to report on for this review.

12 Reasons a Grant Funding Package is Returned to PO: OGD updated the "12 Reasons to Return a Funding Package" also known as the "Elvis list". Visit the below link to review the updated version. http://intranet.epa.gov/ogd/policy/fr_rework_policy_guidance.pdf (See L. Connell)

International Visitors Meetings for October 8 through October 12:

Monday	*Tuesday*	*Wednesday*	*Thursday*	*Friday*
	OAR – Delegation from China OAR – Delegation from India OAR – Delegation from Nigeria OARM – Delegation from Chile	OITA – Delegation from Chile OAR – Delegation from Japan	OITA – Delegation from Chile	

Travel by EPA senior managers

Traveler: Jane Nishida, Principal Deputy Assistant Administrator, OITA
Destinations: TAIPEI - TAIWAN
Meeting: EPA Taiwan Minister Meeting
Date: 10/09/2018

Japhet Cruz
EPA OEJTIA
Date: October 5, 2017

PARS Final-Year Performance Narrative for Dec 2016- September 2017

Since my arrival to EPA R6 OEJTIA/B2020 I have had the opportunity train, place into practice my Grant Management, Project Management, Coordination and engagement skills. I have quickly learned the B2020 Program and because of my fast learning skills I've been able to perform at the same level as my co-workers in El Paso Office. At times performing and developing high quality work on time, balancing, volunteering to help other when needed and with minimal supervision demonstrating my ability to perform at a higher General Schedule grade level.

Based on the B2020 increased workload since the BECC consultant contract was terminated and the great outcome of the FY'17 RFP I have rapidly been able to manage all my B2020 duties/responsibilities, performing as the 4 State main coordinator/liaison as well as keeping up with my Environmental Justice Project Officer duties.

I have been able to increase transparency and coordination between El Paso, Region 6, HQ and the wide geographical spread region of the 4 State for the B2020; improved Regional decision making in international program budget and projects pointing out deficiencies and duplicate efforts and at the same time providing sound solutions to address such issues; improved Regional participation in the development and implementation of international projects and priority area and increasing leveraging opportunities from other sources.

Improved process flow of information, project management, data organization, brining additional resources to the program, performing outreach and engagement with potential partners, as well as spreading the message to the B2020 to take more leadership and ownership of the Program.

Continue to assist other co-workers when necessary, consulted and as requested in topics related with Emergency Management, Grants and Community Planning.

Major Accomplishments or Projects:

1. Reports and Document Preparation:

    a. Successfully provided support by translating the 3 and 4 State Regional Workgroup meeting agendas by collaborating with EPA XA, El Paso Office and R6 RA Office.
    b. Efficiently translated and drafted the 4 State Regional Workgroup meeting report for Border 2020 during Feb. 2017– worked with El Paso Office and BECC Consultant to ensure information was captured on the report.
    c. Preparation of a variety of reports partnering with El Paso Office and sent to EPA OEJTIA Leadership (OITA Reports, Weekly Activity Reports (WAR)
    d. Coordinated, collaborated and transcribed with Maria Sisneros on preparation of guidance and operative procedures relevant to Region 6 Border Program (Communication Plan, RFP flow Chart and Program Overview)
    e. Developed the 4 State Structure presentation and prepared a detailed excel report for both OEJTIA and El Paso Office related to current and past projects in the 3 and 4 State Border Regions.

f. Drafted various documents for the Border Program, RFP Process etc. Some of these include a Dashboard where El Paso Office Director can monitor current activities or projects, Standard Operating Procedures related to the RFP process and an Operational Guide. These document can and will provide continuous support to current and future staff as far as how process work and a clear understanding of the program.
g. Developed various work plans, action plans, power point presentations for the benefit of the B2020 Program.
h. Provided clear and concise reports to management by utilizing various MS Programs and Share Point.

2. 4 State Coordination and Work:

   a. Facilitated with logistic coordination of the meeting and prep work with assigned taskforce co-leads. Reviewed presentations on Border 2020 in Feb. and provided information to the Border Office.
   b. Coordinated and facilitated an Intergovernmental Working Session on August 23, EPA along with U.S. Geological Survey (USGS), Housing Urban Development (HUD), Harlingen Chamber of Commerce, TCEQ and the Lower Rio Grande Valley Development Council (LRGVDC) in Weslaco, Texas, with the purpose of strengthening relationships, creating new partnerships and seeking a way to help the Border 2020 Program and the citizens of this geographical area.

      - Coordination with various federal, state and local agencies. Worked to ensure speakers were chosen to present, obtaining presentation and all necessary paperwork needed to ensure to ensure the information presented was of benefit of the 4 State Task Forces.
      - Coordinated conference venue logistics that included setup of main room and break out rooms. Was able to work with LRGVDC to be able to use their facilities during the event.
      - Presented a Border 2020 Presentation in the last session of the conference.
      - Topics covered- leveraging; synergy; partnerships; Gulf priorities; intergovernmental relationships; water infrastructure; emergency management; and geographic culture.
      - Overall it was a very productive and much needed session in order to continue strengthening the Border 2020 Program and continue building successful partnerships.
      - As a result of such collaboration the USGS agreed to be a partner in B2020 providing both technical and financial resources in a binational manner.
      - This event was done within budget and at very minimal expenses for the Program and the outcomes have been very successful.

3. COMMUNICATION ACTIVITIES: Have been assisting with development of various Communication activities for upcoming Border 2020 program. Various activities have involved frequent conference calls with staff from R9 and HQ and coordination with state and local partners.
   - Help to draft and worked finalizing the Accomplishment/Transition Report for Border 2020 for September 2017– worked with El Paso Office, HQ and staff to finalize accomplishment reports.

- Worked on Border Report for OEJTIA office and Region 9 for activities related to GIS and finalizing the B2020 Tri Fold. Work included obtaining GIS files, working closely with R9 staff to recreate a more visual map of the Border and provided suggestions on final layout of the document.
- Conference Calls: Monthly calls with EPA HQ, R9, TCEQ and SEMARNAT staff to discuss communications within Border 2020 Program.
- SharePoint – Uploaded and organized material in Border 2020 SharePoint Site related to TCEQ action.
- OITA Weekly Report: provided El Paso Office with support regarding the OITA staff a weekly report on Region 6 Border Activities. This was a request by OITA as part of an effort to inform Presidential transition team members who sit on OITA senior staff meetings.
- Coordination with XA: Have coordinated with XA staff for input on a joint effort between OITA, R6, R9, San Diego Border Office and El Paso Office on the tri fold document being developed by BECC with the advice, recommendation and assistance of EPA.
- Actively met and participated with State stakeholder TCEQ in order to improve communication. As a result, we prepared action item table which was placed in our common SharePoint site with the purpose of all partners updating such information. Since then the communication between EPA, El Paso Office and TCEQ has improved at least in an 85%.
- Continue to engage, coordinate and collaborate with all Region 6 US-MX Border Team, OEJTIA Team Leads and co-workers, as well networking with other R6 Divisions.
- Have provided various suggestions to the Regional Hispanic Program Manager related to the program and even shared some previous material of when I was a former Hispanic Program Manager. Some have been shared with the Region and even consulted with Senior Leadership in R6.

4. Emergency Response Activities:
    - Participated on monthly calls between EPA, PROFEPA and Civil Protection. Assisted with Reviewing Region 6 activities and providing feedback to HQ related to the Sister Cities Emergency Plan.
    - Provided the Gulf Task Force with some suggestions on how to address these situations and placed them in contact with a great resource with the TXTDEM and FEMA. Still waiting for disaster activities to slow down to re-engage FEMA on a potential workshop or excursive in this area.
    - Volunteered as Capacity Surge Force to support with disaster activities.

5. Border 2020 Task Force Participation or other Border Meetings:

    - Texas-Coahuila-Nuevo Leon-Tamaulipas Regional Workgroup:
    - Attended 4state RWG meeting in Feb 2017. Provided recommendations of possible leverage sources during the private meeting with the U.S. and MX Leads.
    - Assisted to coordinate the Amistad, Falcon and Gulf Upcoming Task Force meeting in April 2017 (assisted with logistical and possible talking material)
    - Working closely with TCEQ in the development of the 2017-2018 Action Plan. The plan is already developed. Pretty much we have almost everything, we just received some information from SEDUMA and the information from a B2020

funded project. We are working with the translation of SEDUMAs information to English and include the information to the plan.

- Attended via go to meeting, the Amistad, Falcon and Gulf Task Forces held public meetings in Ciudad Acuña, Coahuila; Nuevo Laredo, Tamaulipas and Matamoros, Tamaulipas. Over 161 stakeholders participated in the three public meetings. During each of the meetings, the 2017-2018 draft two-year action work plans were presented that included ongoing and planned projects by border stakeholders.
- City of Del Rio held an Earth Day event, where exhibits and booths were set up to educate the public on recycling, water conservation and gardening.
- The municipality of Ciudad Acuña signed an agreement with Enel S.A. de C.V. and Sowitec (wind power developers) to install 100 wind turbines in 25 acres of land located about 54 miles from the city.

6. R6 Environmental Justice:

    a. Collaborated with Paula Flores by providing technical advice and recommendation of possible Emergency Management outreach or approach in the Bridging Gaps initiative that she is developing.
    b. Met with EJ Team Lead Gloria Vaughn related to an Emergency Management and LEPC concern brought up in the Houston area. Provided some input and explained some technical aspects of EM communications used in such business area.
    c. Assigned as project officer for 2 EJ Small Grants with a total Grant Portfolio of $60k.
    d. Actively negotiated the Budget and work plan with the selected Grantee and as a result was able to identify early in the process that one of the Grantee had an unallowable activity and for such consulted with both HQ/R6 Counsel and I was able to provide a clear understanding to the Grantee so that they reallocate the Budget and activity.

7. EPA R6 & B2020 Collaborating with City of Brownsville:

    a. Actively participated on conference calls regarding Greening America's Communities – Brownsville, TX "Greening of International Boulevard - Ecologización de Boulevard Internacional" In which various Divisions in R6 including B2020 is collaborating to leverage funding and more economic development activities with the City of Brownsville. Continue to provide information on ongoing Region 6 activities relevant to the collaborative activities.

8. Border 2020 Grant and Activities:
   Continue to foster outreach and assistance to B2020 by the coordination and implementation of border program objectives.
    a. Helped with the development, draft and launching the Region 6 Border 2020 Program, through the Border Environmental Cooperation Commission (BECC), request for proposal on May 31, 2017. As a result of the Workshops throughout all the Border in both the US-MX over 109 proposals were received.
    b. Coordinated and participated in several meetings in Texas during early 2017, prior to the RFP launch to get public input to identify priorities in the border communities that align with the goals and objectives of the Program.
    c. Continue to work closely with BECC staff to review Border 2020 grants and ensure that our Collaborative Agreement is not breached by working with Monica

Wilson and other staff by providing any technical assistance on ongoing projects, when requested or needed.

d. Monitor, review and analyze B2020 grants reports and provided advice on certain discrepancies to both El Paso Office leadership and Project Officer.
e. Continue to review BECC project quarterly reports
f. Reviewed the 2017-2018 4 State Region Action Plan and priorities
g. Helped El Paso Office/BECC with the GAP analysis.
h. Suggested to BECC to conduct a survey of customer service and overall grant project management.
i. Performed the review, analysis and scoring of over 15 Environmental Grant Proposals for the Border 2020 Program.
j. Drafted various Excel reports, graphics and table to help summarize and have a visual of the '17 RFP.
k. Participated and help justify the scoring of various '17 RFP Proposals

9. OTHER RELEVANT ACTIVITIES:

a. Contribute and participate on conference calls between HQ, Regions on ZIKA based on my past experience with Dallas County Office of Emergency Management as their former Planning Chief I was able to deliver to OITA and El Paso Office with documentation and verbal advice regarding how Dallas County in the past had responded to these types of events by sharing non confidential and public documents to the team.
b. Supported OEJTIA and R6 by coordinating sustainability day activities and with the help of Randy Gee, Debra Tellez and Alexa Olson OEJTIA was able to display the Building Blocks activity which EJ had a great interest.
c. Coordinating 2-4 Workshops in the 4 State Region alongside with TCEQ, and the Task Forces related to Environmental Health, Vector awareness, Waste management and Electronic Recycling.

10. Training Completed:

a. New Employee mandatory training
b. New Employee Orientation
c. HT401 State Department Security Training
d. Unauthorized Disclosures Policies
e. 952 24hr EPA H&S training
f. 2017 Mandatory Training
g. Coop
h. Lean 101 training
i. Project Officer Training
j. Quality Project and Program Management training
k. Skill port leadership trainings

Good Neighbor Environmental Board (GNEB) Meeting

April 2, 2013
12:00 – 4:00 p.m.

EPA East Building
1201 Constitution Avenue, NW
Washington, D.C.

Call-In: (866) 299-3199; Conference Code: 2022330068#

DRAFT MEETING SUMMARY

Welcome and Introductions
Cynthia Jones-Jackson, U.S. Environmental Protection Agency (EPA), Acting Director, Office of Federal Advisory Committee Management and Outreach (OFACMO), GNEB Acting Designated Federal Officer (DFO); Diane Austin, Chair, GNEB; and GNEB Members

Ms. Cynthia Jones-Jackson welcomed the participants to the meeting and explained that she would act as the DFO in Mr. Mark Joyce's absence. In lieu of face-to-face meetings, the GNEB will be meeting via videoconferences. She noted that Dr. Diane Austin will chair the Board for the next 2 years. Several members who previously served as alternates have become federal members of the GNEB. Mr. Stephen Niemeyer, who served as a GNEB member for several years, is now an alternate.

Dr. Austin commented that implementation of the new meeting format coincided with the new Board. She noted that the GNEB membership includes representatives from diverse federal and nonfederal entities. Although there are many differences with the new meeting format, the greatest difference is the length of the meeting, which has been reduced from 2 days to 4 hours. The Board members can discuss the effects that this change will have on GNEB business. This is a public meeting, and there will be time allotted for public comments; however, because of the shortened meeting format, the public comment time also may be restricted. Ms. Ann-Marie Gantner, who eventually will serve as the GNEB DFO, called the roll (using available pictures of the GNEB members to facilitate the introductions) and had the GNEB members and alternates on the videoconference introduce themselves. Following introductions of the GNEB members, the participants at EPA Headquarters introduced themselves.

Overview of Agenda
Diane Austin, Chair, GNEB

Dr. Austin provided information about the features (e.g., chat box) of the videoconference. She explained that the Board tries to reach consensus during its discussions, with the goal that no member disagrees with the ideas presented. If a GNEB member has "minor concerns," it

indicates that he or she supports the proposal at hand with ideas for improvements. "Reservations" indicates that a member disagrees with the proposal being discussed but consents to the overall idea. "Stand aside" means that a member disagrees with the proposal but will allow the Board to move forward. "Blocked" indicates that a member cannot agree with the proposal. When a member "blocks" the proposal, the GNEB will discuss the issue further. As the chair, Dr. Austin will check in with each member to ensure that the Board's business moves forward and that the opinion of each member is considered. Dr. Austin then provided an overview of the agenda, noting that two members of the public had signed up to provide public comments.

Discussion of Meetings, Report Process and Timeline

Ms. Jones-Jackson explained that sequestration has resulted in budget cuts across the federal government. As a result of EPA's budget cuts, OFACMO is examining cost-cutting methods (e.g., videoconferencing) that will allow the Office to move forward despite the reduced funding. She expressed her hope that the Board will resume its face-to-face meetings during Fiscal Year 2014, which begins on October 1, 2013. She will continue to do her best to advocate for resources for the GNEB.

Ms. Jones-Jackson noted that in December 2012 and again in February 2013, past Board members and the Southwest Border Interagency Working Group (SBIWG) were invited to explore topics and ideas for GNEB's 16th Report. The goal was for a small cadre to move forward quickly and efficiently in exploring ideas through a transparent process. In addition, some returning Board members began discussions about how to disseminate the reports. Ms. Jones-Jackson is awaiting a decision, which is expected within the next week, about whether the White House's Council on Environmental Quality (CEQ) has the resources to distribute printed copies of the Board's 15th Report to members of Congress. Electronic copies of the English version of the 15th Report have been distributed to members of the SBIWG. If the CEQ is unable to distribute printed copies of the 15th Report, EPA will disseminate electronic copies through its Office of Congressional and Intergovernmental Relations.

Ms. Gantner explained that, in response to a request from a Board member, short clips summarizing the Board's reports may be able to be posted to EPA's YouTube channel. She is exploring the proper protocol. Ms. Jones-Jackson reiterated that all postings to social media (e.g., Facebook, Twitter, YouTube) must adhere to EPA's social media policy. This may be another mechanism to communicate about the Board and its reports.

Dr. Austin explained to the new members that the CEQ is the contact point for the Board within the current administration. In December 2012, Dr. Austin traveled to Washington, D.C., to officially deliver the 15th report to the CEQ. As mentioned, the report also was delivered to the SBIWG to allow increased dissemination and more rapid feedback regarding the 15th Report, as well as to generate ideas on topics for the 16th Report. Three topics have been brought forward following several discussions among various entities, including the GNEB, EPA and the CEQ, and the goal of this meeting is to discuss these topics.

In terms of the timeline, the Board has approximately 1.5 years to deliver the 16th Report to the CEQ. The process of creating and delivering the Board's reports has evolved since the First Report, with the quality of the design, data and so forth having increased each year. As a result, it has become more challenging and time-consuming to produce the report, particularly in the face of decreasing resources. To complete its work, the GNEB must obtain input from the

communities that the members represent and channel the information to Congress via the Board's annual reports. The GNEB takes these two responsibilities very seriously. In the past, the Board held two face-to-face meetings each year in border communities and would obtain input directly from the members of these communities. With additional input from presentations and other activities, the GNEB was able to develop the best report possible to convey the information to Congress. The challenge the Board faces now is to continue producing the highest quality report possible under the constraints of sequestration.

Dr. Austin read the proposed timeline for producing the 16th Report, which the members received in their meeting materials. Once the topic for the 16th Report is selected, workgroups will be established. The workgroups can hold as many teleconferences as they deem necessary to prepare the report via requests to Ms. Jones-Jackson, Ms. Gantner and/or Mr. Joyce. The Board will have 2 months to gather information before its June videoconference. If the Board approves the plan, it will produce an advice letter during 2013, which will be finalized and approved by the Board in August 2013 and transmitted to the CEQ in October 2013. This will allow the GNEB to convey some information to the CEQ during 2013 in a timely manner. The 16th Report will be an expansion of the advice letter and will be transmitted to the CEQ in October 2014. Once the Board receives CEQ feedback in early 2014, it will adjust its tasks as necessary and develop a draft report for review by May 2014. The GNEB will finalize and approve the 16th Report in August 2014 so that it can be delivered to the CEQ by October 2014.

Mr. Timothy Treviño indicated that he understood the logic of the timeline and asked about backup scenarios. If the CEQ does not endorse the topic on receiving the advice letter, will the Board need to restart the process? How are various contingencies being considered? Dr. Austin responded that the CEQ has provided the suggested topics, so it is unlikely that once approved, the selected topic would be rejected in the future. If issues arise along the border that need to be addressed by the GNEB, workgroups can be established to provide an additional advice letter regarding these issues. One option is that the 2013 advice letter will describe the main issues of the report without many details. Another option is that the 2013 advice letter could focus on a key element of the topic that the Board members consider particularly important or urgent after they have researched the selected topic. In this scenario, the advice letter will not describe all of the chapters of the report, but it will provide in-depth information about one aspect of the report. The feedback received from the CEQ is in response to GNEB recommendations; the CEQ does not request that the Board, as an "on-call" advisory group, alter its focus.

Mr. Niemeyer asked about the GNEB's flexibility in determining the report topic. Dr. Austin replied that the Board should choose one of the three topics that would be discussed during the videoconference because it has a responsibility to be responsive to the administration. Ms. Jones-Jackson explained that these topics were developed from the topics that were submitted prior to, during and just after the December 2012 meeting of the SBIWG and Board; the February call; and discussions that Dr. Austin had conducted with the CEQ and OFACMO staff, after which the CEQ narrowed the topics to three for the Board's consideration. Ms. Jones-Jackson noted that some of the topics initially identified were not feasible or had been discussed in previous reports. Although this process has not been used before, it was proposed to allow the GNEB flexibility while streamlining the topic selection process to conserve the Board's limited resources. Dr. Austin said that the timeline discussion would be tabled until after the discussion of the three suggested topics.

Discussion on Suggested Report Topics

Dr. Austin explained that the three broad topics that the Board had received from the CEQ are waste management, healthy and sustainable communities, and ecological restoration. There were requests from CEQ and GNEB members to address, within these topics, collaboration and communication, examination of efficiencies, healthy environments, and border security interactions.

Waste Management

Dr. Austin asked the Board members to consider the pros and cons of the waste management topic, including the aspects of electronic waste (e-waste) and food waste, specifically in terms of U.S.-Mexico border issues.

Dr. Cyrus Reed commented that there has been a significant amount of work that has not been resolved in terms of transborder transport of hazardous waste, including e-waste, spent lead-acid batteries (SLAB) and medical waste.

Ms. Edna Mendoza asked about the status of achieving a Transboundary Environmental Impact Assessment (TEIA). Ms. Jones-Jackson responded that the National Advisory Council (NAC) and the Governmental Advisory Council (GAC), two Federal Advisory Committee Act (FACA) committees that her office manages, provided recommendations pertaining to a TEIA based on a dialogue with the U.S. State Department. EPA is not in a position to pursue the TEIA topic; the State Department had been in negotiations with Mexico and Canada on a TEIA, but the effort currently is on hold. The TEIA information from NAC and GAC could be forwarded to the GNEB.

Dr. Teresa Pohlman commented that she had suggested the topic of environmental justice during a prior teleconference. Dr. Austin proposed that environmental justice be added as a subtopic within the broader topic.

Ms. Erin Ward noted that the United States and Mexico define waste differently; the report could serve as a reference that enables people to determine what is and is not defined as waste within the two countries. Another pro is that waste truly is a border-wide issue, affecting most if not all communities along the border. Waste management also involves infrastructure. Mr. Jack Monger added that landfill resources are rapidly shrinking in the San Diego area and many landfills are due to close within the next decade.

Dr. Keith Pezzoli said that the need to rethink waste management was another pro, particularly in terms of considering waste as a resource. A large amount of transborder work on this issue is occurring in the San Diego-Tijuana area, and there is great potential for specific recommendations. Dr. Austin concurred that the GNEB must focus on specific rather than broad recommendations.

In response to a question, Mr. Niemeyer replied that a past GNEB report focused on transboundary movement of hazardous waste. He thought that the more recent issues with respect to waste management involve discarded electronics and scrap tires. Another GNEB member recalled that the earlier report also focused on tracking and disposal of industrial waste.

Mr. Mike Vizzier said that his understanding was that Mexico has a hazardous e-waste tracking system. He concurred with Mr. Niemeyer that scrap tires is a much-discussed topic.

The following pros regarding the waste management topic were provided by GNEB members using the videoconference's chat box function:

- The composting and creation of useful products from food waste can be detailed.
- A project tracking the flow of solid/hazardous wastes from Tijuana can be used as a resource/example.
- The difference in e-waste management on both sides of the U.S.-Mexico border can be considered.
- The topic aligns with the historic work of the GNEB, Border Environment Cooperation Commission and North American Development Bank.
- Sham recycling is a concern.
- The Indian Health Service has identified approximately $1.5 million in undocumented migrant waste sites in Arizona alone.
- The topic relates to community-level public health.
- Binational watershed trash is not managed similarly across the region.
- Tangible outreach opportunities exist at the residential and national levels.
- There are additional waste issues other than scrap tires (e.g., hazardous e-waste).
- Waste management affects water and air quality and refers to solid and liquid waste.
- The topic provides an opportunity to report progress updates since the release of GNEB's 13th Report.
- There is considerable hazardous waste expertise among Region 9, the California Department of Toxic Substances Control and the County of San Diego Department of Environmental Health.

Mr. Jock Whittlesey asked whether GNEB's mission was restricted to the U.S. side of the border. Ms. Jones-Jackson responded that the statute states that the GNEB is restricted to the U.S. side; everyone recognizes, however, that environmental issues do not stop at the border. The recommendations should benefit human health and the environment on the U.S. side, while recognizing that they also could benefit the Mexico side.

In response to a question from Ms. Sherry Sass, Dr. Austin explained that the concern about sham recycling is an issue that could be explored under the topic of waste management.

Mr. Jose Garcia provided a summary of the waste-related recommendations in the 13th Report, many of which involved hazardous waste. The Board's recommendations were to: (1) increase

the number of local, state and/or federal hazmat-certified inspectors; (2) increase the effectiveness of border hazardous waste inspection and enforcement programs; (3) improve the tracking of hazardous waste by strengthening the Commission on Environmental Cooperation's (CEC) Waste Tracking Project; (4) support creation and maintenance of safe hazardous waste storage facilities; (5) encourage binational dialogue to address the problem of indefinite storage of hazardous waste in Mexico; (6) provide more information via seminars, workshops and other mechanisms to the *maquiladora* industry on hazardous waste handling and disposal; (7) work with U.S. states and Mexico to improve the movement of scrap tires across the border; (8) provide federal resources for upgrading states' solid waste management infrastructure; (9) provide federal government support to tribes, private landowners, rural communities and so forth to address undocumented migrant waste; (10) facilitate development of binational recyclable markets; and (11) coordinate with U.S. state and Mexican agencies to develop a banned pesticide inventory.

Mr. Whittlesey thought that taking up the topic of waste management would require a number of discussions with Mexico. Dr. Pohlman was concerned that there have not been significant changes since the release of the 13th Report in 2010. If the report topic is sustainable communities, previous report topics (e.g., air, water, soil, waste) could be discussed within the topic of sustainability, which is a significant issue within the current administration. All federal agencies are developing sustainability plans in response to an Executive Order.

The following cons regarding the waste management topic were provided by GNEB members using the chat box function:

- The GNEB is largely constrained to practical recommendations on the U.S. side.
- The border area has more significant issues as a result of its geometry.
- Undocumented migrant waste is an issue on tribal lands along the border.
- Discussion of the undocumented migrant waste with Mexico may be a sensitive subject.
- A Border Scrap Tires Working Group and website already have been created by EPA.
- The CEC already is addressing the used battery issue.
- SLAB is an issue within Mexico, which conflicts with GNEB's constraint to focus on the U.S. side of the border.

Ms. Sally Spener said that when considering a report topic, the "critical mass" of expertise available on the Board is important, as well as access to other expertise. Ms. Alison Krepp added that it is necessary to ensure that federal actions can be taken in response to the recommendations. Dr. Austin agreed that these were significant considerations in selecting the topic and developing the recommendations and asked members to indicate whether they have expertise related to the topic of waste management.

The following Board members have expertise in the topic of waste management: Mr. Vizzier, Dr. Pohlman, Mr. Niemeyer, Dr. Reed, Dr. Pezzoli, Dr. David Henkel and Mr. Gerardo Alvidrez.

Healthy and Sustainable Communities

The GNEB members then discussed the second potential report topic: healthy and sustainable communities.

Ms. Mendoza provided background on the TEIA issue discussed earlier in the meeting, explaining that a TEIA was supposed to be in place so that the three North American countries could share timely updates regarding environmental issues. Such an agreement would be especially pertinent at the U.S.-Mexico border considering the amount of development occurring in the area. This development has transboundary environmental effects (e.g., water and airshed impacts) that sometimes are not taken into consideration.

Mr. Niemeyer said that a previous report had focused on children and the environment. The report had discussed the impacts of the border environment on children. This aspect relates to healthy and sustainable communities. In terms of TEIA, border communities are affected deeply, but the Executive Branch has not responded effectively to the many advice letters that the GNEB has provided in the past. Dr. Austin thought that the GNEB had received feedback regarding responses to past advice.

In response to a question from Dr. Austin regarding GNEB members who had information on the current status of TEIA within the federal government, Mr. Whittlesey commented that he had not heard anything about TEIA, and in his capacity at the State Department, he most likely would have been informed if there had been any progress.

Mr. Vizzier noted that the topic of healthy and sustainable communities is an emerging topic. Recently, the California Office of Environmental Health Hazard Effects conducted a cumulative impacts study that examines factors such as air admissions, hazardous waste, relative community health and age of residents. He would like to see EPA and the Centers for Disease Control and Prevention (CDC) collaborate more closely on these issues.

Dr. Jose Francisco Zamora-Arroyo commented that issues with the Colorado River had been mentioned in the past, with a more recent mention of the All-American Canal Lining Project.

Ms. Krepp noted that there are many definitions for "healthy" and "sustainable" that fall along a continuum. This could be advantageous in that the Board could define in the report what these terms mean in regard to the U.S.-Mexico border and the standard that should be met. It is an opportunity for the GNEB to make a statement to the federal government about the elements that are imperative to healthy and sustainable border communities.

Dr. Pezzoli stated that this topic is promising in terms of using the Board's expertise on regional security to rethink homeland security from the perspective of using an asset-based approach to address urban and ecological problems. For example, in the San Diego-Tijuana region, a great deal of effort is being expended on the issues of food, energy and water security. Once the regional ecological assets (e.g., wetlands, which buffer storm surges; canyon lands, which buffer floods) are considered, the healthy and sustainable communities perspective could provide an asset-based approach to security in a way that meets basic U.S. needs and makes the country more resilient to disasters.

Ms. Spener said that water is a significant issue in terms of healthy and sustainable communities because most border communities are located in desert climates with limited water resources. Energy is another important issue. The Board recently reported on water and renewable energy; therefore, if this topic is chosen, the report should not repeat that discussion but recognize that it is difficult to discuss sustainability in the border region without acknowledging that water supply is a fundamental, key issue for long-term sustainability.

Mr. Treviño agreed with Ms. Spener and noted that if this topic is selected, each of the Board members would examine the issue from his or her personal and institutional perspective. For example, it was challenging to explore the previous year's topic (water resources) because not only were the members examining it from a binational perspective, but they also were considering the topic from border-state and subregional perspectives. There are many issues that relate to healthy and sustainable communities that can be examined, so it may be necessary to narrow the focus to one or two related issues. He noted that although it is good to obtain Board consensus, the report also must be understandable and meaningful to all of the 15 million border residents represented by the GNEB.

Ms. Ward commented that a handful of border communities, hers included, have received sustainability grants from the U.S. Department of Housing and Urban Development (HUD) that address eight or nine sectors (e.g., water, planning, economic development). The deliverables must be provided by the end of calendar year 2013. As a pro, this topic could be leveraged. As a con, the Board might be providing its advice letter at the same time as the grant deliverables, and there could be conflicts. Additionally, economics is a fundamental issue in the area of sustainability.

Dr. Pohlman said that despite the redundant, nationally based sustainability efforts within the federal government, a report on this topic could provide the Board with the opportunity to highlight healthy and sustainable communities in the context of the southwest border.

The following pros regarding the healthy and sustainable communities topic were provided by GNEB members using the chat box function:

- Integrating health concerns with the built environment (e.g., housing, infrastructure, land use) is crucial; this much-discussed topic provides opportunities to advance more integrated and systems-oriented approaches to problems and solutions.

- Evaluation of ecological services provided to healthy human communities, including contributions from protected areas as well as regulatory programs, could be one approach.

- This topic provides an opportunity to develop specific topics (e.g., economic and social issues) on sustainable development.

- The U.S.-Mexico Border Health Commission most likely possesses expertise in this area or could collaborate with the Board.

- Improving community resiliency is a disaster recovery theme.

- The United States shares water basins and airsheds with Mexico.

Ms. Lisa Quiveors commented that in February 2013, EPA's Office of Sustainable Communities and Office of Environmental Justice released a publication, *Creating Equitable, Healthy, and Sustainable Communities: Strategies for Advancing Smart Growth, Environmental Justice, and Equitable Development*, about this particular issue. It is important to ensure that GNEB's efforts in this area are not redundant. Dr. Austin responded that part of GNEB's charge is to review documents such as this and determine how they relate to the U.S.-Mexico border and develop recommendations that will help move the executive and legislative branches forward regarding border issues.

The following cons regarding the healthy and sustainable communities topic were provided by GNEB members using the chat box function:

- It may be difficult to address healthy and sustainable communities without addressing broad socioeconomic variables.
- It may be difficult for the Board to develop specific recommendations given the broad topic that could deal with a variety of issues (e.g., water, energy, buildings, waste management).
- The topic is too broad.
- In general, highlighting this topic is an admirable goal, but it is too broad to be addressed by this group. Water, waste, ecological restoration and almost any other topic that the GNEB could choose to discuss could be included within this category.

Dr. Austin noted the similarity among some of the cons identified by the Board.

Mr. Enrique Manzanilla provided the following comment on the topic using the chat box function:

- The topic can be narrowed via two methods, domestic and binational.
- The domestic approach considers the principles of the EPA/HUD/U.S. Department of Transportation (USDOT) partnership with U.S. cities along the border (e.g., resource integration).
- The binational approach considers this for U.S.-Mexico sister city pairs.

The following Board members have expertise in the topic of healthy and sustainability communities: Dr. Ivonne Santiago, Mr. Dave Anderson, Ms. Julie Grogan-Brown, Dr. Greg Eckert, Dr. Pezzoli, Mr. Niemeyer, Mr. Vizzier and Dr. Pohlman.

Ecological Restoration

The GNEB next discussed the third potential report topic, ecological restoration.

Dr. Eckert said that several ecological restoration projects had been enacted along the U.S.-Mexico border (e.g., Big Bend area of Texas, Colorado River boundary segment and delta, Rio Grande in southern New Mexico and western Texas, Tijuana River Valley). He liked the secondary topics under consideration (e.g., collaboration and communication, efficiencies). The

Board could present an objective, external view of the ongoing work on these projects and other project opportunities. Another aspect that the Board could address is understanding the barriers of ecosystem recovery to allow entities, despite a lack of resources, to identify key recovery factors than can help ecosystems recover on their own. This encompasses issues relevant to a number of GNEB stakeholders (e.g., invasive aquatic and terrestrial species, remedial efforts, water quality, riparian area management, Natural Resources Conservation Service [NRCS] work). Ecological restoration often includes community involvement and participatory efforts, such as cleaning up local watersheds and restoring ecosystem services.

Mr. Whittlesey thought that this was a tremendous topic because it is positive, and the Board can focus on improvements that will help border communities rather than focusing on criticisms. He agreed with Dr. Eckert that the topic is participatory. This is an opportunity to remind everyone of the environmental changes that have occurred over time, including lost environmental services, recreation opportunities, impact resistance from climate change and so forth.

Dr. Reed noted two aspects on which the GNEB could focus. The first is restoring major river flows along the border. The second is encouraging general access to nature (e.g., parks, recreational lands), which aligns with sustainable communities.

Ms. Mendoza commented that if this topic is selected, the issue of the border fence and how border residents feel about it will need to be addressed. Dr. Austin agreed and said that the subtopic had been reframed in terms of how healthy environments and border security interact. The CEQ has provided the GNEB with the opportunity to reexamine this topic.

Ms. Ward mentioned that some projects have been completed recently, with pending publications on the topic of restoration of scraped areas of desert environments along the border; these areas are a source of particulate matter during the tremendous windstorms that occur in the southwest region. This topic provides the opportunity to address this issue.

Dr. Eckert mentioned the issue of restoring connectivity (e.g., biocorridors and connected lands for wildlife habitat) across landscapes; this is a pertinent issue in terms of cross-border interactions and/or barriers (e.g., cultural interactions, the border fence). Another aspect of restoration is helping areas adapt to further disturbance and climate change stressors. The topic provides the Board members with the opportunity to examine a wide range of adaptation strategies and gain beneficial expert knowledge.

Mr. Whittlesey remarked that the topic has special relevance in the border region and can be discussed in terms of the GNEB mandate to focus on the U.S. side of the border.

In response to a question regarding whether the focus of this topic would be on government lands, Dr. Austin explained that the focus is on actionable recommendations for the federal government. Therefore, the Board can make recommendations about land that the government controls as well as recommendations about the authority the federal government has over nongovernment lands. Dr. Eckert added, via the chat box function, that many government agencies have private lands programs to support restoration on farms, ranches and so forth. The U.S. Fish and Wildlife Service has a private lands program to support bird habitat restoration on ranches. Conservation and management of aquifers is a form of restoration. The Environmental Defense Fund also supports habitat restoration on private lands. Ms. Grogan-Brown noted, via the chat box function, that the NRCS works exclusively on private lands in partnership with the

owners, and many other federal agencies perform work that has a direct impact on private lands; therefore, the recommendations will not need to be limited to federal lands.

Ms. Krepp commented that she considers potential GNEB topics from her organizational perspective, and this is a topic about which she is excited because her institution has expertise to share and potentially could take action. The topic also integrates across federal agencies and could foster government collaboration on border environmental issues.

Dr. Pezzoli also expressed excitement about this topic for the reasons that already have been discussed. Ecosystem degradation and the resulting need for ecological restoration are abundantly clear, and the Board can provide sound recommendations in this area. Ecological restoration requires collaboration on many levels (e.g., community planners, nonprofit organizations, businesses, government, academia). The Board can provide serious biogeographical and ecological recommendations that are rooted in real projects.

In response to a question from Ms. Mendoza regarding whether GNEB's charter allows it to explore this topic, Dr. Austin replied that the charter includes exploration of "the environment and infrastructure." Dr. Reed agreed that the topic addressed environmental infrastructure because ecological restoration of land provides services (e.g., cleaner air and/or water); therefore, ecological restoration can be considered a service. He added that the report would need to connect the restoration of ecological areas to people, the economy and issues in local areas along the border to avoid a "people versus the environment" type of report.

Several comments on this topic were received via the chat box function, including the following remarks. Dr. Henkel thought that it was necessary to acknowledge the regional and local scales for environmental restoration, including local, community-specific projects as well as broader, watershed-scale efforts. Mr. Garcia pointed out that there was a section in the Board's Sixth Report that addressed natural resources conservation via coalitions, multidisciplinary approaches and so forth. Mr. Vizzier suggested adding a representative from One Border One Health to the GNEB.

The following pros regarding the ecological restoration topic were provided by GNEB members using the chat box function:

- The focus should be on adaptation to climate change, especially increasingly variable rainfall projected for the area (i.e., less overall precipitation but more intense flooding events).
- The topic provides an opportunity to address how ecological restoration can make human communities more sustainable.
- The University of Texas at El Paso possesses great resources that address ecological restoration in the face of climate change.
- The topic engages the border communities at all levels, from school children to service projects to public-private partnerships to joint operating agreements between agencies.
- The topic is closely related to sustainability.

- A current topic of high significance within ecological restoration is connectivity, which includes river flows and cross-border species movements.

- The International Boundary and Water Commission (IBWC) has expertise regarding restoration efforts with water or wetland components.

- The topic benefits humans, local communities and wildlife species.

- Ecological areas are not bound by political boundaries. Restoration involves the work of groups, entities and individuals across the spectrum. It has environmental benefits as well as tangible benefits to people, communities and the economy.

- The topic allows the GNEB to address ecosystem services directly, something that is not always evident within public awareness, particularly in terms of the interconnectivity of natural systems.

- Major cross-border projects exist in southeastern Texas in the area of Big Bend National Park.

- Habit restoration could reduce mosquito-borne diseases and contribute to the removal of waste tires.

- The topic could address soil erosion, which is a problem in the desert southwest.

- The Salton Sea restoration project is interesting.

- The topic provides the GNEB with the opportunity to update progress on ecosystems services detailed in its 6th Report.

The following cons regarding the ecological restoration topic were provided by GNEB members using the chat box function:

- The GNEB already had made recommendations about border security in several reports. The Board can study the topic *ad nauseum*, but action is needed.

- There are no public lands in Texas.

- The topic is very broad; select issues would need to be the focus.

The following Board members have expertise in the topic of ecological restoration: Dr. Pezzoli, Ms. Mendoza, Dr. Henkel, Ms. Grogan-Brown, Ms. Spener, Ms. Ward, Dr. Eckert, Dr. Zamora-Arroyo, Dr. Santiago and Ms. Jill Sherman-Warne.

Dr. Austin asked the GNEB members to review the pros and cons identified for the three potential report topics so that the Board could focus on selecting one of them for the next report. Ms. Spener noted, via the chat box function, that the energy of the discussion increased when the Board discussed the topic of ecological restoration.

Dr. Eckert asked whether there had ever been U.S. Public Health Service representation on the Board. Mr. Whittlesey responded that he was only aware of representation from the U.S.-Mexico Border Health Commission. Ms. Gantner confirmed that Mr. Whittlesey was correct; the U.S. Public Health Service declined representation.

Dr. Santiago clarified for Ms. Spener that one of the ecological restoration cons dealt with the fact that there are no public lands in Texas. Ms. Spener noted the presence of several national parks in the state. Dr. Santiago responded that there are state and national parks but no public lands. Ms. Spener remarked that she defined such land as public. Dr. Santiago said that national and state parks were owned by the federal and state governments, respectively, but there are no lands actually owned by the public. Mr. Anderson noted the presence of national forests and parks in Texas that are managed by the U.S. Department of Agriculture (USDA); the issue is not that Texas does not contain federal land, but the percentage of federal lands in Texas is minuscule compared to other western states such as Arizona, New Mexico and California. Dr. Eckert said that there are differing perspectives about access to federal lands, which can be managed differently. For example, the Bureau of Land Management leases the federal lands that it manages. He noted that the ecological restoration topic did not need to focus on federal lands and could explore the differences between areas with more private lands and those with more state and federal lands. Dr. Santiago reiterated that Texas has significant amounts of private lands, and this is not necessarily a con for the topic but rather an issue that must be considered if the topic is chosen.

Dr. Austin called for a GNEB vote to determine the topic of the Board's 16th Report. ***The GNEB members voted in favor of ecological restoration as the topic for the report.***

Dr. Austin reminded the Board members that all of their perspectives were needed to create a successful report, and she urged all of them to participate in the research and development of the report. Prior to performing research, it is necessary for the GNEB to determine which subtopics are considered critical for inclusion in the report and which ones would not be explored. She emphasized that the issues included must be amenable to federal action. Dr. Austin noted a previous comment made by Mr. Treviño about getting the most out of one's GNEB membership, which includes the opportunity to work with individuals with many different perspectives. Writing the report is a chance to educate everyone on the various perspectives of the Board members.

Dr. Santiago noted the need for education on the significant issue of erosion in the desert southwest resulting from windstorms. Another important issue is that environmental remediation must be followed by ecological restoration. Dr. Pezzoli provided the USDA definition of ecological restoration via the chat box function: "Restoration is the process of assisting the recovery of an ecosystem that has been degraded, damaged or destroyed. Ecological restoration focuses on re-establishing the composition, structure, pattern and ecological processes necessary to facilitate terrestrial and aquatic ecosystem sustainability, resilience and health under current and future conditions."[1]

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[1] http://www.fs.fed.us/restoration/.

Dr. Eckert wondered whether there was a way to frame the major system issues or stressors based on scale. For example, erosion, wind and invasive species are on the landscape scale, but finer scale issues also should be acknowledged.

Mr. Whittlesey brought the members' attention to a recent publication by the U.S. Geological Survey (USGS) about science in the U.S.-Mexico border region.[2]

Ms. Gantner explained how the various documents and hyperlinks would be managed during the development of the report. If the Board members have pertinent documents or hyperlinks, they should forward them to Ms. Gantner, who will record them and disseminate them to the GNEB. Once a draft report has been completed and approved by any established workgroups, it will be forwarded to the GNEB members for their review and feedback. Dr. Austin will receive copies of everything as well. If members have any photographs or figures that they would like considered for inclusion in the report, they should forward them to Ms. Gantner.

The following subtopics were offered from the GNEB members via the chat box function:

- Watershed protection.
- Airborne erionite from road dust.
- Riparian restoration and water needs and sources.
- Socioeconomic benefits of restoration.
- Border fence.
- Public-private partnerships for restoration at the community level.
- Impact of restoration on the protection of aquifers.
- Use of border state data on roadway accidents and deaths associated with wind events.
- 1944 Water Treaty and impacts on the environment.
- Increased public access and benefits for aquatic species from restoration of flows.
- Impact of wild fires along the border region.

Via the chat box function, Ms. Camille Mittelholtz suggested USDOT and Dr. Pezzoli recommended the U.S.-Mexico Border Environmental Health Initiative as resources.

In response to a request from Dr. Austin, Ms. Gantner explained that the new email system recently implemented by EPA no longer supports the ability to post items to a common digital location. The Agency will be implementing a SharePoint program, but it will not be available for at least 3 to 6 months. Ms. Gantner advised against using Dropbox software, and stated that she believes EPA is unable to use it. Because FACA rules are complicated, Ms. Jones-Jackson will

[2] http://pubs.usgs.gov/circ/1380/.

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clarify with the Office of Environmental Information (OEI) that the GNEB will be able to use SharePoint once it becomes available to share documents related to the 16th Report. To avoid invoking FACA, workgroups should be established so that documents could be shared among the members of these workgroups, which must not include more than a quorum of members. Any recommendations from the workgroups must be approved by the full Board.

In response to a question from Ms. Sherman-Warne, Ms. Gantner discouraged the posting of the Board's documents to the public EPA website because of the draft nature of the early work. If draft documents are placed on a public website, they could be quoted prematurely, and statements could be taken out of context and misconstrued.

Dr. Eckert stated that the U.S. Department of the Interior (DOI) has been using SharePoint, and he can explore GNEB's use of this system. In regard to Dropbox, federal members are restricted from using it because it is file-sharing software.

Dr. Austin said that the next step in preparing the report is information gathering, including querying the absent members for their expertise. Those members who recognize that other members have similar expertise should contact each other. During the next videoconference in June, the Board will discuss the structure of the report. In the meantime, no quorum of members should engage in any discussion as this will constitute a meeting, which must be published in the *Federal Register* 15 days prior to any such meeting.

Ms. Gantner will set up a Doodle poll to allow as many GNEB members as possible to attend the June and August videoconferences. She asked the members to notify her of any significant border-related meetings occurring during those months to avoid any scheduling conflicts with GNEB videoconferences. Via the chat box function, Ms. Mendoza noted that the Arizona-Mexico Commission 2013 Summer Plenary Session will take place June 13–14, 2013. Ms. Spener provided information, via the chat box function, about the Western Governors Association Meeting being held June 27–28, 2013.

Dr. Austin noted that although there is a great deal of GNEB expertise on the topic of ecological restoration, if additional expertise is needed, the Board can contact local, state and federal agencies; nongovernmental organizations; and experts in the community. It is important for the GNEB members in state offices to inform others in their state governments about the report topic. Experts also can be invited to provide presentations during the June meeting to fill any identified gaps in expertise. Dr. Austin commended Ms. Gantner, Ms. Jones-Jackson and Mr. Joyce on their ability to reach out to other federal agencies on behalf of the GNEB.

Dr. Austin stated that, in addition to providing comments during the 10-minute public comment periods of the videoconferences, the public can submit written comments about the reports. Although the GNEB no longer is interacting with border residents in person, they can be invited to present during the videoconferences.

Prior to the public comment period, Ms. Jones-Jackson and Ms. Gantner thanked the Board members for a productive meeting and Dr. Austin for her leadership.

Public Comments

Written public comments received by the GNEB are included as Appendix A.

Dr. Austin noted that two members of the public had requested time to make oral comments. Ms. Gantner stated that she had forwarded to the Board members written comments from Dr. Monica Perales, who was unable to attend the meeting, and Ms. Andrea Tirres.

Andrea Tirres, The University of Texas at El Paso

Ms. Tirres thanked Ms. Gantner for forwarding her written comments to the Board members and the GNEB for allowing her the opportunity to provide comments. She stated that demolition of the ASARCO, LLC, smokestacks in El Paso, Texas, is scheduled for April 13, 2013. She is not clear which environmental laws are being applied in this action. It has been documented that hazardous waste was illegally burned by the company at the El Paso facility for nearly a decade, and there is good reason to believe that there are hazardous contaminants that remain in the smokestacks. The level of testing, however, has not been adequate to make that determination, and the testing did not include dioxins or polychlorinated biphenyls. EPA has stated that the demolition is not a federal action. If it is not a federal action, what environmental laws are in place to protect the citizens of the affected community? No environmental assessments have been performed and no Environmental Impact Statements have been completed. This appears to be a privatized demolition and action with no communication to the affected community, particularly with Spanish-only and Spanish-dominant speakers. Ms. Tirres requested that the GNEB elevate this issue to the level of the EPA Administrator. In addition to the lack of adequate testing, the level of monitoring is a concern. The community has not been assured through scientific testing that these hazardous wastes have been addressed. Further, local residents living adjacent to the site have not been notified properly about the demolition. The public library in El Paso does not have a record of the demolition plan, and despite evacuation plans developed by the government in Juárez, Mexico, there has been no outreach to the thousands of affected residents who are to be evacuated.

Peter Kardas

Dr. Peter Kardas stated that he resides in Olympia, Washington. During the past several months, he has been involved with a group that is working with the El Paso community regarding the ASARCO site. Many individuals in that area are worried about exposures to hazardous materials shipped to the site in the 1990s. ASARCO documents about the smelting process did not contain references to the documented shipment of toxic materials, including remnants of sarin gas and other chemical warfare agents. There has been no response to questions about what testing is being completed for known contaminants within the smokestacks scheduled for demolition.

Paul Maxwell, Bi-National Sustainability Laboratory

Dr. Paul Maxwell explained that he has been working with Ms. Tirres. EPA has documented the company's sham recycling, including 5,000 tons of hazardous materials, more than 40 percent of which were carcinogenic volatile organic compounds. All of these materials were burned within the smokestacks scheduled for demolition. The environmental analysis performed following requests to the Regional Administrator in EPA Region 6 and government representatives was not adequate. The status of the hazardous materials within the stacks is unknown. Because no environmental analysis has been done, there is great concern regarding groundwater contamination as the materials are leached into the water basin and the Rio Grande River. There have been full investigations, testing and analysis at other ASARCO sites, so why is this not

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occurring at the El Paso site? There must be increased awareness of the severity of this situation and the consequences of the demolition, which will last for many decades.

GNEB Response

Ms. Spener, Dr. Santiago, Mr. Niemeyer, Mr. Bill Luthans, Mr. Jose Angel, Mr. Luis Olmedo, Ms. Sherman-Warne, Ms. Maria Sisneros and Dr. Henkel provided a variety of comments during the videoconference and via the chat box function, noting the legitimacy of the concern and that some work has been done to facilitate communication and coordination with the Mexico section of the IBWC on this issue.

Although the GNEB is limited on what action it can take, particularly given its charter and the April 13 demolition date, the individual members can use their own networks to bring attention to the issue. Dr. Santiago, whose contact information is included in the attached list of participants, agreed to be a point of contact for Ms. Tirres on this issue. EPA Region 6 is another resource.

The meeting was adjourned officially at 4:15 p.m., and the discussion regarding the ASARCO smokestack demolition continued off the record.

Action Items

- ✧ Ms. Jones-Jackson will clarify with OEI that the GNEB will be able to use SharePoint once it becomes available to share documents related to the 16th Report.
- ✧ Dr. Eckert will explore GNEB's use of DOI's SharePoint system.
- ✧ GNEB members who have pertinent information, documents and hyperlinks relevant to the 16th Report will send them to Ms. Gantner, who will disseminate them to the Board members as appropriate.
- ✧ Ms. Gantner will set up a Doodle scheduling poll to allow as many GNEB members as possible to attend the June and August videoconferences.
- ✧ GNEB members will notify Ms. Gantner of any significant border-related meetings occurring during the months of June and August 2013 to avoid scheduling conflicts with GNEB meetings.
- ✧ GNEB members will identify those members with similar subtopic area expertise and coordinate how to gather information.
- ✧ GNEB members will identify topic experts external to the Board and communicate with them to gather information and conduct research for the report.

Good Neighbor Environmental Board (GNEB) Meeting

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GNEB
Environmental Advisors Across Borders

Good Neighbor Environmental Board (GNEB)

Agenda

Tuesday, April 2, 2013
12:00 – 4:00 p.m. EDT

Call-In: (866) 299-3199, Conference Code: 2022330068#

12:00 – 12:30 p.m. **Welcome and Introductions**

- Mark Joyce, Associate Director
  GNEB Acting Designated Federal Officer
- Cynthia Jones-Jackson, Acting Director
  U.S. EPA Office of Federal Advisory Committee Management and Outreach
- Diane Austin, Chair
  Good Neighbor Environmental Board
- Board Members

12:30 – 12:40 p.m. **Overview of Agenda**

- Diane Austin, Chair
  Good Neighbor Environmental Board

12:40 – 1:40 p.m. **Discussion of Meetings, Report Process and Timeline**

- Budget
- Upcoming meetings
- Reports

1:40 – 3:50 p.m. **Discussion on Report**

- Topic
- Moving forward

3:50 – 4:00 p.m. **Public Comments**

4:00 p.m. **Adjournment**

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Appendix A: Written Public Comments

Andrea Tirres, The University of Texas at El Paso

I am writing to ask if the GNEB can help draw attention to the concerns that I share with others regarding a proposed demolition of an 828 ft smokestack built in 1967 by the now bankrupt American Smelting and Refining Co. (ASARCO) that sits within 1000 ft from the Rio Grande and the international boundary of El Paso, TX, and Ciudad Juarez, Mexico.

To give you some historical background, between 1969 and 1971 ASARCO had emitted 1,012 metric tons of lead, 520 tons of zinc, 1.2 tons of arsenic, 12 tons of cadmium, and 230,500 tons of sulfur dioxide a year, or 640 tons a day. In 2006, the *New York Times* reported that ASARCO secretly burned hazardous waste in a sham recycling scheme at the El Paso copper smelter. A 2007 United States Government Accountability (GAO) report confirmed the same. From 1991 to 1998, the ASARCO El Paso smelter illegally received and incinerated hazardous waste from U.S. Department of Defense weapons facilities in Utah and Colorado. Shipments of this waste passed through ASARCO subsidiary Encycle in Corpus Christi, where hazardous waste labels were removed and other slag content was added before being shipped to El Paso. These documented violations resulted in a $50 million fine from the U.S. Department of Justice.

After years of extraordinary environmental violations, fines, and debts, ASARCO declared bankruptcy in 2005 (see CNN story, particularly starting at 9:10 time -- http://vimeo.com/5354253. The bankruptcy court required that $52 million be placed into an account to fund the remediation of the site. Under the settlement agreement, ASARCO's El Paso smelter property was placed in an environmental custodial trust and managed by a custodial trustee selected by the Texas Commission on Environmental Quality (TCEQ). The TCEQ selected Project Navigator, represented by Roberto Puga, as the custodial trustee to manage the remedial activities at the ASARCO-El Paso site. Mr. Puga is a licensed geologist from California, but not licensed in Texas.

We have numerous concerns, but as I am aware that you have other pressing matters to tend to, I will just mention some of the most pervasive aspects including the lack of transparency, outreach, and technical flaws that do not provide assurance of the short and long-term environmental or health impacts due to this demolition:

1. It doesn't appear that any of the documents have been translated into Spanish or made available beyond the internet. This would fall in the category of Environmental Injustice. People who live in the extremely poor communities in Juarez live approximately 2000 ft from the smokestacks. Residents who live in the extremely poor community of Calavera in El Paso also live within a couple thousand feet from the smokestack. The residents of Juarez, in particular, are being kept in the dark with regards to the demolition activities and those U.S. residents who may be aware of the planned demolition are limited in understanding the activities because Spanish is their only (or dominant) language.
2. There are major concerns for contaminants that have not been tested that could be present in the walls of the smokestack and that may become airborne upon demolition. For example:

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a. According to EPA documents, hazardous waste was illegally burned in this smokestack for nearly a decade. In 1998, the EPA submits a memo (which condemns ASARCO's illegal burning of hazardous waste in their El Paso plant. The memorandum states, "this activity, plain and simple, was illegal treatment and disposal of hazardous wastes…" Hazardous wastes included heavy metals such as but not limited to arsenic, chromium, lead, contatrichlorobenzene [sic], hexachlorophenols, and pentachlorophenols.
b. Analysis of contaminants analyzed in the flue was 3 ft long core samples at heights of 10 ft, 50 ft, and 100 ft high, which would mislead concentrations by diluting it, whereas most of the contaminants would be within a few inches from the surface and at a lower elevation. This does not adhere to best Engineering Practices and probably does not adhere to an established protocol.

3. According to sampling plans, core samples of the stack were sampled for RCRA Metals plus COCs and Analyses of Interest (AOIs) but none for PCBs or Dioxins. Dioxins were not tested for in spite of the fact that evidence, such as EPA's Dioxin inventory, indicates that metallurgical processes such as ferrous metal (e.g., copper and lead) produce dioxin-like emissions. PCBs were not tested in spite of the fact that PCBs were commonly used as Dielectric fluids and transformers in primary and secondary metals smelting and refining, etc. for various applications until 1979 when the U.S. banned PCB manufacturing.
4. Asbestos was not sampled in spite of the evidence that should have directed the consultants to test asbestos. Virtually all mortar, brick, and cinder block buildings constructed prior to the mid-1980s may contain asbestos. In addition, according to [a] "comprehensive asbestos" survey of the ASARCO site made in 2010 by ANE Consulting, Inc., asbestos was found in most of the buildings surrounding the smokestack. What is more, this report stated that according to the Occupational Safety and Health Administration (OSHA) regulations, the demolition contractor shall be notified if asbestos is suspected and the work must be stopped and the suspected material should be tested for asbestos. Asbestos was a substance the trustee failed to look for despite this report.
5. The small stack stands at 612′ high and is approximately less than 600 ft away from the international border. The large stack stands at 828 ft high and is approximately just under 100 ft away from the international border. Plans are to bury the stack underneath the ground and within 500 ft. of the Rio Grande River, a primary aquifer source. No Environmental Impact Statement (EIS) or Environmental Assessment (EA) has been done for this.

How can this be allowed? In email exchanges with a community member, the EPA states that the remediation efforts occurring here are neither a State nor Federal action but they don't state what type of action is occurring.

There are a significant number of people who are poor and who live in poverty. Historically, El Paso doesn't carry the same political clout as regions in other areas of the state or nation.

Furthermore, many of the people in this region have humble educations. The overwhelming majority of the people in this are Hispanic. This is a case of environmental injustice on a variety of levels. We are not aware of any PSAs regarding the scheduled demolition, no copies of the Draft Demolition Plan (released on March 21, 2013) are available in the library for people who don't have access to the internet, no mention of an open comment period for the public on the Draft Demolition Plan, and no information that is available in Spanish on the Trust's website, although thousands of residents living less than one mile from the stack speak no English.

What is equally incredulous is the lack of outreach to Mexico on the part of the Trustee. At a community meeting held on February 26, 2013, the Trustee was asked if he had done any outreach to Mexico. He responded that he hadn't because he didn't have the authority. This was the same response he gave to a community member when the same question was asked two and a half years prior. In a presentation to El Paso City Council on March 26, 2013, the Trustee responded that he was doing outreach to Mexico. In a span of a month, the Trustee is now doing outreach and now possesses the authority to do so? What entities and community members, exactly, have been contacted? Please see this link for a perspective from Mexico: http://860noticias.com.mx/new/ciudad-juarez/politica/2069-danos-generados-por-asarco-son-irreversibles-senala-diputado

The process that has been adopted to get to the point that we are at today – demolition of the two stacks – was done without full scientific assessment given the history of the stacks, without scrutiny for possible conflicts of interests on the part of the Trustee and firms that have been contracted, and without proper community outreach and participation on both sides of the border.

We need help now. What can you do to help us stop this demolition and do a thorough study before this turns into a major environmental and health disaster for generations to come? Thank you for your attention to this matter.

Respectfully,
Andrea Tirres

Monica Perales, University of Houston

Dear Ms. Gantner and Mr. Joyce:

I received information regarding the Good Neighbor Environmental Board teleconference meeting scheduled for Tuesday, April 2. It is my understanding that there is a public comment period. Unfortunately, I have a previously scheduled meeting that prevents me from calling in during that time, but respectfully I ask that my comments concerning the demolition of the ASARCO smokestack in El Paso, Texas, scheduled for April 13 be shared with the members of the board.

I am a professor of history, and have spent the majority of my career studying the history of the Mexican and Mexican-American community that formed at the base of that smelter in the late nineteenth century. My award-winning book, *Smeltertown: Making and Remembering a Southwest Border Community* (University of North Carolina Press, 2010), documents, among many things, the demolition of Smeltertown in the 1970s following an air pollution and lead contamination case against ASARCO.

In addition to being the heart of my academic study, I have strong personal ties to El Paso and specific concerns regarding the demolition. My family lives in a neighborhood called Buena Vista, approximately 1 mile west from the smelter and proposed demolition site. I have extended family who live in a neighborhood known as La Calavera, a no-outlet road immediately adjacent to the smelter. Many generations of family members are buried in the nearby Smeltertown Cemetery, also immediately adjacent to the smokestacks.

I have serious concerns regarding the lack of information provided to the residents of both Buena Vista and La Calavera regarding the demolition, and the apparent lack of concern for their safety and well-being, as well as that of the wider borderlands community.

Specifically:

1. There are approximately 100-150 homes in the Buena Vista area. Most are elderly residents who have lived there for many decades. Many are Spanish speakers. They are of a generation and population that does not access information via Internet or social media. Outside of the trustee's website, there has been no attempt to notify residents of this neighborhood (either through community meeting or written notification) of the demolition process, the date of demolition, or precautions being taken to ensure the safety of their homes or of their person. The only information about what is happening with the demolition has come from local media -- my parents learned of the April 13 demolition date from the local newspaper.

2. Similarly, there has been very little information shared with the residents of La Calavera. This no-outlet street has approximately 20 houses. It is my understanding, based on conversations with family, that information regarding the demolition has been piecemeal, at best. There have not been public meetings advertised to the residents of this neighborhood. This little neighborhood literally rests in the shadows of the smokestacks, and faces the greatest peril.

3. Many of the homes in both Buena Vista and La Calavera are made of adobe, constructed in the early twentieth century. There are very real concerns among community residents about the impact the blast -- reportedly equivalent of a 3.8 earthquake -- on the structural integrity of their homes. Again, if there have been any reports of engineering studies, they have not been communicated in an effective way to these residents. Of course, there is also the concern regarding the air quality, and the kinds of precautions that nearby residents should take to protect their health and safety. While there have been unverified rumors of hotels for Calavera residents, absolutely no information about the short term impact of dust from the demolition -- let alone the long terms effects of exposure -- have been communicated to residents of Buena Vista.

I am sure you will hear from others who can speak more on the long term environmental hazards. It was clear as far back as 1970 that this location was highly contaminated, and I can only imagine what the additional 20 years of smelting activity has done to the environment. I am worried for family, friends, and neighbors -- many of whom have few choices, have had limited say in this process, and who will feel the effects most immediately.

In my opinion, the trustee has failed to do what is best for the community, and has failed to take into account the lives of those who would be most impacted by the demolition. When the stacks

come down, he will leave El Paso, but many generations of people in the El Paso-Juarez region will be the ones to have to live with the effects.

Thank you for your consideration.

Sincerely,
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GNEB
Environmental Advisors Across Borders

Good Neighbor Environmental Board

Tuesday, April 2, 2013

12pm – 4pm

Initial Meeting Summary

Follow-up tasks for Board members are highlighted in red in ***bold italic.***

Item 1: **Welcome and Introductions**

Unfortunately, Mark Joyce, (OFACMO) and Acting Designated Federal Officer (DFO) for the GNEB called in sick and was unable to participate in the meeting. Thanks to Cynthia Jones-Jackson, Acting Director of OFACMO, for stepping in and serving as our DFO for the meeting. Cynthia and Diane Austin, Chair of the GNEB, welcomed everyone. Each Board member and alternate on the call then introduced him or herself. Ann-Marie Gantner (OFACMO) and staff assistants in her office had prepared a few slides with photos of the members, and these were displayed during the introductions. ***Members whose photos were not included were asked to email their photos to Ann-Marie.*** One member asked that the slides be shared with all the members. ***Ann-Marie will share the slides with the entire Board once she has photos from everyone.*** Ann-Marie announced that John Maynard, Santa Cruz County Supervisor, had to step down from the Board because of local obligations he is now facing.

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The Board began with three broad topics that emerged from the prior discussions: Waste Management, Healthy and Sustainable Communities, Ecological Restoration. In addition, CEQ requested that, whichever topic was suggested, the Board consider the following as well:

- Collaboration and communication
- Efficiencies
- How healthy environments (human/natural) and border security interact

Teresa Pohlman reminded the board that environmental justice was also a concern, so we added that to the list.

- Environmental justice

The Board then reviewed each topic in turn and provided pros and cons with regard to the Board selecting it as the topic for the 16th report. Board members also then identified any expertise they had or could access in relation to the topic (summary notes of that discussion is pasted at the end of this document). ***The Board then selected Environmental Restoration as its topic***.

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The Board then returned to the discussion of the timeline and approved the proposed timeline. The next Board meeting will be by video/teleconference in June 2013. ***In April and May, Board members will gather information about the report topic and identify important sources of information. Each Board member should begin creating a concise summary highlighting topics and information she or he believes should be included in the report. Please review the***

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2013:
April – Teleconference/Videoconference

- Select topic for 16th report and approve timeline **DONE!** ☺

June – Teleconference/Videoconference

- Review information on the topic, identify tasks and assign responsibilities, agree on information to be transmitted in October's advice letter to CEQ

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- Finalize and approve advice letter to CEQ and get updates on other tasks

October/November - Teleconference/Videoconference

- Transmit advice letter to CEQ

Ann-Marie will set up a Doodle Poll to identify dates for the June and August meetings. Board members were asked to identify dates of other meetings in those months and came up with:
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June 27-28 is Western Governors Association meeting.

Board members are asked to check their calendars and respond right away when Ann-Marie sends out the Doodle Poll so we can get this meeting scheduled and on everyone's calendar.

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SUMMARY of GNEB Discussion of the Report Topics

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- falls w/i historic work of GNEB, BECC and NADBank
- US/ Mexico defined waste differenty (reference), educational aspect, potential for both one side of the border action and binational
- waste mgmt provides infrastructure
- sham recycling (concern)
- rapidly shrinking landfill resources
- good case in SD-Tijuana region, on Tijuana River Flood Plain
- potential for focus and specific recomm
- DHS Indian Health Service has about $1.5 million documented in UDM waste sites in Arizona alone
- ties into community-level public health
- trash from binational watersheds not managed similarly across the region
- outreach opportunities that tangible at the residential and national level
- electronic hazard waste, more than just waste tires
- impacts water and air quality and refers to both solid and liquid
- could update progress since 13th GNEB report
- considerable HazWaste expertise among Region 9, DTSC & my Department

Cons

- largely constrained to practical recommendations on the US side
- do think the border area has bigger issues due to its geometry than waste issue
- UDM waste issues is an issue on tribal lands along the border
- tires discussed everywhere
- issue about discussion UDM waste w/ Mexico, touchy issue (?)
- Addressed in 13th GNEB report, enough time for significant changes? Has only been 3 years
- Border Scrap Tires Working Group and website created by EPA already
- require discussions with Mexico
- CEC is already addressing used battery issue
- slabs issue in interior Mexico, constraint about US side

Expertise:

- **Mike Vizzier**: In California I think we have considerable HazWaste expertise among Region 9, DTSC & my Department but I'm not certain of data. Even less certain of what we do not know.
- **Teresa Pohlman**: We have expertise in sustainability, environmental planning and compliance, etc.
- **Steve Niemeyer**: I've done a legislative report on transboundary movement of hazardous waste. I've also spent way too much time on scrap tires in the border region
- **David Henkel**: I have experience with waste management in colonias as it relates to environmental justice.
- **Cyrus Reed**: Cyrus Reed: I have a lot of background and experience on cross-border waste issues and others related to solid waste management
- **Keith Pezzoli**: Expertise on Waste Management: Our Superfund Research Center has expertise on the health impacts of exposure to renegade wastes, especially hazardous wastes

2. Healthy and Sustainable Communities

Pros

- Integrating health concerns with the built environment (housing, infrastructure, land use, etc) is crucial, hot topic w/ opportunities to advance more integrated and systems-oriented approaches to problem def and solutions
- Evaluation of ecological services provided to healthy human communities could be one angle (include contributuions from protected areas as well as regulatory programs)
- opportunity to develop specific topics on sustainable development, including economic and social
- recent cumulative impacts study, air admissions, hazardous waste, would like to see US EPA and CDC (Center for Disease Control) to work closer with these issues
- issues with Colorado river in EPA and canal project mentioned
- many definitions, discuss standard along border, provides opportunities to bring these topics to gov
- U.S.-Mexico Border Health Commission probably has expertise or would provide opportunity to collaborate.
- expertise to dial in on regional security and re-think homeland security, asset based approach
- improving community resiliency is also a theme in disaster recovery
- We have shared water basins, airsheds too w/ Mexico
- Could bring focus on SW Border and happenings

Cons

- Past GNEB report on Children's Env Health (7th), did not get reponse back from gov
- Feb 2013 EPA issued a report, make sure not to be redundant on GNEB report
- difficult to talk about sus in border region w/o discussing water supply and long term sustainability

- seeing these issues through small lens
- many issues to discuss about sus comm, need to narrow to few topics
- It may be difficult to address healthy and sustainable communities without addressing broad socioeconomic variables
- too much for us to come up with a specific recommendation on it given it could deal with water, energy, buildings, waste management, etc
- too big to tackle sustainability and health
- may be in conflict with existing reports (also already a federal gov't Partnership for Sustainable Communities, so would likely be duplicative)
- general a great goal, but too broad to be tackled by this group. As others have said, water, waste, ecological restoration and almost any other topic this Board could choose to discuss would fall under this category.

Expertise:

- **Ivonne Santiago**: I can contribute on the part of sustainable construction
- **Dave Anderson** here again. I am a Planning Commissioner and working with the local HUD Sustainable Places grant folks as well
- **Julie Grogan-Brown**: USDA has considerable expertise on healthy and sustainable communities regarding economic development, natural resources management/restoration, food and nutrition, and other areas
- **Keith Pezzoli**: Wrote a book on Human Settlements and Planning for Ecological Sustainability (focused on Mexico). Now working on a book titled, Rooted Community: Cultivating Healthy Human Settlements and Bioregional Resilience.
- **Steve Niemeyer**: I have expertise in many areas of this broad topic
- **Mike Vizzier**: Our Health Human Services Agency has expertise and I think they would be excited to contribute. I suspect that the focus will be on air, water and disease transmission. There is an EJ link.
- **Teresa Pohlman** 2: Many of my staff and I have expertise in sustainability, and also component expertise focused on the SW border.
- **Greg Eckert**: FORGOT - I used to work in hazmat so have some expertise in assessment and remediation

Comments:

- **Enrique Manzanilla**: "narrow" topic in two ways: Domestic - how do we apply principles of HUD/Dot/EPA partnership to US cities along the border. Resource integration, etc. #2 Binational - how do this for sister city pairs.

3. Ecological Restoration

Pros

- Several projects happening now along border, opportunity for similar projects (from the Big Bend area of Texas to some groundbreaking binational efforts in the Colorado River boundary segment and delta, to the Rio Grande in southern New Mexico and West Texas, to the Tijuana River Valley, among others)

- Understand barriers of ecosystem recovery, invasive species/ env quality/ NRCS ranch, farm mgmt
- Often tied to participatory efforts, i.e. cleaning up local watershed, ecological services to be restored
- Focus should be on adaptation to climate change--espec more variable rainfall projected for area, plus less overall, plus more intense flooding: how can ecol restore make human communities more sustainable
- Very positive and great to have positive agenda, to help and improve (participatory good!)
- Env has been degraded have years and opportunity to remind folks of this change, realize our losses (Env services, Recreation, etc from climate change)
- (Resource) UTEP has some great resources dealing with ecological restoration in the face of climate changes
- Can be used as general access to outdoors and nature, more along lines of sus comm
- Engages the border communities at all levels, from school children, to service projects, to public-private partnerships, to joint operating agreements between agencies.
- topic is closely related to sustainability
- restoration topic of high significance these days is connectivity which includes river flows and cross border species movements
- Ecological restoration requires working together on many levels (community-university collaboration, government-nonprofits-business). It is a good focus for the GNEB because it can provide a serious biogeographical and ecological recommendations that are rooted in real projects
- International Boundary and Water Commission has expertise regarding those restoration efforts with a water or wetland component.
- not only benefits wildlife species but also PEOPLE - local communities
- link between healthy env and border security
- Ecological areas are not bound by political boundaries. it involves the work of groups, entities, and individual across the spectrum. benefit to the environment, but also has tangible benefits to People, communities, and economy
- GNEB has already made recommendations about border security, in two reports, and in one we wrote about border wall. We can study to death; action is needed.
- opportunity to see range of issues and become experts
- importance of creating corridors and connected lands for wildlife habitat
- Many govt agencies have "private lands" programs to support restoration on farms, ranches, etc
- Allows us to directly address ecosystem services...something not always evident in public awareness...certainly not in terms of natural systems interconnectivity.
- chance to get collaboration between agencies, this topic would be particularly helpful
- NRCS works exclusively on private lands, working in partnership with the owner (private entity, local gov't, etc) and many other federal agencies do work with a direct impact on private lands, so the recommendations will not need to be limited to federal lands
- Big Bend (Texas? Major cross border projects in SE Texas and Big Bend Area)
- Fish and Wildlife Service has a private lands program to support bird habitat restoration on ranches. Conservation and management of aquifers is a form of restoration. EDF supports habitat restoration on private lands

- Habit restoration could reduce mosquito borne diseases and also contribute to removing those waste tires.
- can prevent soil erosion which is a problem in the desert southwest
- Salton Sea is an interesting restoration project.
- opportunity to update ecosystems services from 6th report
- ecosystems services being incorporated.

Cons

- Challenge in Texas: no public lands
- Very broad, if selected, we should focus on a few issues

Expertise:

- **Keith Pezzoli**: At UC San Diego, thru partnerships in San Diego and Tijuana, we are doing ecological restoration using phytoremediation technology. Reclaiming brownfields for productive use (mixed use development, including mixed use development)
- **Edna Mendoza**: Going back to expertise: I have background on waste management issues in the border area. None on ecological restoration, but I do have contacts with a sister agency, Arizona Game & Fish.
- **David Henkel**: Expertise: I train graduate students and conduct research on community-based ecological monitoring in the interest of community action...both on public and private lands.
- **Jill Sherman-Warne**: tribes are doing some great ecological restoration projects that could be highlighted.
- **Julie Grogan-Brown**: USDA has much expertise on ecological restoration on private lands (NRCS) and public lands (Forest Service) as well as controlling invasive species (APHIS) and others.
- **Sally Spener**: IBWC has expertise in ecological restoration efforts with a water or wetland component.
- **Erin Ward**: NMSU has a number of completed and ongoing data on sources of desert wind storms and the identification of scrapped lands that might benefit from restoration while reducing PM concentrations during wind events
- **Greg Eckert**: Expertise: Hazmat site remediation, restoration of natural areas, invasive species management, soil reclamation, community involvement in restoration projects, numerous networks and contacts in restoration science and practice
- **Francisco Zamora**: Expertise: I have been involved in several restoration projects along the border
- **Ivonne Santiago**: Expertise: environmental remediation
- **Gerardo Alvidrez**: Expertise: Hazardous waste management
- **Keith Pezzoli:** expertise on ecological restoration --integrated regional watershed management perspective, linking urban agriculture, food forests, to ecological restoration

- If we need additional expertise, in past we have been able to reach out to state offices and fed agencies, local NGO, community (let them know topic of report)...If by June we need

some other entity go ahead and note, also can have expertise provide presentations on topics to participate in June meeting

Additional comments:

- we need to acknowledge the regional and local scales for environmental restoration: very local, community-specific projects and broader, watershed-scale efforts
- need to connect the restoration of ecological prog with local comm so it does not become local community vs ecological prog
- section in the 6th Report on Natural Resource Conservation: Coalitions, Multidisciplinary Approach, etc
- good to bring someone from "One Border, One Health" on the GNEB.

Additional Issues to Discuss on this Topic:

- Pollution in SW; education in this aspect needed
- Env erosion, windstorms, flooding and ecological restoration
- include air, land, water aspects
- acknowledge finer scale and re scale, might consider cases that represent coarse- and fine-grain scales
- watershed protection
- airborne erionite from road dust (dirt roads issue, US Border Patrol causing erosion and dust in roads)
- riparian restoration and water needs and sources
- socioeconomic benefits of restoration
- Border fence
- Public-private partnerships for restoration at the community level
- impact of restoration on aquifers and protection of aquifers
- use border states data on roadway accidents and deaths associated w/ wind events (may be difficult to collect, Data on "exceptional events" would be much easier)
- Water not provided under 1944 Water Treaty and impacts on environment
- public access and beneifts and restoration of flows for aquatic species
- impact of wild fires along border region (NM, Little Bear Fire destroyed primary source of drinking water for Alamogordo city)

Resources:
USDA definition for ecological restoration: Restoration is the process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed. Ecological restoration focuses on re-establishing the composition, structure, pattern, and ecological processes necessary to facilitate terrestrial and aquatic ecosystem sustainability, resilience, and health under current and future conditions. http://www.fs.fed.us/restoration/

link for the recent and wonderful USGS publication on USGS science (bio, water, energy, climate change) in the border region: http://pubs.usgs.gov/circ/1380/

US DOT has worked with other Federal agencies to encourage linking environmental planning and transportation planning at an ecosystem scale. DOT can provide information and could reach out to state DOTs on this.
U.S. - Mexico Border Environmental Health Initiative (BEHI)
http://borderhealth.cr.usgs.gov/staticmaplib.html

GNEB
Environmental Advisors Across Borders

Good Neighbor Environmental Board

Tuesday, April 2, 2013

12pm – 4pm

Initial Meeting Summary

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- **Ivonne Santiago**: I can contribute on the part of sustainable construction
- **Dave Anderson** here again. I am a Planning Commissioner and working with the local HUD Sustainable Places grant folks as well
- **Julie Grogan-Brown**: USDA has considerable expertise on healthy and sustainable communities regarding economic development, natural resources management/restoration, food and nutrition, and other areas
- **Keith Pezzoli**: Wrote a book on Human Settlements and Planning for Ecological Sustainability (focused on Mexico). Now working on a book titled, Rooted Community: Cultivating Healthy Human Settlements and Bioregional Resilience.
- **Steve Niemeyer**: I have expertise in many areas of this broad topic
- **Mike Vizzier**: Our Health Human Services Agency has expertise and I think they would be excited to contribute. I suspect that the focus will be on air, water and disease transmission. There is an EJ link.
- **Teresa Pohlman** 2: Many of my staff and I have expertise in sustainability, and also component expertise focused on the SW border.
- **Greg Eckert**: FORGOT - I used to work in hazmat so have some expertise in assessment and remediation

Comments:

- **Enrique Manzanilla**: "narrow" topic in two ways: Domestic - how do we apply principles of HUD/Dot/EPA partnership to US cities along the border. Resource integration, etc. #2 Binational - how do this for sister city pairs.

3. Ecological Restoration

Pros

- Several projects happening now along border, opportunity for similar projects (from the Big Bend area of Texas to some groundbreaking binational efforts in the Colorado River boundary segment and delta, to the Rio Grande in southern New Mexico and West Texas, to the Tijuana River Valley, among others)

- Understand barriers of ecosystem recovery, invasive species/ env quality/ NRCS ranch, farm mgmt
- Often tied to participatory efforts, i.e. cleaning up local watershed, ecological services to be restored
- Focus should be on adaptation to climate change--espec more variable rainfall projected for area, plus less overall, plus more intense flooding: how can ecol restore make human communities more sustainable
- Very positive and great to have positive agenda, to help and improve (participatory good!)
- Env has been degraded have years and opportunity to remind folks of this change, realize our losses (Env services, Recreation, etc from climate change)
- (Resource) UTEP has some great resources dealing with ecological restoration in the face of climate changes
- Can be used as general access to outdoors and nature, more along lines of sus comm
- Engages the border communities at all levels, from school children, to service projects, to public-private partnerships, to joint operating agreements between agencies.
- topic is closely related to sustainability
- restoration topic of high significance these days is connectivity which includes river flows and cross border species movements
- Ecological restoration requires working together on many levels (community-university collaboration, government-nonprofits-business). It is a good focus for the GNEB because it can provide a serious biogeographical and ecological recommendations that are rooted in real projects
- International Boundary and Water Commission has expertise regarding those restoration efforts with a water or wetland component.
- not only benefits wildlife species but also PEOPLE - local communities
- link between healthy env and border security
- Ecological areas are not bound by political boundaries. it involves the work of groups, entities, and individual across the spectrum. benefit to the environment, but also has tangible benefits to People, communities, and economy
- GNEB has already made recommendations about border security, in two reports, and in one we wrote about border wall. We can study to death; action is needed.
- opportunity to see range of issues and become experts
- importance of creating corridors and connected lands for wildlife habitat
- Many govt agencies have "private lands" programs to support restoration on farms, ranches, etc
- Allows us to directly address ecosystem services...something not always evident in public awareness...certainly not in terms of natural systems interconnectivity.
- chance to get collaboration between agencies, this topic would be particularly helpful
- NRCS works exclusively on private lands, working in partnership with the owner (private entity, local gov't, etc) and many other federal agencies do work with a direct impact on private lands, so the recommendations will not need to be limited to federal lands
- Big Bend (Texas? Major cross border projects in SE Texas and Big Bend Area)
- Fish and Wildlife Service has a private lands program to support bird habitat restoration on ranches. Conservation and management of aquifers is a form of restoration. EDF supports habitat restoration on private lands

- Habit restoration could reduce mosquito borne diseases and also contribute to removing those waste tires.
- can prevent soil erosion which is a problem in the desert southwest
- Salton Sea is an interesting restoration project.
- opportunity to update ecosystems services from 6th report
- ecosystems services being incorporated.

Cons

- Challenge in Texas: no public lands
- Very broad, if selected, we should focus on a few issues

Expertise:

- **Keith Pezzoli**: At UC San Diego, thru partnerships in San Diego and Tijuana, we are doing ecological restoration using phytoremediation technology. Reclaiming brownfields for productive use (mixed use development, including mixed use development)
- **Edna Mendoza**: Going back to expertise: I have background on waste management issues in the border area. None on ecological restoration, but I do have contacts with a sister agency, Arizona Game & Fish.
- **David Henkel**: Expertise: I train graduate students and conduct research on community-based ecological monitoring in the interest of community action...both on public and private lands.
- **Jill Sherman-Warne**: tribes are doing some great ecological restoration projects that could be highlighted.
- **Julie Grogan-Brown**: USDA has much expertise on ecological restoration on private lands (NRCS) and public lands (Forest Service) as well as controlling invasive species (APHIS) and others.
- **Sally Spener**: IBWC has expertise in ecological restoration efforts with a water or wetland component.
- **Erin Ward**: NMSU has a number of completed and ongoing data on sources of desert wind storms and the identification of scrapped lands that might benefit from restoration while reducing PM concentrations during wind events
- **Greg Eckert**: Expertise: Hazmat site remediation, restoration of natural areas, invasive species management, soil reclamation, community involvement in restoration projects, numerous networks and contacts in restoration science and practice
- **Francisco Zamora**: Expertise: I have been involved in several restoration projects along the border
- **Ivonne Santiago**: Expertise: environmental remediation
- **Gerardo Alvidrez**: Expertise: Hazardous waste management
- **Keith Pezzoli:** expertise on ecological restoration --integrated regional watershed management perspective, linking urban agriculture, food forests, to ecological restoration

- If we need additional expertise, in past we have been able to reach out to state offices and fed agencies, local NGO, community (let them know topic of report)...If by June we need

some other entity go ahead and note, also can have expertise provide presentations on topics to participate in June meeting

Additional comments:

- we need to acknowledge the regional and local scales for environmental restoration: very local, community-specific projects and broader, watershed-scale efforts
- need to connect the restoration of ecological prog with local comm so it does not become local community vs ecological prog
- section in the 6th Report on Natural Resource Conservation: Coalitions, Multidisciplinary Approach, etc
- good to bring someone from "One Border, One Health" on the GNEB.

Additional Issues to Discuss on this Topic:

- Pollution in SW; education in this aspect needed
- Env erosion, windstorms, flooding and ecological restoration
- include air, land, water aspects
- acknowledge finer scale and re scale, might consider cases that represent coarse- and fine-grain scales
- watershed protection
- airborne erionite from road dust (dirt roads issue, US Border Patrol causing erosion and dust in roads)
- riparian restoration and water needs and sources
- socioeconomic benefits of restoration
- Border fence
- Public-private partnerships for restoration at the community level
- impact of restoration on aquifers and protection of aquifers
- use border states data on roadway accidents and deaths associated w/ wind events (may be difficult to collect, Data on "exceptional events" would be much easier)
- Water not provided under 1944 Water Treaty and impacts on environment
- public access and beneifts and restoration of flows for aquatic species
- impact of wild fires along border region (NM, Little Bear Fire destroyed primary source of drinking water for Alamogordo city)

Resources:
USDA definition for ecological restoration: Restoration is the process of assisting the recovery of an ecosystem that has been degraded, damaged, or destroyed. Ecological restoration focuses on re-establishing the composition, structure, pattern, and ecological processes necessary to facilitate terrestrial and aquatic ecosystem sustainability, resilience, and health under current and future conditions. http://www.fs.fed.us/restoration/

link for the recent and wonderful USGS publication on USGS science (bio, water, energy, climate change) in the border region: http://pubs.usgs.gov/circ/1380/

US DOT has worked with other Federal agencies to encourage linking environmental planning and transportation planning at an ecosystem scale. DOT can provide information and could reach out to state DOTs on this.
U.S. - Mexico Border Environmental Health Initiative (BEHI)
http://borderhealth.cr.usgs.gov/staticmaplib.html

Environmental Quality and Border Security: A 10-Year Retrospective

Eighteenth Report of the Good Neighbor Environmental Board to the President and Congress of the United States

September 2017

GNEB
Environmental Advisors Across Borders

About the Board

The Good Neighbor Environmental Board (GNEB or the Board) was created in 1992 by the Enterprise for the Americas Initiative Act, Public Law 102-532. The purpose of the Board is to "advise the President and the Congress on the need for implementation of environmental and infrastructure projects (including projects that affect agriculture, rural development, and human nutrition) within the states of the United States contiguous to Mexico to improve the quality of life of persons residing on the United States side of the border."

The Board is charged with submitting an annual report to the U.S. President and Congress. Management responsibilities for the Board were delegated to the Administrator of the U.S. Environmental Protection Agency by Executive Order 12916 on May 13, 1994.

GNEB does not carry out border region activities of its own, nor does it have a budget to fund border projects. Rather, its unique role is to serve as a nonpartisan advisor to the U.S. President and the Congress and recommend how the federal government can most effectively work with its many partners to improve conditions along the U.S.-Mexico border.

The Board operates under the provisions of the Federal Advisory Committee Act, and membership on the Board is extremely diverse. By statute, GNEB comprises representatives from:

(1) the U.S. government, including a representative from the U.S. Department of Agriculture and representatives from other appropriate agencies;

(2) the governments of the states of Arizona, California, New Mexico and Texas; and

(3) private organizations, including community development, academic, health, environmental and other nongovernmental entities with experience on environmental and infrastructure problems along the southwest border.

The Board also includes representatives from tribal governments with lands in the border region.

The recommendations in this report do not necessarily reflect the official positions of the federal departments and agencies that are represented on the Board, nor does the mention of trade names, commercial products or private companies constitute endorsement.

To request a hardcopy of this report, contact the National Service Center for Environmental Publications at 1-800-490-9198 or via email at nscep@lmsolas.com and request publication number EPA TBD (English version). [To be added: hyperlink to pdf of report]

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Dedication to Eligio "Kika" de la Garza II (September 22, 1927 – March 13, 2017)

Representative Kika de la Garza, center, during a 1985 House Committee on Agriculture meeting. Source: *New York Times*. www.nytimes.com/2017/03/15/us/politics/kika-de-la-garza-dead.html

The Good Neighbor Environmental Board would like to honor the late Eligio "Kika" de la Garza, who served for 32 years in the U.S. House of Representatives, 14 of these as Chairman of the House Committee on Agriculture. He passed away on March 13, 2017.

Chairman de la Garza passed H.R. 4059, 102nd Congress, the "Enterprise for the Americas Initiative Act of 1992," which became Public Law 102-532. A champion of the North American Free Trade Agreement, Chairman de la Garza included the enabling legislation for establishment of the Good Neighbor Environmental Board in the Act. During 1992 hearings of the House Committee on Agriculture, Chairman de la Garza stated,

> "Public input is vital in setting the environmental and infrastructure priorities of EPA's U.S.-Mexico Environmental Plan for the Border. That is why last year I introduced H.R. 4059—which was approved by the Committee last week—to establish a U.S.-Mexico Environmental Board to bring together federal, state and private sector leaders to provide direction in setting these priorities to the President and to the Congress."

This board became the Good Neighbor Environmental Board.

The Board appreciates everything Chairman de la Garza, a Texan from the Lower Rio Grande Valley, championed for the farmers of the United States and the residents of the U.S.-Mexico border region.

Transmittal Letter to the President From the Good Neighbor Environmental Board

To be developed.

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EXECUTIVE SUMMARY

The Good Neighbor Environmental Board's (GNEB or Board) 2007 report, *Environmental Protection and Border Security on the U.S.-Mexico Border: Tenth Report of the Good Neighbor Environmental Board to the President and Congress of the United States*, examined the environmental implications of increased border security. In December 2009, the Board issued an advice letter on the environmental effects of the border fence. In this current report, GNEB returns to the theme of environmental quality and protection in the context of existing and proposed border security infrastructure and measures. The previous GNEB documents focused on undocumented border crossings, hazardous materials (hazmat), and environmental effects and mitigation related to border security infrastructure. Although these issues continue to be important when addressing environmental protection in the U.S.-Mexico border region, some conditions have changed in the last decade. In this report, the Board focuses on five key overlapping challenges in which environmental protection intersects with border security:

1. Tourism and recreation economy.
2. Habitat integrity and wildlife corridors,
3. Water management, flooding, and trash and sediment control.
4. Hazmat and emergency response.
5. Air quality.

Security is a broad concept that can be defined in many different ways. "Border security" as used in this report focuses on threats and challenges to national security at the border associated with preventing terrorist activity or entry of potential terrorists and interdiction of illegal or criminal activities. This relatively narrow definition contrasts with broader concepts of "environmental security," which includes the protection and preservation of natural resources, the environment and natural ecosystems. More expansive definitions of security often focus on critical sectors of the food-water-energy nexus. Thus, energy, water and food security are considered key elements of the broader "security" framework. Although this report primarily uses "border security" in its narrower sense, some recommendations may be relevant to the broader picture of environmental security. While border security is an important national priority, environmental protection in the border region also is of paramount significance.

Chapter 1 provides background and context for this report, as well as recommendations on environmental protection and border security. Many defining features and characteristics of the U.S. border region with Mexico, a developing nation, make it fundamentally different from other regions in the United States. These features present challenges that regions located within the interior of the United States often do not have to overcome. The border has areas of great natural beauty and value, whereas other portions of the border have large and growing human settlements that depend on environmental quality. This chapter addresses the key issues for environmental quality and protection in the diverse geographical regions of the border. Finally, this chapter provides detail on the changes in border security since GNEB's 2007 report that focused on security. These changes include stronger communication and collaboration among security and other agencies, significant increases in physical infrastructure and personnel in the border region, and improved border control and management, including faster border crossing times for goods.

The intersection of border security and the environment impose a number of challenges and opportunities on the border region, and Chapters 2 and 3 of this report focus on challenges and opportunities related to ecosystems, tourism and outdoor recreation; plant and animal life and habitat integrity; emergency response and preparedness; water management, flooding, trash and sediment control; and air quality. The shape and form of security infrastructure installed along the border is a critical factor affecting these areas of special concern. Also of importance are management practices by security agencies. Additional installation of security infrastructure along the border will have a large impact on the region, presenting both challenges and opportunities to enhance security while preserving or even improving environmental sustainability.

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Given the scale and cost of the program to enhance border security infrastructure, it is important to get it right the first time, avoiding costly mistakes and even more costly corrective actions. This requires careful planning and advanced coordination with stakeholders in the region.

This report examines the environmental implications of increased border security infrastructure within the context of its previous report from 2007 and its December 2009 advice letter, which both addressed border environment and security. The earlier GNEB documents provided general and specific recommendations for meeting the security and environmental needs of the border region. In this report, the Board's recommendations focus on the intersection of environmental protection and border security in the five key areas identified above. These recommendations can help federal agencies to preserve or enhance environmental protection and quality while increasing the security of the U.S.-Mexico border.

Border fence cutting across the steep mountainside of Otay Mountain Wilderness Area in San Diego County. The foreground of the photograph is the Tecate River in Baja California, and the shot was taken from Federal Highway 2D in the municipality of Tijuana, Mexico. Note the winding access road that was created by the Border Patrol to provide access to the fence. Source: Paul Ganster, San Diego State University, August 2017.

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INTRODUCTION

A decade ago in 2007, the Good Neighbor Environmental Board's (GNEB or Board) *Environmental Protection and Border Security on the U.S.-Mexico Border: Tenth Report of the Good Neighbor Environmental Board to the President and Congress of the United States* (10th Report) examined the environmental implications of increased border security. Two years later in December 2009, the Board issued an advice letter on the environmental effects of the border fence. In this report, *Environmental Quality and Border Security: A 10-Year Retrospective: Eighteenth Report to the President and Congress of the United States* (18th Report), GNEB returns to the theme of environmental quality and protection in the context of existing and proposed border security infrastructure and measures. The 10th Report focused on two main issues, undocumented border crossings and hazardous materials (hazmat). The December 2009 advice letter addressed environmental impacts and mitigation related to border security infrastructure. All of these issues remain germane to environmental protection in the U.S.-Mexico border region today, but some conditions have changed during the last decade, including a significant decline in undocumented crossings linked to changing economic opportunities as well as to increased security measures. In this report, the Board focuses on five key overlapping challenges in which environmental protection intersects with border security: (1) tourism and recreation economy; (2) habitat integrity and wildlife corridors; (3) water management, flooding, and trash and sediment control; (4) hazmat and emergency response; and (5) air quality.

Security is a broad concept defined in different ways. For example, "border security" as used in this report has a focus on threats and challenges to national security at the border associated with preventing terrorist activity or entry of potential terrorists and interdiction of illegal or criminal activities. This relatively narrow definition contrasts with broader concepts of "environmental security" such as preservation of natural resources; protection of clean air, water and environment; and conservation of the natural ecosystem and the services or benefits provided. More expansive definitions of security often focus on the security and reliability of critical sectors of the food-water-energy nexus and the production of these inputs vital to sustain life and livelihoods. Thus, energy security, water security and food security are increasingly understood to be key elements of the broader "security" framework. Although this report primarily uses "border security" in its narrower sense, several sections and recommendations also may be relevant to broader framings of environmental security.

Border security is an important national priority, and environmental protection in the border region also is of paramount significance, given the rich natural resource endowments of the region. Of the 1,954-mile length of the southern border, almost 780 miles (40%) are U.S. Department of the Interior (DOI) lands (Andrew 2017a). The U.S-Mexico border region (within 100 miles of the border) contains 185 federal land units under DOI jurisdiction (Bureau of Indian Affairs, Bureau of Land Management [BLM], Bureau of Reclamation, U.S. Fish and Wildlife Service [FWS], and National Park Service) totaling 25,388,431 acres (Andrew 2017b), including national parks and protected areas (Figures 1 and 2). Ten tribal nations have lands within the border region, and the Tohono O'odham Nation's land is split by the international border line. Mexico also has significant protected areas within the border region. More than 6,500 animal and plant species reside within the U.S.-Mexico border region (Kolef et al. 2007). On the Mexican side, 235 species found in the border region are classified in a risk category. Of these, 85 are considered endangered under Mexico law. In the United States, 148 species found in border counties are listed as endangered under the U.S. Endangered Species Act (Kolef et al. 2007).

As of 2010, 14.4 million people live in cities, towns and rural areas in the U.S.-Mexico border; these communities need access to clean water and sanitation services, clean air, green spaces, and healthy environments. Tourism and outdoor recreation generate substantial revenues and support thousands of jobs in local communities, all of which depend on the quality of the border's environment.

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Despite its natural and human assets, the U.S.-Mexico border region faces serious environmental challenges, including a increasingly scarce water supply; proneness to flooding, drought and wildfires; and uncontrolled urban expansion. Climate change is projected to increase temperatures, decrease precipitation, produce more extreme weather events, decrease snowpack and runoff, reduce renewable surface and ground water resources, and bring about more frequent and intense wildfires and dangerous storm surges in the region (GNEB 2016). Traditional infrastructure systems are ill-equipped to allow border communities to mitigate these impacts, which will affect many sectors, including water, energy, trade, transportation and public health. The disadvantaged populations of border communities, including tribal populations, are particularly vulnerable to the health effects of climate change. Some animal and plant species and ecosystems in the border region also are at risk.

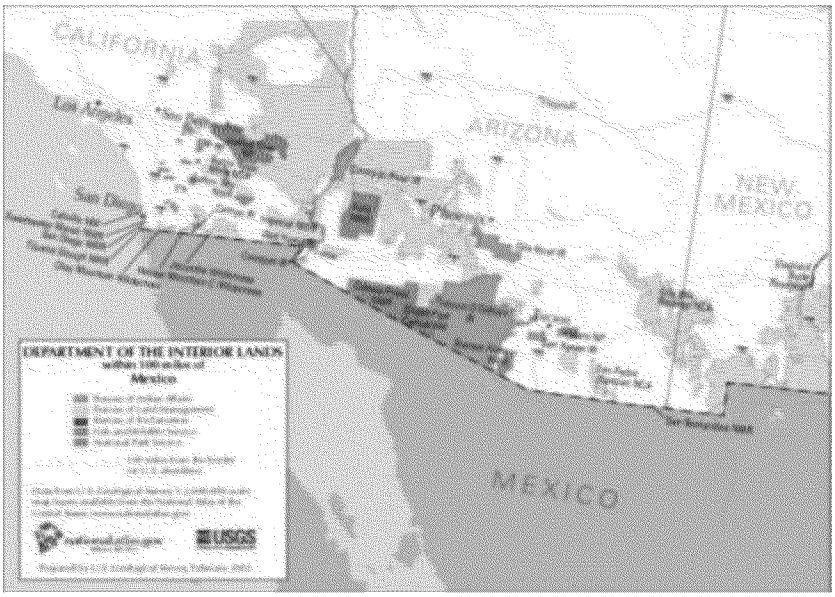

Figure 1. U.S. Department of Interior lands: California and Arizona.
Source: U.S. Geological Survey.

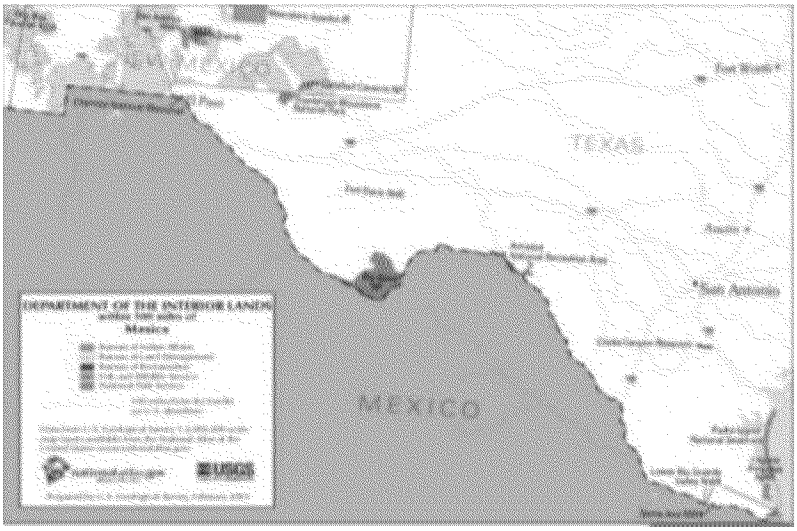

Figure 2. U.S. Department of Interior lands: New Mexico and Texas.
Source: U.S. Geological Survey.

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The fragile natural environment of the border region underscores the need for careful planning and coordination among federal agencies to mitigate the effects as border security infrastructure is built out and enforcement activities intensify. Although 10 years have passed since GNEB published its 10th Report, the southwest border environment and socioeconomic contexts are dynamic and require continual adaptation of policies and actions to respond to emerging challenges and changing conditions. In this report, GNEB identifies the most pressing environmental challenges that may overlap with border security and also provides recommendations to accomplish the goals of environmental protection cooperatively with border security.

The international boundary adds complexities and costs for U.S. border communities in their attempts to address regional environmental issues. Organizing a proper emergency response system is greatly complicated by the international boundary, as is dealing with regional air pollution issues when part of the airshed is located in Mexico. Other examples of environmental issues that ultimately have only binational or international solutions include conservation, water quality protection, aquifer management, watershed management, and solid and hazardous waste.

The governments of the United States and Mexico have responded to the challenge of border environmental issues with a number of measures, including the 1944 Water Treaty for the Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande (1944 Water Treaty), the 1983 La Paz Agreement and its implementation plans (e.g., the U.S.-Mexico Border 2020 Program [Border 2020]), and the creation of the binational institutions of the North American Development Bank (NADB) and the Border Environment Cooperation Commission (BECC). The trilateral environmental organization formed as part of the North American Free Trade Agreement (NAFTA) in 1993, the Commission for Environmental Cooperation (CEC), also addresses border and transboundary environmental issues. Although these efforts to address border environmental problems have had very positive results, they still have been insufficient to meet the needs of dynamic border communities with growing environmental problems.

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CHAPTER 1. Border Context

This chapter provides background and context for GNEB's 18th Report and recommendations on environmental protection and border security. Section 1.1 provides an overview of the demographic and economic context of the border region, and Sections 1.2 and 1.3 then address the environmental and border security contexts, respectively, of the region.

1.1 Demographic and economic context

Many defining features and characteristics of the U.S. border region with Mexico, a developing nation, make it fundamentally different from other regions in the United States. These include rapid economic and population growth; rapid urbanization; shared natural resources such as rivers, ground water and airsheds; economic, cultural, and political differences and asymmetries with Mexican communities across the border; international commerce and trade flows; high rates of poverty; and diverse ethnic identities. These features all present challenges that regions located within the interior of the United States often do not have to overcome.

1.1.1 Population and urbanization

Since the 1940s, the population of the 10 U.S. and Mexican border states has grown more rapidly than the national averages and, at the same time, the populations of the counties and municipalities along the border have grown faster than the states in which they are located. Driven by migration, the populations of Mexican municipalities have grown at a faster rate than their U.S. counterparts, usually at twice the rate. These trends make the border region the most demographically dynamic region of the United States and of Mexico. By 2000, some 12.4 million people lived in the border counties and municipalities (Peach and Williams 2000), and by 2010 that figure had reached 14.4 million, concentrated largely in binational metropolitan sister cities. By 2020, the border population is projected to reach 19.5 million (Figure 3). Most of the border's population resides in 15 paired U.S. and Mexican interdependent sister cities; the remaining residents live in smaller settlements or in rural areas. Tribal and indigenous communities are an important component of the border, both in urban and rural areas. Population growth in the region puts pressure on air, water and land. It also creates additional demand for services—such as water supply and wastewater treatment—to ensure a safe and healthy living environment. Growth puts pressure on surrounding land and habitat (USEPA 2016).

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The dense urban populations of El Paso, Texas (top), and Ciudad Juárez, Chihuahua, are separated only by the meandering channelized Rio Grande River and border security fencing. Source: Google Earth.

Population and Population Growth in the Border Region (pg. 29)

	Population 2010	Average annual growth (%), 2000-2010	Duplication Time (years)
Counties and municipios			
Mexico, border municipios	7,304,901	2.24	31
United States, border counties	7,303,754	1.62	43
Total	14,608,655		
100/300 kilometers			
Mexico, 300 km	17,048,419	2.04	34
United States, 100 km	13,967,038	2.28	30
Total	31,015,457		
Border states			
Mexico	19,894,418	1.95	36
United States	70,850,713	1.49	47
Total	90,745,131		
Mexico	**112,336,538**	**1.52**	**46**
United States	**308,745,538**	**0.97**	**71**

Source: U.S. Census Bureau and INEGI.

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Figure 3. Population and population growth in the border region.
Source: The Wilson Center, *The State of the Border Report: A Comprehensive Analysis of the U.S.-Mexico Border*. www.wilsoncenter.org/sites/default/files/mexico_state_of_border_0.pdf

Urban growth often outpaces the ability of government to provide adequate infrastructure in these border cities, especially on the Mexican side of the boundary where much of the urbanization has been unplanned (Ganster and Lorey 2016). In burgeoning cities such as Ciudad Juárez, Nuevo Laredo, Nogales, Mexicali, and Tijuana, lands were settled and houses were constructed, but water and wastewater infrastructure installation occurred years afterward. In areas of the U.S. border region, principally in Texas and New Mexico, but also in Arizona and California, *colonias*—residential communities in rural areas of counties lacking basic services such as water, sewage, electricity and often paved roads—developed without standard infrastructure. In Texas alone, the Texas Secretary of State found that in 2014 nearly 38,000 residents in the six largest border counties with *colonias* lacked potable water or sewer services (Texas Secretary of State 2014). Thus, on both sides of the border, large numbers of residents do not have safe potable water piped into their homes and/or lack proper sewage collection and treatment services. Many border residents do not have the same levels of water and sewage services as their fellow citizens elsewhere in the United States.

A major difficulty for environmental progress on the U.S.-Mexico border is that although the U.S. border region is one of the poorest areas in the United States, the border region of Mexico is one of the wealthiest areas of that country. This fact has made it politically difficult for Mexican federal authorities to spend funds on border environmental infrastructure when there are more pressing needs elsewhere in the country. In addition, in the past few years, U.S. Environmental Protection Agency (EPA) funds dedicated for border water and sewer projects have declined and in the President's fiscal year (FY) 2018 budget, were proposed for elimination (Office of Management and Budget 2017).

1.1.2 North American Free Trade Agreement (NAFTA) and the border

When NAFTA was being negotiated and debated in Congress in the early 1990s, many border residents had hopes that the trade agreement would address the environmental problems of their communities and bring economic development, including well-paying jobs (Ganster and Lorey 2016). Although NAFTA produced a large increase in trade and investment, it did not create prosperity in U.S. border communities. NAFTA stimulated commerce and created many jobs along the border, but those jobs tended to be low-skill and low-paying, while border communities lost higher paying assembly and manufacturing jobs that moved into Mexico and elsewhere offshore. The border sister cities are vital economic gateways to hundreds of billions of dollars in trade flows each year. This trade growth, however, brought increased vehicular crossings that saturated the existing border infrastructure and overwhelmed communities along the major trade corridors with more air pollution, producing health and safety concerns. Regions throughout the United States benefited from the growth of NAFTA-related trade and investment (Wilson 2017), yet border communities absorbed a disproportionate share of the environmental costs related to congestion.

Ports of entry (POEs) also have significant economic and environmental effects on U.S. border communities because of the enormous quantities of freight that move through the trade corridors with Mexico and the long crossing wait times for commercial and noncommercial vehicles. In 2007, wait times for personal and commercial crossings from Tijuana to San Diego alone cost the U.S. and Mexico economies an estimated $7.2 billion in foregone gross output and more than 62,000 jobs (San Diego Association of Governments 2007). If compiled for the entire border, the figure for losses produced by long wait times would be very large, in excess of $10 billion per year. The costs are absorbed by border communities but benefit communities throughout the United States.

1.1.3 Poverty and ethnicity

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An analysis of recent U.S. Census Bureau data (U.S. Census Bureau 2017a) showed that when ranked as a state, the 24 counties bordering Mexico (excepting San Diego County, California,[1] and Pima County, Arizona), would rank 51st—or dead last—in poverty rate and percentage of persons under 65 without health insurance. The border counties also would rank last in percentage of persons age 25 years or older with a high school degree or higher and lowest in *per capita* income. In some cases, the differences are staggering; for example, only 69.1 percent of residents of these counties over age 25 are high school graduates, with the next lowest state, California, having an 81.8% high school graduation rate. When San Diego and Pima counties are included, the counties in the four U.S. states bordering Mexico still would rank 48th in poverty rate; 44th in persons under age 65 without health insurance; 51st in percent of residents over age 25 who are high school graduates; and 43rd in *per capita* income. All of these are indicators of regions of poverty (U.S. Census Bureau 2017a).

Hispanics constitute the largest ethnic group in the border region, are the largest minority group in the United States, and are a majority of the population in 19 of the 24 counties along the international border with Mexico. In 2015, 82 percent of the population of the border counties, excluding San Diego and Pima counties, was Hispanic (U.S. Census Bureau 2017a). The percentage of Hispanics in the U.S. border population is increasing as a result of continuing migration from Mexico and the relatively high birth rate of border Hispanic populations compared with the general population.

Adding to the cultural and economic complexity of the border region are 26 U.S. federally recognized Native American tribes that range from 9 to 28,000 members. Some of these tribes share extensive family and cultural ties to indigenous peoples in Mexico's border region and occupy land adjacent to the international boundary.

The border region, then, is a region where poverty and ethnicity coincide. It also is a region where the large vulnerable population is harmed by the health effects of deteriorated environmental conditions.

1.2 Environmental protection context

This section addresses the key issues for environmental quality and protection in the diverse geographical regions of the border. A number of national parks in both countries—including Big Bend National Park in Texas, Maderas del Carmen Biosphere Reserve in Mexico, Organ Pipe Cactus National Monument, and El Pinacate and Gran Desierto del Altar Biosphere Reserve in Mexico—are spectacular and remote. Deserts, mountains and riparian areas help to provide great diversity in plant and animal species and contribute to ecotourism. In addition to these federal lands, important state and local public lands exist along the border, including the three state-owned sites that form the World Birding Center in the Lower Rio Grande Valley, the Rio Bosque in El Paso, and Big Bend State Ranch, which also provide important habitat and local economic development. The states of New Mexico, Arizona and California also have state parks and protected areas in the border region. The border has areas of great natural beauty and value. Other portions of the border have large and growing human settlements that depend on environmental quality. This section also provides an overview of management agencies and programs.

1.2.1 Environmental challenges

The natural environment and climate of the border region provide a number of challenges for environmental quality and sustainability of communities. The border is mostly arid, with annual precipitation averaging 28 inches per year in the Lower Rio Grande Valley in Texas, decreasing to about 7 inches per year in the Trans Pecos area of Texas, and finally decreasing to 3 inches annually in Imperial Valley, California.

[1] The southern part of San Diego County has socioeconomic characteristics similar to other border counties; North San Diego County is more affluent and less Hispanic.

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The region's environmental quality and health are influenced by trends in population, the economy and industrial activity, as explained in the previous section. Specific environmental challenges include air and water quality, land management and protection of sensitive ecosystems and species, and waste disposal, all of which have implications for public health, especially for low-income populations.

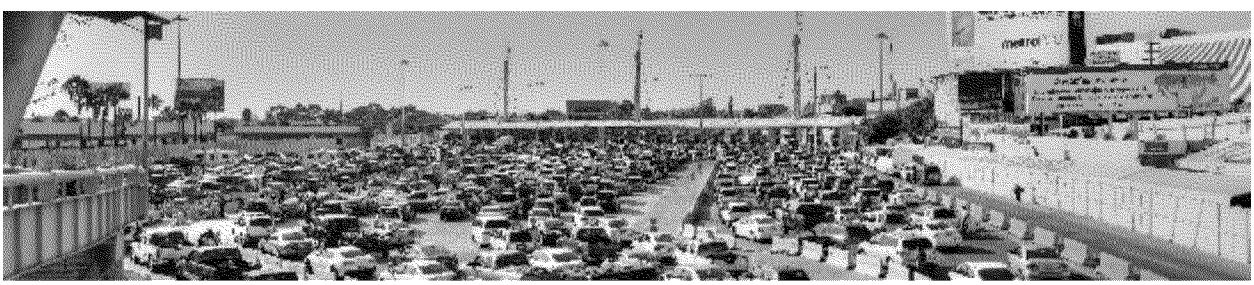
1.2.1.1 Air quality

Air quality in the border region is affected by pollutants from a number of sources. Motor vehicles, power plants, industrial facilities, agricultural operations, mining, dust from unpaved roads and open burning (e.g., for heating, cooking and trash disposal) all influence urban and regional air quality along the U.S.-Mexico border. POEs, characterized by intense motor vehicle traffic and long crossing delays northbound, have significant air quality problems that affect the facilities and surrounding communities (Quintana et al. 2015). The most common and harmful pollutants from these sources and at POEs include suspended particulate matter (fine and coarse) and ground-level ozone.

The United States and Mexico continue to collaborate to help safeguard the health of border residents by protecting and improving air quality in shared air basins. The two federal governments—in partnership with border tribal, state and local governments—have worked collaboratively to increase knowledge about pollution sources and effects, establish monitoring networks in several key areas, develop emissions inventories, demonstrate the benefits of using cleaner fuels, retrofit diesel vehicles, collaborate on projects to reduce emissions, and build local emergency response capacity through training (USEPA 2016).

Although substantial gains have been made, air quality still is a major concern throughout the border region. The pressures associated with industrial and population growth, differences in governance and regulatory frameworks, and topographic and meteorological conditions combine to present a challenging context in which to address air quality management. The number of days exceeding the ozone and particulate matter standards has decreased during the past decade (USEPA 2016); however, lengthy wait times at POEs, undocumented crossing in undeveloped areas, and patrolling using unpaved roads adversely affect air quality (USEPA 1988, 1998, 2006).

Northbound crossings increased with growing trade after the signing of NAFTA, and wait times further escalated with increases in security after the terrorist events of September 11, 2001 (Quintana et al. 2015), referred to hereafter as 9/11. Frequently, pedestrian lines are immediately adjacent to the vehicle queues (Quintana et al. 2015), resulting in pedestrians' exposure to air with significantly higher pollutant levels than extant in the already-compromised air quality of the border region (Smith et al. 2001). Such near-traffic exposures have been associated with a variety of adverse health effects, including asthma and cardiovascular issues (Quintana et al. 2015). These exposures are a matter of concern not only for the millions of people who cross each year, but also for the thousands of people employed at the POEs and those who live in nearby neighborhoods. In a white paper produced for the U.S. Department of Transportation (Kear et al. 2012), commercial vehicle emissions were noted to be substantially greater than from privately owned vehicles despite the fact that commercial vehicles comprise only approximately 15 percent of the traffic volume in the case study conducted. Therefore, the authors concluded that efforts to minimize wait times would result in the greatest improvements in POE air quality.



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Cars line up at the U.S. Customs and Border Protection inspection station at San Ysidro, Califronia, thought to be the busiest land port in the world. Source: JohnGK/Shutterstock.com.

1.2.1.2 Water access and quality

In addition to air quality, water access and quality are important issues in the U.S.-Mexico border region. Water is an extremely limited resource in many parts of this region. Population growth—along with growth in agriculture and other economic activity—places increasing stress on water quantity and quality. Protecting the quality of rivers, oceans and other water sources is important for ecological and human health in the region. The historic ambient temperature increases and long-term drought associated with climate change point to declines of fresh water supply in the border region (GNEB 2016).

The United States shares 1,954 miles of border with Mexico. The land border and rivers that make up the international boundary fall under the jurisdiction of the International Boundary and Water Commission (IBWC) (Figure 4). The IBWC comprises two sections, the U.S. Section and the Mexico Section, and is responsible for applying the boundary and water treaties and settling differences that arise in their application.

Figure 4. The U.S.-Mexico international boundary.
Source: International Boundary and Water Commission.

Rapid population growth in the border region, combined with lack of adequate infrastructure, has brought major public health and environmental concerns for both countries as a result of frequent raw sewage discharges. These renegade sewage flows contaminate surface water and adjacent beaches, posing health threats to workers and community members who come into contact with these waters (CBP 2017a). Major

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populations in cities such as San Diego, California, and El Paso, Texas—in addition to the populations of smaller towns and rural areas—depend on scarce ground and surface water to meet current demands for urban and agricultural uses and also for ecosystem services. To meet these needs for potable water, border communities must employ costly solutions, such as transporting water across long distances, desalinating saline ground water, and in the case of El Paso, direct reuse. Two major river basins—the Colorado and Rio Grande—and smaller ones, such as the San Pedro and Tijuana, supply water for municipal, agricultural and other uses. Climate effects, including long-term drought on the Colorado River, suggest that fresh water resources will decrease in the future.

The U.S.-Mexico Border Water Infrastructure Program was created in the 1990s under the La Paz Agreement as a binational effort to provide border communities with safe drinking water and sanitation. EPA and the Comisión Nacional del Agua (Mexico's National Water Commission, also known as CONAGUA) coordinate with U.S. and Mexico federal, state and local agencies to fund drinking water and wastewater infrastructure projects, recognizing that access to these basic public health services is of the highest priority (USEPA 2016). No comprehensive data on drinking water and sanitation infrastructure needs along the border are available for comparison purposes. EPA, however, has tracked the number of homes provided with first-time access to essential drinking water and wastewater services through the Border Water Infrastructure Program. From 2006 to 2015, 65,665 homes had been connected to a safe community drinking water system, and 626,631 homes were connected to adequate wastewater collection and treatment service (USEPA 2016). This effort shows that a binational government effort is essential to provide border residents with basic services that most of the U.S. population takes for granted.

1.2.1.3 Solid and hazardous waste

In addition to being affected by air and water pollution, land in the border region can be impacted by improper disposal of solid waste and negative effects from urban, industrial and agricultural activities. Border 2020 focuses on addressing land contamination from inadequate management and disposal of solid and hazardous waste and sites contaminated by solid or hazardous waste (USEPA 2016). Since 2006, *per capita* waste disposal in the United States and border states has declined according to data related to municipal solid waste. Similarly, all Mexican border states have seen a decline in *per capita* municipal solid waste generation, with the exception of Baja California from 2005 to 2012 (USEPA 2016). Reduction of waste generation and increased recycling are evident and should coincide with a decrease in improper disposal. Certified electronic recyclers are now found within 100 kilometers on both sides of the southern border.

1.2.1.4 Intersection with border security

Some environmental challenges are especially relevant based on their close relationship with border security. Contaminated surface waters—including intermittent flows in arroyos, rivers, drains and lakes—present health dangers for the U.S. Border Patrol (USBP) and other law enforcement personnel who come into contact with these waters in the course of their duties. Poor air quality in the major sister city metropolitan areas of the border, and especially around the POEs, creates unhealthy air quality for U.S. Customs and Border Protection (CPB) and USBP agents who work in those areas. Urbanization and other land cover changes, including the installation of security infrastructure and the increased number of intense storm events that has accompanied changes in climate, have accelerated erosion in some areas, posing problems for enforcement activities.

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Big Bend National Park. Installation of the proposed wall would severely impact the viewshed and the migration corridor for animals in addition to having no flood plain for border security infrastructure. Source: Ann Wildermuth, National Park Service.

1.2.2 Protected areas and the border

The border region has significant protected areas (see Figures 1 and 2 in the introduction), including national parks, national forests, national monuments, wildlife refuges, estuaries and riparian conservation areas. In addition to these national and other federal lands, states and local governments also have invested in significant ecological areas. Some of these are adjacent to protected areas across the border, forming important transboundary ecosystems. Protected areas along the border include habitat for hundreds of threatened and endangered animal and plant species and, in many cases, are on established flyways for migratory birds. The integrity of species and habitats has been challenged by tactical security infrastructure at a number of locations along the border, fragmenting habitat and creating barriers to the migration of threatened and endangered animal species. In some areas, the visual impact of border security in pristine scenic areas presents a significant challenge.

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Mule deer approaching the border wall in the San Pedro region of southeastern Arizona, 2008. [Placeholder image].

Threatened and endangered animal species, often present in small numbers, require large areas of linked habitat to promote migration and genetic diversity, assuring the health and continuance of the population in question. Important species along the border that require movement across the international boundary to maintain healthy, genetically diverse populations include the Sonoran pronghorn antelope, mountain lion, bighorn sheep, jaguar, ocelot, long-nosed bat and black bear. In some areas of the region, physical infrastructure has created barriers that prevent this natural migration. The problems for wildlife created by this infrastructure for some species is similar to barriers created by highways and freeways. For example, in Southern California, mountain lions must cross major freeways, resulting in high mortality rates and reducing the genetic diversity of isolated populations (Phys.org 2017). Potential solutions to the current problem include adding wildlife overpasses or underpasses, which are very expensive; however, proactive planning to address the needs of species to migrate across the border can be cost-effective, while meeting both security and environmental needs.

For example, the U.S. Attorney General was provided the authority to waive certain environmental laws to expedite the construction of border infrastructure pursuant to the Illegal Immigration Reform and Immigrant Responsibility Act of 1996, as amended. In 2005, as a part of the Real ID Act of 2005, Congress amended the Illegal Immigration Reform and Immigrant Responsibility Act to expand the scope of the limited waiver authority to include cultural considerations in addition to environmental laws and transfer the waiver authority to the Secretary of the newly established U.S. Department of Homeland Security (DHS). In 2007, the waiver was invoked for fence construction in San Diego. Since that time, the waiver has been invoked four more times in parts of Texas, New Mexico, Arizona and California—waiving environmental and other laws to expedite the construction of border security measures in areas "of high illegal entry." The 2008 waiver use was supported by DOI and led to a pledge to mitigate impacts on the environment. Under this pledge, $17.8 million was provided by CBP for mitigation (Andrew 2017a), and measures were taken to successfully mitigate the impacts on the environment. CPB prepared Environmental Stewardship Plans and biological and cultural resources surveys for all work completed under the waivers. The waiver was issued again in August 2017 to expedite border construction projects in the San Diego area (DHS 2017a). This example of proactive planning highlights how environmental protection can be cost effective while still meeting security needs.

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1.2.3 Case study: Habitat restoration of areas damaged by foot and vehicle traffic[2]

At the time of GNEB's 10th Report, levels of illegal smuggling of humans and drugs had reached record highs in southern Arizona. The passage of thousands of illegal border crossers across public lands, many using vehicles, and the law enforcement response to control them, resulted in a large number of undesignated vehicle routes being created in designated wilderness. The level of disturbance to public lands was evaluated in several reports and depicted using 30-centimenter resolution aerial imagery (Figure 5). Environmental effects were categorized according to the level of impact on desert habitat; a Class 1, the lowest category, was defined as a one-time pass by a vehicle, whereas the highest category, Class 4, was defined as multiple undesignated vehicle routes with deep rutting.

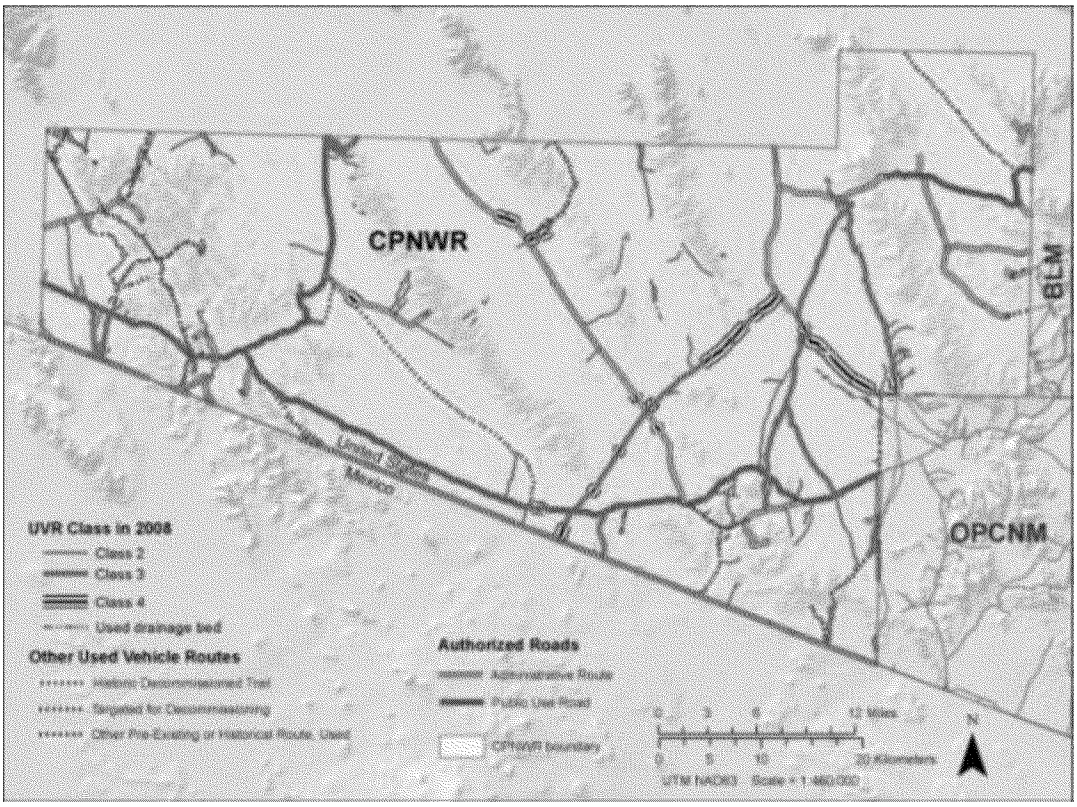

Figure 5. Unauthorized vehicle routes in Cabeza Prieta National Wildlife Refuge, 2008.
Source: NPS 2014.

Beginning in February 2015, work began to reverse these effects using CBP SBInet Ajo-1 and Ajo-2 (pedestrian fence) mitigation funds. Organ Pipe Cactus National Monument was the lead DOI unit managing the restoration program, working in close coordination with USBP's Ajo Station. The 2006 *Memorandum of Understanding Among U.S. Department of Homeland Security and U.S. Department of the Interior and U. S. Department of Agriculture Regarding Cooperative National Security and Counterterrorism Efforts on Federal Lands Along the United States' Borders* (hereinafter referred to as the 2006 MOU), was a key component of the restoration effort and formalized a unique relationship and mutually successful partnership. The first step in the process was to identify access required by USBP for border security after evaluating all existing routes. Once this was determined, the remaining undesignated access routes could be considered eligible for restoration.

[2]Source: Jon Andrew Organ Pipe Cactus National Monument Case Study—Undesignated Vehicle Route Restoration

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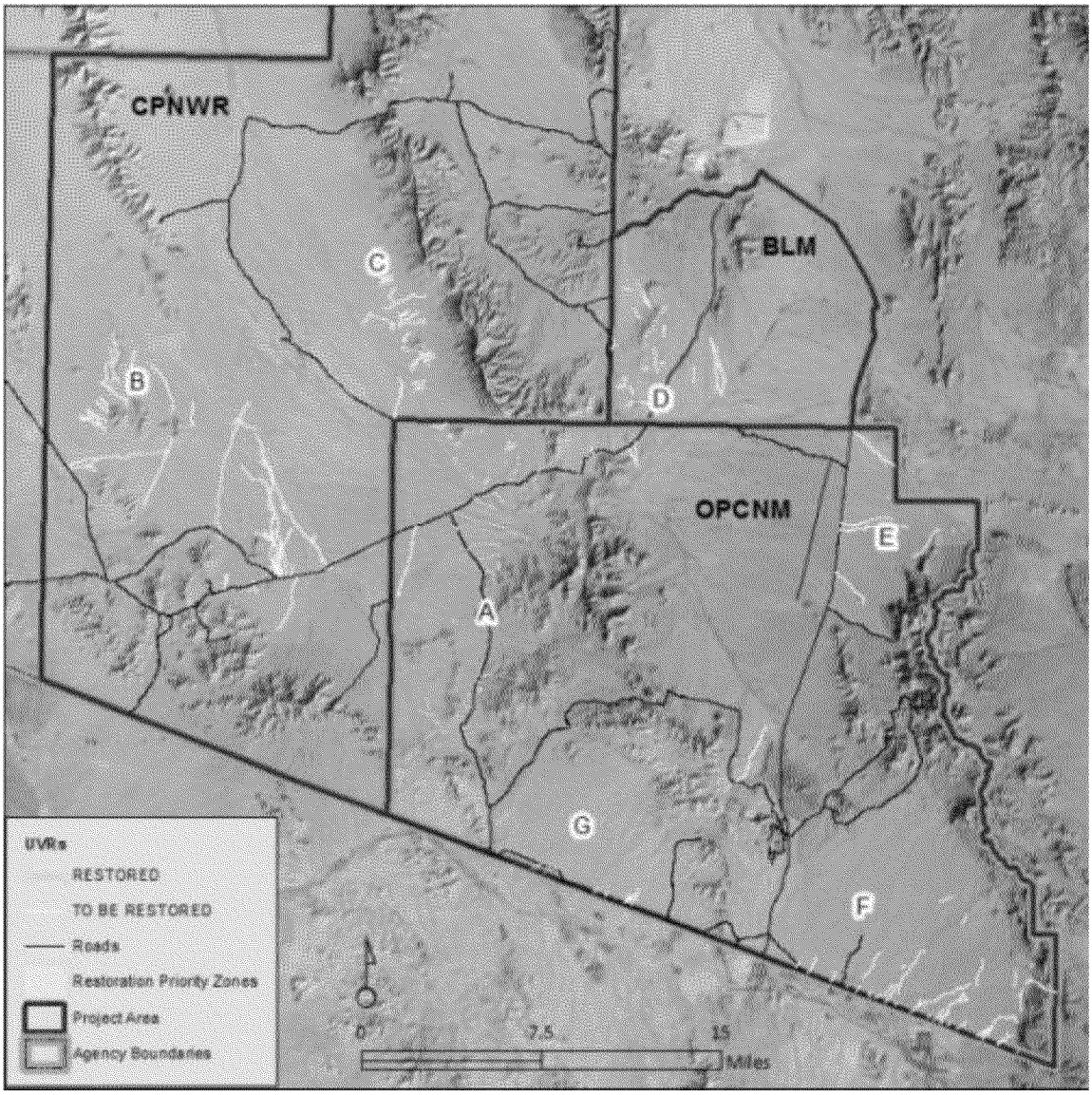

Figure 6. Undesignated vehicle routes that have been restored or identified to be restored, Cabeza Prieta National Wildlife Refuge and Organ Pipe Cactus National Monument, 2015.
Source: National Park Service; Jon Andrew Organ Pipe Cactus National Monument Case Study—Undesignated Vehicle Route Restoration.

Restoration was accomplished with various methods, ranging from hand tools to mechanized equipment in an attempt to restore the topographic grade and re-establish the natural flow of water during monsoonal rain events. Plants grown in the Organ Pipe Cactus National Monument nursery and cacti recovered from construction of the pedestrian fence were planted at the beginning of many undesignated vehicle routes, whereas areas beyond sight relied on the natural seed bank to provide future vegetative cover. On completion of restoration activities in the summer of 2015, some 230 miles of undesignated access routes were restored on all three DOI-managed lands within Pima County (Figure 6). Restored areas were marked with a simple signage system, and an agreement with the USBP assured that patrol agents would be informed of the protocol for access that would allow the areas to be grown back and complete restoration.

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A typical restoration site with pre- and post-restoration condition. Source: National Park Service.

Endangered Sonoran pronghorn antelope were observed in one area of Organ Pipe Cactus National Monument soon after restoration had been completed. Presence of this species in a restored road corridor is clear evidence that mitigation funds have achieved the stated goals and purpose. This cooperative project

exemplifies the progress in the relationship between the USBP and DOI bureaus. It also shows that providing the necessary support for border security and protecting public lands are compatible and not mutually exclusive goals. In 2015, this project was recognized with the Wes Henry National Wilderness Stewardship Award and the NPS Regional Wilderness Stewardship Award: Wilderness Champion.

1.2.4 Progress on environmental quality and protection

Much progress made on improving environmental quality in the border region relates to Border 2020, a cooperative program between the United States and Mexico initiated in 2013 as a successor to Border 2012. Border 2020 is the latest cooperative initiative implemented under the 1983 La Paz Agreement, building on previous efforts, particularly the Border XXI Program, which marked the first binational effort to develop environmental indicators for the border region. Border 2020's mission is to "protect the environment and public health in the U.S.-Mexico border region, consistent with the principles of sustainable development." Through Border 2020, federal, state, tribal and local institutions and agencies collaboratively work to produce prioritized and sustained actions that consider the needs of border communities. The actions implemented under Border 2020 are guided by a series of results-oriented goals and objectives. Border 2020's goals and objectives were updated at the end of the Border 2012 period to reflect new needs and opportunities in the region (USEPA 2016).

Additional environmental quality and protection progress has been made as a result of the efforts of binational institutions. BECC and its sister agency NADB, through cooperation with EPA and other agencies, have significantly improved water, wastewater and solid waste infrastructure in border communities through grants, loans and technical assistance. The agencies more recently have begun to address air quality issues through investment in road paving, alternative energy, and transportation infrastructure (BECC 2017; NADB 2017).

1.3 Context for security in the border region

The previous section provided a brief overview of major environmental quality and environmental protection challenges in the border region in addition to describing key federal agency responsibility for environmental management and protection. This section provides detail on the changes in border security since GNEB's 2007 report. These changes include stronger communication and collaboration among security and other agencies. They also include significant increases in physical infrastructure and personnel in the border region. Finally, the changes involve improved border control and management and faster border crossing times for goods.

1.3.1 Strengthening communication and collaboration

Since 2007, considerable progress has been made in improving communication and collaboration among security agencies and natural resource agencies in the border region (U.S. Government Accountability Office 2011). Guided by the 2006 MOU, regular, ongoing collaboration now is part of standard operating practices. Representatives from the MOU agencies hold monthly coordination calls to discuss ongoing initiatives, projects and consultation under the Endangered Species Act of 1973. These calls are organized by CBP's Energy and Environmental Management Division.

In 2005, USBP established the Public Lands Liaison Agent (PLLA) Program, and in 2009, the Chief of USBP signed the PLLA Program into national policy (Koerner 2012). Today, all sector chiefs have an on-staff PLLAs to engage with federal, state, local and tribal partners. PLLA duties include engagement with personnel from DOI, the U.S. Department of Agriculture (USDA), and other federal, state, local, tribal and nongovernmental organizations involved in land management, resource protection, and borderlands access issues. The PLLAs also promote dialogue that includes collaboration to identify mutually beneficial activities and outcomes as well as joint environmental education, border security and border safety training.

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Agents serving as PLLAs receive advanced training on environmental matters. They regularly coordinate with other USBP liaisons and remain actively engaged in preparation and review of environmental documents, including those prepared under the National Environmental Policy Act (NEPA) for activities within their sector. They monitor changes in land-use designation (e.g., wilderness designation) within their sector and communicate that information throughout the sector. They provide outreach regarding candidate and protected species under the Endangered Species Act. Finally they serve as co-chairs with representatives from DOI and USDA for Borderlands Management Task Force (BMTF) meetings.

USBP, DOI and USDA established the BMTF as an intergovernmental forum for cooperative problem-solving on common issues related to the international border. The primary mission is to address border security, human safety, and natural and cultural resource protection through shared resources, information, communication, problem-solving, standardization and training. The BMTF is intended to create a positive, intergovernmental working relationship and foster support among agencies charged with border responsibilities. Through this coordination the task force creates mutually beneficial solutions to resource management issues and provide expertise, experience and information to address common border issues. Additionally, the BMTF provides an opportunity to inform agencies and interested parties about border issues and recommendations for the implementation of possible solutions in the border environment.

Along the southwest border, all USBP sectors have an active BMTF that meets on a regular schedule, with *ad hoc* meetings called as needed. Border 2020 continues to provide an ongoing venue through its task force and regional workgroup meetings to raise new concerns and coordinate with federal, state, tribal and local agencies on border environmental issues, including security-related concerns. In the past, issues such as the waste effects on natural resources and communities resulting from undocumented migrant crossings, and practices to mitigate these effects, were addressed. Border 2020 continues to involve CBP and other agencies in its discussions on environmental issues along the border. Importantly, Border 2020 also involves the participation of Mexican agencies and stakeholders to address environmental issues that cross the border.

Access to federal lands for security purposes should continue to be managed under the terms of the 2006 MOU signed by USDA, DOI and DHS. This guiding document provides a framework for access by USBP and facilitates communication and coordination among the signatories. The MOU has been used in Arizona to allow the USBP to manage use of roads at Organ Pipe Cactus National Monument and Cabeza Prieta National Wildlife Refuge and BLM lands. This arrangement has provided the USBP with the access it requires for border security and also has resulted in the restoration of unneeded roads that can be restored. DHS and collaborating agencies have been encouraged to provide or seek funding in support of additional restoration of habitats affected by illegal activities and the resulting law enforcement activities. The work at Organ Pipe Cactus National Monument has proven that the overriding need for access to enhance border security can be provided while also restoring and conserving unique and valuable habitats. The case study of road restoration in this report highlights the cooperative effort for ecological restoration in this area of the border.

The GNEB's 10th Report and December 2009 advice letter noted the lack of adequate coordination of security agencies with environmental and land management agencies and other border stakeholders (GNEB 2007, 2009). The PLLA program, the BMTF effort and the Border 2020 process have made significant progress in addressing the Board's concerns. A recent report from the DHS Office of Inspector General did note, however, the need for improved coordination and communication with both internal and external stakeholders (DHS 2017b).

1.3.2 Creating a safer border environment

Protecting U.S. borders from the illegal movement of weapons, drugs, contraband and people, while promoting lawful entry and exit, is an essential mission of DHS. DHS works to manage and make

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U.S. borders secure through the deployment of personnel, technology and infrastructure. It also works closely with Canada and Mexico as well as federal, state, local and tribal partners. After the 9/11 terrorist attacks of 2001, the deployment of personnel, technology and infrastructure on U.S. borders accelerated. The human and physical resource base built during the past two decades has enabled USBP to develop and implement an enforcement strategy tailored to meet the challenges of securing the border against a variety of threats. Border security has been improved through increases in USBP staffing; construction of new infrastructure and fencing, use of advanced technology (e.g., sensors, radar, aerial assets), investments to modernize the POEs, and stronger partnerships and information sharing. USBP agent staffing has increased significantly since 9/11. In FY 2001, 9,147 Border Patrol agents were stationed along the border with Mexico; by FY 2007 when GNEB's 10th Report was issued, 13,297 agents were on the Southwest border. By FY 2016, 17,026 agents were on this border, accounting for 86 percent of the total number of Border Patrol agents (CBP 2017b).

Today, USBP's enforcement strategy is threat-based and intelligence-driven. This includes identifying high-risk areas and flows, targeting responses, and deploying resources and capabilities in the most effective manner to achieve multiple security objectives. These include preventing terrorists and terrorist weapons from entering the United States between the POEs, disrupting transnational criminal organizations through targeted enforcement efforts against the highest priority threats and expanding programs that reduce smuggling and crimes associated with smuggling, and managing risk through the introduction and expansion of advanced detection technology along with sophisticated tactics, techniques and procedures. Through enhanced technology and situational awareness and the introduction and expansion of sophisticated and layered tactics, capabilities, and operations, USBP's strategy focuses on "Information, Integration, and Rapid Response."

Information gathered from reconnaissance, community engagement, sign-cutting and tracking, and mobile and fixed technology provides situational intelligence to assess the threats along the border. The use of technology in the border environment is an invaluable force multiplier to increase situational awareness, direct a response team to the best interdiction location, and warn the team of any additional danger that might develop. Information and intelligence help USBP leadership and front line agents to be predictive and proactive and get ahead of the threat. *Integration* denotes CBP planning and execution of border security operations while leveraging partnerships with other federal, state, local, tribal and international organizations. Lastly, *Rapid Response* facilitates the deployment of capabilities efficiently and effectively to mitigate risks. Put simply, rapid response means USBP and its partners can quickly and appropriately respond to changing threats.

A key element of USBP's strategic plan for securing the border is the agency's layered enforcement posture, referred to as "defense-in-depth." This includes advanced detection technology, tactical infrastructure, traditional patrol activities and other enforcement operations. The strategic plan recognizes that the security of the border cannot be achieved by only enforcement activities located at the physical border. For that reason, some of USBP's enforcement operations take place away from the physical border, at interior checkpoints and in ancillary areas. These operational areas away from the border line also require continued and improved mitigation to promote environmental quality and protection in these areas as well.

With more agents, better infrastructure, more powerful technology after the 9/11 attacks, and other factors, the downward trend in apprehensions of undocumented persons at the southern border has been dramatic. Since FY 2000, apprehensions have dropped by more than two-thirds on the California, Arizona, New Mexico and Texas borders. In the Tucson Sector, apprehensions are down from more than 616,000 in FY 2000 to just 63,397 in FY 2015, a drop of nearly 90 percent. Border wide, FY 2000 had 1.6 million apprehensions; FY 2016 saw only 408,870 apprehensions (CBP 2017c). Increased enforcement and improved security infrastructure at the border with Mexico partially explain the decline in apprehensions as a result of the increased difficulty and cost for migrants seeking to cross the border illegally. Factors such

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as U.S. and Mexican macro-economic conditions, political instability and gang-related violence in Central America and elsewhere, Mexico's demographic shift, workplace enforcement actions in the United States, perceptions of unauthorized migrants in U.S. politics, and others also help to explain the sharp decrease in apprehensions at the border with Mexico.

1.3.3 Making travel faster at the border

By expanding trusted-traveler programs that provide expedited movement through POEs into the United States for preapproved, low-risk travelers, CPB has at once improved security and reduced the time and cost that individuals spend entering the United States. Border residents and frequent border crossers have particularly benefitted from programs such as the Secure Electronic Network for Travelers Rapid Inspection (commonly known as SENTRI), which has reduced the waiting time for northbound crossing at a land POE to 20 minutes or less. Faster processing of vehicles not only reduces inconvenience and costs for travelers but reduces air pollution, with health benefits to people at the POEs and surrounding communities (GNEB 2016). This is another example of meeting security needs at the border and improving the environment and quality of life for border communities.

At a 2016 Border 2020 Air Quality Task Force Meeting in Tubac, Arizona, CBP reported on a pilot project for joint cargo inspections with Mexico at the Mariposa POE to reduce crossing time and emissions that has led to significant improvements. During the proof-of-concept phase of the project, nonperishable northbound cargo that was prescreened was inspected jointly by U.S. and Mexico customs (Galvan 2016). The program reduced crossing times from Mexican warehouses to the United States from an average of 4 to 8 hours to 1.2 hours. This represented a savings of $762,000 in inventory transit costs in just the first 30 days, as determined by the participating industrial sector. The program is now standard at the Mariposa POE and is being considered for expansion to include perishable cargo and rail from prescreened companies and cargo traveling southbound into Mexico. Additionally, it is being considered for implementation at the San Luis and Douglas POEs.

1.3.4 Border security infrastructure

The Board's 10th Report and December 2009 advice letter detailed concerns about the unintended environmental consequences of the hurried-pace construction of border security infrastructure that included primary and secondary fencing, access roads, sensor networks, communications networks, and lighting and video installations (GNEB 2007, 2009). Environmental impacts included altered hydrology in some areas, producing flooding and significant sedimentation, damage to cultural and natural resources, habitat fragmentation, and barriers to migration of endangered or threatened animal species. Increased enforcement activities on dirt roads also had environmental consequences. In some cases, the infrastructure and enforcement activities reduced human pressure on sensitive habitats and species, enabling them to recover. Appendix 1 reviews the recommendations of the 2007 GNEB 10th Report and federal agency responses to these recommendations. Appendix 2 reviews the recommendations of the December 2009 GNEB advice letter and the progress made toward addressing the highlighted challenges.

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Border security infrastructure near Border Field State Park in San Diego County adjacent to the Pacific Ocean. The infrastructure includes the fence near the boundary, an access road, stadium lighting, a secondary fence and an additional road. Source: Paul Ganster, San Diego State University.

1.3.5 Case study: Alternative fencing and collaboration: Buenos Aires National Wildlife Refuge and Organ Pipe Cactus National Monument

In 2004, Organ Pipe Cactus National Monument undertook construction of a vehicle barrier along 30 miles of the south boundary at the Mexico border. The barrier was designed to stop vehicles from driving around the U.S. POEs or USBP checkpoints and through the fragile desert wilderness. Although this 3-year construction project was costly, the natural and cultural resources it has protected are priceless. The effort also had positive effects on visitor and officer safety and national security.

One remaining concern for the FWS and other federal land managers is potential impacts to the endangered Sonoran pronghorn (*Antilocapra americana sonoriensis*) in Arizona as well as other species elsewhere along the border, such as the ocelot (*Leopardus pardalis*) in South Texas. The Sonoran pronghorn population was last surveyed in 2016. In southern Arizona, there are now an estimated 273 animals. An additional 90 animals have been released through a captive rearing program in Nevada. In recent years, captive propagation and better habitat conditions have resulted in a substantial increase in the population from a drought-induced population collapse in the early years of the 21st century. Sonoran pronghorn are especially sensitive to fencing, preferring to crawl under barbed wire fences rather than jump over, and human disturbance, including unauthorized migrants and smuggling activities and border patrol activities.

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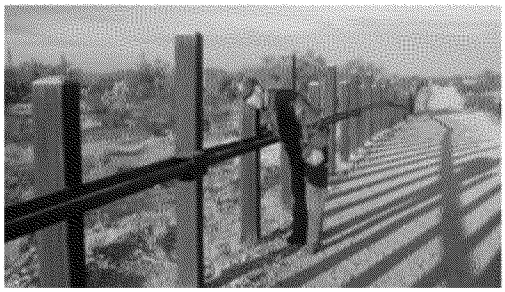
The migration of Sonoran pronghorn to populations across the border also is important for the recovery and health of the species (FWS 2015) .

Vehicle barrier on Buenos Aires National Wildlife Refuge. Pronghorn antelope and other threatened species are able to cross the vehicle barrier but not the solid pedestrian fence to the right. Source: U.S. Fish and Wildlife Service from *On the Border: Protecting Natural Resources on the Front Lines of Immigration*. www.fws.gov/home/feature/2008/pdf/OntheBorder.pdf

In 2006, FWS worked with CBP in the design of fence segments to incorporate wildlife passage elements. For other segments, CBP committed to mitigation measures for the fences' effects on listed species.



This steel fence is designed to stop car and truck traffic that used to drive from Mexico, through the wilderness of Organ Pipe Cactus National Monument, to enter into the United States illegally. This type of barrier does not impede wildlife following tradition migration corridors. Source: National Park Service. www.nps.gov/orpi/planyourvisit/barrier.htm

1.4 In Closing

Although 10 years have passed since GNEB issued its 10th Report, the southwest border environment and socioeconomic context are dynamic and require continual adaptation of policies and actions to respond to emerging challenges and changing conditions. The fragile natural environment of the border region underscores the need for careful planning and coordination among federal agencies to mitigate the impacts as border security infrastructure is built out and enforcement activities intensify. Advance planning, coordination and stakeholder participation will improve security infrastructure and facilitate meeting both security and environmental goals. This will help to avoid costly mistakes and the resulting need to make expensive adjustments to infrastructure along the border.

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CHAPTER 2. Challenges and Opportunities, Part I

The intersection of border security and the environment impose a number of challenges and opportunities on the border region. Areas of emphasis in this report include:

- Ecosystems, tourism and outdoor recreation.
- Plant and animal life and habitat integrity.
- Hazmat and emergency response.
- Water management, flooding, and trash and sediment control.
- Air quality.

The shape and form of security infrastructure installed along the border is a critical factor affecting these areas of special concern. Also of importance are management practices by security agencies. Additional installation of security infrastructure along the border will have a significant effect on the region, presenting both challenges and opportunities to enhance security while preserving or even improving environmental sustainability. Installation of new walls, fencing and support infrastructure along the border could be an enormous undertaking. In some areas, the infrastructure could be the equivalent of construction of a highway through similar terrain. Given the scale and cost of the program to enhance border security infrastructure, it is important to get it right the first time, avoiding costly mistakes and even more costly corrective actions. This requires careful planning and advanced coordination with stakeholders in the region.

Ecosystems, ecotourism and outdoor recreation

Natural ecosystems are the foundation of many life-sustaining and life-enhancing benefits (or services)—clean air and water, fertile soil for crop production, pollination, recreation, flood control and others. Ecosystem services are critical to economic development and sustainability as well as environmental health but often are often undervalued, taken for granted or ignored. Collaborative ecosystem management efforts are especially effective in avoiding costly environmental and health remediation efforts that can occur from a dysfunctional system. Two case studies—the Tijuana River National Estuarine Research Reserve (TRNERR) and the Buenos Aires National Wildlife Refuge—highlight lessons learned. These case studies serve as models for achieving both improved border security and environmental quality.

It is evident from past successes that collaboration among DHS and other federal and state agencies with conservation research and management groups leads to mutually beneficial solutions that both enhance border security and support wildlife corridors, estuary health and environmental health, leading to species protection and ecotourism benefits. Together, ecotourism and outdoor recreation are a substantial part of the U.S. economy and of the border region. As indicated in Figures 1 and 2 in the Introduction, large areas of the border are protected areas, especially in California, New Mexico and Arizona and to a lesser extent in Texas. These protected areas are important resources for ecotourism and outdoor recreation including birding, hiking, camping, mountain biking and so forth. In addition to the federally protected areas, important state and local parks and wildlife management areas provide further opportunities for the public and for the protection of vital habitats and species.

Although the value of ecotourism in the border area is difficult to quantify, the Texas Parks and Wildlife Department has collected information that helps to explain economic benefits of wildlife-related tourism. Millions of Texas residents travel to observe, photograph or feed wildlife; these travelers spent $228,779,736 on travel-related expenses in 2001. Additionally, wildlife-watching activities support more

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than 23,000 jobs in Texas. More than $80 million was generated from state sales tax on purchases by wildlife watchers. FWS and the U.S. Census Bureau reported that, in 2011, wildlife watchers spent $1.8 billion on wildlife-watching activities in Texasn (Figure 7) (FWS and U.S. Census Bureau 2013). Wildlife-watching equipment (binoculars, special clothing, etc.) expenditures totaled $590 million, and away-from-home wildlife watchers on average each spent $463 on trip-related expenditures (FWS and U.S. Census Bureau, 2013). Not only does wildlife-watching support jobs and bring in ecotourism dollars, tourism is the third largest industry in Texas, and nature-based tourism is one of its fastest growing segments. "Nature-related tourism offers Texans the opportunity to build and diversify economies based on conserving the natural resources and rural lifestyles important today and for future generations" (Texas Parks & Wildlife 2017).

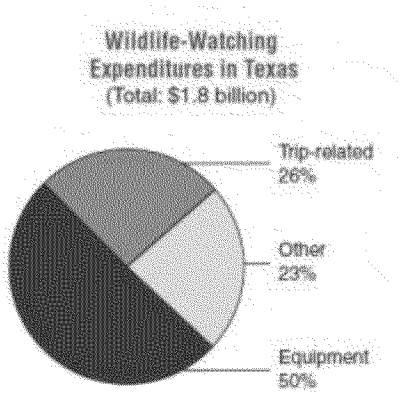

Figure 7. Wildlife-watching expenditures in Texas.
Source: (FWS and U.S. Census Bureau, 2013).

Important birding areas are found throughout the border region. These include, among others, the Tijuana River Estuary and the Colorado River and Salton Sea in California; the San Pedro River National Conservation Area in Arizona; and the Santa Ana National Wildlife Refuge, Las Palomas Wildlife Management Area, and Laguna Atascosa in Texas. These generate a large number of visitors with positive effects on the local economies. In addition to these federal lands that help provide important habitat for birds and birding opportunities, state and local parks along the border also provide protected areas and opportunities for wildlife watching. In Texas, the World Birding Center, the Sabal Palm Sanctuary, and Big Bend Rancho State Park all could be significantly affected by the construction of a physical wall.

Security infrastructure and enforcement actions have negatively affected border ecotourism through the building of fences and roads and restricting access to some areas. Alternatively, in many protected areas along the border, improved security has helped protect ecosystems from damage by migrants and smugglers, as well as from the enforcement activities, and has made these areas once again safe and accessible for ecotourism and outdoor recreation. A good example of this is the reopening of the areas adjacent to the international border in Organ Pipe Cactus National Monument, including the famed Quitobaquito Springs. This part of the national monument had been closed for a number of years because of a lack of security for monument personnel and visitors. Another example of benefits of increased border security is the Coronado National Forest along the border in Southern Arizona. In 2007, at the time that GNEB's 10th Report was issued, warning signs were posted to alert recreationists of the dangers from unauthorized border crossers. By 2017, these border areas of the Coronado National Forest were safe for people to enjoy.

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Warning sign in Coronado National Forest in southern Arizona, near the international border, circa 2006. By 2017, increased border security made the national forest safe for recreation once again.
Source: Paul Ganster, San Diego State University.

As seen along the border of Tijuana, Mexico, and Imperial Beach, California, collaboration among USBP, land and resource management agencies, and conservation organizations have many benefits. When Border Patrol agents understand the positive impact and delicate balance required for effective ecosystem management, and when resource managers understand the intricate elements of border security, the results can mean a healthier environment, a safer border and economic advantage. According to Linnell et al. (2016), "Including border security personnel in wildlife monitoring is one critical step to raise awareness of wildlife needs, help assess the impact of border fences, and explore potential strategies for reducing the unintended impacts on wildlife." Additionally, through this collaboration, all parties can achieve a better understanding of where additional options for enhancing border security that also support natural system functions can work together. For instance, high-tech monitoring methods in unfenced areas could provide effective security while allowing for wildlife corridors to remain intact. An improved ability to manage natural resources and lands from border patrol activities also can be seen along high-traffic areas for illegal immigration, such as the Tijuana border area. Natural resource management personnel have increased security in their daily activities, and the effects from illegal camping and hiking off trails have been reduced.

2.2 Intersection of invasive species and border security

The Board has commented on the persistent problem of invasive species affecting natural systems along the border, especially aquatic areas and the banks of the Rio Grande and Colorado rivers (GNEB 2004). The dense vegetation produced by some invasive species presents problems for border security enforcement by restricting USBP access and screening smugglers and illicit activities from observation.

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Giant cane or Carrizo cane (*Arundo donax)* is a species from the Middle East brought to the United States in the 19th century and has now taken over many water bodies. Along the Rio Grande, it grows in dense stands, sometimes acres in size, allowing undocumented migrants and drug smugglers to hide and evade USBP agents (Figure 8). Remote video surveillance cameras cannot penetrate the thickets, enabling smugglers to cross the Rio Grande and approach agents virtually undetected (DHS 2007).

Figure 8. Border Patrol Agent Jose Perales wades his way through the Carrizo cane along the Texas-Mexico border.
Source: *Texas Standard*. http://www.texasstandard.org/stories/this-invasive-species-is-a-threat-to-national-security

The giant cane can grow rapidly up to 18 feet in height. A predatory wasp was introduced to help eliminate the cane, but more usual control methods are cutting, burning and application of herbicides. A binational group, Los Diablos (The Devils), burns the cane along the Rio Grande in Big Band National Park (Fernandez 2016). Composed of firefighters, conservationists and park rangers, the group uses prescribed burns followed by application of an herbicide to guarantee that reproduction is halted.

Tamarisk (*Tamarix* species), also known as salt cedar, is another invasive that has spread throughout the border, causing problems similar to *A. donax*, outcompeting native vegetation and frustrating border security activities, affecting river flows important to complying with minimum amounts of water important to binational water treaties, and limiting access to the riparian areas by local communities. Along the lower Colorado River limitrophe that forms the U.S.-Mexico border, the Fort Yuma Quechan Indian Tribe manages a Bureau of Indian Affairs Noxious Weed Program that also is used to clear and eradicate salt cedar. The tribe also manages a USDA Natural Resource Conservation Service Environmental Quality Incentive Program, which is used to replant areas cleared of salt cedar along the Colorado River with native vegetation like Mesquite, Cottonwood and Willow trees (Fort Yuma Quechan Indian Tribe 2017). The tribe and its partners have not only restored access to the river to tribal members but have restored native vegetation and improved access for security purposes.

2.3 Endangered species along the border

The U.S.-Mexico border region is a delicate ecosystem with regular animal and bird migrations moving between the north and south of the North American continent across the international border. It is home to a diverse population of mammals, birds and plants. The dry, desert ecosystem also supports pronghorn antelope, cougars, desert bighorn sheep, the endangered North American jaguar, and the ocelot—which is

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down to its last 50 animals in southern Texas (Sullivan 2016).The U.S.-Mexico border region has the highest rate of species endangerment in the United States (Van Schoik 2004). Some 31 percent of the species listed as endangered by DOI are found in the region. On the Mexican side of the border, 85 species of plants and animals are endangered. Not surprisingly, the threats to these species are exacerbated by the fact that the ecosystems in this region are split by a political boundary that greatly complicates conservation efforts as well as creates a physical barrier that fragments habitat and impedes migration of animals The border wall bisects public and private lands along the border, and the barrier can affect the 30 endangered, threatened or candidate species of wildlife that live near the international border in just Arizona and Sonora (Cohn 2007; Gaskill 2016).

Other areas of the border experience similar issues with respect to border infrastructure. Because of the necessary roads, vehicles and support facilities that come with border security, some fragile desert plants (including saguaros) and other wildlife species (including Sonoran pronghorn) may lose access to important sources of food and water (Cohn 2007). Retaining migration corridors via connected habitat across the international border for endangered and important species is critical. Maintaining connected habitats across the international boundary is especially important for species struggling to survive in the face of multiple and cumulative threats. For some species, existing sections of the border wall have completely blocked the migration corridors—or regularly traveled paths through the landscape—in areas that species have relied on for centuries. New sections of the wall may have the same effect depending on how they are designed and where they are constructed. Imperiled species such as the ocelot, jaguar, bighorn sheep, mountain lion, long-nose bat and Sonoran pronghorn, among others, may not be able to migrate, exchange genes between populations necessary for a healthy population, and/or reach vital food sources (Esquina 2017).

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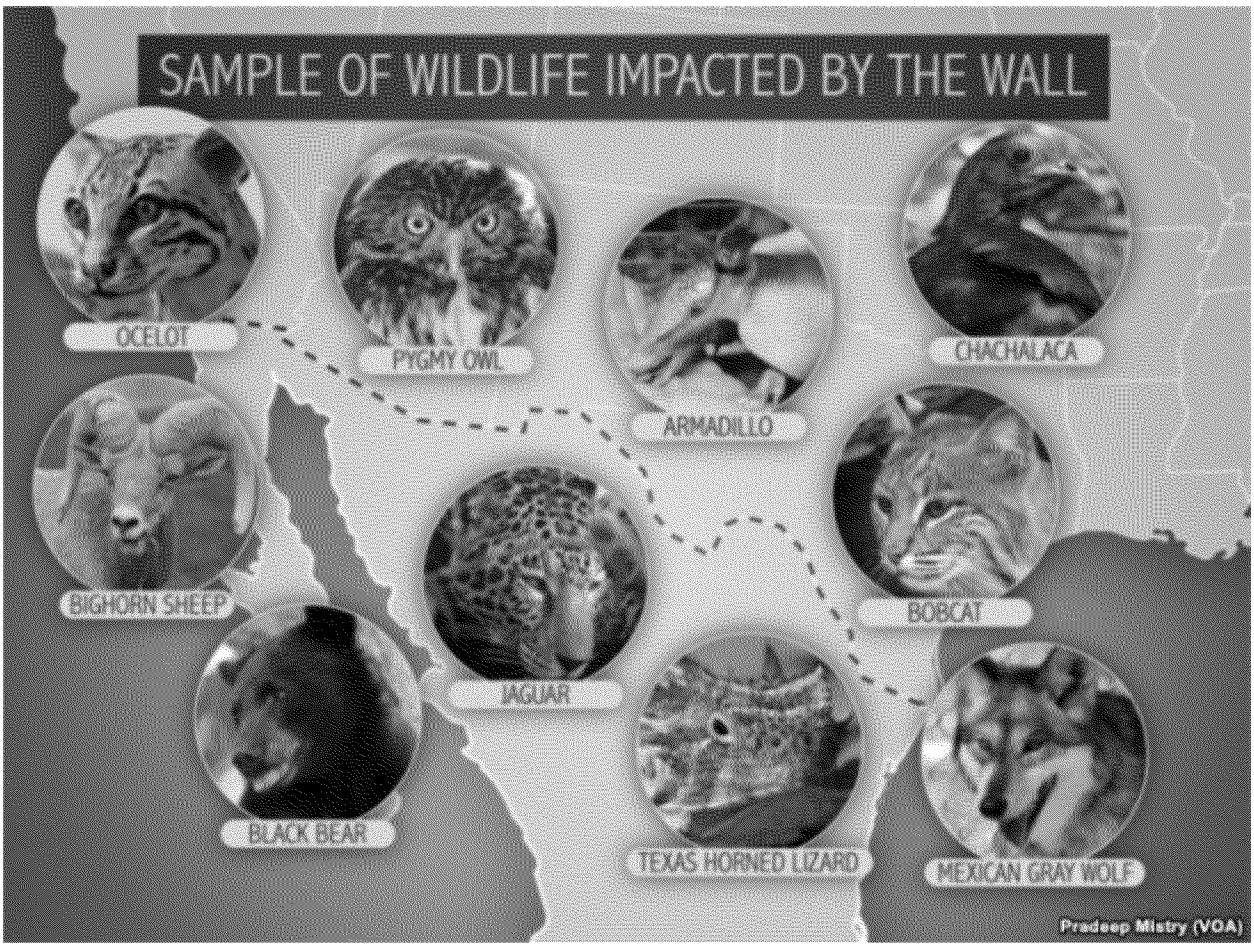

A variety of species, including those presented in this image, could be affected by the construction of a border wall. Source: Pradeep Mistry, Voice of America. www.voanews.com/a/border-wall-doom-ocelots-other-wildlife/3848977.html Do we have/need permission to use this? If do not/cannot get permission, SCG Graphics Department will recreate a similar graphic.

2.4 Proposed border wall, potential environmental impacts and alternatives

Since the passage of the Secure Fence Act of 2006, the U.S. government has constructed 654 miles of primary fencing and an additional 51 miles of secondary fence covering approximately 36 percent of the border. Other parts of the border have high mountainous terrain or major rivers, such as the Rio Grande, that act as natural barriers. The current administration has proposed extending the structure to cover the entire border. In March 2017, CBP issued a formal request for proposals (RFP) that specified the physical requirements for the proposed wall: 18–30 feet in height, made of solid concrete, possess an anti-climb top and below-ground barrier to prohibit digging beneath it, must withstand 1 hour of hammering and chiseling, contain pedestrian and vehicle gates (25 and 50 feet wide, respectively), contain fittings on the U.S. face to "shield from external attack," and include attractive texture and color on the U.S. side. Companies that submitted proposals were expected to construct a physical prototype of their proposal (www.cbp.gov/newsroom/national-media-release/cbp-requests-proposals-border-wall-prototypes).

Federal law provides the DHS Secretary with the authority to waive federal, state and local environmental law if deemed necessary for border security. As of 2011, the DHS Secretary had applied waivers of more than 50 environmental laws. Waivers also were applied to more than 550 miles of barriers and roads needed to complete border fencing projects (Neeley 2011). If new security infrastructure is to be built, federal agencies must continue to collaborate to ensure that infrastructure is designed and sited to mitigate

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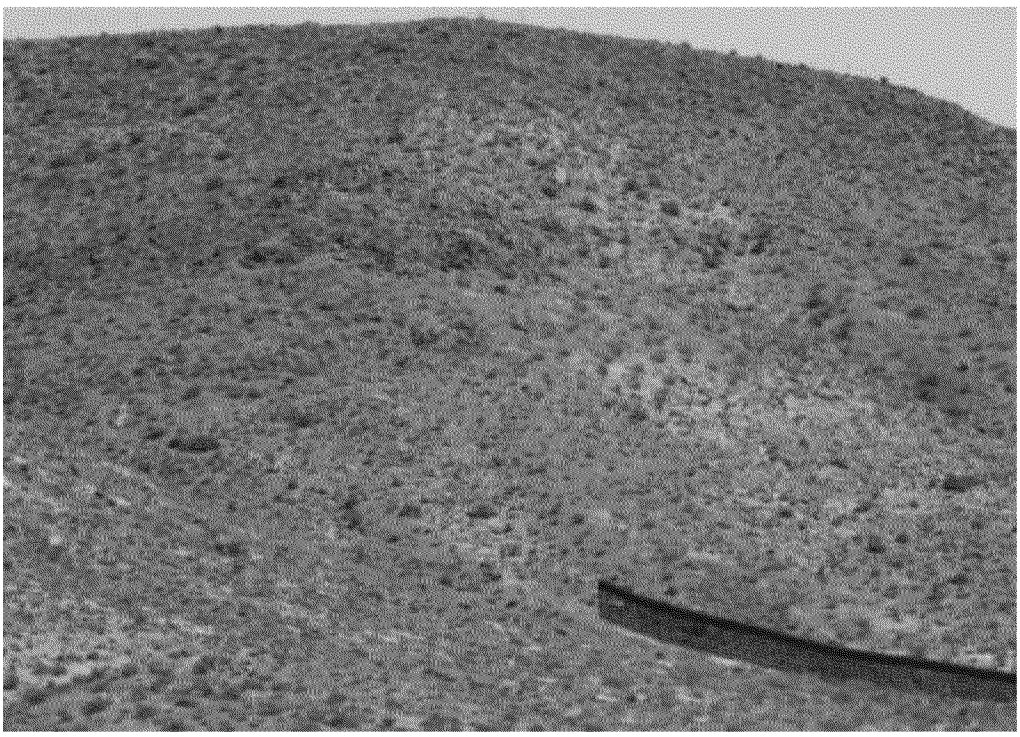
the effects on the environment, plant and animal species, and their habitat. This collaborative approach will help to ensure that the infrastructure is completed properly and will not have to be reconfigured to address flooding or other issues. This is the most cost-effective approach.

No comprehensive border-wide studies of the existing fence's effects on wildlife and plant species have been conducted. Scientific studies conducted in specific border locations and published in peer-reviewed science journals, however, provide important information on the effects of fencing on wildlife in parts of the border region. A 2010 biological analysis found that nine herds of bighorn sheep in Mexico are linked to herds in Arizona, and proposed fencing would isolate some herds on the Arizona side as a result of the limited mobility range of female bighorn sheep. The same study found that endangered Ferruginous Pygmy-owls would be affected by the large vegetation gaps and tall fences created by proposed fencing because of the birds' limited range and flight height. Overall, the study found that other species that have similar mobility and spatial distributions may be affected by border development, yet mitigation strategies could be designed to address both wildlife and societal needs (Flesch et al. 2010). Other species identified by biologists and other scientists as affected by the fencing proposal in 2007 include the Sonoran pronghorn, jaguar and ocelot. A wall would prevent jaguars from repopulating the southwestern United States from a population in Mexico's Sierra Madre Occidental. Landscape permeability to allow wildlife movement is critical to wildlife health and survival (Cohn 2007).

In southern San Diego County, the border fence now ends on a steep western slope of mountains to the east of the small town of Jacumba and does not begin again until the desert floor of Imperial County. The intervening mountains are part of the range of the peninsular bighorn sheep (*Ovis canedensis nelsoni*) that inhabits the Peninsular Ranges in southern California from the San Jacinto Mountains south across the border and through Baja California to Volcan de Tres Virgenes in Baja California Sur, Mexico (Bighorn Institute 2017; FWS 2000). Peninsular bighorn sheep are a natural part of the California border's heritage and culturally and economically important. Completing an impenetrable fence across its migration corridor would further endanger this species.



Jacumba, California, where existing fence ends, not intruding on migration corridor for Peninsular bighorn sheep, mountain lion and other species. Source: Paul Ganster, San Diego State University.

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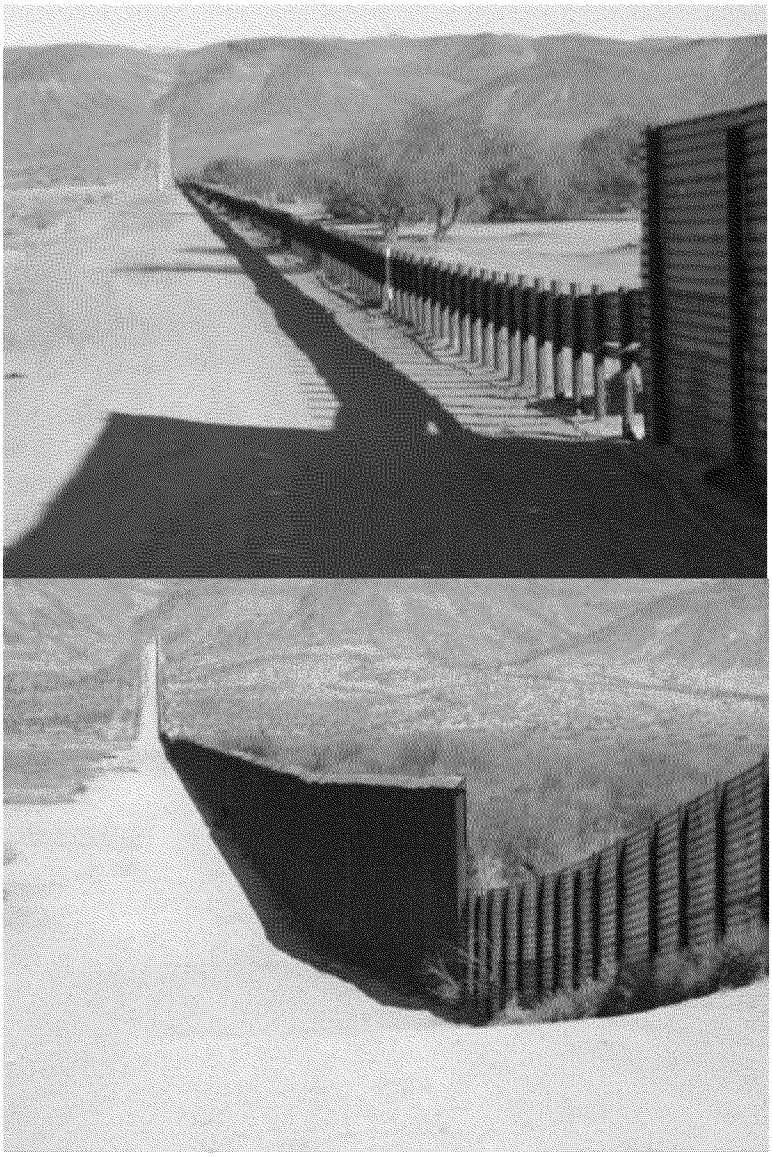
Flooding impacts on habitat and the landscape have been associated with existing border fencing, including a pedestrian barrier in Organ Pipe Cactus National Monument that impounded floodwaters after a heavy storm event in July 2008 (Neeley 2011; NPS 2008). Border barriers caused similar problems and several deaths to occur in Nogales, Sonora, also in July 2008 (Clarke 2016). Landscape disruption in the rugged Otay Mountain Wilderness in San Diego County through fence and access road construction produced accelerated erosion in areas with the rare Tecate cypress and the imperiled Thorne's hairstreak butterfly that relies on the cypress as a host (Neeley 2011). In Starr County, Texas, on the Lower Rio Grande, recent proposals for barrier construction has raised strong local concerns (Schwartz 2017). Elected officials and community members have raised specific issues with new wall construction, including heightened flooding risk, isolation of parts of the communities or private lands on the south side of the new structure, and major impacts on habitat and birding areas, especially Roma Bluffs.



Border fence near Jacumba in eastern San Diego County. The image from 2002 (above) shows the 8-foot fence constructed from surplus landing mats and then a vehicle barrier in the valley bottom. The 2017 image (below) shows how the vehicle barrier was replaced with a pedestrian fence approximately 20 feet in height that also includes gates that open to accommodate stormwater flow and decrease flooding impacts. Source: Paul Ganster, San Diego State University.

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In view of these impacts of border security infrastructure installation on the environment, wildlife and landscape, it is imperative for federal agencies such as DHS and CBP to continue to collaborate on environmental mitigation to the maximum extent feasible in future border security infrastructure projects. GNEB recommends that environmentally sustainable infrastructure design be considered in future projects. The negative environmental impacts produced by previous fence and access road construction should inform the current efforts of 2017 to extend and enhance border infrastructure. Careful planning and collaboration with other federal agencies and state and local stakeholders will help DHS to avoid past mistakes and produce border barriers that meet the needs of security and environmental protection. For example, through working with land managers of protected areas and biologists, DHS could determine locations where cross-border habitat must be undisturbed to facilitate migration and survival of critical species. A combination of vehicle barriers, gates, sensors, presence of USBP personnel, close cooperation with Mexican authorities, and other methods could secure these areas from unwanted human intrusion yet enable animal movement to take place. To this end, GNEB reiterates its recommendation from the 10th Report:

> "As a best business practice, hold a national conference on fencing/barrier technology that highlights successes to date and educates the public, with participation from private sector experts and nongovernmental organizations. As an outcome, develop recommendations for prototype fences that meet security goals while minimizing environmental damage or even improve environmental conditions" (GNEB 2007).

The 2017 CBP RFP for border wall construction proposals produced innovative thinking on border wall designs and solutions. At least two proposals for more "sustainable" alternative border barriers represent the types of proposals that have emerged. One defense contractor developed a proposal for a virtual border barrier that uses computer technology and thousands of portable sensors as an alternative to a concrete brick-and-mortar wall. The proposed virtual wall would be less costly than a brick-and-mortar equivalent, approximately $300 million compared with an estimated $21 billion for the physical wall. This proposal employs sophisticated prototype infrared sensors the size of a softball (4 inches in diameter and 5.5 inches high) that are powered by solar batteries and can sense motion, infrared light, heat and other evidence of human activity nearby. The portable sensors would be distributed via dropping an estimated 200 sensors per mile of border area from an aircraft in an "asymmetrical grid pattern" and scattered in a band extending 0.5 mile into the United States from the border. The sensors would activate on impact and begin communicating with adjacent nodes and sending data regarding detected activity to regional cluster nodes with a signal similar to Bluetooth, not requiring Wi-Fi or satellite connection. The cluster nodes, which are a bit larger because of their increased power need and requisitely larger solar panel, then would relay the information through an encrypted wireless signal to the sensor network monitoring server. Information from sensors can be tracked on computers or devices such as tablets and smartphones via a web browser; color-coded alerts would be sent to tracking devices if human activity is detected (Dickson 2017).

A second alternative concept first proposed by Mexican environmentalists is a solar border structure that would generate enough electricity to power one-half-million U.S. homes and would "pay for itself" (Fthenakis and Zweibel 2017). This alternative would be a "massive string" of horizontal photovoltaic panels that could provide an equivalent barrier to that associated with a concrete wall. The solar structure could be managed by a public-private partnership that could generate economic development in the border region. A Nevada company has developed a similar proposal (Yeo 2017). Despite the obvious practical obstacles, the solar alternative may represent a sustainable and less costly alternative to the concrete wall described in the RFP.

These are just two of many alternatives that have emerged in 2017. It is apparent that, through collaboration with the private sector and other stakeholders, innovative solutions can be developed for border security infrastructure. Existing practices, such as leaving gaps to provide access for agricultural fields along the Rio Grande and Rio Colorado that were isolated by border fence construction, can be

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adapted to permit wildlife migration with proper USBP supervision. These solutions can address both security and environmental needs along the border with Mexico.

2.4.1 Case study: The National Butterfly Center (NBC) in Mission, Texas

The NBC is a 100-acre botanical garden, featuring formal demonstration beds and wildscape, focused on native host and nectar plants that sustain all life stages of more than 200 species of butterflies. Once a commercial onion field, this parcel of land that borders the Rio Grande River and is bisected by the Mission Main Canal and levee, now serves as a preserve for disappearing riverine woodland and wetland and acts as a refuge for three federally listed endangered plant species, Slender Rushpea, Tamaulipan Kidneypetal and Walker's Manioc. Other species of interest at NBC include the threatened Texas Tortoise, Texas Horned Toad and Texas Indigo.

Less than 5 percent of native habitat remains in the Lower Rio Grande Valley, and it is primarily set aside along the Rio Grande River, in the Lower Rio Grande Valley Wildlife Conservation Corridor. This corridor is a multistakeholder effort to connect lands from Falcon Dam to the Laguna Madre to create a contiguous range for wildlife to feed and breed. Projects like the NBC play a critical role in the conservation corridor by preserving remnants of land for native plant and wildlife species in this subtropical zone, where western desert meets thorny shrubland and the South Texas prairie.

The Lower Rio Grande Valley is home to 1,200 plant species, 300 butterfly species and 700 vertebrate species, of which 530 are birds. The greatest conservation challenges to this area are land development, the availability of water, erosion management, increases in nonnative pasture for livestock at the expense of native grassland, and habitat fragmentation.

According to the US Geological Survey, "native habitats in the LRGV, particularly in the riparian corridor, remain small and fragmented—even more so with construction and completion of the border fence" (Leslie 2016). Similarly, The Nature Conservancy notes stresses, including habitat disturbance and destruction, as peculiarly detrimental to the landscape and survival of wildlife, as hundreds of acres of native plants are eliminated for CBP's barren "control zone." The movement of terrestrial life, especially, is restricted by unnatural barriers (The Nature Conservancy 2008). Not only does the border wall impose an artificial division on the southwestern borderlands, once united by the Rio Grande River, it now poses a threat to wildlife that will not be able to reach the river or range beyond the wall. The wall also will disrupt the natural seed distribution of native plants provided by wind and wildlife and exacerbate the spread of plants that do not depend on consumption to proliferate. Construction of a border wall also presents a challenge to the thriving ecotourism economic activity of the NBC and the Lower Rio Grande Valley. Declines in ecotourism, an economic activity that generates more than $450 million annually for the Lower Rio Grande Valley occurred where portions of a border wall have already been constructed. [Source needed.]

The NBC has spent the past 15 years working to reverse habitat loss through the deliberate planting of native host and nectar plants for wild, free-flying butterflies, all of which face increasing pressure to survive as a result of climate change, drought, disease and development. Most recently, the NBC became home to the Southernmost Monarch Waystation and is planting 10,000 native milkweeds and spring and fall nectar plants to sustain imperiled Monarch butterflies during seasonal migrations and provide ecologically appropriate host plants to support a rebound in species numbers.

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A Monarch butterfly feeding on a nectar plant. Source: National Butterfly Center.

Just as the topography of border mountain ranges presents challenges to the installation of border security infrastructure (i.e., fences and access roads) in a way that minimizes negative environmental impacts, the Lower Rio Grande River Valley also presents significant challenges. The Rio Grande River meanders through the valley, and the adjacent river bottom is generally not suitable for fence construction as a result of periodic flooding. As a result, USBP has placed the fence and support roads on higher ground on the river's levee, which often is some distance from the international boundary located in the center of the river. In the case of the NBC, USBP has proposed locating the fence along the levee, which is approximately 700 yards from the banks of the Rio Grande. In additional to installation of an impenetrable barrier, this security project would remove vegetation from a 150-foot wide control zone. These actions would fragment the habitat in an important link of the Lower Rio Grande River Valley Wildlife Corridor and would impair the functioning of the NBC. More than half of the NBC's land would be located south of the fence. Figure 9 shows the location of the NBC and proposed border fence.

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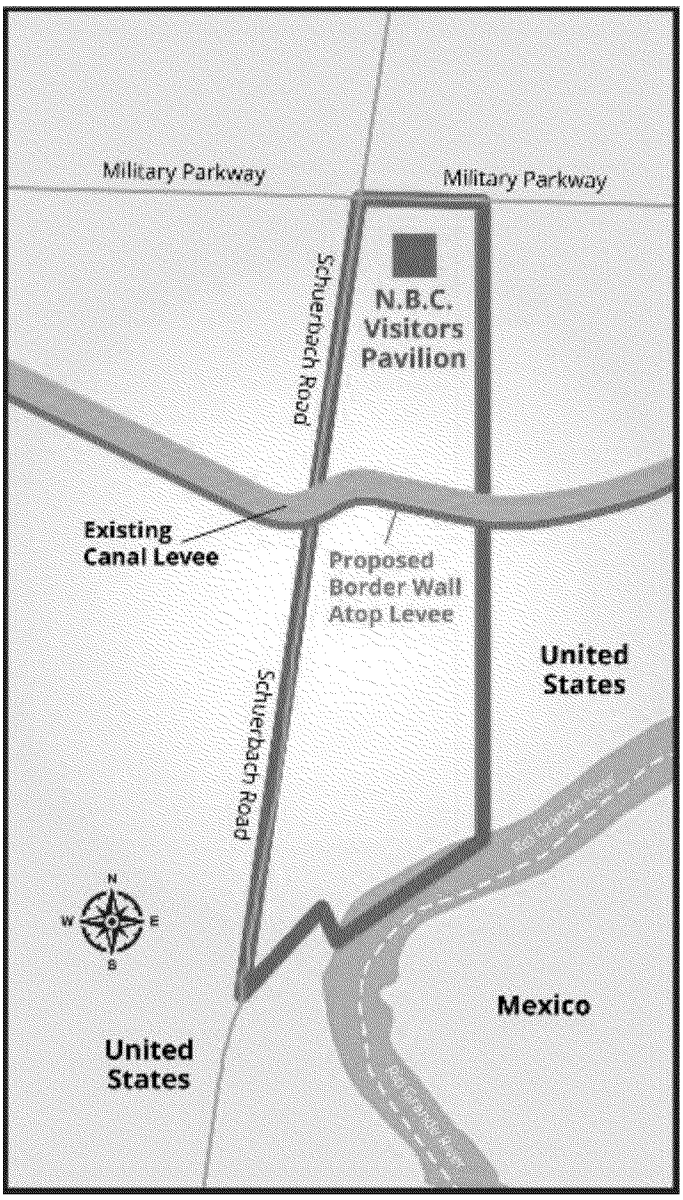

Figure 9. Map of the National Butterfly Center and proposed border fence.
Source: Modified from the National Butterfly Center.

2.5 In Closing

The Board urges all appropriate federal government departments and agencies to coordinate closely with state, local, municipal and tribal governments and local property owners who would be affected by additional fencing in Starr and Hidalgo Counties in Texas. Concerns regarding flooding that could result from additional infrastructure along that section of the border have been raised continually during the past decade. Unless it is carefully planned and designed, additional infrastructure in that section of the border, particularly within the Santa Ana National Wildlife Refuge, could have extremely damaging and likely irreversible ecological and economic effects.

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Challenges and Opportunities, Part II

Emergency response and preparedness

A critical element related to border security as well as to sustainability and resilience of border communities is emergency response. There is a strong foundation of hazmat and emergency response preparation and planning along and across the border, capacity that can support security efforts in the region. This section describes how the U.S. and Mexico governments manage transboundary emergency response, including agreements, non-binding documents and standard operating procedures at the federal, state and local levels. This section relies on three documents: a 1980 agreement between the U.S. and Mexico updated in 2008 (U.S. Department of State 2008), a U.S. Department of State 2013 report on transboundary emergency procedures (U.S. Department of State 2013), and a 2004 report (Batchelor 2004). The sister city plans (USEPA 2017), central to the contingency plans along the border, also are discussed.

The 1980 agreement (updated in 2008) on emergency management in case of natural disasters or accidents provides a framework for U.S.-Mexico cooperation among nine U.S. and 14 Mexican agencies in a natural disaster, accident or other emergency, including security-related incidents (U.S. Department of State 2008). Table 1 lists mandated topics of U.S.-Mexico cooperation (U.S. Department of State 2008). This agreement authorizes participation of nongovernmental organizations or businesses and coordination with state, local and other authorities. The agreement asks each country to use best efforts to facilitate prompt entry into and exit from its territory of personnel and recognizes that cooperation is limited to actions authorized by domestic laws and the availability of funds.

Table 1. The U.S.-Mexico Emergency Cooperation Agreement

Exchange of information, experts and technicians as mutually agreed.
Exchange of information on techniques for evacuation of persons under emergency conditions.
Exchange of information on techniques to ensure an adequate supply of resources necessary to meet emergency situations.
Assessment of emergency communications planning.
Analysis of the probable effects and potential risks of particular kinds of disaster in geographic areas having a high potential for risk.
Promotion of symposia, conferences, workshops and training programs in emergency management and response.
Cooperation with other international, governmental or public and private nongovernmental entities involved in emergency management.
Other activities, as mutually recommended by the U.S. Departments of State and Homeland Security and Mexican ministries of Foreign Affairs and Governance.

Source: U.S. Department of State 2008.

If an environmental incident should occur along the U.S.-Mexico border, local governments will respond initially and provide emergency response capability prior to either federal or state agency responses. Local governments usually concentrate emergency response and planning into a few agencies that address fire, police, emergency medical services or emergency response. Local governments also deal with private companies that haul hazmat. In the event of an incident, these companies may have first responder capability and, if so, local governments can integrate public sector responses with private sector capabilities.

For many border communities, the fire department is the principal agency for emergency response because those units typically prevent and control fires and respond to hazmat incidents. In many communities, fire

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departments also deliver basic emergency medical services (EMS) and general emergency response. In some communities, EMS and emergency management departments may be separate. If an office of emergency management (OEM) exists, it may address contingency planning and integrating departmental standard operating procedures. The OEM fulfills state and federal government legal requirements for each city to have a single point of contact for emergency management to create coordination among different jurisdictions.[3] For example, an OEM in one city may negotiate with neighboring cities and counties, or even across the U.S.-Mexico border, to institute mutual aid agreements. The capabilities and organizational structure of fire departments vary from city to city.

Local emergency personnel respond to incidents regardless of the nature or cause of the problem. As emergency causes vary, emergency planning efforts focus on dealing with the common effects (State of Texas 2003). For example, fires and floods both can force people from their homes, so emergency plans focus on evacuation. Emergency plans identify key functions and assign responsibility for carrying out the tasks necessary to complete them. Typically, the organization or unit tasked with a function develops a standard operating procedure to ensure critical tasks are completed, an "all-hazards" approach so emergency response personnel can respond to any situation. Nine common functions necessary for local emergency response operations as identified by the Federal Emergency Management Agency (FEMA) are listed in Table 2 (FEMA 1996).

Table 2. Core Functions for Emergency Response Plans

Direction and Control
Communications
Warning
Emergency Public Information
Evacuation
Mass Care
Health and Medical Services
Resource Management
Incident Response and Mitigation

Source: FEMA 1996.

On the U.S.-Mexico border, many U.S. cities have signed mutual aid agreements with their Mexican counterparts, sometimes called sister city plans. Currently, 15 sister city plans are in place, listed in Table 3. These agreements include specific guidance for responding to emergency situations, including accidental leaks or hazmat spills, and are being updated to account for emergency situations caused by natural disasters. Although there have been instances of cross-border notification and response to emergency situations at the municipal level, the Joint Contingency Plan has not been activated since it was signed and implemented in 1999 (Oliveira 2017). Informal binational cooperation often occurs, as documented in, *Natural Disasters and the Environment Along the U.S.-Mexico Border: Eleventh Report of the Good Neighbor Environmental Board to the President and Congress of the United States* (GNEB 2008). These cases include the April 2004 flooding of the Río Escondido in Piedras Negras, in which case the mayor of the Mexican border town requested assistance directly from CBP, and also severe thunderstorms in April 2007, during which the Mexican state of Coahuila and the city of Piedras Negras assisted with clean-up efforts in Eagle Pass and Maverick County, Texas. These cross-border linkages for emergency response form a basic component of border security.

[3] Texas Government Code: *Texas Disaster Act of 1975. Title 4, Subtitle B, Chapter 418, Subchapter A § 418.101.*

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Table 3. Current Cross-Border Contingency Plans for U.S.-Mexico Sister Cities

EPA Region	Sister Cities	Adoption Date
6	Columbus, NM–Puerto Palomas, Chih.	2002
6	El Paso, TX–Ciudad Juárez, Chih.–Sunland Park, NM–Ysleta del Sur Pueblo	2007, updated 2009
6	Del Rio, TX–Ojinaga, Chih.	2004, updated 2013
6	Del Rio, TX–Ciudad Acuña, Coah.	2001, updated 2013
6	Eagle Pass, TX–Piedras Negras, Chih.	1998, updated 2013
6	Laredo, TX–Nuevo Laredo, Tamps.	1998, updated 2016
6	McAllen, TX–Reynosa, Tamps.	2000, updated 2009
6	Pharr, Mission, Hidalgo, Edinburg, Weslaco, Donna, TX; and Río Bravo, Tamps., added to McAllen–Reynosa agreement	2009
6	Brownsville, TX–Matamoros, Tamps.	2002, updated 2016
6	Harlingen, TX and Valle Hermoso, Tamps., added to Brownsville–Matamoros agreement	2016
9	San Diego, CA–Tijuana, BC	2013 updated
9	Calexico (Imperial County), CA–Mexicali, BC	2005, update pending
9	Yuma and San Luis, AZ–San Luis Río Colorado, Son.	2000, update pending
9	Nogales, AZ–Nogales, Son.	2005, update pending
9	Naco (Cochise County), AZ–Naco, Son.	2002, update pending
9	Douglas, AZ–Agua Prieta, Son.	2011, update pending
9	Tohono O'Odham Nation, AZ–Sonoyta, Son.	pending

Source: USEPA 2017.

State governments are intermediaries in contingency planning and emergency response. The federal government sets priorities and develops national plans. Local governments respond to incidents. State governments enact federal priorities and support local governments in their response efforts. When an emergency exceeds the response capability of local governments, state agencies may become involved in directing and coordinating state response. Disaster preparedness and mitigation activities can be ongoing at any time. Response and recovery activities generally require the declaration of a state of disaster. A governor may declare a state of disaster for a particular area if a disaster has occurred or is imminent. Once a state of disaster has been declared, the appropriate designated agency institute the appropriate sections of the state emergency management plan and other necessary actions to deal with the situation.[4]

For example, in Texas, the Texas State Emergency Management Plan assigns responsibilities to nine executive branch state agencies, two services operated by the Texas A&M University System, and one nongovernmental organization (Table 4) (State of Texas 2003). The Texas Governor's Division of Emergency Management is the primary Texas agency for contingency planning, response, and mitigation. Once a state of disaster has been declared, a Division of Emergency Management may institute the appropriate sections of the state emergency management plan and other necessary actions to deal with the situation. Under Texas law, the governor and his or her duly appointed advisors have considerable powers in implementing any response strategy. These options range from the use of public and private resources to the suspension of procedural rules and laws to the forced movement of people. The disaster proclamation must specifically state the nature of the threat and the emergency, and a state of disaster cannot last longer than 30 days unless extended or until the conditions no longer exist (State of Texas 2003).

Table 4. Emergency Support Functions and Primary State Agencies in Texas

Emergency Support Function	Primary Agency

[4] Texas Government Code: *Texas Disaster Act of 1975. Title 4, Subtitle B, Chapter 418, Subchapter A § 418.101.*

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1 – Transportation	Texas Department of Criminal Justice
2 – Communications	Texas Department of Information Resources
3 – Public Works and Engineering	Texas Department of Transportation
4 – Fire Fighting	Texas Forest Service, Texas A&M University System
5 – Information and Planning	Texas Division of Emergency Management
6 – Mass Care	The Salvation Army
7 – Resource Support	Texas Building and Procurement Commission
8 – Health and Medical Services	Texas Department of Health
9 – Urban Search and Rescue	Texas Engineering Extension Service, Texas A&M University System
10 – Hazardous Materials	Texas Commission on Environmental Quality
11 – Food	Texas Department of Human Services
12 – Energy	Public Utility Commission of Texas

Source: State of Texas 2003.

3.2 Federal government involvement

The United States federal emergency management efforts focus on preparedness, mitigation and recovery more than response. Federal response efforts are limited to only the largest incidents, and the federal government does not get involved in response activities unless absolutely necessary. Federal response plans provide the framework for requesting, coordinating and delivering federal assistance in any federal disaster or emergency.

In the spirit of preparedness, different federal entities such as EPA (Regions 6 and 9) and the U.S. Department of Defense have participated in training exercises (table-top exercises and formal training such as Incident Command System) and information exchange activities and also have donated equipment to sister city efforts. A successful partnership between EPA and the U.S. Northern Command in the form of a Memorandum of Agreement enhanced border preparedness and readiness. The partnership resulted in a number of benefits:

- Provision of response equipment and training for 10 Mexican border sister cities during the past 4 years.
- More than 650 Mexican first responders trained.
- Training, equipment and technical/training materials facilitated by $1,919,316 in funding.

The La Paz Agreement established the Mexico-U.S. Joint Contingency Plan to provide 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 the United States and Mexico. This was finalized under Border 2012 (USEPA 1999). The La Paz Agreement also established the Joint Response Team (JRT), which has coordinating authorities for both Mexico and the United States. The JRT comprises representatives from U.S. and Mexico federal, state and local agencies responsible for emergency prevention, preparedness and response in the border region. The work of the JRT is supported by a robust system for the binational notification (Figure 10) of emergency response incidents, drills and threats and local Emergency Response Plans developed jointly by sister cities along the border. It also is supported by extensive training to provide capacity building to enhance response readiness, cross-border coordination and training continuance for hazmat and emergency response capabilities of both countries.

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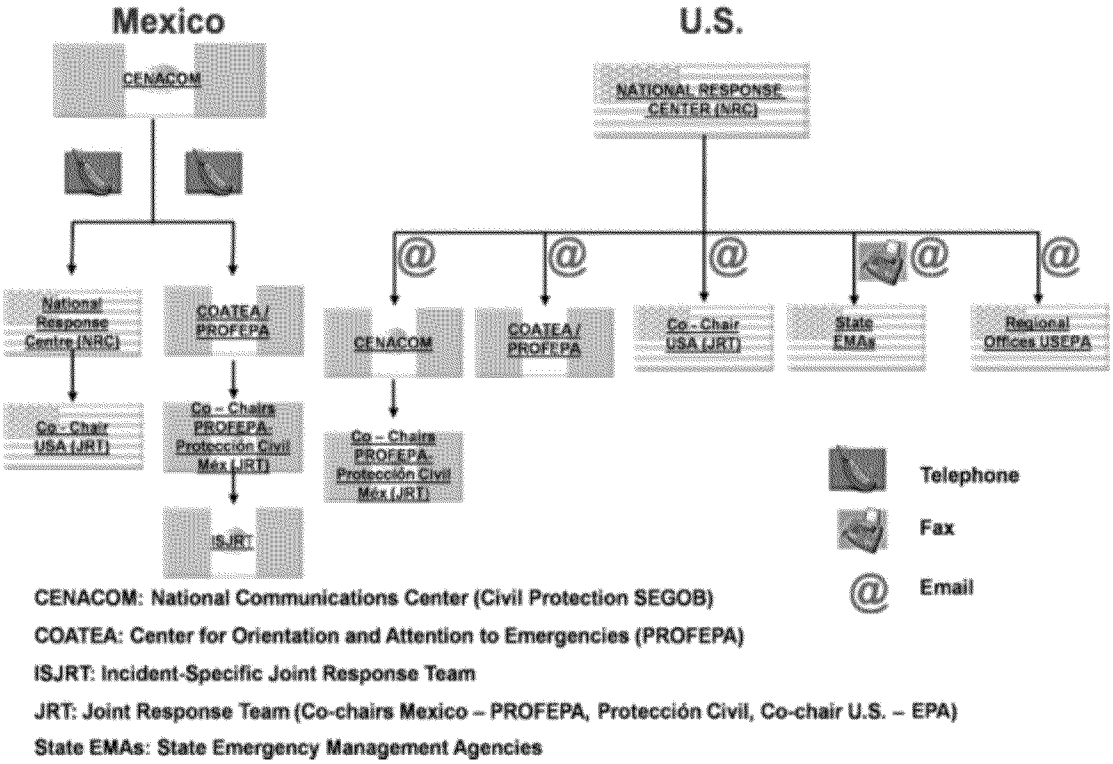

Figure 10. U.S.-Mexico binational notification system.
Source: EPA and SEMARNAT, *State of the Border Region Indicators Interim Report 2016.* www.epa.gov/sites/production/files/2017-01/documents/state_of_the_border_region_2016_122216.pdf

3.3 Water management, flooding, and trash and sediment control

Maintaining a balance between effective measures to secure the border and minimizing the environmental effects has been challenging. Some of the effects of increased security measures, especially infrastructure installation and additional enforcement activities, include accumulation of sediment and trash, deterioration of water quality, and effects on watersheds and the environment. The case studies of this section focus on the security measures implemented, such as border fences or increased patrols, and the effects that have been experienced by communities, personnel or the environment. In some areas, enforcement was increased, but the border fence was not constructed. It is important to evaluate both areas in terms of security, social, economic, environmental and health effects to make effective decisions in future strategies for securing the border. The studies also were selected to highlight the geographic setting, successes and concerns that have been seen in the 10 years since the 10th Report; they representative of the different landscapes found along the U.S.-Mexico border.

3.3.1 Case study: Tijuana River National Estuarine Research Reserve (TRNERR)

The Tijuana River Watershed is a large, 1,700-square-mile system straddling the international border with one-quarter located in the United States and three-quarters in Mexico (Wright and Vela 2005). The Tijuana River Watershed includes three POEs, much of urban Tijuana and dense populations in south San Diego County, topography from sea level to more than 6,000 feet, diverse microclimates and ecosystems, and numbers of threatened and endangered species. The Tijuana River crosses the international border 4 miles from the coast and drains through an 8-square-mile valley mainly in the United States and along the border. A significant portion of the river valley in the United States is designated as the TRNERR, recognizing the important ecological, historical and cultural resources of this region. The Reserve is protected and managed

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through a federal-state cooperative effort with the National Oceanic and Atmospheric Administration and California State Parks for long-term research, education, training and interpretation. TRNERR and adjacent areas are important locations for recreation and nature tourism, especially bird watching because the estuary is at once a nesting site and stopover on migration for many avian species.

TRNERR includes beach, dune, mudflat, salt marsh, riparian, coastal sage scrub and upland habitats surrounded by the growing cities of Tijuana, Mexico, and San Diego and Imperial Beach, California. Border security and enforcement efforts have had a huge impact in the area in the past decades as security imperatives and practices have evolved. Critical issues faced by the reserve include habitat conservation and restoration, endangered species management, management of the wastewater from Mexico, sediment and solid waste management, and the integration of recreation activities.

Other agencies involved in land management in the river valley include the U.S. Navy, CBP, and FWS. The U.S. Section of IBWC also operates a wastewater treatment facility, treating on average 25 million gallons of sewage per day that originates in Mexico. The International Wastewater Treatment Plant, serving 800,000 people, was funded by EPA at a cost of $239.4 million (Liden 2017). Additionally, EPA has invested $1.5 million in addressing trash and sediment via the Border 2012/Border 2020 programs and related efforts such as the West Coast Estuaries Initiative, furthering the effort to reduce the strain on the Tijuana River ecosystem.

Recognizing the many pressures that a binational and highly urbanized watershed encounters, partners, including TRNERR, the State Coastal Conservancy, and the San Diego Regional Water Quality Control Board among many others in the region, formed the Tijuana River Valley Recovery Team to develop a recovery strategy for the valley (Tijuana River Valley Recovery Team 2012). The recovery strategy and subsequent actions contributed to the development by the IBWC of Minute 320 of the 1944 Water Treaty, which is for binational coordination of the Tijuana River Watershed, and initially focused on pollution and sediment issues in the Tijuana River Valley.

TRNERR approaches water quality issues, and trash and sediment control through a three-pronged approach: (1) address the issue at the source through cross-border partnerships, (2) stop pollutants before they enter sensitive habitat, and (3) restore healthy ecosystems that have increased capacity to process higher levels of pollution. At TRNERR, the majority of funding has been directed toward the second prong—stopping pollutants before they enter sensitive estuarine habitat. Between 2003 and 2005, two sediment basins were constructed within the upper floodplain of Goat Canyon to annually retain more than 40,000 cubic yards of sediment and trash. As a result, sedimentation and trash pollution in downstream riparian forest and marsh habitats has been reduced. Because of the location of the basins downstream from the urbanized and degraded watershed in Mexico, however, regular sediment and trash removal and maintenance is required.

Since construction in 2005, the Goat Canyon Sediment Basins have captured nearly one-half million cubic yards of trash and sediment, allowing for effective cleanup, increased health of the estuary, and a safer environment for those that visit, live and work in this border region. This includes reducing the exposure of CBP agents to the polluted sediment and trash that is carried into the Tijuana River Valley. Habitat restoration efforts have been initiated downstream of the Goat Canyon Sediment Basins to begin the process of restoring the land damaged by the previous uncontrolled impacts and further improve the health and safety of this area.

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The Goat Canyon Sediment Basin in the Tijuana River National Estuarine Research Reserve filled with trash and sediment. Source: Christopher M. Peregrin, Tijuana River National Estuarine Research Reserve.

Clearing and processing of sediment out of the basin being prepared for transport off site. Source: Christopher M. Peregrin, Tijuana River National Estuarine Research Reserve.

The Tijuana-San Diego interface has been the focus of increasing installation of border security infrastructure and more intense enforcement activities since the 1990s. This activity, especially the renewed security efforts after 9/11, have had a number of environmental effects, most notably increased sedimentation from fence and road construction and increased patrol activities in vehicles. The construction of the access roads and enhanced fence were pushed through very rapidly without accompanying stormwater infrastructure and revegetation of disturbed areas. Eventually these mitigation steps were taken by USBP, lessening the sedimentation problem. Threatened species and important habitats also were affected. These security activities compounded the effects originating in upstream urban Tijuana areas consisting of renegade sewage flows and quantities of solid waste and sediments transported across the border by intense winter storms.

3.3.2 Case study: Laredo, Texas–Nuevo Laredo, Tamaulipas

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3.3.2.1 Geographic setting

The City of Laredo is located in Webb County, Texas, and had a mid-2016 population of 257,156 (U.S. Census Bureau 2017b). It is expected to continue to grow to 610,669 by 2070 (Texas Water Development Board 2015). Growth along the border is attributed to cultural, social and economic relationships with Mexico (Texas Water Development Board 2015). In early 2016, Nuevo Laredo, Tamaulipas, had a population of 399,431 (Instituto Nacional de Estadística y Geografía 2017). Both communities rely on commerce between the two countries to support economic development. Equally important is that both communities rely on the Rio Grande as their primary water supply. The river also serves as the international boundary between the two countries.

3.3.2.2 Issue

Access to the Rio Grande for both communities is vital. The intakes that pump water for drinking and irrigation are within the river corridor and floodplain. There is a long history of familial, social and community interactions across the river. The Rio Grande remains a central focus for both communities and is a core part of their image. Maintaining the connectedness across the river is vital for both Laredo and Nuevo Laredo.

3.3.2.3 Water quality

The discharge from wastewater treatment plants, untreated wastewater renegade flows, and debris and trash from storms can affect water quality of the river. Laredo and Nuevo Laredo have experienced high levels of fecal indicator bacterial contamination in the Rio Grande. Since 1998, the communities have expressed concern about water contact recreation and degraded water quality. One of the issues identified was damage to the sewage collection system in Nuevo Laredo that caused stormwater and wastewater cross connections.

3.3.2.4 Sanitation

BECC certified a rehabilitation project for of the sewer collection system to prevent the flow from going to the stormwater drain system and into the Rio Grande. The project was completed in 2015, and a study is under way to evaluate the success of this project.

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A small waterfall emanating from a concrete structure draining into the Rio Grande. Source: International Boundary Water Commission.

3.3.2.5 Habitat

A section of land in the middle of Laredo (known as the Riverbend) has been a topic of discussion for more than a decade. It is within the Rio Grande floodplain and has been targeted for restoration by the city for a number of reasons. The area had been significantly degraded by encroachment of invasive species, unauthorized border crossings, informal sand and gravel mining, flood damage, security patrols, and other activities (U.S. Army Corps of Engineers 2013). Historically, this 77-acre parcel of riparian habitat had supported wildlife such as migratory birds, endangered species (jaguarundi and ocelot), and other animals. The Laredo Riverbend Restoration Project was initiated in 2015 and includes the restoration of riparian, wetland and aquatic habitat, improvement of water quality, reduction of erosion, and an increase habitat quality as part of a migration, foraging and breeding corridor for common native wildlife and federally and state listed species (U.S. Army Corps of Engineers 2013). The project also will make the area appropriate for recreation again.

3.3.2.6 Strategies

Nonstructural measures have been taken. Laredo is one of the few urban areas along the border where border fence has not been constructed. The Rio Grande serves as the primary barrier to unauthorized border crossings. The City of Laredo and CBP work collaboratively and have developed a balance that has been fostered since 2006. This partnership serves as an example of bridging security measures with community and environmental values (Rio Grande International Study Center 2017). Part of restoration activities and invasive species control is to enhance security measures and improve habitat quality along the river corridor. CBP utilizes a border road and boats to conduct patrols. The City of Laredo and CBP understand that cooperation and dialog help resolve differences and lead to better outcomes.

Nonprofit organizations such as the Rio Grande International Study Center also help to promote activities to engage citizens from Laredo and Nuevo Laredo to foster awareness through civic duty and education. The Rio Grande International Study Center sponsors cleanups, science fairs and festivals throughout the year. In 2016, the center had a successful year of events, including Día del Rio (water quality monitoring by high school students throughout the watershed), the Laredo Birding Festival, and “Loving Laredo” hikes.

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Monitoring the Rio Grande. Source: Rio Grande International Study Center.

The Rio Grande remains a focal point for Laredo and Nuevo Laredo, and the sister cities continue to work together to address items that will improve water quality, reduce trash and create a healthier ecosystem. The communities firmly believe that a sustainable future is one that includes a connection to the river as a resource and forms part of the community to be enjoyed and protected.

Border Patrol Explorers volunteering at Manadas Creek in Laredo. Source: Rio Grande International Study Center.

The Laredo case indicates how effective approaches to border protection through adaptability and collaboration with communities can achieve security goals while supporting ecotourism and social values and maximizing the infrastructure budget. Riparian vegetation restoration was able to support security efforts and improve the quality of the local environment. The Laredo case suggests that effective solutions to border security and environmental protection challenges are somewhat different in different areas along the international border with Mexico.

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3.3.3 Case study: Ambos Nogales

The sister cities of Nogales, Arizona, and Nogales, Sonora, commonly referred to as Ambos Nogales, are linked by the Nogales Wash and the Santa Cruz River. The Santa Cruz River originates in the Canelo Hills area of southeastern Arizona and flows south into Mexico prior to turning northward and re-entering the United States in Ambos Nogales. Ambos Nogales is in a narrow valley surrounded by mountain ranges. The population of Nogales, Arizona, has been stable for several years at around 20,000 inhabitants (Arizona Commerce Authority 2017). The 2015 population of Nogales, Sonora, was 233,952 (Instituto Nacional de Estadística y Geografía 2017), and new *colonias* continue to appear on the urban margins as the area increases in population.

Wastewater for both communities is treated at the Nogales International Wastewater Treatment Plant (NIWTP), located approximately 9 miles north of the international boundary. Nogales, Arizona, contributes an average of 2 million gallons per day of wastewater for treatment, whereas an average of 11 million gallons per day is contributed by Nogales, Sonora. Wastewater is conveyed to the NIWTP through the International Outfall Interceptor. Some metals in wastewater discharged from Mexico have either exceeded the NIWTP's operational limits or U.S. regulatory standards. Additionally, because there are no stormwater management regulations and inadequate infrastructure in Mexico, stormwater inflow and infiltration contributes to binational sanitary sewer overflows during heavy rainfall.

North of the NIWTP, the treated effluent discharged into the Santa Cruz River maintains critical riparian habitat downstream in the United States for many miles and recharges aquifers that supply potable water to surrounding communities (GNEB 2016). The treated wastewater from the NIWTP supports a cottonwood–willow riparian environment that is designated as a critical habitat for the endangered Southwestern Willow flycatcher and is also recognized as an Important Bird Area (IBA) by the Audubon Society (GNEB 2014). In 2015, the Friends of the Santa Cruz River also detected the return of the endangered Gila topminnow downstream of the NIWTP. Its return is attributed to improved effluent water quality discharges into the river resulting from infrastructure improvements at the NIWTP in 2009. Wastewater flows from the NIWTP also help Arizona comply with the Groundwater Management Act for safe yield by keeping the Santa Cruz River aquifer in balance. Under IBWC Minute 276, however, Mexico has no obligation to deliver wastewater to Arizona for treatment and eventual discharge into the Santa Cruz River.

Storm events often contribute to the transfer and accumulation of waste along Nogales Wash and Santa Cruz River in addition to flooding and overflow of the binational sewage treatment system. The migration of wastes into the United States via the Nogales Wash and the Santa Cruz River represents a significant threat to human health, infrastructure and the environment. These storm-related effects also pose health and safety concerns for border security personnel in addition to the entire community.

A severe storm in July of 2008 produced significant runoff, causing manholes to overflow as large amounts of trash and sediments were swept into the commercial downtown area. Runoff in this section of the city had been impeded by the design of the wall separating the cities, which trapped trash and formed a dam. The flooding damage caused the pedestrian Morley Avenue POE to be closed for 16 days as damage to businesses and streets were cleaned up. Damage to businesses and infrastructure in Nogales, Sonora, was estimated at $8 million, and Nogales, Arizona, also experienced significant economic loss. The border wall in this section had been reinforced earlier in 2008 to stem the flow of drugs and persons entering the United

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States illegally. Subsequently, the design of the wall was altered to reduce flood risk from this security infrastructure (Coppola 2008).

Flooding in Ambos Nogales. Left side of the fence is Nogales, Arizona; Nogales, Sonora is on the right. Source: City of Nogales, Arizona.

Another intense storm in July 2014 destroyed and lifted sewer mains and caused mudslides in Nogales, Sonora. The DeConcini POE was closed for approximately 10 hours that day so that port staff could clear out the one-half inch of sewage and mud in processing areas, sweep out a storm grate, pick up trash, and move sand bags (Coppola 2014).

The periodic storms and flooding produce major damage in Ambos Nogales. The torrential rains and runoff are complicated by a variety of diverse factors, such as security infrastructure, solid waste originating in Mexico, and stormwater infrastructure inadequacies. The investigation, mitigation and cleanup of the wastes originating in Mexico and being transported to the United States is a complex issue requiring action on both sides of the border. In 2015, EPA commissioned a waste characterization study for this watershed. Trash cleanups in the binational watershed that same year removed 4 tons of trash in Nogales, Sonora, and 29 tons of trash in Nogales, Sonora.

In June 2015, the cleanup of trash along banks of tributaries in Nogales, Sonora, that flow into the Nogales Wash removed more than 4 tons that would have otherwise flowed into the Santa Cruz River in Arizona along with stormwater. The cleanup in Nogales, Arizona, was prioritized for an area in Nogales Wash that had collected copious amounts of debris around a sewer pipe that connected to the International Outfall Interceptor. That cleanup occurred in December 2015 and removed 29 tons of trash and debris.

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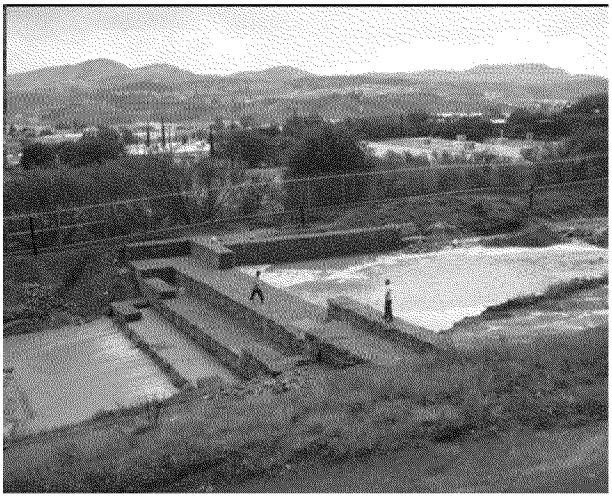
Before and after cleanup photos in Santa Cruz River in Nogales, Arizona. Source: Booz Allen Hamilton, December 2015.

Another strategy to mitigate the effects of stormwater flows in Ambos Nogales involves green infrastructure such as swales, gabions and other detention features. Some of these features have been implemented or supported through projects funded by the Border 2012 and Border 2020 programs.



Nogales, Sonora, Detention Basin La Bellota. Source: Watershed Management Group.

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The Ambos Nogales region illustrates complexities in managing security and environmental challenges in transborder metropolitan regions. Binational watersheds are complex natural systems with complicated governance issues and require collaboration among colleagues from each side of the border. Without effective communication and coordination, dire impacts are witnessed by the local communities while affecting the ability of security personnel to safely perform their jobs. Moving through tunnels and washes that have been overrun with stormwater and sanitary sewer overflows creates public health and safety risks. To mitigate such occurrences, it is imperative that collaboration with local stakeholders and security officials continue for a secure border and economic vitality in the region.

3.3.4 Case study: The New River along the U.S.-Mexico border region

3.3.4.1 Geographic context

The New River has been known as a source of environmental and health problems since the early 1940s. The New River is within the Salton Sea Transboundary Watershed and has its beginnings approximately 20 miles south of the U.S.-Mexico international boundary, near Cerro Prieto in the Mexicali Valley, Mexico. The river travels for another 60 miles in the United States through the Imperial Valley, in California, before it discharges its contents into the Salton Sea, California's largest inland surface water body (Figure 11). In Mexico, the New River collects agricultural drainage from the Mexicali Valley as well as stormwater runoff and industrial and municipal wastewater as it passes through the City of Mexicali on its way through the City of Calexico, California. In California, the river collects municipal treated wastewater, stormwater runoff and agricultural runoff from the Imperial Valley before it discharges its flow into the Salton Sea. The New River is encased in the Mexicali metropolitan area, and it crosses into Calexico near the U.S.-Calexico West POE (Figure 12).

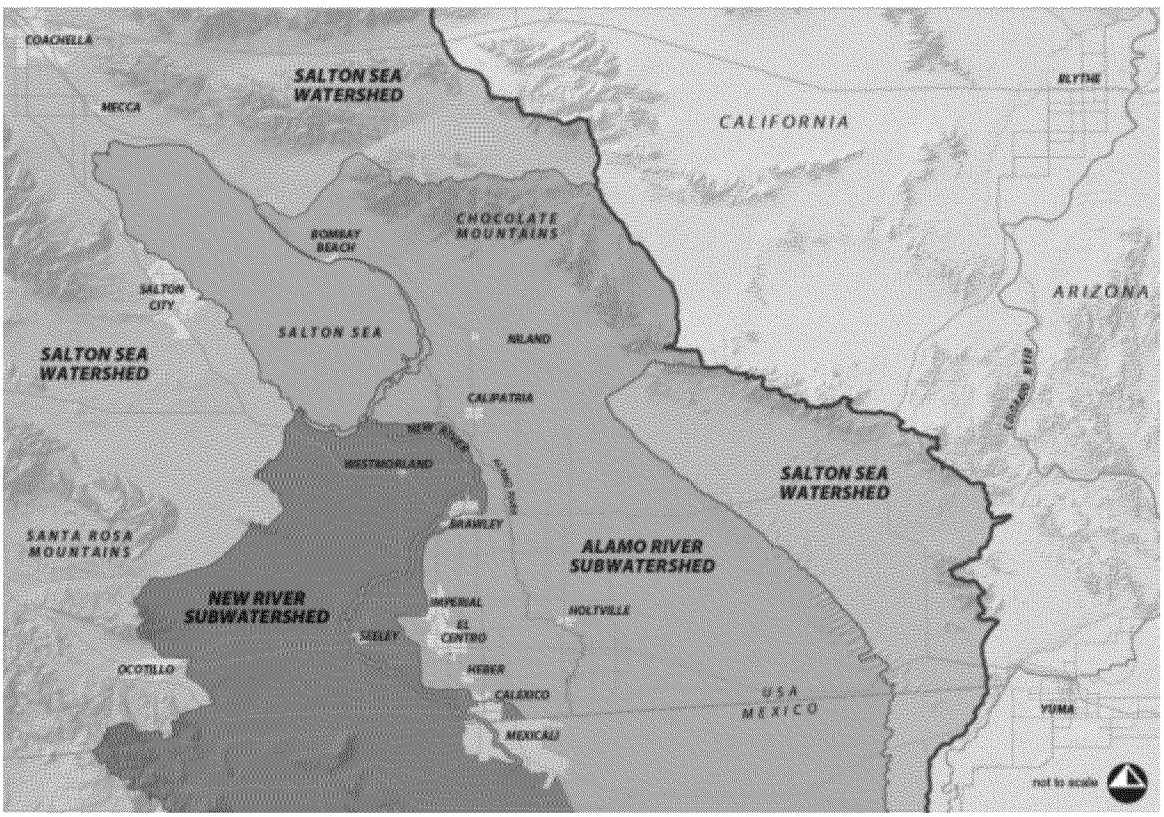

Figure 11. The New River geographical location.
Source: *Strategic Plan: New River Improvement Project* (2011).

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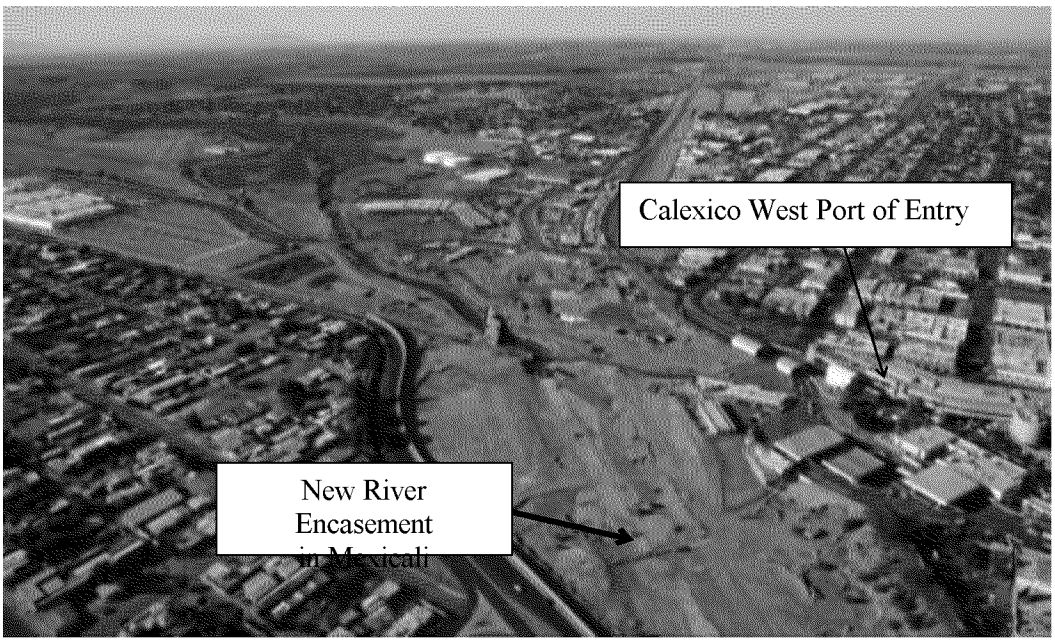

Figure 12. The New River is encased as it crosses from Mexico into the United States.
Source: Francisco Zamora, Sonoran Institute, November 2016.

3.3.4.2 New River security and environmental issues

In 2013, the IBWC estimated the average flow of the New River was between 80–100 million gallons per day at the border. Although several actions implemented in Mexico during the last decade have significantly improved the water quality of the flows, the New River still fails to meet U.S. Clean Water Act water quality standards as it enters the United States, in particular pathogen-indicator bacteria standards established to protect public health. Sewage infrastructure problems in Mexicali produce discharges of raw municipal sewage from 0.7 to close to 15 million of gallons per day into the New River. A recent estimate is that approximately $80 million would be required to correct infrastructure problems in Mexicali (California Regional Water Quality Control Board 2017). This also contributes to the New River being the most polluted river in California. The New River poses a health threat, especially for people who have contact with the river's waters. Although encased in Mexico, it still is used by migrants who attempt to cross into the United States. Exposure to the river's waters has negative health implications for migrants and the U.S. security personnel who apprehend them.

The impairments of the New River include pathogens, dissolved oxygen, nutrients, pesticides, metals, trash and sediment, and others. The tributary drains to the New River in Mexicali continue to be dumping grounds for trash and are one of the main sources of trash that is brought across the border by the river flows. In the United States, the primary sources of pollution are agricultural runoff from the Imperial Valley, which carries nutrients, sediments and pesticides. Stormwater runoff also contributes to the water quality problems but to a lesser degree

The California Regional Water Quality Control Board's Colorado River Basin Region estimates that approximately 120 tons of trash are dumped every year into the New River and its tributaries (New River Improvement Project Technical Advisory Committee 2011). Solid waste transported in the New River is not removed and accumulates downstream. The two screens installed by the Border Patrol are to deter illegal border crossers and not to remove trash. The California-Mexico Border Relations Council's New River strategic plan recommends that the U.S. government either (1) construct/install/operate/maintain trash screens immediately downstream from the International Boundary in the United States or (2) assist Mexico to construct/install/operate/maintain trash screens immediately upstream from the International

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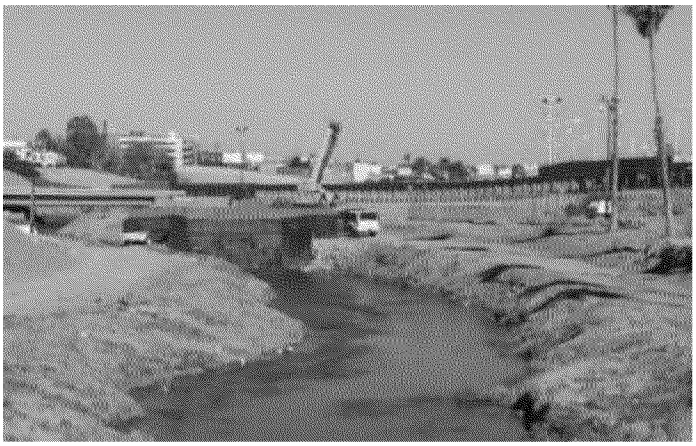
Boundary in Mexico (Technical Advisory Committee for New River Strategic Plan 2016). The strategic plan also recommends encasing the New River from a point immediately downstream from the border to a point downstream from where the river crosses the West Branch of the All-American Canal to isolate the contaminated waters from possible human contact.



Screen placed across the New River by the U.S. Border Patrol. Designed to stop people, the screen also traps solid waste. Source: Paul Ganster, San Diego State University.

Chemical and biological problems and solid waste in the New River present challenges for the surrounding communities and present risk not only for migrants who attempt to use the waterway to cross into the United States but for USBP and local emergency response personnel who have contact with the river's waters. Addressing these problems in a cost-effective way requires not only coordination across the border but careful planning and cooperation by security agencies and other stakeholders. The screens installed by the USBP to deter migrant movement provides an example of the negative environmental effects security infrastructure can have when not considered carefully before important. With proactive involvement of local and state authorities, a solution that provides security and removes trash could have been designed and installed, with benefits to all stakeholders.

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Recommendations

This 18th Report of the Good Neighbor Environmental Board examines the environmental implications of increased border security infrastructure within the context of its 10th Report from 2007 and its advice letter of December 2009, both of which addressed border environment and security. The earlier GNEB report provided general and specific recommendations for meeting the security and environmental needs of the border region. Appendices of this report provide detailed descriptions of the recommendations from the 2007 10th Report and December 2009 advice letter and actions taken by federal agencies to address those concerns.

The 2007 and December 2009 GNEB documents also provide recommendations of a more general nature. Most important are the recommendations in two areas. First, the Board advised that federal policy makers concentrate on stronger communication and collaboration between security agencies and environmental protection and land management agencies on matters relating to border security and border security infrastructure. Second, the Board recommended strategic mixing of technology and infrastructure to reflect different security and environmental needs for the varied geography of the border (GNEB 2007, 2009).

In this report, the Board focuses on five key overlapping challenges where environmental protection intersects with border security: (1) tourism and recreation economy; (2) habitat integrity and wildlife corridors, (3) water management, flooding, and trash and sediment control, (4) hazmat and emergency response, and (5) air quality. Please see Chapters 2 and 3 for a more in-depth discussion of each of the following recommendations.

Coordination of agency planning and implementation with local border communities

- The Board recommends continued careful planning and coordination among federal agencies to mitigate the impacts as border security infrastructure is built out and enforcement activities intensify. Advance planning, coordination and stakeholder participation will improve security infrastructure, facilitate the meeting of both security and environmental goals, and help to avoid costly mistakes (see Chapter 1).

- The Board recognizes the improvements in coordination between DHS and land management and environmental agencies since its last report and advice letter. GNEB urges that those efforts continue and also include active participation of other stakeholders, including state, tribal and local governments as well as the private sector, academics and border communities.

- DHS, DOI and DOA are encouraged to meet annually to coordinate their activities and identify successes and challenges and future issues and concerns. The annual "Border Forum" that has been focused on Arizona should be expanded to include all those involved in land management and border security in the four southwestern border states.

- The Rescue Beacon Program operated by USBP has been very helpful in reducing the number of fatalities in remote areas. Likewise, DOI agencies have much improved their permitting of this activity. The Board encourages these efforts and recommends expansion as deemed necessary by USBP and land management agencies.

- Consultation with tribes should be initiated at the earliest possible time to assure that input on impacts to tribal interests is received and incorporated into project planning. Tribes are in the best position to identify Native American grave sites, historic sites or tribal natural resources or other sites of particular spiritual value that could be affected.

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- The PLLA Program established by the USBP has been extremely valuable in terms of developing relationships and enhancing coordination and communication among federal, state and local entities with responsibilities in the border region. USBP should continue to support and develop this program as a means to enhance border security while also protecting the environment. Programs to educate USBP agents on environmental issues should be continued. Efforts to educate DOI, DOA, and state and local entities on the work of USBP have been very helpful and should be expanded.

- Coordination with the IBWC is encouraged to avoid unintended effects on the flow of the Rio Grande River, Colorado River and Tijuana River and compliance with international treaties with Mexico. Implementation of Minute 320 of the IBWC 1944 Water Treaty to address pollution and sediment issues in the Tijuana River Valley basin also should be pursued.

- The Board recommends that access to federal lands should continue to be managed under the terms of the 2006 MOU signed by DOA, DOI and DHS. The work at Organ Pipe Cactus National Monument has proven that the overriding need for access for border security can be provided while also restoring and conserving unique and valuable habitats.

- Proactive planning and cooperation with border stakeholders can enable DHS to address security concerns and meet the environmental needs of the border region. A number of efforts initiated during the past decade should be continued.

Reduce environmental footprint of infrastructure

- The environmental footprint of border security infrastructure remains a concern of the Board. When possible, avoidance of large infrastructure projects in riparian areas and mountainous terrain is recommended. At the same time, GNEB urges DHS to expand the successful restoration efforts on unused access roads and informal trails and roads established by illegal activities.

- Use of surveillance technology such as integrated fixed towers, remote video surveillance towers, ground sensors, and other methods have proven to be very helpful in detecting illegal activity and directing the appropriate law enforcement response. Wherever feasible, the Board encourages the use of the appropriate technologies to enhance border security and reduce the footprint of border security measures.

Protect wildlife migration and habitat corridors

- The Board recommends that DHS engage all stakeholders to develop and design innovative approaches to ensure that critical species can move back and forth across the border while still meeting security needs.

- The Board recommends the monitoring of environmental impacts, including impacts on hydrology and wildlife movements, to assist in design of future border security infrastructure and the development of possible mitigation measures for impacts that may be detected through monitoring.

- In the design of border security infrastructure, DHS should seek to minimize or avoid measures that would impede the flow of wildlife across the landscape. Recognizing that some structures by their very nature may have impacts, measures such as the ocelot openings in south Texas could be used.

- Design of vehicle barriers that preclude passage of motorized vehicles should be developed so that movement of large mammals (e.g., deer, sheep, pronghorn antelope) still would be possible.

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- Joint projects with tribes and federal and state agencies to remove invasive plants from riparian areas should be expanded.

Minimize use of waivers of environmental reviews and mitigate unintended impacts

- Should the DHS Secretary waive environmental review, several measures can be undertaken to avoid or minimize impacts on the environment, archeological and historic resources. DHS should coordinate, to the extent practicable, with DOI and USDA land management agencies, as well as appropriate state and local land managers, to avoid unintended effects of border security infrastructure.[5]

- Although traditional documents required by NEPA and the Endangered Species Act would not be required under the waiver, Environmental Stewardship Plans prepared under previous waivers are helpful in reducing negative effects through planning and in documenting work done. DHS is encouraged to prepare similar documents if a waiver is invoked for future work.

- The Board recommends that DHS use NEPA or equivalent procedures for scientific and public input as well as continued research to avoid impending disasters.

Enhance efforts to reduce flooding and trash and sedimentation flows

- The Board recommends routine coordination with IBWC and other agencies to avoid flooding and excess sedimentation caused by security infrastructure. Not only will this help to reduce disastrous events, but it can significantly help to address environmental problems. For example, screens across waterways to impede unauthorized migrants can be designed to avoid flooding during storm events. They also can be designed to facilitate removal of solid waste from rivers and storm drains.

- The Southern Arizona Project led by the BLM should continue. This effort has resulted in substantial reductions in trash and debris resulting from illegal immigrant traffic. BLM also has facilitated collaboration among law enforcement agencies with activities such as Operation Reclaim Our Arizona Monuments, which have had helped reduce drug and human smuggling in the Tucson area.

Continue and expand cross-border fire and emergency response systems

- Communication across the border with first responders should be enhanced. Sharing resources to assist with response to wild fires could be improved through coordination and sharing of personnel and resources.[6]

- The ability of emergency response personnel to cross the border, along with their requisite equipment, to promptly respond to emergency situations remains a challenge that the border region faces. Identifying best practices, such as the Douglas, Arizona, sister city agreement, promoting

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[5] For example, this could be achieved through coordination with land managers on affected DOI and USDA lands as early as possible. Assistance could be provided to DHS on particularly sensitive fish and wildlife habitat and archeological and historic resources as well as possible conflicts with existing public use of parks, refuges and BLM lands. Activities in proximity to Bureau of Reclamation facilities could also be coordinated to avoid impacts on water delivery.

[6] A model could be the Mexico/United States Bilateral Response Plan (MEXUS Plan) to coordinate transboundary responses for marine waters and both Gulf and Pacific Annexes. The MEXUS Plan was updated and signed on July 11, 2017, by the U.S. Coast Guard and Secretaría de Marina (Mexican Navy).

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those practices and enhancing them if applicable may stimulate the genesis of additional effective solutions.

- Points of contact for DOA, DOI and DHS should be identified at the headquarters level to assure that the coordination and resolution of issues and concerns can be efficiently facilitated when needed during emergencies.

Seek further reductions in border-crossing times to improve air quality

- The Board recommends that DHS continue to reduce border-crossing times at POEs for passengers, private vehicles and cargo. Faster processing of vehicles not only reduces inconvenience and costs for travelers but reduces air pollution, with health benefits to people at the POEs and surrounding communities.

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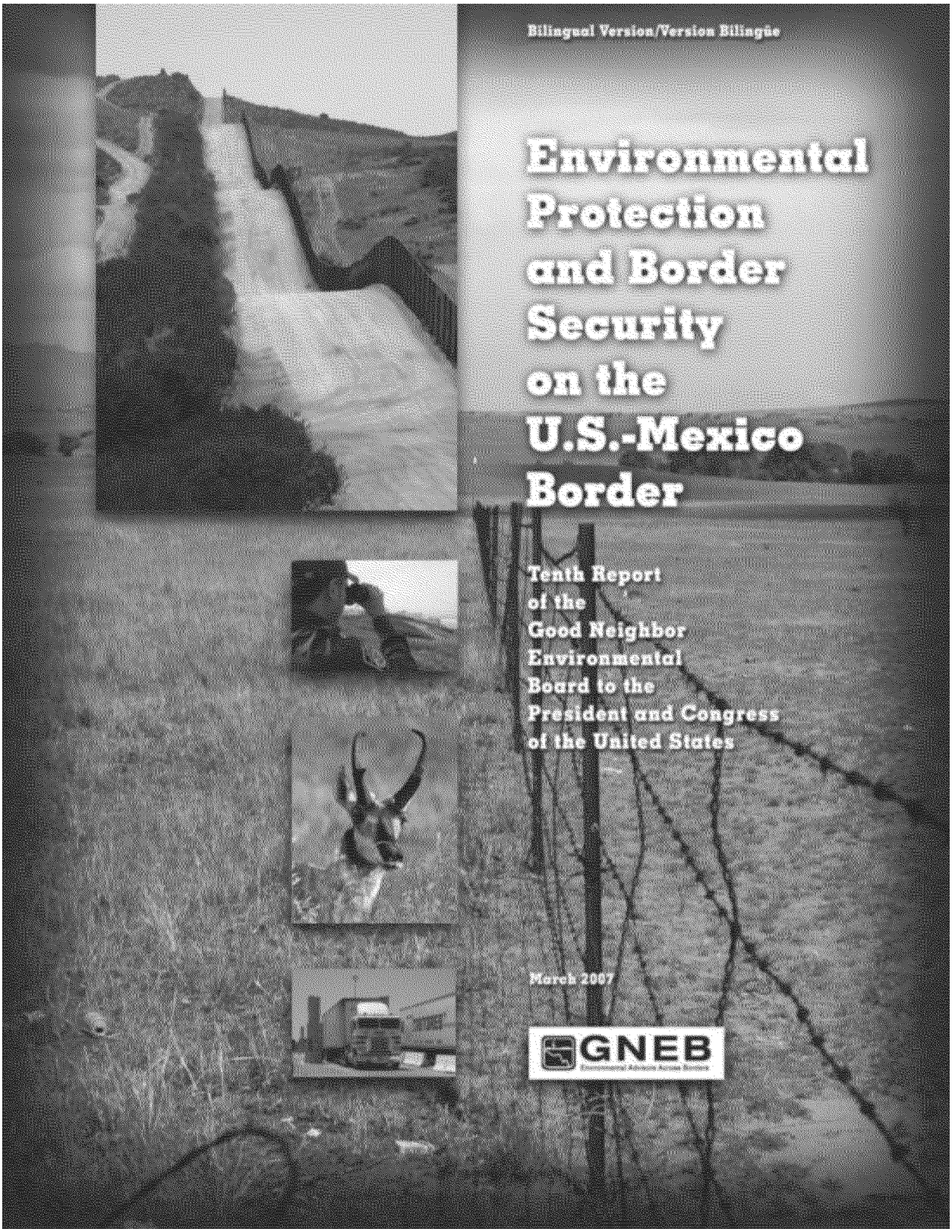
Appendix 1. GNEB 10th Report Status Update



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The information below presents a summary of progress that federal agencies have made in advancing the recommendations of the Good Neighbor Environmental Board's (GNEB) 10th Report. The information presented is not intended to represent a complete compilation of activities; however, it is a representative sampling of notable actions that support the objectives of GNEB.

The information in this table documents considerable progress made by federal agencies in addressing recommendations and issues related to border security and environment that were raised in the GNEB 10th Report in 2010. Most apparent has been the increased cooperation among agencies concerned about border environmental issues and the agencies of the U.S Department of Homeland Security (DHS) charged with border security (e.g., U.S. Customs and Border Protection [CBP]. U.S. Border Patrol [USBP]). Progress on institutional cooperation on hazardous materials (hazmat) at the ports of entry (POEs) also is evident.

Minimal progress since 2010 also is apparent in some areas. Although the U.S. Environmental Protection Agency (EPA) and the International Boundary and Water Commission (IBWC), and to some extent the U.S Department of the Interior (DOI), regularly engage with Mexico on matters related to environment and security, it is not clear this is true for other U.S. federal agencies. Likewise, engagement of the community in a proactive way could be improved considerably. Finally, little systematic progress has been made in developing approaches for security installations that meet the needs of environmental sustainability, particularly as related to habitat fragmentation and the need to migrate to preserve healthy populations of some threatened species.

Human Crossings

2009 GNEB Recommendation or Finding	2017 Agency Update
Recommendation 1: Strengthen communication and collaboration between security agencies and environmental protection agencies, including land management agencies, on both sides of the border. Early and ongoing cooperation and participation in the cross-agency dialogue will contribute to effective solutions that serve the core agency missions of homeland security and environmental protection while also addressing quality of life concerns of border communities.	**DHS/CBP:** Guided by the *2006 Memorandum of Understanding Among U.S. Department of Homeland Security and U.S. Department of the Interior and U. S. Department of Agriculture Regarding Cooperative National Security and Counterterrorism Efforts on Federal Lands Along the United States' Borders* (hereinafter 2006 MOU), CBP has executed a number of programs to strengthen communications with agencies on both sides of the border. These efforts are detailed in the responses below. **DOI**: Regular conference calls between U.S. Department of Interior (DOI) and CBP keep the activities of each department coordinated with ongoing activities. The Public Lands Liaison Agent (PLLA) Program established by USBP also has improved coordination greatly. At the local level, land managers with DOI are in regular contact with PLLAs and local USBP through Borderland Management Task Force (BMTF) meetings and day-to-day contact. The degree of coordination flexes with the amount of activity by USBP. **EPA:** EPA's U.S.-Mexico Border 2020 Program (Border 2020) continues to provide an ongoing venue through the task force and regional workgroup meetings to raise and coordinate with federal, state and local agencies and tribal nations on environmental issues. In the past, issues such as waste impacts on natural resources from undocumented migrant crossing and practices to mitigate these impacts on natural resources and communities were addressed. Border 2020 continues to involve

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	CBP and other agencies in its discussions on environmental issues along the border. Additional information is provided through the EPA Border 2020 website at www.epa.gov/border2020. Further examples of EPA collaboration and communication are as follow: • EPA Region 6 Activities and Highlights: www.epa.gov/sites/production/files/2016-10/documents/september_2016_final_1st.pdf • EPA Region 9 and CBP serve on the Tijuana River Valley Recovery Team and the Tijuana River Advisory Council. Improving water quality in the Tijuana River and New River helps the health and safety of USBP agents. These agents also report spills in Mexico to EPA and IBWC. **U.S. Section of the IBWC (USIBWC):** USIBWC communicates issues to stakeholders on a quarterly basis through its Citizens Forums. The forums are located in areas that provide coverage throughout the border. USIBWC also utilizes technical forums to address transboundary resource issues with Mexico. IBWC reviews and coordinates with the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, environmental departments, and other federal agencies to address environmental issues along the border. USIBWC is the liaison on issues between the United States and Mexico. It coordinates with Mexico on a daily basis on a variety of matters that include water accounting, flood operations, water quality, boundary, reservoir operations, permitting projects on federal lands, and sanitation issues. USIBWC works closely with DHS/CBP on a routine basis.
Recommendation 2: Strategically employ a mix of technology and personnel to meet the security and environmental needs of different sections of the border region. Vehicle barriers and sensor technology along the boundary that permit habitat connectivity and migration of important species can serve well in rural areas characterized by fragile habitats.	**DHS/CBP:** Based on systematic threat evaluation and consideration of the ecology of the area, CBP has deployed vehicle fencing, surveillance technology and communications equipment where appropriate along the southwest border. These efforts are coordinated with the appropriate resource agencies, including DOI, to minimize impacts to the human and natural environment.
Challenge 1 (pg. 19): Roads and foot trails created by undocumented migrants, migrant smugglers and drug smugglers and by the interdiction agencies that pursue them	**DOI:** Although no formal assessment of the effects of illegal immigrants on border ecosystems has been conducted in recent years, it is the general opinion of land managers that the negative effects of illegal immigration have been reduced significantly, and hazards to public safety also have been reduced.

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cause damage to wildlife and fragile ecosystems.	
Next Steps (pg. 20): When possible use technology rather than new roads and barriers to achieve security goals. If additional security infrastructure is required, combine permanent vehicle barriers with ground-based radar and other technology, as well as personnel, to effectively halt undocumented crossers as close to the border as possible.	**DHS/CBP:** CBP has made extensive use of surveillance technology along the border. Based on the threat assessment and environment of a given area, different tower types and appropriate technology mixes have been installed. Integrated fixed towers deploy in open areas using radar, visible light and infrared cameras, and other technology to detect and classify potential illegal activity. Remote Video Surveillance System towers are deployed in areas with denser groundcover and also deploy a mix of technologies. Mobile surveillance units are deployed to preselected sites that have been screened to avoid environmental and cultural resources. The information is sent to centralized locations for analysis and used to deploy personnel to interdict illegal activity close to the border and along prescreened access routes. Vehicle barriers have been constructed to prevent access by vehicles in areas where road infrastructure on the Mexican side of the border supports vehicle access and is monitored by the surveillance systems. **DOI:** Currently, 15 integrated fixed towers are located on DOI-managed lands. The surveillance information obtained from these towers has reduced the level of vehicle surveillance required. DOI bureaus and USBP locally are continuing to work on ways to reduce the negative effects of patrol activity. An additional 15 towers have been proposed for the Tohono O'odham Nation; when installed, these should help reduce and focus vehicle patrol work.
Next Steps (pg. 20): DHS should take appropriate steps to identify important or sensitive natural resources along the U.S.-Mexico border and avoid, minimize or mitigate environmental impacts on such resources wherever possible.	**DHS/CBP:** Prior to initiation of construction, CBP conducts environmental and cultural resource surveys to identify important or sensitive natural and cultural resources. CBP then adjusts locations, revises designs or alters construction methods to minimize impacts to the extent consistent with mission requirements. **DOI:** From the DOI perspective, this has improved greatly since 2007. DHS provided $17.8 million toward mitigation for waived infrastructure and has supported a variety of other project specific mitigation. Discussions with CBP during project planning also have helped to avoid unintended effects on the environment. In anticipation of additional border security infrastructure, DOI and its bureaus have been working with USBP to frame the process for coordination and communication. These efforts should help to inform USBP of sensitive sites and the measures that could be used to avoid impacts.
Next Steps (pg. 20): Strengthen communication and outreach to the public to enable greater interaction with appropriate land management agencies and DHS, thus resulting in continued public input on border project development and implementation.	**DHS/CBP:** CBP uses multiple avenues to enhance communications with the public and land management agency personnel. All projects receive appropriate environmental review and the corresponding level of public input. The CBP website at www.cbp.gov includes information on environmental programs within CBP (www.cbp.gov/about/environmental-cultural-stewardship) and includes documents describing projects open for public review and projects that have completed approvals and have entered the construction phase. CBP's Office of Public Affairs facilitates public outreach and communications regarding border security activities. Additionally, the USBP PLLA and Local and Tribal Liaison programs foster coordination and support to enable greater coordination

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	with appropriate land management agencies and the public. **DOI:** The PLLA Agent and BMTF in each sector have improved communication with DOI bureaus.
Next Steps (pg. 20): Establish an office within a relevant federal agency that is dedicated to analyzing and communicating the impacts of border security on the environment.	**DHS/CBP:** As noted above, CBP analyzes and communicates the environmental impacts of construction and deployment of tactical infrastructure along the borders routinely. The Energy and Environmental Management Division in the Office of Facilities and Asset Management is tasked with overseeing the environmental programs throughout CBP to ensure that CBP is in compliance with environmental requirements and properly communicating potential project impacts to the public and and management agencies. **DOI:** Within DOI no such office or function is in place now; this is handled by Public Affairs staff as needed. Public affairs communications will be a part of the planning for anticipated border security infrastructure in the next few years.
Challenge 2 (pg. 21): Trash and other waste left by undocumented migrants and drug smugglers in the process crossing despoils the landscape and puts people and wildlife at risk for disease.	**U.S. Department of Commerce (DOC)/National Oceanic and Atmospheric Administration (NOAA):** The Tijuana River National Estuarine Research Reserve has been working with U.S. and cross-border interests and communities to educate citizens about the negative effects of trash entering the ecosystem. This work is not specifically focused on the effects of undocumented migrants, rather on influencing the general behaviors of border community citizens in both countries for helping achieve environmental and human health protections. **EPA:** Border 2020 continues to provide an ongoing venue through the task forces and regional workgroup meetings to raise and coordinate with federal, state and local agencies and tribal nations on environmental issues. In the past, waste impacts on tribal lands and natural resources from undocumented migrant crossings and practices to mitigate these impacts on natural resources and communities were addressed.
Next Steps (pg. 22): Provide federal government support to tribes, private landowners, rural communities, state parks and protected areas, and federal land management agencies to address sanitation and solid waste issues associated with undocumented crossings.	**DHS/CBP:** Physical barriers have, in some cases, assisted in reducing the amount of trash and other waste resulting from illegal border crossings on federal lands. **DOI:** The Bureau of Land Management (BLM) Southern Arizona Project has been funded since 2003 to remove trash and debris resulting from illegal border crossings. An annual report has been issued by BLM, the most recent in 2015. Individual land management units conduct cleanups on an as-needed basis as funds allow. The amount of trash associated with illegal crossings has decreased as illegal crossing levels have decreased. **EPA:** Border 2020 accomplishments reports can be found online:

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	• 2011: www.epa.gov/sites/production/files/documents/b2012closeout_eng.pdf • 2011–2012: www.epa.gov/sites/production/files/documents/4-state-border-highlights-2012_0.pdf • 2014–2015: www.epa.gov/sites/production/files/2015-02/documents/highlights_report_winter_2014_2015_border2020.pdf • 2016 (Region 6 specific): www.epa.gov/sites/production/files/2016-10/documents/september_2016_final_1st.pdf
Challenge 3 (pg. 22): Impenetrable fences may present significant negative consequences to wildlife and the environment.	
Next Steps (pg. 22): As a best business practice, hold a national conference on fencing/barrier technology that highlights successes to date and educates the public, with participation from private sector experts and nongovernmental organizations. As an outcome, develop recommendations for prototype fences that meet security goals while minimizing environmental damage or even improving environmental conditions.	**DHS/CBP:** In March 2017, DHS/CBP issued a solicitation for design and construction of prototype fencing that meets defined security objectives. Information utilized from the prototype fencing will be utilized to inform future design standard(s), which will likely continue to evolve to meet CBP's requirements. Any and all prototypes will be designed to deter illegal entry into the United States. Through the prototyping process, CBP may identify new designs or influences for new designs that will expand the current border barrier toolkit that CBP will use to construct a border wall system based on CBP's requirements. **DOI:** DOI would support such a conference. To the department's knowledge, there has not been a conference convened that has been focused on this topic. DOI also would be willing to assist with design of future fence or wall to seek a design to minimize environmental impacts.
Next Steps (pg. 23): Continue to ensure that USIBWC has the opportunity to review proposed border security infrastructure prior to construction and provide advice on ways to minimize negative transboundary impacts, such as erosion or flooding.	**DHS/CBP:** CBP has worked closely with IBWC when infrastructure projects have been executed on IBWC-managed land or have had the potential to cause transboundary effects. **USIBWC:** USIBWC has worked closely with CBP in reviewing the compatibility with U.S. treaty commitments of proposed CBP infrastructure projects, working out design modifications where necessary to ensure fulfillment of both entities' respective responsibilities and missions.
Challenge 4 (pg. 23):	

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Lack of collaboration across agencies with responsibility for border security, land management and environmental protections tends to lessen the likelihood of win-win scenarios for both security and the environment.	
Next Steps (pg. 23): An interagency task force comprising DHS, DOI and the U.S. Department of Agriculture (USDA) should be established that includes their respective law enforcement components; this task force then could develop strategic plans and establish mutual goals regarding law enforcement changes that would affect federal lands, including sensitivity to environmental impacts.	**DHS/CBP:** CBP facilitates a monthly coordination meeting that includes representatives from DOI, the U.S. Forest Service and CBP. This includes representatives from both environmental and law enforcement offices, as needed, to coordinate law enforcement efforts on federal lands. At the local level, coordination among law enforcement personnel occurs regularly. **DOI:** Although not established as a task force, there is regular communication among law enforcement entities. An example is Operation Reclaim Our Arizona Monuments, an effort coordinated by BLM that focuses on fighting back against smugglers and others using public land for transporting contraband. There have been other cooperative efforts (e.g., Operation Trident Surge in Arizona, Operation Take it Outside in California) that have involved law enforcement personnel in each of the departments. Tactical efforts occur on an as-needed basis. Interoperability of land mobile radio communications has also improved and is managed through an MOU that expires in 2017. This MOU now is being prepared for renewal. [Ensure there are no updates before publication.]
Next Steps (pg. 24): The federal government should identify communications gaps and place liaison personnel in the border states who facilitate communication among security, environmental and border land management agencies.	**DHS/CBP:** In 2005, CBP initiated the PLLA Program, which was formalized as a national program in May 2009. Each USBP sector along the southwest border has a PLLA. PLLAs support active engagement with personnel from DOI, USDA and other federal, state, local, tribal and nongovernmental organizations involved in land management, resource protection and access issues. They also promote a dialogue that includes collaboration to identify mutually beneficial activities and outcomes, joint environmental education, and border security and border safety training. PLLAs communication up and down the chain of command to accomplish goals and objectives, serving a vital role in the facilitation of BMTFs, which are designed to facilitate an intergovernmental forum for cooperative problem-solving on common issues related to the international border. The primary mission is to address border security, human safety, and natural and cultural resource protection through shared resources, information, communication, problem-solving, standardization and training. In keeping with the 2006 MOU, issues are discussed and resolved at the local level to the maximum extent possible. Operational personnel from CBP law enforcement offices routinely interact with local, state and federal officials. CBP has participated in joint projects to support and strengthen interagency relationships, including the Operation Stone Garden grants and operations program to provide resources for state, local and tribal partners to enhance integration efforts for border security. **DOI:** The USBP PLLA Program is the best example of this, with agents identified in each sector who coordinate with DOI and USDA. DOI staffing levels have not allowed for this beyond the DOI

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	Interagency Borderlands Coordinator position in Washington, D.C. DOI also supports a Senior Special Agent located at the USBP Tucson Sector Headquarters who coordinates with USBP on the entire southwest border. DOI plans to maintain these positions indefinitely. **EPA:** Border 2020 has collaborative efforts and liaisons to assist and facilitate communication with different partners. A consistent framework beyond the program, especially among federal agencies, remains a challenge. EPA continues to work on a more consistent framework with other agencies through local and regional outlets. The following website summarizes Border 2020, including background goals and program structure: www.epa.gov/sites/production/files/documents/border2020summary.pdf.
Projects and Partnerships (pg. 24): U.S.-Mexico critical infrastructure protection frameworks.	**EPA:** EPA is an active member of the boards of the Border Environmental Cooperation Commission and North American Development Bank, which are binational institutions created to develop the environmental infrastructure of the U.S.-Mexico border region and enhance the well-being of residents in both nations. Information related to infrastructure and collaboration involving these entities can be found at www.epa.gov/international-cooperation/epas-role-border-environment-cooperation-commission-becc-and-north. **IBWC:** IBWC signed Minute 320 on October 5, 2015, to address sanitation and water quality issues in the Tijuana River Watershed. Binational technical workgroups for the New River and Nogales areas discuss sanitation (pretreatment issues, water quality, and collaboration and coordination between the United States and Mexico). IBWC continues to address security and safety measures at Amistad and Falcon dams, working closely with CBP and federal agencies and binationally with Mexico.
Projects and Partnerships (pg. 24): Douglas-Agua Prieta stormwater partnership.	**EPA:** Border 2020 information as related to the Douglas, Arizona, wastewater treatment: • Border 2020 Action Plan (2016): www.epa.gov/sites/production/files/2015-07/documents/final_arizona_sonora_2015_2016_action_plan.pdf • Environmental assessment for Douglas, Arizona, Wastewater Collection and Potable Water Distribution Improvement Project (2001): nepis.epa.gov/Exe/ZyPDF.cgi/P1008NUV.PDF?Dockey=P1008NUV.PDF
Projects and Partnerships (pg. 24): MOU to facilitate security and minimize environmental damage on federal borderlands.	**DHS/CBP:** Guided by the 2006 MOU, CBP, DOI and USDA have executed a number of programs that strengthen border security while minimizing negative effects to the environment on federal borderlands. **DOI:** The 2006 MOU signed by DHS, USDA and DOI has continued to provide a framework for

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	cooperation and coordination. The MOU has been reviewed annually by the signatories, and no changes have been proposed. DOI and DHS are in the process of updating current MOUs and memoranda of agreement or preparing new agreements relating to environmental reviews in anticipation of additional border security work. These are expected to be updated or renewed this calendar year. Individual land management units also have negotiated agreements for road maintenance and other activities.

Hazardous Materials

2009 GNEB Recommendation or Finding	2017 Agency Update
Recommendation 1: At POEs, increase the number of hazmat inspectors and establish specific sites and hours for hazmat vehicles. Duplicate successful approaches, including use of appropriate technology. Increase cooperation between environmental agencies and security agencies through approaches that reflect site-specific language and staffing requirements.	**DHS/CBP:** Within budget constraints, CBP has increased staffing at POEs and has expanded the capacity at several land POEs on the southwest border. Joint inspection programs, such as the joint inspection facilities at the Otay Mesa commercial port, are being implemented and considered for expansion as budgets allow. **DOC/NOAA:** For both recommendations and the subordinate challenges, the following information is provided to raise awareness of the specialized response capability of NOAA. NOAA's Office of Response and Restoration (OR&R) is a center of expertise in preparing for, evaluating and responding to threats to coastal environments, including oil and chemical spills, releases from hazardous waste sites, and marine debris. OR&R provides scientific and technical support to prepare for and respond to oil and chemical releases; determines damage to natural resources from these releases; protects and restores marine and coastal ecosystems, including coral reefs; and works with communities to address critical local and regional coastal challenges. OR&R comprises three divisions—Emergency Response, Assessment and Restoration, and Marine Debris—and collectively provides comprehensive solutions to environmental hazards caused by oil, chemicals and marine debris. OR&R works closely with the U.S. Coast Guard in responding to incidents. **EPA:** EPA continues to work with federal, state, regional, tribal and local entities to ensure that hazmat is handled in accordance with applicable environmental regulations. Border 2020 continues to convene binational waste and enforcement task forces that provide venues to facilitate information exchange and cooperation on environmental issue, including issues at POEs. Additional information related to hazmat management along the border can be found at www.epa.gov/border2020/border-2020-enforcement-webinar.
Recommendation 2: Beyond POEs, resolve liability issues for cross-	**DHS/CBP:** USBP agents have participated in several local emergency response actions and coordinate with local and state emergency responders. Improved mobile communications connections have facilitated both improved cooperation and response.

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border emergency responders and provide targeted support that reflects the needs of border communities within the larger national strategic plan. Document and share best emergency response practices. In addition, increase dialogue with tribal entities about hazmat transported near and through tribal lands and increase tribal participation in training exercises.	**EPA:** Border 2020 continues to have a main goal to address emergency response needs along the U.S.-Mexico border. Discussions to resolve liability issues in which EPA is involved are ongoing. The best emergency response practices are being shared at quarterly trainings and task force meetings and through sister city plans. EPA's Office of Land and Emergency Management (OLEM)/Office of Emergency Management (OEM) has been coordinating with Regions 6 and 9 to incorporate tribal governments in emergency response planning and preparedness efforts along the U.S.-Mexico border with respect to the sister city contingency plans. Additional information can be found on the Border 2020 website at www.epa.gov/border2020/emergency-response-policy-forum.
Challenge 1 (pg. 34): POEs lack staff to inspect all shipments of hazmat, including hazardous waste, and some local emergency responders have inadequate training. Environmental agencies also lack hazmat tracking data as well as more general chemical storage data. Although CBP prescreens shipments before leaving 32 foreign ports, it does not do so at land ports in Mexico.	**DHS/CBP:** Key ports have crossing sites designated for hazmat with some trained officers. CBP's primary interest is to protect the border from inadvertent spills and conduct inspections of shipments to prevent illegal crossings. Additionally, CBP has worked with EPA to improve information flow via the International Trade Data System (ITDS). Regulations and procedures currently are in the process for these improvements.
Next Steps (pg. 34): Increase the number of hazmat inspectors at POEs.	
Next Steps (pg. 34): DHS should provide additional support for Mexican counterparts, especially Protección Civil and local Mexican fire departments.	**EPA:** Through Border 2020 Goal 4 (Emergency Response), Objective 3, training has been provided to entities on both sides of the border: www.epa.gov/border2020/emergency-response-policy-forum.
Next Steps (pg. 34): Establish specific POE sites/hours for hazmat vehicle use.	**EPA:** EPA continues to work with federal, state, regional and local entities to ensure that hazmat is handled in accordance with applicable environmental regulations. An example of inspection collaboration between agencies, including federal and local, can be seen at California POEs, where hazmat only is authorized to come through during specific times on designated days when federal and local environmental inspectors are present: www.epa.gov/sites/production/files/documents/b2020-enf2013-workshop-border-inspections-en.pdf.
Next Steps (pg. 34):	**EPA:** The best emergency response practices are being shared at quarterly trainings and task force meetings and through sister city plan updates.

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Best practices, such as San Diego County's hazmat inspection program or the City of Laredo's warehouse ordinance, need to be shared with other communities.	
Next Steps (pg. 35): New electronic manifest.	**EPA:** EPA OLEM/Office of Resource Conservation and Recovery currently is developing an electronic hazardous waste manifest system (www.epa.gov/hwgenerators/hazardous-waste-electronic-manifest-system-e-manifest) in response to a statutory mandate under the 2012 Electronic Hazardous Waste Manifest Establishment Act. The system is scheduled to begin operations in the spring of 2018. The first phase of implementation will include the domestic manifest process, and a second phase of system development and rulemaking likely will expand the system to include the tracking of export manifests.
Next Steps (pg. 35): Radio frequency identification (RFID).	**EPA:** RFID is a method of marking and tracking drums of waste to ensure that shipments reached their destination that was tested under EPA's former Environmental Technology Verification Program. Although the technology worked, it had some issues and implementing it would have required a regulatory change, unless its use was voluntary. The Waste Import Export Tracking System (WIETS) is the tracking system currently used in the United States. • RFID Project Results: nepis.epa.gov/Exe/ZyPDF.cgi/P100FZQS.PDF?Dockey=P100FZQS.PDF • RFID Stakeholder Meeting: nepis.epa.gov/Exe/ZyPDF.cgi/P100K341.PDF?Dockey=P100K341.PDF • RFID Project Plan: nepis.epa.gov/Exe/ZyPDF.cgi/P10049JN.PDF?Dockey=P10049JN.PDF • WIETS: www.epa.gov/hwgenerators/information-exporters-resource-conservation-and-recovery-act-rcra-hazardous-waste
Next Steps (pg. 35): Automated Commercial Environment (ACE) System and ITDS.	**EPA:** EPA made regulatory and information technology system changes to meet Executive Order 13659. This provided the capability to convert border processes necessary to clear the following cargo from paper to electronic under the ITDS and its supporting ACE system: (1) chemicals and waste chemicals for import subject to regulations implementing the Toxic Substances Control Act (TSCA); (2) pesticides for import subject to regulations implementing the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA); and (3) hazardous waste for export subject to regulations implementing the Resource Conservation and Recovery Act (RCRA). With respect to hazardous waste export shipments, paper consent checks and submittal of paper manifest to CBP at the border were converted to electronic validation of consent and entry of manifest tracking number in the Automated Export System in CBP's ACE System.

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	Basic information on RCRA export and import requirements can be found at www.epa.gov/hwgenerators/basic-information-resource-conservation-and-recovery-act-rcra-export-and-import.
Challenge 2 (pg. 35): Emergency responders are not able to easily cross border to respond to incidents because of insurance, liability, national sovereignty and command issues, and customs and border procedures may delay response.	**DOI:** DOI reached an agreement with Mexico to allow for cross-border support for wildfire suppression. The agreement allows for response in proximity to the border (within 10 miles). DOI personnel conduct these activities consistent with an operating plan that has been provided to Mexico. Mexico has not provided a similar plan to the United States. The plan is in preparation, but it is not known when the plan will be finalized. **EPA:** An example of local liability resolution is seen in Douglas, Arizona, which has created agreements allowing its first responders to cross the border. EPA OLEM/OEM has been coordinating liability and crossing issues, where possible, with the sister city plans. More information on sister city plans can be found at www.epa.gov/border2020/cross-border-contingency-plans-us-mexico-sister-cities.
Next Steps (pg. 35): Resolve liability issues for cross-border emergency responders.	**EPA:** An example of local liability resolution is seen in Douglas, Arizona, which has created agreements allowing its first responders to cross the border. EPA OLEM/OEM has been coordinating liability and crossing issues, where possible, with the sister city plans. More information on sister city plans can be found at www.epa.gov/border2020/cross-border-contingency-plans-us-mexico-sister-cities.
Next Steps (pg. 35): Coordinate binational federal customs.	
Challenge 3 (pg. 36): Technology equipment and personnel issues: environmental protection needs of small U.S. communities, Mexican communities and U.S. tribes are overlooked in the "big picture".	**EPA:** EPA OLEM/OEM has been coordinating with Regions 6 and 9 to incorporate tribal governments in emergency response planning and preparedness efforts along the U.S.-Mexico border with respect to the sister city contingency plans, which can be found at www.epa.gov/border2020/cross-border-contingency-plans-us-mexico- sister-cities.
Next Steps (pg. 36): Provide additional support for low-tech, small-scale, local environmental protection efforts, Mexican communities, and tribes as part of overall strategic planning for national security.	**EPA:** Best emergency response practices are being shared at quarterly trainings and task force meetings and through sister city plan updates; please see information provided above for further information. For example, a trinational emergency response plan between the Tohono O'odham Nation, United States and Mexico currently is being finalized to address the needs of the region: www.epa.gov/border2020/cross-border-contingency-plans-us-mexico- sister-cities.

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Next Steps (pg. 36): Where U.S. local emergency responders provide assistance, their experiences need to be documented and shared for the benefit of other U.S. and Mexico responders.	**EPA:** Best emergency response practices are being shared at quarterly trainings and task force meetings and through sister city plan updates; please see information provided above for further information. For more information on emergency response, see the Border 2020 website at www.epa.gov/border2020/emergency-response-policy-forum.
Challenge 4 (pg. 36): An overarching strategic plan for border region POEs is needed that reflects development, population, language, and staffing requirements, which also would lesson tensions that exist between security and environmental protection personnel at some ports of entry.	
Challenge 4 (continued, pg. 36): Other border concerns include industrial development on the border, the large population on the border, the lack of protective equipment for Mexican emergency responders, the language, and tourists and migrant workers in the area.	
Next Steps (pg. 37): Strengthen communication and collaboration.	**EPA:** Best emergency response practices are being shared at quarterly trainings and task force meetings and through sister city plan updates. For more information on emergency response, please see the Border 2020 website at www.epa.gov/border2020/emergency-response-policy-forum.
Next Steps (pg. 37): When planning for border emergencies, consider actual settings of the border.	**EPA:** Best emergency response practices are being shared at quarterly trainings and task force meetings and through sister city plan updates. For more information on emergency response, please see the Border 2020 website at www.epa.gov/border2020/emergency-response-policy-forum.
Challenge 5 (pg. 37): Tribal funding and communication pose a challenge, specifically the inability of border tribes to receive funding for emergency response and less than desirable communication on hazmat transported through and adjacent to tribal lands.	**EPA:** EPA OLEM/OEM has been coordinating with Regions 6 and 9 to incorporate tribal governments in emergency response planning and preparedness efforts along the U.S.-Mexico border with respect to the sister city contingency plans. Best emergency response practices are being shared at quarterly trainings and task force meetings and through sister city plan updates. For additional information see the sister city plans at www.epa.gov/border2020/cross-border-contingency-plans-us-mexico- sister-cities.

Next Steps (pg. 37): DHS should earmark funding specifically for border tribes.	
Next Steps (pg. 37): Increase tribal participation in training exercises that involve federal, state and local entities.	**EPA:** Best emergency response practices are being shared at quarterly trainings and task force meetings and through sister city plan updates; please see information provided above for further information. **Additional example:** Tribes were involved in the Lower Colorado River Pipeline Functional Exercise: https://www.kindermorgan.com/content/docs/the_responder_2017_02.pdf.
Projects and Partnerships (pg. 38): RFID pilot to track hazardous waste shipments.	**EPA:** RFID is a method of marking and tracking drums of waste to ensure that shipments reached their destination that was tested under EPA's former Environmental Technology Verification Program. Although the technology worked, it had some issues and implementing it would have required a regulatory change, unless its use was voluntary. WIETS is the tracking system currently used in the United States. • RFID Project Results: nepis.epa.gov/Exe/ZyPDF.cgi/P100FZQS.PDF?Dockey=P100FZQS.PDF • RFID Stakeholder Meeting: nepis.epa.gov/Exe/ZyPDF.cgi/P100K341.PDF?Dockey=P100K341.PDF • RFID Project Plan: nepis.epa.gov/Exe/ZyPDF.cgi/P10049JN.PDF?Dockey=P10049JN.PDF • WIETS: www.epa.gov/hwgenerators/information-exporters-resource-conservation-and-recovery-act-rcra-hazardous-waste
Projects and Partnerships (pg. 38): Baja California Emergency Management Institute.	**EPA:** Border 2020 continues to play a role in Baja California area emergency management, as described at www.epa.gov/sites/production/files/2016-01/documents/san_diego_ca_-_tijuana_baja_ca_jan_14_2013.pdf.
Projects and Partnerships (pg. 38): The Border Agency Fire Council.	
Projects and Partnerships (pg. 38): Four Sister-City Collaboration.	**EPA:** Collaborations continue through the Border 2020 sister city effort: www.epa.gov/border2020/cross-border-contingency-plans-us-mexico- sister-cities.

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Projects and Partnerships (pg. 38): Collaboration between the Arizona/Sonora Emergency Preparedness and Response Task Force and the Arizona/Mexico Commission Emergency Management Committee.	**EPA:** Task force members participate, present and provide routine updates to the Arizona/Mexico Commission Emergency Management Committee. Some additional information regarding the Arizona-Sonora Border 2020 Action Plan can be found at www.epa.gov/sites/production/files/2016-04/documents/az- sonora_action_plan_english_3_10_16_final.pdf.
Projects and Partnerships (pg. 38): Interagency Arizona Port Inspection Exercise.	
Projects and Partnerships (pg. 39): North American Commission on Environmental Cooperation (CEC) Waste Tracking Projects	EPA: The CEC's Hazardous Waste Task Force completed its report on hazardous waste tracking in August 2011. The report can be found at www3.cec.org/islandora/en/item/10158-crossing-border-opportunities-improve-sound- management-transboundary-hazardous-en.pdf.
Projects and Partnerships (pg. 39): ACE System and ITDS.	**EPA:** EPA made regulatory and information technology system changes to meet Executive Order 13659. This provided the capability to convert border processes necessary to clear the following cargo from paper to electronic under the ITDS and its supporting ACE System: (1) chemicals and waste chemicals for import subject to regulations implementing TSCA; (2) pesticides for import subject to regulations implementing FIFRA; and (3) hazardous waste for export subject to regulations implementing RCRA. With respect to hazardous waste export shipments, paper consent checks and submittal of paper manifest to CBP at the border were converted to electronic validation of consent and entry of manifest tracking number in the Automated Export System in CBP's ACE System. Basic information on RCRA export and import requirements can be found at www.epa.gov/hwgenerators/basic-information-resource-conservation-and-recovery-act-rcra-export-and-import. The U.S. Food and Drug Administration provides more information about ACE/ITDS at www.fda.gov/ForIndustry/ImportProgram/ucm456276.htm, including links to user guides.
Projects and Partnerships (pg. 39): EPA Enforcement and Compliance Assistance Training Programs.	**EPA:** EPA co-hosted multimedia binational enforcement workshops with the CEC, the trilateral body formed under the North American Free Trade Agreement, in Hermosillo, Sonora, Mexico, in 2007 and in San Diego, California, in 2013. State partners in California routinely provide training through EPA State Technical Assistance Grants, which include topics such as "developing and sharing protocols for detecting noncompliant transboundary shipments of hazardous waste," as described in the 10th Report. Border 2020 continues to collaborate with states to offer recurrent training on hazmat import/export requirements. Through the task forces, Border 2020 identifies opportunities for information exchange

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	that builds knowledge on respective regulatory programs, such as import/export requirements, and facilitates public access of compliance data for border industrial facilities. EPA Border 2020, Compliance Assistance (Goal 5): www.epa.gov/border2020/compliance- assistance-policy-forum.
Projects and Partnerships (pg. 39): Joint Contingency Plan.	**EPA:** EPA OLEM/OEM is coordinating the update of the 2009 Mexico-U.S. Joint Contingency Plan with its Mexican counterparts, SEMARNAT and Civil Protection. The Joint Contingency Plan is updated, exercised and tested regularly: www.epa.gov/sites/production/files/2016-01/documents/us_mexico_joint_contingency_plan.pdf.

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Appendix 2. December 2009 GNEB Border Fence Advice Letter Recommendations and Status Update

On December 2, 2009, the Good Neighbor Environmental Board (GNEB) issued an advice letter to the U.S. President and Congress regarding the U.S.-Mexico border fence. The letter was sent after Congress authorized the construction of 700 miles of border fence under the Secure Fence Act of 2006, charging the Department of Homeland Security with the responsibility for building the border fence. By the time the Board wrote the letter, most of the 654 miles of border fence had been constructed.

Prior to the Board's letter, the Congress had also enacted into law the Real ID Act of 2005, which grants the Secretary of Homeland Security "…the authority to waive all legal requirements…necessary to ensure expeditious construction of barriers and roads under this section." These legal requirements included the National Environmental Policy Act (NEPA), Clean Water Act, and Clean Air Act.

The December 2009 letter from the GNEB on the border fence was incorporated into *A Blueprint for Action on the U.S. Mexico Border: Thirteenth Report of the Good Neighbor Environmental Board to the President and Congress of the United States* (13th Report), issued in June 2010. The advice letter is the longest that GNEB has issued and contains several supporting images. Although most GNEB advice letters do not receive a formal response, in 2010, Nancy Sutley, Chair of the White House's Council on Environmental Quality (CEQ), responded specifically about the border fence letter. Her response also is included in the 13th Report.

The key portion of the advice letter was a list of recommendations about the border fence. The following table contains the list of recommendations from the December 2009 advice letter, along with an update on the status of implementation actions taken (or not taken).

2009 GNEB Recommendation	**2017 Update**
1. Require that all border security infrastructure projects fully comply with the National Environmental Policy Act (NEPA) as well as all other laws, including environmental, historic and archeological preservation laws.	Responding for President Barack Obama in April 2010, CEQ Chair Nancy Sutley wrote, "CEQ and appropriate federal departments and agencies appreciate your recommendations of bringing border security infrastructure activities in full compliance with NEPA and our nation's environmental laws. As you know, we are reviewing the current environmental impacts of border security infrastructure and looking for opportunities for minimizing these impacts. As part of this process, we look forward to identifying opportunities for ensuring that border security infrastructure and associated maintenance and repair meet national environmental goals." The U.S. Congress has not amended the Real ID Act of 2005, which would be required.
2. Work with Congress to amend the REAL ID Act of 2005 to remove the provisions allowing the Secretary of Homeland Security to waive legal requirements.	See update to Recommendation 1. No actions were taken to amend the Real ID Act of 2005.
3. Fully incorporate adequate environmental review,	CEQ Chair Sutley responded in April 2010, "CEQ and appropriate federal departments and

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public participation and scientific analysis into the design and implementation of all border security infrastructure projects.	agencies agree with the Board that public participation is important in border security infrastructure projects. CEQ, with the U.S. Department of the Interior (DOI), U.S. Forest Service, U.S. Environmental Protection Agency, U.S. Department of State, and National Oceanic and Atmospheric Administration, will continue to work with the U.S. Department of Homeland Security (DHS) to improve public review, analysis and participation in the design and implementation of select border security infrastructure projects. DHS has agreed to provide CEQ and these departments and agencies with a description of its stakeholder engagement process to foster ongoing coordination. DHS plans to obtain input from non-Federal stakeholders, including State, local and Tribal authorities and the interested public. DHS will share this information with the Board and will post it on the U.S. Customs and Border Protection (CBP) website and disseminate it through other appropriate mechanisms. In January of this year [2010], DHS officials toured the westernmost portion of the fence with the California Coastal Conservancy and provided updates on their work to the Tijuana River Valley Recovery team in December 2009 and January 2010. This exchange of information was very well received by the stakeholders."
4. Facilitate review by the International Boundary and Water Commission of projects that may cause deflection or obstruction of the normal flow of rivers or their flood flows, ensuring continued compliance with the 1970 Boundary Treaty between the United States and Mexico and other international agreements.	In the April 2010 CEQ response, Chair Sutley wrote, "…the State Department encourages and welcomes recent steps by DHS to coordinate with the Commission on border fence construction, particularly in flood-prone areas."
5. Systematically monitor the entire fence and supporting infrastructure for effects resulting from its construction and develop actions to modify, redesign or mitigate the negative outcomes realized or anticipated by the existing construction.	No actions taken.
6. Provide sufficient annual funding via the DHS budget for monitoring, research and mitigation of the environmental impacts of the border fence.	From the April 2010 CEQ Chair Sutley letter, "DHS has executed an Interagency Agreement with U.S. Geological Survey to develop a monitoring protocol to determine the environmental effects of border security activities. This agreement is an important step in monitoring the impacts of the fence and its supporting infrastructure. DHS will continue to work with affected federal land resource agencies to address possible negative consequences as they are identified."
7. Obtain adequate local stakeholder input for all fence	See update to Recommendation 3.

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construction, mitigation and maintenance as well as for associated infrastructure projects, including access roads.	
8. In sensitive rural areas that are important wildlife corridors, use barriers and technology that prevent vehicular traffic, control pedestrian incursion and allow wildlife movement.	Approximately 300 miles of the current fence consists of vehicular fence, much of it designed to allow wildlife movement.
9. Aggressively explore the use of information and remote sensing technologies that will enhance border security while reducing the physical footprint of interdiction activities along the border.	No update.
10. Ensure adequate funding to DHS/CBP for ongoing training for border security personnel about the local natural environment and significant natural and cultural resources.	In the April 2010 CEQ response, Chair Sutley wrote, "The Board urged adequate funding to DHS/CBP for training border security personnel about environmental, natural and cultural resource issues. DHS already has infrastructure in place to provide some of this training. The Environmental and Cultural Stewardship Training Task Force, operated under the Director of the Border Patrol Planning Branch, is one example. It delivers environmental and cultural awareness training to Border Patrol agents whose patrol activities include Federal lands. The Environmental and Cultural Stewardship Training Task Force's mission was established within a Memorandum of Understanding entitled, *Cooperative National Security and Counterterrorism Efforts on Federal Lands Along the United States' Borders*, signed in March 2006 by the Secretaries of Homeland Security, the Interior and Agriculture." CPB has also incorporated environmental awareness and sensitivity training into the basic curriculum for all new Border Patrol agents during their initial basic training.
11. Identify and implement best management practices to prevent and mitigate the erosion resulting from fence construction and associated infrastructure.	CEQ Chair Sutley responded in April 2010, "As you know, DHS/CBP and DOI signed a Memorandum of Agreement in January 2009 regarding environmental stewardship measures related to the construction of border security infrastructure. To implement the Memorandum of Agreement, CBP agreed to fund up to $50 million to address the adverse effects of infrastructure construction and maintenance on DOI-managed natural and cultural resources. DHS and DOI are working together to release the funds so mitigation measures can occur."
12. Charge the National Academy of Sciences to conduct a study on the binational environmental effects of the border fence and associated infrastructure.	CEQ recommended that the Board discuss this with the National Academy of Sciences. GNEB did not act on this recommendation.

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Glossary of Acronyms and Abbreviations

10th Report	*Environmental Protection and Border Security on the U.S.-Mexico Border: Tenth Report of the Good Neighbor Environmental Board to the President and Congress of the United States*
13th Report	*A Blueprint for Action on the U.S. Mexico Border: Thirteenth Report of the Good Neighbor Environmental Board to the President and Congress of the United States*
18th Report	*Environmental Quality and Border Security: A 10-Year Retrospective: Eighteenth Report of the Good Neighbor Environmental Board to the President and Congress of the United States*
1944 Water Treaty	1944 Water Treaty for the Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande
2006 MOU	*Memorandum of Understanding Among U.S. Department of Homeland Security and U.S. Department of the Interior and U. S. Department of Agriculture Regarding Cooperative National Security and Counterterrorism Efforts on Federal Lands Along the United States' Borders*
9/11	September 11, 2001, terrorist attacks
ACE	Automated Commercial Environment (System)
BECC	Border Environment Cooperation Commission
BLM	Bureau of Land Management
BMTF	Borderlands Management Task Force
Border 2020	U.S.-Mexico Border 2020 Program (EPA)
CBP	U.S. Customs and Border Protection
CEC	Commission for Environmental Cooperation
CEQ	Council on Environmental Quality
DHS	U.S. Department of Homeland Security
DOC	U.S. Department of Commerce
DOI	U.S. Department of the Interior
EMS	emergency medical services
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FIFRA	Federal Insecticide, Fungicide and Rodenticide Act
FWS	U.S. Fish and Wildlife Service

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FY	fiscal year
GNEB	Good Neighbor Environmental Board
hazmat	hazardous materials
IBWC	International Boundary and Water Commission
IDTS	International Trade Data System
JRT	Joint Response Team
MEXUS Plan	Mexico/United States Bilateral Response Plan
MOU	Memorandum of Understanding
NADB	North American Development Bank
NAFTA	North American Free Trade Agreement
NBC	National Butterfly Center
NEPA	National Environmental Policy Act
NIWTP	Nogales International Wastewater Treatment Plant
NOAA	National Oceanic and Atmospheric Administration
OEM	Office of Emergency Management (EPA)
OLEM	Office of Land and Emergency Management (EPA)
OR&R	Office of Response and Restoration (NOAA)
PLLA	Public Lands Liaison Agent
POE	port of entry
RCRA	Resource Conservation and Recovery Act
RFID	radio frequency identification
RFP	request for proposals
SENTRI	Secure Electronic Network for Travelers Rapid Inspection
TRNERR	Tijuana River National Estuarine Research Reserve
TSCA	Toxic Substances Control Act
USBP	U.S. Border Patrol
USDA	U.S. Department of Agriculture
USIBWC	U.S. Section of the International Boundary and Water Commission
WIETS	Waste Import Export Tracking System

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Environmental Quality and Border Security: A 10-Year Retrospective

Eighteenth Report of the Good Neighbor Environmental Board to the President and Congress of the United States

September 2017

GNEB
Environmental Advisors Across Borders

About the Board

The Good Neighbor Environmental Board (GNEB or the Board) was created in 1992 by the Enterprise for the Americas Initiative Act, Public Law 102-532. The purpose of the Board is to "advise the President and the Congress on the need for implementation of environmental and infrastructure projects (including projects that affect agriculture, rural development, and human nutrition) within the states of the United States contiguous to Mexico to improve the quality of life of persons residing on the United States side of the border."

The Board is charged with submitting an annual report to the U.S. President and Congress. Management responsibilities for the Board were delegated to the Administrator of the U.S. Environmental Protection Agency by Executive Order 12916 on May 13, 1994.

GNEB does not carry out border region activities of its own, nor does it have a budget to fund border projects. Rather, its unique role is to serve as a nonpartisan advisor to the U.S. President and the Congress and recommend how the federal government can most effectively work with its many partners to improve conditions along the U.S.-Mexico border.

The Board operates under the provisions of the Federal Advisory Committee Act, and membership on the Board is extremely diverse. By statute, GNEB comprises representatives from:

(1) the U.S. government, including a representative from the U.S. Department of Agriculture and representatives from other appropriate agencies;

(2) the governments of the states of Arizona, California, New Mexico and Texas; and

(3) private organizations, including community development, academic, health, environmental and other nongovernmental entities with experience on environmental and infrastructure problems along the southwest border.

The Board also includes representatives from tribal governments with lands in the border region.

The recommendations in this report do not necessarily reflect the official positions of the federal departments and agencies that are represented on the Board, nor does the mention of trade names, commercial products or private companies constitute endorsement.

To request a hardcopy of this report, contact the National Service Center for Environmental Publications at 1-800-490-9198 or via email at nscep@lmsolas.com and request publication number EPA TBD (English version). [To be added: hyperlink to pdf of report]

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Dedication to Eligio "Kika" de la Garza II (September 22, 1927 – March 13, 2017)

Representative Kika de la Garza, center, during a 1985 House Committee on Agriculture meeting. Source: *New York Times*. www.nytimes.com/2017/03/15/us/politics/kika-de-la-garza-dead.html

The Good Neighbor Environmental Board would like to honor the late Eligio "Kika" de la Garza, who served for 32 years in the U.S. House of Representatives, 14 of these as Chairman of the House Committee on Agriculture. He passed away on March 13, 2017.

Chairman de la Garza passed H.R. 4059, 102nd Congress, the "Enterprise for the Americas Initiative Act of 1992," which became Public Law 102-532. A champion of the North American Free Trade Agreement, Chairman de la Garza included the enabling legislation for establishment of the Good Neighbor Environmental Board in the Act. During 1992 hearings of the House Committee on Agriculture, Chairman de la Garza stated,

> "Public input is vital in setting the environmental and infrastructure priorities of EPA's U.S.-Mexico Environmental Plan for the Border. That is why last year I introduced H.R. 4059—which was approved by the Committee last week—to establish a U.S.-Mexico Environmental Board to bring together federal, state and private sector leaders to provide direction in setting these priorities to the President and to the Congress."

This board became the Good Neighbor Environmental Board.

The Board appreciates everything Chairman de la Garza, a Texan from the Lower Rio Grande Valley, championed for the farmers of the United States and the residents of the U.S.-Mexico border region.

Transmittal Letter to the President From the Good Neighbor Environmental Board

To be developed.

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EXECUTIVE SUMMARY

The Good Neighbor Environmental Board's (GNEB or Board) 2007 report, *Environmental Protection and Border Security on the U.S.-Mexico Border: Tenth Report of the Good Neighbor Environmental Board to the President and Congress of the United States*, examined the environmental implications of increased border security. In December 2009, the Board issued an advice letter on the environmental effects of the border fence. In this current report, GNEB returns to the theme of environmental quality and protection in the context of existing and proposed border security infrastructure and measures. The previous GNEB documents focused on undocumented border crossings, hazardous materials (hazmat), and environmental effects and mitigation related to border security infrastructure. Although these issues continue to be important when addressing environmental protection in the U.S.-Mexico border region, some conditions have changed in the last decade. In this report, the Board focuses on five key overlapping challenges in which environmental protection intersects with border security:

1. Tourism and recreation economy.
2. Habitat integrity and wildlife corridors,
3. Water management, flooding, and trash and sediment control.
4. Hazmat and emergency response.
5. Air quality.

Security is a broad concept that can be defined in many different ways. "Border security" as used in this report focuses on threats and challenges to national security at the border associated with preventing terrorist activity or entry of potential terrorists and interdiction of illegal or criminal activities. This relatively narrow definition contrasts with broader concepts of "environmental security," which includes the protection and preservation of natural resources, the environment and natural ecosystems. More expansive definitions of security often focus on critical sectors of the food-water-energy nexus. Thus, energy, water and food security are considered key elements of the broader "security" framework. Although this report primarily uses "border security" in its narrower sense, some recommendations may be relevant to the broader picture of environmental security. While border security is an important national priority, environmental protection in the border region also is of paramount significance.

Chapter 1 provides background and context for this report, as well as recommendations on environmental protection and border security. Many defining features and characteristics of the U.S. border region with Mexico, a developing nation, make it fundamentally different from other regions in the United States. These features present challenges that regions located within the interior of the United States often do not have to overcome. The border has areas of great natural beauty and value, whereas other portions of the border have large and growing human settlements that depend on environmental quality. This chapter addresses the key issues for environmental quality and protection in the diverse geographical regions of the border. Finally, this chapter provides detail on the changes in border security since GNEB's 2007 report that focused on security. These changes include stronger communication and collaboration among security and other agencies, significant increases in physical infrastructure and personnel in the border region, and improved border control and management, including faster border crossing times for goods.

The intersection of border security and the environment impose a number of challenges and opportunities on the border region, and Chapters 2 and 3 of this report focus on challenges and opportunities related to ecosystems, tourism and outdoor recreation; plant and animal life and habitat integrity; emergency response and preparedness; water management, flooding, trash and sediment control; and air quality. The shape and form of security infrastructure installed along the border is a critical factor affecting these areas of special concern. Also of importance are management practices by security agencies. Additional installation of security infrastructure along the border will have a large impact on the region, presenting both challenges and opportunities to enhance security while preserving or even improving environmental sustainability.

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Given the scale and cost of the program to enhance border security infrastructure, it is important to get it right the first time, avoiding costly mistakes and even more costly corrective actions. This requires careful planning and advanced coordination with stakeholders in the region.

This report examines the environmental implications of increased border security infrastructure within the context of its previous report from 2007 and its December 2009 advice letter, which both addressed border environment and security. The earlier GNEB documents provided general and specific recommendations for meeting the security and environmental needs of the border region. In this report, the Board's recommendations focus on the intersection of environmental protection and border security in the five key areas identified above. These recommendations can help federal agencies to preserve or enhance environmental protection and quality while increasing the security of the U.S.-Mexico border.

Border fence cutting across the steep mountainside of Otay Mountain Wilderness Area in San Diego County. The foreground of the photograph is the Tecate River in Baja California, and the shot was taken from Federal Highway 2D in the municipality of Tijuana, Mexico. Note the winding access road that was created by the Border Patrol to provide access to the fence. Source: Paul Ganster, San Diego State University, August 2017.

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INTRODUCTION

A decade ago in 2007, the Good Neighbor Environmental Board's (GNEB or Board) *Environmental Protection and Border Security on the U.S.-Mexico Border: Tenth Report of the Good Neighbor Environmental Board to the President and Congress of the United States* (10th Report) examined the environmental implications of increased border security. Two years later in December 2009, the Board issued an advice letter on the environmental effects of the border fence. In this report, *Environmental Quality and Border Security: A 10-Year Retrospective: Eighteenth Report to the President and Congress of the United States* (18th Report), GNEB returns to the theme of environmental quality and protection in the context of existing and proposed border security infrastructure and measures. The 10th Report focused on two main issues, undocumented border crossings and hazardous materials (hazmat). The December 2009 advice letter addressed environmental impacts and mitigation related to border security infrastructure. All of these issues remain germane to environmental protection in the U.S.-Mexico border region today, but some conditions have changed during the last decade, including a significant decline in undocumented crossings linked to changing economic opportunities as well as to increased security measures. In this report, the Board focuses on five key overlapping challenges in which environmental protection intersects with border security: (1) tourism and recreation economy; (2) habitat integrity and wildlife corridors; (3) water management, flooding, and trash and sediment control; (4) hazmat and emergency response; and (5) air quality.

Security is a broad concept defined in different ways. For example, "border security" as used in this report has a focus on threats and challenges to national security at the border associated with preventing terrorist activity or entry of potential terrorists and interdiction of illegal or criminal activities. This relatively narrow definition contrasts with broader concepts of "environmental security" such as preservation of natural resources; protection of clean air, water and environment; and conservation of the natural ecosystem and the services or benefits provided. More expansive definitions of security often focus on the security and reliability of critical sectors of the food-water-energy nexus and the production of these inputs vital to sustain life and livelihoods. Thus, energy security, water security and food security are increasingly understood to be key elements of the broader "security" framework. Although this report primarily uses "border security" in its narrower sense, several sections and recommendations also may be relevant to broader framings of environmental security.

Border security is an important national priority, and environmental protection in the border region also is of paramount significance, given the rich natural resource endowments of the region. Of the 1,954-mile length of the southern border, almost 780 miles (40%) are U.S. Department of the Interior (DOI) lands (Andrew 2017a). The U.S-Mexico border region (within 100 miles of the border) contains 185 federal land units under DOI jurisdiction (Bureau of Indian Affairs, Bureau of Land Management [BLM], Bureau of Reclamation, U.S. Fish and Wildlife Service [FWS], and National Park Service) totaling 25,388,431 acres (Andrew 2017b), including national parks and protected areas (Figures 1 and 2). Ten tribal nations have lands within the border region, and the Tohono O'odham Nation's land is split by the international border line. Mexico also has significant protected areas within the border region. More than 6,500 animal and plant species reside within the U.S.-Mexico border region (Kolef et al. 2007). On the Mexican side, 235 species found in the border region are classified in a risk category. Of these, 85 are considered endangered under Mexico law. In the United States, 148 species found in border counties are listed as endangered under the U.S. Endangered Species Act (Kolef et al. 2007).

As of 2010, 14.4 million people live in cities, towns and rural areas in the U.S.-Mexico border; these communities need access to clean water and sanitation services, clean air, green spaces, and healthy environments. Tourism and outdoor recreation generate substantial revenues and support thousands of jobs in local communities, all of which depend on the quality of the border's environment.

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Despite its natural and human assets, the U.S.-Mexico border region faces serious environmental challenges, including a increasingly scarce water supply; proneness to flooding, drought and wildfires; and uncontrolled urban expansion. Climate change is projected to increase temperatures, decrease precipitation, produce more extreme weather events, decrease snowpack and runoff, reduce renewable surface and ground water resources, and bring about more frequent and intense wildfires and dangerous storm surges in the region (GNEB 2016). Traditional infrastructure systems are ill-equipped to allow border communities to mitigate these impacts, which will affect many sectors, including water, energy, trade, transportation and public health. The disadvantaged populations of border communities, including tribal populations, are particularly vulnerable to the health effects of climate change. Some animal and plant species and ecosystems in the border region also are at risk.

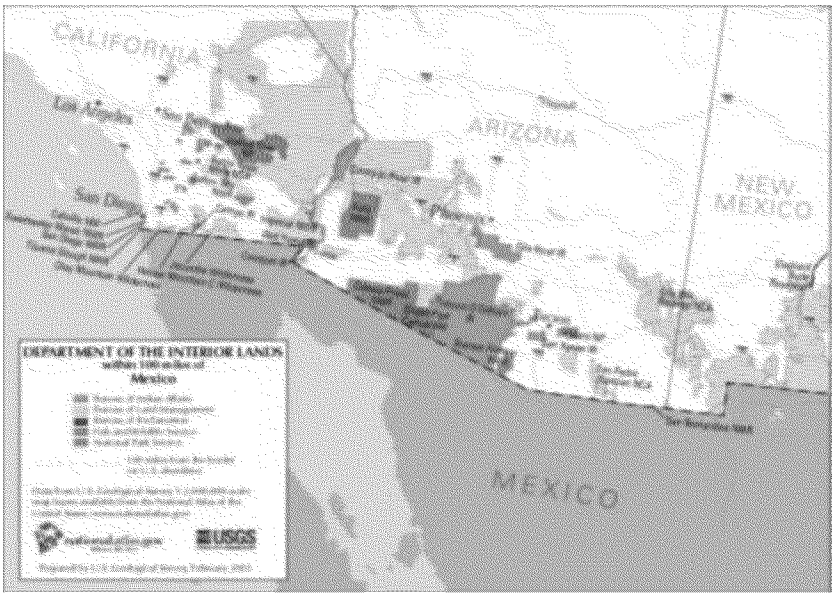

Figure 1. U.S. Department of Interior lands: California and Arizona.
Source: U.S. Geological Survey.

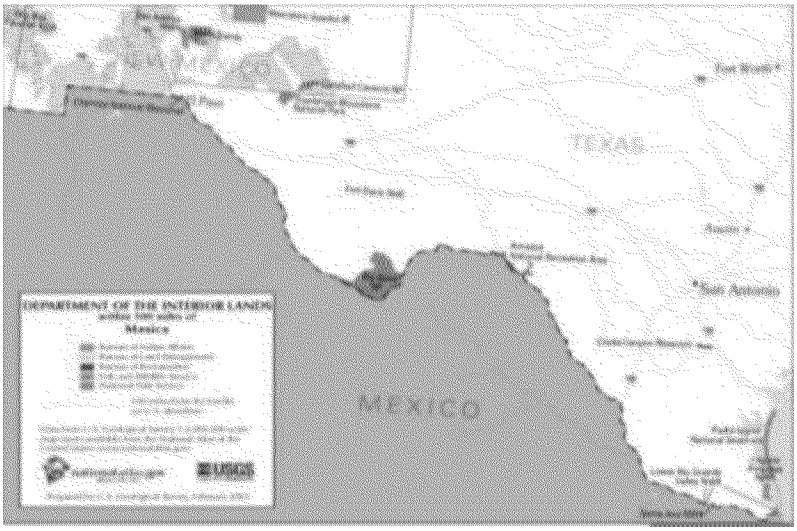

Figure 2. U.S. Department of Interior lands: New Mexico and Texas.
Source: U.S. Geological Survey.

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The fragile natural environment of the border region underscores the need for careful planning and coordination among federal agencies to mitigate the effects as border security infrastructure is built out and enforcement activities intensify. Although 10 years have passed since GNEB published its 10th Report, the southwest border environment and socioeconomic contexts are dynamic and require continual adaptation of policies and actions to respond to emerging challenges and changing conditions. In this report, GNEB identifies the most pressing environmental challenges that may overlap with border security and also provides recommendations to accomplish the goals of environmental protection cooperatively with border security.

The international boundary adds complexities and costs for U.S. border communities in their attempts to address regional environmental issues. Organizing a proper emergency response system is greatly complicated by the international boundary, as is dealing with regional air pollution issues when part of the airshed is located in Mexico. Other examples of environmental issues that ultimately have only binational or international solutions include conservation, water quality protection, aquifer management, watershed management, and solid and hazardous waste.

The governments of the United States and Mexico have responded to the challenge of border environmental issues with a number of measures, including the 1944 Water Treaty for the Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande (1944 Water Treaty), the 1983 La Paz Agreement and its implementation plans (e.g., the U.S.-Mexico Border 2020 Program [Border 2020]), and the creation of the binational institutions of the North American Development Bank (NADB) and the Border Environment Cooperation Commission (BECC). The trilateral environmental organization formed as part of the North American Free Trade Agreement (NAFTA) in 1993, the Commission for Environmental Cooperation (CEC), also addresses border and transboundary environmental issues. Although these efforts to address border environmental problems have had very positive results, they still have been insufficient to meet the needs of dynamic border communities with growing environmental problems.

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CHAPTER 1. Border Context

This chapter provides background and context for GNEB's 18th Report and recommendations on environmental protection and border security. Section 1.1 provides an overview of the demographic and economic context of the border region, and Sections 1.2 and 1.3 then address the environmental and border security contexts, respectively, of the region.

1.1 Demographic and economic context

Many defining features and characteristics of the U.S. border region with Mexico, a developing nation, make it fundamentally different from other regions in the United States. These include rapid economic and population growth; rapid urbanization; shared natural resources such as rivers, ground water and airsheds; economic, cultural, and political differences and asymmetries with Mexican communities across the border; international commerce and trade flows; high rates of poverty; and diverse ethnic identities. These features all present challenges that regions located within the interior of the United States often do not have to overcome.

1.1.1 Population and urbanization

Since the 1940s, the population of the 10 U.S. and Mexican border states has grown more rapidly than the national averages and, at the same time, the populations of the counties and municipalities along the border have grown faster than the states in which they are located. Driven by migration, the populations of Mexican municipalities have grown at a faster rate than their U.S. counterparts, usually at twice the rate. These trends make the border region the most demographically dynamic region of the United States and of Mexico. By 2000, some 12.4 million people lived in the border counties and municipalities (Peach and Williams 2000), and by 2010 that figure had reached 14.4 million, concentrated largely in binational metropolitan sister cities. By 2020, the border population is projected to reach 19.5 million (Figure 3). Most of the border's population resides in 15 paired U.S. and Mexican interdependent sister cities; the remaining residents live in smaller settlements or in rural areas. Tribal and indigenous communities are an important component of the border, both in urban and rural areas. Population growth in the region puts pressure on air, water and land. It also creates additional demand for services—such as water supply and wastewater treatment—to ensure a safe and healthy living environment. Growth puts pressure on surrounding land and habitat (USEPA 2016).

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The dense urban populations of El Paso, Texas (top), and Ciudad Juárez, Chihuahua, are separated only by the meandering channelized Rio Grande River and border security fencing. Source: Google Earth.

Population and Population Growth in the Border Region (pg. 29)

	Population 2010	Average annual growth (%), 2000-2010	Duplication Time (years)
Counties and municipios			
Mexico, border municipios	7,304,901	2.24	31
United States, border counties	7,303,754	1.62	43
Total	14,608,655		
100/300 kilometers			
Mexico, 300 km	17,048,419	2.04	34
United States, 100 km	13,967,038	2.28	30
Total	31,015,457		
Border states			
Mexico	19,894,418	1.95	36
United States	70,850,713	1.49	47
Total	90,745,131		
Mexico	**112,336,538**	**1.52**	**46**
United States	**308,745,538**	**0.97**	**71**

Source: U.S. Census Bureau and INEGI.

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Figure 3. Population and population growth in the border region.
Source: The Wilson Center, *The State of the Border Report: A Comprehensive Analysis of the U.S.-Mexico Border*. www.wilsoncenter.org/sites/default/files/mexico_state_of_border_0.pdf

Urban growth often outpaces the ability of government to provide adequate infrastructure in these border cities, especially on the Mexican side of the boundary where much of the urbanization has been unplanned (Ganster and Lorey 2016). In burgeoning cities such as Ciudad Juárez, Nuevo Laredo, Nogales, Mexicali, and Tijuana, lands were settled and houses were constructed, but water and wastewater infrastructure installation occurred years afterward. In areas of the U.S. border region, principally in Texas and New Mexico, but also in Arizona and California, *colonias*—residential communities in rural areas of counties lacking basic services such as water, sewage, electricity and often paved roads—developed without standard infrastructure. In Texas alone, the Texas Secretary of State found that in 2014 nearly 38,000 residents in the six largest border counties with *colonias* lacked potable water or sewer services (Texas Secretary of State 2014). Thus, on both sides of the border, large numbers of residents do not have safe potable water piped into their homes and/or lack proper sewage collection and treatment services. Many border residents do not have the same levels of water and sewage services as their fellow citizens elsewhere in the United States.

A major difficulty for environmental progress on the U.S.-Mexico border is that although the U.S. border region is one of the poorest areas in the United States, the border region of Mexico is one of the wealthiest areas of that country. This fact has made it politically difficult for Mexican federal authorities to spend funds on border environmental infrastructure when there are more pressing needs elsewhere in the country. In addition, in the past few years, U.S. Environmental Protection Agency (EPA) funds dedicated for border water and sewer projects have declined and in the President's fiscal year (FY) 2018 budget, were proposed for elimination (Office of Management and Budget 2017).

1.1.2 North American Free Trade Agreement (NAFTA) and the border

When NAFTA was being negotiated and debated in Congress in the early 1990s, many border residents had hopes that the trade agreement would address the environmental problems of their communities and bring economic development, including well-paying jobs (Ganster and Lorey 2016). Although NAFTA produced a large increase in trade and investment, it did not create prosperity in U.S. border communities. NAFTA stimulated commerce and created many jobs along the border, but those jobs tended to be low-skill and low-paying, while border communities lost higher paying assembly and manufacturing jobs that moved into Mexico and elsewhere offshore. The border sister cities are vital economic gateways to hundreds of billions of dollars in trade flows each year. This trade growth, however, brought increased vehicular crossings that saturated the existing border infrastructure and overwhelmed communities along the major trade corridors with more air pollution, producing health and safety concerns. Regions throughout the United States benefited from the growth of NAFTA-related trade and investment (Wilson 2017), yet border communities absorbed a disproportionate share of the environmental costs related to congestion.

Ports of entry (POEs) also have significant economic and environmental effects on U.S. border communities because of the enormous quantities of freight that move through the trade corridors with Mexico and the long crossing wait times for commercial and noncommercial vehicles. In 2007, wait times for personal and commercial crossings from Tijuana to San Diego alone cost the U.S. and Mexico economies an estimated $7.2 billion in foregone gross output and more than 62,000 jobs (San Diego Association of Governments 2007). If compiled for the entire border, the figure for losses produced by long wait times would be very large, in excess of $10 billion per year. The costs are absorbed by border communities but benefit communities throughout the United States.

1.1.3 Poverty and ethnicity

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An analysis of recent U.S. Census Bureau data (U.S. Census Bureau 2017a) showed that when ranked as a state, the 24 counties bordering Mexico (excepting San Diego County, California,[1] and Pima County, Arizona), would rank 51st—or dead last—in poverty rate and percentage of persons under 65 without health insurance. The border counties also would rank last in percentage of persons age 25 years or older with a high school degree or higher and lowest in *per capita* income. In some cases, the differences are staggering; for example, only 69.1 percent of residents of these counties over age 25 are high school graduates, with the next lowest state, California, having an 81.8% high school graduation rate. When San Diego and Pima counties are included, the counties in the four U.S. states bordering Mexico still would rank 48th in poverty rate; 44th in persons under age 65 without health insurance; 51st in percent of residents over age 25 who are high school graduates; and 43rd in *per capita* income. All of these are indicators of regions of poverty (U.S. Census Bureau 2017a).

Hispanics constitute the largest ethnic group in the border region, are the largest minority group in the United States, and are a majority of the population in 19 of the 24 counties along the international border with Mexico. In 2015, 82 percent of the population of the border counties, excluding San Diego and Pima counties, was Hispanic (U.S. Census Bureau 2017a). The percentage of Hispanics in the U.S. border population is increasing as a result of continuing migration from Mexico and the relatively high birth rate of border Hispanic populations compared with the general population.

Adding to the cultural and economic complexity of the border region are 26 U.S. federally recognized Native American tribes that range from 9 to 28,000 members. Some of these tribes share extensive family and cultural ties to indigenous peoples in Mexico's border region and occupy land adjacent to the international boundary.

The border region, then, is a region where poverty and ethnicity coincide. It also is a region where the large vulnerable population is harmed by the health effects of deteriorated environmental conditions.

1.2 Environmental protection context

This section addresses the key issues for environmental quality and protection in the diverse geographical regions of the border. A number of national parks in both countries—including Big Bend National Park in Texas, Maderas del Carmen Biosphere Reserve in Mexico, Organ Pipe Cactus National Monument, and El Pinacate and Gran Desierto del Altar Biosphere Reserve in Mexico—are spectacular and remote. Deserts, mountains and riparian areas help to provide great diversity in plant and animal species and contribute to ecotourism. In addition to these federal lands, important state and local public lands exist along the border, including the three state-owned sites that form the World Birding Center in the Lower Rio Grande Valley, the Rio Bosque in El Paso, and Big Bend State Ranch, which also provide important habitat and local economic development. The states of New Mexico, Arizona and California also have state parks and protected areas in the border region. The border has areas of great natural beauty and value. Other portions of the border have large and growing human settlements that depend on environmental quality. This section also provides an overview of management agencies and programs.

1.2.1 Environmental challenges

The natural environment and climate of the border region provide a number of challenges for environmental quality and sustainability of communities. The border is mostly arid, with annual precipitation averaging 28 inches per year in the Lower Rio Grande Valley in Texas, decreasing to about 7 inches per year in the Trans Pecos area of Texas, and finally decreasing to 3 inches annually in Imperial Valley, California.

[1] The southern part of San Diego County has socioeconomic characteristics similar to other border counties; North San Diego County is more affluent and less Hispanic.

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The region's environmental quality and health are influenced by trends in population, the economy and industrial activity, as explained in the previous section. Specific environmental challenges include air and water quality, land management and protection of sensitive ecosystems and species, and waste disposal, all of which have implications for public health, especially for low-income populations.

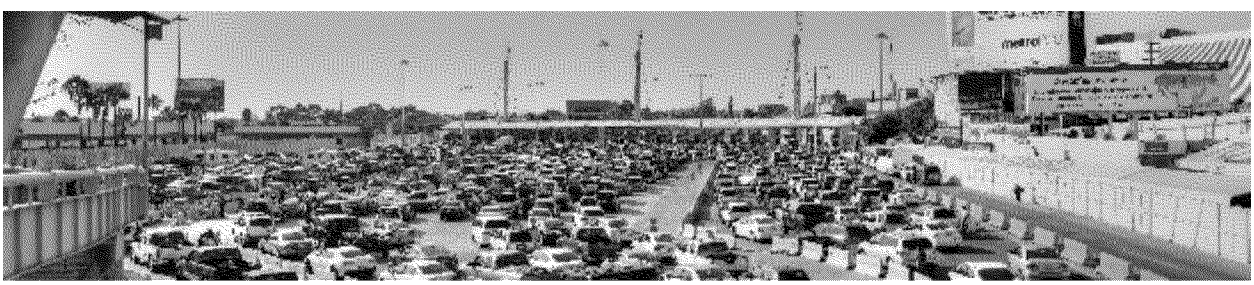
1.2.1.1 Air quality

Air quality in the border region is affected by pollutants from a number of sources. Motor vehicles, power plants, industrial facilities, agricultural operations, mining, dust from unpaved roads and open burning (e.g., for heating, cooking and trash disposal) all influence urban and regional air quality along the U.S.-Mexico border. POEs, characterized by intense motor vehicle traffic and long crossing delays northbound, have significant air quality problems that affect the facilities and surrounding communities (Quintana et al. 2015). The most common and harmful pollutants from these sources and at POEs include suspended particulate matter (fine and coarse) and ground-level ozone.

The United States and Mexico continue to collaborate to help safeguard the health of border residents by protecting and improving air quality in shared air basins. The two federal governments—in partnership with border tribal, state and local governments—have worked collaboratively to increase knowledge about pollution sources and effects, establish monitoring networks in several key areas, develop emissions inventories, demonstrate the benefits of using cleaner fuels, retrofit diesel vehicles, collaborate on projects to reduce emissions, and build local emergency response capacity through training (USEPA 2016).

Although substantial gains have been made, air quality still is a major concern throughout the border region. The pressures associated with industrial and population growth, differences in governance and regulatory frameworks, and topographic and meteorological conditions combine to present a challenging context in which to address air quality management. The number of days exceeding the ozone and particulate matter standards has decreased during the past decade (USEPA 2016); however, lengthy wait times at POEs, undocumented crossing in undeveloped areas, and patrolling using unpaved roads adversely affect air quality (USEPA 1988, 1998, 2006).

Northbound crossings increased with growing trade after the signing of NAFTA, and wait times further escalated with increases in security after the terrorist events of September 11, 2001 (Quintana et al. 2015), referred to hereafter as 9/11. Frequently, pedestrian lines are immediately adjacent to the vehicle queues (Quintana et al. 2015), resulting in pedestrians' exposure to air with significantly higher pollutant levels than extant in the already-compromised air quality of the border region (Smith et al. 2001). Such near-traffic exposures have been associated with a variety of adverse health effects, including asthma and cardiovascular issues (Quintana et al. 2015). These exposures are a matter of concern not only for the millions of people who cross each year, but also for the thousands of people employed at the POEs and those who live in nearby neighborhoods. In a white paper produced for the U.S. Department of Transportation (Kear et al. 2012), commercial vehicle emissions were noted to be substantially greater than from privately owned vehicles despite the fact that commercial vehicles comprise only approximately 15 percent of the traffic volume in the case study conducted. Therefore, the authors concluded that efforts to minimize wait times would result in the greatest improvements in POE air quality.



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Cars line up at the U.S. Customs and Border Protection inspection station at San Ysidro, Califronia, thought to be the busiest land port in the world. Source: JohnGK/Shutterstock.com.

1.2.1.2 Water access and quality

In addition to air quality, water access and quality are important issues in the U.S.-Mexico border region. Water is an extremely limited resource in many parts of this region. Population growth—along with growth in agriculture and other economic activity—places increasing stress on water quantity and quality. Protecting the quality of rivers, oceans and other water sources is important for ecological and human health in the region. The historic ambient temperature increases and long-term drought associated with climate change point to declines of fresh water supply in the border region (GNEB 2016).

The United States shares 1,954 miles of border with Mexico. The land border and rivers that make up the international boundary fall under the jurisdiction of the International Boundary and Water Commission (IBWC) (Figure 4). The IBWC comprises two sections, the U.S. Section and the Mexico Section, and is responsible for applying the boundary and water treaties and settling differences that arise in their application.

Figure 4. The U.S.-Mexico international boundary.
Source: International Boundary and Water Commission.

Rapid population growth in the border region, combined with lack of adequate infrastructure, has brought major public health and environmental concerns for both countries as a result of frequent raw sewage discharges. These renegade sewage flows contaminate surface water and adjacent beaches, posing health threats to workers and community members who come into contact with these waters (CBP 2017a). Major

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populations in cities such as San Diego, California, and El Paso, Texas—in addition to the populations of smaller towns and rural areas—depend on scarce ground and surface water to meet current demands for urban and agricultural uses and also for ecosystem services. To meet these needs for potable water, border communities must employ costly solutions, such as transporting water across long distances, desalinating saline ground water, and in the case of El Paso, direct reuse. Two major river basins—the Colorado and Rio Grande—and smaller ones, such as the San Pedro and Tijuana, supply water for municipal, agricultural and other uses. Climate effects, including long-term drought on the Colorado River, suggest that fresh water resources will decrease in the future.

The U.S.-Mexico Border Water Infrastructure Program was created in the 1990s under the La Paz Agreement as a binational effort to provide border communities with safe drinking water and sanitation. EPA and the Comisión Nacional del Agua (Mexico's National Water Commission, also known as CONAGUA) coordinate with U.S. and Mexico federal, state and local agencies to fund drinking water and wastewater infrastructure projects, recognizing that access to these basic public health services is of the highest priority (USEPA 2016). No comprehensive data on drinking water and sanitation infrastructure needs along the border are available for comparison purposes. EPA, however, has tracked the number of homes provided with first-time access to essential drinking water and wastewater services through the Border Water Infrastructure Program. From 2006 to 2015, 65,665 homes had been connected to a safe community drinking water system, and 626,631 homes were connected to adequate wastewater collection and treatment service (USEPA 2016). This effort shows that a binational government effort is essential to provide border residents with basic services that most of the U.S. population takes for granted.

1.2.1.3 Solid and hazardous waste

In addition to being affected by air and water pollution, land in the border region can be impacted by improper disposal of solid waste and negative effects from urban, industrial and agricultural activities. Border 2020 focuses on addressing land contamination from inadequate management and disposal of solid and hazardous waste and sites contaminated by solid or hazardous waste (USEPA 2016). Since 2006, *per capita* waste disposal in the United States and border states has declined according to data related to municipal solid waste. Similarly, all Mexican border states have seen a decline in *per capita* municipal solid waste generation, with the exception of Baja California from 2005 to 2012 (USEPA 2016). Reduction of waste generation and increased recycling are evident and should coincide with a decrease in improper disposal. Certified electronic recyclers are now found within 100 kilometers on both sides of the southern border.

1.2.1.4 Intersection with border security

Some environmental challenges are especially relevant based on their close relationship with border security. Contaminated surface waters—including intermittent flows in arroyos, rivers, drains and lakes—present health dangers for the U.S. Border Patrol (USBP) and other law enforcement personnel who come into contact with these waters in the course of their duties. Poor air quality in the major sister city metropolitan areas of the border, and especially around the POEs, creates unhealthy air quality for U.S. Customs and Border Protection (CPB) and USBP agents who work in those areas. Urbanization and other land cover changes, including the installation of security infrastructure and the increased number of intense storm events that has accompanied changes in climate, have accelerated erosion in some areas, posing problems for enforcement activities.

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Big Bend National Park. Installation of the proposed wall would severely impact the viewshed and the migration corridor for animals in addition to having no flood plain for border security infrastructure. Source: Ann Wildermuth, National Park Service.

1.2.2 Protected areas and the border

The border region has significant protected areas (see Figures 1 and 2 in the introduction), including national parks, national forests, national monuments, wildlife refuges, estuaries and riparian conservation areas. In addition to these national and other federal lands, states and local governments also have invested in significant ecological areas. Some of these are adjacent to protected areas across the border, forming important transboundary ecosystems. Protected areas along the border include habitat for hundreds of threatened and endangered animal and plant species and, in many cases, are on established flyways for migratory birds. The integrity of species and habitats has been challenged by tactical security infrastructure at a number of locations along the border, fragmenting habitat and creating barriers to the migration of threatened and endangered animal species. In some areas, the visual impact of border security in pristine scenic areas presents a significant challenge.

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Mule deer approaching the border wall in the San Pedro region of southeastern Arizona, 2008. [Placeholder image].

Threatened and endangered animal species, often present in small numbers, require large areas of linked habitat to promote migration and genetic diversity, assuring the health and continuance of the population in question. Important species along the border that require movement across the international boundary to maintain healthy, genetically diverse populations include the Sonoran pronghorn antelope, mountain lion, bighorn sheep, jaguar, ocelot, long-nosed bat and black bear. In some areas of the region, physical infrastructure has created barriers that prevent this natural migration. The problems for wildlife created by this infrastructure for some species is similar to barriers created by highways and freeways. For example, in Southern California, mountain lions must cross major freeways, resulting in high mortality rates and reducing the genetic diversity of isolated populations (Phys.org 2017). Potential solutions to the current problem include adding wildlife overpasses or underpasses, which are very expensive; however, proactive planning to address the needs of species to migrate across the border can be cost-effective, while meeting both security and environmental needs.

For example, the U.S. Attorney General was provided the authority to waive certain environmental laws to expedite the construction of border infrastructure pursuant to the Illegal Immigration Reform and Immigrant Responsibility Act of 1996, as amended. In 2005, as a part of the Real ID Act of 2005, Congress amended the Illegal Immigration Reform and Immigrant Responsibility Act to expand the scope of the limited waiver authority to include cultural considerations in addition to environmental laws and transfer the waiver authority to the Secretary of the newly established U.S. Department of Homeland Security (DHS). In 2007, the waiver was invoked for fence construction in San Diego. Since that time, the waiver has been invoked four more times in parts of Texas, New Mexico, Arizona and California—waiving environmental and other laws to expedite the construction of border security measures in areas "of high illegal entry." The 2008 waiver use was supported by DOI and led to a pledge to mitigate impacts on the environment. Under this pledge, $17.8 million was provided by CBP for mitigation (Andrew 2017a), and measures were taken to successfully mitigate the impacts on the environment. CPB prepared Environmental Stewardship Plans and biological and cultural resources surveys for all work completed under the waivers. The waiver was issued again in August 2017 to expedite border construction projects in the San Diego area (DHS 2017a). This example of proactive planning highlights how environmental protection can be cost effective while still meeting security needs.

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1.2.3 Case study: Habitat restoration of areas damaged by foot and vehicle traffic[2]

At the time of GNEB's 10th Report, levels of illegal smuggling of humans and drugs had reached record highs in southern Arizona. The passage of thousands of illegal border crossers across public lands, many using vehicles, and the law enforcement response to control them, resulted in a large number of undesignated vehicle routes being created in designated wilderness. The level of disturbance to public lands was evaluated in several reports and depicted using 30-centimenter resolution aerial imagery (Figure 5). Environmental effects were categorized according to the level of impact on desert habitat; a Class 1, the lowest category, was defined as a one-time pass by a vehicle, whereas the highest category, Class 4, was defined as multiple undesignated vehicle routes with deep rutting.

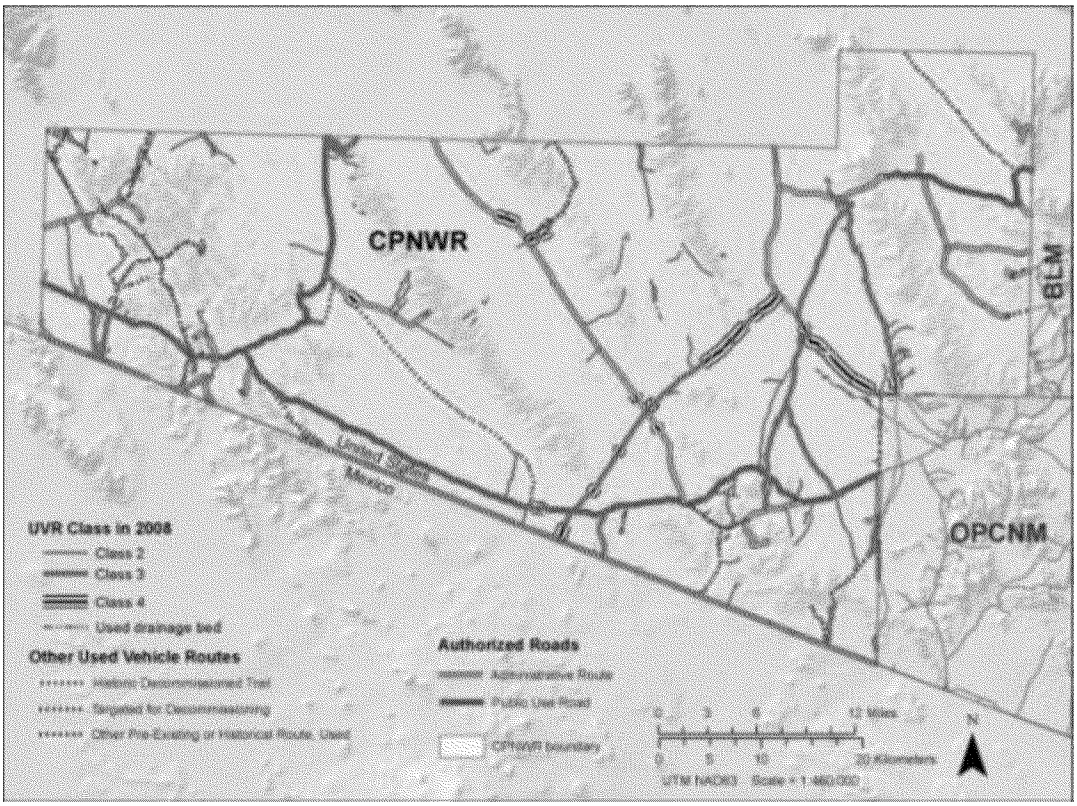

Figure 5. Unauthorized vehicle routes in Cabeza Prieta National Wildlife Refuge, 2008.
Source: NPS 2014.

Beginning in February 2015, work began to reverse these effects using CBP SBInet Ajo-1 and Ajo-2 (pedestrian fence) mitigation funds. Organ Pipe Cactus National Monument was the lead DOI unit managing the restoration program, working in close coordination with USBP's Ajo Station. The 2006 *Memorandum of Understanding Among U.S. Department of Homeland Security and U.S. Department of the Interior and U. S. Department of Agriculture Regarding Cooperative National Security and Counterterrorism Efforts on Federal Lands Along the United States' Borders* (hereinafter referred to as the 2006 MOU), was a key component of the restoration effort and formalized a unique relationship and mutually successful partnership. The first step in the process was to identify access required by USBP for border security after evaluating all existing routes. Once this was determined, the remaining undesignated access routes could be considered eligible for restoration.

[2]Source: Jon Andrew Organ Pipe Cactus National Monument Case Study—Undesignated Vehicle Route Restoration

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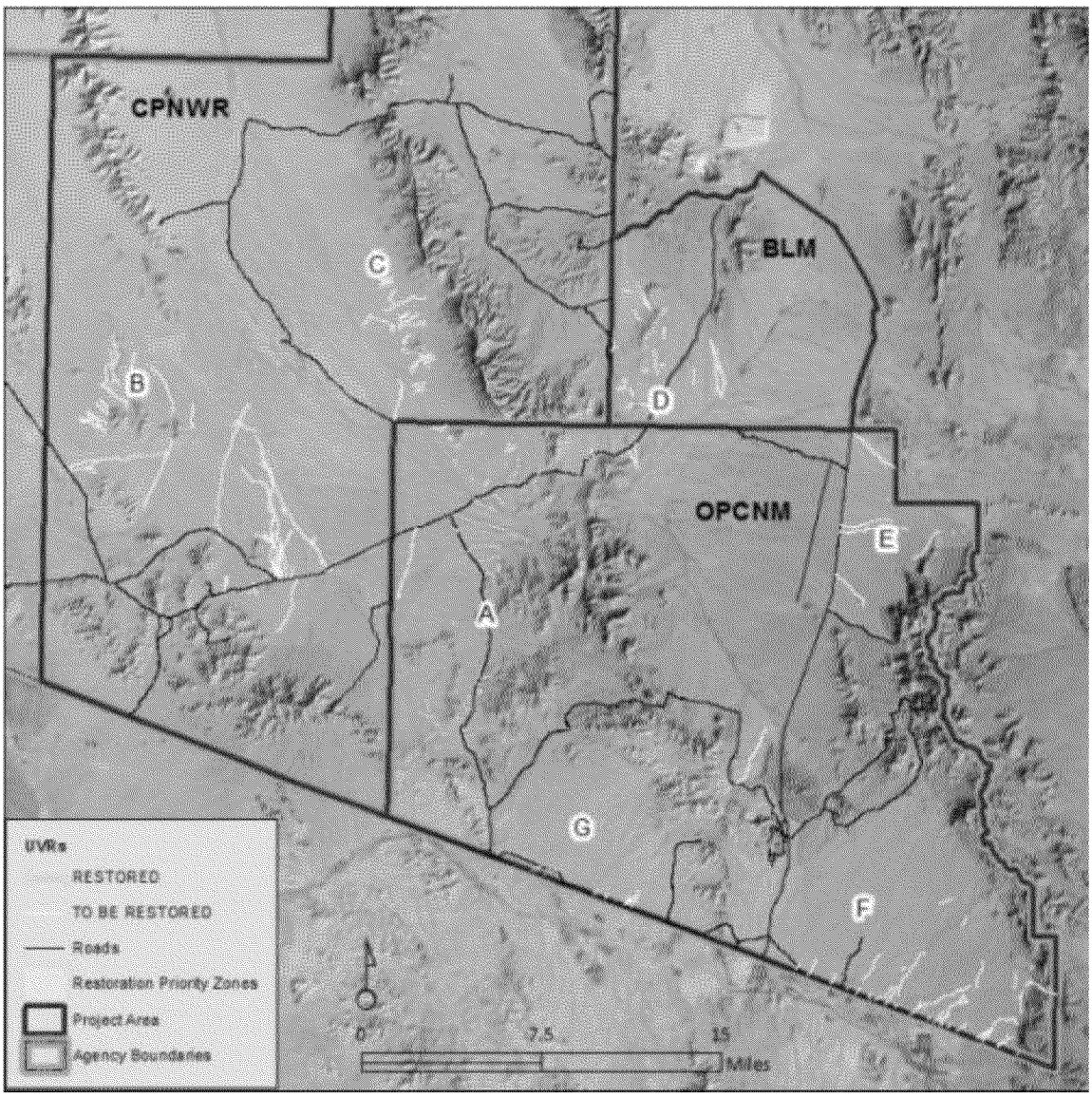

Figure 6. Undesignated vehicle routes that have been restored or identified to be restored, Cabeza Prieta National Wildlife Refuge and Organ Pipe Cactus National Monument, 2015.
Source: National Park Service; Jon Andrew Organ Pipe Cactus National Monument Case Study—Undesignated Vehicle Route Restoration.

Restoration was accomplished with various methods, ranging from hand tools to mechanized equipment in an attempt to restore the topographic grade and re-establish the natural flow of water during monsoonal rain events. Plants grown in the Organ Pipe Cactus National Monument nursery and cacti recovered from construction of the pedestrian fence were planted at the beginning of many undesignated vehicle routes, whereas areas beyond sight relied on the natural seed bank to provide future vegetative cover. On completion of restoration activities in the summer of 2015, some 230 miles of undesignated access routes were restored on all three DOI-managed lands within Pima County (Figure 6). Restored areas were marked with a simple signage system, and an agreement with the USBP assured that patrol agents would be informed of the protocol for access that would allow the areas to be grown back and complete restoration.

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A typical restoration site with pre- and post-restoration condition. Source: National Park Service.

Endangered Sonoran pronghorn antelope were observed in one area of Organ Pipe Cactus National Monument soon after restoration had been completed. Presence of this species in a restored road corridor is clear evidence that mitigation funds have achieved the stated goals and purpose. This cooperative project

exemplifies the progress in the relationship between the USBP and DOI bureaus. It also shows that providing the necessary support for border security and protecting public lands are compatible and not mutually exclusive goals. In 2015, this project was recognized with the Wes Henry National Wilderness Stewardship Award and the NPS Regional Wilderness Stewardship Award: Wilderness Champion.

1.2.4 Progress on environmental quality and protection

Much progress made on improving environmental quality in the border region relates to Border 2020, a cooperative program between the United States and Mexico initiated in 2013 as a successor to Border 2012. Border 2020 is the latest cooperative initiative implemented under the 1983 La Paz Agreement, building on previous efforts, particularly the Border XXI Program, which marked the first binational effort to develop environmental indicators for the border region. Border 2020's mission is to "protect the environment and public health in the U.S.-Mexico border region, consistent with the principles of sustainable development." Through Border 2020, federal, state, tribal and local institutions and agencies collaboratively work to produce prioritized and sustained actions that consider the needs of border communities. The actions implemented under Border 2020 are guided by a series of results-oriented goals and objectives. Border 2020's goals and objectives were updated at the end of the Border 2012 period to reflect new needs and opportunities in the region (USEPA 2016).

Additional environmental quality and protection progress has been made as a result of the efforts of binational institutions. BECC and its sister agency NADB, through cooperation with EPA and other agencies, have significantly improved water, wastewater and solid waste infrastructure in border communities through grants, loans and technical assistance. The agencies more recently have begun to address air quality issues through investment in road paving, alternative energy, and transportation infrastructure (BECC 2017; NADB 2017).

1.3 Context for security in the border region

The previous section provided a brief overview of major environmental quality and environmental protection challenges in the border region in addition to describing key federal agency responsibility for environmental management and protection. This section provides detail on the changes in border security since GNEB's 2007 report. These changes include stronger communication and collaboration among security and other agencies. They also include significant increases in physical infrastructure and personnel in the border region. Finally, the changes involve improved border control and management and faster border crossing times for goods.

1.3.1 Strengthening communication and collaboration

Since 2007, considerable progress has been made in improving communication and collaboration among security agencies and natural resource agencies in the border region (U.S. Government Accountability Office 2011). Guided by the 2006 MOU, regular, ongoing collaboration now is part of standard operating practices. Representatives from the MOU agencies hold monthly coordination calls to discuss ongoing initiatives, projects and consultation under the Endangered Species Act of 1973. These calls are organized by CBP's Energy and Environmental Management Division.

In 2005, USBP established the Public Lands Liaison Agent (PLLA) Program, and in 2009, the Chief of USBP signed the PLLA Program into national policy (Koerner 2012). Today, all sector chiefs have an on-staff PLLAs to engage with federal, state, local and tribal partners. PLLA duties include engagement with personnel from DOI, the U.S. Department of Agriculture (USDA), and other federal, state, local, tribal and nongovernmental organizations involved in land management, resource protection, and borderlands access issues. The PLLAs also promote dialogue that includes collaboration to identify mutually beneficial activities and outcomes as well as joint environmental education, border security and border safety training.

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Agents serving as PLLAs receive advanced training on environmental matters. They regularly coordinate with other USBP liaisons and remain actively engaged in preparation and review of environmental documents, including those prepared under the National Environmental Policy Act (NEPA) for activities within their sector. They monitor changes in land-use designation (e.g., wilderness designation) within their sector and communicate that information throughout the sector. They provide outreach regarding candidate and protected species under the Endangered Species Act. Finally they serve as co-chairs with representatives from DOI and USDA for Borderlands Management Task Force (BMTF) meetings.

USBP, DOI and USDA established the BMTF as an intergovernmental forum for cooperative problem-solving on common issues related to the international border. The primary mission is to address border security, human safety, and natural and cultural resource protection through shared resources, information, communication, problem-solving, standardization and training. The BMTF is intended to create a positive, intergovernmental working relationship and foster support among agencies charged with border responsibilities. Through this coordination the task force creates mutually beneficial solutions to resource management issues and provide expertise, experience and information to address common border issues. Additionally, the BMTF provides an opportunity to inform agencies and interested parties about border issues and recommendations for the implementation of possible solutions in the border environment.

Along the southwest border, all USBP sectors have an active BMTF that meets on a regular schedule, with *ad hoc* meetings called as needed. Border 2020 continues to provide an ongoing venue through its task force and regional workgroup meetings to raise new concerns and coordinate with federal, state, tribal and local agencies on border environmental issues, including security-related concerns. In the past, issues such as the waste effects on natural resources and communities resulting from undocumented migrant crossings, and practices to mitigate these effects, were addressed. Border 2020 continues to involve CBP and other agencies in its discussions on environmental issues along the border. Importantly, Border 2020 also involves the participation of Mexican agencies and stakeholders to address environmental issues that cross the border.

Access to federal lands for security purposes should continue to be managed under the terms of the 2006 MOU signed by USDA, DOI and DHS. This guiding document provides a framework for access by USBP and facilitates communication and coordination among the signatories. The MOU has been used in Arizona to allow the USBP to manage use of roads at Organ Pipe Cactus National Monument and Cabeza Prieta National Wildlife Refuge and BLM lands. This arrangement has provided the USBP with the access it requires for border security and also has resulted in the restoration of unneeded roads that can be restored. DHS and collaborating agencies have been encouraged to provide or seek funding in support of additional restoration of habitats affected by illegal activities and the resulting law enforcement activities. The work at Organ Pipe Cactus National Monument has proven that the overriding need for access to enhance border security can be provided while also restoring and conserving unique and valuable habitats. The case study of road restoration in this report highlights the cooperative effort for ecological restoration in this area of the border.

The GNEB's 10th Report and December 2009 advice letter noted the lack of adequate coordination of security agencies with environmental and land management agencies and other border stakeholders (GNEB 2007, 2009). The PLLA program, the BMTF effort and the Border 2020 process have made significant progress in addressing the Board's concerns. A recent report from the DHS Office of Inspector General did note, however, the need for improved coordination and communication with both internal and external stakeholders (DHS 2017b).

1.3.2 Creating a safer border environment

Protecting U.S. borders from the illegal movement of weapons, drugs, contraband and people, while promoting lawful entry and exit, is an essential mission of DHS. DHS works to manage and make

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U.S. borders secure through the deployment of personnel, technology and infrastructure. It also works closely with Canada and Mexico as well as federal, state, local and tribal partners. After the 9/11 terrorist attacks of 2001, the deployment of personnel, technology and infrastructure on U.S. borders accelerated. The human and physical resource base built during the past two decades has enabled USBP to develop and implement an enforcement strategy tailored to meet the challenges of securing the border against a variety of threats. Border security has been improved through increases in USBP staffing; construction of new infrastructure and fencing, use of advanced technology (e.g., sensors, radar, aerial assets), investments to modernize the POEs, and stronger partnerships and information sharing. USBP agent staffing has increased significantly since 9/11. In FY 2001, 9,147 Border Patrol agents were stationed along the border with Mexico; by FY 2007 when GNEB's 10th Report was issued, 13,297 agents were on the Southwest border. By FY 2016, 17,026 agents were on this border, accounting for 86 percent of the total number of Border Patrol agents (CBP 2017b).

Today, USBP's enforcement strategy is threat-based and intelligence-driven. This includes identifying high-risk areas and flows, targeting responses, and deploying resources and capabilities in the most effective manner to achieve multiple security objectives. These include preventing terrorists and terrorist weapons from entering the United States between the POEs, disrupting transnational criminal organizations through targeted enforcement efforts against the highest priority threats and expanding programs that reduce smuggling and crimes associated with smuggling, and managing risk through the introduction and expansion of advanced detection technology along with sophisticated tactics, techniques and procedures. Through enhanced technology and situational awareness and the introduction and expansion of sophisticated and layered tactics, capabilities, and operations, USBP's strategy focuses on "Information, Integration, and Rapid Response."

Information gathered from reconnaissance, community engagement, sign-cutting and tracking, and mobile and fixed technology provides situational intelligence to assess the threats along the border. The use of technology in the border environment is an invaluable force multiplier to increase situational awareness, direct a response team to the best interdiction location, and warn the team of any additional danger that might develop. Information and intelligence help USBP leadership and front line agents to be predictive and proactive and get ahead of the threat. *Integration* denotes CBP planning and execution of border security operations while leveraging partnerships with other federal, state, local, tribal and international organizations. Lastly, *Rapid Response* facilitates the deployment of capabilities efficiently and effectively to mitigate risks. Put simply, rapid response means USBP and its partners can quickly and appropriately respond to changing threats.

A key element of USBP's strategic plan for securing the border is the agency's layered enforcement posture, referred to as "defense-in-depth." This includes advanced detection technology, tactical infrastructure, traditional patrol activities and other enforcement operations. The strategic plan recognizes that the security of the border cannot be achieved by only enforcement activities located at the physical border. For that reason, some of USBP's enforcement operations take place away from the physical border, at interior checkpoints and in ancillary areas. These operational areas away from the border line also require continued and improved mitigation to promote environmental quality and protection in these areas as well.

With more agents, better infrastructure, more powerful technology after the 9/11 attacks, and other factors, the downward trend in apprehensions of undocumented persons at the southern border has been dramatic. Since FY 2000, apprehensions have dropped by more than two-thirds on the California, Arizona, New Mexico and Texas borders. In the Tucson Sector, apprehensions are down from more than 616,000 in FY 2000 to just 63,397 in FY 2015, a drop of nearly 90 percent. Border wide, FY 2000 had 1.6 million apprehensions; FY 2016 saw only 408,870 apprehensions (CBP 2017c). Increased enforcement and improved security infrastructure at the border with Mexico partially explain the decline in apprehensions as a result of the increased difficulty and cost for migrants seeking to cross the border illegally. Factors such

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as U.S. and Mexican macro-economic conditions, political instability and gang-related violence in Central America and elsewhere, Mexico's demographic shift, workplace enforcement actions in the United States, perceptions of unauthorized migrants in U.S. politics, and others also help to explain the sharp decrease in apprehensions at the border with Mexico.

1.3.3 Making travel faster at the border

By expanding trusted-traveler programs that provide expedited movement through POEs into the United States for preapproved, low-risk travelers, CPB has at once improved security and reduced the time and cost that individuals spend entering the United States. Border residents and frequent border crossers have particularly benefitted from programs such as the Secure Electronic Network for Travelers Rapid Inspection (commonly known as SENTRI), which has reduced the waiting time for northbound crossing at a land POE to 20 minutes or less. Faster processing of vehicles not only reduces inconvenience and costs for travelers but reduces air pollution, with health benefits to people at the POEs and surrounding communities (GNEB 2016). This is another example of meeting security needs at the border and improving the environment and quality of life for border communities.

At a 2016 Border 2020 Air Quality Task Force Meeting in Tubac, Arizona, CBP reported on a pilot project for joint cargo inspections with Mexico at the Mariposa POE to reduce crossing time and emissions that has led to significant improvements. During the proof-of-concept phase of the project, nonperishable northbound cargo that was prescreened was inspected jointly by U.S. and Mexico customs (Galvan 2016). The program reduced crossing times from Mexican warehouses to the United States from an average of 4 to 8 hours to 1.2 hours. This represented a savings of $762,000 in inventory transit costs in just the first 30 days, as determined by the participating industrial sector. The program is now standard at the Mariposa POE and is being considered for expansion to include perishable cargo and rail from prescreened companies and cargo traveling southbound into Mexico. Additionally, it is being considered for implementation at the San Luis and Douglas POEs.

1.3.4 Border security infrastructure

The Board's 10th Report and December 2009 advice letter detailed concerns about the unintended environmental consequences of the hurried-pace construction of border security infrastructure that included primary and secondary fencing, access roads, sensor networks, communications networks, and lighting and video installations (GNEB 2007, 2009). Environmental impacts included altered hydrology in some areas, producing flooding and significant sedimentation, damage to cultural and natural resources, habitat fragmentation, and barriers to migration of endangered or threatened animal species. Increased enforcement activities on dirt roads also had environmental consequences. In some cases, the infrastructure and enforcement activities reduced human pressure on sensitive habitats and species, enabling them to recover. Appendix 1 reviews the recommendations of the 2007 GNEB 10th Report and federal agency responses to these recommendations. Appendix 2 reviews the recommendations of the December 2009 GNEB advice letter and the progress made toward addressing the highlighted challenges.

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Border security infrastructure near Border Field State Park in San Diego County adjacent to the Pacific Ocean. The infrastructure includes the fence near the boundary, an access road, stadium lighting, a secondary fence and an additional road. Source: Paul Ganster, San Diego State University.

1.3.5 Case study: Alternative fencing and collaboration: Buenos Aires National Wildlife Refuge and Organ Pipe Cactus National Monument

In 2004, Organ Pipe Cactus National Monument undertook construction of a vehicle barrier along 30 miles of the south boundary at the Mexico border. The barrier was designed to stop vehicles from driving around the U.S. POEs or USBP checkpoints and through the fragile desert wilderness. Although this 3-year construction project was costly, the natural and cultural resources it has protected are priceless. The effort also had positive effects on visitor and officer safety and national security.

One remaining concern for the FWS and other federal land managers is potential impacts to the endangered Sonoran pronghorn (*Antilocapra americana sonoriensis*) in Arizona as well as other species elsewhere along the border, such as the ocelot (*Leopardus pardalis*) in South Texas. The Sonoran pronghorn population was last surveyed in 2016. In southern Arizona, there are now an estimated 273 animals. An additional 90 animals have been released through a captive rearing program in Nevada. In recent years, captive propagation and better habitat conditions have resulted in a substantial increase in the population from a drought-induced population collapse in the early years of the 21st century. Sonoran pronghorn are especially sensitive to fencing, preferring to crawl under barbed wire fences rather than jump over, and human disturbance, including unauthorized migrants and smuggling activities and border patrol activities.

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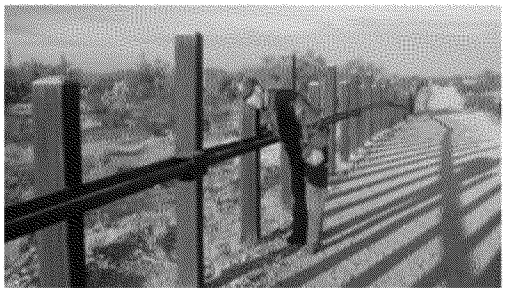
The migration of Sonoran pronghorn to populations across the border also is important for the recovery and health of the species (FWS 2015) .

Vehicle barrier on Buenos Aires National Wildlife Refuge. Pronghorn antelope and other threatened species are able to cross the vehicle barrier but not the solid pedestrian fence to the right. Source: U.S. Fish and Wildlife Service from *On the Border: Protecting Natural Resources on the Front Lines of Immigration*. www.fws.gov/home/feature/2008/pdf/OntheBorder.pdf

In 2006, FWS worked with CBP in the design of fence segments to incorporate wildlife passage elements. For other segments, CBP committed to mitigation measures for the fences' effects on listed species.



This steel fence is designed to stop car and truck traffic that used to drive from Mexico, through the wilderness of Organ Pipe Cactus National Monument, to enter into the United States illegally. This type of barrier does not impede wildlife following tradition migration corridors. Source: National Park Service. www.nps.gov/orpi/planyourvisit/barrier.htm

1.4 In Closing

Although 10 years have passed since GNEB issued its 10th Report, the southwest border environment and socioeconomic context are dynamic and require continual adaptation of policies and actions to respond to emerging challenges and changing conditions. The fragile natural environment of the border region underscores the need for careful planning and coordination among federal agencies to mitigate the impacts as border security infrastructure is built out and enforcement activities intensify. Advance planning, coordination and stakeholder participation will improve security infrastructure and facilitate meeting both security and environmental goals. This will help to avoid costly mistakes and the resulting need to make expensive adjustments to infrastructure along the border.

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CHAPTER 2. Challenges and Opportunities, Part I

The intersection of border security and the environment impose a number of challenges and opportunities on the border region. Areas of emphasis in this report include:

- Ecosystems, tourism and outdoor recreation.
- Plant and animal life and habitat integrity.
- Hazmat and emergency response.
- Water management, flooding, and trash and sediment control.
- Air quality.

The shape and form of security infrastructure installed along the border is a critical factor affecting these areas of special concern. Also of importance are management practices by security agencies. Additional installation of security infrastructure along the border will have a significant effect on the region, presenting both challenges and opportunities to enhance security while preserving or even improving environmental sustainability. Installation of new walls, fencing and support infrastructure along the border could be an enormous undertaking. In some areas, the infrastructure could be the equivalent of construction of a highway through similar terrain. Given the scale and cost of the program to enhance border security infrastructure, it is important to get it right the first time, avoiding costly mistakes and even more costly corrective actions. This requires careful planning and advanced coordination with stakeholders in the region.

Ecosystems, ecotourism and outdoor recreation

Natural ecosystems are the foundation of many life-sustaining and life-enhancing benefits (or services)—clean air and water, fertile soil for crop production, pollination, recreation, flood control and others. Ecosystem services are critical to economic development and sustainability as well as environmental health but often are often undervalued, taken for granted or ignored. Collaborative ecosystem management efforts are especially effective in avoiding costly environmental and health remediation efforts that can occur from a dysfunctional system. Two case studies—the Tijuana River National Estuarine Research Reserve (TRNERR) and the Buenos Aires National Wildlife Refuge—highlight lessons learned. These case studies serve as models for achieving both improved border security and environmental quality.

It is evident from past successes that collaboration among DHS and other federal and state agencies with conservation research and management groups leads to mutually beneficial solutions that both enhance border security and support wildlife corridors, estuary health and environmental health, leading to species protection and ecotourism benefits. Together, ecotourism and outdoor recreation are a substantial part of the U.S. economy and of the border region. As indicated in Figures 1 and 2 in the Introduction, large areas of the border are protected areas, especially in California, New Mexico and Arizona and to a lesser extent in Texas. These protected areas are important resources for ecotourism and outdoor recreation including birding, hiking, camping, mountain biking and so forth. In addition to the federally protected areas, important state and local parks and wildlife management areas provide further opportunities for the public and for the protection of vital habitats and species.

Although the value of ecotourism in the border area is difficult to quantify, the Texas Parks and Wildlife Department has collected information that helps to explain economic benefits of wildlife-related tourism. Millions of Texas residents travel to observe, photograph or feed wildlife; these travelers spent $228,779,736 on travel-related expenses in 2001. Additionally, wildlife-watching activities support more

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than 23,000 jobs in Texas. More than $80 million was generated from state sales tax on purchases by wildlife watchers. FWS and the U.S. Census Bureau reported that, in 2011, wildlife watchers spent $1.8 billion on wildlife-watching activities in Texasn (Figure 7) (FWS and U.S. Census Bureau 2013). Wildlife-watching equipment (binoculars, special clothing, etc.) expenditures totaled $590 million, and away-from-home wildlife watchers on average each spent $463 on trip-related expenditures (FWS and U.S. Census Bureau, 2013). Not only does wildlife-watching support jobs and bring in ecotourism dollars, tourism is the third largest industry in Texas, and nature-based tourism is one of its fastest growing segments. "Nature-related tourism offers Texans the opportunity to build and diversify economies based on conserving the natural resources and rural lifestyles important today and for future generations" (Texas Parks & Wildlife 2017).

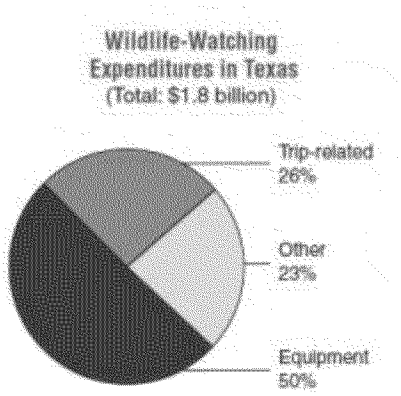

Figure 7. Wildlife-watching expenditures in Texas.
Source: (FWS and U.S. Census Bureau, 2013).

Important birding areas are found throughout the border region. These include, among others, the Tijuana River Estuary and the Colorado River and Salton Sea in California; the San Pedro River National Conservation Area in Arizona; and the Santa Ana National Wildlife Refuge, Las Palomas Wildlife Management Area, and Laguna Atascosa in Texas. These generate a large number of visitors with positive effects on the local economies. In addition to these federal lands that help provide important habitat for birds and birding opportunities, state and local parks along the border also provide protected areas and opportunities for wildlife watching. In Texas, the World Birding Center, the Sabal Palm Sanctuary, and Big Bend Rancho State Park all could be significantly affected by the construction of a physical wall.

Security infrastructure and enforcement actions have negatively affected border ecotourism through the building of fences and roads and restricting access to some areas. Alternatively, in many protected areas along the border, improved security has helped protect ecosystems from damage by migrants and smugglers, as well as from the enforcement activities, and has made these areas once again safe and accessible for ecotourism and outdoor recreation. A good example of this is the reopening of the areas adjacent to the international border in Organ Pipe Cactus National Monument, including the famed Quitobaquito Springs. This part of the national monument had been closed for a number of years because of a lack of security for monument personnel and visitors. Another example of benefits of increased border security is the Coronado National Forest along the border in Southern Arizona. In 2007, at the time that GNEB's 10th Report was issued, warning signs were posted to alert recreationists of the dangers from unauthorized border crossers. By 2017, these border areas of the Coronado National Forest were safe for people to enjoy.

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Warning sign in Coronado National Forest in southern Arizona, near the international border, circa 2006. By 2017, increased border security made the national forest safe for recreation once again.
Source: Paul Ganster, San Diego State University.

As seen along the border of Tijuana, Mexico, and Imperial Beach, California, collaboration among USBP, land and resource management agencies, and conservation organizations have many benefits. When Border Patrol agents understand the positive impact and delicate balance required for effective ecosystem management, and when resource managers understand the intricate elements of border security, the results can mean a healthier environment, a safer border and economic advantage. According to Linnell et al. (2016), "Including border security personnel in wildlife monitoring is one critical step to raise awareness of wildlife needs, help assess the impact of border fences, and explore potential strategies for reducing the unintended impacts on wildlife." Additionally, through this collaboration, all parties can achieve a better understanding of where additional options for enhancing border security that also support natural system functions can work together. For instance, high-tech monitoring methods in unfenced areas could provide effective security while allowing for wildlife corridors to remain intact. An improved ability to manage natural resources and lands from border patrol activities also can be seen along high-traffic areas for illegal immigration, such as the Tijuana border area. Natural resource management personnel have increased security in their daily activities, and the effects from illegal camping and hiking off trails have been reduced.

2.2 Intersection of invasive species and border security

The Board has commented on the persistent problem of invasive species affecting natural systems along the border, especially aquatic areas and the banks of the Rio Grande and Colorado rivers (GNEB 2004). The dense vegetation produced by some invasive species presents problems for border security enforcement by restricting USBP access and screening smugglers and illicit activities from observation.

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Giant cane or Carrizo cane (*Arundo donax)* is a species from the Middle East brought to the United States in the 19th century and has now taken over many water bodies. Along the Rio Grande, it grows in dense stands, sometimes acres in size, allowing undocumented migrants and drug smugglers to hide and evade USBP agents (Figure 8). Remote video surveillance cameras cannot penetrate the thickets, enabling smugglers to cross the Rio Grande and approach agents virtually undetected (DHS 2007).

Figure 8. Border Patrol Agent Jose Perales wades his way through the Carrizo cane along the Texas-Mexico border.
Source: *Texas Standard*. http://www.texasstandard.org/stories/this-invasive-species-is-a-threat-to-national-security

The giant cane can grow rapidly up to 18 feet in height. A predatory wasp was introduced to help eliminate the cane, but more usual control methods are cutting, burning and application of herbicides. A binational group, Los Diablos (The Devils), burns the cane along the Rio Grande in Big Band National Park (Fernandez 2016). Composed of firefighters, conservationists and park rangers, the group uses prescribed burns followed by application of an herbicide to guarantee that reproduction is halted.

Tamarisk (*Tamarix* species), also known as salt cedar, is another invasive that has spread throughout the border, causing problems similar to *A. donax*, outcompeting native vegetation and frustrating border security activities, affecting river flows important to complying with minimum amounts of water important to binational water treaties, and limiting access to the riparian areas by local communities. Along the lower Colorado River limitrophe that forms the U.S.-Mexico border, the Fort Yuma Quechan Indian Tribe manages a Bureau of Indian Affairs Noxious Weed Program that also is used to clear and eradicate salt cedar. The tribe also manages a USDA Natural Resource Conservation Service Environmental Quality Incentive Program, which is used to replant areas cleared of salt cedar along the Colorado River with native vegetation like Mesquite, Cottonwood and Willow trees (Fort Yuma Quechan Indian Tribe 2017). The tribe and its partners have not only restored access to the river to tribal members but have restored native vegetation and improved access for security purposes.

2.3 Endangered species along the border

The U.S.-Mexico border region is a delicate ecosystem with regular animal and bird migrations moving between the north and south of the North American continent across the international border. It is home to a diverse population of mammals, birds and plants. The dry, desert ecosystem also supports pronghorn antelope, cougars, desert bighorn sheep, the endangered North American jaguar, and the ocelot—which is

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down to its last 50 animals in southern Texas (Sullivan 2016).The U.S.-Mexico border region has the highest rate of species endangerment in the United States (Van Schoik 2004). Some 31 percent of the species listed as endangered by DOI are found in the region. On the Mexican side of the border, 85 species of plants and animals are endangered. Not surprisingly, the threats to these species are exacerbated by the fact that the ecosystems in this region are split by a political boundary that greatly complicates conservation efforts as well as creates a physical barrier that fragments habitat and impedes migration of animals The border wall bisects public and private lands along the border, and the barrier can affect the 30 endangered, threatened or candidate species of wildlife that live near the international border in just Arizona and Sonora (Cohn 2007; Gaskill 2016).

Other areas of the border experience similar issues with respect to border infrastructure. Because of the necessary roads, vehicles and support facilities that come with border security, some fragile desert plants (including saguaros) and other wildlife species (including Sonoran pronghorn) may lose access to important sources of food and water (Cohn 2007). Retaining migration corridors via connected habitat across the international border for endangered and important species is critical. Maintaining connected habitats across the international boundary is especially important for species struggling to survive in the face of multiple and cumulative threats. For some species, existing sections of the border wall have completely blocked the migration corridors—or regularly traveled paths through the landscape—in areas that species have relied on for centuries. New sections of the wall may have the same effect depending on how they are designed and where they are constructed. Imperiled species such as the ocelot, jaguar, bighorn sheep, mountain lion, long-nose bat and Sonoran pronghorn, among others, may not be able to migrate, exchange genes between populations necessary for a healthy population, and/or reach vital food sources (Esquina 2017).

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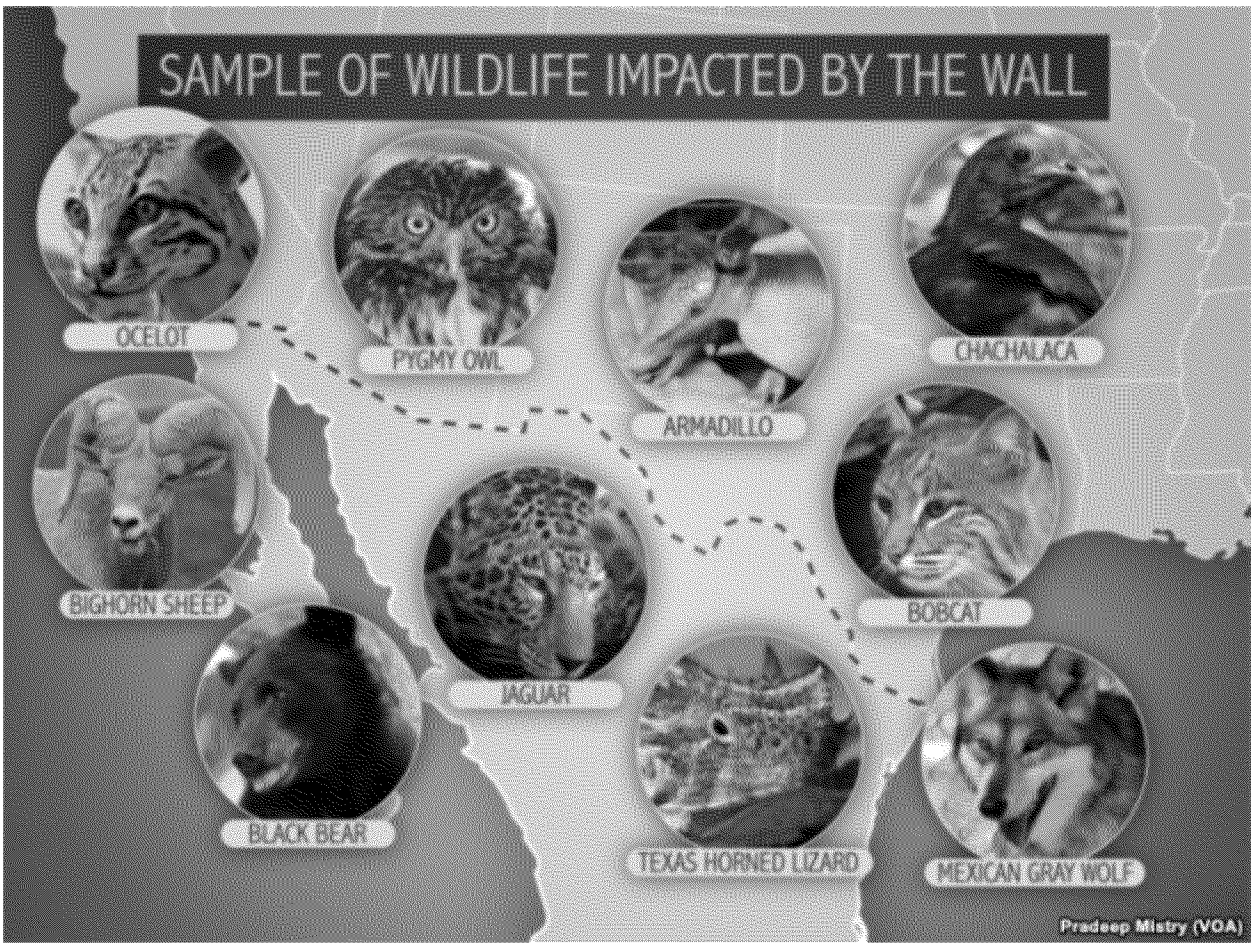

A variety of species, including those presented in this image, could be affected by the construction of a border wall. Source: Pradeep Mistry, Voice of America. www.voanews.com/a/border-wall-doom-ocelots-other-wildlife/3848977.html Do we have/need permission to use this? If do not/cannot get permission, SCG Graphics Department will recreate a similar graphic.

2.4 Proposed border wall, potential environmental impacts and alternatives

Since the passage of the Secure Fence Act of 2006, the U.S. government has constructed 654 miles of primary fencing and an additional 51 miles of secondary fence covering approximately 36 percent of the border. Other parts of the border have high mountainous terrain or major rivers, such as the Rio Grande, that act as natural barriers. The current administration has proposed extending the structure to cover the entire border. In March 2017, CBP issued a formal request for proposals (RFP) that specified the physical requirements for the proposed wall: 18–30 feet in height, made of solid concrete, possess an anti-climb top and below-ground barrier to prohibit digging beneath it, must withstand 1 hour of hammering and chiseling, contain pedestrian and vehicle gates (25 and 50 feet wide, respectively), contain fittings on the U.S. face to "shield from external attack," and include attractive texture and color on the U.S. side. Companies that submitted proposals were expected to construct a physical prototype of their proposal (www.cbp.gov/newsroom/national-media-release/cbp-requests-proposals-border-wall-prototypes).

Federal law provides the DHS Secretary with the authority to waive federal, state and local environmental law if deemed necessary for border security. As of 2011, the DHS Secretary had applied waivers of more than 50 environmental laws. Waivers also were applied to more than 550 miles of barriers and roads needed to complete border fencing projects (Neeley 2011). If new security infrastructure is to be built, federal agencies must continue to collaborate to ensure that infrastructure is designed and sited to mitigate

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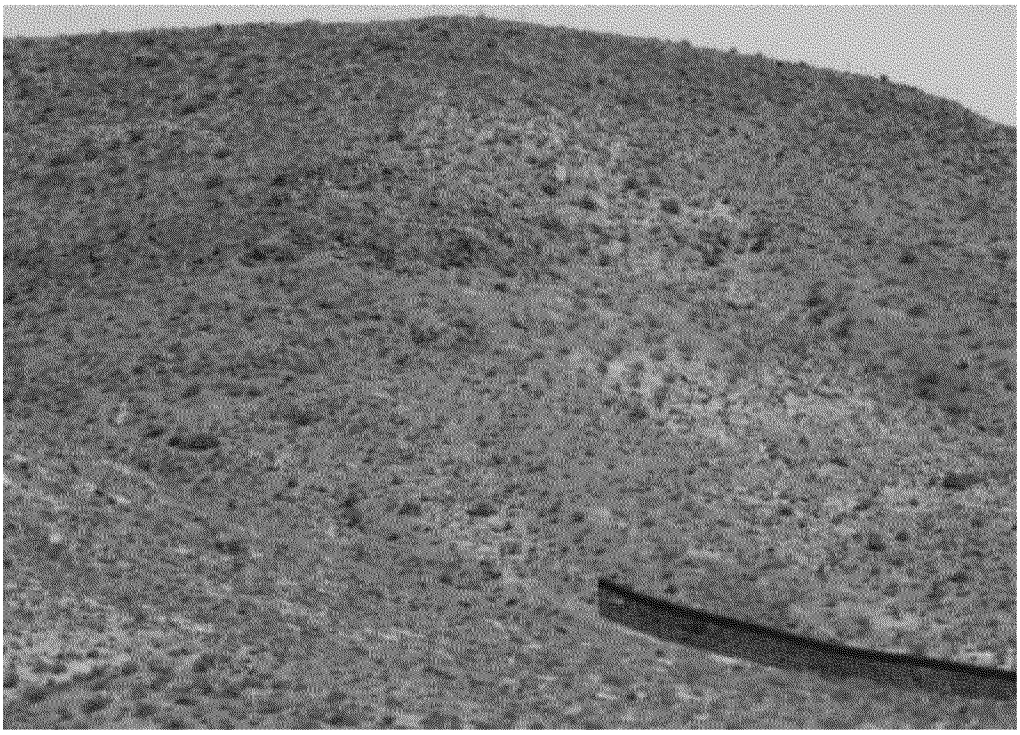
the effects on the environment, plant and animal species, and their habitat. This collaborative approach will help to ensure that the infrastructure is completed properly and will not have to be reconfigured to address flooding or other issues. This is the most cost-effective approach.

No comprehensive border-wide studies of the existing fence's effects on wildlife and plant species have been conducted. Scientific studies conducted in specific border locations and published in peer-reviewed science journals, however, provide important information on the effects of fencing on wildlife in parts of the border region. A 2010 biological analysis found that nine herds of bighorn sheep in Mexico are linked to herds in Arizona, and proposed fencing would isolate some herds on the Arizona side as a result of the limited mobility range of female bighorn sheep. The same study found that endangered Ferruginous Pygmy-owls would be affected by the large vegetation gaps and tall fences created by proposed fencing because of the birds' limited range and flight height. Overall, the study found that other species that have similar mobility and spatial distributions may be affected by border development, yet mitigation strategies could be designed to address both wildlife and societal needs (Flesch et al. 2010). Other species identified by biologists and other scientists as affected by the fencing proposal in 2007 include the Sonoran pronghorn, jaguar and ocelot. A wall would prevent jaguars from repopulating the southwestern United States from a population in Mexico's Sierra Madre Occidental. Landscape permeability to allow wildlife movement is critical to wildlife health and survival (Cohn 2007).

In southern San Diego County, the border fence now ends on a steep western slope of mountains to the east of the small town of Jacumba and does not begin again until the desert floor of Imperial County. The intervening mountains are part of the range of the peninsular bighorn sheep (*Ovis canedensis nelsoni*) that inhabits the Peninsular Ranges in southern California from the San Jacinto Mountains south across the border and through Baja California to Volcan de Tres Virgenes in Baja California Sur, Mexico (Bighorn Institute 2017; FWS 2000). Peninsular bighorn sheep are a natural part of the California border's heritage and culturally and economically important. Completing an impenetrable fence across its migration corridor would further endanger this species.



Jacumba, California, where existing fence ends, not intruding on migration corridor for Peninsular bighorn sheep, mountain lion and other species. Source: Paul Ganster, San Diego State University.

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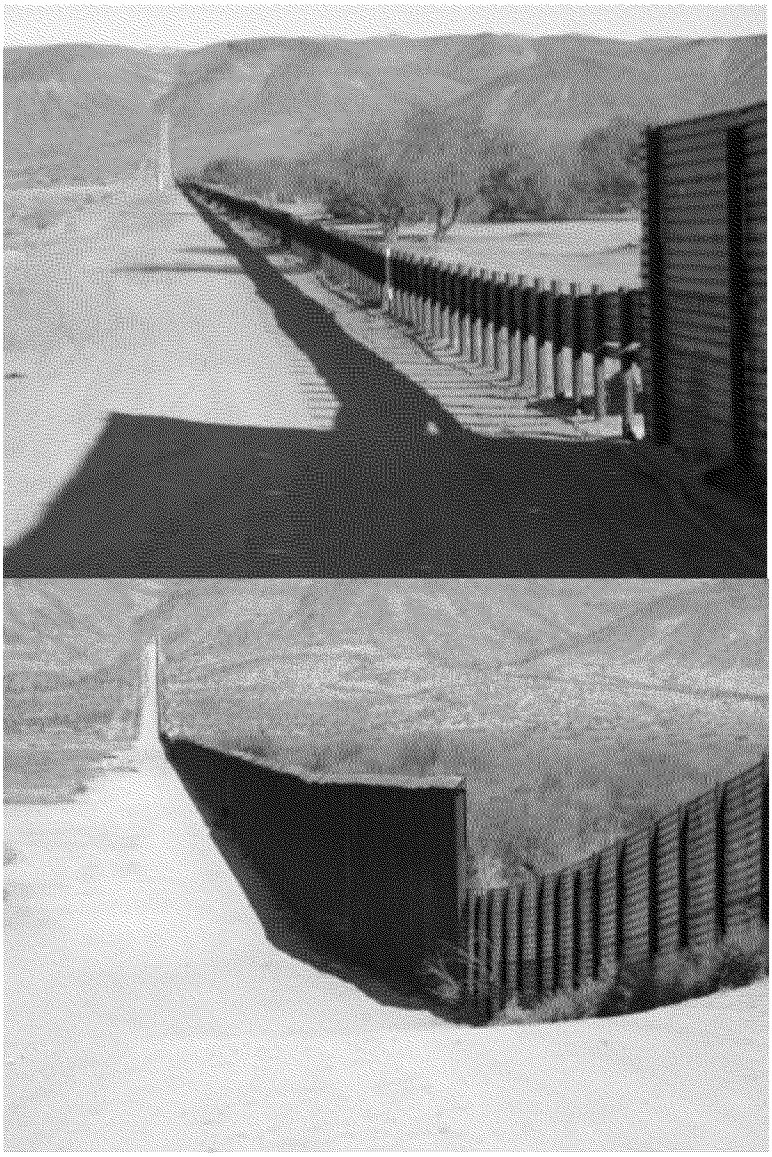
Flooding impacts on habitat and the landscape have been associated with existing border fencing, including a pedestrian barrier in Organ Pipe Cactus National Monument that impounded floodwaters after a heavy storm event in July 2008 (Neeley 2011; NPS 2008). Border barriers caused similar problems and several deaths to occur in Nogales, Sonora, also in July 2008 (Clarke 2016). Landscape disruption in the rugged Otay Mountain Wilderness in San Diego County through fence and access road construction produced accelerated erosion in areas with the rare Tecate cypress and the imperiled Thorne's hairstreak butterfly that relies on the cypress as a host (Neeley 2011). In Starr County, Texas, on the Lower Rio Grande, recent proposals for barrier construction has raised strong local concerns (Schwartz 2017). Elected officials and community members have raised specific issues with new wall construction, including heightened flooding risk, isolation of parts of the communities or private lands on the south side of the new structure, and major impacts on habitat and birding areas, especially Roma Bluffs.



Border fence near Jacumba in eastern San Diego County. The image from 2002 (above) shows the 8-foot fence constructed from surplus landing mats and then a vehicle barrier in the valley bottom. The 2017 image (below) shows how the vehicle barrier was replaced with a pedestrian fence approximately 20 feet in height that also includes gates that open to accommodate stormwater flow and decrease flooding impacts. Source: Paul Ganster, San Diego State University.

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In view of these impacts of border security infrastructure installation on the environment, wildlife and landscape, it is imperative for federal agencies such as DHS and CBP to continue to collaborate on environmental mitigation to the maximum extent feasible in future border security infrastructure projects. GNEB recommends that environmentally sustainable infrastructure design be considered in future projects. The negative environmental impacts produced by previous fence and access road construction should inform the current efforts of 2017 to extend and enhance border infrastructure. Careful planning and collaboration with other federal agencies and state and local stakeholders will help DHS to avoid past mistakes and produce border barriers that meet the needs of security and environmental protection. For example, through working with land managers of protected areas and biologists, DHS could determine locations where cross-border habitat must be undisturbed to facilitate migration and survival of critical species. A combination of vehicle barriers, gates, sensors, presence of USBP personnel, close cooperation with Mexican authorities, and other methods could secure these areas from unwanted human intrusion yet enable animal movement to take place. To this end, GNEB reiterates its recommendation from the 10th Report:

> "As a best business practice, hold a national conference on fencing/barrier technology that highlights successes to date and educates the public, with participation from private sector experts and nongovernmental organizations. As an outcome, develop recommendations for prototype fences that meet security goals while minimizing environmental damage or even improve environmental conditions" (GNEB 2007).

The 2017 CBP RFP for border wall construction proposals produced innovative thinking on border wall designs and solutions. At least two proposals for more "sustainable" alternative border barriers represent the types of proposals that have emerged. One defense contractor developed a proposal for a virtual border barrier that uses computer technology and thousands of portable sensors as an alternative to a concrete brick-and-mortar wall. The proposed virtual wall would be less costly than a brick-and-mortar equivalent, approximately $300 million compared with an estimated $21 billion for the physical wall. This proposal employs sophisticated prototype infrared sensors the size of a softball (4 inches in diameter and 5.5 inches high) that are powered by solar batteries and can sense motion, infrared light, heat and other evidence of human activity nearby. The portable sensors would be distributed via dropping an estimated 200 sensors per mile of border area from an aircraft in an "asymmetrical grid pattern" and scattered in a band extending 0.5 mile into the United States from the border. The sensors would activate on impact and begin communicating with adjacent nodes and sending data regarding detected activity to regional cluster nodes with a signal similar to Bluetooth, not requiring Wi-Fi or satellite connection. The cluster nodes, which are a bit larger because of their increased power need and requisitely larger solar panel, then would relay the information through an encrypted wireless signal to the sensor network monitoring server. Information from sensors can be tracked on computers or devices such as tablets and smartphones via a web browser; color-coded alerts would be sent to tracking devices if human activity is detected (Dickson 2017).

A second alternative concept first proposed by Mexican environmentalists is a solar border structure that would generate enough electricity to power one-half-million U.S. homes and would "pay for itself" (Fthenakis and Zweibel 2017). This alternative would be a "massive string" of horizontal photovoltaic panels that could provide an equivalent barrier to that associated with a concrete wall. The solar structure could be managed by a public-private partnership that could generate economic development in the border region. A Nevada company has developed a similar proposal (Yeo 2017). Despite the obvious practical obstacles, the solar alternative may represent a sustainable and less costly alternative to the concrete wall described in the RFP.

These are just two of many alternatives that have emerged in 2017. It is apparent that, through collaboration with the private sector and other stakeholders, innovative solutions can be developed for border security infrastructure. Existing practices, such as leaving gaps to provide access for agricultural fields along the Rio Grande and Rio Colorado that were isolated by border fence construction, can be

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adapted to permit wildlife migration with proper USBP supervision. These solutions can address both security and environmental needs along the border with Mexico.

2.4.1 Case study: The National Butterfly Center (NBC) in Mission, Texas

The NBC is a 100-acre botanical garden, featuring formal demonstration beds and wildscape, focused on native host and nectar plants that sustain all life stages of more than 200 species of butterflies. Once a commercial onion field, this parcel of land that borders the Rio Grande River and is bisected by the Mission Main Canal and levee, now serves as a preserve for disappearing riverine woodland and wetland and acts as a refuge for three federally listed endangered plant species, Slender Rushpea, Tamaulipan Kidneypetal and Walker's Manioc. Other species of interest at NBC include the threatened Texas Tortoise, Texas Horned Toad and Texas Indigo.

Less than 5 percent of native habitat remains in the Lower Rio Grande Valley, and it is primarily set aside along the Rio Grande River, in the Lower Rio Grande Valley Wildlife Conservation Corridor. This corridor is a multistakeholder effort to connect lands from Falcon Dam to the Laguna Madre to create a contiguous range for wildlife to feed and breed. Projects like the NBC play a critical role in the conservation corridor by preserving remnants of land for native plant and wildlife species in this subtropical zone, where western desert meets thorny shrubland and the South Texas prairie.

The Lower Rio Grande Valley is home to 1,200 plant species, 300 butterfly species and 700 vertebrate species, of which 530 are birds. The greatest conservation challenges to this area are land development, the availability of water, erosion management, increases in nonnative pasture for livestock at the expense of native grassland, and habitat fragmentation.

According to the US Geological Survey, "native habitats in the LRGV, particularly in the riparian corridor, remain small and fragmented—even more so with construction and completion of the border fence" (Leslie 2016). Similarly, The Nature Conservancy notes stresses, including habitat disturbance and destruction, as peculiarly detrimental to the landscape and survival of wildlife, as hundreds of acres of native plants are eliminated for CBP's barren "control zone." The movement of terrestrial life, especially, is restricted by unnatural barriers (The Nature Conservancy 2008). Not only does the border wall impose an artificial division on the southwestern borderlands, once united by the Rio Grande River, it now poses a threat to wildlife that will not be able to reach the river or range beyond the wall. The wall also will disrupt the natural seed distribution of native plants provided by wind and wildlife and exacerbate the spread of plants that do not depend on consumption to proliferate. Construction of a border wall also presents a challenge to the thriving ecotourism economic activity of the NBC and the Lower Rio Grande Valley. Declines in ecotourism, an economic activity that generates more than $450 million annually for the Lower Rio Grande Valley occurred where portions of a border wall have already been constructed. [Source needed.]

The NBC has spent the past 15 years working to reverse habitat loss through the deliberate planting of native host and nectar plants for wild, free-flying butterflies, all of which face increasing pressure to survive as a result of climate change, drought, disease and development. Most recently, the NBC became home to the Southernmost Monarch Waystation and is planting 10,000 native milkweeds and spring and fall nectar plants to sustain imperiled Monarch butterflies during seasonal migrations and provide ecologically appropriate host plants to support a rebound in species numbers.

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A Monarch butterfly feeding on a nectar plant. Source: National Butterfly Center.

Just as the topography of border mountain ranges presents challenges to the installation of border security infrastructure (i.e., fences and access roads) in a way that minimizes negative environmental impacts, the Lower Rio Grande River Valley also presents significant challenges. The Rio Grande River meanders through the valley, and the adjacent river bottom is generally not suitable for fence construction as a result of periodic flooding. As a result, USBP has placed the fence and support roads on higher ground on the river's levee, which often is some distance from the international boundary located in the center of the river. In the case of the NBC, USBP has proposed locating the fence along the levee, which is approximately 700 yards from the banks of the Rio Grande. In additional to installation of an impenetrable barrier, this security project would remove vegetation from a 150-foot wide control zone. These actions would fragment the habitat in an important link of the Lower Rio Grande River Valley Wildlife Corridor and would impair the functioning of the NBC. More than half of the NBC's land would be located south of the fence. Figure 9 shows the location of the NBC and proposed border fence.

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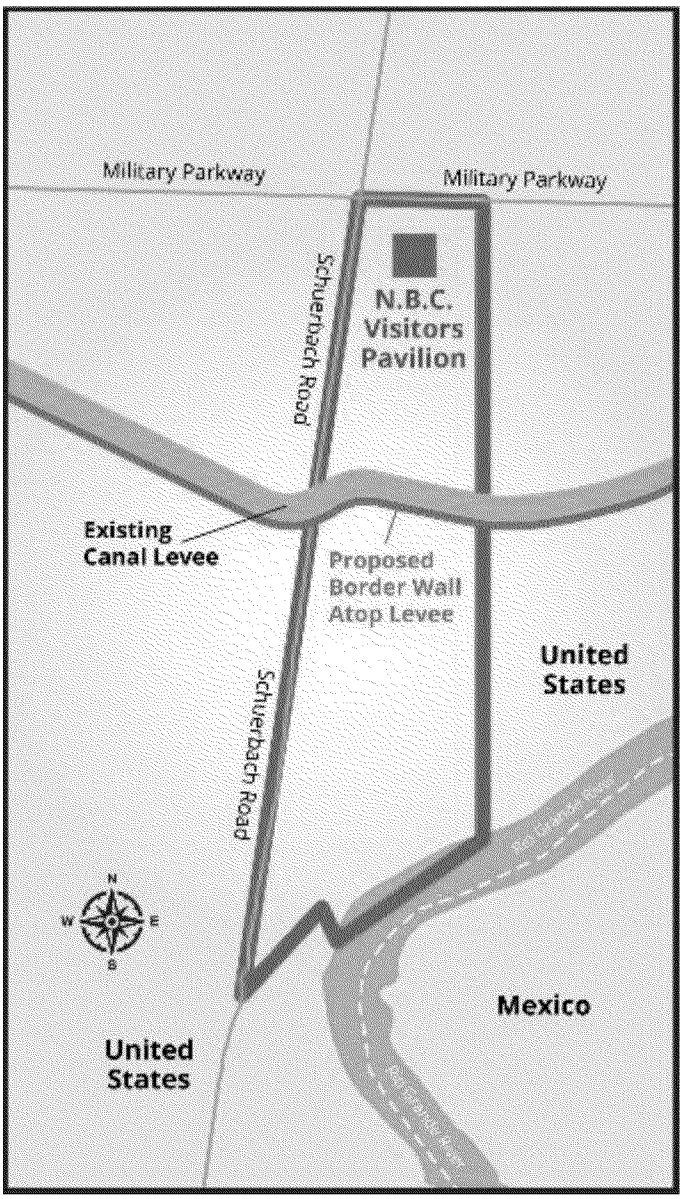

Figure 9. Map of the National Butterfly Center and proposed border fence.
Source: Modified from the National Butterfly Center.

2.5 In Closing

The Board urges all appropriate federal government departments and agencies to coordinate closely with state, local, municipal and tribal governments and local property owners who would be affected by additional fencing in Starr and Hidalgo Counties in Texas. Concerns regarding flooding that could result from additional infrastructure along that section of the border have been raised continually during the past decade. Unless it is carefully planned and designed, additional infrastructure in that section of the border, particularly within the Santa Ana National Wildlife Refuge, could have extremely damaging and likely irreversible ecological and economic effects.

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Challenges and Opportunities, Part II

Emergency response and preparedness

A critical element related to border security as well as to sustainability and resilience of border communities is emergency response. There is a strong foundation of hazmat and emergency response preparation and planning along and across the border, capacity that can support security efforts in the region. This section describes how the U.S. and Mexico governments manage transboundary emergency response, including agreements, non-binding documents and standard operating procedures at the federal, state and local levels. This section relies on three documents: a 1980 agreement between the U.S. and Mexico updated in 2008 (U.S. Department of State 2008), a U.S. Department of State 2013 report on transboundary emergency procedures (U.S. Department of State 2013), and a 2004 report (Batchelor 2004). The sister city plans (USEPA 2017), central to the contingency plans along the border, also are discussed.

The 1980 agreement (updated in 2008) on emergency management in case of natural disasters or accidents provides a framework for U.S.-Mexico cooperation among nine U.S. and 14 Mexican agencies in a natural disaster, accident or other emergency, including security-related incidents (U.S. Department of State 2008). Table 1 lists mandated topics of U.S.-Mexico cooperation (U.S. Department of State 2008). This agreement authorizes participation of nongovernmental organizations or businesses and coordination with state, local and other authorities. The agreement asks each country to use best efforts to facilitate prompt entry into and exit from its territory of personnel and recognizes that cooperation is limited to actions authorized by domestic laws and the availability of funds.

Table 1. The U.S.-Mexico Emergency Cooperation Agreement

Exchange of information, experts and technicians as mutually agreed.
Exchange of information on techniques for evacuation of persons under emergency conditions.
Exchange of information on techniques to ensure an adequate supply of resources necessary to meet emergency situations.
Assessment of emergency communications planning.
Analysis of the probable effects and potential risks of particular kinds of disaster in geographic areas having a high potential for risk.
Promotion of symposia, conferences, workshops and training programs in emergency management and response.
Cooperation with other international, governmental or public and private nongovernmental entities involved in emergency management.
Other activities, as mutually recommended by the U.S. Departments of State and Homeland Security and Mexican ministries of Foreign Affairs and Governance.

Source: U.S. Department of State 2008.

If an environmental incident should occur along the U.S.-Mexico border, local governments will respond initially and provide emergency response capability prior to either federal or state agency responses. Local governments usually concentrate emergency response and planning into a few agencies that address fire, police, emergency medical services or emergency response. Local governments also deal with private companies that haul hazmat. In the event of an incident, these companies may have first responder capability and, if so, local governments can integrate public sector responses with private sector capabilities.

For many border communities, the fire department is the principal agency for emergency response because those units typically prevent and control fires and respond to hazmat incidents. In many communities, fire

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departments also deliver basic emergency medical services (EMS) and general emergency response. In some communities, EMS and emergency management departments may be separate. If an office of emergency management (OEM) exists, it may address contingency planning and integrating departmental standard operating procedures. The OEM fulfills state and federal government legal requirements for each city to have a single point of contact for emergency management to create coordination among different jurisdictions.[3] For example, an OEM in one city may negotiate with neighboring cities and counties, or even across the U.S.-Mexico border, to institute mutual aid agreements. The capabilities and organizational structure of fire departments vary from city to city.

Local emergency personnel respond to incidents regardless of the nature or cause of the problem. As emergency causes vary, emergency planning efforts focus on dealing with the common effects (State of Texas 2003). For example, fires and floods both can force people from their homes, so emergency plans focus on evacuation. Emergency plans identify key functions and assign responsibility for carrying out the tasks necessary to complete them. Typically, the organization or unit tasked with a function develops a standard operating procedure to ensure critical tasks are completed, an "all-hazards" approach so emergency response personnel can respond to any situation. Nine common functions necessary for local emergency response operations as identified by the Federal Emergency Management Agency (FEMA) are listed in Table 2 (FEMA 1996).

Table 2. Core Functions for Emergency Response Plans

Direction and Control
Communications
Warning
Emergency Public Information
Evacuation
Mass Care
Health and Medical Services
Resource Management
Incident Response and Mitigation

Source: FEMA 1996.

On the U.S.-Mexico border, many U.S. cities have signed mutual aid agreements with their Mexican counterparts, sometimes called sister city plans. Currently, 15 sister city plans are in place, listed in Table 3. These agreements include specific guidance for responding to emergency situations, including accidental leaks or hazmat spills, and are being updated to account for emergency situations caused by natural disasters. Although there have been instances of cross-border notification and response to emergency situations at the municipal level, the Joint Contingency Plan has not been activated since it was signed and implemented in 1999 (Oliveira 2017). Informal binational cooperation often occurs, as documented in, *Natural Disasters and the Environment Along the U.S.-Mexico Border: Eleventh Report of the Good Neighbor Environmental Board to the President and Congress of the United States* (GNEB 2008). These cases include the April 2004 flooding of the Río Escondido in Piedras Negras, in which case the mayor of the Mexican border town requested assistance directly from CBP, and also severe thunderstorms in April 2007, during which the Mexican state of Coahuila and the city of Piedras Negras assisted with clean-up efforts in Eagle Pass and Maverick County, Texas. These cross-border linkages for emergency response form a basic component of border security.

[3] Texas Government Code: *Texas Disaster Act of 1975. Title 4, Subtitle B, Chapter 418, Subchapter A § 418.101.*

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Table 3. Current Cross-Border Contingency Plans for U.S.-Mexico Sister Cities

EPA Region	Sister Cities	Adoption Date
6	Columbus, NM–Puerto Palomas, Chih.	2002
6	El Paso, TX–Ciudad Juárez, Chih.–Sunland Park, NM–Ysleta del Sur Pueblo	2007, updated 2009
6	Del Rio, TX–Ojinaga, Chih.	2004, updated 2013
6	Del Rio, TX–Ciudad Acuña, Coah.	2001, updated 2013
6	Eagle Pass, TX–Piedras Negras, Chih.	1998, updated 2013
6	Laredo, TX–Nuevo Laredo, Tamps.	1998, updated 2016
6	McAllen, TX–Reynosa, Tamps.	2000, updated 2009
6	Pharr, Mission, Hidalgo, Edinburg, Weslaco, Donna, TX; and Río Bravo, Tamps., added to McAllen–Reynosa agreement	2009
6	Brownsville, TX–Matamoros, Tamps.	2002, updated 2016
6	Harlingen, TX and Valle Hermoso, Tamps., added to Brownsville–Matamoros agreement	2016
9	San Diego, CA–Tijuana, BC	2013 updated
9	Calexico (Imperial County), CA–Mexicali, BC	2005, update pending
9	Yuma and San Luis, AZ–San Luis Río Colorado, Son.	2000, update pending
9	Nogales, AZ–Nogales, Son.	2005, update pending
9	Naco (Cochise County), AZ–Naco, Son.	2002, update pending
9	Douglas, AZ–Agua Prieta, Son.	2011, update pending
9	Tohono O'Odham Nation, AZ–Sonoyta, Son.	pending

Source: USEPA 2017.

State governments are intermediaries in contingency planning and emergency response. The federal government sets priorities and develops national plans. Local governments respond to incidents. State governments enact federal priorities and support local governments in their response efforts. When an emergency exceeds the response capability of local governments, state agencies may become involved in directing and coordinating state response. Disaster preparedness and mitigation activities can be ongoing at any time. Response and recovery activities generally require the declaration of a state of disaster. A governor may declare a state of disaster for a particular area if a disaster has occurred or is imminent. Once a state of disaster has been declared, the appropriate designated agency institute the appropriate sections of the state emergency management plan and other necessary actions to deal with the situation.[4]

For example, in Texas, the Texas State Emergency Management Plan assigns responsibilities to nine executive branch state agencies, two services operated by the Texas A&M University System, and one nongovernmental organization (Table 4) (State of Texas 2003). The Texas Governor's Division of Emergency Management is the primary Texas agency for contingency planning, response, and mitigation. Once a state of disaster has been declared, a Division of Emergency Management may institute the appropriate sections of the state emergency management plan and other necessary actions to deal with the situation. Under Texas law, the governor and his or her duly appointed advisors have considerable powers in implementing any response strategy. These options range from the use of public and private resources to the suspension of procedural rules and laws to the forced movement of people. The disaster proclamation must specifically state the nature of the threat and the emergency, and a state of disaster cannot last longer than 30 days unless extended or until the conditions no longer exist (State of Texas 2003).

Table 4. Emergency Support Functions and Primary State Agencies in Texas

Emergency Support Function	Primary Agency

[4] Texas Government Code: *Texas Disaster Act of 1975. Title 4, Subtitle B, Chapter 418, Subchapter A § 418.101.*

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1 – Transportation	Texas Department of Criminal Justice
2 – Communications	Texas Department of Information Resources
3 – Public Works and Engineering	Texas Department of Transportation
4 – Fire Fighting	Texas Forest Service, Texas A&M University System
5 – Information and Planning	Texas Division of Emergency Management
6 – Mass Care	The Salvation Army
7 – Resource Support	Texas Building and Procurement Commission
8 – Health and Medical Services	Texas Department of Health
9 – Urban Search and Rescue	Texas Engineering Extension Service, Texas A&M University System
10 – Hazardous Materials	Texas Commission on Environmental Quality
11 – Food	Texas Department of Human Services
12 – Energy	Public Utility Commission of Texas

Source: State of Texas 2003.

3.2 Federal government involvement

The United States federal emergency management efforts focus on preparedness, mitigation and recovery more than response. Federal response efforts are limited to only the largest incidents, and the federal government does not get involved in response activities unless absolutely necessary. Federal response plans provide the framework for requesting, coordinating and delivering federal assistance in any federal disaster or emergency.

In the spirit of preparedness, different federal entities such as EPA (Regions 6 and 9) and the U.S. Department of Defense have participated in training exercises (table-top exercises and formal training such as Incident Command System) and information exchange activities and also have donated equipment to sister city efforts. A successful partnership between EPA and the U.S. Northern Command in the form of a Memorandum of Agreement enhanced border preparedness and readiness. The partnership resulted in a number of benefits:

- Provision of response equipment and training for 10 Mexican border sister cities during the past 4 years.
- More than 650 Mexican first responders trained.
- Training, equipment and technical/training materials facilitated by $1,919,316 in funding.

The La Paz Agreement established the Mexico-U.S. Joint Contingency Plan to provide 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 the United States and Mexico. This was finalized under Border 2012 (USEPA 1999). The La Paz Agreement also established the Joint Response Team (JRT), which has coordinating authorities for both Mexico and the United States. The JRT comprises representatives from U.S. and Mexico federal, state and local agencies responsible for emergency prevention, preparedness and response in the border region. The work of the JRT is supported by a robust system for the binational notification (Figure 10) of emergency response incidents, drills and threats and local Emergency Response Plans developed jointly by sister cities along the border. It also is supported by extensive training to provide capacity building to enhance response readiness, cross-border coordination and training continuance for hazmat and emergency response capabilities of both countries.

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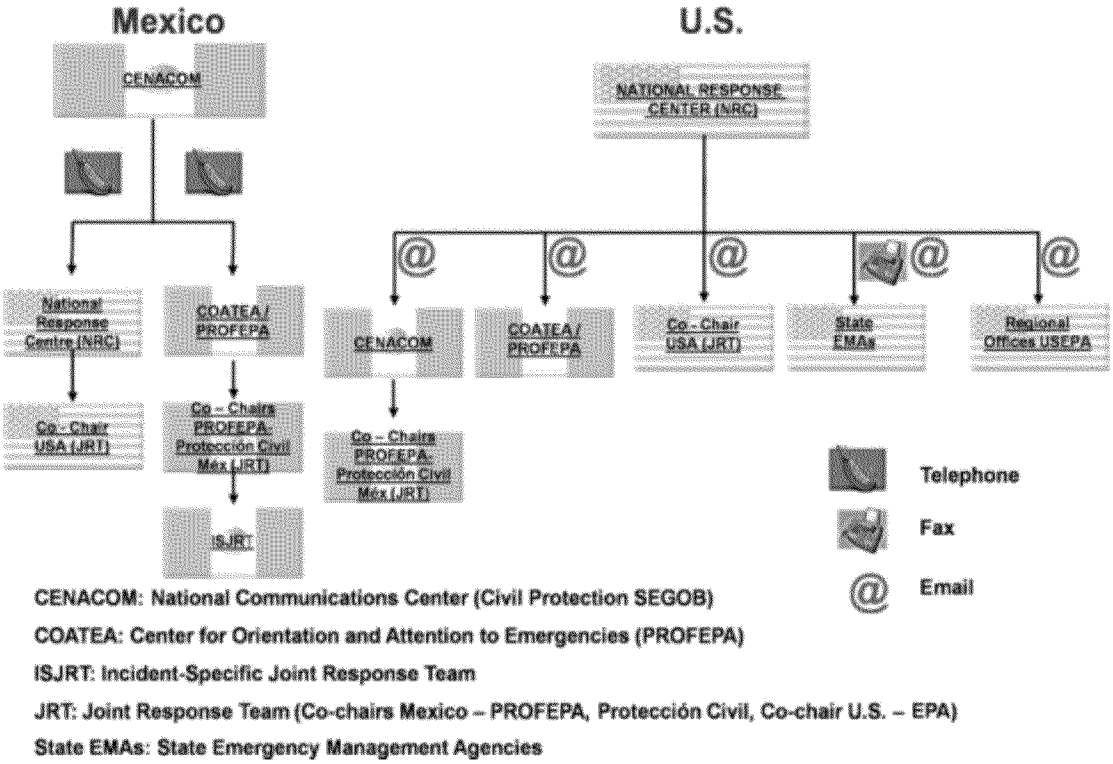

Figure 10. U.S.-Mexico binational notification system.
Source: EPA and SEMARNAT, *State of the Border Region Indicators Interim Report 2016.* www.epa.gov/sites/production/files/2017-01/documents/state_of_the_border_region_2016_122216.pdf

3.3 Water management, flooding, and trash and sediment control

Maintaining a balance between effective measures to secure the border and minimizing the environmental effects has been challenging. Some of the effects of increased security measures, especially infrastructure installation and additional enforcement activities, include accumulation of sediment and trash, deterioration of water quality, and effects on watersheds and the environment. The case studies of this section focus on the security measures implemented, such as border fences or increased patrols, and the effects that have been experienced by communities, personnel or the environment. In some areas, enforcement was increased, but the border fence was not constructed. It is important to evaluate both areas in terms of security, social, economic, environmental and health effects to make effective decisions in future strategies for securing the border. The studies also were selected to highlight the geographic setting, successes and concerns that have been seen in the 10 years since the 10th Report; they representative of the different landscapes found along the U.S.-Mexico border.

3.3.1 Case study: Tijuana River National Estuarine Research Reserve (TRNERR)

The Tijuana River Watershed is a large, 1,700-square-mile system straddling the international border with one-quarter located in the United States and three-quarters in Mexico (Wright and Vela 2005). The Tijuana River Watershed includes three POEs, much of urban Tijuana and dense populations in south San Diego County, topography from sea level to more than 6,000 feet, diverse microclimates and ecosystems, and numbers of threatened and endangered species. The Tijuana River crosses the international border 4 miles from the coast and drains through an 8-square-mile valley mainly in the United States and along the border. A significant portion of the river valley in the United States is designated as the TRNERR, recognizing the important ecological, historical and cultural resources of this region. The Reserve is protected and managed

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through a federal-state cooperative effort with the National Oceanic and Atmospheric Administration and California State Parks for long-term research, education, training and interpretation. TRNERR and adjacent areas are important locations for recreation and nature tourism, especially bird watching because the estuary is at once a nesting site and stopover on migration for many avian species.

TRNERR includes beach, dune, mudflat, salt marsh, riparian, coastal sage scrub and upland habitats surrounded by the growing cities of Tijuana, Mexico, and San Diego and Imperial Beach, California. Border security and enforcement efforts have had a huge impact in the area in the past decades as security imperatives and practices have evolved. Critical issues faced by the reserve include habitat conservation and restoration, endangered species management, management of the wastewater from Mexico, sediment and solid waste management, and the integration of recreation activities.

Other agencies involved in land management in the river valley include the U.S. Navy, CBP, and FWS. The U.S. Section of IBWC also operates a wastewater treatment facility, treating on average 25 million gallons of sewage per day that originates in Mexico. The International Wastewater Treatment Plant, serving 800,000 people, was funded by EPA at a cost of $239.4 million (Liden 2017). Additionally, EPA has invested $1.5 million in addressing trash and sediment via the Border 2012/Border 2020 programs and related efforts such as the West Coast Estuaries Initiative, furthering the effort to reduce the strain on the Tijuana River ecosystem.

Recognizing the many pressures that a binational and highly urbanized watershed encounters, partners, including TRNERR, the State Coastal Conservancy, and the San Diego Regional Water Quality Control Board among many others in the region, formed the Tijuana River Valley Recovery Team to develop a recovery strategy for the valley (Tijuana River Valley Recovery Team 2012). The recovery strategy and subsequent actions contributed to the development by the IBWC of Minute 320 of the 1944 Water Treaty, which is for binational coordination of the Tijuana River Watershed, and initially focused on pollution and sediment issues in the Tijuana River Valley.

TRNERR approaches water quality issues, and trash and sediment control through a three-pronged approach: (1) address the issue at the source through cross-border partnerships, (2) stop pollutants before they enter sensitive habitat, and (3) restore healthy ecosystems that have increased capacity to process higher levels of pollution. At TRNERR, the majority of funding has been directed toward the second prong—stopping pollutants before they enter sensitive estuarine habitat. Between 2003 and 2005, two sediment basins were constructed within the upper floodplain of Goat Canyon to annually retain more than 40,000 cubic yards of sediment and trash. As a result, sedimentation and trash pollution in downstream riparian forest and marsh habitats has been reduced. Because of the location of the basins downstream from the urbanized and degraded watershed in Mexico, however, regular sediment and trash removal and maintenance is required.

Since construction in 2005, the Goat Canyon Sediment Basins have captured nearly one-half million cubic yards of trash and sediment, allowing for effective cleanup, increased health of the estuary, and a safer environment for those that visit, live and work in this border region. This includes reducing the exposure of CBP agents to the polluted sediment and trash that is carried into the Tijuana River Valley. Habitat restoration efforts have been initiated downstream of the Goat Canyon Sediment Basins to begin the process of restoring the land damaged by the previous uncontrolled impacts and further improve the health and safety of this area.

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The Goat Canyon Sediment Basin in the Tijuana River National Estuarine Research Reserve filled with trash and sediment. Source: Christopher M. Peregrin, Tijuana River National Estuarine Research Reserve.

Clearing and processing of sediment out of the basin being prepared for transport off site. Source: Christopher M. Peregrin, Tijuana River National Estuarine Research Reserve.

The Tijuana-San Diego interface has been the focus of increasing installation of border security infrastructure and more intense enforcement activities since the 1990s. This activity, especially the renewed security efforts after 9/11, have had a number of environmental effects, most notably increased sedimentation from fence and road construction and increased patrol activities in vehicles. The construction of the access roads and enhanced fence were pushed through very rapidly without accompanying stormwater infrastructure and revegetation of disturbed areas. Eventually these mitigation steps were taken by USBP, lessening the sedimentation problem. Threatened species and important habitats also were affected. These security activities compounded the effects originating in upstream urban Tijuana areas consisting of renegade sewage flows and quantities of solid waste and sediments transported across the border by intense winter storms.

3.3.2 Case study: Laredo, Texas–Nuevo Laredo, Tamaulipas

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3.3.2.1 Geographic setting

The City of Laredo is located in Webb County, Texas, and had a mid-2016 population of 257,156 (U.S. Census Bureau 2017b). It is expected to continue to grow to 610,669 by 2070 (Texas Water Development Board 2015). Growth along the border is attributed to cultural, social and economic relationships with Mexico (Texas Water Development Board 2015). In early 2016, Nuevo Laredo, Tamaulipas, had a population of 399,431 (Instituto Nacional de Estadística y Geografía 2017). Both communities rely on commerce between the two countries to support economic development. Equally important is that both communities rely on the Rio Grande as their primary water supply. The river also serves as the international boundary between the two countries.

3.3.2.2 Issue

Access to the Rio Grande for both communities is vital. The intakes that pump water for drinking and irrigation are within the river corridor and floodplain. There is a long history of familial, social and community interactions across the river. The Rio Grande remains a central focus for both communities and is a core part of their image. Maintaining the connectedness across the river is vital for both Laredo and Nuevo Laredo.

3.3.2.3 Water quality

The discharge from wastewater treatment plants, untreated wastewater renegade flows, and debris and trash from storms can affect water quality of the river. Laredo and Nuevo Laredo have experienced high levels of fecal indicator bacterial contamination in the Rio Grande. Since 1998, the communities have expressed concern about water contact recreation and degraded water quality. One of the issues identified was damage to the sewage collection system in Nuevo Laredo that caused stormwater and wastewater cross connections.

3.3.2.4 Sanitation

BECC certified a rehabilitation project for of the sewer collection system to prevent the flow from going to the stormwater drain system and into the Rio Grande. The project was completed in 2015, and a study is under way to evaluate the success of this project.

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A small waterfall emanating from a concrete structure draining into the Rio Grande. Source: International Boundary Water Commission.

3.3.2.5 Habitat

A section of land in the middle of Laredo (known as the Riverbend) has been a topic of discussion for more than a decade. It is within the Rio Grande floodplain and has been targeted for restoration by the city for a number of reasons. The area had been significantly degraded by encroachment of invasive species, unauthorized border crossings, informal sand and gravel mining, flood damage, security patrols, and other activities (U.S. Army Corps of Engineers 2013). Historically, this 77-acre parcel of riparian habitat had supported wildlife such as migratory birds, endangered species (jaguarundi and ocelot), and other animals. The Laredo Riverbend Restoration Project was initiated in 2015 and includes the restoration of riparian, wetland and aquatic habitat, improvement of water quality, reduction of erosion, and an increase habitat quality as part of a migration, foraging and breeding corridor for common native wildlife and federally and state listed species (U.S. Army Corps of Engineers 2013). The project also will make the area appropriate for recreation again.

3.3.2.6 Strategies

Nonstructural measures have been taken. Laredo is one of the few urban areas along the border where border fence has not been constructed. The Rio Grande serves as the primary barrier to unauthorized border crossings. The City of Laredo and CBP work collaboratively and have developed a balance that has been fostered since 2006. This partnership serves as an example of bridging security measures with community and environmental values (Rio Grande International Study Center 2017). Part of restoration activities and invasive species control is to enhance security measures and improve habitat quality along the river corridor. CBP utilizes a border road and boats to conduct patrols. The City of Laredo and CBP understand that cooperation and dialog help resolve differences and lead to better outcomes.

Nonprofit organizations such as the Rio Grande International Study Center also help to promote activities to engage citizens from Laredo and Nuevo Laredo to foster awareness through civic duty and education. The Rio Grande International Study Center sponsors cleanups, science fairs and festivals throughout the year. In 2016, the center had a successful year of events, including Día del Rio (water quality monitoring by high school students throughout the watershed), the Laredo Birding Festival, and “Loving Laredo” hikes.

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Monitoring the Rio Grande. Source: Rio Grande International Study Center.

The Rio Grande remains a focal point for Laredo and Nuevo Laredo, and the sister cities continue to work together to address items that will improve water quality, reduce trash and create a healthier ecosystem. The communities firmly believe that a sustainable future is one that includes a connection to the river as a resource and forms part of the community to be enjoyed and protected.

Border Patrol Explorers volunteering at Manadas Creek in Laredo. Source: Rio Grande International Study Center.

The Laredo case indicates how effective approaches to border protection through adaptability and collaboration with communities can achieve security goals while supporting ecotourism and social values and maximizing the infrastructure budget. Riparian vegetation restoration was able to support security efforts and improve the quality of the local environment. The Laredo case suggests that effective solutions to border security and environmental protection challenges are somewhat different in different areas along the international border with Mexico.

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3.3.3 Case study: Ambos Nogales

The sister cities of Nogales, Arizona, and Nogales, Sonora, commonly referred to as Ambos Nogales, are linked by the Nogales Wash and the Santa Cruz River. The Santa Cruz River originates in the Canelo Hills area of southeastern Arizona and flows south into Mexico prior to turning northward and re-entering the United States in Ambos Nogales. Ambos Nogales is in a narrow valley surrounded by mountain ranges. The population of Nogales, Arizona, has been stable for several years at around 20,000 inhabitants (Arizona Commerce Authority 2017). The 2015 population of Nogales, Sonora, was 233,952 (Instituto Nacional de Estadística y Geografía 2017), and new *colonias* continue to appear on the urban margins as the area increases in population.

Wastewater for both communities is treated at the Nogales International Wastewater Treatment Plant (NIWTP), located approximately 9 miles north of the international boundary. Nogales, Arizona, contributes an average of 2 million gallons per day of wastewater for treatment, whereas an average of 11 million gallons per day is contributed by Nogales, Sonora. Wastewater is conveyed to the NIWTP through the International Outfall Interceptor. Some metals in wastewater discharged from Mexico have either exceeded the NIWTP's operational limits or U.S. regulatory standards. Additionally, because there are no stormwater management regulations and inadequate infrastructure in Mexico, stormwater inflow and infiltration contributes to binational sanitary sewer overflows during heavy rainfall.

North of the NIWTP, the treated effluent discharged into the Santa Cruz River maintains critical riparian habitat downstream in the United States for many miles and recharges aquifers that supply potable water to surrounding communities (GNEB 2016). The treated wastewater from the NIWTP supports a cottonwood–willow riparian environment that is designated as a critical habitat for the endangered Southwestern Willow flycatcher and is also recognized as an Important Bird Area (IBA) by the Audubon Society (GNEB 2014). In 2015, the Friends of the Santa Cruz River also detected the return of the endangered Gila topminnow downstream of the NIWTP. Its return is attributed to improved effluent water quality discharges into the river resulting from infrastructure improvements at the NIWTP in 2009. Wastewater flows from the NIWTP also help Arizona comply with the Groundwater Management Act for safe yield by keeping the Santa Cruz River aquifer in balance. Under IBWC Minute 276, however, Mexico has no obligation to deliver wastewater to Arizona for treatment and eventual discharge into the Santa Cruz River.

Storm events often contribute to the transfer and accumulation of waste along Nogales Wash and Santa Cruz River in addition to flooding and overflow of the binational sewage treatment system. The migration of wastes into the United States via the Nogales Wash and the Santa Cruz River represents a significant threat to human health, infrastructure and the environment. These storm-related effects also pose health and safety concerns for border security personnel in addition to the entire community.

A severe storm in July of 2008 produced significant runoff, causing manholes to overflow as large amounts of trash and sediments were swept into the commercial downtown area. Runoff in this section of the city had been impeded by the design of the wall separating the cities, which trapped trash and formed a dam. The flooding damage caused the pedestrian Morley Avenue POE to be closed for 16 days as damage to businesses and streets were cleaned up. Damage to businesses and infrastructure in Nogales, Sonora, was estimated at $8 million, and Nogales, Arizona, also experienced significant economic loss. The border wall in this section had been reinforced earlier in 2008 to stem the flow of drugs and persons entering the United

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States illegally. Subsequently, the design of the wall was altered to reduce flood risk from this security infrastructure (Coppola 2008).

Flooding in Ambos Nogales. Left side of the fence is Nogales, Arizona; Nogales, Sonora is on the right. Source: City of Nogales, Arizona.

Another intense storm in July 2014 destroyed and lifted sewer mains and caused mudslides in Nogales, Sonora. The DeConcini POE was closed for approximately 10 hours that day so that port staff could clear out the one-half inch of sewage and mud in processing areas, sweep out a storm grate, pick up trash, and move sand bags (Coppola 2014).

The periodic storms and flooding produce major damage in Ambos Nogales. The torrential rains and runoff are complicated by a variety of diverse factors, such as security infrastructure, solid waste originating in Mexico, and stormwater infrastructure inadequacies. The investigation, mitigation and cleanup of the wastes originating in Mexico and being transported to the United States is a complex issue requiring action on both sides of the border. In 2015, EPA commissioned a waste characterization study for this watershed. Trash cleanups in the binational watershed that same year removed 4 tons of trash in Nogales, Sonora, and 29 tons of trash in Nogales, Sonora.

In June 2015, the cleanup of trash along banks of tributaries in Nogales, Sonora, that flow into the Nogales Wash removed more than 4 tons that would have otherwise flowed into the Santa Cruz River in Arizona along with stormwater. The cleanup in Nogales, Arizona, was prioritized for an area in Nogales Wash that had collected copious amounts of debris around a sewer pipe that connected to the International Outfall Interceptor. That cleanup occurred in December 2015 and removed 29 tons of trash and debris.

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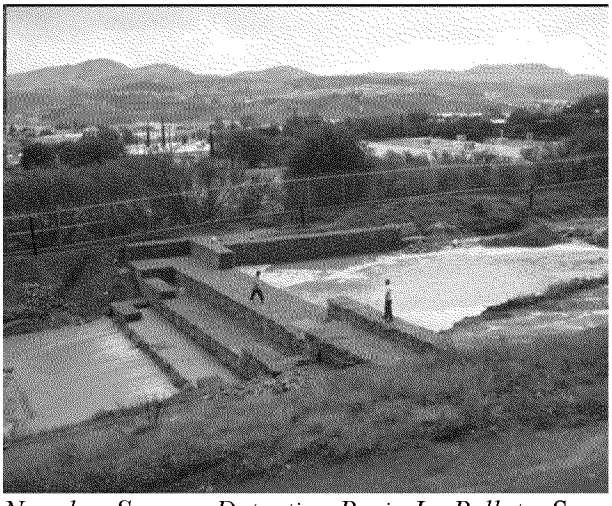
Before and after cleanup photos in Santa Cruz River in Nogales, Arizona. Source: Booz Allen Hamilton, December 2015.

Another strategy to mitigate the effects of stormwater flows in Ambos Nogales involves green infrastructure such as swales, gabions and other detention features. Some of these features have been implemented or supported through projects funded by the Border 2012 and Border 2020 programs.



Nogales, Sonora, Detention Basin La Bellota. Source: Watershed Management Group.

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The Ambos Nogales region illustrates complexities in managing security and environmental challenges in transborder metropolitan regions. Binational watersheds are complex natural systems with complicated governance issues and require collaboration among colleagues from each side of the border. Without effective communication and coordination, dire impacts are witnessed by the local communities while affecting the ability of security personnel to safely perform their jobs. Moving through tunnels and washes that have been overrun with stormwater and sanitary sewer overflows creates public health and safety risks. To mitigate such occurrences, it is imperative that collaboration with local stakeholders and security officials continue for a secure border and economic vitality in the region.

3.3.4 Case study: The New River along the U.S.-Mexico border region

3.3.4.1 Geographic context

The New River has been known as a source of environmental and health problems since the early 1940s. The New River is within the Salton Sea Transboundary Watershed and has its beginnings approximately 20 miles south of the U.S.-Mexico international boundary, near Cerro Prieto in the Mexicali Valley, Mexico. The river travels for another 60 miles in the United States through the Imperial Valley, in California, before it discharges its contents into the Salton Sea, California's largest inland surface water body (Figure 11). In Mexico, the New River collects agricultural drainage from the Mexicali Valley as well as stormwater runoff and industrial and municipal wastewater as it passes through the City of Mexicali on its way through the City of Calexico, California. In California, the river collects municipal treated wastewater, stormwater runoff and agricultural runoff from the Imperial Valley before it discharges its flow into the Salton Sea. The New River is encased in the Mexicali metropolitan area, and it crosses into Calexico near the U.S.-Calexico West POE (Figure 12).

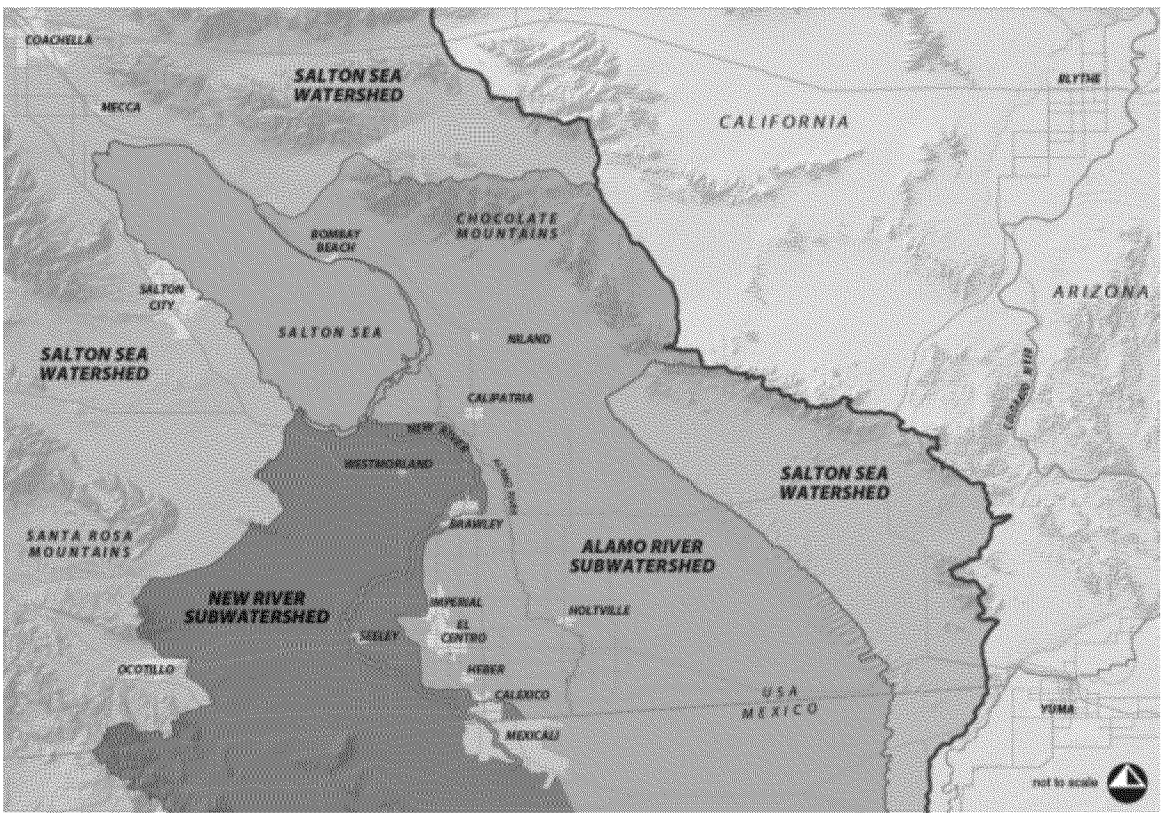

Figure 11. The New River geographical location.
Source: *Strategic Plan: New River Improvement Project* (2011).

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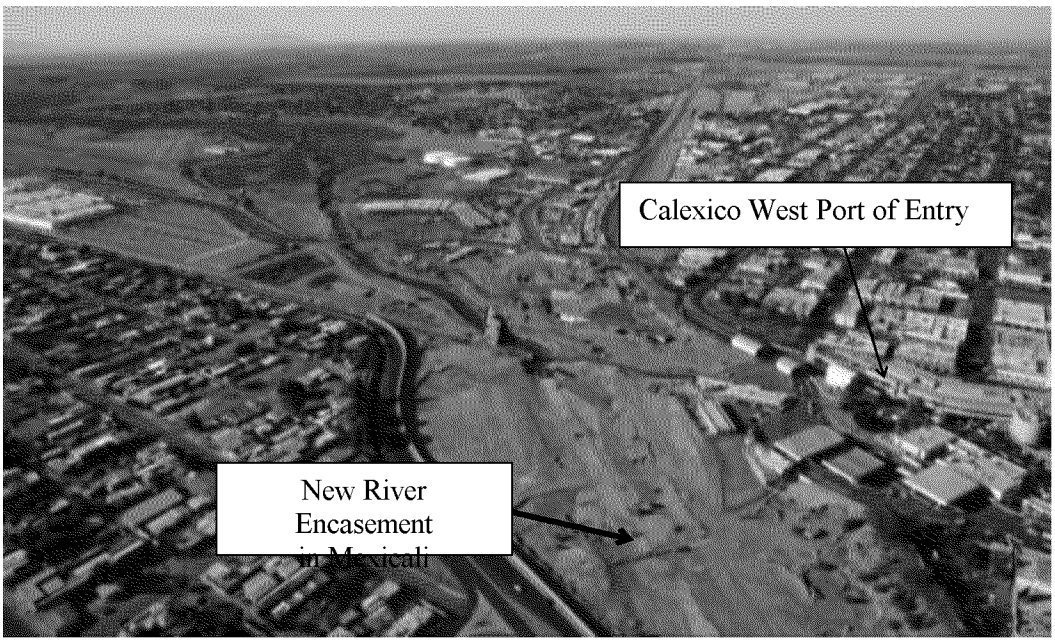

Figure 12. The New River is encased as it crosses from Mexico into the United States.
Source: Francisco Zamora, Sonoran Institute, November 2016.

3.3.4.2 New River security and environmental issues

In 2013, the IBWC estimated the average flow of the New River was between 80–100 million gallons per day at the border. Although several actions implemented in Mexico during the last decade have significantly improved the water quality of the flows, the New River still fails to meet U.S. Clean Water Act water quality standards as it enters the United States, in particular pathogen-indicator bacteria standards established to protect public health. Sewage infrastructure problems in Mexicali produce discharges of raw municipal sewage from 0.7 to close to 15 million of gallons per day into the New River. A recent estimate is that approximately $80 million would be required to correct infrastructure problems in Mexicali (California Regional Water Quality Control Board 2017). This also contributes to the New River being the most polluted river in California. The New River poses a health threat, especially for people who have contact with the river's waters. Although encased in Mexico, it still is used by migrants who attempt to cross into the United States. Exposure to the river's waters has negative health implications for migrants and the U.S. security personnel who apprehend them.

The impairments of the New River include pathogens, dissolved oxygen, nutrients, pesticides, metals, trash and sediment, and others. The tributary drains to the New River in Mexicali continue to be dumping grounds for trash and are one of the main sources of trash that is brought across the border by the river flows. In the United States, the primary sources of pollution are agricultural runoff from the Imperial Valley, which carries nutrients, sediments and pesticides. Stormwater runoff also contributes to the water quality problems but to a lesser degree

The California Regional Water Quality Control Board's Colorado River Basin Region estimates that approximately 120 tons of trash are dumped every year into the New River and its tributaries (New River Improvement Project Technical Advisory Committee 2011). Solid waste transported in the New River is not removed and accumulates downstream. The two screens installed by the Border Patrol are to deter illegal border crossers and not to remove trash. The California-Mexico Border Relations Council's New River strategic plan recommends that the U.S. government either (1) construct/install/operate/maintain trash screens immediately downstream from the International Boundary in the United States or (2) assist Mexico to construct/install/operate/maintain trash screens immediately upstream from the International

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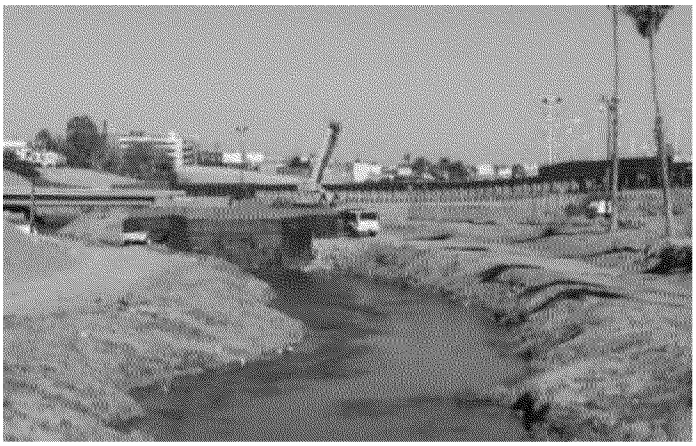
Boundary in Mexico (Technical Advisory Committee for New River Strategic Plan 2016). The strategic plan also recommends encasing the New River from a point immediately downstream from the border to a point downstream from where the river crosses the West Branch of the All-American Canal to isolate the contaminated waters from possible human contact.



Screen placed across the New River by the U.S. Border Patrol. Designed to stop people, the screen also traps solid waste. Source: Paul Ganster, San Diego State University.

Chemical and biological problems and solid waste in the New River present challenges for the surrounding communities and present risk not only for migrants who attempt to use the waterway to cross into the United States but for USBP and local emergency response personnel who have contact with the river's waters. Addressing these problems in a cost-effective way requires not only coordination across the border but careful planning and cooperation by security agencies and other stakeholders. The screens installed by the USBP to deter migrant movement provides an example of the negative environmental effects security infrastructure can have when not considered carefully before important. With proactive involvement of local and state authorities, a solution that provides security and removes trash could have been designed and installed, with benefits to all stakeholders.

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Recommendations

This 18th Report of the Good Neighbor Environmental Board examines the environmental implications of increased border security infrastructure within the context of its 10th Report from 2007 and its advice letter of December 2009, both of which addressed border environment and security. The earlier GNEB report provided general and specific recommendations for meeting the security and environmental needs of the border region. Appendices of this report provide detailed descriptions of the recommendations from the 2007 10th Report and December 2009 advice letter and actions taken by federal agencies to address those concerns.

The 2007 and December 2009 GNEB documents also provide recommendations of a more general nature. Most important are the recommendations in two areas. First, the Board advised that federal policy makers concentrate on stronger communication and collaboration between security agencies and environmental protection and land management agencies on matters relating to border security and border security infrastructure. Second, the Board recommended strategic mixing of technology and infrastructure to reflect different security and environmental needs for the varied geography of the border (GNEB 2007, 2009).

In this report, the Board focuses on five key overlapping challenges where environmental protection intersects with border security: (1) tourism and recreation economy; (2) habitat integrity and wildlife corridors, (3) water management, flooding, and trash and sediment control, (4) hazmat and emergency response, and (5) air quality. Please see Chapters 2 and 3 for a more in-depth discussion of each of the following recommendations.

Coordination of agency planning and implementation with local border communities

- The Board recommends continued careful planning and coordination among federal agencies to mitigate the impacts as border security infrastructure is built out and enforcement activities intensify. Advance planning, coordination and stakeholder participation will improve security infrastructure, facilitate the meeting of both security and environmental goals, and help to avoid costly mistakes (see Chapter 1).

- The Board recognizes the improvements in coordination between DHS and land management and environmental agencies since its last report and advice letter. GNEB urges that those efforts continue and also include active participation of other stakeholders, including state, tribal and local governments as well as the private sector, academics and border communities.

- DHS, DOI and DOA are encouraged to meet annually to coordinate their activities and identify successes and challenges and future issues and concerns. The annual "Border Forum" that has been focused on Arizona should be expanded to include all those involved in land management and border security in the four southwestern border states.

- The Rescue Beacon Program operated by USBP has been very helpful in reducing the number of fatalities in remote areas. Likewise, DOI agencies have much improved their permitting of this activity. The Board encourages these efforts and recommends expansion as deemed necessary by USBP and land management agencies.

- Consultation with tribes should be initiated at the earliest possible time to assure that input on impacts to tribal interests is received and incorporated into project planning. Tribes are in the best position to identify Native American grave sites, historic sites or tribal natural resources or other sites of particular spiritual value that could be affected.

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- The PLLA Program established by the USBP has been extremely valuable in terms of developing relationships and enhancing coordination and communication among federal, state and local entities with responsibilities in the border region. USBP should continue to support and develop this program as a means to enhance border security while also protecting the environment. Programs to educate USBP agents on environmental issues should be continued. Efforts to educate DOI, DOA, and state and local entities on the work of USBP have been very helpful and should be expanded.

- Coordination with the IBWC is encouraged to avoid unintended effects on the flow of the Rio Grande River, Colorado River and Tijuana River and compliance with international treaties with Mexico. Implementation of Minute 320 of the IBWC 1944 Water Treaty to address pollution and sediment issues in the Tijuana River Valley basin also should be pursued.

- The Board recommends that access to federal lands should continue to be managed under the terms of the 2006 MOU signed by DOA, DOI and DHS. The work at Organ Pipe Cactus National Monument has proven that the overriding need for access for border security can be provided while also restoring and conserving unique and valuable habitats.

- Proactive planning and cooperation with border stakeholders can enable DHS to address security concerns and meet the environmental needs of the border region. A number of efforts initiated during the past decade should be continued.

Reduce environmental footprint of infrastructure

- The environmental footprint of border security infrastructure remains a concern of the Board. When possible, avoidance of large infrastructure projects in riparian areas and mountainous terrain is recommended. At the same time, GNEB urges DHS to expand the successful restoration efforts on unused access roads and informal trails and roads established by illegal activities.

- Use of surveillance technology such as integrated fixed towers, remote video surveillance towers, ground sensors, and other methods have proven to be very helpful in detecting illegal activity and directing the appropriate law enforcement response. Wherever feasible, the Board encourages the use of the appropriate technologies to enhance border security and reduce the footprint of border security measures.

Protect wildlife migration and habitat corridors

- The Board recommends that DHS engage all stakeholders to develop and design innovative approaches to ensure that critical species can move back and forth across the border while still meeting security needs.

- The Board recommends the monitoring of environmental impacts, including impacts on hydrology and wildlife movements, to assist in design of future border security infrastructure and the development of possible mitigation measures for impacts that may be detected through monitoring.

- In the design of border security infrastructure, DHS should seek to minimize or avoid measures that would impede the flow of wildlife across the landscape. Recognizing that some structures by their very nature may have impacts, measures such as the ocelot openings in south Texas could be used.

- Design of vehicle barriers that preclude passage of motorized vehicles should be developed so that movement of large mammals (e.g., deer, sheep, pronghorn antelope) still would be possible.

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- Joint projects with tribes and federal and state agencies to remove invasive plants from riparian areas should be expanded.

Minimize use of waivers of environmental reviews and mitigate unintended impacts

- Should the DHS Secretary waive environmental review, several measures can be undertaken to avoid or minimize impacts on the environment, archeological and historic resources. DHS should coordinate, to the extent practicable, with DOI and USDA land management agencies, as well as appropriate state and local land managers, to avoid unintended effects of border security infrastructure.[5]

- Although traditional documents required by NEPA and the Endangered Species Act would not be required under the waiver, Environmental Stewardship Plans prepared under previous waivers are helpful in reducing negative effects through planning and in documenting work done. DHS is encouraged to prepare similar documents if a waiver is invoked for future work.

- The Board recommends that DHS use NEPA or equivalent procedures for scientific and public input as well as continued research to avoid impending disasters.

Enhance efforts to reduce flooding and trash and sedimentation flows

- The Board recommends routine coordination with IBWC and other agencies to avoid flooding and excess sedimentation caused by security infrastructure. Not only will this help to reduce disastrous events, but it can significantly help to address environmental problems. For example, screens across waterways to impede unauthorized migrants can be designed to avoid flooding during storm events. They also can be designed to facilitate removal of solid waste from rivers and storm drains.

- The Southern Arizona Project led by the BLM should continue. This effort has resulted in substantial reductions in trash and debris resulting from illegal immigrant traffic. BLM also has facilitated collaboration among law enforcement agencies with activities such as Operation Reclaim Our Arizona Monuments, which have had helped reduce drug and human smuggling in the Tucson area.

Continue and expand cross-border fire and emergency response systems

- Communication across the border with first responders should be enhanced. Sharing resources to assist with response to wild fires could be improved through coordination and sharing of personnel and resources.[6]

- The ability of emergency response personnel to cross the border, along with their requisite equipment, to promptly respond to emergency situations remains a challenge that the border region faces. Identifying best practices, such as the Douglas, Arizona, sister city agreement, promoting

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[5] For example, this could be achieved through coordination with land managers on affected DOI and USDA lands as early as possible. Assistance could be provided to DHS on particularly sensitive fish and wildlife habitat and archeological and historic resources as well as possible conflicts with existing public use of parks, refuges and BLM lands. Activities in proximity to Bureau of Reclamation facilities could also be coordinated to avoid impacts on water delivery.

[6] A model could be the Mexico/United States Bilateral Response Plan (MEXUS Plan) to coordinate transboundary responses for marine waters and both Gulf and Pacific Annexes. The MEXUS Plan was updated and signed on July 11, 2017, by the U.S. Coast Guard and Secretaría de Marina (Mexican Navy).

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those practices and enhancing them if applicable may stimulate the genesis of additional effective solutions.

- Points of contact for DOA, DOI and DHS should be identified at the headquarters level to assure that the coordination and resolution of issues and concerns can be efficiently facilitated when needed during emergencies.

Seek further reductions in border-crossing times to improve air quality

- The Board recommends that DHS continue to reduce border-crossing times at POEs for passengers, private vehicles and cargo. Faster processing of vehicles not only reduces inconvenience and costs for travelers but reduces air pollution, with health benefits to people at the POEs and surrounding communities.

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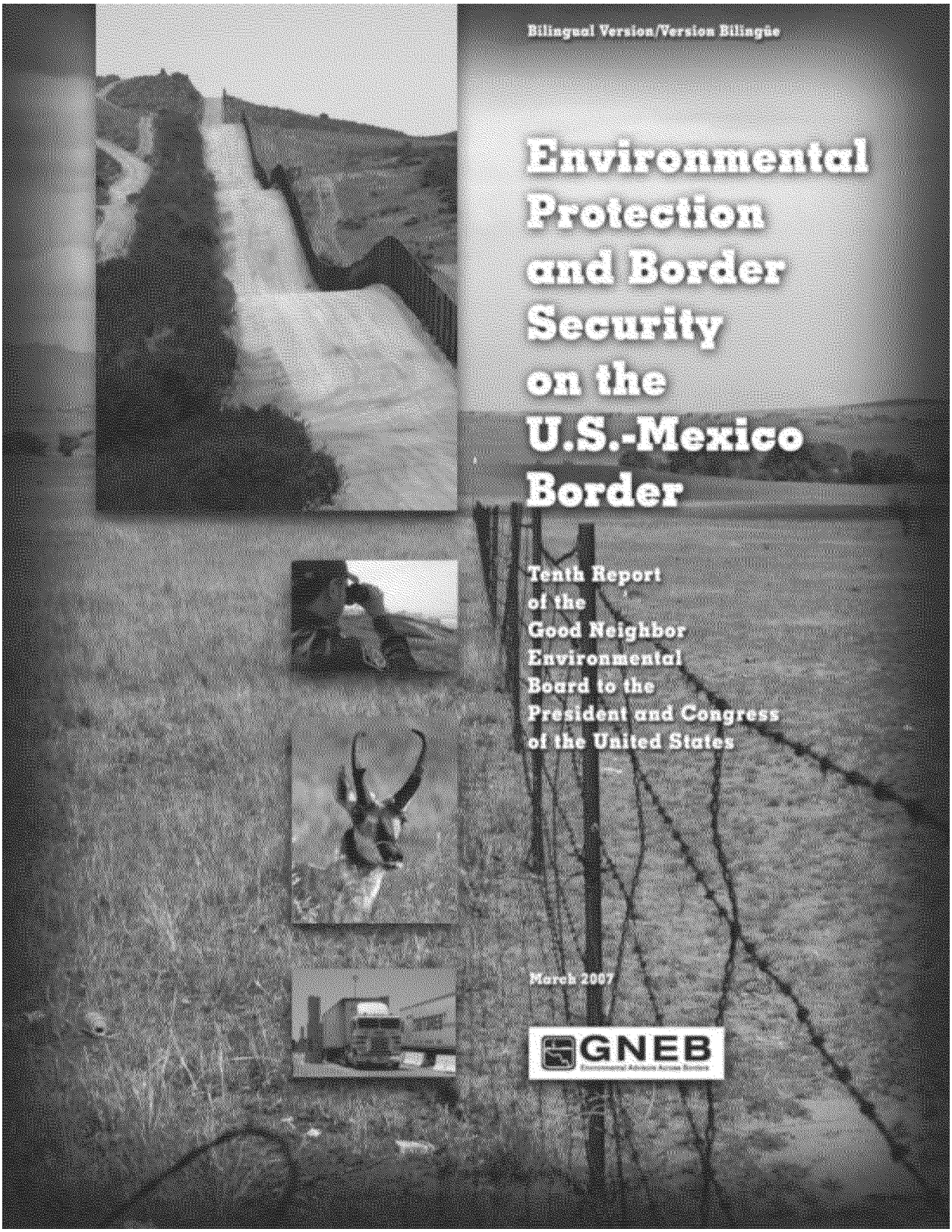
Appendix 1. GNEB 10th Report Status Update



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The information below presents a summary of progress that federal agencies have made in advancing the recommendations of the Good Neighbor Environmental Board's (GNEB) 10th Report. The information presented is not intended to represent a complete compilation of activities; however, it is a representative sampling of notable actions that support the objectives of GNEB.

The information in this table documents considerable progress made by federal agencies in addressing recommendations and issues related to border security and environment that were raised in the GNEB 10th Report in 2010. Most apparent has been the increased cooperation among agencies concerned about border environmental issues and the agencies of the U.S Department of Homeland Security (DHS) charged with border security (e.g., U.S. Customs and Border Protection [CBP]. U.S. Border Patrol [USBP]). Progress on institutional cooperation on hazardous materials (hazmat) at the ports of entry (POEs) also is evident.

Minimal progress since 2010 also is apparent in some areas. Although the U.S. Environmental Protection Agency (EPA) and the International Boundary and Water Commission (IBWC), and to some extent the U.S Department of the Interior (DOI), regularly engage with Mexico on matters related to environment and security, it is not clear this is true for other U.S. federal agencies. Likewise, engagement of the community in a proactive way could be improved considerably. Finally, little systematic progress has been made in developing approaches for security installations that meet the needs of environmental sustainability, particularly as related to habitat fragmentation and the need to migrate to preserve healthy populations of some threatened species.

Human Crossings

2009 GNEB Recommendation or Finding	2017 Agency Update
Recommendation 1: Strengthen communication and collaboration between security agencies and environmental protection agencies, including land management agencies, on both sides of the border. Early and ongoing cooperation and participation in the cross-agency dialogue will contribute to effective solutions that serve the core agency missions of homeland security and environmental protection while also addressing quality of life concerns of border communities.	**DHS/CBP:** Guided by the *2006 Memorandum of Understanding Among U.S. Department of Homeland Security and U.S. Department of the Interior and U. S. Department of Agriculture Regarding Cooperative National Security and Counterterrorism Efforts on Federal Lands Along the United States' Borders* (hereinafter 2006 MOU), CBP has executed a number of programs to strengthen communications with agencies on both sides of the border. These efforts are detailed in the responses below. **DOI**: Regular conference calls between U.S. Department of Interior (DOI) and CBP keep the activities of each department coordinated with ongoing activities. The Public Lands Liaison Agent (PLLA) Program established by USBP also has improved coordination greatly. At the local level, land managers with DOI are in regular contact with PLLAs and local USBP through Borderland Management Task Force (BMTF) meetings and day-to-day contact. The degree of coordination flexes with the amount of activity by USBP. **EPA:** EPA's U.S.-Mexico Border 2020 Program (Border 2020) continues to provide an ongoing venue through the task force and regional workgroup meetings to raise and coordinate with federal, state and local agencies and tribal nations on environmental issues. In the past, issues such as waste impacts on natural resources from undocumented migrant crossing and practices to mitigate these impacts on natural resources and communities were addressed. Border 2020 continues to involve

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	CBP and other agencies in its discussions on environmental issues along the border. Additional information is provided through the EPA Border 2020 website at www.epa.gov/border2020. Further examples of EPA collaboration and communication are as follow: • EPA Region 6 Activities and Highlights: www.epa.gov/sites/production/files/2016-10/documents/september_2016_final_1st.pdf • EPA Region 9 and CBP serve on the Tijuana River Valley Recovery Team and the Tijuana River Advisory Council. Improving water quality in the Tijuana River and New River helps the health and safety of USBP agents. These agents also report spills in Mexico to EPA and IBWC. **U.S. Section of the IBWC (USIBWC):** USIBWC communicates issues to stakeholders on a quarterly basis through its Citizens Forums. The forums are located in areas that provide coverage throughout the border. USIBWC also utilizes technical forums to address transboundary resource issues with Mexico. IBWC reviews and coordinates with the U.S. Fish and Wildlife Service, U.S. Army Corps of Engineers, environmental departments, and other federal agencies to address environmental issues along the border. USIBWC is the liaison on issues between the United States and Mexico. It coordinates with Mexico on a daily basis on a variety of matters that include water accounting, flood operations, water quality, boundary, reservoir operations, permitting projects on federal lands, and sanitation issues. USIBWC works closely with DHS/CBP on a routine basis.
Recommendation 2: Strategically employ a mix of technology and personnel to meet the security and environmental needs of different sections of the border region. Vehicle barriers and sensor technology along the boundary that permit habitat connectivity and migration of important species can serve well in rural areas characterized by fragile habitats.	**DHS/CBP:** Based on systematic threat evaluation and consideration of the ecology of the area, CBP has deployed vehicle fencing, surveillance technology and communications equipment where appropriate along the southwest border. These efforts are coordinated with the appropriate resource agencies, including DOI, to minimize impacts to the human and natural environment.
Challenge 1 (pg. 19): Roads and foot trails created by undocumented migrants, migrant smugglers and drug smugglers and by the interdiction agencies that pursue them	**DOI:** Although no formal assessment of the effects of illegal immigrants on border ecosystems has been conducted in recent years, it is the general opinion of land managers that the negative effects of illegal immigration have been reduced significantly, and hazards to public safety also have been reduced.

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cause damage to wildlife and fragile ecosystems.	
Next Steps (pg. 20): When possible use technology rather than new roads and barriers to achieve security goals. If additional security infrastructure is required, combine permanent vehicle barriers with ground-based radar and other technology, as well as personnel, to effectively halt undocumented crossers as close to the border as possible.	**DHS/CBP:** CBP has made extensive use of surveillance technology along the border. Based on the threat assessment and environment of a given area, different tower types and appropriate technology mixes have been installed. Integrated fixed towers deploy in open areas using radar, visible light and infrared cameras, and other technology to detect and classify potential illegal activity. Remote Video Surveillance System towers are deployed in areas with denser groundcover and also deploy a mix of technologies. Mobile surveillance units are deployed to preselected sites that have been screened to avoid environmental and cultural resources. The information is sent to centralized locations for analysis and used to deploy personnel to interdict illegal activity close to the border and along prescreened access routes. Vehicle barriers have been constructed to prevent access by vehicles in areas where road infrastructure on the Mexican side of the border supports vehicle access and is monitored by the surveillance systems. **DOI:** Currently, 15 integrated fixed towers are located on DOI-managed lands. The surveillance information obtained from these towers has reduced the level of vehicle surveillance required. DOI bureaus and USBP locally are continuing to work on ways to reduce the negative effects of patrol activity. An additional 15 towers have been proposed for the Tohono O'odham Nation; when installed, these should help reduce and focus vehicle patrol work.
Next Steps (pg. 20): DHS should take appropriate steps to identify important or sensitive natural resources along the U.S.-Mexico border and avoid, minimize or mitigate environmental impacts on such resources wherever possible.	**DHS/CBP:** Prior to initiation of construction, CBP conducts environmental and cultural resource surveys to identify important or sensitive natural and cultural resources. CBP then adjusts locations, revises designs or alters construction methods to minimize impacts to the extent consistent with mission requirements. **DOI:** From the DOI perspective, this has improved greatly since 2007. DHS provided $17.8 million toward mitigation for waived infrastructure and has supported a variety of other project specific mitigation. Discussions with CBP during project planning also have helped to avoid unintended effects on the environment. In anticipation of additional border security infrastructure, DOI and its bureaus have been working with USBP to frame the process for coordination and communication. These efforts should help to inform USBP of sensitive sites and the measures that could be used to avoid impacts.
Next Steps (pg. 20): Strengthen communication and outreach to the public to enable greater interaction with appropriate land management agencies and DHS, thus resulting in continued public input on border project development and implementation.	**DHS/CBP:** CBP uses multiple avenues to enhance communications with the public and land management agency personnel. All projects receive appropriate environmental review and the corresponding level of public input. The CBP website at www.cbp.gov includes information on environmental programs within CBP (www.cbp.gov/about/environmental-cultural-stewardship) and includes documents describing projects open for public review and projects that have completed approvals and have entered the construction phase. CBP's Office of Public Affairs facilitates public outreach and communications regarding border security activities. Additionally, the USBP PLLA and Local and Tribal Liaison programs foster coordination and support to enable greater coordination

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	with appropriate land management agencies and the public. **DOI:** The PLLA Agent and BMTF in each sector have improved communication with DOI bureaus.
Next Steps (pg. 20): Establish an office within a relevant federal agency that is dedicated to analyzing and communicating the impacts of border security on the environment.	**DHS/CBP:** As noted above, CBP analyzes and communicates the environmental impacts of construction and deployment of tactical infrastructure along the borders routinely. The Energy and Environmental Management Division in the Office of Facilities and Asset Management is tasked with overseeing the environmental programs throughout CBP to ensure that CBP is in compliance with environmental requirements and properly communicating potential project impacts to the public and and management agencies. **DOI:** Within DOI no such office or function is in place now; this is handled by Public Affairs staff as needed. Public affairs communications will be a part of the planning for anticipated border security infrastructure in the next few years.
Challenge 2 (pg. 21): Trash and other waste left by undocumented migrants and drug smugglers in the process crossing despoils the landscape and puts people and wildlife at risk for disease.	**U.S. Department of Commerce (DOC)/National Oceanic and Atmospheric Administration (NOAA):** The Tijuana River National Estuarine Research Reserve has been working with U.S. and cross-border interests and communities to educate citizens about the negative effects of trash entering the ecosystem. This work is not specifically focused on the effects of undocumented migrants, rather on influencing the general behaviors of border community citizens in both countries for helping achieve environmental and human health protections. **EPA:** Border 2020 continues to provide an ongoing venue through the task forces and regional workgroup meetings to raise and coordinate with federal, state and local agencies and tribal nations on environmental issues. In the past, waste impacts on tribal lands and natural resources from undocumented migrant crossings and practices to mitigate these impacts on natural resources and communities were addressed.
Next Steps (pg. 22): Provide federal government support to tribes, private landowners, rural communities, state parks and protected areas, and federal land management agencies to address sanitation and solid waste issues associated with undocumented crossings.	**DHS/CBP:** Physical barriers have, in some cases, assisted in reducing the amount of trash and other waste resulting from illegal border crossings on federal lands. **DOI:** The Bureau of Land Management (BLM) Southern Arizona Project has been funded since 2003 to remove trash and debris resulting from illegal border crossings. An annual report has been issued by BLM, the most recent in 2015. Individual land management units conduct cleanups on an as-needed basis as funds allow. The amount of trash associated with illegal crossings has decreased as illegal crossing levels have decreased. **EPA:** Border 2020 accomplishments reports can be found online:

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	• 2011: www.epa.gov/sites/production/files/documents/b2012closeout_eng.pdf • 2011–2012: www.epa.gov/sites/production/files/documents/4-state-border-highlights-2012_0.pdf • 2014–2015: www.epa.gov/sites/production/files/2015-02/documents/highlights_report_winter_2014_2015_border2020.pdf • 2016 (Region 6 specific): www.epa.gov/sites/production/files/2016-10/documents/september_2016_final_1st.pdf
Challenge 3 (pg. 22): Impenetrable fences may present significant negative consequences to wildlife and the environment.	
Next Steps (pg. 22): As a best business practice, hold a national conference on fencing/barrier technology that highlights successes to date and educates the public, with participation from private sector experts and nongovernmental organizations. As an outcome, develop recommendations for prototype fences that meet security goals while minimizing environmental damage or even improving environmental conditions.	**DHS/CBP:** In March 2017, DHS/CBP issued a solicitation for design and construction of prototype fencing that meets defined security objectives. Information utilized from the prototype fencing will be utilized to inform future design standard(s), which will likely continue to evolve to meet CBP's requirements. Any and all prototypes will be designed to deter illegal entry into the United States. Through the prototyping process, CBP may identify new designs or influences for new designs that will expand the current border barrier toolkit that CBP will use to construct a border wall system based on CBP's requirements. **DOI:** DOI would support such a conference. To the department's knowledge, there has not been a conference convened that has been focused on this topic. DOI also would be willing to assist with design of future fence or wall to seek a design to minimize environmental impacts.
Next Steps (pg. 23): Continue to ensure that USIBWC has the opportunity to review proposed border security infrastructure prior to construction and provide advice on ways to minimize negative transboundary impacts, such as erosion or flooding.	**DHS/CBP:** CBP has worked closely with IBWC when infrastructure projects have been executed on IBWC-managed land or have had the potential to cause transboundary effects. **USIBWC:** USIBWC has worked closely with CBP in reviewing the compatibility with U.S. treaty commitments of proposed CBP infrastructure projects, working out design modifications where necessary to ensure fulfillment of both entities' respective responsibilities and missions.
Challenge 4 (pg. 23):	

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Lack of collaboration across agencies with responsibility for border security, land management and environmental protections tends to lessen the likelihood of win-win scenarios for both security and the environment.	
Next Steps (pg. 23): An interagency task force comprising DHS, DOI and the U.S. Department of Agriculture (USDA) should be established that includes their respective law enforcement components; this task force then could develop strategic plans and establish mutual goals regarding law enforcement changes that would affect federal lands, including sensitivity to environmental impacts.	**DHS/CBP:** CBP facilitates a monthly coordination meeting that includes representatives from DOI, the U.S. Forest Service and CBP. This includes representatives from both environmental and law enforcement offices, as needed, to coordinate law enforcement efforts on federal lands. At the local level, coordination among law enforcement personnel occurs regularly. **DOI:** Although not established as a task force, there is regular communication among law enforcement entities. An example is Operation Reclaim Our Arizona Monuments, an effort coordinated by BLM that focuses on fighting back against smugglers and others using public land for transporting contraband. There have been other cooperative efforts (e.g., Operation Trident Surge in Arizona, Operation Take it Outside in California) that have involved law enforcement personnel in each of the departments. Tactical efforts occur on an as-needed basis. Interoperability of land mobile radio communications has also improved and is managed through an MOU that expires in 2017. This MOU now is being prepared for renewal. [Ensure there are no updates before publication.]
Next Steps (pg. 24): The federal government should identify communications gaps and place liaison personnel in the border states who facilitate communication among security, environmental and border land management agencies.	**DHS/CBP:** In 2005, CBP initiated the PLLA Program, which was formalized as a national program in May 2009. Each USBP sector along the southwest border has a PLLA. PLLAs support active engagement with personnel from DOI, USDA and other federal, state, local, tribal and nongovernmental organizations involved in land management, resource protection and access issues. They also promote a dialogue that includes collaboration to identify mutually beneficial activities and outcomes, joint environmental education, and border security and border safety training. PLLAs communication up and down the chain of command to accomplish goals and objectives, serving a vital role in the facilitation of BMTFs, which are designed to facilitate an intergovernmental forum for cooperative problem-solving on common issues related to the international border. The primary mission is to address border security, human safety, and natural and cultural resource protection through shared resources, information, communication, problem-solving, standardization and training. In keeping with the 2006 MOU, issues are discussed and resolved at the local level to the maximum extent possible. Operational personnel from CBP law enforcement offices routinely interact with local, state and federal officials. CBP has participated in joint projects to support and strengthen interagency relationships, including the Operation Stone Garden grants and operations program to provide resources for state, local and tribal partners to enhance integration efforts for border security. **DOI:** The USBP PLLA Program is the best example of this, with agents identified in each sector who coordinate with DOI and USDA. DOI staffing levels have not allowed for this beyond the DOI

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	Interagency Borderlands Coordinator position in Washington, D.C. DOI also supports a Senior Special Agent located at the USBP Tucson Sector Headquarters who coordinates with USBP on the entire southwest border. DOI plans to maintain these positions indefinitely. **EPA:** Border 2020 has collaborative efforts and liaisons to assist and facilitate communication with different partners. A consistent framework beyond the program, especially among federal agencies, remains a challenge. EPA continues to work on a more consistent framework with other agencies through local and regional outlets. The following website summarizes Border 2020, including background goals and program structure: www.epa.gov/sites/production/files/documents/border2020summary.pdf.
Projects and Partnerships (pg. 24): U.S.-Mexico critical infrastructure protection frameworks.	**EPA:** EPA is an active member of the boards of the Border Environmental Cooperation Commission and North American Development Bank, which are binational institutions created to develop the environmental infrastructure of the U.S.-Mexico border region and enhance the well-being of residents in both nations. Information related to infrastructure and collaboration involving these entities can be found at www.epa.gov/international-cooperation/epas-role-border-environment-cooperation-commission-becc-and-north. **IBWC:** IBWC signed Minute 320 on October 5, 2015, to address sanitation and water quality issues in the Tijuana River Watershed. Binational technical workgroups for the New River and Nogales areas discuss sanitation (pretreatment issues, water quality, and collaboration and coordination between the United States and Mexico). IBWC continues to address security and safety measures at Amistad and Falcon dams, working closely with CBP and federal agencies and binationally with Mexico.
Projects and Partnerships (pg. 24): Douglas-Agua Prieta stormwater partnership.	**EPA:** Border 2020 information as related to the Douglas, Arizona, wastewater treatment: • Border 2020 Action Plan (2016): www.epa.gov/sites/production/files/2015-07/documents/final_arizona_sonora_2015_2016_action_plan.pdf • Environmental assessment for Douglas, Arizona, Wastewater Collection and Potable Water Distribution Improvement Project (2001): nepis.epa.gov/Exe/ZyPDF.cgi/P1008NUV.PDF?Dockey=P1008NUV.PDF
Projects and Partnerships (pg. 24): MOU to facilitate security and minimize environmental damage on federal borderlands.	**DHS/CBP:** Guided by the 2006 MOU, CBP, DOI and USDA have executed a number of programs that strengthen border security while minimizing negative effects to the environment on federal borderlands. **DOI:** The 2006 MOU signed by DHS, USDA and DOI has continued to provide a framework for

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	cooperation and coordination. The MOU has been reviewed annually by the signatories, and no changes have been proposed. DOI and DHS are in the process of updating current MOUs and memoranda of agreement or preparing new agreements relating to environmental reviews in anticipation of additional border security work. These are expected to be updated or renewed this calendar year. Individual land management units also have negotiated agreements for road maintenance and other activities.

Hazardous Materials

2009 GNEB Recommendation or Finding	2017 Agency Update
Recommendation 1: At POEs, increase the number of hazmat inspectors and establish specific sites and hours for hazmat vehicles. Duplicate successful approaches, including use of appropriate technology. Increase cooperation between environmental agencies and security agencies through approaches that reflect site-specific language and staffing requirements.	**DHS/CBP:** Within budget constraints, CBP has increased staffing at POEs and has expanded the capacity at several land POEs on the southwest border. Joint inspection programs, such as the joint inspection facilities at the Otay Mesa commercial port, are being implemented and considered for expansion as budgets allow. **DOC/NOAA:** For both recommendations and the subordinate challenges, the following information is provided to raise awareness of the specialized response capability of NOAA. NOAA's Office of Response and Restoration (OR&R) is a center of expertise in preparing for, evaluating and responding to threats to coastal environments, including oil and chemical spills, releases from hazardous waste sites, and marine debris. OR&R provides scientific and technical support to prepare for and respond to oil and chemical releases; determines damage to natural resources from these releases; protects and restores marine and coastal ecosystems, including coral reefs; and works with communities to address critical local and regional coastal challenges. OR&R comprises three divisions—Emergency Response, Assessment and Restoration, and Marine Debris—and collectively provides comprehensive solutions to environmental hazards caused by oil, chemicals and marine debris. OR&R works closely with the U.S. Coast Guard in responding to incidents. **EPA:** EPA continues to work with federal, state, regional, tribal and local entities to ensure that hazmat is handled in accordance with applicable environmental regulations. Border 2020 continues to convene binational waste and enforcement task forces that provide venues to facilitate information exchange and cooperation on environmental issue, including issues at POEs. Additional information related to hazmat management along the border can be found at www.epa.gov/border2020/border-2020-enforcement-webinar.
Recommendation 2: Beyond POEs, resolve liability issues for cross-	**DHS/CBP:** USBP agents have participated in several local emergency response actions and coordinate with local and state emergency responders. Improved mobile communications connections have facilitated both improved cooperation and response.

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border emergency responders and provide targeted support that reflects the needs of border communities within the larger national strategic plan. Document and share best emergency response practices. In addition, increase dialogue with tribal entities about hazmat transported near and through tribal lands and increase tribal participation in training exercises.	**EPA:** Border 2020 continues to have a main goal to address emergency response needs along the U.S.-Mexico border. Discussions to resolve liability issues in which EPA is involved are ongoing. The best emergency response practices are being shared at quarterly trainings and task force meetings and through sister city plans. EPA's Office of Land and Emergency Management (OLEM)/Office of Emergency Management (OEM) has been coordinating with Regions 6 and 9 to incorporate tribal governments in emergency response planning and preparedness efforts along the U.S.-Mexico border with respect to the sister city contingency plans. Additional information can be found on the Border 2020 website at www.epa.gov/border2020/emergency-response-policy-forum.
Challenge 1 (pg. 34): POEs lack staff to inspect all shipments of hazmat, including hazardous waste, and some local emergency responders have inadequate training. Environmental agencies also lack hazmat tracking data as well as more general chemical storage data. Although CBP prescreens shipments before leaving 32 foreign ports, it does not do so at land ports in Mexico.	**DHS/CBP:** Key ports have crossing sites designated for hazmat with some trained officers. CBP's primary interest is to protect the border from inadvertent spills and conduct inspections of shipments to prevent illegal crossings. Additionally, CBP has worked with EPA to improve information flow via the International Trade Data System (ITDS). Regulations and procedures currently are in the process for these improvements.
Next Steps (pg. 34): Increase the number of hazmat inspectors at POEs.	
Next Steps (pg. 34): DHS should provide additional support for Mexican counterparts, especially Protección Civil and local Mexican fire departments.	**EPA:** Through Border 2020 Goal 4 (Emergency Response), Objective 3, training has been provided to entities on both sides of the border: www.epa.gov/border2020/emergency-response-policy-forum.
Next Steps (pg. 34): Establish specific POE sites/hours for hazmat vehicle use.	**EPA:** EPA continues to work with federal, state, regional and local entities to ensure that hazmat is handled in accordance with applicable environmental regulations. An example of inspection collaboration between agencies, including federal and local, can be seen at California POEs, where hazmat only is authorized to come through during specific times on designated days when federal and local environmental inspectors are present: www.epa.gov/sites/production/files/documents/b2020-enf2013-workshop-border-inspections-en.pdf.
Next Steps (pg. 34):	**EPA:** The best emergency response practices are being shared at quarterly trainings and task force meetings and through sister city plan updates.

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Best practices, such as San Diego County's hazmat inspection program or the City of Laredo's warehouse ordinance, need to be shared with other communities.	
Next Steps (pg. 35): New electronic manifest.	**EPA:** EPA OLEM/Office of Resource Conservation and Recovery currently is developing an electronic hazardous waste manifest system (www.epa.gov/hwgenerators/hazardous-waste-electronic-manifest-system-e-manifest) in response to a statutory mandate under the 2012 Electronic Hazardous Waste Manifest Establishment Act. The system is scheduled to begin operations in the spring of 2018. The first phase of implementation will include the domestic manifest process, and a second phase of system development and rulemaking likely will expand the system to include the tracking of export manifests.
Next Steps (pg. 35): Radio frequency identification (RFID).	**EPA:** RFID is a method of marking and tracking drums of waste to ensure that shipments reached their destination that was tested under EPA's former Environmental Technology Verification Program. Although the technology worked, it had some issues and implementing it would have required a regulatory change, unless its use was voluntary. The Waste Import Export Tracking System (WIETS) is the tracking system currently used in the United States. • RFID Project Results: nepis.epa.gov/Exe/ZyPDF.cgi/P100FZQS.PDF?Dockey=P100FZQS.PDF • RFID Stakeholder Meeting: nepis.epa.gov/Exe/ZyPDF.cgi/P100K341.PDF?Dockey=P100K341.PDF • RFID Project Plan: nepis.epa.gov/Exe/ZyPDF.cgi/P10049JN.PDF?Dockey=P10049JN.PDF • WIETS: www.epa.gov/hwgenerators/information-exporters-resource-conservation-and-recovery-act-rcra-hazardous-waste
Next Steps (pg. 35): Automated Commercial Environment (ACE) System and ITDS.	**EPA:** EPA made regulatory and information technology system changes to meet Executive Order 13659. This provided the capability to convert border processes necessary to clear the following cargo from paper to electronic under the ITDS and its supporting ACE system: (1) chemicals and waste chemicals for import subject to regulations implementing the Toxic Substances Control Act (TSCA); (2) pesticides for import subject to regulations implementing the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA); and (3) hazardous waste for export subject to regulations implementing the Resource Conservation and Recovery Act (RCRA). With respect to hazardous waste export shipments, paper consent checks and submittal of paper manifest to CBP at the border were converted to electronic validation of consent and entry of manifest tracking number in the Automated Export System in CBP's ACE System.

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	Basic information on RCRA export and import requirements can be found at www.epa.gov/hwgenerators/basic-information-resource-conservation-and-recovery-act-rcra-export-and-import.
Challenge 2 (pg. 35): Emergency responders are not able to easily cross border to respond to incidents because of insurance, liability, national sovereignty and command issues, and customs and border procedures may delay response.	**DOI:** DOI reached an agreement with Mexico to allow for cross-border support for wildfire suppression. The agreement allows for response in proximity to the border (within 10 miles). DOI personnel conduct these activities consistent with an operating plan that has been provided to Mexico. Mexico has not provided a similar plan to the United States. The plan is in preparation, but it is not known when the plan will be finalized. **EPA:** An example of local liability resolution is seen in Douglas, Arizona, which has created agreements allowing its first responders to cross the border. EPA OLEM/OEM has been coordinating liability and crossing issues, where possible, with the sister city plans. More information on sister city plans can be found at www.epa.gov/border2020/cross-border-contingency-plans-us-mexico-sister-cities.
Next Steps (pg. 35): Resolve liability issues for cross-border emergency responders.	**EPA:** An example of local liability resolution is seen in Douglas, Arizona, which has created agreements allowing its first responders to cross the border. EPA OLEM/OEM has been coordinating liability and crossing issues, where possible, with the sister city plans. More information on sister city plans can be found at www.epa.gov/border2020/cross-border-contingency-plans-us-mexico-sister-cities.
Next Steps (pg. 35): Coordinate binational federal customs.	
Challenge 3 (pg. 36): Technology equipment and personnel issues: environmental protection needs of small U.S. communities, Mexican communities and U.S. tribes are overlooked in the "big picture".	**EPA:** EPA OLEM/OEM has been coordinating with Regions 6 and 9 to incorporate tribal governments in emergency response planning and preparedness efforts along the U.S.-Mexico border with respect to the sister city contingency plans, which can be found at www.epa.gov/border2020/cross-border-contingency-plans-us-mexico- sister-cities.
Next Steps (pg. 36): Provide additional support for low-tech, small-scale, local environmental protection efforts, Mexican communities, and tribes as part of overall strategic planning for national security.	**EPA:** Best emergency response practices are being shared at quarterly trainings and task force meetings and through sister city plan updates; please see information provided above for further information. For example, a trinational emergency response plan between the Tohono O'odham Nation, United States and Mexico currently is being finalized to address the needs of the region: www.epa.gov/border2020/cross-border-contingency-plans-us-mexico- sister-cities.

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Next Steps (pg. 36): Where U.S. local emergency responders provide assistance, their experiences need to be documented and shared for the benefit of other U.S. and Mexico responders.	**EPA:** Best emergency response practices are being shared at quarterly trainings and task force meetings and through sister city plan updates; please see information provided above for further information. For more information on emergency response, see the Border 2020 website at www.epa.gov/border2020/emergency-response-policy-forum.
Challenge 4 (pg. 36): An overarching strategic plan for border region POEs is needed that reflects development, population, language, and staffing requirements, which also would lesson tensions that exist between security and environmental protection personnel at some ports of entry.	
Challenge 4 (continued, pg. 36): Other border concerns include industrial development on the border, the large population on the border, the lack of protective equipment for Mexican emergency responders, the language, and tourists and migrant workers in the area.	
Next Steps (pg. 37): Strengthen communication and collaboration.	**EPA:** Best emergency response practices are being shared at quarterly trainings and task force meetings and through sister city plan updates. For more information on emergency response, please see the Border 2020 website at www.epa.gov/border2020/emergency-response-policy-forum.
Next Steps (pg. 37): When planning for border emergencies, consider actual settings of the border.	**EPA:** Best emergency response practices are being shared at quarterly trainings and task force meetings and through sister city plan updates. For more information on emergency response, please see the Border 2020 website at www.epa.gov/border2020/emergency-response-policy-forum.
Challenge 5 (pg. 37): Tribal funding and communication pose a challenge, specifically the inability of border tribes to receive funding for emergency response and less than desirable communication on hazmat transported through and adjacent to tribal lands.	**EPA:** EPA OLEM/OEM has been coordinating with Regions 6 and 9 to incorporate tribal governments in emergency response planning and preparedness efforts along the U.S.-Mexico border with respect to the sister city contingency plans. Best emergency response practices are being shared at quarterly trainings and task force meetings and through sister city plan updates. For additional information see the sister city plans at www.epa.gov/border2020/cross-border-contingency-plans-us-mexico- sister-cities.

Next Steps (pg. 37): DHS should earmark funding specifically for border tribes.	
Next Steps (pg. 37): Increase tribal participation in training exercises that involve federal, state and local entities.	**EPA:** Best emergency response practices are being shared at quarterly trainings and task force meetings and through sister city plan updates; please see information provided above for further information. **Additional example:** Tribes were involved in the Lower Colorado River Pipeline Functional Exercise: https://www.kindermorgan.com/content/docs/the_responder_2017_02.pdf.
Projects and Partnerships (pg. 38): RFID pilot to track hazardous waste shipments.	**EPA:** RFID is a method of marking and tracking drums of waste to ensure that shipments reached their destination that was tested under EPA's former Environmental Technology Verification Program. Although the technology worked, it had some issues and implementing it would have required a regulatory change, unless its use was voluntary. WIETS is the tracking system currently used in the United States. • RFID Project Results: nepis.epa.gov/Exe/ZyPDF.cgi/P100FZQS.PDF?Dockey=P100FZQS.PDF • RFID Stakeholder Meeting: nepis.epa.gov/Exe/ZyPDF.cgi/P100K341.PDF?Dockey=P100K341.PDF • RFID Project Plan: nepis.epa.gov/Exe/ZyPDF.cgi/P10049JN.PDF?Dockey=P10049JN.PDF • WIETS: www.epa.gov/hwgenerators/information-exporters-resource-conservation-and-recovery-act-rcra-hazardous-waste
Projects and Partnerships (pg. 38): Baja California Emergency Management Institute.	**EPA:** Border 2020 continues to play a role in Baja California area emergency management, as described at www.epa.gov/sites/production/files/2016-01/documents/san_diego_ca_-_tijuana_baja_ca_jan_14_2013.pdf.
Projects and Partnerships (pg. 38): The Border Agency Fire Council.	
Projects and Partnerships (pg. 38): Four Sister-City Collaboration.	**EPA:** Collaborations continue through the Border 2020 sister city effort: www.epa.gov/border2020/cross-border-contingency-plans-us-mexico- sister-cities.

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Projects and Partnerships (pg. 38): Collaboration between the Arizona/Sonora Emergency Preparedness and Response Task Force and the Arizona/Mexico Commission Emergency Management Committee.	**EPA:** Task force members participate, present and provide routine updates to the Arizona/Mexico Commission Emergency Management Committee. Some additional information regarding the Arizona-Sonora Border 2020 Action Plan can be found at www.epa.gov/sites/production/files/2016-04/documents/az- sonora_action_plan_english_3_10_16_final.pdf.
Projects and Partnerships (pg. 38): Interagency Arizona Port Inspection Exercise.	
Projects and Partnerships (pg. 39): North American Commission on Environmental Cooperation (CEC) Waste Tracking Projects	EPA: The CEC's Hazardous Waste Task Force completed its report on hazardous waste tracking in August 2011. The report can be found at www3.cec.org/islandora/en/item/10158-crossing-border-opportunities-improve-sound- management-transboundary-hazardous-en.pdf.
Projects and Partnerships (pg. 39): ACE System and ITDS.	**EPA:** EPA made regulatory and information technology system changes to meet Executive Order 13659. This provided the capability to convert border processes necessary to clear the following cargo from paper to electronic under the ITDS and its supporting ACE System: (1) chemicals and waste chemicals for import subject to regulations implementing TSCA; (2) pesticides for import subject to regulations implementing FIFRA; and (3) hazardous waste for export subject to regulations implementing RCRA. With respect to hazardous waste export shipments, paper consent checks and submittal of paper manifest to CBP at the border were converted to electronic validation of consent and entry of manifest tracking number in the Automated Export System in CBP's ACE System. Basic information on RCRA export and import requirements can be found at www.epa.gov/hwgenerators/basic-information-resource-conservation-and-recovery-act-rcra-export-and-import. The U.S. Food and Drug Administration provides more information about ACE/ITDS at www.fda.gov/ForIndustry/ImportProgram/ucm456276.htm, including links to user guides.
Projects and Partnerships (pg. 39): EPA Enforcement and Compliance Assistance Training Programs.	**EPA:** EPA co-hosted multimedia binational enforcement workshops with the CEC, the trilateral body formed under the North American Free Trade Agreement, in Hermosillo, Sonora, Mexico, in 2007 and in San Diego, California, in 2013. State partners in California routinely provide training through EPA State Technical Assistance Grants, which include topics such as "developing and sharing protocols for detecting noncompliant transboundary shipments of hazardous waste," as described in the 10th Report. Border 2020 continues to collaborate with states to offer recurrent training on hazmat import/export requirements. Through the task forces, Border 2020 identifies opportunities for information exchange

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	that builds knowledge on respective regulatory programs, such as import/export requirements, and facilitates public access of compliance data for border industrial facilities. EPA Border 2020, Compliance Assistance (Goal 5): www.epa.gov/border2020/compliance- assistance-policy-forum.
Projects and Partnerships (pg. 39): Joint Contingency Plan.	**EPA:** EPA OLEM/OEM is coordinating the update of the 2009 Mexico-U.S. Joint Contingency Plan with its Mexican counterparts, SEMARNAT and Civil Protection. The Joint Contingency Plan is updated, exercised and tested regularly: www.epa.gov/sites/production/files/2016-01/documents/us_mexico_joint_contingency_plan.pdf.

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Appendix 2. December 2009 GNEB Border Fence Advice Letter Recommendations and Status Update

On December 2, 2009, the Good Neighbor Environmental Board (GNEB) issued an advice letter to the U.S. President and Congress regarding the U.S.-Mexico border fence. The letter was sent after Congress authorized the construction of 700 miles of border fence under the Secure Fence Act of 2006, charging the Department of Homeland Security with the responsibility for building the border fence. By the time the Board wrote the letter, most of the 654 miles of border fence had been constructed.

Prior to the Board's letter, the Congress had also enacted into law the Real ID Act of 2005, which grants the Secretary of Homeland Security "…the authority to waive all legal requirements…necessary to ensure expeditious construction of barriers and roads under this section." These legal requirements included the National Environmental Policy Act (NEPA), Clean Water Act, and Clean Air Act.

The December 2009 letter from the GNEB on the border fence was incorporated into *A Blueprint for Action on the U.S. Mexico Border: Thirteenth Report of the Good Neighbor Environmental Board to the President and Congress of the United States* (13th Report), issued in June 2010. The advice letter is the longest that GNEB has issued and contains several supporting images. Although most GNEB advice letters do not receive a formal response, in 2010, Nancy Sutley, Chair of the White House's Council on Environmental Quality (CEQ), responded specifically about the border fence letter. Her response also is included in the 13th Report.

The key portion of the advice letter was a list of recommendations about the border fence. The following table contains the list of recommendations from the December 2009 advice letter, along with an update on the status of implementation actions taken (or not taken).

2009 GNEB Recommendation	**2017 Update**
1. Require that all border security infrastructure projects fully comply with the National Environmental Policy Act (NEPA) as well as all other laws, including environmental, historic and archeological preservation laws.	Responding for President Barack Obama in April 2010, CEQ Chair Nancy Sutley wrote, "CEQ and appropriate federal departments and agencies appreciate your recommendations of bringing border security infrastructure activities in full compliance with NEPA and our nation's environmental laws. As you know, we are reviewing the current environmental impacts of border security infrastructure and looking for opportunities for minimizing these impacts. As part of this process, we look forward to identifying opportunities for ensuring that border security infrastructure and associated maintenance and repair meet national environmental goals." The U.S. Congress has not amended the Real ID Act of 2005, which would be required.
2. Work with Congress to amend the REAL ID Act of 2005 to remove the provisions allowing the Secretary of Homeland Security to waive legal requirements.	See update to Recommendation 1. No actions were taken to amend the Real ID Act of 2005.
3. Fully incorporate adequate environmental review,	CEQ Chair Sutley responded in April 2010, "CEQ and appropriate federal departments and

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public participation and scientific analysis into the design and implementation of all border security infrastructure projects.	agencies agree with the Board that public participation is important in border security infrastructure projects. CEQ, with the U.S. Department of the Interior (DOI), U.S. Forest Service, U.S. Environmental Protection Agency, U.S. Department of State, and National Oceanic and Atmospheric Administration, will continue to work with the U.S. Department of Homeland Security (DHS) to improve public review, analysis and participation in the design and implementation of select border security infrastructure projects. DHS has agreed to provide CEQ and these departments and agencies with a description of its stakeholder engagement process to foster ongoing coordination. DHS plans to obtain input from non-Federal stakeholders, including State, local and Tribal authorities and the interested public. DHS will share this information with the Board and will post it on the U.S. Customs and Border Protection (CBP) website and disseminate it through other appropriate mechanisms. In January of this year [2010], DHS officials toured the westernmost portion of the fence with the California Coastal Conservancy and provided updates on their work to the Tijuana River Valley Recovery team in December 2009 and January 2010. This exchange of information was very well received by the stakeholders."
4. Facilitate review by the International Boundary and Water Commission of projects that may cause deflection or obstruction of the normal flow of rivers or their flood flows, ensuring continued compliance with the 1970 Boundary Treaty between the United States and Mexico and other international agreements.	In the April 2010 CEQ response, Chair Sutley wrote, "…the State Department encourages and welcomes recent steps by DHS to coordinate with the Commission on border fence construction, particularly in flood-prone areas."
5. Systematically monitor the entire fence and supporting infrastructure for effects resulting from its construction and develop actions to modify, redesign or mitigate the negative outcomes realized or anticipated by the existing construction.	No actions taken.
6. Provide sufficient annual funding via the DHS budget for monitoring, research and mitigation of the environmental impacts of the border fence.	From the April 2010 CEQ Chair Sutley letter, "DHS has executed an Interagency Agreement with U.S. Geological Survey to develop a monitoring protocol to determine the environmental effects of border security activities. This agreement is an important step in monitoring the impacts of the fence and its supporting infrastructure. DHS will continue to work with affected federal land resource agencies to address possible negative consequences as they are identified."
7. Obtain adequate local stakeholder input for all fence	See update to Recommendation 3.

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construction, mitigation and maintenance as well as for associated infrastructure projects, including access roads.	
8. In sensitive rural areas that are important wildlife corridors, use barriers and technology that prevent vehicular traffic, control pedestrian incursion and allow wildlife movement.	Approximately 300 miles of the current fence consists of vehicular fence, much of it designed to allow wildlife movement.
9. Aggressively explore the use of information and remote sensing technologies that will enhance border security while reducing the physical footprint of interdiction activities along the border.	No update.
10. Ensure adequate funding to DHS/CBP for ongoing training for border security personnel about the local natural environment and significant natural and cultural resources.	In the April 2010 CEQ response, Chair Sutley wrote, "The Board urged adequate funding to DHS/CBP for training border security personnel about environmental, natural and cultural resource issues. DHS already has infrastructure in place to provide some of this training. The Environmental and Cultural Stewardship Training Task Force, operated under the Director of the Border Patrol Planning Branch, is one example. It delivers environmental and cultural awareness training to Border Patrol agents whose patrol activities include Federal lands. The Environmental and Cultural Stewardship Training Task Force's mission was established within a Memorandum of Understanding entitled, *Cooperative National Security and Counterterrorism Efforts on Federal Lands Along the United States' Borders*, signed in March 2006 by the Secretaries of Homeland Security, the Interior and Agriculture." CPB has also incorporated environmental awareness and sensitivity training into the basic curriculum for all new Border Patrol agents during their initial basic training.
11. Identify and implement best management practices to prevent and mitigate the erosion resulting from fence construction and associated infrastructure.	CEQ Chair Sutley responded in April 2010, "As you know, DHS/CBP and DOI signed a Memorandum of Agreement in January 2009 regarding environmental stewardship measures related to the construction of border security infrastructure. To implement the Memorandum of Agreement, CBP agreed to fund up to $50 million to address the adverse effects of infrastructure construction and maintenance on DOI-managed natural and cultural resources. DHS and DOI are working together to release the funds so mitigation measures can occur."
12. Charge the National Academy of Sciences to conduct a study on the binational environmental effects of the border fence and associated infrastructure.	CEQ recommended that the Board discuss this with the National Academy of Sciences. GNEB did not act on this recommendation.

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Glossary of Acronyms and Abbreviations

10th Report	*Environmental Protection and Border Security on the U.S.-Mexico Border: Tenth Report of the Good Neighbor Environmental Board to the President and Congress of the United States*
13th Report	*A Blueprint for Action on the U.S. Mexico Border: Thirteenth Report of the Good Neighbor Environmental Board to the President and Congress of the United States*
18th Report	*Environmental Quality and Border Security: A 10-Year Retrospective: Eighteenth Report of the Good Neighbor Environmental Board to the President and Congress of the United States*
1944 Water Treaty	1944 Water Treaty for the Utilization of Waters of the Colorado and Tijuana Rivers and of the Rio Grande
2006 MOU	*Memorandum of Understanding Among U.S. Department of Homeland Security and U.S. Department of the Interior and U. S. Department of Agriculture Regarding Cooperative National Security and Counterterrorism Efforts on Federal Lands Along the United States' Borders*
9/11	September 11, 2001, terrorist attacks
ACE	Automated Commercial Environment (System)
BECC	Border Environment Cooperation Commission
BLM	Bureau of Land Management
BMTF	Borderlands Management Task Force
Border 2020	U.S.-Mexico Border 2020 Program (EPA)
CBP	U.S. Customs and Border Protection
CEC	Commission for Environmental Cooperation
CEQ	Council on Environmental Quality
DHS	U.S. Department of Homeland Security
DOC	U.S. Department of Commerce
DOI	U.S. Department of the Interior
EMS	emergency medical services
EPA	U.S. Environmental Protection Agency
FEMA	Federal Emergency Management Agency
FIFRA	Federal Insecticide, Fungicide and Rodenticide Act
FWS	U.S. Fish and Wildlife Service

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FY	fiscal year
GNEB	Good Neighbor Environmental Board
hazmat	hazardous materials
IBWC	International Boundary and Water Commission
IDTS	International Trade Data System
JRT	Joint Response Team
MEXUS Plan	Mexico/United States Bilateral Response Plan
MOU	Memorandum of Understanding
NADB	North American Development Bank
NAFTA	North American Free Trade Agreement
NBC	National Butterfly Center
NEPA	National Environmental Policy Act
NIWTP	Nogales International Wastewater Treatment Plant
NOAA	National Oceanic and Atmospheric Administration
OEM	Office of Emergency Management (EPA)
OLEM	Office of Land and Emergency Management (EPA)
OR&R	Office of Response and Restoration (NOAA)
PLLA	Public Lands Liaison Agent
POE	port of entry
RCRA	Resource Conservation and Recovery Act
RFID	radio frequency identification
RFP	request for proposals
SENTRI	Secure Electronic Network for Travelers Rapid Inspection
TRNERR	Tijuana River National Estuarine Research Reserve
TSCA	Toxic Substances Control Act
USBP	U.S. Border Patrol
USDA	U.S. Department of Agriculture
USIBWC	U.S. Section of the International Boundary and Water Commission
WIETS	Waste Import Export Tracking System

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Andy Yuen, U.S. Fish and Wildlife Service

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From: Javier Ortiz
Sent: Wed 6/4/2014 11:01:17 PM
Subject: 11, 17, 316
Bills Sponsored by Mary Helen Garcia, NM State Rep Distr 34.doc

Hi to All: Some of the physical, infrastructure, education,safety and financial outstanding features of Doña Ana County today carry in their genes the following numbers:

11
17
316

The numbers also reflect pragmatic vocation and dedication with a humanitarian touch.

Enough to make the new generation consider waiting a bit more and enough for a wishful and honorable correction by recount.

11 votes behind
17 years in the New Mexico Legislature
316 Bills Sponsored

Saludos
Javier

MARY HELEN GARCIA

Hola a Todos: Algunos de los rasgos sobresalientes del Condado de Doña Ana en su físico, infraestructura, educación, seguridad y finanzas llevan hoy en sus génes las siguientes cifras:

11
17
316

Las cifras también reflejan vocación y dedicación pragmáticas con un toque humanitario.

Suficiente para que la nueva generación considere esperar un poco y suficiente para una ilusionada y honorable corrección mediante recuento.

11 votos abajo
17 años en la Legislatura de Nuevo México
316 Leyes Promulgadas

Saludos
Javier

Primary Election Results June 3, 2014
Resultados Elección Interna 3 de junio 2014

Candidate	Votes	Percent
DEM Party BEALQUIN BILL GOMEZ	405	47.59%
DEM Party MARY HELEN GARCIA	394	46.30%
DEM Party CHRISTIAN LIRA	52	6.11%
Total Votes	851	

BORDER 2020: UNITED STATES - MEXICO ENVIRONMENTAL PROGRAM

BORDER 2020
FRONTERA 2020

HIGHLIGHTS REPORT AUTUMN 2018

EPA
United States Environmental Protection Agency

SEMARNAT
SECRETARÍA DE MEDIO AMBIENTE Y RECURSOS NATURALES

Cover photo:
Chisos Mountains, Texas, U.S.A.
Photographic Archives
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.

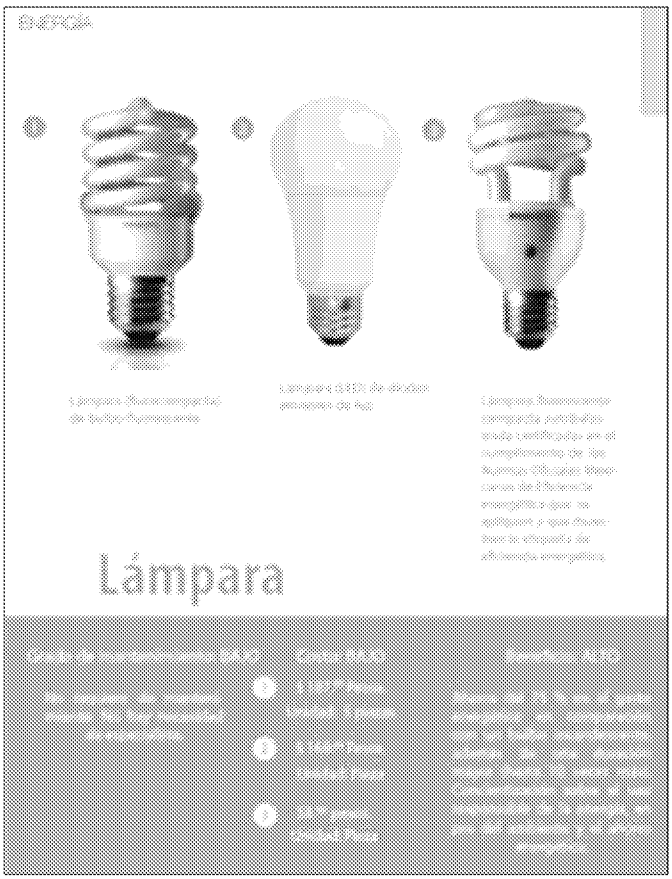

Illustration: Description of types of light bulbs in the catalog.

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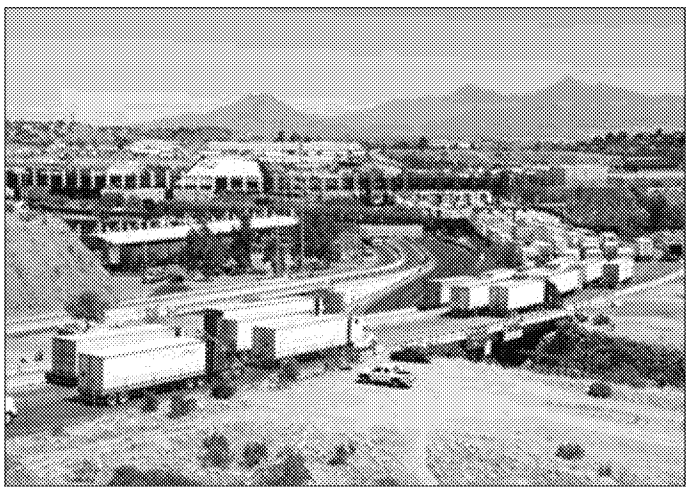
Quantifying Emission Reduction from Reduced Wait Times at Mariposa Port of Entry

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

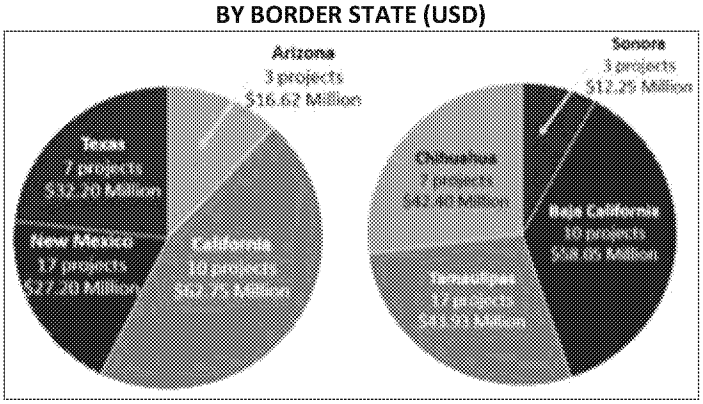
Rivers and watersheds know no boundaries and, in some areas, define the United States-Mexico border. Polluted stormwater and sewage from deteriorated infrastructure and extreme weather events can contaminate transboundary waterways, causing health concerns along the border region. The Border 2020 Program 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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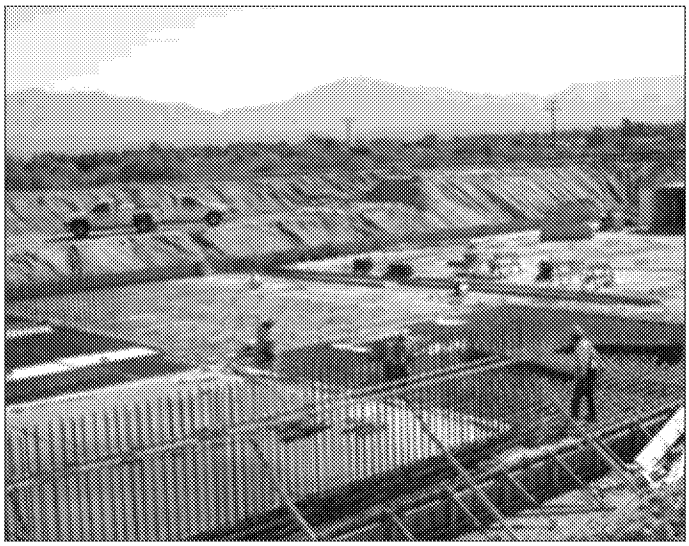
ble drinking water and wastewater projects with a total estimated construction cost of $296 million dollars that address public health and environmental conditions along the border.

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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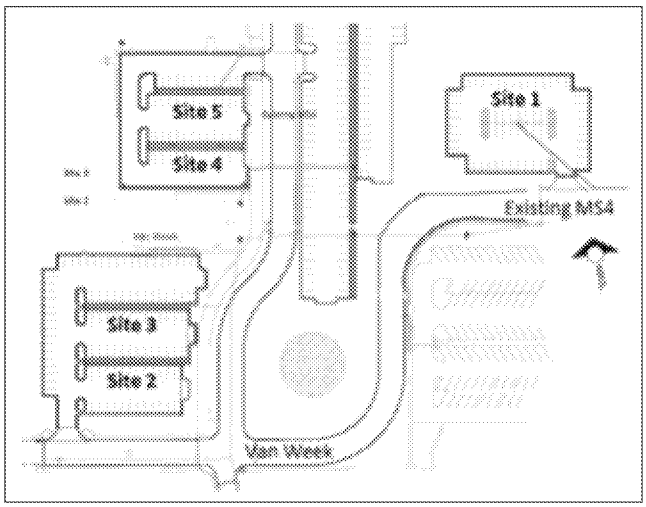
Studying Low Impact Development Methods for South Texas Stormwater Management

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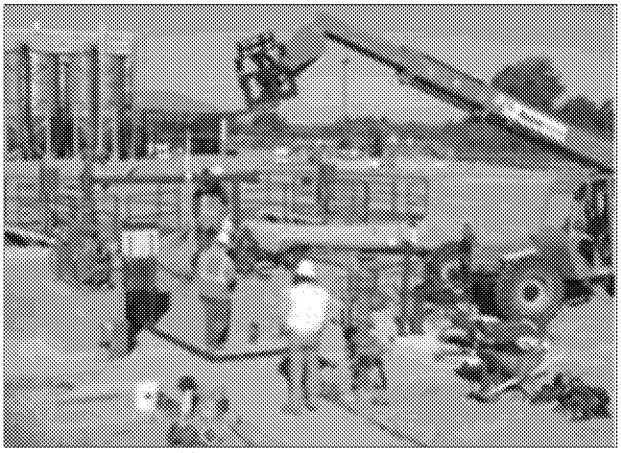
Protecting the City of Holtville's Water Resources in Imperial County

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.

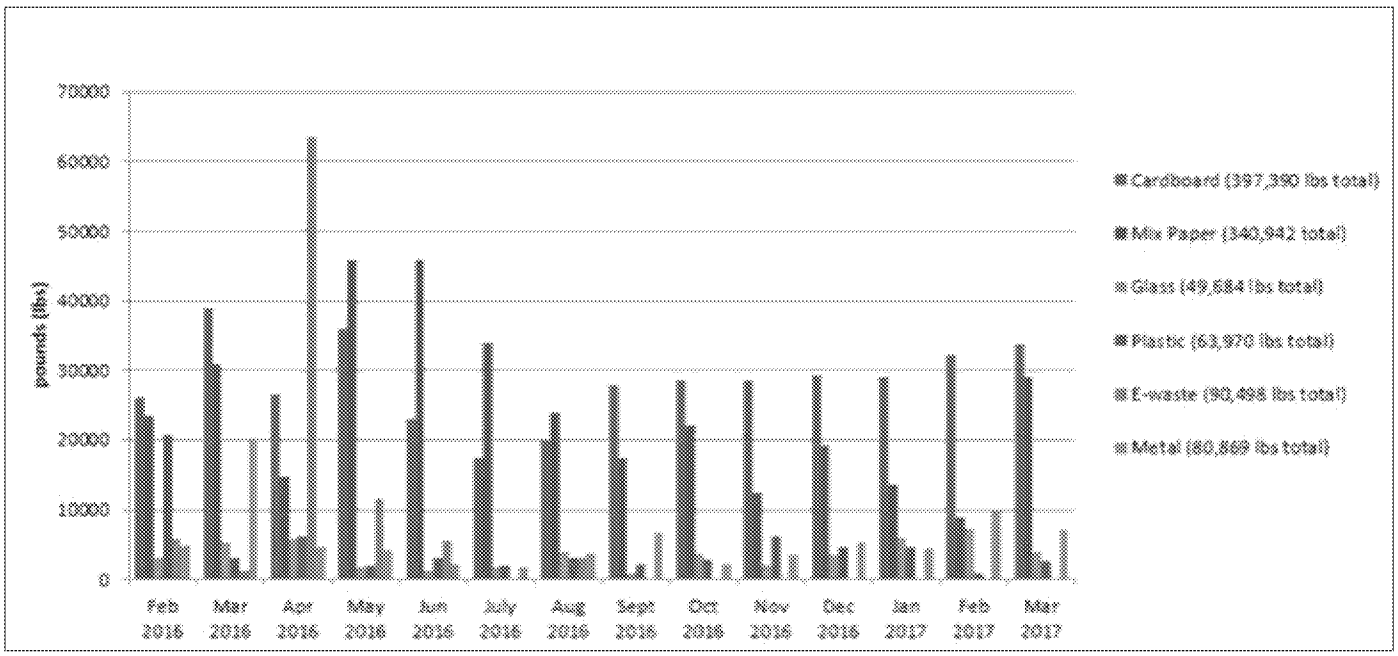
City of Pharr, Texas

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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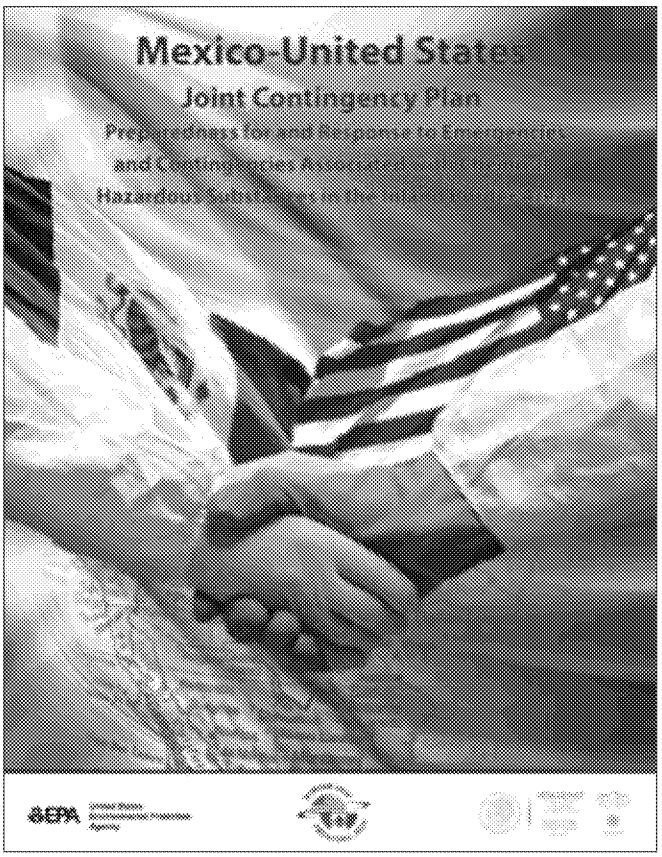
Enhance Joint Preparedness for Environmental Response under the Border 2020 Program

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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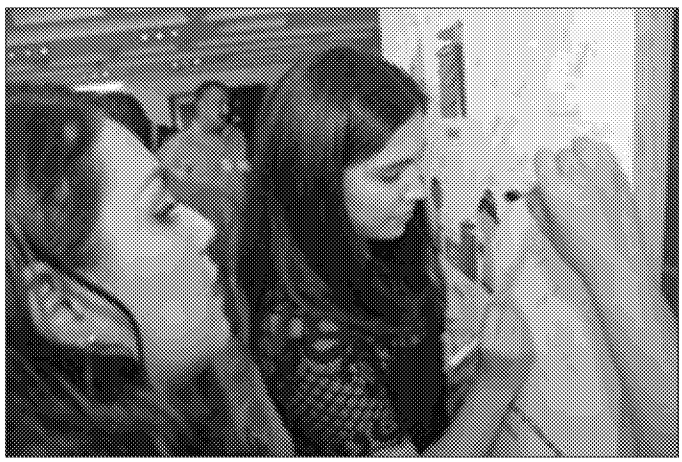
Responding to *Zika* Threat Along the Border

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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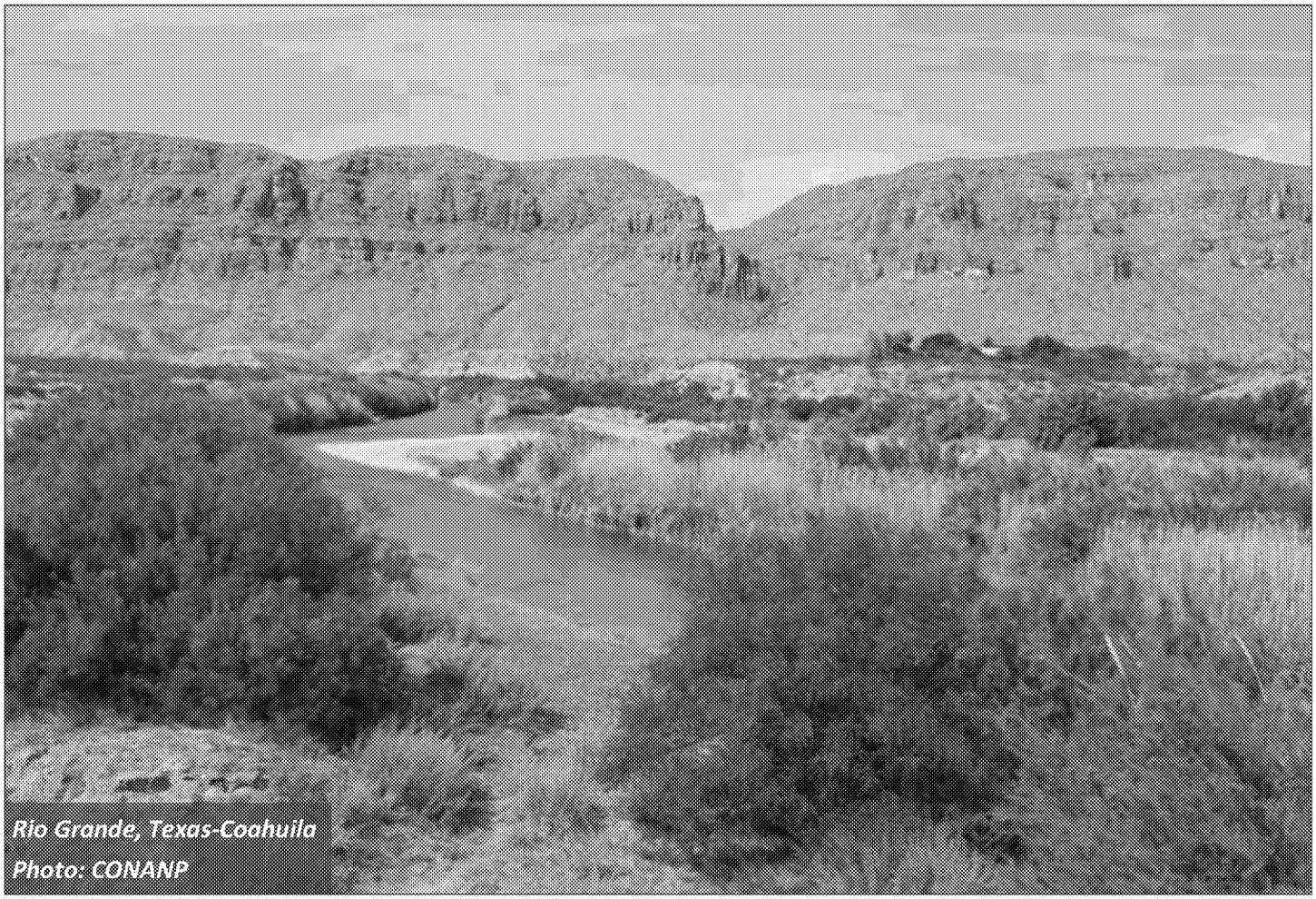
Visit our webpages!
www.epa.gov/border2020
www.gob.mx/semarnat

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.

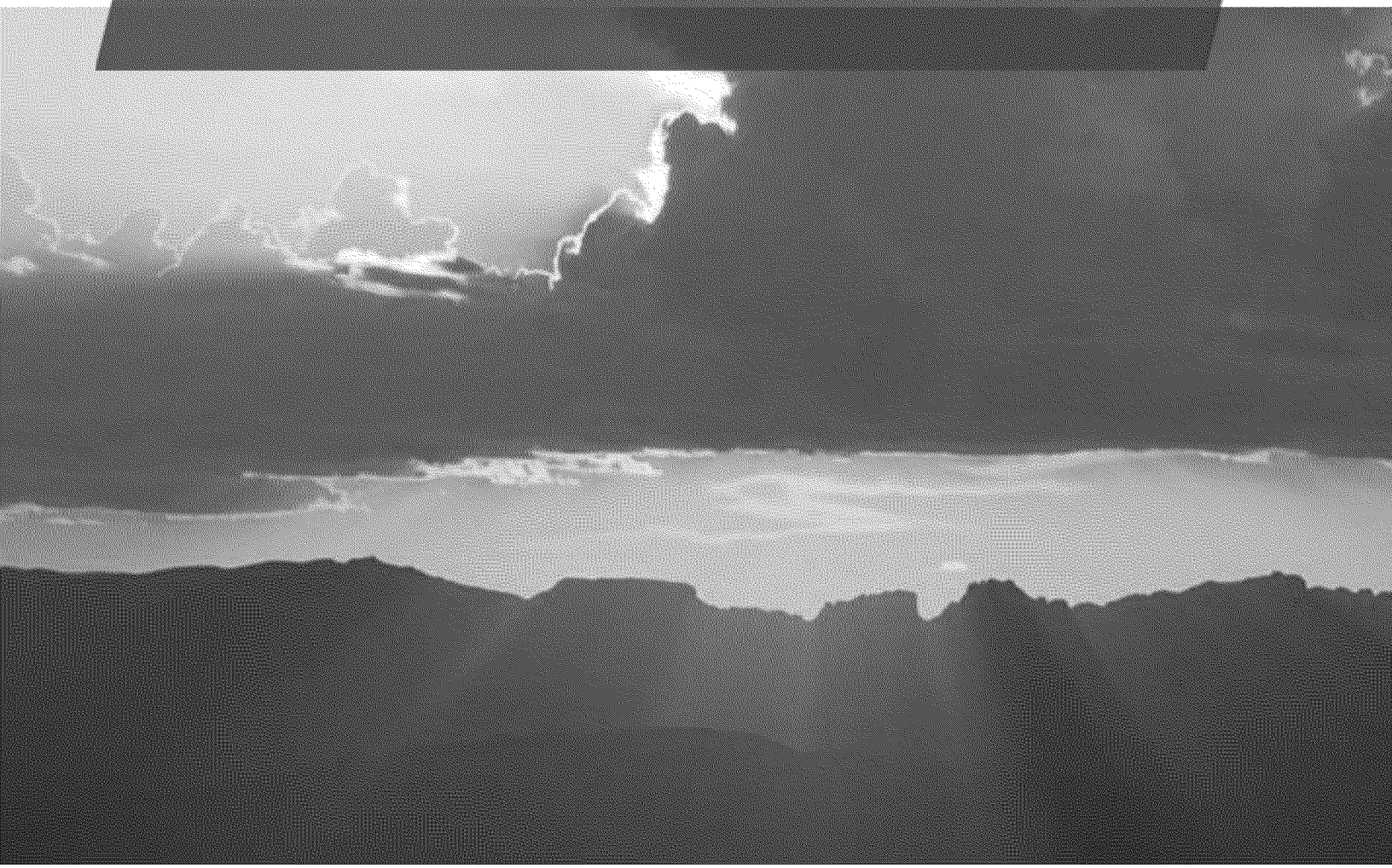


Rio Grande, Texas-Coahuila
Photo: CONANP

PROGRAMA AMBIENTAL MÉXICO - ESTADOS UNIDOS: FRONTERA 2020

FRONTERA 2020
BORDER 2020

REPORTE DE LOGROS OTOÑO 2018



SEMARNAT
SECRETARÍA DE MEDIO AMBIENTE Y RECURSOS NATURALES

EPA
United States Environmental Protection Agency

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Foto portada:
Montañas Chisos, Texas, Estados Unidos
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Comisión Nacional de Áreas Naturales Protegidas de México (CONANP)

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MENSAJE DE LOS COORDINADORES NACIONALES

El Programa Frontera 2020 continúa brindando una base sólida y dinámica para nuestra asociación binacional proporcionando soluciones a los desafíos ambientales y de salud pública en la región fronteriza. La colaboración es clave para lograr resultados exitosos, sustentables y de largo plazo. Como Coordinadores Nacionales, estamos comprometidos a trabajar juntos para avanzar la misión del Programa Frontera 2020: proteger el medio ambiente y la salud pública a lo largo de la región fronteriza entre México y los Estados Unidos.

Nuestros esfuerzos de colaboración con las Naciones Tribales fronterizas de los Estados Unidos y los gobiernos federal, estatal y local de ambos países han demostrado beneficiar a nuestro medio ambiente compartido y a los habitantes de ambos lados de la frontera. Hemos creado asociaciones e invertido nuestros recursos en proyectos que abordan temas como la calidad del aire, la calidad del agua, el tratamiento de aguas residuales, la gestión de residuos sólidos, la respuesta a emergencias y la gestión ambiental responsable.

Este informe destaca los logros del Programa Frontera 2020 durante los últimos dos años. Presentamos 22 proyectos que se han implementado y ejemplifican el progreso de nuestros esfuerzos para mejorar las condiciones de las comunidades fronterizas y nuestro medio ambiente compartido. A través de estos proyectos, también hemos podido realizar estudios o aplicar las mejores prácticas de gestión para lograr resultados exitosos en cumplimiento de los objetivos del Programa.

Reafirmando nuestro compromiso con el Programa Frontera 2020, nosotros, como Coordinadores Nacionales, apoyamos a nuestros socios, que incluyen a los tres niveles de gobierno, las Naciones Tribales fronterizas de los Estados Unidos y las comunidades indígenas mexicanas. Nos gustaría aprovechar esta oportunidad para expresar nuestro agradecimiento a las personas, comunidades y organizaciones dedicadas que apoyan y participan en las actividades del Programa para mejorar las condiciones ambientales y de salud pública en la región fronteriza. Reconocemos la importancia y el valor de la dedicación, el compromiso y la contribución de nuestros Socios al éxito del Programa.

La cooperación ambiental entre México y los Estados Unidos en la región fronteriza común es sin duda una historia de éxito y un ejemplo para el mundo, bajo la cual ciertamente vale la pena seguir construyendo. Les invitamos a reflexionar sobre nuestros logros recientes y les pedimos que continúen brindando su apoyo y su participación en la búsqueda de soluciones a los desafíos que aún existen en la región fronteriza.

¡Muchas gracias!

Enrique Lendo
Coordinador Nacional
México

Jane Nishida
Coordinadora Nacional
Estados Unidos de América

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INTRODUCCIÓN

Reafirmando nuestro compromiso, 2017-2018

La frontera entre México y los Estados Unidos es una región geográfica dinámica y única que enfrenta muchos retos ambientales, incluida la mala calidad del aire, agua potable de dudosa calidad e inadecuado tratamiento de aguas residuales, así como programas y servicios inadecuados para la gestión de residuos. La frontera es el hogar de más de 15 millones de personas, donde aproximadamente el 90% de la población reside en ciudades, mientras que la población restante se encuentra en pueblos pequeños o comunidades rurales. El **Programa Frontera 2020** es la más reciente iniciativa de cooperación México-Estados Unidos implementada en el marco del Convenio de La Paz de 1983, enfocándose en las comunidades ubicadas dentro de los 100 kilómetros a ambos lados de los más de 3,100 kilómetros de frontera. El Programa Frontera 2020 fomenta un enfoque regional de abajo hacia arriba para la toma de decisiones, el establecimiento de prioridades y la implementación de proyectos para abordar los desafíos ambientales y de salud pública en la región fronteriza.

El Programa está diseñado para aprovechar la contribución de comunidades e interesados locales, así como para trabajar directamente con socios federales, estatales, tribales e internacionales para implementar proyectos y soluciones ambientales. Específicamente, los objetivos del Programa se centran en mejorar la calidad del aire y el agua, promover suelos limpios, fortalecer la preparación y respuesta a emergencias, fomentar el liderazgo ambiental y abogar por iniciativas de salud ambiental a lo largo de la frontera. Este informe de logros comparte un ejemplo de los éxitos que nuestro Programa ha alcanzado en los últimos años (2016-2018) mejorando la calidad de vida y nuestro entorno compartido.

Para obtener más información sobre los detalles de las metas y los objetivos del Programa Frontera 2020, lo invitamos a leer el documento del Programa o si está interesado en conocer más logros del mismo, visite su página de internet en las páginas de la SEMARNAT y/o la EPA para consultar los informes anteriores y otra información de interés.

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MEJORANDO LA CALIDAD DEL AIRE

La mala calidad del aire puede tener importantes impactos económicos y sociales en la comunidad, incluyendo un aumento en la contracción de enfermedades, muerte prematura y una menor calidad de vida. La región fronteriza entre México y los Estados Unidos es vulnerable al movimiento transfronterizo de contaminantes, lo que incluye materia particular inhalable (hollín y polvo), ozono (smog) y monóxido de carbono. Las fuentes binacionales que contribuyen a este movimiento incluyen el polvo de las carreteras sin pavimentar y de las áreas abiertas, el humo de la quema ilícita de basura y llantas, así como fuentes móviles como vehículos pesados de carga, automóviles y camiones que están haciendo fila en los cruces fronterizos. El Programa Frontera 2020 ha apoyado la mejora de la calidad del aire mediante la expansión de las redes de monitoreo con un mayor acceso a sus datos, la mejora de la calidad del aire a través de Planes de Implementación Estatales (en ambos países) y programas educativos sobre la calidad del aire en interiores.

Taller de Eficiencia Energética en Tamaulipas

Participantes en el primer taller de eficiencia energética.

Incrementar la eficiencia energética en México se ha convertido en una estrategia en todos los niveles de Gobierno a fin de mejorar y asegurar la sustentabilidad a largo plazo en los edificios públicos y mejorar la seguridad del suministro eléctrico, a la vez que se reducen los impactos en el medio ambiente. La operación e instalación de los sistemas de alumbrado público, así como el consumo de energía en edificios públicos, representa uno de los principales gastos que enfrentan los municipios, llegando incluso a absorber hasta un 40% de su presupuesto anual, lo cual limita la capacidad de los gobiernos locales para enfocar sus esfuerzos en otras prioridades. Mediante un financiamiento otorgado por el Programa Frontera 2020, la Secretaría de Desarrollo Urbano y Medio Ambiente del estado de Tamaulipas llevó a cabo dos talleres sobre eficiencia energética dirigidos a los 10 municipios fronterizos del estado. Los materiales de los talleres proporcionaron información sobre las herramientas básicas necesarias para lograr una mayor eficiencia energética en la iluminación de espacios públicos, a la vez que se incrementan los ahorros económicos.

Estos talleres fueron parte de una serie de acciones para mejorar la eficiencia energética en el estado, incluyendo dos foros de energía: "Primer Foro Estatal de Energía. Tamaulipas, Energía que Mueve a México" y el tercer Congreso Internacional sobre Energías Renovables titulado "Perspectivas de la Energía en México". La realización de estos talleres coincidió con la puesta en marcha de un proyecto eólico demostrativo que incluye la operación de cuatro aerogeneradores con el objetivo de promover el uso de energías renovables en el estado. Asimismo, el estado realizó la distribución de 10 mil "Guías Prácticas para el Ahorro de Energía" con el objetivo de sensibilizar a la población sobre los beneficios de instalar tecnologías ambientalmente amigables en sus hogares. Como resultado de los talleres, 10 municipios se comprometieron a realizar una auditoría energética en sus edificios públicos, beneficiando a 1.7 millones de habitantes.

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Viviendas Sanas y Resilientes en Ciudad Juárez

Las familias de bajos ingresos cuentan con recursos limitados para implementar medidas de ahorro de energía y de agua en sus hogares. Esto es generalmente debido tanto a la falta de conocimientos como a insuficiente asistencia técnica y/o recursos financieros. La falta de acceso a financiamiento para cubrir sus necesidades económicas limita su acceso a energías limpias y servicios básicos. La Federación Mexicana de Asociaciones Privadas de Salud y Desarrollo Comunitario de Ciudad Juárez, A.C. (FEMAP) ha operado durante treinta años un programa de microcréditos en la región; en este lapso se han entregado más de 40,000 microcréditos a los habitantes de bajos recursos para hacer mejoras en sus hogares.

Con el apoyo del Programa Frontera 2020, FEMAP desarrolló un proyecto para identificar e implementar opciones de infraestructura verde y elementos de ahorro de energía para las familias de escasos recursos que buscan mejorar sus hogares en una colonia de rápido crecimiento en Ciudad Juárez. El proyecto ofreció asistencia técnica y financiera a 50 hogares (más de 200 personas) para la implementación de estas opciones y elementos energéticamente eficientes. En coordinación con empresas, instituciones académicas y organizaciones civiles sin fines de lucro, los residentes tuvieron acceso a asistencia técnica de expertos que los guiaron y enseñaron sobre los elementos de la infraestructura verde que podrían ser incorporados y adoptados en sus hogares, así como el acceso a materiales ecológicos.

El proyecto resultó en un ahorro de $630 dólares, 11.249 kW/hr, en el costo de energía y un ahorro de 530,000 litros de agua, equivalentes a $500 dólares, luego de las mejoras realizadas en 45 de las 50 viviendas mediante la instalación de:

- Cerca de 250 focos LED;
- 200 sellados de ventanas;
- 50 regaderas de bajo consumo;
- 50 filtros de agua; y
- techos y paredes aislantes.

Además de las mejoras realizadas directamente en sus hogares, se desarrolló un catálogo de ecomateriales con el apoyo del Programa de Arquitectura de la Universidad Autónoma de Ciudad Juárez. Este catálogo incluye información sobre mejores prácticas y una evaluación de cada una de las ecotecnologías seleccionadas, identificando aquellas viables de implementación en comunidades marginadas ya que los catálogos existentes están enfocados mayoritariamente en vivienda nueva.

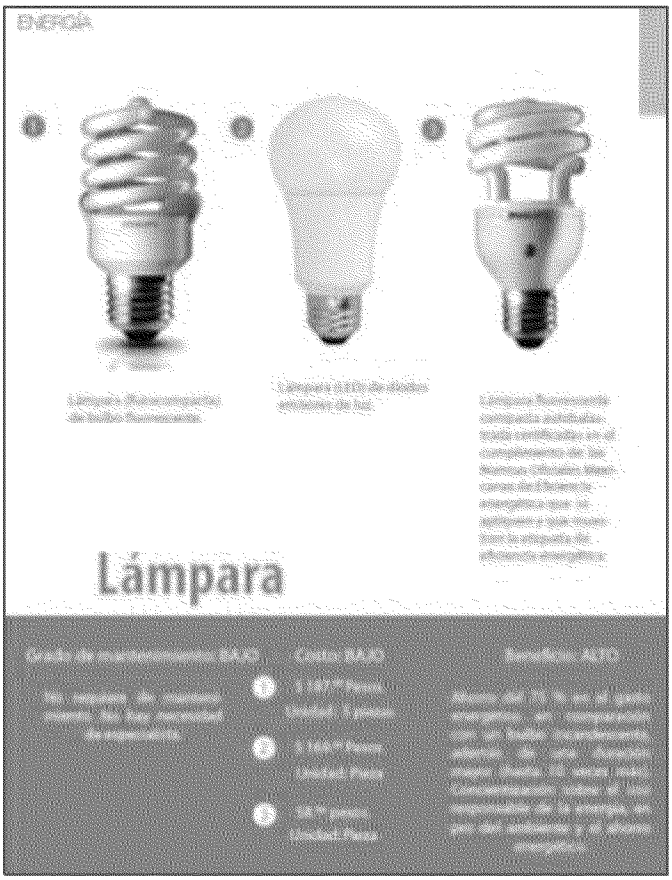

Ilustración: Descripción de los diferentes tipos de focos del catálogo.

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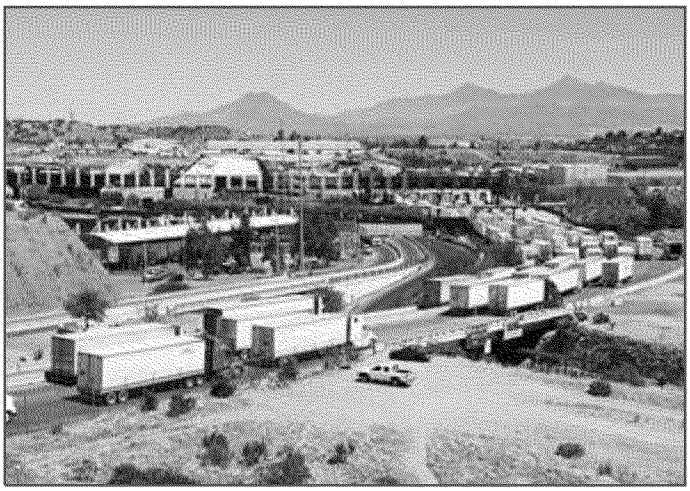
Cuantificando la Disminución de Emisiones Derivada de la Reducción en los Tiempos de Espera en el Cruce Fronterizo Mariposa

El Cruce Fronterizo Mariposa en Nogales, Arizona, es un importante cruce terrestre en la región fronteriza México-Estados Unidos con más de 7 millones de vehículos que cruzan al año, incluidos 350,000 camiones de carga. Las autoridades del cruce fronterizo están implementando un programa piloto innovador realizando inspecciones conjuntas a fin de reducir los tiempos de espera de los camiones de carga. Se espera que este programa piloto reduzca significativamente los tiempos de espera, de 8 horas a 1 hora, para los camiones de carga en dirección a los Estados Unidos. Esta reducción en los tiempos de espera reducirá las emisiones de los vehículos y acelerará el comercio. Actualmente, Nogales no cumple los estándares de emisiones de partículas PM^{10} y $PM^{2.5}$, las cuales pueden causar problemas respiratorios y cardíacos, especialmente en adultos mayores y niños pequeños. Se espera que la reducción de emisiones de fuentes móviles mejore la calidad del aire y la salud pública en la región.

El Programa Frontera 2020 otorgó financiamiento a la Asociación de Investigación de América del Norte (NARP, por sus siglas en inglés) para implementar un estudio que detalle los beneficios de la reducción de emisiones de este proyecto piloto. Más de 400 vehículos fueron encuestados para obtener información sobre los tiempos de espera, así como la marca y modelo del vehículo, lo que permitió a los investigadores calcular sus emisiones.



Camiones en espera de ingresar a las instalaciones unificadas para el procesamiento de carga en Nogales.

Encuesta a un chofer de un camión después de la inspección.

El Simulador de Emisiones de Vehículos a Motor de la EPA (MOVES, por sus siglas en inglés), un sistema de modelado que estima las emisiones de fuentes móviles a nivel nacional, municipal y de proyecto de los contaminantes atmosféricos criterio, está siendo utilizado por los investigadores para cuantificar las reducciones de emisiones durante los tiempos de espera en el cruce fronterizo. Los datos preliminares muestran que la reducción de los tiempos de espera ha reducido las emisiones vehiculares. Además, se detectó que la reducción de emisiones también se debe a que los vehículos procesados a través de la instalación unificada para el procesamiento de carga tienden a ser más nuevos y utilizan más tecnologías para la reducción de emisiones. La NARP está trabajando en el análisis de datos de las encuestas y en la cuantificación de la reducción de emisiones, así como en el informe final el cual estará disponible a fines de 2018.

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Reduciendo los Desencadenantes del Asma Infantil en los Hogares

Los niños del Condado Imperial, California, viven con altas concentraciones de factores desencadenantes del asma tanto en el ambiente interior como en el exterior, incluida la contaminación transfronteriza del aire. Estos factores han contribuido a que el Condado Imperial experimente algunas de las tasas más altas de visitas a la sala de emergencias en el estado de California a causa del asma.

Para atender este problema, el Programa Frontera 2020 se asoció con y financió el Programa de Asma Infantil del Valle Imperial (IVCAP, por sus siglas en inglés) durante el periodo 2015-2017 con el objetivo de llevar a cabo inspecciones en los hogares e identificar los desencadenantes del asma, así como colaborar con las personas que se dedican al mantenimiento de casas en la implementación de estrategias para fomentar hogares saludables. Durante este período, el 94% de los participantes inscritos en el programa informaron que no visitaron salas de emergencia ni fueron hospitalizados. Además, el IVCAP informó a más de 2.000 personas mediante campañas de difusión y educación, su inscripción en el programa, así como otras actividades de participación comunitaria.

La enfermera Aide Fulton realiza actividades de educación en una feria comunitaria sobre salud llevada a cabo en la Escuela Primaria Seeley.

La EPA continúa apoyando e impactando positivamente a las familias de bajos ingresos financiando actividades educativas sobre asma en el hogar en colaboración con el IVCAP mediante una subvención establecida en la Ley de Aire Limpio. Los fondos aprobados para el periodo 2017-2018 tienen como objetivo proporcionar evaluaciones y herramientas para controlar los desencadenantes del asma en el hogar que afectan a las familias y a los adolescentes de 17 años o menos. Estas evaluaciones son llevadas a cabo por Promotoras o trabajadoras de la salud comunitarias.

> *"Disfruto educando a los padres de asmáticos sobre lo que pueden hacer para mejorar el entorno de su hogar, como presentarles productos de limpieza no tóxicos."*
>
> **Rubi Álvarez**
> **Trabajadora de Salud Comunitaria**
> ***(Promotora)***

A la fecha, IVCAP ha inscrito a casi 90 asmáticos adicionales en su programa, con un 80% de ellos reduciendo, evitando y/o eliminando dos o más desencadenantes de asma identificados en sus hogares después de la evaluación. Las familias recibieron propuestas adecuadas al conjunto único de factores desencadenantes identificados en sus hogares.

Al término de este esfuerzo de dos años, el IVCAP espera atender a otras 70 familias y llevar a cabo evaluaciones en sus hogares esperando disminuir las visitas a la sala de emergencias y las hospitalizaciones. Además de las visitas domiciliarias, el IVCAP aumentará las actividades de divulgación dirigidas a incrementar la conciencia sobre el asma con programas de educación para los residentes diagnosticados con asma sobre los beneficios de mejorar el entorno doméstico interior para mantener el control a largo plazo de esta condición. Para obtener más información sobre el asma y sus desencadenantes, visite la página sobre asma de la EPA.

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MEJORANDO LA CALIDAD DEL AGUA

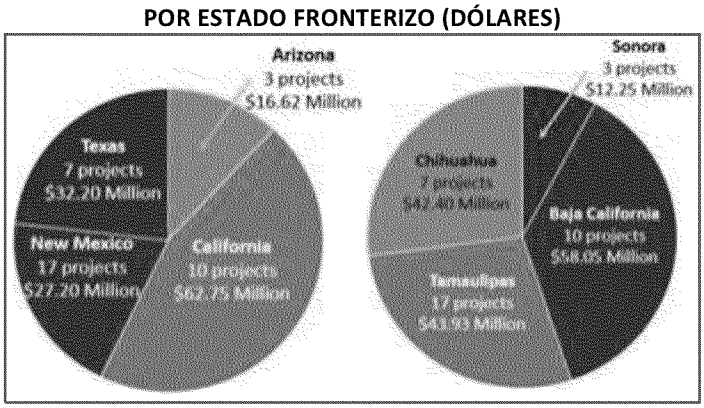
Los ríos y las cuencas hidrográficas no conocen fronteras y, en algunos casos, definen la frontera entre México y los Estados Unidos. Las aguas pluviales contaminadas y las aguas residuales de infraestructura deteriorada, así como los fenómenos meteorológicos extremos pueden contaminar los cursos de agua transfronterizos, causando problemas de salud pública en la región fronteriza. El Programa Frontera 2020 ha mejorado la calidad del agua mediante el financiamiento de proyectos piloto para la gestión o aprovechamiento de aguas pluviales, así como infraestructura verde, programas para la reducción de residuos sólidos e investigación. Los fondos del Programa de Infraestructura Hidráulica Fronteriza (BWIP, por sus siglas en inglés) se han utilizado tanto para rehabilitar como para construir infraestructura para agua potable y para aguas residuales.

Programa México-Estados Unidos de Infraestructura Hidráulica Fronteriza

A través del Programa México-Estados Unidos de Infraestructura Hidráulica Fronteriza (PIHF) se otorgaron recursos para la planeación, diseño y construcción de proyectos prioritarios de infraestructura de agua potable y aguas residuales a lo largo de la frontera. El PIHF ayuda a las comunidades desfavorecidas a identificar y asegurar las fuentes de financiación disponibles y abordar los déficits de financiación para garantizar el acceso al agua potable y al saneamiento adecuado, a menudo por primera vez.

El PIHF proporciona capacitación administrativa y supervisión técnica a las comunidades que carecen de éstas con el propósito de que puedan cumplir con los requisitos de diseño y planificación de proyectos, aumentando así las oportunidades de financiamiento para la asistencia de construcción proveniente de otros programas como el Programa de Áreas Marginadas de Texas, el Fondo Rotatorio Estatal, los programas de agua y medio ambiente para el desarrollo rural del Departamento de Agricultura de los Estados Unidos (USDA, por sus siglas en inglés) y del Banco de Desarrollo de América del Norte (BDAN).

PRIORIZACIÓN DE PROYECTOS 2017 POR ESTADO FRONTERIZO (DÓLARES)



Los ríos ubicados en la región fronteriza entre México y los Estados Unidos en ocasiones definen de forma natural el límite geográfico internacional, como lo hace el Río Bravo, o bien fluyen desde México a los Estados Unidos, como es el caso del río Tijuana. Los proyectos financiados por el PIHF en ambos países abordan las descargas de aguas residuales transfronterizas, ya que su tratamiento antes de que entren en los cuerpos de agua fronterizos compartidos es la opción más viable, desde el punto de vista técnico y financiero. para prevenir su contaminación. Como parte de esta asociación, México iguala dólar por dólar las inversiones que la EPA proporciona a proyectos de infraestructura hidráulica, lo que ayuda a proteger la salud pública y el medio ambiente.

Logros del Programa

Desde 2003, a través de 108 proyectos financiados, el PIHF ha proporcionado acceso a agua potable a 70,000 hogares, así como sistemas para la recolección y tratamiento de aguas residuales a 673,000 hogares que nunca habían recibido este servicio. En 2017, a través del BDAN, la EPA anunció un nuevo ciclo de solicitud de proyectos para recibir financiamiento del PIHF. Se identificaron

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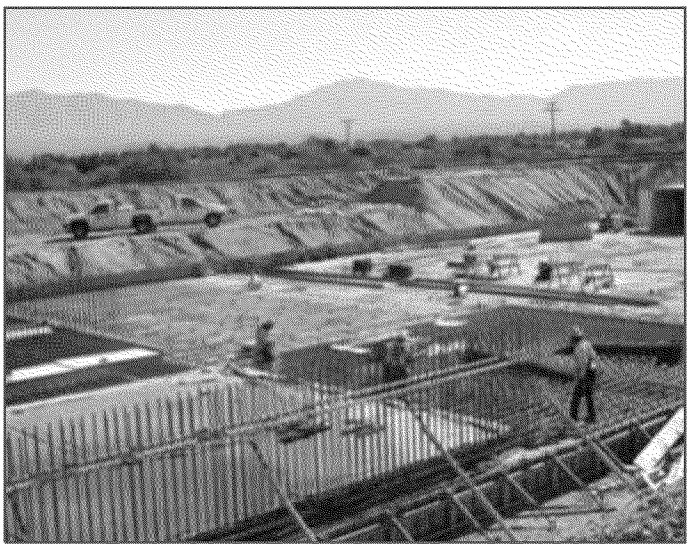
más de 60 proyectos elegibles de agua potable y aguas residuales con un costo de construcción total estimado en $296 millones de dólares que abordan las condiciones ambientales y de salud pública en la región fronteriza.

Desarrollando capacidades técnicas y de gestión en Sunland Park, Nuevo México, mediante asociaciones conjuntas

La construcción de una nueva planta de tratamiento en Sunland Park, una comunidad pequeña y marginada en Nuevo México, comenzó en agosto de 2017. La Autoridad de Servicios Regionales de Camino Real (CRRUA), la autoridad sanitaria local, se enfrentó a problemas debido a infraestructura inadecuada y obsoleta, el cumplimiento ambiental y la falta de capacidad y recursos gerenciales. Durante casi dos años, la EPA, el Departamento de Medio Ambiente de Nuevo México (NMED) y el BDAN trabajaron en estrecha colaboración con CRRUA para implementar un plan de desarrollo de capacidades para garantizar que esta institución pudiera administrar efectivamente una planta nueva de tratamiento de aguas residuales. La USEPA proporcionó más de $816 mil dólares para implementar con éxito este plan y la asistencia técnica para la planificación y el diseño del proyecto; posteriormente, la EPA y el NMED financiaron la construcción de una planta de tratamiento con un costo de $12.7 millones de dólares, de los cuales la EPA contribuyó con $9 millones y el NMED proporcionó los $3.7 millones restantes con fondos estatales. La planta de tratamiento mejorará el acceso a servicios sustentables de tratamiento de aguas residuales a aproximadamente 6,440 residentes de Sunland Park y Santa Teresa y reducirá en gran medida los riesgos de descargas de aguas residuales no tratadas o inadecuadamente tratadas al río Bravo.


Construcción de la nueva planta de tratamiento de Sunland Park.

El presidente de la junta directiva de CRRUA, Josh Orozco, enfatizó la importancia de finalmente poder proporcionar la capacidad adecuada de tratamiento de aguas residuales en la comunidad. Durante la ceremonia de inauguración en julio de 2017, dijo que esta nueva planta "... no sólo permitirá que más hogares y más empresas reciban ayuda, sino que también mejorará la salud de nuestra comunidad."

Protegiendo la cuenca del río Tijuana de la contaminación transfronteriza

El río Tijuana nace en Baja California, México, cruza la frontera en San Ysidro, California, y desemboca en el Océano Pacífico al sur de Imperial Beach, California. Las descargas de aguas residuales y tratadas inadecuadamente en este río pueden afectar la economía, la salud y el medioambiente de comunidades estadounidenses como Imperial Beach y Chula Vista en el condado de San Diego. Como parte de un esfuerzo multilateral y de largo plazo para abordar estas descargas transfronterizas, se está llevando a cabo un proyecto en el marco del PIHF para reparar algunos de los recolectores de aguas residuales deteriorados. Estos recolectores transportan las aguas residuales de los hogares a la planta de tratamiento de aguas residuales de Tijuana. Si no son reparados, pueden producirse colapsos catastróficos que darían lugar a cientos de millones de litros de aguas residuales no tratadas que fluirían hacia los Estados Unidos y hacia las playas del Condado de San Diego. La cooperación existente entre las agencias de agua mexicanas y la EPA se traduce en $7 millones de dólares invertidos en la reparación de poco más de 9.6 km de recolectores de aguas residuales y la rehabilitación de 30 pozos de registro. Asimismo, está en marcha una segunda fase para la construcción de 4 km de líneas de alcantarillado adicionales. El costo estimado de este proyecto es de $3 millones de dólares, con una contribución proyectada por parte de la EPA de $1.4 millones.

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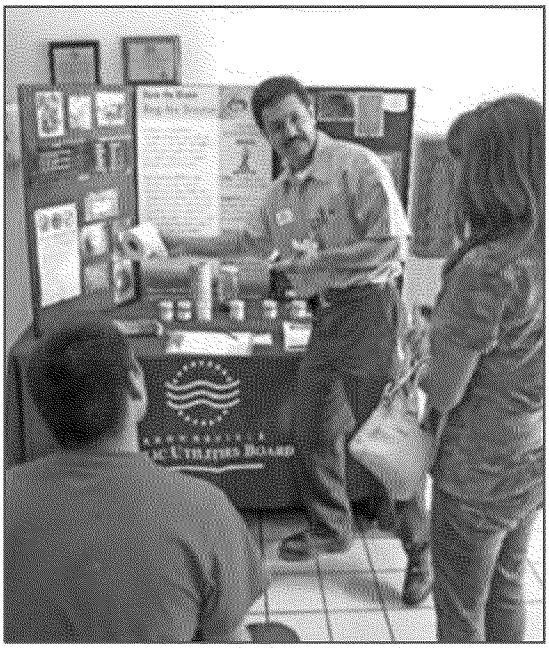
Campaña de Difusión Pública sobre Aceites y Grasas en Brownsville

La Junta de Servicios Públicos de Brownsville (BPUB, por sus siglas en inglés) recibió financiamiento del Programa Frontera 2020 por $25 mil dólares en febrero de 2016 para la difusión de información y educación sobre el impacto de la contaminación con grasas y aceites en la calidad del agua de las comunidades en Brownsville, Texas, y Matamoros, Tamaulipas. Históricamente, las llamadas al BPUB de zonas residenciales y comerciales por problemas relacionados con grasas y aceites ocurrieron en promedio cinco veces por semana, con un aumento de incidencias durante el mes de diciembre.

El BPUB se integró a un programa de reducción voluntario de la Comisión de Calidad Ambiental de Texas (TCEQ, por sus siglas en inglés) llamado Iniciativa Sanitario para el Desbordamiento del Alcantarillado. Este programa voluntario requiere que el BPUB trabaje para reducir la descarga no autorizada de aguas residuales no tratadas o parcialmente tratadas en el sistema de recolección o sus componentes (por ejemplo, alcantarillas, estaciones de bombeo o de limpieza) antes de llegar a una planta de tratamiento de aguas residuales, como resultado de problemas relacionados con aceites y grasas. Mediante campañas educativas para el público en general y para establecimientos comerciales, el BPUB tuvo como objetivo reducir el número de llamadas de servicio relacionadas con aceites y grasas, así como crear conciencia sobre las técnicas apropiadas para la eliminación adecuada de éstas.

Esfuerzos de mercadeo y educación

El 16 de marzo de 2016, el BPUB lanzó oficialmente su campaña de alcance masivo "Grasas y Aceites" en su reunión pública mensual en Brownsville. De igual forma, anunciaron la colaboración con la ciudad de Matamoros para la difusión de la campaña sobre aceites y grasas. El BPUB informó a las comunidades de ambos lados de la frontera a través de una serie de actividades que incluyeron anuncios, volantes educativos, videos publicitarios, talleres y cobertura de prensa. Las plataformas de redes sociales como Facebook, Twitter y YouTube también fueron utilizadas para dirigirse al público más joven y compartir las campañas educativas producidas en video y audio. A lo largo del período del proyecto, se llevaron a cabo más de 80 eventos de divulgación pública y difusión en apartamentos y complejos de viviendas, iglesias e instituciones educativas, así como en negocios comerciales en los que participaron más de 1,700 personas.



Evento de difusión en Brownsville.

Más importante aún, el BPUB, a través de sus actividades de promoción, ha reducido consistentemente el número de llamadas relacionadas con grasas y aceites de 731 en 2013 a 417 en 2016, una reducción del 43% en tan sólo cuatro años. Durante el período del proyecto, en 2015 y 2016, el BPUB recibió 477 y 417 llamadas, respectivamente, para atender problemas relacionados con grasas y aceites. En general, el proyecto cumplió con sus objetivos, entre los que se incluía el de reducir el número de llamadas de incidencias relacionadas con grasas y aceites en un 13% o en 60 llamadas. Para obtener más información sobre los esfuerzos que el BPUB realiza en este tema, por favor visite su página en internet.

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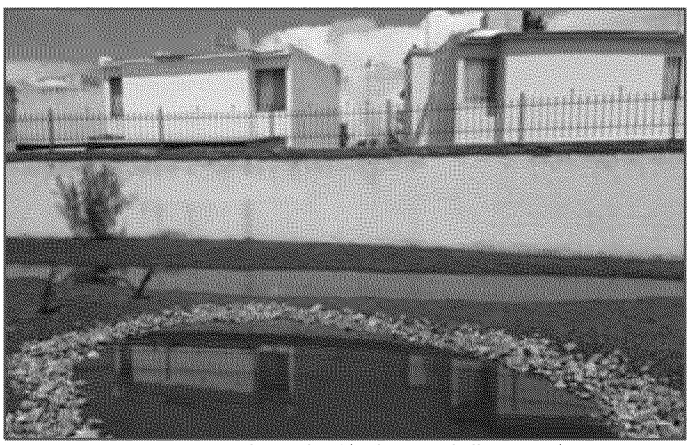
Construyendo Infraestructura Verde en Espacio Público de la Avenida Valle del Sol

La Organización Mundial de la Salud (OMS) establece un indicador de sustentabilidad de 9 m^2 de áreas verdes por habitante. La región fronteriza de Ciudad Juárez y El Paso experimenta un marcado déficit de espacios verdes urbanos, especialmente en Ciudad Juárez donde se calcula existen sólo 4.5 m^2 de área verde por habitante. Desde 2013, la ciudad ha buscado activamente asociarse con diversas organizaciones para incrementar su infraestructura y espacios verdes. Estos proyectos no sólo pueden ser rentables, sino que pueden atender problemas de inundación asociados con la falta de infraestructura de aguas pluviales y embellecer las áreas con alto tránsito peatonal.

En 2016, con apoyo del Programa Frontera 2020 se financió la rehabilitación de un parque situado en la avenida Valle del Sol y la calle Solares. Ubicado a menos de un kilómetro de la línea fronteriza, este parque es el único espacio verde disponible para la comunidad de la zona. Con el paso de los años, la condición del parque se fue degradando debido a la falta de mantenimiento y dejó de servir como un área de esparcimiento y reunión para los miembros de la comunidad. El Instituto Tecnológico de Ciudad Juárez (ITCJ), promotor del proyecto, transformó el parque en un espacio adecuado para ser utilizado por los miembros de la comunidad e implementó medidas para atender los problemas de inundación que experimenta esta zona cuando llueve.



Sistemas pasivos para la recolección de agua de lluvia en el parque.

Con el financiamiento otorgado por el Programa, la ITCJ desarrolló este proyecto con los siguientes objetivos:

- Construir sistemas pasivos para el almacenamiento de aguas pluviales;
- Conservar agua potable usada para regar;
- Proteger el suelo de la erosión causada por el viento; e
- Incorporar y aprovechar la infraestructura urbana existente.

El proyecto inició en junio de 2016 con la limpieza del sitio y el acondicionamiento de la banqueta. Posteriormente se trabajó en la construcción de sistemas pasivos para la recolección de aguas pluviales, así como en la recuperación y reconfiguración de la vegetación existente en el lugar. La cantidad de lluvia medida en 17 meses, de julio de 2016 a noviembre de 2017, resultó en la captura de un volumen total de 1,788 metros cúbicos de aguas pluviales.

En la actualidad, los sistemas pasivos de recolección de agua continúan funcionando eficazmente y la vegetación está prosperando. El parque se sostiene casi en su totalidad con agua de lluvia, excepto en casos de sequía extrema o para el riego de vegetación recién sembrada.

Gracias a una donación de las autoridades municipales, el suelo del parque está protegido de la erosión eólica por una cubierta de cáscara de nuez que permite que se conserve la humedad del suelo.

Finalmente, las encuestas realizadas en la zona mostraron que el valor social del parque ha aumentado sustancialmente. Antes del proyecto, el lugar era considerado como un espacio negativo por los residentes de la comunidad y ahora es considerado como un espacio público agradable y con valor social.

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Estudiando Métodos de Desarrollo de Bajo Impacto para la Gestión de Aguas Pluviales en el Sur de Texas

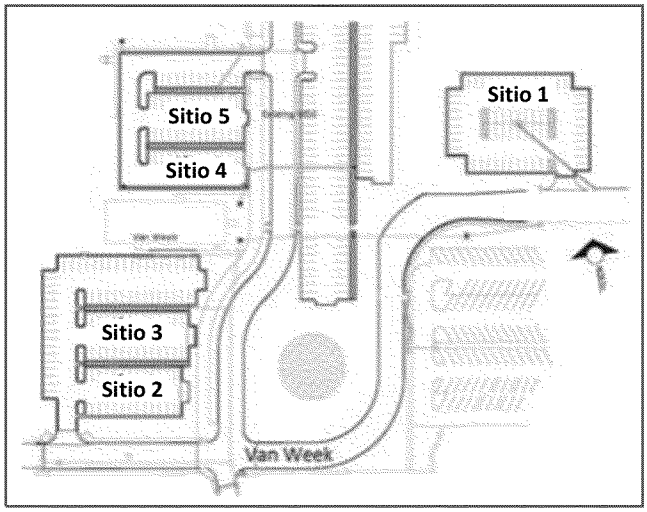
Varias comunidades en el Valle Bajo del Río Bravo en el sur de Texas han estado evaluando varios métodos de Desarrollo de Bajo Impacto (DBI) para incorporarlos a sus comunidades. Los DBI proporcionan varias ventajas sobre las prácticas tradicionales para la gestión de aguas pluviales, tales como: reducir o eliminar la necesidad de grandes estanques de captación y retención de agua; disminuir la contaminación de los cuerpos de agua; disminuir la erosión; incrementar el aspecto atractivo de la comunidad; flexibilidad en el diseño de los proyectos; todo a bajo costo. Un equipo de investigación liderado por el Dr. Jungseok Ho, de la Universidad de Texas en el Valle Bajo del Río Bravo (UTRGV, por sus siglas en inglés), evaluó el uso de drenajes sostenibles en estacionamientos para determinar el mejor material poroso disponible a nivel local, así como un diseño estándar que podría ser utilizado por las localidades de la región. Los drenajes sostenibles generalmente son diseñados para el manejo de aguas pluviales en superficies impermeables de gran tamaño, como estacionamientos, incorporando materiales porosos y elementos de paisaje urbano con el propósito de eliminar los desechos y la contaminación de las aguas pluviales.

MATERIALES POROSOS Y TAMAÑO DE DRENAJE POR SITIO DE ESTUDIO

Sitios de Prueba	Drenaje Sostenible	Material Poroso	Tamaño (acres)
Sitio 1	Sin drenaje	Sin drenaje	.237
Sitio 2	Drenaje 1	Piedra Pómez	.216
Sitio 3	Drenaje 2	Arena fabricada	.218
Sitio 4	Drenaje 3	Vidrio reciclado triturado	.209
Sitio 5	Drenaje 4	Arena natural	.206

Basándose en estudios previos realizados por el Dr. Ho, su equipo evaluó cinco sitios de prueba que utilizaron varios materiales porosos (piedra pómez, arena fabricada, vidrio triturado reciclado y arena natural) en los estacionamientos del campus Edinburg de la UTRGV.

El proyecto evaluó el rendimiento hidrológico de los cuatro materiales diferentes utilizados en los cinco sitios de prueba. Los resultados obtenidos para el Sitio 2, con el material de piedra pómez, mostraron un mejor rendimiento hidrológico teniendo en cuenta los cuatro criterios definidos para la elección: 1) reducción del volumen escurrimiento de aguas pluviales; 2) reducción del caudal máximo; 3) atenuación de los puntos máximos del caudal; y 4) filtración de los sólidos contenidos en el caudal de aguas pluviales. La piedra pómez mostró la mayor filtración de los cuatro materiales utilizados con un 58% y una atenuación del volumen máximo del caudal en un 64%.



Ubicación de los sitios de estudio en el Campus Edinburg de la UTRGV.

Los resultados del estudio de suelo muestran que cualquier mezcla que contenga más del 40% de piedra pómez del volumen total produce resultados prometedores. Tres mezclas de arena fabricada, arena natural y vidrio triturado reciclado con un 40% de piedra pómez cada una, alcanzaron un promedio de 30% de retención de aguas pluviales y 52% de filtración de residuos.

En general, con base en las pruebas de campo, la piedra pómez tuvo el mejor desempeño de los materiales porosos utilizados, con resultados que muestran que la utilización de mezclas con al menos un 40% de piedra pómez es el material ideal para esta región. Sin embargo, cabe destacar que es necesario realizar más estudios para conocer la disponibilidad y costo de este material en la región, así como el costo de la construcción de proyectos para determinar su nivel de efectividad final y ser utilizado por las comunidades de la región.

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Infraestructura Verde para Control de Sedimentos y Protección Contra Inundaciones en Ambos Nogales

El Interceptor de Desagüe Internacional (IDI) es una tubería que transporta las aguas residuales no tratadas de Nogales, Sonora, y Nogales, Arizona, (Ambos Nogales) a la Planta Internacional de Tratamiento de Aguas Residuales de Nogales, nueve millas al norte de la frontera en Río Rico, Arizona. Dado que el sistema de recolección de aguas residuales en Sonora actúa como transporte combinado de agua sanitaria y pluvial, a lo largo de los años los flujos de sedimentos y la infiltración de aguas pluviales en Sonora han causado la falla del IDI en Arizona. El deterioro ocasionado por el sedimento ha debilitado el sistema, lo que ha provocado roturas en las tuberías del IDI, la última en julio de 2017, lo que ha generado derrames de aguas residuales en el Arroyo Nogales. Las fallas reiteradas del IDI podrían ocasionar la contaminación de los recursos hídricos subterráneos de Arizona.

Parque diseñado para recolectar agua de lluvia y prevenir inundaciones.

El Grupo de Gestión de Cuencas Hidrográficas (WMG, por sus siglas en inglés), una organización sin fines de lucro con sede en Tucson, Arizona, encabezó un proyecto financiado por el Programa Frontera 2020 para demostrar el potencial de infraestructura verde existente para disminuir la cantidad de sedimentos durante las inundaciones provocadas por lluvias que están deteriorando el IDI. La infraestructura verde, de acuerdo con la EPA, utiliza la vegetación, los suelos y otros elementos y prácticas para restaurar algunos de los procesos naturales necesarios para gestionar el agua y crear entornos urbanos más saludables. El proyecto utilizó un enfoque de tres frentes que incluyó:

- Desarrollo de capacidades (capacitaciones comunitarias en actividades de planificación, diseño e implementación);
- Sitios piloto (dos proyectos para el control de sedimentos); y
- Desarrollo de políticas (resolución para expandir y fortalecer las prácticas de infraestructura verde en Nogales, Sonora).

Trabajando con el gobierno local y los residentes de Nogales, Sonora, el WMG completó dos sitios piloto con un área de aproximadamente de una hectárea, similar al área de un campo de fútbol. Además, 88 residentes asistieron a un taller de capacitación y más de 500 miembros de la comunidad recibieron información sobre conceptos de infraestructura verde a través de eventos comunitarios y participación en proyectos. Uno de los sitios piloto es un parque que ahora colecta un volumen de entre 50,000 y 70,000 litros de agua pluvial cada evento de lluvia. Estas modificaciones de infraestructura verde eliminan casi por completo la contribución de sedimentos originados en el parque durante inundaciones provocadas por lluvias río abajo en el área de Ambos Nogales.

El proyecto atrajo el apoyo de un Diputado del Congreso de Sonora electo en representación del Municipio de Nogales y que es miembro de la Comisión de Energía, Medio Ambiente y Cambio Climático del Congreso Estatal; por lo que tuvo un impacto más allá del nivel local fomentando que el Congreso de Sonora adoptara una ley de infraestructura verde en abril de 2017, la primera de su tipo aprobada en México.

De igual forma, incrementó la capacidad de la comunidad para usar infraestructura ecológica para reducir las inundaciones en el área de Ambos Nogales e impulsó al gobierno local a apoyar el futuro desarrollo de infraestructura verde.

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Protegiendo los Recursos Hídricos de la Ciudad de Holtville en el Condado Imperial

Ubicada en el Condado Imperial, California, la planta de tratamiento de aguas residuales (PTAR) de la ciudad de Holtville no cumplía con los requisitos de descarga de amoniaco y otros contaminantes que fluían hacia el drenaje Pear, que alimenta el río Álamo y finalmente el Mar de Salton en el sur de California. Gracias al financiamiento del Fondo México-Estados Unidos de Infraestructura Hidráulica Fronteriza (PIHF) y del Fondo Rotatorio Estatal de Agua Limpia del estado de California, la PTAR existente se modernizó y ahora brinda servicio de aguas residuales al 100% para la zona, beneficiando a 6,594 residentes de Holtville.

Construcción de una estación de bombeo de aguas pluviales.

Considerado un cuerpo de agua deteriorado, las descargas contaminadas de Holtville exacerbaron las difíciles condiciones que enfrentan las comunidades de flora y fauna que viven en el Mar de Salton. Con el paso de los años, los niveles de agua en el Mar de Salton han disminuido rápidamente debido a la evaporación y han aumentado tanto la salinidad y como las concentraciones de contaminantes. El lecho del lago expuesto ha sucumbido a los vientos del desierto que ahora llevan el polvo contaminado a las comunidades circundantes. Estas partículas de polvo pueden contribuir a los ataques de asma en todo el Valle Imperial. La PTAR de Holtville, que ahora cumple con todos los requisitos, no sólo aumentará las posibilidades de supervivencia de los diversos organismos dependientes del Mar de Salton, sino que la afluencia de agua tratada adecuadamente evitará que el lecho del lago esté expuesto al viento y el polvo generado no afecte a los residentes urbanos vulnerables.

Algunos de los nuevos componentes instalados en la PTAR de Holtville incluyen una cortina de barra de operación automática que maximiza la eliminación de objetos grandes y un sistema de lodo activado que mejora la efectividad del tratamiento y la calidad del agua tratada. Así mismo, se rehabilitó el edificio de operaciones de la planta de tratamiento y se instalaron equipos de laboratorio modernos, lo que permitirá que se puedan llevar a cabo los análisis necesarios para asegurar que el agua tratada cumpla con los requisitos para su descarga.

> ***"La EPA está comprometida a ayudar a las comunidades de todo el Valle Imperial a proteger los recursos hídricos vitales del estado. Nuestras inversiones renuevan la infraestructura obsoleta, lo que puede ser costoso para comunidades pequeñas como Holtville."***
>
> **Tomás Torres**
> **Director de la División de Agua**
> **Oficina Regional 9 de la EPA**

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PROMOVIENDO SUELOS LIMPIOS

En la región fronteriza entre México y los Estados Unidos, la gestión de los residuos sólidos no ha seguido el ritmo del aumento de la población, lo que ha dado como resultado basura no colectada de manera apropiada, así como infraestructura y servicios sobrecargados y la pérdida de posibles materiales valiosos en rellenos sanitarios o vertederos ilegales. La basura sin dispuesta en sitios adecuados contamina la tierra y el agua generando impactos adversos en la salud pública, tales como propiciar incendios que contribuyen a la mala calidad del aire o servir como hábitat de reproducción de mosquitos y la propagación de enfermedades transmitidas por vectores como el Zika. La Gestión Sustentable de Materiales (GSM) promueve un enfoque de ciclo de vida que va desde la optimización del diseño hasta el proceso de producción final de bienes y servicios para reducir el desperdicio, eliminar la toxicidad y maximizar la reutilización. Los Socios del Programa Frontera 2020 han avanzado la GSM a través de limpiezas y proyectos para reciclar residuos domésticos peligrosos, aparatos electrónicos y llantas de desecho.

Atendiendo los Desafíos Binacionales de la Basura Electrónica en Coahuila y Texas

Los rápidos avances en la tecnología y el uso de productos electrónicos por parte de los consumidores hacen que estos se vuelvan obsoletos rápidamente y sean desechados. A diferencia de otros materiales reciclables, los desechos electrónicos (e-waste) no son tan fácilmente reciclables debido a los metales tóxicos que contienen (plomo, mercurio, cadmio y arsénico). El desafío con el reciclaje de desechos electrónicos es a menudo la disposición inadecuada en los rellenos sanitarios locales y la falta de infraestructura en las comunidades para apoyar el correcto manejo y reciclaje.

En 2016, el Programa Frontera 2020 otorgó financiamiento a dos proyectos, promovidos por la Secretaría de Medio Ambiente del estado de Coahuila (SEMA) y por la organización Green Tec-osos, grupo ambientalista del Instituto Tecnológico de Piedras Negras, para el reciclaje de residuos electrónicos en las comunidades de Ciudad Acuña, Piedras Negras y Guerrero, en el estado de Coahuila, y Eagle Pass en Texas. Estos proyectos tuvieron como objetivo evitar que los desechos electrónicos generados en estos municipios fueran vertidos ilegalmente en el lecho del Río Bravo, en los alrededores de la presa La Amistad, así como en arroyos, lotes baldíos y rellenos sanitarios de la región. También proporcionaron información y educaron a la comunidad sobre los beneficios de reutilizar productos electrónicos.

EVENTOS COMUNITARIO DE RECOLECCIÓN EN COAHUILA Y TEXAS
FEBRERO, 2016 - MARZO, 2017

Tipo de	*e-waste* Recolectado (tons)	Población Atendida
22 colonias de Piedras Negras	32.22	45,000-50,000
Escuelas de los municipios de Piedras Negras y Nava	8.83	5,500
Negocios y otros	5.56	2,500
Eagle Pass	14.83	28,765

Para mejorar las prácticas sustentables se establecieron 10 centros permanentes de recolección de desechos electrónicos en las cuatro comunidades. A través de eventos comunitarios, los proyectos lograron la recolección de más de 113 toneladas de desechos electrónicos. Además, con la asistencia de más de 60 socios del Programa y a través de talleres, capacitaciones y medios de comunicación; los residentes fueron educados sobre los impactos positivos que el reciclaje adecuado de los desechos electrónicos tiene en el medio ambiente.

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Manejo Integral de Desechos Sólidos y Llantas Usadas en la Frontera México-Estados Unidos

El Programa Frontera 2020 tiene como uno de sus objetivos construir un enfoque más sustentable e integrado para la gestión de materiales de desecho con el fin de minimizar y reducir su impacto en el medio ambiente y mejorar la salud pública. Sin embargo, en una región geográfica donde la población, las condiciones socioeconómicas y las regulaciones ambientales pueden variar significativamente, las diferentes comunidades fronterizas han tenido que adoptar enfoques variados y creativos para construir comunidades sustentables.

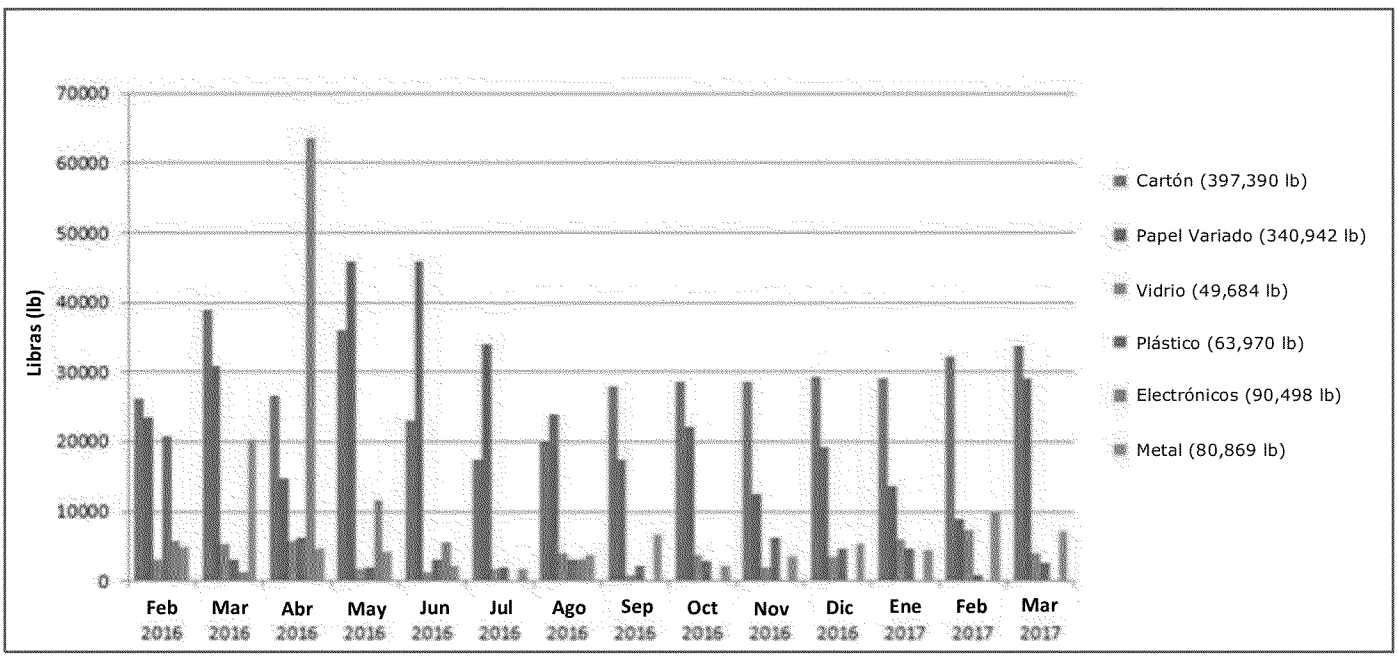
Ciudad de Pharr, Texas

A lo largo de los años, la ciudad de Pharr ha implementado diversas herramientas para la sustentabilidad en el Departamento de Obras Públicas con el objetivo de que esta ciudad sea una de las más limpias en el Valle Bajo del Río Bravo. En 2016, Pharr recibió financiamiento por parte del Programa Frontera 2020 por un monto de $36 mil dólares para continuar mejorando sus actividades de reciclaje y educativas en la comunidad con el objetivo de reducir la dependencia de la ciudad en los rellenos sanitarios y construir una comunidad más saludable. Durante un período de 14 meses la ciudad recolectó:

- Más de 5,700 llantas de desecho;
- 60 toneladas de residuos diversos (Figura); y
- 464 toneladas de material reciclado que no fueron depositadas en rellenos sanitarios.

El Departamento de Obras Públicas condujo una campaña de educación pública bilingüe sobre los esfuerzos de reciclaje y sustentabilidad de la ciudad, así como de la contaminación de aguas pluviales y disposición ilegal de llantas usadas, a través de redes sociales, folletos, anuncios de radio y más de 100 actividades informativas (20 reuniones, 40 eventos, 50 presentaciones). El proyecto también fomentó los esfuerzos de reciclaje en algunas escuelas de la ciudad mediante la promoción de un concurso de educación ambiental, así como el suministro en el distrito escolar de 75 contenedores para reciclaje en los salones de clase y docenas de contenedores para reciclaje con una capacidad de 360 litros. Para obtener más información sobre el Departamento de Obras Públicas de Pharr y sus esfuerzos, por favor visite su página en internet.

MATERIAL RECOLECTADO Y RECILADO DESVIADO DEL RELLENO SANITARIO DE PHARR, TEXAS. (lb/mes)



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Valle Hermoso y Río Bravo, Tamaulipas

En 2014, el estado de Tamaulipas aprobó la legislación que establece su Programa de Gestión y Prevención Integral de Residuos. Dentro de este programa, basado en factores como el crecimiento de la población y la generación per cápita de los residuos sólidos, el estado priorizó los municipios donde era vital establecer un programa municipal integral para la gestión y prevención de residuos. También se delinearon las estrategias y acciones específicas que estos programas municipales deberían contener, incluidos los costos asociados a su implementación a corto, mediano y largo plazo. La implementación de los programas municipales se realiza en tres fases: llevando a cabo un diagnóstico para conocer las condiciones actuales; la adopción por parte del municipio de su programa; y, finalmente, la implementación, monitoreo y evaluación del programa municipal.

La Secretaría de Desarrollo Urbano y Medio Ambiente de Tamaulipas (SEDUMA) recibió financiamiento por parte del Programa Frontera 2020 por un monto de $20 mil dólares para ayudar a los municipios de Valle Hermoso y Río Bravo a completar su estudio de diagnóstico sobre la gestión local de los residuos. El estudio de diagnóstico, que se llevó a cabo en período de dos meses, analizó:

- Actividades actuales, personal, equipo, desechos sólidos recolectados y clasificación de desechos;
- Estrategias específicas recomendadas para ser implementadas a corto, mediano y largo plazo;
- Costos asociados a la implementación de las estrategias (Tabla 1);
- Parámetros del programa de monitoreo; y
- Posibles mecanismos de financiación.

El 22 de agosto de 2016, SEDUMA presentó a los dos municipios el diagnóstico de su sistema actual para la gestión de residuos. Con base en el diagnóstico, en marzo de 2017 el municipio de Valle Hermoso publicó y registró oficialmente ante autoridades estatales su programa municipal para la gestión integral de residuos, pasando a la tercera fase. Los próximos pasos incluyen la aprobación por parte del municipio de Río Bravo del diagnóstico y el registro de su programa.

COSTOS TOTALES DE IMPLEMENTACIÓN DE ESTRATEGIAS A CORTO, MEDIANO Y LARGO PLAZO EN VALLE HERMOSO Y RÍO BRAVO, TAMAULIPAS.

Estrategia Considerada por Municipio	Costo Total de Implementación por Municipio (Dólares)	
	Río Bravo	Valle Hermoso
Administración/Operación	$4,776,923.00	$1,296,428.00
Reciclaje	$1,648.00	No considerada/No aplica
Servicios Generales	No considerada/No aplica	$10,989.00
Difusión Pública y Campañas Educativas	$16,373.63	$17,032.00
Participación Sector Privado/ Asociaciones	Sin costo para el Municipio	No considerada/No aplica
Creación de Capacidades Institucionales	$155,495.00	$122,527.00
Financiero/Legislativo	Sin costo para el Municipio	No considerada/No aplica

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Apoyando a los Recicladores de Automóviles

Cada año, los vehículos que alcanzan el final de su vida útil son depositados en deshuesadoras ubicadas en la región fronteriza entre México y los Estados Unidos. A menudo, estos vehículos desechados no se procesan adecuadamente para recuperar los materiales reutilizables o reciclables ni eliminar los materiales peligrosos que contienen. A medida que los vehículos desechados se acumulan, el terreno que ocupan se convierte en un paisaje desagradable a la vista dentro de las comunidades locales y representan un riesgo para la salud humana y el medio ambiente. Los vehículos suelen contener materiales peligrosos como anticongelantes, aceite usado o plomo y, cuando se abandonan, se convierten en una responsabilidad legal para los gobiernos locales.

En respuesta a las necesidades de los recicladores automotrices en la región fronteriza, la SEMARNAT y la EPA desarrollaron una "Guía para Vehículos al Final de su Vida Útil". Este documento fue desarrollado para compartir prácticas efectivas en la preparación de vehículos al final de su vida útil para que sean reciclados adecuadamente y contribuir al objetivo del Programa de reducir el desperdicio mediante la recuperación segura y responsable de los materiales contenidos en ellos.

Poster diseñado para proveer acceso rápido a información básica sobre la preparación adecuada de los vehículos antes de su desmontaje.

La Guía forma parte de un paquete que incluye también un juego de tarjetas de referencia rápida sobre residuos y un póster. Estos materiales instructivos pueden ser utilizados para proveer información oportuna en las instalaciones de desmontaje a los técnicos sobre la preparación adecuada de los vehículos para que su desmontaje sea conducido mediante una gestión ambientalmente racional. Además, la Guía analiza la eliminación responsable, la recuperación de costos, la salud, la seguridad y la protección, las normas que rigen a la industria y una lista de vehículos que contienen interruptores de mercurio.

Los flujos de desechos específicos que representan un alto riesgo para los trabajadores y el medio ambiente se destacan en la Guía y en un conjunto de tarjetas que incluyen diagramas. Los flujos de desechos incluidos son: plomo, interruptores de mercurio, refrigerantes, baterías de desecho, así como líquidos y combustible residuales. En general, la Guía proporciona información que los técnicos pueden utilizar para procesar los vehículos viejos utilizando prácticas de gestión ambientalmente racionales.

La SEMARNAT y la EPA trabajarán coordinadamente para difundir la Guía entre los actores relevantes a lo largo de la región fronteriza en el otoño de 2018. La Guía impresa se encuentra disponible en español, mientras que versiones electrónicas en ambos idiomas están disponibles en la página de la EPA.

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La Tribu Campo Band Avanza en las Prácticas Cero Desperdicios

En la región fronteriza, la disposición inadecuada de basura tiene impactos negativos en el medio ambiente que pueden llegar a tener efectos transfronterizos, como el deterioro de la calidad del agua, la obstrucción del flujo de la corriente de los ríos y la creación de hábitats para vectores de enfermedades. En 2015, la tribu Campo Band, ubicada en California, expresó su preocupación a los representantes del Programa Frontera 2020 por los problemas de desechos sólidos transfronterizos. Para atender estas preocupaciones, en el año 2016 el Programa proporcionó financiamiento para realizar una evaluación del flujo de los desechos sólidos y preparar un Plan de Cero Desperdicios. Este Plan tendría como objetivo reducir significativamente el desperdicio y establecer acciones para eventualmente eliminar los desechos enviados al relleno sanitario.

El Plan de Cero Desperdicios se completó en enero de 2018. Junto con las recomendaciones de este Plan, la tribu Campo Band está explorando activamente otras acciones para la gestión de materiales, incluyendo metas a corto y largo plazo para desarrollar un programa autosustentable de reciclaje y desechos, así como establecer una estación de transferencia. Este Plan fue un importante primer paso o herramienta para que la tribu pudiera alcanzar sus objetivos relacionados con los residuos sólidos y así mejorar la salud de sus miembros y de la región fronteriza en general. La tribu Campo Band continúa aprovechando otros recursos como el Programa de Asistencia General (GAP, por sus siglas en inglés) de la EPA para cumplir sus objetivos sobre desechos sólidos, crear prácticas que tengan sentido para su comunidad y utilizar el plan de cero residuos como una herramienta valiosa para satisfacer sus necesidades. Actualmente, la tribu Campo Band obtuvo $18 mil dólares de financiamiento por parte del GAP para que continúe trabajando con su Plan de Cero Desperdicios.

Miembros de la tribu Campo Band identifican y separan diferentes tipos de residuos.

Miembros de la tribu Campo Band pesan diferentes tipos de residuos.

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El Compostaje Desvía Valiosos Materiales Orgánicos de los Rellenos Sanitarios

Donación de composta a participantes del programa Ecoparque.

La composta es un recurso valioso formado por desperdicios de comida, esquejes de jardinería u otro material orgánico. Sin embargo, con base en el estudio de 2018 "Caracterización y Manejo de los Desechos Orgánicos", publicado por la Comisión de Cooperación Ambiental (CCA), los residuos orgánicos en México y los Estados Unidos son depositados principalmente en rellenos sanitarios. El Programa Frontera 2020 ha trabajado para aumentar las tasas de reutilización de los residuos orgánicos, estimadas en 7% para México y 32% para los Estados Unidos, trabajando con socios y actores gubernamentales, académicos, organizaciones sin fines de lucro e industriales para mejorar el manejo de desechos orgánicos a través de prácticas para el compostaje y las prácticas "Jerarquía para la recuperación de alimentos" de la EPA.

En el año 2012, el Programa otorgó financiamiento a la organización Tijuana Calidad de Vida que tuvo como resultado la implementación del primer programa piloto fronterizo de compostaje municipal, el cual produce composta y educa a futuros compostadores. En el año 2016, el Centro de Finanzas Ambientales de la Oficina Regional 9 de la EPA financió un proyecto para identificar nichos de mercado para la composta en Tijuana que pudieran ser aprovechados por las empresas que necesitaban alcanzar metas de reducción de desechos para sus calificaciones de responsabilidad social corporativa. En 2017, el Colegio de la Frontera Norte (COLEF) condujo un programa piloto que trabajó con casi 120 hogares de Tijuana capacitando a sus integrantes en un total de 27 talleres. Esto dió como resultado la reutilización de 10,067 kg de residuos de comida de sus hogares. La composta generada fue utilizada en Ecoparque, un programa para modelar y enseñar prácticas sustentables y se donaron 107 sacos de composta a los participantes del programa piloto. Los resultados de este programa fueron incluidos en el informe 2018 de la CCA.

El 13 de junio de 2018, el programa *Compost Cats* de la Universidad de Arizona celebró la adjudicación de un financiamiento por $91 mil dólares del Programa para establecer el Centro de Compostaje del Condado de Santa Cruz; una alternativa muy necesaria a los rellenos sanitarios. Cerca de 3,000,000 de toneladas de productos cruzan cada año por el cercano cruce fronterizo Mariposa en Nogales, uno de los cruces terrestres más concurridos de la frontera, con destino a los mercados estadounidenses. Alrededor de 8,000 toneladas de residuos se generan anualmente, lo que equivale a dos camiones de volteo por día al año, y son depositados en el relleno sanitario de Río Rico, por lo que se espera que el Centro de Compostaje ofrezca beneficios ambientales y económicos a la región (Comunicado de prensa de la Universidad de Arizona). En su primer año, el Centro de Compostaje utilizará 3,000 toneladas de residuos orgánicos creando 6,880 metros cúbicos de composta. Esto equivale a 4.3 campos de fútbol cubiertos con 30 centímetros de composta. El objetivo a largo plazo es utilizar las 8,000 toneladas de residuos generadas anualmente.

El Centro de Compostaje se establecerá siguiendo el exitoso programa "Compost Cats" de la Universidad de Arizona en Tucson, que no sólo genera composta, sino que también trabaja con los bancos de alimentos locales para donar los sobrantes de comida del campus para alimentar a indigentes. En 2015, el trabajo de este programa fue reconocido con el premio *"Food Recovery Challenge"* de la EPA por reducir el desperdicio de alimentos en el campus principal de la Universidad de Arizona y en la ciudad de Tucson. El Centro de Compostaje también servirá como un centro de aprendizaje agrícola para estudiantes de secundaria y universitarios, evitando que este valioso recurso sea depositado en rellenos sanitarios.

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FORTALECIENDO LA PREPARACION Y RESPUESTA A EMERGENCIAS

Reconociendo que los incidentes que involucran químicos peligrosos y otras emergencias ambientales, independientemente de la frontera internacional, pueden amenazar a las comunidades locales y binacionales, México y los Estados Unidos continúan trabajando juntos para mejorar la preparación y la respuesta a emergencias internacionales. El Programa Frontera 2020 y sus Socios apoyan actividades para la capacitación binacional, ejercicios conjuntos, así como la actualización de los equipos esenciales y de los planes conjuntos de emergencia lo que ha incrementado las capacidades de comunicación y respuesta. Juntos, hemos reducido la magnitud de los incidentes y mejorado la seguridad en la región fronteriza.

La Capacitación Binacional Reduce el Peligro y los Impactos Negativos en las Comunidades Fronterizas

Mediante la coordinación con agencias federales, estatales y locales de ambos países, el Programa Frontera 2020 ha organizado ejercicios y actividades de capacitación conjunta, y ha tomado las medidas necesarias para garantizar que los socorristas cuenten con el equipo de protección personal adecuado para responder de manera segura y efectiva a incidentes. Desde el inicio del Programa, más de 10,500 bomberos, brigadistas para la atención de emergencias, policías, militares, representantes de la industria, personal médico y otros líderes comunitarios relevantes han recibido capacitación a través de: 153 cursos de capacitación, 32 ejercicios binacionales y 245 ejercicios de notificación entre México y los Estados Unidos en la región fronteriza de Sonora-Arizona y Baja California-California.

"Gracias a la EPA, así como a los bomberos de la ciudad de Douglas, Arizona, que han participado como instructores, por enriquecer nuestro conocimiento HAZMAT. Gracias a esto estamos preparados para cualquier emergencia. Nuestro objetivo es proteger a la comunidad de nuestras ciudades hermanas. Gracias a la EPA por proporcionarnos el equipo ya que, debido a su alto costo, está fuera de nuestro alcance. Gracias por confiar y creer en los bomberos de Agua Prieta."

Teniente José Romero
H. Cuerpo de Bomberos de Agua Prieta

Bomberos de ambos países combaten el incendio de diciembre.

Conseguir que personal y equipo crucen la frontera de manera oportuna para ayudar a responder a emergencias siempre ha sido un desafío que requiere de un esfuerzo coordinado entre una amplia gama de agencias y organizaciones. Las actividades de capacitación y los ejercicios binacionales con socorristas, funcionarios de aduanas, distintas agencias gubernamentales, militares, industria y el público en general; han sentado las bases para una respuesta eficiente a situaciones reales de emergencia.

Respuesta Binacional a un Incendio en el Invierno de 2017

Cuando un gran incendio de llantas produjo peligrosas nubes de humo en Agua Prieta, Sonora, que se desplazaron hacia Douglas, Arizona, en diciembre de 2017, los bomberos de Douglas cruzaron la frontera y ayudaron a apagarlo en cuatro horas. La

Participantes del taller de capacitación en HAZMAT Tech.

capacitación binacional y los ejercicios en campo, realizados cuatro meses antes del incendio, ayudaron enormemente a aumentar la eficiencia de la respuesta así como a reducir la escala y el impacto del incidente. Además, la Patrulla Fronteriza destacada en el cruce fronterizo entre ambas comunidades permitió el paso oportuno a los bomberos.

La colaboración binacional, con el apoyo de los bomberos de Douglas, evitó que el fuego creciera y potencialmente cruzara a los Estados Unidos reduciendo también la cantidad de humo, el cual puede causar problemas respiratorios a poblaciones sensibles como niños, ancianos y asmáticos en esas localidades de la región fronteriza.

Capacitación Puesta a Prueba por Incendio de Llantas

Un taller de capacitación en HAZMAT *Tech*, con duración de 200 horas, para los bomberos de Douglas y Agua Prieta se está impartiendo los fines de semana y terminará en el otoño de 2018. Como resultado, se tendrán más bomberos capacitados en HAZMAT en Douglas y se formará un equipo completo de HAZMAT en Agua Prieta. Este taller permitirá a los cuerpos de bomberos de estas localidades fronterizas estar mejor entrenados y equipados para responder a incidentes y apoyarse mutuamente en la atención de emergencias.

El 26 de mayo el taller de capacitación tuvo que ser interrumpido y pospuesto debido a la necesidad de atender un llamado de emergencia originado por un incendio en un tiradero de llantas de desecho en Agua Prieta. Se activó y utilizó el Plan de Emergencia Binacional para las Ciudades Hermanas Agua Prieta-Douglas, el cual había sido actualizado recientemente, para atender la emergencia. Con el apoyo del Departamento de Bomberos de Douglas, el incendio fue controlado en menos de tres horas.

Gerardo Romo, miembro del Departamento de Bomberos de Douglas comentó: "Gracias a los esfuerzos binacionales y la capacitación en HAZMAT proporcionada, los bomberos de Agua Prieta tuvieron la capacidad de responder a los incidentes de una manera más rápida y eficiente. En el pasado, el Departamento de Bomberos de Agua Prieta atendió voluntariamente las emergencias de incendios dando su mejor esfuerzo; sin embargo, ahora que están recibiendo el entrenamiento HAZMAT por parte del Departamento de Bomberos de Douglas, entienden la necesidad de contar con un equipo de protección personal adecuado para responder y enfrentar el riesgo de cada evento, como los incendios de llantas. Personalmente, vi a los bomberos usar el equipo de protección respiratoria adecuadamente durante el incendio de llantas que ocurrió el 26 de mayo."

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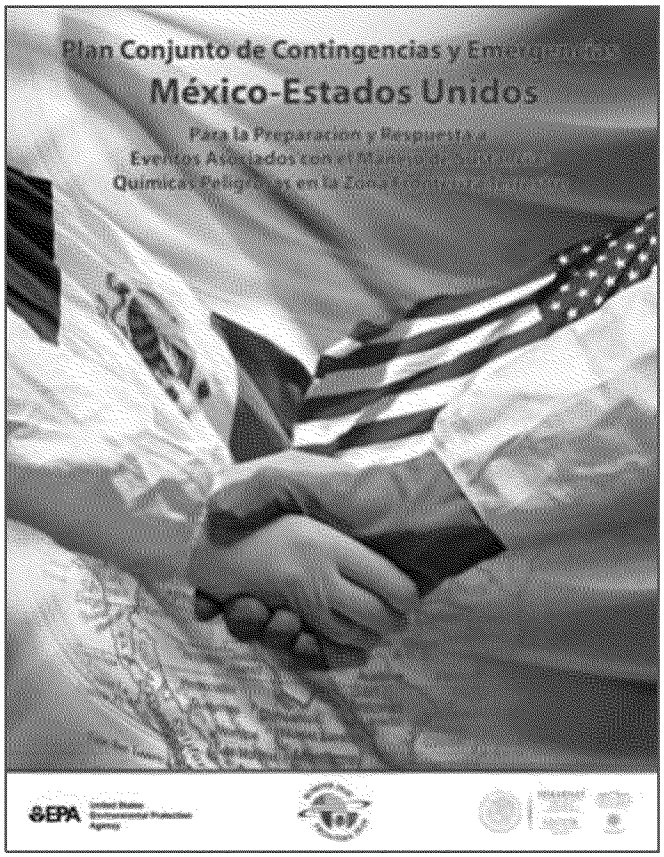
Mejora la Preparación Conjunta para la Respuesta a Emergencias Ambientales en el Marco del Programa Frontera 2020

Las emergencias químicas y de otras sustancias peligrosas no respetan las fronteras internacionales por lo que mantener una adecuada preparación para atender una posible emergencia en la región fronteriza es esencial para mejorar la capacidad de respuesta a incidentes, protegiendo al medio ambiente y a la población de sus impactos.

El Anexo II del Acuerdo de La Paz de 1983 estableció el Plan Conjunto de Contingencias (PCC), el cual proporciona un mecanismo de coordinación binacional para proteger la salud humana y el medio ambiente, así como la respuesta a contingencias químicas o petrolíferas significativas o emergencias que afecten la región fronteriza entre México y los Estados Unidos. Atendiendo este compromiso, dos versiones anteriores del PCC han sido revisadas y actualizadas, resaltando que el 17 de noviembre de 2017, en la Ciudad de México, la última actualización del PCC fue firmado por la Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT), a través de la Procuraduría Federal de Protección al Ambiente (PROFEPA), y por la Coordinación Nacional de Protección Civil de la Secretaría de Gobernación (SEGOB). Previamente, en representación de los Estados Unidos, la Oficina de Gestión de Emergencias (OEM) de la EPA firmó la actualización del PCC.

El PCC actualizado establece un sólido sistema de notificación binacional que ha sido reestructurado para reflejar las lecciones aprendidas de las emergencias reales y los simulacros de notificación. Los cambios al sistema de notificación fueron coordinados con el Centro Nacional de Respuesta (NRC) de los Estados Unidos, el Centro Nacional de Comunicaciones/Sistema Nacional de Protección Civil (CENACOM) de México y la PROFEPA, así como con las Oficinas Regionales 6 y 9 de la EPA. Expertos en normatividad de la Oficina del Asesor Jurídico General, la Oficina de Derecho Internacional y la Oficina de Asuntos Internacionales y Tribales de la EPA, así como del Departamento de Estado de los Estados Unidos realizaron revisiones exhaustivas a estos cambios.



Portada del Plan Conjunto de Contingencias.

La capacidad de planificar y prepararse binacionalmente mejora la probabilidad de responder adecuadamente a los incidentes y proteger el medio ambiente y a la población de la exposición a contaminantes dañinos y de posibles impactos ambientales o en la salud. Esta asociación binacional también está aumentando la capacidad de respuesta a emergencias mediante eventos de capacitación diseñados para mejorar la cooperación, fortalecer los planes de contingencia binacionales a nivel local, tribal, estatal, regional y nacional, así como para reducir los riesgos de emergencias y desastres en toda la región fronteriza.

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FOMENTANDO UNA GESTIÓN AMBIENTAL RESPONSABLE

La frontera entre México y los Estados Unidos es una región económica vibrante con un movimiento transfronterizo diario de una gran variedad de bienes de consumo y materiales peligrosos destinados a reciclaje o eliminación. Cuando no son manejados adecuadamente, los materiales peligrosos representan una amenaza inmediata para la salud ambiental transfronteriza. En respuesta, autoridades federales, estatales y locales de ambos países se asocian para vigilar los movimientos fronterizos en ambas direcciones, proporcionar asistencia para el cumplimiento de leyes y mejorar el acceso a la información sobre posibles fuentes industriales de sustancias tóxicas a través de actividades de capacitación y talleres. Estas acciones aumentan el cumplimiento transfronterizo de las normas vigentes, fomentan la gestión ambiental responsable y reducen los riesgos que plantean los desechos y materiales peligrosos.

Reforma Legislativa y Educación Ambiental en Nuevo Laredo

La Universidad Autónoma de Tamaulipas recibió financiamiento por parte del Programa Frontera 2020 para continuar educando a las comunidades fronterizas sobre los desafíos ambientales (en temas como: contaminación del agua, desechos sólidos urbanos, grasas, aceites) que persisten en esta región. El proyecto se enfocó en los siguientes objetivos:

Página de internet de la UAT con los documentos genéricos de las normas ambientales que pueden ser adaptadas por los Municipios de los estados de Tamaulipas y Nuevo León.

- Capacitar a estudiantes de escuelas públicas y a inspectores ambientales acerca de los retos ambientales más comunes en la localidad.
- Desarrollar propuestas para actualizar la legislación municipal de Nuevo Laredo.
- Crear una base de datos disponible en internet con toda la reglamentación ambiental de los municipios que componen la región fronteriza del estado de Tamaulipas.

El proyecto permitió la capacitación en temas de conservación ambiental para más de 2,300 estudiantes, 50 directores de escuelas públicas y 20 inspectores ambientales de la ciudad de Nuevo Laredo. Adicionalmente, el proyecto ayudó en el desarrollo y entrega a autoridades municipales de la propuesta de ley para el "Ordenamiento Ecológico Territorial del Municipio de Nuevo Laredo, Tamaulipas". Finalmente, los municipios de Ciudad Mier, Camargo, Jiménez y Jaumave, Tamaulipas, también adoptaron leyes de ordenamiento ecológico territorial que beneficiarán aproximadamente a 300,000 residentes.

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Los Inspectores de los Cruces Internacionales Protegen a las Comunidades Fronterizas

La aplicación de las normas de importación/exportación establecidas por la Ley de Conservación y Recuperación de Recursos de los Estados Unidos (RCRA, por sus siglas en inglés) protege la salud pública y el medio ambiente al proporcionar salvaguardias para prevenir el manejo inadecuado y derrame de residuos y materiales peligrosos. También reduce las actividades binacionales de empresas fraudulentas que implementan prácticas ilegales, creando una competencia comercial desleal. La EPA otorga financiamiento al Departamento de Sustancias Tóxicas de California (DTSC, por sus siglas en inglés), un socio del Programa Frontera 2020, para proteger la frontera entre México y los Estados Unidos.

Los inspectores del DTSC y del Condado de San Diego trabajan en estrecha colaboración con la Oficina de Aduanas y la Patrulla Fronteriza de los Estados Unidos (CBP, por sus siglas en inglés) para vigilar y garantizar el cumplimiento de las normas vigentes y certificar que los materiales peligrosos y los productos de desecho se transporten de manera segura a través de los cruces fronterizos hacia sus destinos finales en ambos países. Estos inspectores, capacitados en el procedimiento HAZMAT, forman parte del equipo de respuesta de emergencia, una primera línea de defensa en caso de un derrame o accidente peligroso en el cruce fronterizo. Los inspectores del DTSC y del Condado de San Diego, a solicitud de CBP, también participan en operaciones especiales, como inspecciones de carga fuera de días y horas permitidas para transportar materiales peligrosos. Para reforzar el cumplimiento de las normas vigentes, México y los Estados Unidos brindan asistencia técnica y capacitación para facilitar que las industrias de ambos países comprendan los requisitos reglamentarios vigentes.

El 20 de junio de 2018, con fondos otorgados por el Programa Frontera 2020 y el programa RCRA, el DTSC organizó, en coordinación con la SEMARNAT, la PROFEPA y la Secretaría de Protección Ambiental del Estado de Baja California (SPA); un taller en la ciudad de Tijuana sobre las normas y requisitos para la importación/exportación, dirigido a las empresas e industrias mexicanas generadoras de residuos peligrosos y residuos especiales que operan en Baja California. El taller se centró en los requisitos para la importación/exportación incluyendo: transporte, el nuevo sistema electrónico de manifiesto y verificación, la definición de residuos y materiales peligrosos, así como resaltando las diferencias entre los requisitos federales y estatales.

Asistentes al taller sobre requisitos para la importación/exportación celebrado en Tijuana.

Asistieron casi 200 personas de los sectores industrial, gubernamental y académico, lo que demuestra la demanda que existe por este tipo de información y la voluntad de la industria en cumplir con las normas.

Con base en el último informe del Mecanismo Consultivo México-Estados Unidos, la SEMARNAT autorizó a 33 empresas mexicanas a tratar, almacenar o eliminar los desechos peligrosos generados por los cientos de negocios en la región fronteriza. Ofrecer este tipo de talleres de capacitación en Tijuana ayuda a la industria e informa a las partes interesadas clave sobre los requisitos para el cumplimiento de las regulaciones de los Estados Unidos ayudando, en última instancia, a proteger la salud pública y el medio ambiente.

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PROTEGIENDO LA SALUD AMBIENTAL

La salud ambiental se enfoca en analizar cómo el entorno natural y el ambiente construido afectan a la salud humana y cómo se pueden gestionar para mejorar la calidad de vida. Nuestras poblaciones más vulnerables, como los niños, los ancianos y las personas con problemas respiratorios, a menudo son las más afectadas por la combinación de la mala calidad del aire interior y exterior, el agua contaminada, los residuos no manejados adecuadamente y otras condiciones ambientales. El Programa Frontera 2020 y sus Socios han apoyado conferencias binacionales de salud ambiental, actividades para la capacitación de capacitadores de promotoras *(trabajadoras comunitarias de la salud), aplicaciones de mapeo interactivo para identificar retos ambientales, así como la implementación de soluciones y estrategias de comunicación clave para mejorar la salud pública en la región fronteriza entre México y los Estados Unidos.*

Trabajando en Equipo para Atender la Enfermedad de *Zika* en Brownsville

En 2016, el brote de *Zika* en los Estados Unidos surgió como una amenaza significativa para la población. En noviembre de ese año, la ciudad de Brownsville, Texas, informó sobre el primer caso del virus *Zika* transmitido por un mosquito en el estado. La ciudad trabajó en coordinación con el Centro para el Control de Enfermedades (CDC, por sus siglas en inglés), el Departamento Estatal de Servicios de Salud de Texas (TDSHS, por sus siglas en inglés), el Condado de Cameron y el Departamento de Salud de Brownsville para obtener más información sobre la transmisión y las precauciones que debe tomar la población.

En 2017, la EPA se asoció con el Departamento de Salud de Brownsville para identificar las áreas de riesgo y los factores que llevaron a la diseminación del mosquito *aedes aegypti*. El proyecto se desarrolló bajo un enfoque holístico para identificar las condiciones subyacentes que permiten la cría de mosquitos y cómo prevenirla. Gracias al análisis de los datos ambientales existentes junto con los datos socioeconómicos y la información disponible sobre este mosquito, fue posible crear un mapa de las áreas de riesgo dentro de la ciudad. A la fecha, la ciudad está utilizando una aplicación con una plataforma de colaboración abierta en la que los residentes puedan informar sitios potenciales para la reproducción de mosquitos y cargar fotos georreferenciadas. El sitio web también proporciona acciones recomendadas que las personas pueden implementar para combatir los riesgos que representan los mosquitos.

El Departamento de Salud de la ciudad de Brownsville también está trabajando con las Promotoras, que sirven como enlaces comunitarios públicos, para educar a los residentes a través de un modelo de "capacitación de capacitadores". El proyecto está en curso y los investigadores de la EPA presentaron sus hallazgos iniciales en una conferencia y recientemente publicaron los resultados.

> ***"Combinamos datos ambientales (cobertura terrestre, precipitación y temperatura) con datos socioeconómicos y de la actividad de mosquitos con el fin de obtener una imagen más precisa del riesgo. Por lo que sabemos, este es el primer estudio de mitigación de vectores que tiene en cuenta tanto los datos de la cobertura terrestre de 1x1 metros como de los determinantes socioeconómicos."***
>
> **Dr. Pai-Yei Whung**
> **Líder del proyecto e**
> **Investigador Titular de la EPA**

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La EPA Trabaja con las Comunidades para Atender la Salud Ambiental Infantil

Jacobo Sandoval durante un evento sobre salud ambiental en Nogales, Arizona.

> ***Las familias en Nogales, Arizona, están muy contentas con la evaluación de hogares saludables y especialmente con las alarmas de humo instaladas por el Instituto Sonora de Investigación Ambiental (SERI). Muchas familias mencionaron que en Nogales no existen muchos programas de salud ambiental infantil disponibles para las familias de bajos ingresos, y están agradecidas por la oportunidad de participar en el programa.***
>
> **Jacobo Sandoval**
> **Gerente del Programa SERI**

Según la Organización Mundial de la Salud, en el año 2012 se estimó que 1.7 millones de niños menores de cinco años murieron debido a factores ambientales. Los niños que viven en la región fronteriza entre México y los Estados Unidos son particularmente vulnerables debido a que la región tiene las tasas promedio más altas de niños que viven en la pobreza, no cuentan con seguro médico y padecen de enfermedades crónicas (Organización Panamericana de la Salud, 2014).

En los últimos años, la asociación entre la Oficina de Salud Ambiental Infantil de la EPA, el Programa Frontera 2020, la sección estadounidense de la Comisión México-Estados Unidos de Salud Fronteriza, que depende del Departamento de Salud y Servicios Humanos de los Estados Unidos, y organizaciones civiles locales han trabajado en proyectos colaborativos para identificar las necesidades de salud y brindar oportunidades de acción local

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con el objetivo de mejorar las vidas de los niños que viven a lo largo de la frontera entre México y los Estados Unidos. Estas acciones incluyeron la organización de tres simposios de salud infantil desde el sur de Texas hasta California, así como subsidios federales para educar a las familias, a trabajadoras comunitarias de la salud, a maestros y a profesionales médicos sobre cómo abordar las necesidades de salud de los niños.

En el año 2018, la EPA otorgó más de $214 mil dólares para financiar cinco proyectos destinados a atender la salud ambiental de los niños en las comunidades fronterizas de Texas, Nuevo México y Arizona. Estos cinco proyectos abordaron temáticas de salud ambiental relacionadas con la pintura a base de plomo, la calidad del aire interior y el manejo integral de plagas.

Muchos de estos proyectos están estableciendo nuevas formas para mejorar los programas e iniciativas actuales de salud ambiental de las agencias que trabajan al interior de las comunidades ubicadas en la región fronteriza. Estos proyectos capacitarán a cerca de 350 especialistas, incluyendo a trabajadoras comunitarias de la salud, proveedores de cuidado infantil y médicos; e informarán a más de 2,000 miembros de las comunidades sobre temas de salud ambiental tales como: mejorar la calidad del aire interior, reducir la exposición a pintura a base de plomo e implementar estrategias integrales para el control de plagas. A través de estos proyectos, y el continuo liderazgo de las comunidades fronterizas, la salud ambiental de los niños continuará mejorando.

"Las enfermedades crónicas como el asma, padecimientos cardiovasculares y la diabetes están relacionadas con la contaminación del aire. Proporcionaremos educación sobre una variedad de riesgos ambientales a las Promotoras, a los padres de niños que asisten a primarias y secundarias así como a las mujeres embarazadas. Esta educación proporcionará a los participantes el conocimiento necesario para identificar los contaminantes interiores y exteriores, los químicos dañinos contenidos en los pesticidas utilizados en el hogar y cómo pueden cambiarlos o controlarlos sin exponer a sus hijos a sus efectos nocivos."

Dra. Genny Carrillo
Escuela de Salud Pública
Universidad de Texas A&M

"El Centro de Salud Comunitario Mariposa se complace en haber recibido este financiamiento. Proteger a nuestros hijos garantizando un entorno de vida saludable es esencial para su salud y bienestar a largo plazo. Estos fondos proporcionarán capacitación para trabajadoras comunitarias de la salud a lo largo de la frontera entre México y los Estados Unidos con el objetivo de ayudarlos a identificar contaminantes ambientales, así como capacitar a las mamás y papás en los métodos apropiados para reducir o eliminar la exposición a estos contaminantes dentro de sus hogares."

Ed Sicurello
Director Ejecutivo
Centro de Salud Comunitario Mariposa

"El Centro del Suroeste para la Salud Ambiental Pediátrica se complace en enterarse de que se nos ha otorgado este financiamiento. Servirá para aumentar la atención de los niños desfavorecidos en la región fronteriza entre El Paso y Brownsville. Trabajando desde el Centro de Ciencias de la Salud de la Universidad Texas Tech en El Paso, nos hemos asociado con colegas de la Facultad de Medicina de la Universidad de Texas en el Valle del Río Bravo para ampliar nuestra zona de trabajo. Los fondos se destinarán a la organización de dos talleres y el desarrollo de guías de capacitación para la Promotoras. Asimismo, apoyará el desarrollo de módulos de enseñanza electrónicos que serán utilizados en la materia optativa para estudiantes de medicina sobre salud ambiental pediátrica de estas universidades."

Director Stephen Borron, M.D.
Centro del Suroeste para la
Salud Ambiental pediátrica

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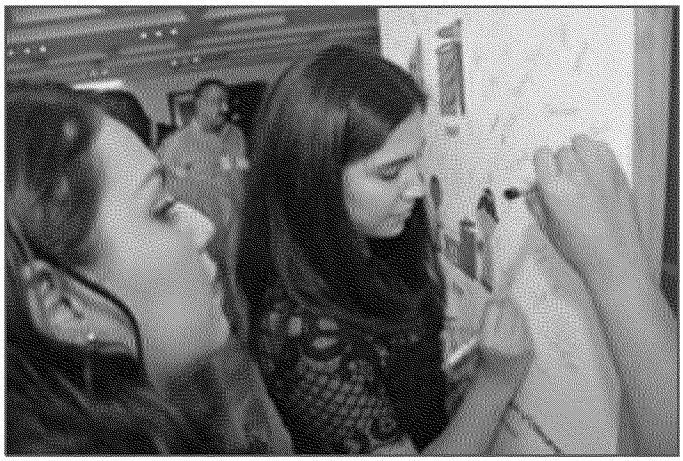
Atendiendo la Amenaza del *Zika* en la Frontera

Además de los ecosistemas compartidos por México y los Estados Unidos en la región fronteriza, el Programa Frontera 2020 también reconoce que "[el] movimiento de personas y productos entre los dos países crea un ambiente binacional único para prevenir y controlar enfermedades propagadas a través de alimentos y agua, de insectos o animales, y entre personas" (Centro para el Control de Enfermedades, 2018). En respuesta a estos riesgos, el Programa ha apoyado los esfuerzos para aumentar la concienciación y proporcionar capacitación sobre el uso del manejo integrado de plagas, así como para prevenir la propagación de enfermedades transmitidas por vectores, como el *Zika* que es transmitido por mosquitos.

En el otoño de 2016, dos conferencias binacionales de salud ambiental sobre enfermedades transmitidas por vectores se llevaron a cabo en Mexicali, Baja California, y Nogales, Sonora. Participaron la Universidad Autónoma de Baja California (UABC), el Instituto Técnico de Nogales (ITN), El Colegio de la Frontera Norte (COLEF), el Centro para el Control de Enfermedades (CDC, por sus siglas en inglés) de los Estados Unidos y su contraparte mexicana, El Centro Nacional de Programas Preventivos y Control de Enfermedades (CENAPRECE), entre otros. Asistieron más de 360 personas, entre los que se encontraban estudiantes de medicina, profesores, profesionales de la salud, funcionarios gubernamentales y 30 expertos en enfermedades transmitidas por vectores. Los temas clave incluyeron: medidas preventivas para combatir el *Zika* y otras enfermedades transmitidas por vectores, estrategias integradas para el control de plagas y el uso apropiado de repelentes de insectos.



Participantes de una de las conferencias se comprometen a eliminar las fuentes de vectores manteniendo sus hogares y el medio ambiente limpios y libres de basura y agua estancada.

En 2017, para confirmar el impacto a largo plazo de los eventos, los organizadores y anfitriones de las conferencias (UABC e ITN) contactaron a los asistentes y llevaron a cabo una evaluación, aprendiendo tres conclusiones clave:

- Después de su participación en las conferencias, tres de cada cuatro encuestados compartieron la información ambiental y de salud pública que aprendieron con sus conocidos.
- Más de la mitad de los encuestados informaron que ahora leen la etiqueta de los productos antes de usar repelentes de insectos.
- De importancia crítica, casi la mitad de los asistentes han comenzado a vaciar el agua estancada en macetas para eliminar los huevos de los mosquitos, lo que reduce sus hábitats de reproducción.

De acuerdo con los resultados de esta evaluación, es posible afirmar que las conferencias aumentaron el conocimiento y cambiaron el comportamiento de los asistentes. Para obtener más información sobre estos eventos, visite la página de internet del Programa Frontera 2020 de la EPA.

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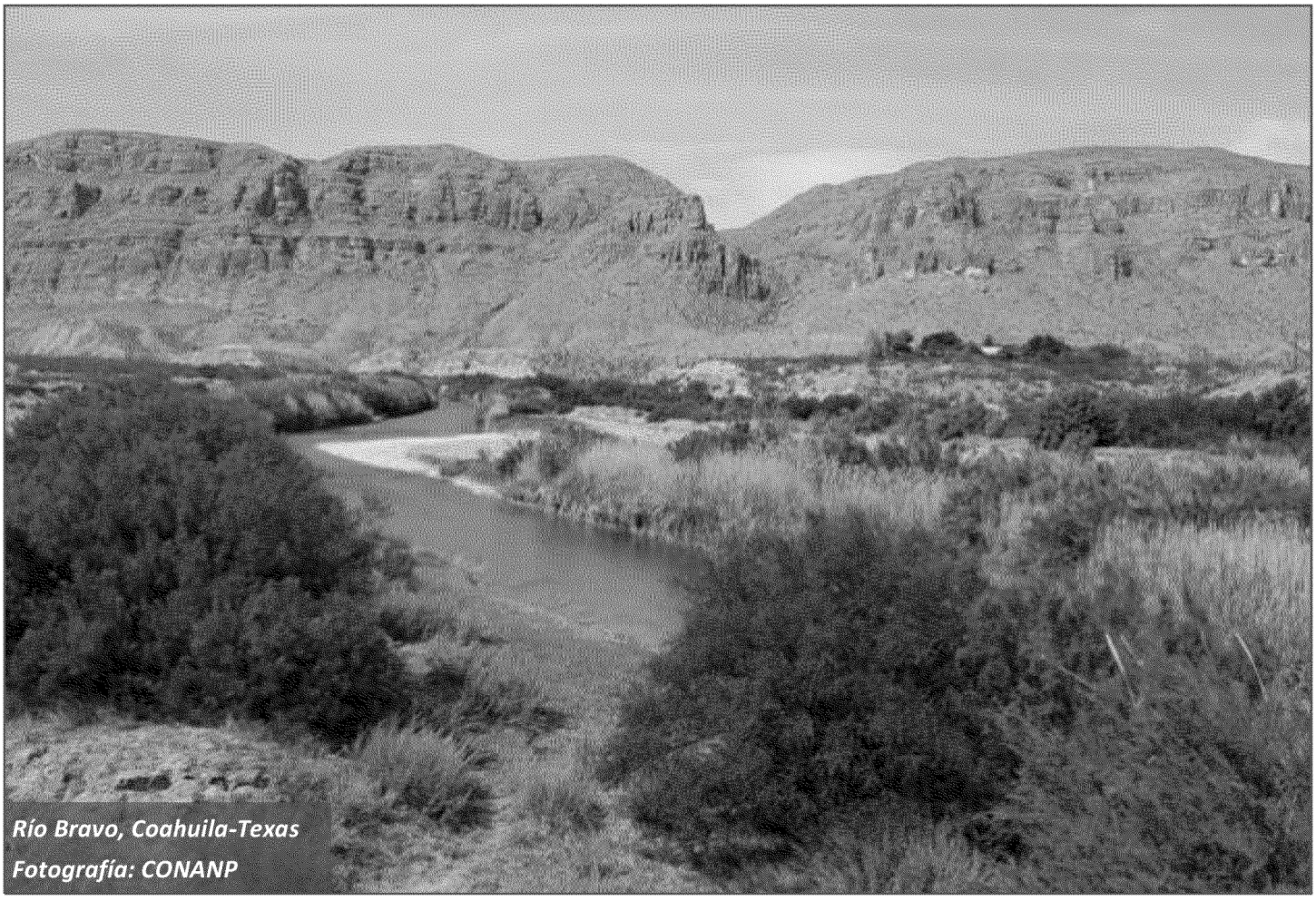
MISIÓN DEL PROGRAMA

Como resultado de la colaboración entre los gobiernos federales, estatales y locales de México y Estados Unidos, y de las Tribus de los Estados Unidos, la Misión del Programa Frontera 2020 es:

Proteger el medio ambiente y la salud pública en la región fronteriza México-Estados Unidos de manera consistente con los principios del desarrollo sustentable.



Río Bravo, Coahuila-Texas
Fotografía: CONANP

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From: Lopez-Powers, Lorena
Sent: Mon 10/23/2017 10:51:56 PM
Subject: TRI-FOLD Publication - both languages - Final
Final- Tri-fold_English_Border Brochure.pdf
Final-Border Brochure_SPN_(003).pdf

Greetings, please see enclosed files of the Tri-fold publication in both languages. I want to thank you for support and guidance given on the completion of this publication.

It was a lot of work but the CORE Team (communication officers, OITA rep.,, and POs) along with other key team members, worked very hard to complete it.

We are awaiting the final printed copies in Spanish and hope to release it soon afterwards.

- We'll be working on ***a strategy*** to get this publication out to external and internal audiences. And we'll keep you abreast on next steps..

Please let me know if you have any questions, comments, etc.
Thankyou,

Lorena

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Protecting the Environment and Public Health

IN THE U.S.–MEXICO BORDER REGION

BORDER 2020
FRONTERA 2020

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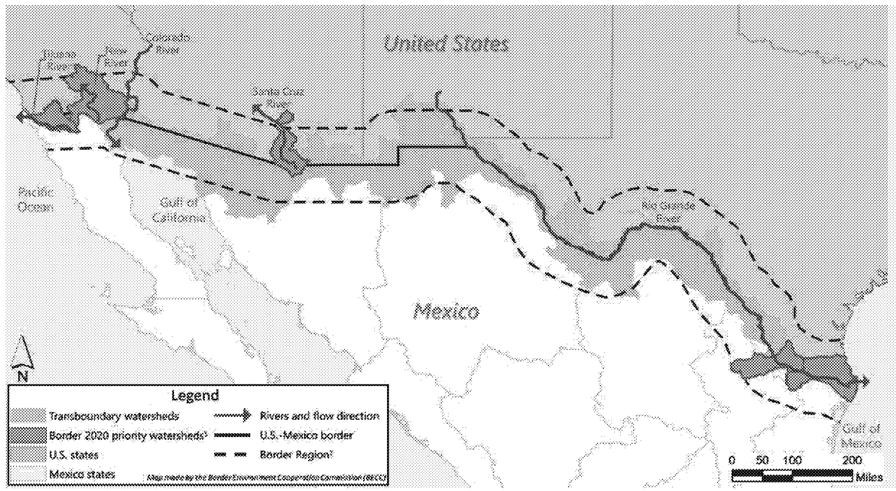
Overcoming Binational Environmental Challenges

The U.S.-Mexico border region is home to over 15 million people who share natural resources, watersheds, and air basins that transcend political boundaries. Binational pollution impacts both sides of the border and necessitates a coordinated response. To improve and protect the environment and public health, the La Paz Agreement was signed by the Governments of Mexico and the United States in 1983, thus providing the foundation for cooperative efforts to address the complex and intertwined environmental issues along the U.S.-Mexico border.

Opening ceremony of the Border 2020 Program in Tijuana, Baja California, on August 8th, 2012

A Diverse U.S.-Mexico Border Region



1. Map shows subwatersheds delineated at the Hydrologic Unit Code 8 level.
2. Boundary set forth by La Paz Agreement (62 miles from border).

- **15 million+** people borderwide
- **26** federally recognized U.S. tribes
- **6** national parks
- **4** high priority river basins
- **40+** U.S. counties and **80** MX municipalities
- **4** transboundary rivers into the U.S.
- **2,000** mile shared border

TIMELINE

Building from the La Paz Agreement, U.S. Environmental Protection Agency (U.S. EPA) and Mexico's Secretariat of the Environment and Natural Resources (SEMARNAT) have implemented four successive binational programs to meet emerging environmental challenges in this dynamic region. Along the entire border, key stakeholders such as the 10 states, 26 federally recognized tribes and local partners have provided leadership and additional funding to implement projects that advance environmental protection and public health improvements while the population and economic activity have increased.

1983

The Basis for Binational Cooperation — La Paz Agreement

President Reagan of the U.S. and President de la Madrid of Mexico sign the La Paz Agreement

Recognizing the need to cooperate binationally on environmental and public health challenges in the border region, the Governments of the United States and Mexico signed the Agreement on Cooperation for the Protection and Improvement of the Environment in the Border Area (the La Paz Agreement), in the city of La Paz, Baja California Sur, Mexico, in 1983.

1992

Integrated Border Environmental Plan (IBEP)

The first binational border program, IBEP, focused on enhanced environmental regulation and resulted in significant investments in infrastructure along the border. Although the binational environment improved, many projects were implemented at a federal scale, and the Program recognized the need to address environmental and health concerns on the border with more local involvement.

1996

Border XXI

Local emergency response sister-cities were developed

Border XXI established a five-year bilateral effort which included additional federal partners to achieve its goals, engaged the 10 border states and U.S. tribes, and included over 40 public meetings to solicit input and identify local priorities. Border XXI established nine borderwide workgroups to address transboundary environmental issues. While the workgoups implemented many pilot projects benefitting communities, the Program objectives remained broad in nature.

2003

Border 2012

Partnership with U.S. tribes and Necua Indigenous Community in Mexico on waste management

The Border 2012 Program set an ambitious ten-year plan that included specific and measurable environmental goals and objectives developed through public input. The Program took a bottom-up approach that continued engagement of state, tribal and local communities and operated through four new regional workgroups and numerous local taskforces to implement stakeholder-led projects.

2012

Border 2020

Improving water infrastructure in the Tijuana-San Diego region

Border 2020 continues a bottom-up approach and tackles emerging environmental issues. Program goals were established binationally and seek to improve air and water quality, reduce waste, strengthen emergency preparation and response, promote environmental stewardship and address environmental health. These goals directly align with U.S. EPA's core programs, local priorities, and the original mandate from the La Paz Agreement to address the complex and on-going regional environmental challenges.

Overcoming Binational Environmental Challenges

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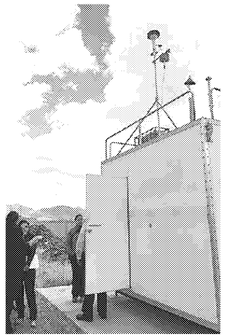
Protecting Communities Borderwide

Improving the Air We Share

Many U.S.-Mexico border cities share binational air basins, where pollutants such as particulate matter (PM_{10}, $PM_{2.5}$) and ozone and its precursors (NO_x and VOC) travel across borders. Exposure to these pollutants can affect our hearts and lungs, triggering a variety of health problems, particularly to vulnerable populations with asthma. For example, in California, ozone is problematic in San Diego County, while both ozone and PM are concerns in the Imperial Valley. In El Paso, Texas, key challenges include PM, Carbon Monoxide and ozone.



Air quality monitoring inspection in San Diego-Tijuana Border Region

In response, local binational task forces formed to coordinate and implement solutions such as improving and/or expanding monitoring networks, increasing data availability, and expanding public outreach. Meanwhile states on both sides of the border have identified mitigation strategies in air quality improvement plans (State Implementation Plans in the U.S. and ProAire in Mexico).

The border region has reduced emissions at ports-of-entry by reducing wait times for idling vehicles, while paving dusty roads and improving urban transport borderwide have resulted in the elimination of 170,000 tons per year of PM_{10}. Air monitoring from 2006 -2014 identified a decline in ozone exceedances in the San Diego and Imperial Valley air basins and PM exceedances in the El Paso air basin.

Groundbreaking ceremony of water system improvements in Anthony, New Mexico

Enhancing Water Quality

The U.S.-Mexico border region shares numerous transboundary watersheds, with many rivers flowing from Mexico into the U.S., or even forming the border itself in some cases. Four have been identified as high-priority. Outdated infrastructure and extreme weather events can result in contaminated stormwater and sewage overflows entering the transboundary waterways and exposing communities living and/or working in or nearby the watersheds to contaminated water. The Border Programs have worked to address these environmental health challenges for over 20 years.

Since 1997, the Border Water Infrastructure Program (BWIP) and binational program partners have supported the construction and/or expansion of infrastructure projects that are eliminating over 350 million gallons a day (mgd) of untreated or inadequately treated sewage discharges.

The Border Program also carries out trash cleanup and waste reduction efforts to address illegal dumping that contaminates transboundary waterways, the Gulf of Mexico and the Pacific Ocean. To protect existing infrastructure, the Program partners with local businesses in Texas, Arizona and Tamaulipas to properly dispose of Fats, Oils and Grease (FOGs). Green infrastructure projects and trainings in Ambos Nogales have reduced impacts from stormwater runoff into the Nogales Wash and the Santa Cruz River in Arizona. In addition, more than 1,000 community members and municipal staff in southern New Mexico and west Texas received training on the health threats posed by improperly maintained septic tanks.

Household hazardous waste collection event in Nuevo Laredo, Tamaulipas, Mexico

Ojinaga, Chihuahua responders received HAZMAT training and equipment

Promoting Clean Land

When waste materials are improperly disposed of they can negatively impact our lands, transboundary watersheds and oceans and create habitat for disease-bearing vectors such as mosquitoes. As the population has grown in border communities, increased amounts of plastics, electronics, tires and other materials have overburdened the waste management infrastructure and services.

The Border Programs have improved collaboration among binational stakeholders to reduce waste through: 1) mitigating the impacts of plastic, tires, and other waste through cleanups and educational outreach and community actions; 2) reducing waste and increasing recovery and reuse of plastic, e-waste, tires, and other materials; and 3) building technical capacity among diverse stakeholders to adopt sustainable materials management practices.

Since 2005, communities in the U.S.-Mexico border region have carried out projects to properly dispose: over 8 million scrap tires, nearly 60,000 tons of household hazardous waste, and 264 tons of electronic waste.

Strengthening Emergency Response Capability

Binational emergency preparedness and response coordination is critical in the border region, because toxic smoke, contaminated water and other impacts from disasters and incidents pay no heed to local, state or international boundaries. Emergency preparedness efforts — training, exercises, equipment — have been tested in real-life emergencies and led to a more efficient coordinated response along the U.S.-Mexico border. Joint Response Teams (JRT) support these efforts and ensure timely binational reporting of incidents.

Since 2013, through the Border Program, more than 10,500 responders have received capacity trainings from over 140 training courses and over 25 binational exercises and 200 drill notifications between the U.S. and Mexico. These actions and resources have made the border region safer for residents, first responders and the environment.

Fostering Environmental Stewardship

Improperly managing hazardous materials can pose transboundary environmental health issues. Challenges such as illegal or improper crossing of hazardous wastes and material at the U.S.-Mexico ports of entry and the lack of community information on pollutant sources has called for improved enforcement efforts, compliance assistance and environmental stewardship.

Through Border Program efforts, environmental inspectors are now present at ports of entry, and information is exchanged between Program partners on transboundary compliance at binational workshops. Border communities are also benefitting from improved transparency of U.S. and Mexican pollutant discharge data (i.e. the U.S. Toxic Release Inventory [TRI] and the Mexican Registry of Emissions and Transfer of Contaminants [RETC]) reports. In addition, a binational public-private partnership led to enhanced environmental stewardship, through Environmental Management System (EMS) trainings for over 30 small and medium-sized companies in border communities.

Inspector conducts truck stop inspection in Calexico, CA. Photo/Jessica Rodriguez

Partnering Binationally to Achieve Environmental Results

Tangible improvements along the entire 2000-mile border through stakeholder-driven projects

CALIFORNIA

ARIZONA

Pacific Ocean

BAJA CALIFORNIA

Gulf of California

SONORA

NEW MEXICO

TEXAS

CHIHUAHUA

COAHUILA

NUEVO LEÓN

TAMAULIPAS

Gulf of Mexico

N

IMPACT: Binational Collection of Oil and Grease for Biodiesel

Through the Ambos Nogales Biodiesel Capacity Building Program, oil and grease collected from local restaurants is transformed into biodiesel fuel used for emergency response vehicles. This Program has the dual benefit of 1) preventing the oil and grease from negatively impacting the sewer system and 2) creating an alternative fuel.

Key Accomplishments:

- 1,200-1,500 gallons of biodiesel produced annually since original 2009 pilot project.
- Reduced grease blockages in sewer systems.
- Increased local usage of biodiesel for fire department vehicles.

BEFORE: Fat and bread crumbs left behind from filtering oil

AFTER: Refueling cars with biodiesel converted from grease and oils

IMPACT: Improving Air Quality in the Paso del Norte Region

The Joint Advisory Committee was formed in 1996 and works to improve air quality through binational collaboration.

Key Accomplishments:

- Introducing cleaner fuel (oxygenated gasoline) in Mexico.
- Dedicating commuter lanes at border crossings to reduce emissions and wait times.

View of El Paso-Ciudad Juarez Airshed

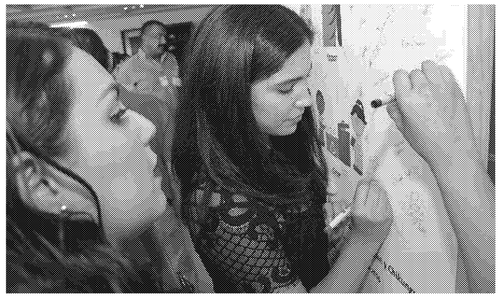
- Strengthening vehicle inspection in Ciudad Juarez with an average of 200,000 inspections completed annually.

IMPACT: 900+ Participate in Binational Symposia to Improve Environmental Health

From 2015-17 Border 2020 and EPA's Children's Health Offices convened four children's environmental health and two vector borne disease symposia. Topics included: indoor air quality, asthma, lead, mosquito borne illness, children's health and prenatal exposures among others.

Key Accomplishments:

- 566+ attended the children's health symposia in El Paso and Brownsville, Texas, and San Diego, California.
- 360+ attended two vector borne disease prevention symposia in Mexicali, Baja California, and Nogales, Sonora.
- Participants at symposia included healthcare experts from the U.S. and Mexico, public health practitioners, community health promoters or promotores, educators, medical students, faculty, government agencies, and the public.



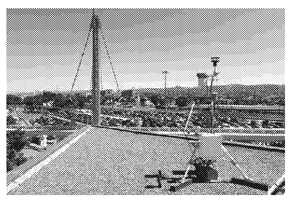
Students sign pledge poster to manage vector borne diseases from mosquitoes using integrated pest management

IMPACT: Improving the Air We Share

Federal, state, and local agencies collaborate to measure air quality at border crossings and inform neighboring communities. Outreach campaigns target sources of pollution to mitigate health impacts.

Key Accomplishments:

- Monitor installed at San Ysidro, busiest land port of entry in Western Hemisphere, in January 2015.
- Bilingual television and radio campaign targeting fireworks and open burning in Imperial-Mexicali region launched in 2010.
- Mexicali announced ban on sale of fireworks in December 2016.



Roof-top equipment monitors $PM_{2.5}$ levels as traffic backs up at San Ysidro Port of Entry

IMPACT: Enhancing our Water

Through a Border 2012-funded monitoring program, high levels of nutrients discharged through the Las Arenitas Wastewater Treatment Plant in southern Mexicali were determined to be causing algal blooms in the Rio Hardy. Funds from the Program were used to design a 97 hectare artificial wetland system, which was later constructed with funds from Mexico.

Key Accomplishments:

- 15 million gallons per day of untreated wastewater that once polluted the New River is now treated.
- Constructed wetlands provided additional treatment and expanded riparian habitat.

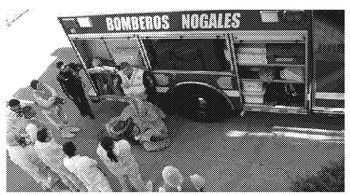
Treatment plant (center) and wetlands (upper right). Photo/Bill Hatcher

IMPACT: Strengthening Emergency Preparedness

The border region is highly industrial and hazardous materials pose a threat to communities and transboundary air and watersheds. Arizona State University led the development of a binational Hazardous Materials Emergency Response Training (HAZMAT) Pilot Program with industry, academia, and federal, state, and local agencies.

Key Accomplishments:

- Developed five multi-day training courses.
- Trained and certified 12 new instructors.
- Created a binational model for on-going trainings to industry and first responders.



Capacity-building for Ambos Nogales firemen. Photo/Bill Hatcher

IMPACT: Enhanced Sustainability in Alamo, Texas

Through a new partnership, the City enhanced environmental stewardship.

Key Accomplishments:

- Decreased illegal dumping by over 238 tons/year.
- Presented to over 1,270 students at five community presentations on recycling.
- Distributed 5,000 bilingual recycling brochures and installed a revolving recycling trailer and bins at schools.
- Led community clean-ups and collection events.

School student contest mascot design winner presented with award at city council

IMPACT: Enhancing Emergency Preparedness in Colonias

In August 2016, the Border 2020 Program, along with NGOs in the Lower Rio Grande Valley region, hosted the first Emergency Preparedness Conference for Colonias.

Key Accomplishments:

- 110+ residents were trained on how to prepare, survive and recover from a disaster.
- Other topics included: fire prevention, food safety and storage, county evacuation plans, disaster housing, and family emergency planning.

Colonias Conference in Alamo, Texas

"The Border 2020 work group has allowed a working relationship to become an excellent friendship. It has been a very useful tool for the development of border environmental initiatives. Sonora and Arizona have benefited from multiple projects on water, air, and solid waste."

– Luis Carlos Romo Salazar, Commissioner, Commission on Ecology and Sustainable Development, State of Sonora, Mexico

"The Border 2020 Program is essential to continue providing guidelines of our goals within the United States and the State of Texas. We need to continue to improve the environment and decrease pollution."

– Dr. Elaine Mowinski Barron, MD, U.S. Joint Advisory Committee Charter Member, El Paso, Texas

LEGEND

- U.S.-Mexico Border
- Border Region: Boundary set forth by La Paz Agreement (62 miles from border)
- U.S. States
- Mexico States
- Project Locations

Two countries, ten states, twenty-six tribes

one environment

Anza-Borrego Desert State Park in California. Photo/Jeremy Bauer

"The Border 2020 Program has allowed us to improve our relationship with EPA and more importantly they are accepting local input. That is important to develop long term relationships and really address U.S. – Mexico Border environmental issues."

– **Dr. Hector F. Gonzalez,** Director of the City of Laredo Health Department, Laredo, Texas

"The Border 2020 Program brings people together to better understand and coordinate emergency preparedness and response tactics. The result is first responders and communities on both sides of the Border who are better trained and equipped to protect human health and the environment."

– **Mario Novoa**, Fire Chief, Douglas, Arizona

BORDER 2020 FRONTERA 2020

U.S.-Mexico Border 2020 Program

www.epa.gov/border2020

BORDER 2020: UNITED STATES - MEXICO ENVIRONMENTAL PROGRAM

BORDER 2020
FRONTERA 2020

HIGHLIGHTS REPORT AUTUMN 2018

EPA
United States Environmental Protection Agency

SEMARNAT
SECRETARÍA DE MEDIO AMBIENTE Y RECURSOS NATURALES

Cover photo:
Chisos Mountains, Texas
Photographic Archives
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 snap shot 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.

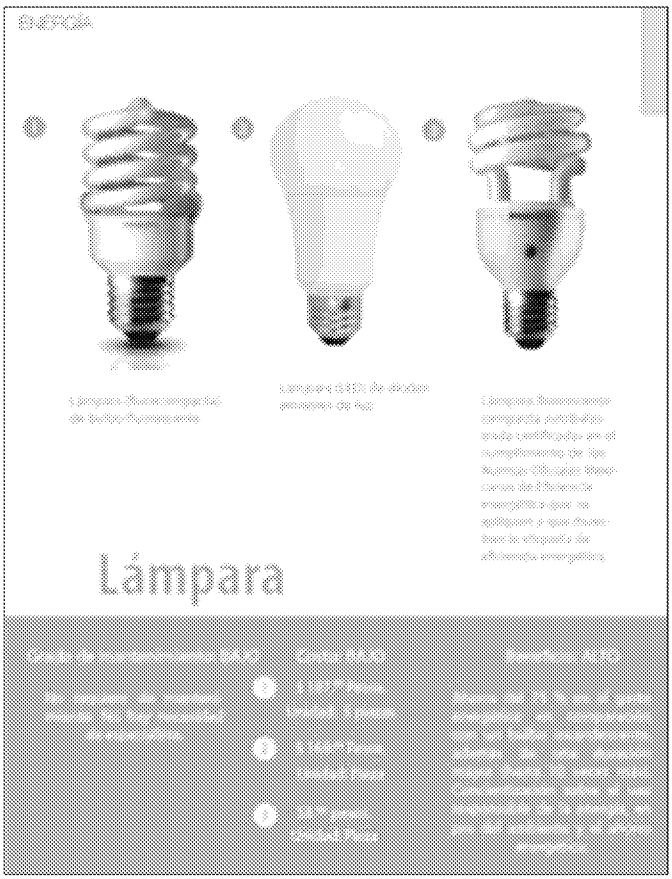

Illustration. Description of types of light bulbs in the catalog.

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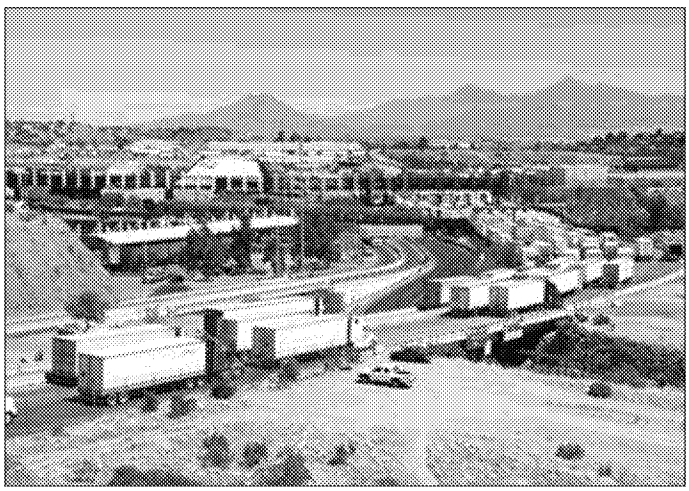
Quantifying Emission Reduction from Reduced Wait Times at Mariposa Port of Entry

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 with inspectors from both countries 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 may 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.

One of the community events held at Imperial County.

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

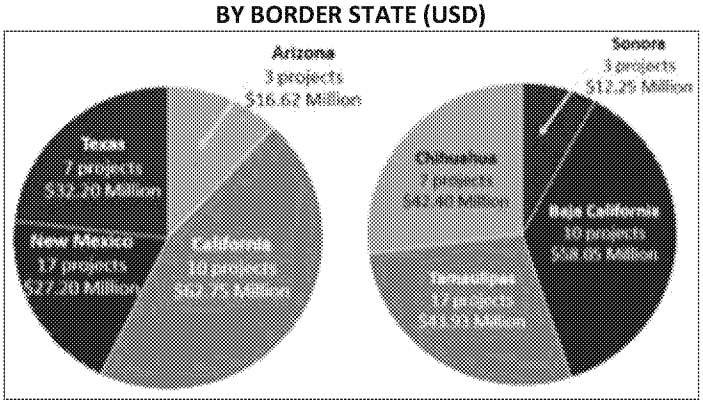
Rivers and watersheds know no boundaries and, in some areas, define the United States-Mexico border. Polluted stormwater and sewage from deteriorated infrastructure and extreme weather events can contaminate transboundary waterways, causing health concerns along the border region. The Border 2020 Program 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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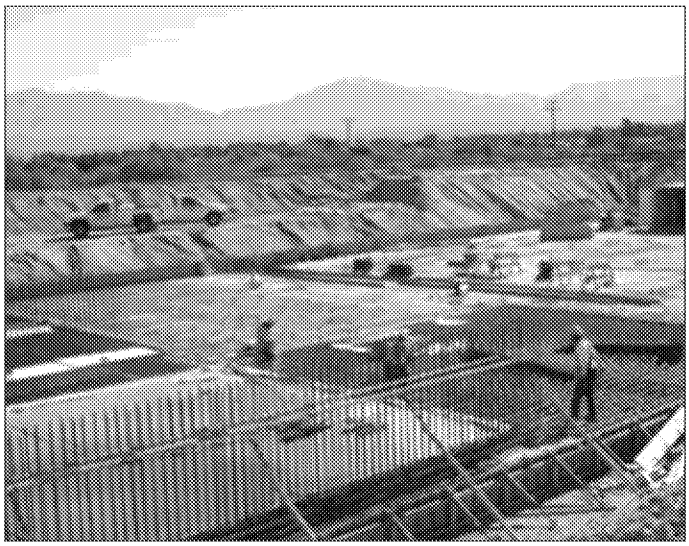
ble drinking water and wastewater projects with a total estimated construction cost of $296 million dollars that address public health and environmental conditions along the border.

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 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.



Construction activities for the new Sunland Park treatment plant.

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 storm-water 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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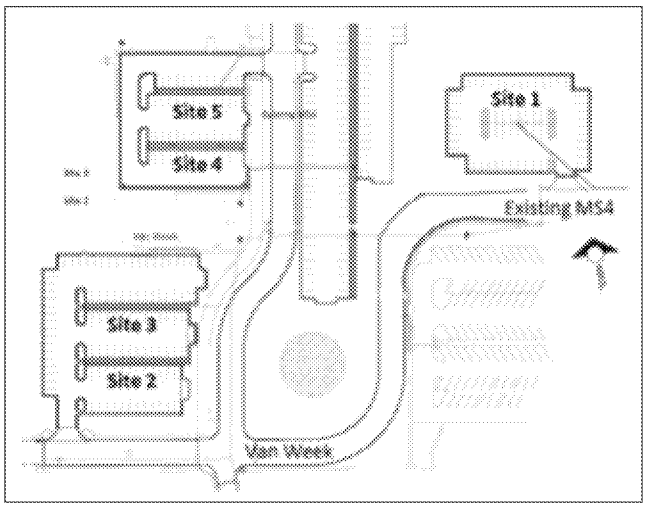
Studying Low Impact Development Methods for South Texas Stormwater Management

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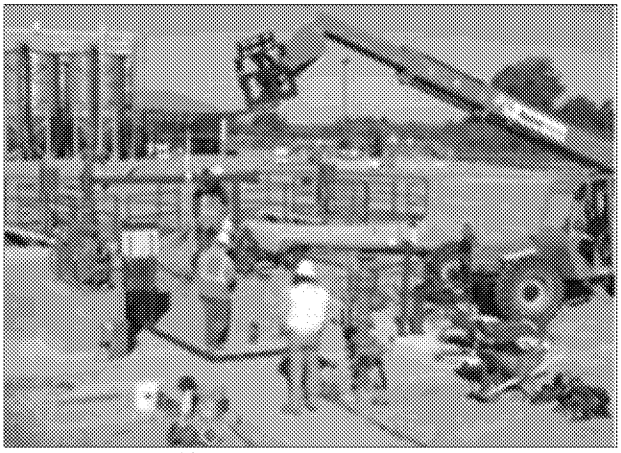
Protecting the City of Holtville's Water Resources in Imperial County

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."*
>
> **Tomas 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.

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.

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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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, socioeconomic conditions and environmental regulations can vary significantly, different border communities have had to take varying and creative approaches to build sustainable communities.

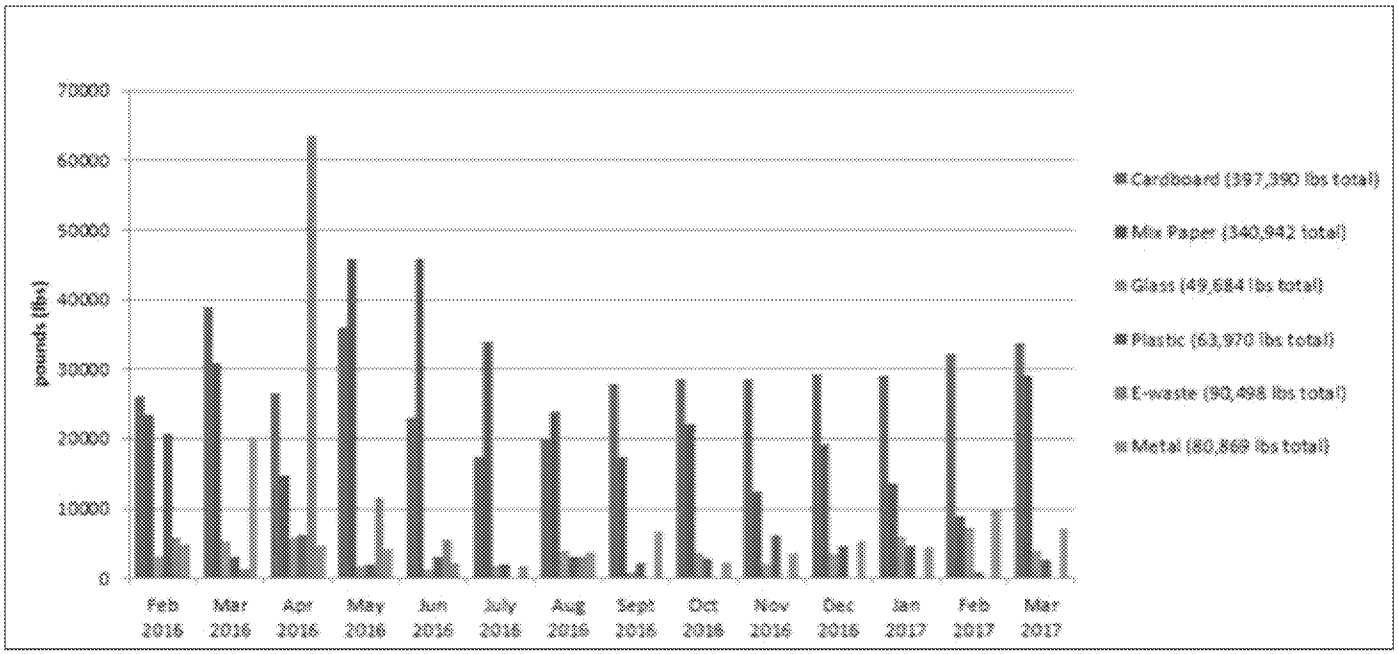
City of Pharr, Texas

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 1); 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 1);
- 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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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

Permanent collection center in the facilities of the Public Works Department of Eagle Pass, Texas.

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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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, non-profits, 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

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Participants in the HAZMAT Tech training.

it 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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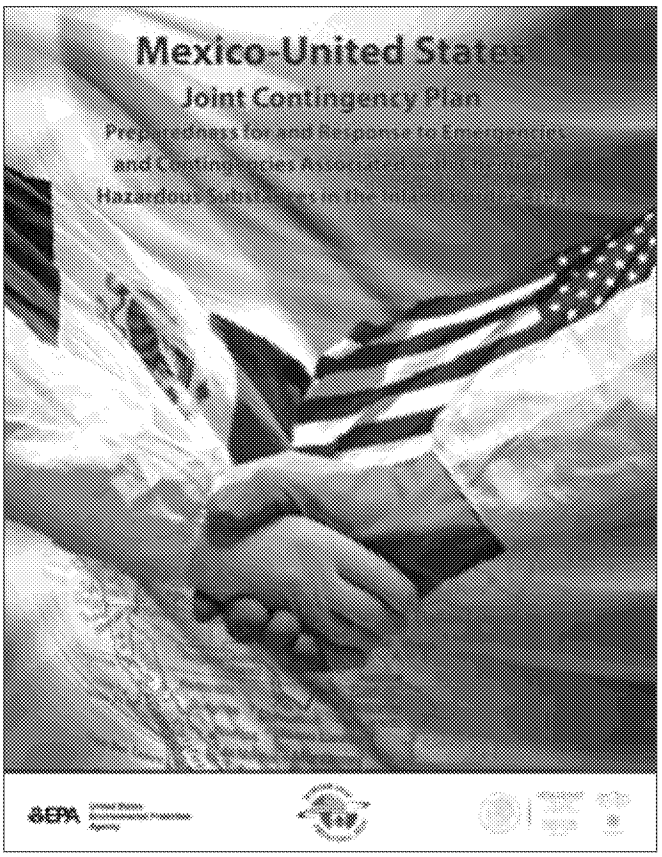
Enhance Joint Preparedness for Environmental Response under the Border 2020 Program

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 one community 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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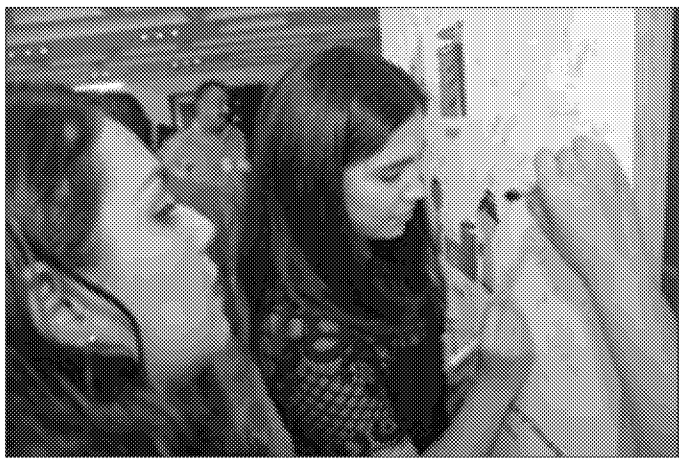
Responding to *Zika* Threat Along the Border

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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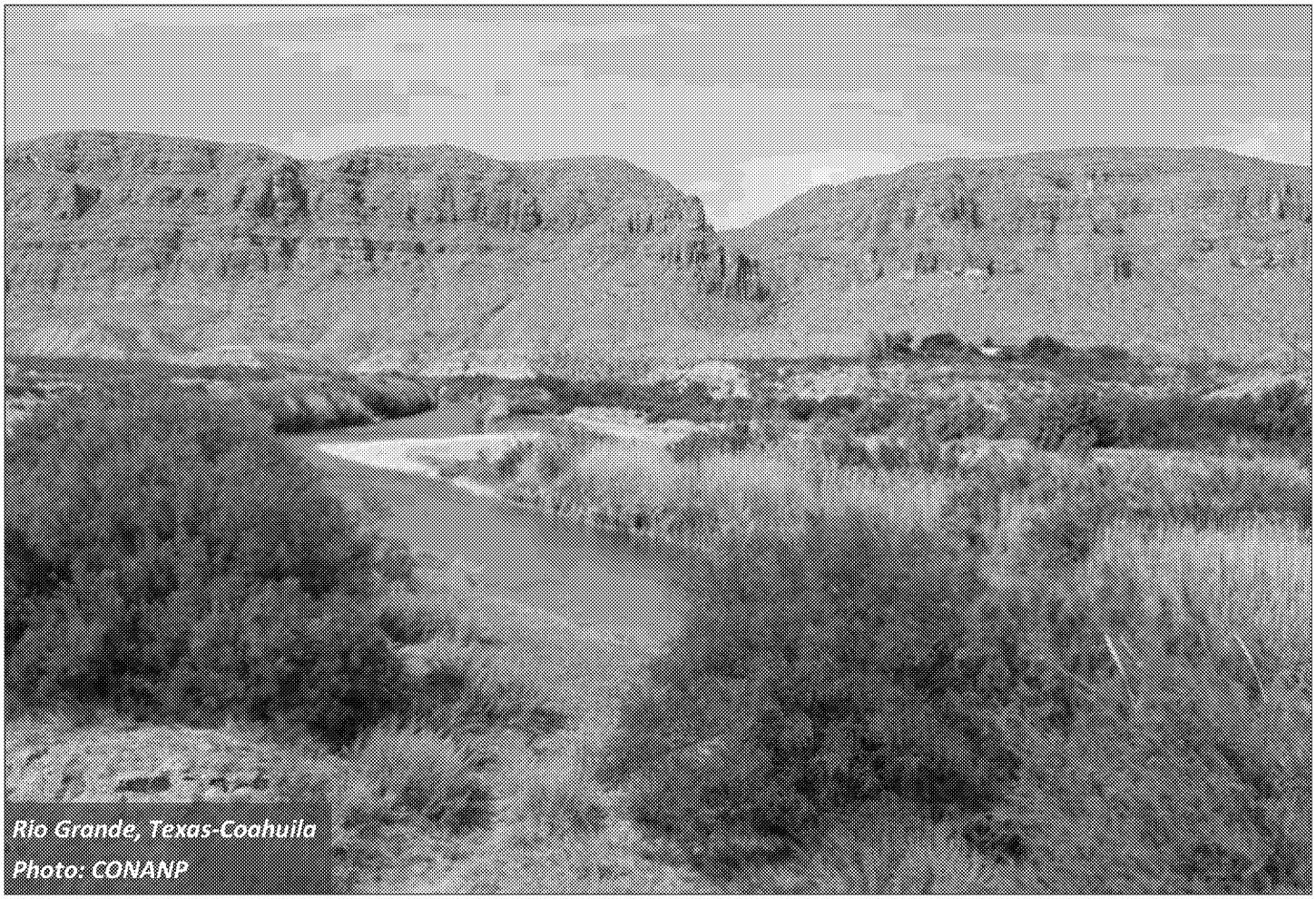
¡Visit our web pages!
www.epa.gov/border2020
www.gob.mx/semarnat

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

PROGRAMA AMBIENTAL MÉXICO - ESTADOS UNIDOS: FRONTERA 2020

FRONTERA 2020
BORDER 2020

REPORTE DE LOGROS OTOÑO 2018

SEMARNAT
SECRETARÍA DE MEDIO AMBIENTE Y RECURSOS NATURALES

EPA
United States Environmental Protection Agency

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Foto portada:
Montañas Chisos, Texas
Archivos Fotográficos
Comisión Nacional de Áreas Naturales Protegidas de México (CONANP)

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MENSAGE DE LOS COORDINADORES NACIONALES

El Programa Frontera 2020 continúa brindando una base sólida y dinámica para nuestra asociación binacional brindando soluciones a los desafíos ambientales y de salud pública en la región fronteriza. La colaboración es clave para lograr resultados exitosos, sustentables y de largo plazo. Como Coordinadores Nacionales, estamos comprometidos a trabajar juntos para avanzar la misión del Programa Frontera 2020: proteger el medio ambiente y la salud pública a lo largo de la región fronteriza entre México y los Estados Unidos.

Nuestros esfuerzos de colaboración con las Naciones Tribales fronterizas de los Estados Unidos y los gobiernos federal, estatal y local de ambos países han demostrado beneficiar a nuestro medio ambiente compartido y a los habitantes de ambos lados de la frontera. Hemos creado asociaciones e invertido nuestros recursos en proyectos que abordan temas como la calidad del aire, la calidad del agua, el tratamiento de aguas residuales, la gestión de residuos sólidos, la respuesta a emergencias y la gestión ambiental responsable.

Este informe destaca los logros del Programa Frontera 2020 durante los últimos dos años. Presentamos 22 proyectos que se han implementado y ejemplifican el progreso de nuestros esfuerzos para mejorar las condiciones de las comunidades fronterizas y nuestro medio ambiente compartido. A través de estos proyectos, también hemos podido realizar estudios o aplicar las mejores prácticas de gestión para lograr resultados exitosos en cumplimiento de los objetivos del Programa.

Reafirmando nuestro compromiso con el Programa Frontera 2020, nosotros, como Coordinadores Nacionales, apoyamos a nuestros socios, que incluyen a los tres niveles de gobierno, las Naciones Tribales fronterizas de los Estados Unidos y las comunidades indígenas mexicanas. Nos gustaría aprovechar esta oportunidad para expresar nuestro agradecimiento a las personas, comunidades y organizaciones dedicadas que apoyan y participan en las actividades del Programa para mejorar las condiciones ambientales y de salud pública en la región fronteriza. Reconocemos la importancia y el valor de la dedicación, el compromiso y la contribución de nuestros Socios al éxito del Programa.

La cooperación ambiental entre México y los Estados Unidos en la región fronteriza común es sin duda una historia de éxito y un ejemplo para el mundo, bajo la cual ciertamente vale la pena seguir construyendo. Le invitamos a reflexionar sobre nuestros logros recientes y le pedimos que continúe brindando su apoyo y su participando en la búsqueda de soluciones a los desafíos que aún existen en la región fronteriza.

¡Muchas gracias!

Enrique Lendo
Coordinador Nacional
México

Jane Nishida
Coordinadora Nacional
Estados Unidos de América

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INTRODUCCIÓN

Reafirmando nuestro compromiso, 2017-2018

La frontera entre México y los Estados Unidos es una región geográfica dinámica y única que enfrenta muchos retos ambientales, incluida la mala calidad del aire, agua potable insegura e inadecuado tratamiento de aguas residuales, así como programas y servicios inadecuados para la gestión de residuos. La frontera es el hogar de más de 15 millones de personas, donde aproximadamente el 90% de la población reside en ciudades, mientras que la población restante se encuentra en pueblos pequeños o comunidades rurales. El **Programa Frontera 2020** es la más reciente iniciativa de cooperación México-Estados Unidos implementada en el marco del Convenio de La Paz de 1983, enfocándose en las comunidades ubicadas dentro de los 100 km a ambos lados de los más de 3,100 kilómetros de frontera. El Programa Frontera 2020 fomenta un enfoque regional de abajo hacia arriba para la toma de decisiones, el establecimiento de prioridades y la implementación de proyectos para abordar los desafíos ambientales y de salud pública en la región fronteriza.

El Programa está diseñado para aprovechar a las comunidades e interesados locales, así como para trabajar directamente con socios federales, estatales, tribales e internacionales para implementar proyectos y soluciones ambientales. Específicamente, los objetivos del Programa se centran en mejorar la calidad del aire y el agua, promover suelos limpios, fortalecer la preparación y respuesta a emergencias, fomentar el liderazgo ambiental y abogar por iniciativas de salud ambiental a lo largo de la frontera. Este informe de logros comparte un ejemplo de los éxitos que nuestro Programa ha alcanzado en los últimos años (2016-2018) y que mejoran la calidad de vida y nuestro entorno compartido.

Para obtener más información sobre los detalles de las metas y los objetivos del Programa Frontera 2020, lo invitamos a leer el documento del Programa o si está interesado en conocer más logros del mismo, visite su página de internet en las páginas de la SEMARNAT y/o la EPA para consultar los informes anteriores y otra información de interés.

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MEJORANDO LA CALIDAD DEL AIRE

La mala calidad del aire puede tener importantes impactos económicos y sociales en la comunidad, incluyendo un aumento en la contracción de enfermedades, muerte prematura y una menor calidad de vida. La región fronteriza entre México y los Estados Unidos es vulnerable al movimiento transfronterizo de contaminantes, lo que incluye materia particular inhalable (hollín y polvo), ozono (smog) y monóxido de carbono. Las fuentes binacionales que contribuyen a este movimiento incluyen el polvo de las carreteras sin pavimentar y de las áreas abiertas, el humo de la quema ilícita de basura y llantas, así como fuentes móviles como vehículos pesados de carga, automóviles y camiones que están haciendo fila en los cruces fronterizos. El Programa Frontera 2020 ha apoyado la mejora de la calidad del aire mediante la expansión de las redes de monitoreo con un mayor acceso a sus datos, la mejora de la calidad del aire a través de Planes de Implementación Estatales (en ambos países) y programas educativos sobre la calidad del aire en interiores.

Taller de Eficiencia Energética en Tamaulipas

Participantes en el primer taller de eficiencia energética.

Incrementar la eficiencia energética en México se ha convertido en una estrategia en todos los niveles de Gobierno a fin de mejorar y asegurar la sustentabilidad a largo plazo en los edificios públicos y mejorar la seguridad del suministro eléctrico, a la vez que se reducen los impactos en el medio ambiente. La operación e instalación de los sistemas de alumbrado público, así como el consumo de energía en edificios públicos, representa uno de los principales gastos que enfrentan los municipios, llegando incluso a absorber hasta un 40% de su presupuesto anual, lo cual limita la capacidad de los gobiernos locales para enfocar sus esfuerzos en otras prioridades. Mediante un financiamiento otorgado por el Programa Frontera 2020, la Secretaría de Desarrollo Urbano y Medio Ambiente del estado de Tamaulipas llevó a cabo dos talleres sobre eficiencia energética dirigidos a los 10 municipios fronterizos del estado. Los materiales de los talleres proporcionaron información sobre las herramientas básicas necesarias para lograr una mayor eficiencia energética en la iluminación de espacios públicos, a la vez que se incrementan los ahorros económicos.

Estos talleres fueron parte de una serie de acciones para mejorar la eficiencia energética en el estado, incluyendo dos foros de energía: "Primer Foro Estatal de Energía. Tamaulipas, Energía que Mueve a México" y el tercer Congreso Internacional sobre Energías Renovables titulado "Perspectivas de la Energía en México". La realización de estos talleres coincidió con la puesta en marcha de un proyecto eólico demostrativo que incluye la operación de cuatro aerogeneradores con el objetivo de promover el uso de energías renovables en el estado. Asimismo, el estado realizó la distribución de 10 mil "Guías Prácticas para el Ahorro de Energía" con el objetivo de sensibilizar a la población sobre los beneficios de instalar tecnologías ecológicas en sus hogares. Como resultado de los talleres, 10 municipios se comprometieron a realizar una auditoría energética en sus edificios públicos, beneficiando a 1.7 millones de habitantes.

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Viviendas Sanas y Resilientes en Ciudad Juarez

Las familias de bajos ingresos cuentan con recursos limitados para implementar medidas de ahorro de energía y agua en sus hogares. Esto es generalmente debido tanto a la falta de conocimientos como a insuficiente asistencia técnica y/o recursos financieros. La falta de acceso a financiamiento para cubrir sus necesidades económicas limita su acceso a energías limpias y servicios básicos. La Federación Mexicana de Asociaciones Privadas de Salud y Desarrollo Comunitario de Ciudad Juárez, A.C. (FEMAP) ha operado durante treinta años un programa de microcréditos en la región; en este lapso se han entregado más de 40,000 microcréditos a los habitantes de bajos recursos para mejoras en sus hogares.

Con el apoyo del Programa Frontera 2020, FEMAP desarrolló un proyecto para identificar e implementar opciones de infraestructura verde y elementos de ahorro de energía para las familias de escasos recursos que buscan mejorar sus hogares en una colonia de rápido crecimiento en Ciudad Juárez. El proyecto ofreció asistencia técnica y financiera a 50 hogares (más de 200 personas) para la implementación de estas opciones y elementos energéticamente eficientes. En coordinación con empresas, instituciones académicas y organizaciones civiles sin fines de lucro, los residentes tuvieron acceso a asistencia técnica de expertos que los guiaron y enseñaron sobre los elementos de la infraestructura verde que podrían ser incorporados y adoptados en sus hogares, así como el acceso a materiales ecológicos.

El proyecto resultó en un ahorro de $630 dólares, 11.249 kW/hr, en el costo de energía y un ahorro de 530,000 litros de agua, equivalentes a $500 dólares, luego de las mejoras realizadas en 45 de las 50 viviendas mediante la instalación de:

- Cerca de 250 focos LED;
- 200 sellados de ventanas;
- 50 regaderas de bajo consumo;
- 50 filtros de agua;
- techos y paredes aislantes.

Además de las mejoras realizadas directamente en sus hogares, se desarrolló un catálogo de eco-materiales con el apoyo del Programa de Arquitectura de la Universidad Autónoma de Ciudad Juárez. Este catálogo incluye información sobre mejores prácticas y una evaluación de cada una de las ecotecnologías seleccionadas, identificando aquellas viables de implementación en comunidades marginadas ya que los catálogos existentes están enfocados mayoritariamente en vivienda nueva.

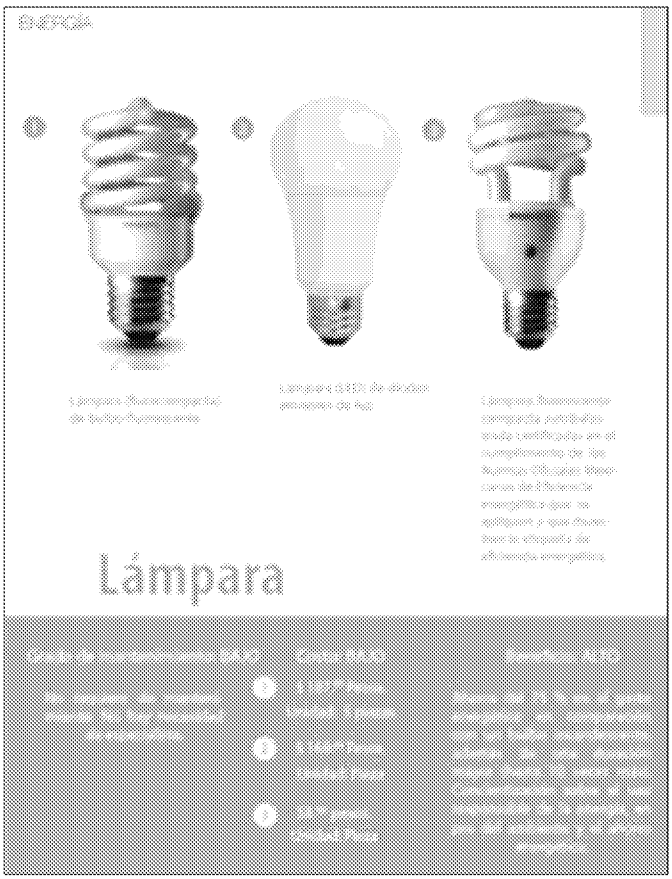

Ilustración. Descripción de los diferentes tipos de focos del catálogo.

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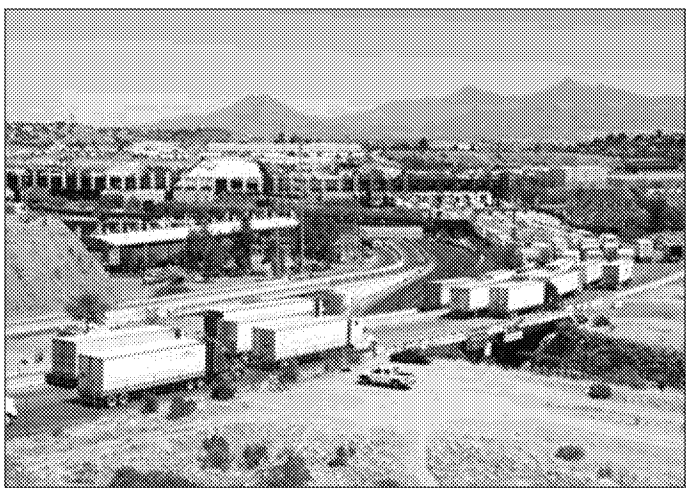
Cuantificando la Disminución de Emisiones Derivada de la Reducción en los Tiempos de Espera en el Cruce Fronterizo Mariposa

El Cruce Fronterizo Mariposa en Nogales, Arizona, es un importante cruce terrestre en la región fronteriza México-Estados Unidos con más de 7 millones de vehículos que cruzan al año, incluidos 350,000 camiones de carga. Las autoridades del cruce fronterizo están implementando un programa piloto innovador realizando inspecciones conjuntas a fin de reducir los tiempos de espera de los camiones de carga. Se espera que este programa piloto reduzca significativamente los tiempos de espera, de 8 horas a 1 hora, para los camiones de carga en dirección a los Estados Unidos. Esta reducción en los tiempos de espera reducirá las emisiones de los vehículos y acelerará el comercio. Actualmente, Nogales no cumple los estándares de emisiones de partículas PM^{10} y $PM^{2.5}$ las cuales pueden causar problemas respiratorios y cardíacos, especialmente en adultos mayores y niños pequeños. La reducción de emisiones de fuentes móviles puede mejorar la calidad del aire y la salud pública en la región.

El Programa Frontera 2020 otorgó financiamiento a la Asociación de Investigación de América del Norte (NARP, por sus siglas en inglés) para implementar un estudio que detalle los beneficios de la reducción de emisiones de este proyecto piloto. Más de 400 vehículos fueron encuestados para obtener información sobre los tiempos de espera, así como la marca y modelo del vehículo, lo que permitió a los investigadores calcular sus emisiones.



Camiones en espera de ingresar a las instalaciones Unificadas para el Procesamiento de Carga en Nogales.

Encuesta a un chofer de un camión después de la inspección.

El Simulador de Emisiones de Vehículos a Motor de la EPA (MOVES, por sus siglas en inglés), un sistema de modelado que estima las emisiones de fuentes móviles a nivel nacional, municipal y de proyecto de los contaminantes atmosféricos criterio, está siendo utilizado por los investigadores para cuantificar las reducciones de emisiones durante los tiempos de espera en el cruce fronterizo. Los datos preliminares muestran que la reducción de los tiempos de espera ha reducido las emisiones vehiculares. Además, se detectó que la reducción de emisiones también se debe a que los vehículos procesados a través de la Instalación Unificada para el Procesamiento de Carga tienden a ser más nuevos y utilizan más tecnologías para la reducción de emisiones. La NARP está trabajando en el análisis de datos de las encuestas y en la cuantificación de la reducción de emisiones, así como en el informe final el cual estará disponible a fines de 2018.

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Reduciendo los Desencadenantes del Asma Infantil en los Hogares

Los niños del Condado Imperial, California, viven con altas concentraciones de factores desencadenantes del asma tanto en el ambiente interior como en el exterior, incluida la contaminación transfronteriza del aire. Estos factores han contribuido a que el Condado Imperial experimente algunas de las tasas más altas de visitas a la sala de emergencias en el estado de California a causa del asma.

Para atender este problema, el Programa Frontera 2020 se asoció y financió el Programa de Asma Infantil del Valle Imperial (IVCAP, por sus siglas en inglés) durante el periodo 2015-2017 con el objetivo de llevar a cabo inspecciones en los hogares e identificar los desencadenantes del asma, así como colaborar con las personas que se dedican al mantenimiento de casas en la implementación de estrategias para fomentar hogares saludables. Durante este período, el 94% de los participantes inscritos en el programa informaron que no visitaron salas de emergencia ni fueron hospitalizados. Además, el IVCAP informó a más de 2.000 personas mediante campañas de difusión y educación, su inscripción en el programa, así como otras actividades de participación comunitaria.

Uno de los eventos comunitarios celebrados en el Condado Imperial.

> *"Disfruto educando a los padres de asmáticos sobre lo que pueden hacer para mejorar el entorno de su hogar, como presentarles productos de limpieza no tóxicos."*
>
> **Rubi Alvarez**
> **Trabajadora de Salud Comunitaria**
> ***(Promotora)***

La EPA continúa apoyando e impactando positivamente a las familias de bajos ingresos financiando actividades educativas sobre asma en el hogar en colaboración con el IVCAP mediante una subvención establecida en la Ley de Aire Limpio. Los fondos aprobados para el periodo 2017-2018 tienen como objetivo proporcionar evaluaciones y herramientas para controlar los desencadenantes del asma en el hogar que afectan a las familias y a los adolescentes de 17 años o menos. Estas evaluaciones son llevadas a cabo por Promotoras o trabajadoras de la salud comunitarias.

A la fecha, IVCAP ha inscrito a casi 90 asmáticos adicionales en su programa, con un 80% de ellos reduciendo, evitando y/o eliminando dos o más desencadenantes de asma identificados en sus hogares después de la evaluación. Las familias recibieron propuestas adecuadas al conjunto único de factores desencadenantes identificados en sus hogares.

Al término de este esfuerzo de dos años, el IVCAP espera atender a otras 70 familias y llevar a cabo evaluaciones en sus hogares esperando disminuir las visitas a la sala de emergencias y las hospitalizaciones. Además de las visitas domiciliarias, el IVCAP aumentará las actividades de divulgación dirigidas a aumentar la conciencia sobre el asma con programas de educación para los residentes diagnosticados con asma sobre los beneficios de mejorar el entorno doméstico interior para mantener el control a largo plazo de esta condición. Para obtener más información sobre el asma y sus desencadenantes, visite la página sobre asma de la EPA.

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MEJORANDO LA CALIDAD DEL AGUA

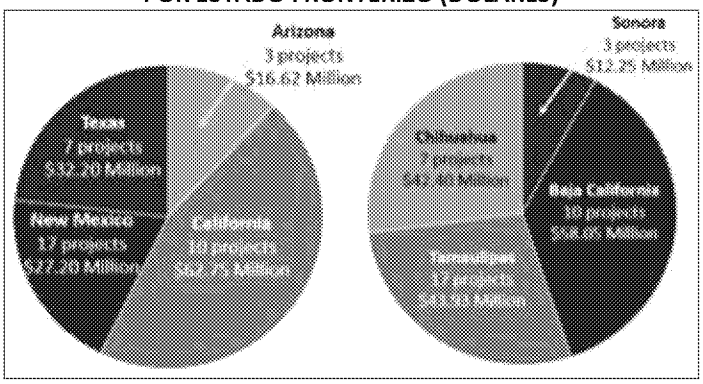
Los ríos y las cuencas hidrográficas no conocen fronteras y, en algunos casos, definen la frontera entre México y los Estados Unidos Los aguas pluviales contaminadas y las aguas residuales de infraestructura deteriorada, así como los fenómenos meteorológicos extremos pueden contaminar los cursos de agua transfronterizos, causando problemas de salud pública en la región fronteriza. El Programa Frontera 2020 ha mejorado la calidad del agua mediante el financiamiento de proyectos piloto para la gestión o mitigación de aguas pluviales, como infraestructura verde, programas para la reducción de residuos sólidos e investigación. Los fondos del Programa de Infraestructura Hidráulica Fronteriza (BWIP, por sus siglas en inglés) se han utilizado tanto para rehabilitar como para construir infraestructura para agua potable y para aguas residuales.

Programa México-Estados Unidos de Infraestructura Hidráulica Fronteriza

A través del Programa México-Estados Unidos de Infraestructura Hidráulica Fronteriza (PIHF) se otorgaron recursos para la planeación, diseño y construcción de proyectos prioritarios de infraestructura de agua potable y aguas residuales a lo largo de la frontera. El FIHF ayuda a las comunidades desfavorecidas a identificar y asegurar las fuentes de financiación disponibles y abordar los déficits de financiación para garantizar el acceso al agua potable y al saneamiento adecuado, a menudo por primera vez.

El FIHF proporciona capacitación administrativa y supervisión técnica a las comunidades que carecen de estas con el propósito de que puedan cumplir con los requisitos de diseño y planificación de proyectos aumentando así las oportunidades de financiamiento para la asistencia de construcción proveniente de otros programas, como el Programa de Áreas Marginadas de Texas, el Fondo Rotatorio Estatal, los programas de agua y medio ambiente para el desarrollo rural del Departamento de Agricultura de los Estados Unidos (USDA, por sus siglas en inglés)) y del Banco de Desarrollo de América del Norte (BDAN).

PRIORIZACIÓN DE PROYECTOS 2017 POR ESTADO FRONTERIZO (DÓLARES)



Los ríos ubicados en la región fronteriza entre México y los Estados Unidos en ocasiones definen de forma natural el límite geográfico internacional, como lo hace el Río Bravo, o bien fluyen desde México a los Estados Unidos, como es el caso del río Tijuana. Los proyectos financiados por el FIHF en ambos países abordan las descargas de aguas residuales transfronterizas, ya que su tratamiento antes de que entren en los cuerpos de agua fronterizos compartidos es la opción más viable desde el punto de vista técnico y financiero para prevenir su contaminación. Como parte de esta asociación, México iguala dólar por dólar las inversiones que la EPA proporciona a proyectos de infraestructura hidráulica, lo que ayuda a proteger la salud pública y el medio ambiente.

Logros del Programa

Desde 2003, a través de 108 proyectos financiados, el FIHF ha proporcionado acceso a agua potable a 70,000 hogares, así como sistemas para la recolección y tratamiento de aguas residuales a 673,000 hogares que nunca habían recibido este servicio. En 2017, a través del BDAN, la EPA anunció un nuevo ciclo de solicitud de proyectos para recibir financiamiento del FIHF. Se identificaron

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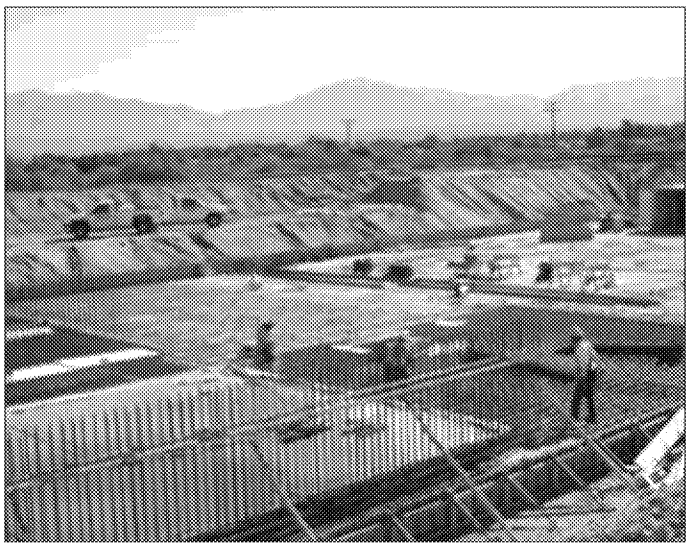
más de 60 proyectos elegibles de agua potable y aguas residuales con un costo de construcción total estimado en $296 millones de dólares que abordan las condiciones ambientales y de salud pública en la región fronteriza.

Desarrollando capacidades técnicas y de gestión en Sunland Park, Nuevo México, mediante asociaciones

La construcción de una nueva planta de tratamiento en Sunland Park, una comunidad pequeña y marginada en Nuevo México, comenzó en agosto de 2017. La Autoridad de Servicios Regionales de Camino Real (CRRUA), la autoridad sanitaria local, se enfrentó a problemas debido a infraestructura inadecuada y obsoleta, el cumplimiento ambiental y la falta de capacidad y recursos gerenciales. Durante casi dos años, la EPA, el Departamento de Medio Ambiente de Nuevo México (NMED) y el BDAN trabajaron en estrecha colaboración con CRRUA para implementar un plan de desarrollo de capacidades para garantizar que esta institución pudiera administrar efectivamente una planta nueva de tratamiento de aguas residuales. La USEPA proporcionó más de $816 mil dólares para implementar con éxito este plan y la asistencia técnica para la planificación y el diseño del proyecto; posteriormente, la EPA y el NMED financiaron la construcción de una planta de tratamiento con un costo de $12.7 millones de dólares, de los cuales la EPA contribuyó con $9 millones y el NMED proporcionó los $3.7 millones restantes con fondos estatales. La planta de tratamiento mejorará el acceso a servicios sustentables de tratamiento de aguas residuales a aproximadamente 6,440 residentes de Sunland Park y Santa Teresa y reducirá en gran medida los riesgos de descargas de aguas residuales no tratadas o inadecuadamente tratadas al río Bravo.



Construcción de la nueva planta de tratamiento de Sunland Park.

El presidente de la junta directiva de CRRUA, Josh Orozco, enfatizó la importancia de finalmente poder proporcionar la capacidad adecuada de tratamiento de aguas residuales en la comunidad. Durante la ceremonia de inauguración en julio de 2017, dijo que esta nueva planta "... no solo permitirá que más hogares y más empresas reciban ayuda, sino que también mejorará la salud de nuestra comunidad."

Protegiendo la cuenca del río Tijuana de la contaminación transfronteriza

El río Tijuana, que tiene su origen en Baja California, México, cruza la frontera en San Ysidro, California, y desemboca en el Océano Pacífico al sur de Imperial Beach, California. Las descargas de aguas residuales y tratadas inadecuadamente en Tijuana pueden afectar la economía, la salud y el medioambiente de comunidades estadounidenses como Imperial Beach y Chula Vista en el condado de San Diego. Como parte de un esfuerzo multilateral y de largo plazo para abordar estas descargas transfronterizas, se está llevando a cabo un proyecto en el marco del FIHF para reparar algunos de los recolectores de aguas residuales deteriorados. Estos recolectores transportan las aguas residuales de los hogares a la planta de tratamiento de aguas residuales de Tijuana. Si no son reparados, pueden producirse colapsos catastróficos que darían lugar a cientos de millones de litros de aguas residuales no tratadas que fluirían hacia los Estados Unidos y hacia las playas del Condado de San Diego. La cooperación existente entre las agencias de agua mexicanas y la EPA se traduce en $7 millones de dólares invertidos en la reparación de poco más de 9.6 km de recolectores de aguas residuales y la rehabilitaron 30 pozos de registro. Asimismo, está en marcha una segunda fase para la construcción de 4 km de líneas de alcantarillado adicionales. El costo estimado de este proyecto es de $3 millones de dólares, con una contribución proyectada por parte de la EPA de $1.4 millones.

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Campaña de Difusión Pública sobre Aceites y Grasas en Brownsville

La Junta de Servicios Públicos de Brownsville (BPUB, por sus siglas en inglés) recibió financiamiento del Programa Frontera 2020 por $25 mil dólares en febrero de 2016 para la difusión de información y educación sobre el impacto de la contaminación con grasas y aceites en la calidad del agua de las comunidades en Brownsville, Texas, y Matamoros, Tamaulipas. Históricamente, las llamadas al BPUB de zonas residenciales y comerciales por problemas relacionados con grasas y aceites ocurrieron en promedio cinco veces por semana, con un aumento de incidencias durante el mes de diciembre.

El BPUB se integró a un programa de reducción voluntario de la Comisión de Calidad Ambiental de Texas (TCEQ, por sus siglas en inglés) llamado Iniciativa Sanitario para el Desbordamiento del Alcantarillado. Este programa voluntario requiere que el BPUB trabaje para reducir la descarga no autorizada de aguas residuales no tratadas o parcialmente tratadas en el sistema de recolección o sus componentes (por ejemplo, alcantarillas, estaciones de bombeo o de limpieza) antes de llegar a una planta de tratamiento de aguas residuales como resultado de problemas relacionados con aceites y grasas. Mediante campañas educativas para el público en general y para establecimientos comerciales, el BPUB tuvo como objetivo reducir el número de llamadas de servicio relacionadas con aceites y grasas, así como crear conciencia sobre las técnicas apropiadas para la de eliminación adecuada de éstas.

Esfuerzos de marketing y educación

El 16 de marzo de 2016, el BPUB lanzó oficialmente su campaña de alcance masivo "Grasas y Aceites" en su reunión pública mensual en Brownsville. Durante la reunión pública, anunciaron su colaboración con la ciudad de Matamoros con el nuevo programa de divulgación sobre aceites y grasas. El BPUB informó a las comunidades de ambos lados de la frontera a través de una serie de actividades que incluyeron anuncios, volantes educativos, videos publicitarios, talleres y cobertura de prensa. Las plataformas de redes sociales como Facebook, Twitter y YouTube también fueron utilizadas para dirigirse al público más joven y compartir las campañas educativas producidas en video y audio. A lo largo del período del proyecto, se llevaron a cabo más de 80 eventos de divulgación pública y difusión en apartamentos y complejos de viviendas, iglesias e instituciones educativas, así como en negocios comerciales en los que participaron más de 1,700 personas.

Evento de difusión en Brownsville.

Más importante aún, el BPUB, a través de sus actividades de promoción, ha reducido consistentemente el número de llamadas relacionadas con grasas y aceites de 731 en 2013 a 417 en 2016, una reducción del 43% en tan solo cuatro años. Durante el período del proyecto, en 2015 y 2016, el BPUB recibió 477 y 417 llamadas, respectivamente, para atender problemas relacionados con grasas y aceites. En general, el proyecto cumplió con sus objetivos, entre los que se incluía el de reducir el número de llamadas de incidencias relacionadas con grasas y aceites en un 13% o en 60 llamadas. Para obtener más información sobre los esfuerzos que el BPUB realiza en este tema, por favor visite su página en internet.

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Construyendo Infraestructura Verde en Espacio Público de la Avenida Valle del Sol

La Organización Mundial de la Salud (OMS) establece un indicador de sustentabilidad de 9 m^2 de áreas verdes por habitante. La región fronteriza de Ciudad Juárez y El Paso experimenta un marcado déficit de espacios verdes urbanos; especialmente en Ciudad Juárez, donde se calcula existen sólo 4.5 m^2 de área verde por habitante. Desde 2013, la ciudad ha buscado activamente asociarse con diversas organizaciones para incrementar su infraestructura y espacios verdes. Estos proyectos no sólo pueden ser rentables, sino que pueden atender problemas de inundación asociados con la falta de infraestructura de aguas pluviales y embellecer las áreas con alto tránsito peatonal.

En 2016, con apoyo del Programa Frontera 2020 se financió un parque situado en la avenida Valle del Sol y la calle Solares. Ubicado a menos de un kilómetro de la línea fronteriza, este parque es el único espacio verde disponible para la comunidad de la zona. Con el paso de los años, la condición del parque se fue degradando debido a la falta de mantenimiento y dejó de servir como un área de esparcimiento y reunión para los miembros de la comunidad. El Instituto Tecnológico de Ciudad Juárez (ITCJ), promotor del proyecto, transformó el parque en un espacio adecuado para ser utilizado por los miembros de la comunidad e implementó medidas para atender los problemas de inundación que experimenta esta zona cuando llueve.

Sistemas pasivos para la recolección de agua de lluvia en el parque.

Con el financiamiento otorgado por el Programa, la ITCJ desarrolló este proyecto con los siguientes objetivos:

- Construir sistemas pasivos para el almacenamiento de aguas pluviales;
- Conservar agua potable usada para regar;
- Proteger el suelo de la erosión causada por el viento; e
- Incorporar y aprovechar la infraestructura urbana existente.

El proyecto inició en junio de 2016 con la limpieza del sitio y el acondicionamiento de la banqueta, posteriormente se trabajó en la construcción de sistemas pasivos para la recolección de aguas pluviales, así como en la recuperación y reconfiguración de la vegetación existente en el lugar. La cantidad de lluvia monitoreada de julio de 2016 a noviembre de 2017 (17 meses) resultó en la captura de un volumen total de 1,788 metros cúbicos de aguas pluviales.

En la actualidad, los sistemas pasivos de recolección de agua continúan funcionando eficazmente y la vegetación está prosperando. El parque se sostiene casi en su totalidad con agua de lluvia, excepto en casos de sequía extrema o para el riego de vegetación recién sembrada.

Gracias a una donación de las autoridades municipales, el suelo del parque está protegido de la erosión eólica por una cubierta de cáscara de nuez que permite que se conserve la humedad del suelo.

Finalmente, las encuestas realizadas en la zona mostraron que el valor social del parque ha aumentado sustancialmente. Antes del proyecto, el lugar era considerado como un espacio negativo por los residentes de la comunidad y ahora se lo ve como un espacio público agradable y con valor social.

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Estudiando Métodos de Desarrollo de Bajo Impacto para la Gestión de Aguas Pluviales en el Sur de Texas

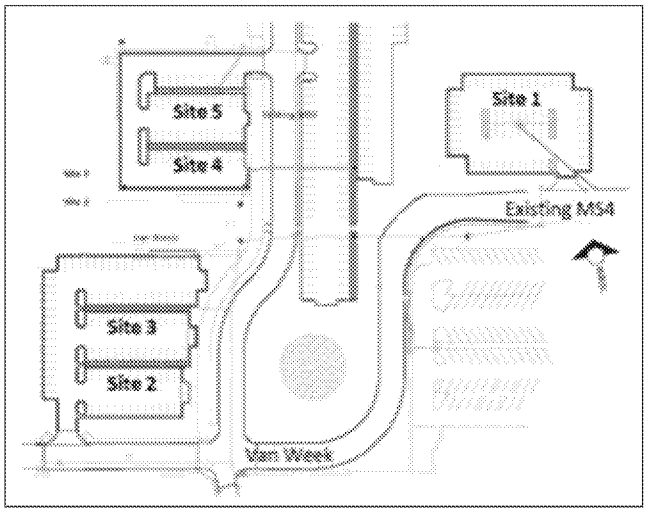
Varias comunidades en el Valle Bajo del Río Bravo en el sur de Texas han estado evaluando varios métodos de Desarrollo de Bajo Impacto (DBI) para incorporarlos a sus comunidades. Los DBI proporcionan varias ventajas sobre las prácticas tradicionales para la gestión de aguas pluviales, tales como: reducir o eliminar la necesidad de grandes estanques de captación y retención de agua; disminuir la contaminación de los cuerpos de agua; disminuir la erosión; incrementar el aspecto atractivo de la comunidad; flexibilidad en el diseño de los proyectos; todo a bajos costos. Un equipo de investigación liderado por el Dr. Jungseok Ho, de la Universidad de Texas en el Valle Bajo del Río Bravo (UTRGV, por sus siglas en inglés)), evaluó el uso de drenajes sostenibles en estacionamientos para determinar el mejor material poroso disponible a nivel local, así como un diseño estándar que podría ser utilizado por las localidades de la región. Los drenajes sostenibles generalmente son diseñados para el manejo de aguas pluviales en superficies impermeables de gran tamaño, como estacionamientos, incorporando materiales porosos y elementos de paisaje urbano con el propósito de eliminar los desechos y la contaminación de las aguas pluviales.

MATERIALES POROSOS Y TAMAÑO DE DRENAJE POR SITIO DE ESTUDIO

Sitios de Prueba	Drenaje Sostenible	Material Poroso	Tamaño (acres)
Sitio 1	Sin drenaje	Sin drenaje	.237
Sitio 2	Drenaje 1	Piedra Pómez	.216
Sitio 3	Drenaje 2	Arena fabricada	.218
Sitio 4	Drenaje 3	Vidrio reciclado triturado	.209
Sitio 5	Drenaje 4	Arena natural	.206

Basándose en estudios previos realizados por el Dr. Ho, su equipo evaluó cinco sitios de prueba que utilizaron varios materiales porosos (piedra pómez, arena fabricada, vidrio triturado reciclado y arena natural) en los estacionamientos del campus Edinburg de la UTRGV.

El proyecto evaluó el rendimiento hidrológico de los cuatro materiales diferentes utilizados en los cinco sitios de prueba. Los resultados obtenidos para el Sitio 2, con el material de piedra pómez, mostraron un mejor rendimiento hidrológico teniendo en cuenta los cuatro criterios definidos para la elección: 1) reducción del volumen de aguas pluviales; 2) reducción del caudal máximo; 3) atenuación de los puntos máximos del caudal; y 4) filtración de los sólidos contenidos en el caudal de aguas pluviales. La piedra pómez mostró la mayor filtración de los cuatro materiales utilizados con un 58% y una atenuación del volumen máximo del caudal en un 64%.



Ubicación de los Sitios de estudio en el Campus Edinburg de la UTRGV.

Los resultados del estudio de suelo muestran que cualquier mezcla que contenga más del 40% de piedra pómez del volumen total produce resultados prometedores. Tres mezclas de arena fabricada, arena natural y vidrio triturado reciclado con un 40% de piedra pómez cada una, alcanzaron un promedio de 30% de retención de aguas pluviales y 52% de filtración de residuos.

En general, con base en las pruebas de campo, la piedra pómez tuvo el mejor desempeño de los materiales porosos utilizados, con resultados que muestran que la utilización de mezclas con al menos un 40% de piedra pómez es el material ideal para esta región. Sin embargo, cabe destacar que es necesario realizar más estudios para conocer la disponibilidad y costo de este material en la región, así como el costo de la construcción de proyectos para determinar su nivel de efectividad final y ser utilizado por las comunidades de la región.

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Infraestructura Verde para Control de Sedimentos y Protección Contra Inundaciones en Ambos Nogales

El Interceptor de Desagüe Internacional (IDI) es una tubería que transporta las aguas residuales no tratadas de Nogales, Sonora, y Nogales, Arizona, (Ambos Nogales) a la Planta Internacional de Tratamiento de Aguas Residuales de Nogales nueve millas al norte de la frontera en Río Rico, Arizona. Dado que el sistema de recolección de aguas residuales en Sonora actúa como transporte combinado de agua sanitaria y pluvial, a lo largo de los años los flujos de sedimentos y la infiltración de aguas pluviales en Sonora han causado la falla del IDI en Arizona. El deterioro ocasionado por el sedimento ha debilitado el sistema, lo que ha provocado roturas en las tuberías del IDI, la última en julio de 2017, lo que ha generado derrames de aguas residuales en el Arroyo Nogales. Las fallas reiteradas del IDI podrían ocasionar la contaminación de los recursos hídricos subterráneos de Arizona.

Parque diseñado para recolectar agua de lluvia y prevenir inundaciones.

El Grupo de Gestión de Cuencas Hidrográficas (WMG, por sus siglas en inglés), una organización sin fines de lucro con sede en Tucson, Arizona, encabezó un proyecto financiado por el Programa Frontera 2020 para demostrar el potencial de infraestructura verde existente para disminuir la cantidad de sedimentos durante las inundaciones provocadas por lluvias que están deteriorando el IDI. La infraestructura verde, de acuerdo con la EPA, utiliza la vegetación, los suelos y otros elementos y prácticas para restaurar algunos de los procesos naturales necesarios para gestionar el agua y crear entornos urbanos más saludables. El proyecto utilizó un enfoque de tres frentes que incluyó:

- Desarrollo de capacidades (capacitaciones comunitarias en actividades de planificación, diseño e implementación);
- Sitios piloto (dos proyectos para el control de sedimentos); y
- Desarrollo de políticas (resolución para expandir y fortalecer las prácticas de infraestructura verde en Nogales, Sonora).

Trabajando con el gobierno local y los residentes de Nogales, Sonora, el WMG completó dos sitios piloto con un área de aproximadamente 10,000 m^2, similar al área de un campo de fútbol. Además, 88 residentes asistieron a un taller de capacitación y más de 500 miembros de la comunidad recibieron información sobre conceptos de infraestructura verde a través de eventos comunitarios y participación en proyectos. Uno de los sitios piloto es un parque de lluvia que ahora colecta un volumen de entre 50,000 y 70,000 litros de agua pluvial cada evento de lluvia. Estas modificaciones de infraestructura verde eliminan casi por completo la contribución de sedimentos originados en el parque durante inundaciones provocadas por lluvias río abajo en el área de Ambos Nogales.

El proyecto atrajo el apoyo de un Diputado del Congreso de Sonora electo en representación del municipio de Nogales y que es miembro de la Comisión de Energía, Medio Ambiente y Cambio Climático del Congreso Estatal; por lo que tuvo un impacto más allá del nivel local fomentando que el Congreso de Sonora adoptara una ley de infraestructura verde en abril de 2017, la primera de su tipo aprobada en México.

Este proyecto incrementó la capacidad de la comunidad para usar infraestructura ecológica para reducir las inundaciones en el área de Ambos Nogales e impulsó al gobierno local a apoyar el futuro desarrollo de infraestructura verde.

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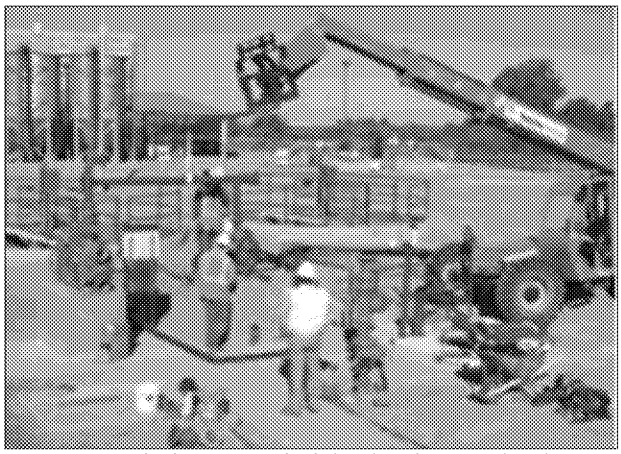
Protegiendo los Recursos Hídricos de la Ciudad de Holtville en el Condado Imperial

Ubicada en el Condado Imperial, California, la planta de tratamiento de aguas residuales (PTAR) de la ciudad de Holtville no cumplía con los requisitos de descarga de amoníaco y otros contaminantes que fluían hacia el drenaje Pear, que alimenta el río Álamo y finalmente el Mar de Salton en el sur de California. Gracias al financiamiento del Fondo México-Estados Unidos de Infraestructura Hidráulica Fronteriza (FIHF) y del Fondo Rotatorio Estatal de Agua Limpia del estado de California, la PTAR existente se modernizó y ahora brinda servicio de aguas residuales al 100% para la zona beneficiando a 6,594 residentes de Holtville.

Considerado un cuerpo de agua deteriorado, las descargas contaminadas de Holtville exacerbaron las difíciles condiciones que enfrentan las comunidades de flora y fauna que viven en el Mar de Salton. Con el paso de los años, los niveles de agua en el Mar de Salton han disminuido rápidamente debido a la evaporación y han aumentado tanto la salinidad y como las concentraciones de contaminantes. El lecho del lago expuesto ha sucumbido a los vientos del desierto que ahora llevan el polvo contaminado a las comunidades circundantes. Estas partículas de polvo pueden contribuir a los ataques de asma en todo el Valle Imperial. La PTAR de Holtville, que ahora cumple con todos los requisitos, no solo aumentará las posibilidades de supervivencia de los diversos organismos dependientes del Mar de Salton, sino que la afluencia de agua tratada adecuadamente evitará que el lecho del lago esté expuesto al viento y, a su vez, el polvo generado no afecte a los residentes urbanos vulnerables.

"La EPA está comprometida a ayudar a las comunidades de todo el Valle Imperial a proteger los recursos hídricos vitales del estado. Nuestras inversiones renuevan la infraestructura obsoleta, lo que puede ser costoso para comunidades pequeñas como Holtville."

Tomas Torres
Director de la División de Agua
Oficina Regional 9 de la USEPA



Construcción de una estación de bombeo de aguas pluviales.

Algunos de los nuevos componentes instalados en la PTAR de Holtville incluyen una cortina de barra de operación automática que maximiza la eliminación de objetos grandes y un sistema de lodo activado que mejora la efectividad del tratamiento y la calidad del agua tratada. Así mismo, se rehabilitó el edificio de operaciones de la planta de tratamiento y se instalaron equipos de laboratorio modernos, lo que permitirá que se puedan llevar a cabo los análisis necesarios para asegurar que el agua tratada cumpla con los requisitos para su descarga.

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PROMOVIENDO SUELOS LIMPIOS

En la región fronteriza entre México y los Estados Unidos, la gestión de los residuos sólidos no ha seguido el ritmo del aumento de la población, lo que ha dado como resultado basura no gestionada así como infraestructura y servicios sobrecargados y la pérdida de posibles materiales valiosos en rellenos sanitarios o vertederos ilegales. La basura sin gestionar contamina la tierra y el agua, y tiene impactos adversos en la salud pública, tales como propiciar incendios contribuyendo a la mala calidad del aire o servir como hábitat de reproducción de mosquitos y la propagación de enfermedades transmitidas por vectores como el Zika. La Gestión Sustentable de Materiales (GSM) promueve un enfoque de ciclo de vida que va desde la optimización del diseño hasta el proceso de producción final de bienes y servicios para reducir el desperdicio, eliminar la toxicidad y maximizar la reutilización. Los Socios del Programa Frontera 2020 han avanzado la GSM a través de limpiezas y proyectos para reciclar residuos domésticos peligrosos, aparatos electrónicos y llantas de desecho.

Apoyando a los Recicladores de Automóviles

Cada año, los vehículos que alcanzan el final de su vida útil son depositados en deshuesadoras ubicadas en la región fronteriza entre México y los Estados Unidos. A menudo, estos vehículos desechados no se procesan adecuadamente para recuperar los materiales reutilizables o reciclables ni eliminar los materiales peligrosos que contienen. A medida que los vehículos desechados se acumulan, el terreno que ocupan se convierte en un paisaje desagradable a la vista dentro de las comunidades locales y representan un riesgo para la salud humana y el medio ambiente. Los vehículos suelen contener materiales peligrosos como anticongelantes, aceite usado o plomo y, cuando se abandonan, se convierten en una responsabilidad legal para los gobiernos locales.

En respuesta a las necesidades de los recicladores automotrices en la región fronteriza, la SEMARNAT y la EPA desarrollaron una "Guía para Vehículos al Final de su Vida Útil". Este documento fue desarrollado para compartir prácticas efectivas en la preparación de vehículos al final de su vida útil para que sean reciclados adecuadamente y contribuir al objetivo del Programa de reducir el desperdicio mediante la recuperación segura y responsable de los materiales contenidos en ellos.

La Guía forma parte de un paquete que incluye también un juego de tarjetas de referencia rápida sobre residuos y un póster. Estos materiales instructivos pueden ser utilizados para proveer información oportuna en las instalaciones de desmontaje a los técnicos sobre la preparación adecuada de los vehículos para que su desmontaje sea conducido mediante una gestión ambientalmente racional. Además, la Guía analiza la eliminación responsable, la recuperación de costos, la salud, la seguridad y la protección, las normas que rigen a la industria y una lista de vehículos que contienen interruptores de mercurio.

Los flujos de desechos específicos que representan un alto riesgo para los trabajadores y el medio ambiente se destacan en la Guía y en un conjunto de tarjetas que incluyen diagramas. Los flujos de desechos incluidos son: plomo, interruptores de mercurio, refrigerantes, baterías de desecho, así como líquidos y combustible residuales. En general, la Guía proporciona materiales que los técnicos pueden utilizar para procesar los vehículos viejos utilizando prácticas de gestión ambientalmente racionales.

La SEMARNAT y la EPA trabajarán coordinadamente para difundir la Guía entre los actores relevantes a lo largo de la región fronteriza en el otoño de 2018. La Guía impresa se encuentra disponible en español, mientras que versiones electrónicas en ambos idiomas están disponibles en la página de la EPA.

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Manejo Integral de Desechos Sólidos y Llantas Usadas en la Frontera México-Estados Unidos

El Programa Frontera 2020 tiene como uno de sus objetivos construir un enfoque más sustentable e integrado para la gestión de materiales de desecho con el fin de minimizar y reducir su impacto en el medio ambiente y mejorar la salud pública. Sin embargo, en una región geográfica donde la población, las condiciones socioeconómicas y las regulaciones ambientales pueden variar significativamente, las diferentes comunidades fronterizas han tenido que adoptar enfoques variados y creativos para construir comunidades sustentables.

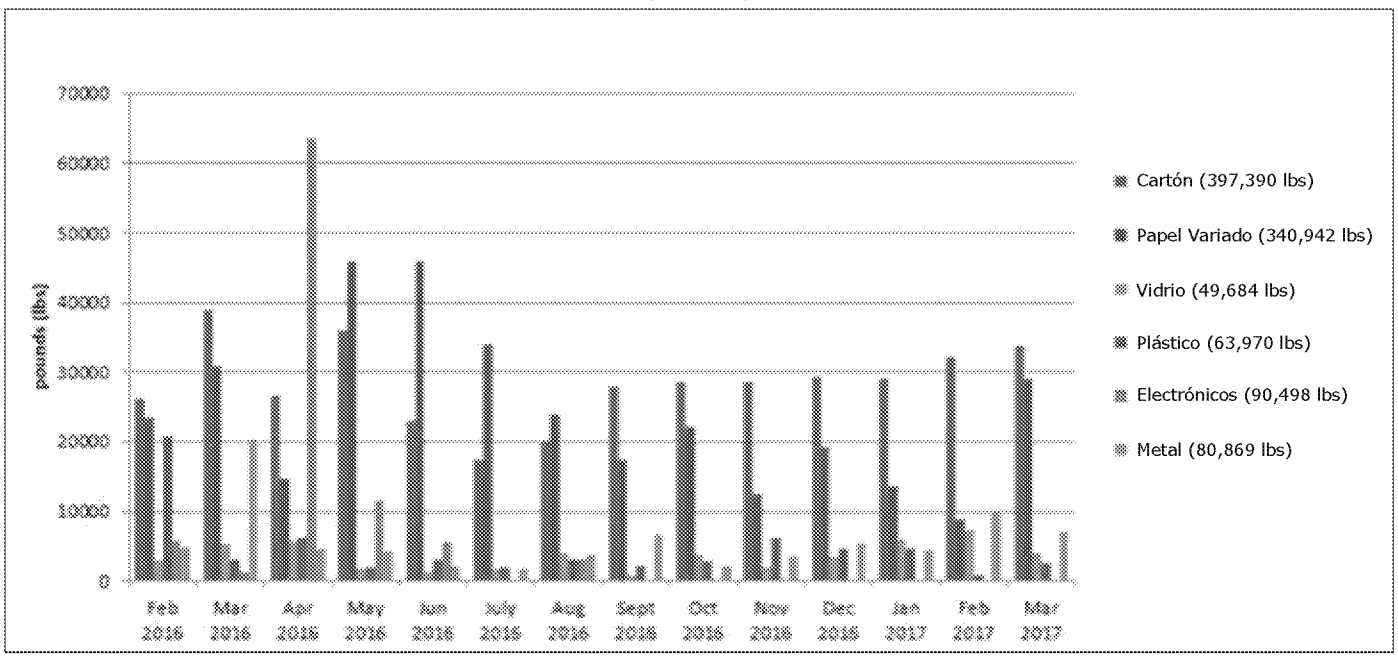
Ciudad de Pharr, Texas

A lo largo de los años, la ciudad de Pharr ha implementado diversas herramientas para la sustentabilidad en el Departamento de Obras Públicas con el objetivo de que esta ciudad sea una de las más limpias en el Valle Bajo Río Bravo. En 2016, Pharr recibió financiamiento por parte del Programa Frontera 2020 por un monto de $36 mil dólares para continuar mejorando sus actividades de reciclaje y educativas en la comunidad con el objetivo de reducir la dependencia de la ciudad en los rellenos sanitarios y construir una comunidad más saludable. Durante un período de 14 meses, la ciudad recolectó:

- Más de 5,700 llantas de desecho;
- 60 toneladas de residuo diversos (Figura 1); y
- 464 toneladas de material reciclado que no fueron depositadas en rellenos sanitarios.

El Departamento de Obras Públicas condujo una campaña de educación pública bilingüe sobre los esfuerzos de reciclaje y sustentabilidad de la ciudad, así como de la contaminación de aguas pluviales y disposición ilegal de llantas usadas, a través de redes sociales, folletos, anuncios de radio y más de 100 actividades informativas (20 reuniones, 40 eventos, 50 presentaciones). El proyecto también fomentó los esfuerzos de reciclaje en algunas escuelas de la ciudad mediante la promoción de un concurso de educación ambiental, así como el suministro de 75 contenedores para el reciclaje en los salones de clase y docenas de contenedores para el reciclaje con una capacidad de 360 litros en el distrito escolar. Para obtener más información sobre el Departamento de Obras Públicas de Pharr y sus esfuerzos, por favor visite su página en internet.

MATERIAL RECOLECTADO Y RECILADO DESVIADO DEL RELLENO SANITARIO DE PHARR, TEXAS. (lbs/mes)



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Valle Hermoso y Rio Bravo, Tamaulipas

En 2014, el estado de Tamaulipas aprobó la legislación que establece su Programa de Gestión y Prevención Integral de Residuos. Dentro de este programa, basado en factores como el crecimiento de la población y la generación per cápita de los residuos sólidos, el estado priorizó los municipios donde era vital establecer un programa municipal integral para la gestión y prevención de residuos. También se delinearon las estrategias y acciones específicas que estos programas municipales deberían contener, incluidos los costos asociados a su implementación a corto, mediano y largo plazo. La implementación de los programas municipales se realiza en tres fases: llevando a cabo un diagnóstico para conocer las condiciones actuales; la adopción por parte del municipio de su programa; y, finalmente, la implementación, monitoreo y evaluación del programa municipal.

La Secretaría de Desarrollo Urbano y Medio Ambiente de Tamaulipas (SEDUMA) recibió financiamiento por parte del Programa Frontera 2020 por un monto de $20 mil dólares para ayudar a los municipios de Valle Hermoso y Río Bravo a completar su estudio de diagnóstico sobre la gestión local de los residuos. El estudio de diagnóstico, que se llevó a cabo en período de dos meses, analizó:

- Actividades actuales, personal, equipo, desechos sólidos recolectados y clasificación de desechos;
- Estrategias específicas recomendadas para ser implementadas a corto, mediano y largo plazo;
- Costos asociados a la implementación de las estrategias (Tabla 1);
- Parámetros del programa de monitoreo; y
- Posibles mecanismos de financiación.

El 22 de agosto de 2016, SEDUMA presentó a los dos municipios el diagnóstico de su sistema actual para la gestión de residuos. Con base en el diagnóstico, en marzo de 2017 el municipio de Valle Hermoso publicó y registró oficialmente ante autoridades estatales su programa municipal para la gestión integral de residuos, pasando a la tercera fase. Los próximos pasos incluyen la aprobación por parte del municipio de Río Bravo del diagnóstico y el registro de su programa.

COSTOS TOTALES DE IMPLEMENTACIÓN DE ESTRATEGIAS A CORTO, MEDIANO Y LARGO PLAZO EN VALLE HERMOSO Y RIO BRAVO, TAMAULIPAS.

Estrategia Considerada por Municipio	Costo Total de Implementación por Municipio (Dólares)	
	Rio Bravo	Valle Hermoso
Administración/Operación	$4,776,923.00	$1,296,428.00
Reciclaje	$1,648.00	No Considerada / No Aplica
Servicios Generales	No Considerada / No Aplica	$10,989.00
Difusión Pública y Campañas Educativas	$16,373.63	$17,032.00
Participación Sector Privado/ Asociaciones	Sin costo para el Municipio	No Considerada / No Aplica
Creación de Capacidades Institucionales	$155,495.00	$122,527.00
Financiero/Legislativo	Sin costo para el Municipio	No Considerada / No Aplica

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Atendiendo los Desafíos Binacionales de la Basura Electrónica en Coahuila y Texas

Los rápidos avances en la tecnología y el uso de productos electrónicos por parte de los consumidores hacen que los productos electrónicos se vuelvan obsoletos rápidamente y sean desechados. A diferencia de otros materiales reciclables, los desechos electrónicos (e-waste) no son tan fácilmente reciclables debido a los metales tóxicos que contienen (plomo, mercurio, cadmio y arsénico). El desafío con el reciclaje de desechos electrónicos es a menudo la eliminación inadecuada en los rellenos sanitarios locales y la falta de infraestructura en las comunidades para apoyar el correcto manejo y reciclaje.

Centro de recolección permanente ubicado en las instalaciones del Departamento de Obras Públicas de Eagle Pass, Texas.

En 2016, el Programa Frontera 2020 otorgó financiamiento a dos proyectos, promovidos por la Secretaría de Medio Ambiente del estado de Coahuila (SEMA) y por la organización Green Tecosos, grupo ambientalista del Instituto Tecnológico de Piedras Negras, para el reciclaje de residuos electrónicos en las comunidades de Ciudad Acuña, Piedras Negras y Guerrero, en el estado de Coahuila, e Eagle Pass en Texas. Estos proyectos tuvieron como objetivo evitar que los desechos electrónicos generados en estos municipios fueran vertidos ilegalmente en el lecho del Río Bravo, en los alrededores de la presa La Amistad, así como en arroyos, lotes baldíos y rellenos sanitarios de la región. También proporcionaron información y educaron a la comunidad sobre los beneficios de reutilizar productos electrónicos.

Para mejorar las prácticas sustentables se establecieron 10 centros permanentes de recolección de desechos electrónicos en las cuatro comunidades. A través de eventos comunitarios, los proyectos lograron la recolección de más de 113 toneladas de desechos electrónicos. Además, con la asistencia de más de 60 socios del Programa y a través de talleres, capacitaciones y medios de comunicación; los residentes fueron educados sobre los impactos positivos que el reciclaje adecuado de los desechos electrónicos tiene en el medio ambiente.

EVENTOS COMUNITARIO DE RECOLECCIÓN EN COAHUILA Y TEXAS
FEBRERO, 2016 - MARZO, 2017

Tipo de	*e-waste* Recolectado (tons)	Población Atendida
22 colonias de Piedras Negras	32.22	45,000-50,000
Escuelas de los municipios de Piedras Negras y Nava	8.83	5,500
Negocios y otros	5.56	2,500
Eagle Pass	14.83	28,765

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La Tribu Campo Band Avanza en las Prácticas Cero Desperdicios

En la región fronteriza, la disposición inadecuada de basura tiene impactos negativos en el medio ambiente que pueden llegar a tener efectos transfronterizos, como el deterioro de la calidad del agua, la obstrucción del flujo de la corriente de los ríos y la creación de hábitats para vectores de enfermedades. En 2015, la tribu Campo Band, ubicada en California, expresó su preocupación a los representantes del Programa Frontera 2020 por los problemas de desechos sólidos transfronterizos. Para atender estas preocupaciones, en el año 2016 el Programa proporcionó financiamiento para realizar una evaluación del flujo de los desechos sólidos y preparar un Plan de Cero Desperdicios. Este Plan tendría como objetivo reducir significativamente el desperdicio y establecer acciones para eventualmente eliminar los desechos enviados al relleno sanitario.

El Plan de Cero Desperdicios se completó en enero de 2018. Junto con las recomendaciones de este Plan, la tribu Campo Band está explorando activamente otras acciones para la gestión de materiales, incluyendo metas a corto y largo plazo para desarrollar un programa autosustentable de reciclaje y desechos, así como establecer una estación de transferencia. Este Plan fue un importante primer paso o herramienta para que la tribu pudiera alcanzar sus objetivos relacionados con los residuos sólidos y así mejorar la salud de sus miembros y de la región fronteriza en general. La tribu Campo Band continúa aprovechando otros recursos como el Programa de Asistencia General (GAP, por sus siglas en inglés) de la EPA para cumplir sus objetivos sobre desechos sólidos, crear prácticas que tengan sentido para su comunidad y utilizar el plan de cero residuos como una herramienta valiosa para satisfacer sus necesidades. Actualmente, la tribu Campo Band obtuvo $18 mil dólares de financiamiento por parte del GAP para que continúe trabajando con su Plan de Cero Desperdicios.

Miembros de la Tribu Campo Band identifican y separan diferentes tipos de residuos.

Miembros de la Tribu Campo Band pesan diferentes tipos de residuos.

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El Compostaje Desvía Valiosos Materiales Orgánicos de los Rellenos Sanitarios

Donación de composta a participantes del programa Ecoparque.

La composta es un recurso valioso formado por desperdicios de comida, esquejes de jardinería u otro material orgánico. Sin embargo, con base en el estudio de 2018 "Caracterización y Manejo de los Desechos Orgánicos", publicado por la Comisión de Cooperación Ambiental (CCA), los residuos orgánicos en México y los Estados Unidos son depositados principalmente en rellenos sanitarios. El Programa Frontera 2020 ha trabajado para aumentar las tasas de reutilización de los residuos orgánicos, estimadas en 7% para México y 32% para los Estados Unidos, trabajando con socios y actores gubernamentales, académicos, organizaciones sin fines de lucro e industriales para mejorar el manejo de desechos orgánicos a través de prácticas para el composteo y las prácticas "Jerarquía para la recuperación de alimentos" de la EPA.

En el año 2012, el Programa otorgó financiamiento a la organización Tijuana Calidad de Vida que tuvo como resultado la implementación del primer programa piloto fronterizo de composteo municipal, el cual produce composta y educa a futuros compostadores. En el año 2016, el Centro de Finanzas Ambientales de la Oficina Regional 9 de la EPA financió un proyecto para identificar nichos de mercado para la composta en Tijuana que pudieran ser aprovechados por las empresas que necesitaban alcanzar metas de reducción de desechos para sus calificaciones de responsabilidad social corporativa. En 2017, el Colegio de la Frontera Norte (COLEF) condujo un programa piloto que trabajó con casi 120 hogares de Tijuana capacitando a sus integrantes en un total de 27 talleres. Esto dio como resultado la reutilización de 10,067 kg de residuos de comida de sus hogares. La composta generada fue utilizada en Ecoparque, un programa para modelar y enseñar prácticas sustentables y se donaron 107 sacos de composta a los participantes del programa piloto. Los resultados de este programa fueron incluidos en el informe 2018 de la CCA.

El 13 de junio de 2018, el programa *Compost Cats* de la Universidad de Arizona celebró la adjudicación de un financiamiento por $91 mil dólares del Programa para establecer el Centro de Composteo del Condado de Santa Cruz; una alternativa muy necesaria a los rellenos sanitarios. Cerca de 3,000,000 de toneladas de productos cruzan cada año por el cercano cruce fronterizo Mariposa en Nogales, uno de los cruces terrestres más concurridos de la frontera, con destino a los mercados estadounidenses. Alrededor de 8,000 toneladas de residuos se generan anualmente, lo que equivale a dos camiones de volteo por día al año, y son depositados en el relleno sanitario de Rio Rico, por lo que se espera que el Centro de Composteo ofrezca beneficios ambientales y económicos a la región (Comunicado de prensa de la Universidad de Arizona). En su primer año, el Centro de Composteo utilizará 3,000 toneladas de residuos orgánicos creando 6,880 metros cúbicos de composta. Esto equivale a 4.3 campos de fútbol cubiertos con 30 centímetros de composta. El objetivo a largo plazo es utilizar las 8,000 toneladas de residuos generadas anualmente.

El Centro de Composteo se establecerá siguiendo el exitoso programa "Compost Cats" de la Universidad de Arizona en Tucson, que no sólo genera composta, sino que también trabaja con los bancos de alimentos locales para donar los sobrantes de comida del campus para alimentar a indigentes. En 2015, el trabajo de este programa fue reconocido con el premio "*Food Recovery Challenge*" de la EPA por reducir el desperdicio de alimentos en el campus principal de la Universidad de Arizona y en la ciudad de Tucson. El Centro de Composteo también servirá como un centro de aprendizaje agrícola para estudiantes de secundaria y universitarios, evitando que este valioso recurso sea depositado en rellenos sanitarios.

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FORTALECIENDO LA PREPARACIÓN Y RESPUESTA A EMERGENCIAS

Reconociendo que los incidentes que involucran químicos peligrosos y otras emergencias ambientales, independientemente de la frontera internacional, pueden amenazar a las comunidades locales y binacionales, México y los Estados Unidos continúan trabajando juntos para mejorar la preparación y la respuesta a emergencias internacionales. El Programa Frontera 2020 y sus Socios apoyan actividades para la capacitación binacional, ejercicios conjuntos, así como la actualización de los equipos esenciales y de los planes conjuntos de emergencia lo que ha incrementado las capacidades de comunicación y respuesta. Juntos, hemos reducido la magnitud de los incidentes y mejorado la seguridad en la región fronteriza.

La Capacitación Binacional Reduce el Peligro y los Impactos Negativos en las Comunidades Fronterizas

Mediante la coordinación con agencias federales, estatales y locales de ambos países, el Programa Frontera 2020 ha organizado ejercicios y actividades de capacitación conjunta, y ha tomado las medidas necesarias para garantizar que los socorristas cuenten con el equipo de protección personal adecuado para responder de manera segura y efectiva a incidentes. Desde el inicio del Programa, más de 10,500 bomberos, brigadistas para la atención de emergencias, policías, militares, representantes de la industria, personal médico y otros líderes comunitarios relevantes han recibido capacitación a través de: 153 cursos de capacitación, 32 ejercicios binacionales y 245 ejercicios de notificación entre México y los Estados Unidos en la región fronteriza de Sonora-Arizona y Baja California-California.

"Gracias a la EPA, así como a los bomberos de la ciudad de Douglas, Arizona, que han participado como instructores, por enriquecer nuestro conocimiento HAZMAT. Gracias a esto estamos preparados para cualquier emergencia. Nuestro objetivo es proteger a la comunidad de nuestras ciudades hermanas. Gracias a la EPA por proporcionarnos el equipo ya que, debido a su alto costo, está fuera de nuestro alcance. Gracias por confiar y creer en los bomberos de Agua Prieta."

Teniente José Romero
H. Cuerpo de Bomberos de Agua Prieta

Bomberos de ambos países combaten el incendio de Diciembre.

Conseguir que personal y equipo crucen la frontera de manera oportuna para ayudar a responder a emergencias siempre ha sido un desafío que requiere de un esfuerzo coordinado entre una amplia gama de agencias y organizaciones. Las actividades de capacitación y los ejercicios binacionales con socorristas, funcionarios de aduanas, distintas agencias gubernamentales, militares, industria y el público en general; han sentado las bases para una respuesta eficiente a situaciones reales de emergencia.

Respuesta Binacional a un Incendio en el Invierno de 2017

Cuando un gran incendio de llantas produjo peligrosas nubes de humo en Agua Prieta, Sonora, que se desplazaron hacia Douglas, Arizona, en diciembre de 2017, los bomberos de Douglas cruzaron la frontera y ayudaron a apagarlo en cuatro

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Participantes del taller de capacitación en HAZMAT Tech.

horas. La capacitación binacional y los ejercicios en campo, realizados cuatro meses antes del incendio, ayudaron enormemente a aumentar la eficiencia de la respuesta así como a reducir la escala y el impacto del incidente. Además, la Patrulla Fronteriza destacada en el cruce fronterizo entre ambas comunidades permitió el paso oportuno a los bomberos.

La colaboración binacional, con el apoyo de los bomberos de Douglas, evitó que el fuego creciera y potencialmente cruzara a los Estados Unidos y se redujo la cantidad de humo, el cual puede causar problemas respiratorios a poblaciones sensibles como niños, ancianos y asmáticos en esas localidades de la región fronteriza.

Capacitación Puesta a Prueba por Incendio de Llantas

Un taller de capacitación en HAZMAT *Tech*, con duración de 200 horas, para los bomberos de Douglas y Agua Prieta se está impartiendo los fines de semana y terminará en el otoño de 2018. Como resultado, se tendrán más bomberos capacitados en HAZMAT en Douglas y se formará un equipo completo de HAZMAT en Agua Prieta. Este taller permitirá a los cuerpos de bomberos de estas localidades fronterizas estar mejor entrenados y equipados para responder a incidentes y apoyarse mutuamente en la atención de emergencias.

El 26 de mayo el taller de capacitación tuvo que ser interrumpido y pospuesto debido a la necesidad de atender un llamado de emergencia originado por un incendio en un tiradero de llantas de desecho en Agua Prieta. Se activó y utilizó el Plan de Emergencia Binacional para las Ciudades Hermanas Agua Prieta-Douglas, el cual había sido actualizado recientemente, para atender la emergencia. Con el apoyo del Departamento de Bomberos de Douglas, el incendio fue controlado en menos de tres horas.

Gerardo Romo, miembro del Departamento de Bomberos de Douglas comentó: "Gracias a los esfuerzos binacionales y la capacitación en HAZMAT proporcionada a los bomberos de Agua Prieta, tuvieron la capacidad de responder a los incidentes de una manera más rápida y eficiente. En el pasado, el Departamento de Bomberos de Agua Prieta atendió voluntariamente las emergencias de incendios dando su mejor esfuerzo; sin embargo, ahora que están recibiendo el entrenamiento HAZMAT por parte del Departamento de Bomberos de Douglas, entienden la necesidad de contar con un equipo de protección personal adecuado para responder y enfrentar el riesgo de cada evento, como los incendios de llantas. Personalmente, vi a los bomberos usar el equipo de protección respiratoria adecuadamente durante el incendio de llantas que ocurrió el 26 de mayo."

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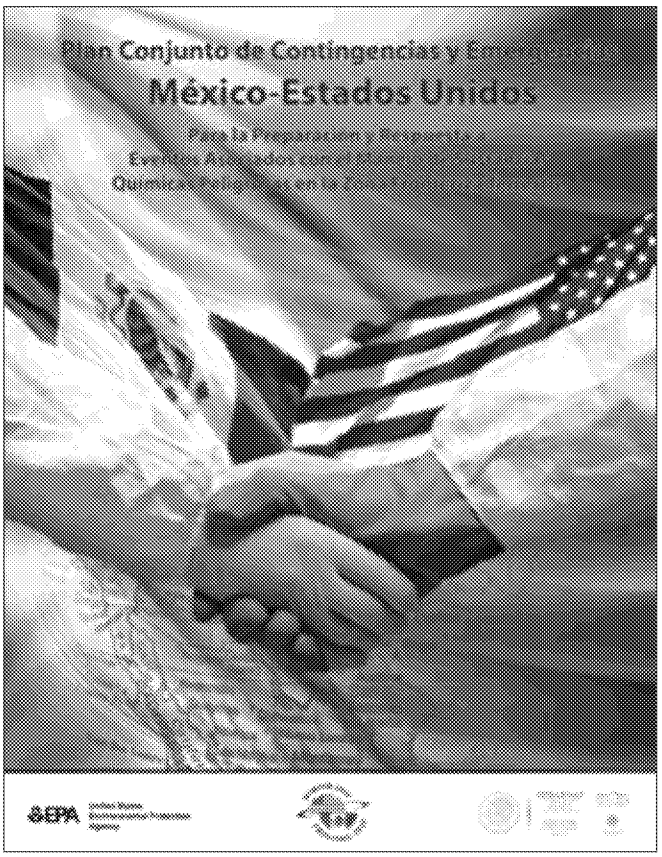
Mejora la Preparación Conjunta para la Respuesta a Emergencias Ambientales en el Marco del Programa Frontera 2020

Las emergencias químicas y de otras sustancias peligrosas no respetan las fronteras internacionales por lo que mantener una adecuada preparación para atender una posible emergencia en la región fronteriza es esencial para mejorar la capacidad de respuesta a incidentes, protegiendo al medio ambiente y a la población de sus impactos.

El Anexo II del Acuerdo de La Paz de 1983 estableció el Plan Conjunto de Contingencias (PCC), el cual proporciona un mecanismo de coordinación binacional para proteger la salud humana y el medio ambiente, así como la respuesta a contingencias químicas o petrolíferas significativas o emergencias que afecten la región fronteriza entre México y los Estados Unidos. Atendiendo este compromiso, dos versiones anteriores del PCC han sido revisadas y actualizadas, resaltando que el 17 de noviembre de 2017, en la Ciudad de México, la última actualización del PCC fue firmado por la Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT), a través de la Procuraduría Federal de Protección al Ambiente (PROFEPA), y por la Coordinación Nacional de Protección Civil de la Secretaría de Gobernación (SEGOB). Previamente, en representación de los Estados Unidos, la Oficina de Gestión de Emergencias (OEM) de la EPA firmó la actualización del PCC.

El PCC actualizado establece un sólido sistema de notificación binacional que ha sido reestructurado para reflejar las lecciones aprendidas de las emergencias reales y los simulacros de notificación. Los cambios al sistema de notificación fueron coordinados con el Centro Nacional de Respuesta (NRC) de los Estados Unidos, el Centro Nacional de Comunicaciones/Sistema Nacional de Protección Civil (CENACOM) de México y la PROFEPA, así como con las Oficinas Regionales 6 y 9 de la EPA. Expertos en normatividad de la Oficina del Asesor Jurídico General, la Oficina de Derecho Internacional y la Oficina de Asuntos Internacionales y Tribales de la EPA, así como del Departamento de Estado de los Estados Unidos realizaron revisiones exhaustivas a estos cambios.



Portada del Plan Conjunto de Contingencias.

La capacidad de planificar y prepararse binacionalmente mejora la probabilidad de responder adecuadamente a los incidentes y proteger el medio ambiente y a la población de la exposición a contaminantes dañinos y de posibles impactos ambientales o en la salud. Esta asociación binacional también está aumentando la capacidad de respuesta a emergencias mediante eventos de capacitación diseñados para mejorar la cooperación, fortalecer los planes de contingencia binacionales a nivel local, tribal, estatal, regional y nacional, así como para reducir los riesgos de emergencias y desastres en toda la región fronteriza.

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FOMENTANDO UNA GESTIÓN AMBIENTAL RESPONSABLE

La frontera entre México y los Estados Unidos es una región económica vibrante con un movimiento transfronterizo diario de una gran variedad de bienes de consumo y materiales peligrosos destinados a reciclaje o eliminación. Cuando no son manejados adecuadamente, los materiales peligrosos representan una amenaza inmediata para la salud ambiental transfronteriza. En respuesta, autoridades federales, estatales y locales de ambos países se asocian para vigilar los movimientos fronterizos en ambas direcciones, proporcionar asistencia para el cumplimiento de leyes y mejorar el acceso a la información sobre posibles fuentes industriales de sustancias tóxicas a través de actividades de capacitación y talleres. Estas acciones aumentan el cumplimiento transfronterizo de las normas vigentes, fomentan la gestión ambiental responsable y reducen los riesgos que plantean los desechos y materiales peligrosos.

Reforma Legislativa y Educación Ambiental en Nuevo Laredo

La Universidad Autónoma de Tamaulipas recibió financiamiento por parte del Programa Frontera 2020 para continuar educando a las comunidades fronterizas sobre los desafíos ambientales (en temas como: contaminación del agua, desechos sólidos urbanos, grasas, aceites) que persisten en esta región. El proyecto se enfocó en los siguientes objetivos:

Página de internet de la UAT con los documentos genéricos de las normas ambientales que pueden ser adaptadas por los Municipios de los estados de Tamaulipas y Nuevo León.

- Capacitar a estudiantes de escuelas públicas y a inspectores ambientales acerca de los retos ambientales más comunes en la localidad.
- Desarrollar propuestas para actualizar la legislación municipal de Nuevo Laredo.
- Crear una base de datos disponible en internet con toda la reglamentación ambiental de los municipios que componen la región fronteriza del estado de Tamaulipas.

El proyecto permitió la capacitación en temas de conservación ambiental para más de 2,300 estudiantes, 50 directores de escuelas públicas y 20 inspectores ambientales de la ciudad de Nuevo Laredo. Adicionalmente, el proyecto ayudó en el desarrollo y entrega a autoridades municipales de la propuesta de ley para el "Ordenamiento Ecológico Territorial del Municipio de Nuevo Laredo, Tamaulipas". Finalmente, los municipios de Ciudad Mier, Camargo, Jiménez y Jaumave, Tamaulipas, también adoptaron leyes de ordenamiento ecológico territorial que beneficiarán aproximadamente a 300,000 residentes.

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Los Inspectores de los Cruces Internacionales Protegen a las Comunidades Fronterizas

La aplicación de las normas de importación/exportación establecidas por la Ley de Conservación y Recuperación de Recursos de los Estados Unidos (RCRA, por sus siglas en inglés) protege la salud pública y el medio ambiente al proporcionar salvaguardias para prevenir el manejo inadecuado y derrame de residuos y materiales peligrosos. También reduce las actividades binacionales de empresas fraudulentas que implementan prácticas ilegales, creando una competencia comercial desleal. La EPA otorga financiamiento al Departamento de Sustancias Tóxicas de California (DTSC, por sus siglas en inglés), un socio del Programa Frontera 2020, para proteger la frontera entre México y los Estados Unidos.

Los inspectores del DTSC y del Condado de San Diego trabajan en estrecha colaboración con la Oficina de Aduanas y la Patrulla Fronteriza de los Estados Unidos (CBP, por sus siglas en inglés) para vigilar y garantizar el cumplimiento de las normas vigentes para garantizar que los materiales peligrosos y los productos de desecho se transporten de manera segura a través de los cruces fronterizos hacia sus destinos finales en ambos países. Estos inspectores, capacitados en el procedimiento HAZMAT, forman parte del equipo de respuesta de emergencia, una primera línea de defensa en caso de un derrame o accidente peligroso en el cruce fronterizo. Los inspectores del DTSC y del Condado de San Diego, a solicitud de CBP, también participan en operaciones especiales, como inspecciones de carga fuera de días y horas permitidas para transportar materiales peligrosos. Para reforzar el cumplimiento de las normas vigentes, México y los Estados Unidos brindan asistencia técnica y capacitación para facilitar que las industrias de ambos países comprendan los requisitos reglamentarios vigentes.

El 20 de junio de 2018, con fondos otorgados por el Programa Frontera 2020 y el programa RCRA, el DTSC organizó, en coordinación con la SEMARNAT, la PROFEPA y la Secretaría de Protección Ambiental del Estado de Baja California (SPA); un taller en la ciudad de Tijuana sobre las normas y requisitos para la importación/exportación, dirigido a las empresas e industrias mexicanas generadoras de residuos peligrosos y residuos especiales que operan en Baja California. El taller se centró en los requisitos para la importación/exportación incluyendo: transporte, el nuevo sistema electrónico de manifiesto y verificación, la definición de residuos y materiales peligrosos, así como resaltando las diferencias entre los requisitos federales

Asistentes al taller sobre requisitos para la importación/exportación celebrado en Tijuana.

y estatales. Asistieron casi 200 personas de los sectores industrial, gubernamental y académico, lo que demuestra la demanda que existe por este tipo de información y la voluntad de la industria en cumplir con las normas.

Con base en el último informe del Mecanismo Consultivo México-Estados Unidos, la SEMARNAT autorizó a 33 empresas mexicanas a tratar, almacenar o eliminar los desechos peligrosos generados por los cientos de negocios en la región fronteriza. Ofrecer este tipo de talleres de capacitación en Tijuana ayuda a la industria e informa a las partes interesadas clave sobre los requisitos para el cumplimiento de las regulaciones de los Estados Unidos ayudando, en última instancia, a proteger la salud pública y el medio ambiente.

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PROTEGIENDO LA SALUD AMBIENTAL

La salud ambiental se enfoca en analizar cómo el entorno natural y el ambiente construido afectan a la salud humana y cómo se pueden gestionar para mejorar la calidad de vida. Nuestras poblaciones más vulnerables, como los niños, los ancianos y las personas con problemas respiratorios, a menudo son las más afectadas por la combinación de la mala calidad del aire interior y exterior, el agua contaminada, los residuos no gestionados y otras condiciones ambientales. El Programa Frontera 2020 y sus Socios han apoyado conferencias binacionales de salud ambiental, actividades para la capacitación de capacitadores de promotoras (trabajadoras comunitarias de la salud), aplicaciones de mapeo interactivo para identificar retos ambientales así como la implementación de soluciones y estrategias de comunicación clave para mejorar la salud pública en la región fronteriza entre México y los Estados Unidos.

Trabajando en Equipo para Atender la Enfermedad de *Zika* en Brownsville

En 2016, el brote de *Zika* en los Estados Unidos surgió como una amenaza significativa para la población. En noviembre de ese año, la ciudad de Brownsville, Texas, informó sobre el primer caso del virus *Zika* transmitido por un mosquito en el estado. La ciudad trabajó en coordinación con el Centro para el Control de Enfermedades (CDC, por sus siglas en inglés), el Departamento Estatal de Servicios de Salud de Texas (TDSHS, por sus siglas en inglés), el Condado de Cameron y el Departamento de Salud de Brownsville para obtener más información sobre la transmisión y las precauciones que debe tomar la población.

En 2017, la EPA se asoció con el Departamento de Salud de Brownsville para identificar las áreas de riesgo y los factores que llevaron a la diseminación del mosquito *aedes aegypti*. El proyecto se desarrolló bajo un enfoque holístico para identificar las condiciones subyacentes que permiten la cría de mosquitos y cómo prevenirla. Gracias al análisis de los datos ambientales existentes junto con los datos socioeconómicos y la información disponible sobre este mosquito, fue posible crear un mapa de las áreas de riesgo dentro de la ciudad. A la fecha, la ciudad está utilizando una aplicación con una plataforma de colaboración abierta en la que los residentes puedan informar sitios potenciales para la reproducción de mosquitos y cargar fotos georreferenciadas. El sitio web también proporciona acciones recomendadas que las personas pueden implementar para combatir los riesgos que representan los mosquitos.

El Departamento de Salud de la ciudad de Brownsville también está trabajando con las Promotoras, que sirven como enlaces comunitarios públicos, para educar a los residentes a través de un modelo de "capacitación de capacitadores". El proyecto está en curso y los investigadores de la EPA presentaron sus hallazgos iniciales en una conferencia y recientemente publicaron los resultados.

> *"Combinamos datos ambientales (cobertura terrestre, precipitación y temperatura) con datos socioeconómicos y de la actividad de mosquitos con el fin de obtener una imagen más precisa del riesgo. Por lo que sabemos, este es el primer estudio de mitigación de vectores que tiene en cuenta tanto los datos de la cobertura terrestre de 1x1 metros como de los determinantes socioeconómicos."*
>
> **Dr. Pai-Yei Whung**
> **Líder del proyecto e**
> **Investigador Titular del la EPA**

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La EPA Trabaja con las Comunidades para Atender la Salud Ambiental Infantil

Jacobo Sandoval durante un evento comunitario de difusión en Nogales, Arizona.

> *"Las familias en Nogales, Arizona, están muy contentas con la evaluación de hogares saludables y especialmente con las alarmas de humo instaladas por el Instituto Sonora de Investigación Ambiental (SERI). Muchas familias mencionaron que en Nogales no existen muchos programas de salud ambiental infantil disponibles para las familias de bajos ingresos, y están agradecidas por la oportunidad de participar en el programa."*
>
> **Jacobo Sandoval**
> **Gerente del Programa SERI**

Según la Organización Mundial de la Salud, en el año 2012 se estimó que 1.7 millones de niños menores de cinco años murieron debido a factores ambientales. Los niños que viven en la región fronteriza entre México y los Estados Unidos son particularmente vulnerables debido a que la región tiene las tasas promedio más altas de niños que viven en la pobreza, no cuentan seguro médico y padecen de enfermedades crónicas (Organización Panamericana de la Salud, 2014).

En los últimos años, la asociación entre la Oficina de Salud Ambiental Infantil de la EPA, el Programa Frontera 2020, la sección estadounidense de la Comisión México-Estados Unidos de Salud Fronteriza, que depende del Departamento de Salud y Servicios Humanos de los Estados Unidos, y organizaciones civiles locales han trabajado en proyectos colaborativos para identificar las necesidades de salud y brindar oportunidades de acción

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local con el objetivo de mejorar las vidas de los niños que viven a lo largo de la frontera entre México y los Estados Unidos. Estas acciones incluyeron la organización de tres simposios de salud infantil desde el sur de Texas hasta California, así como subsidios federales para educar a las familias, a trabajadoras comunitarias de la salud, a maestros y a profesionales médicos sobre cómo abordar las necesidades de salud de los niños.

En el año 2018, la EPA otorgó más de $214 mil dólares para financiar cinco proyectos destinados a atender la salud ambiental de los niños en las comunidades fronterizas de Texas, Nuevo México y Arizona. Estos cinco proyectos abordaron temáticas de salud ambiental relacionadas con la pintura a base de plomo, la calidad del aire interior y el manejo integral de plagas.

Muchos de estos proyectos están estableciendo nuevas formas para mejorar los programas e iniciativas actuales de salud ambiental de las agencias que trabajan al interior de las comunidades ubicadas en la región fronteriza. Estos proyectos capacitarán a cerca de 350 especialistas, incluyendo a trabajadoras comunitarias de la salud, proveedores de cuidado infantil y médicos; e informarán a más de 2,000 miembros de las comunidades sobre temas de salud ambiental tales como: mejorar la calidad del aire interior, reducir la exposición a pintura a base de plomo e implementar estrategias integrales para el control de plagas. A través de estos proyectos, y el continuo liderazgo de las comunidades fronterizas, la salud ambiental de los niños continuará mejorando.

"Las enfermedades crónicas como el asma, padecimientos cardiovasculares y la diabetes están relacionadas con la contaminación del aire. Proporcionaremos educación sobre una variedad de riesgos ambientales a las Promotoras, a los padres de niños que asisten a primarias y secundarias así como a las mujeres embarazadas. Esta educación proporcionará a los participantes el conocimiento necesario para identificar los contaminantes interiores y exteriores, los químicos dañinos contenidos en los pesticidas utilizados en el hogar y cómo pueden cambiarlos o controlarlos sin exponer a sus hijos a sus efectos nocivos."

Dra. Genny Carrillo
Escuela de Salud Pública
Universidad de Texas A&M

"El Centro de Salud Comunitario Mariposa se complace en haber recibido este financiamiento. Proteger a nuestros hijos garantizando un entorno de vida saludable es esencial para su salud y bienestar a largo plazo. Estos fondos proporcionarán capacitación para trabajadoras comunitarias de la salud a lo largo de la frontera entre México y los Estados Unidos con el objetivo de ayudarlos a identificar contaminantes ambientales, así como capacitar a las mamás y papás en los métodos apropiados para reducir o eliminar la exposición a estos contaminantes dentro de sus hogares."

Ed Sicurello
Director Ejecutivo
Centro de Salud Comunitario Mariposa

"El Centro del Suroeste para la Salud Ambiental Pediátrica se complace en enterarse de que se nos ha otorgado este financiamiento. Servirá para aumentar la atención de los niños desfavorecidos en la región fronteriza entre El Paso y Brownsville. Trabajando desde el Centro de Ciencias de la Salud de la Universidad Texas Tech en El Paso, nos hemos asociado con colegas de la Facultad de Medicina de la Universidad de Texas en el Valle del Río Bravo para ampliar nuestra zona de trabajo. Los fondos se destinarán a la organización de dos talleres y el desarrollo de guías de capacitación para la Promotoras. Asimismo, apoyará el desarrollo de módulos de enseñanza electrónicos que serán utilizados en la materia optativa para estudiantes de medicina sobre salud ambiental pediátrica de estas universidades."

Director Stephen Borron, M.D.
Centro del Suroeste para la
Salud Ambiental pediátrica

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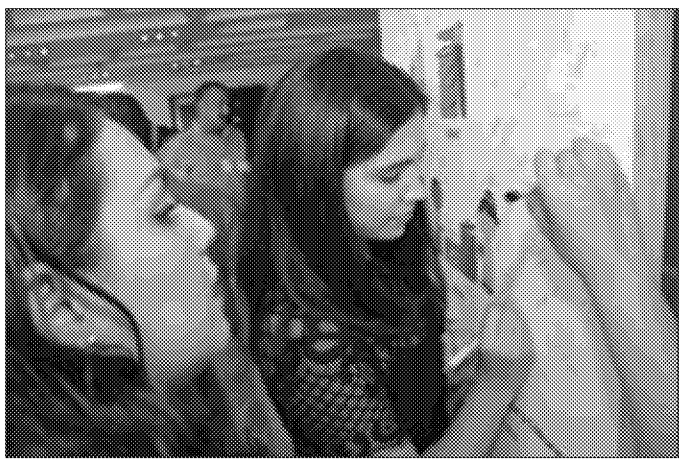
Atendiendo la Amenaza del *Zika* en la Frontera

Además de los ecosistemas compartidos por México y los Estados Unidos en la región fronteriza, el Programa Frontera 2020 también reconoce que "[el] movimiento de personas y productos entre los dos países crea un ambiente binacional único para prevenir y controlar enfermedades propagadas a través de alimentos y agua, de insectos o animales, y entre personas" (Centro para el Control de Enfermedades, 2018). En respuesta a estos riesgos, el Programa ha apoyado los esfuerzos para aumentar la concienciación y proporcionar capacitación sobre el uso del manejo integrado de plagas, así como para prevenir la propagación de enfermedades transmitidas por vectores, como el *Zika* que es transmitido por mosquitos.

En el otoño de 2016, dos conferencias binacionales de salud ambiental sobre enfermedades transmitidas por vectores se llevaron a cabo en Mexicali, Baja California, y Nogales, Sonora. Participaron la Universidad Autónoma de Baja California (UABC), el Instituto Técnico de Nogales (ITN), El Colegio de la Frontera Norte (COLEF), el Centro para el Control de Enfermedades (CDC, por sus siglas en inglés) de los Estados Unidos y su contraparte mexicana, El Centro Nacional de Programas Preventivos y Control de Enfermedades (CENAPRECE), entre otros. Asistieron más de 360 personas, entre los que se encontraban estudiantes de medicina, profesores, profesionales de la salud, funcionarios gubernamentales y 30 expertos en enfermedades transmitidas por vectores. Los temas clave incluyeron: medidas preventivas para combatir el *Zika* y otras enfermedades transmitidas por vectores, estrategias integradas para el control de plagas y el uso apropiado de repelentes de insectos.



Participantes de una de las conferencias se comprometen a eliminar las fuentes de vectores manteniendo sus hogares y el medio ambiente limpios y libres de basura y agua estancada.

En 2017, para confirmar el impacto a largo plazo de los eventos, los organizadores y anfitriones de las conferencias (UABC e ITN) contactaron a los asistentes y llevaron a cabo una evaluación, aprendiendo tres conclusiones clave:

- Después de su participación en las conferencias, tres de cada cuatro encuestados compartieron la información ambiental y de salud pública que aprendieron con sus conocidos.
- Más de la mitad de los encuestados informaron que ahora leen la etiqueta de los productos antes de usar repelentes de insectos.
- De importancia crítica, casi la mitad de los asistentes han comenzado a vaciar el agua estancada en macetas para eliminar los huevos de los mosquitos, lo que reduce sus hábitats de reproducción.

De acuerdo con los resultados de esta evaluación, es posible afirmar que las conferencias aumentaron el conocimiento y el comportamiento de los asistentes. Para obtener más información sobre estos eventos, visite la página de internet del Programa Frontera 2020 de la EPA.

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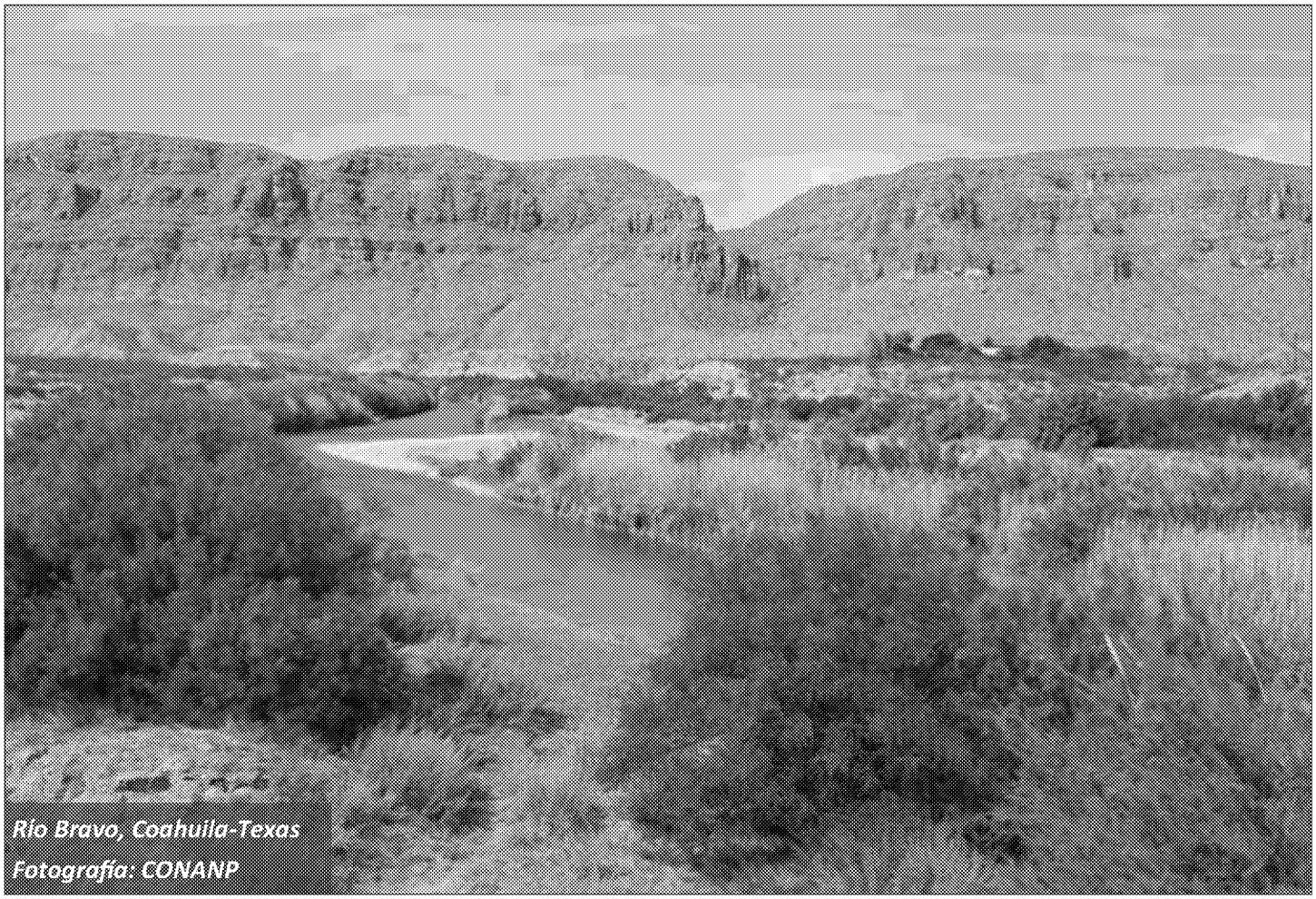
¡Visit our web pages!
www.epa.gov/border2020
www.gob.mx/semarnat

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.



Río Bravo, Coahuila-Texas
Fotografía: CONANP

BORDER 2020: UNITED STATES - MEXICO ENVIRONMENTAL PROGRAM

BORDER 2020
FRONTERA 2020

HIGHLIGHTS REPORT AUTUMN 2018

EPA
United States Environmental Protection Agency

SEMARNAT
SECRETARÍA DE MEDIO AMBIENTE Y RECURSOS NATURALES

Cover photo:
Chisos Mountains, Texas
Photographic Archives
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 snap shot 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.

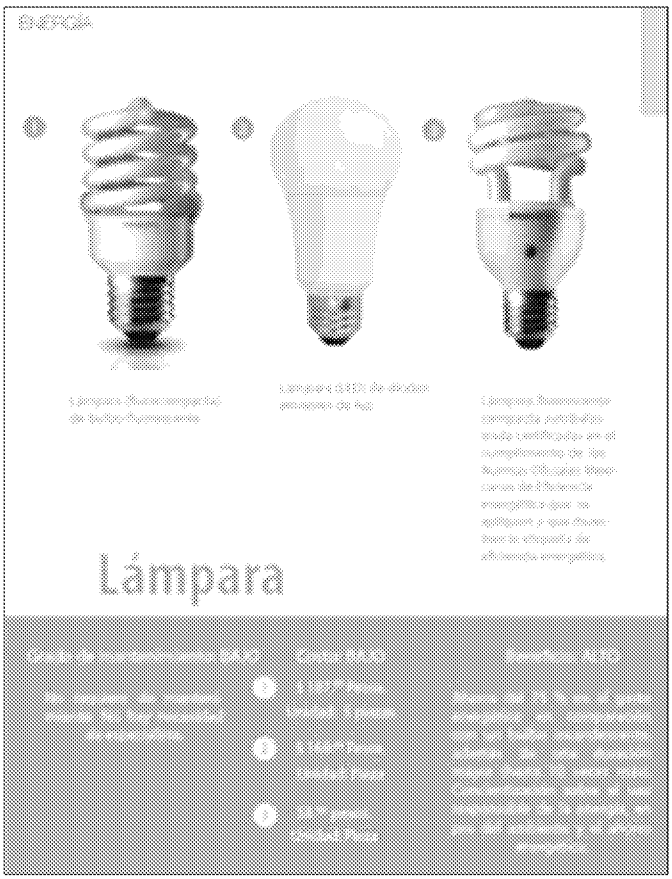

Illustration. Description of types of light bulbs in the catalog.

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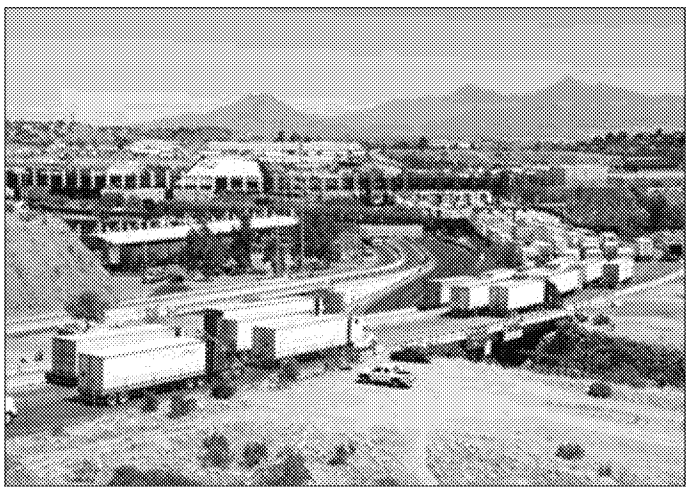
Quantifying Emission Reduction from Reduced Wait Times at Mariposa Port of Entry

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 with inspectors from both countries 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 may 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.

One of the community events held at Imperial County.

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

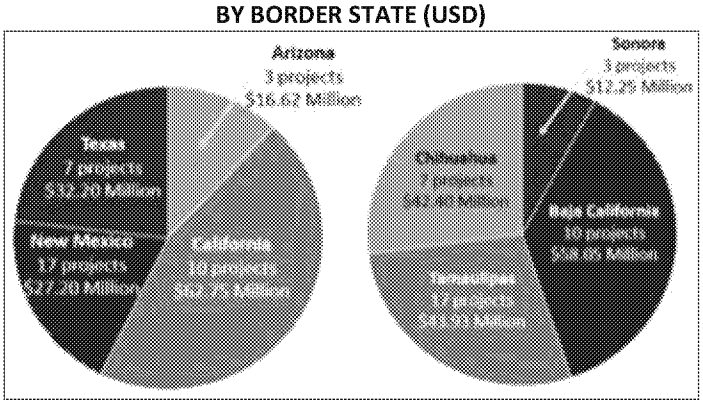
Rivers and watersheds know no boundaries and, in some areas, define the United States-Mexico border. Polluted stormwater and sewage from deteriorated infrastructure and extreme weather events can contaminate transboundary waterways, causing health concerns along the border region. The Border 2020 Program 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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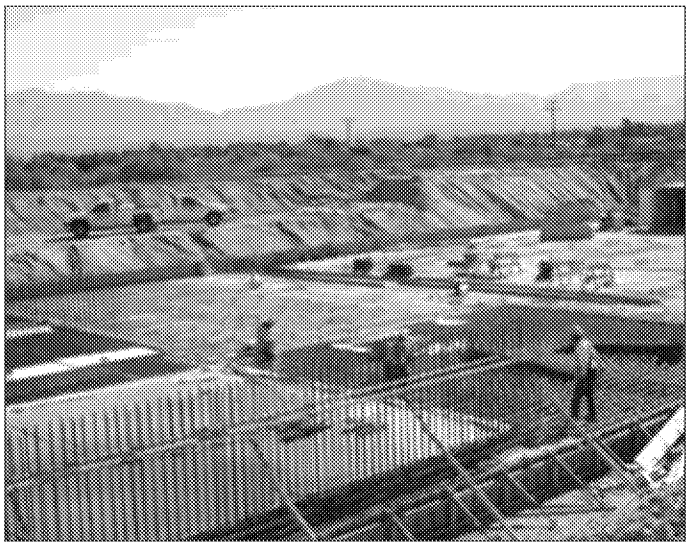
ble drinking water and wastewater projects with a total estimated construction cost of $296 million dollars that address public health and environmental conditions along the border.

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 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.



Construction activities for the new Sunland Park treatment plant.

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 storm-water 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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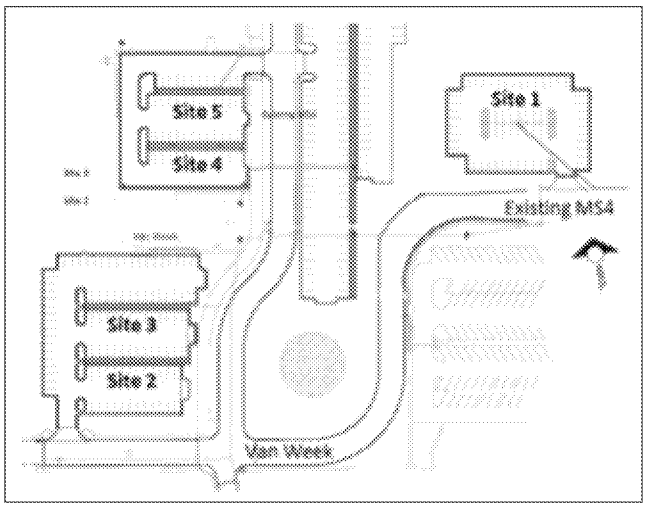
Studying Low Impact Development Methods for South Texas Stormwater Management

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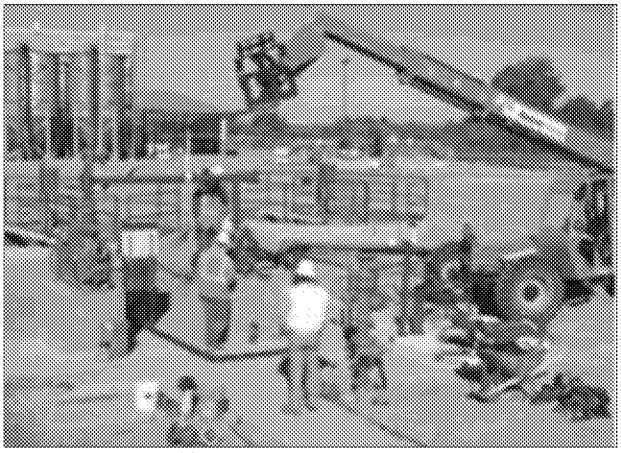
Protecting the City of Holtville's Water Resources in Imperial County

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."*
>
> **Tomas 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.

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.

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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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.

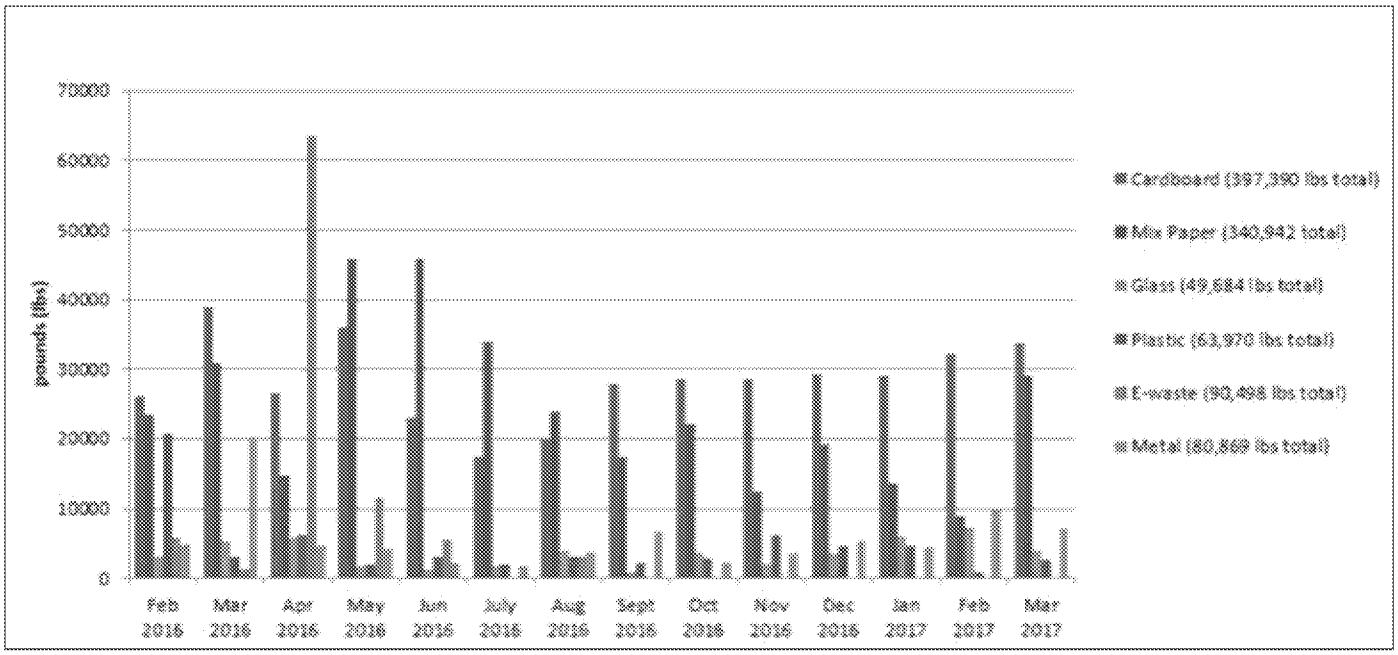
City of Pharr, Texas

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 1); 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 1);
- 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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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

Permanent collection center in the facilities of the Public Works Department of Eagle Pass, Texas.

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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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, non-profits, 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

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Participants in the HAZMAT Tech training.

it 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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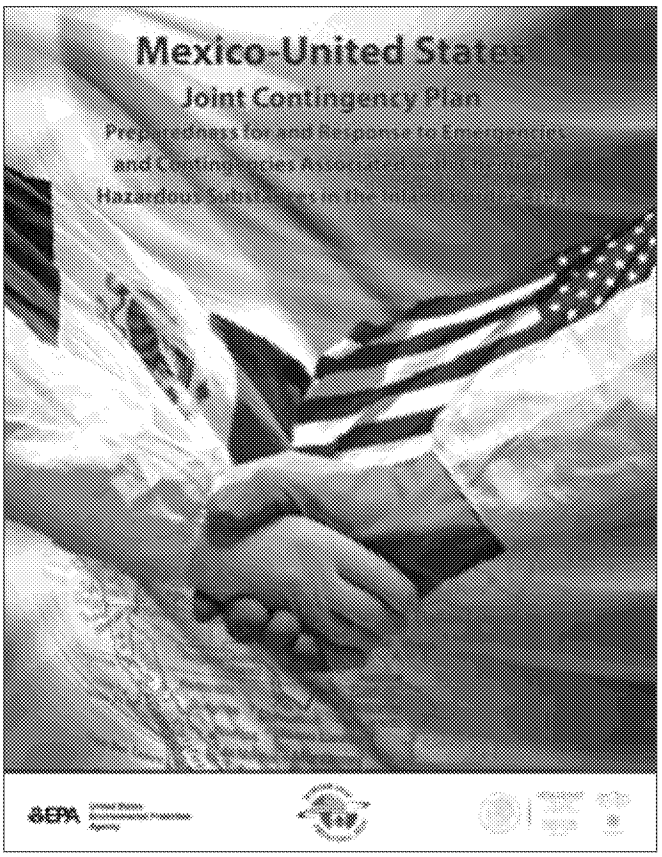
Enhance Joint Preparedness for Environmental Response under the Border 2020 Program

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 one community 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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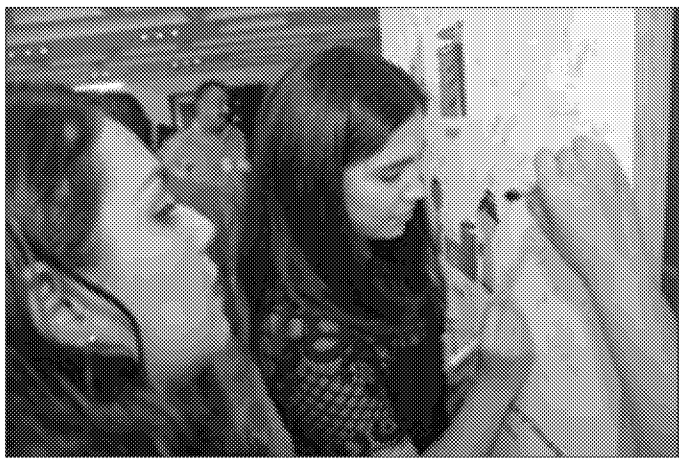
Responding to *Zika* Threat Along the Border

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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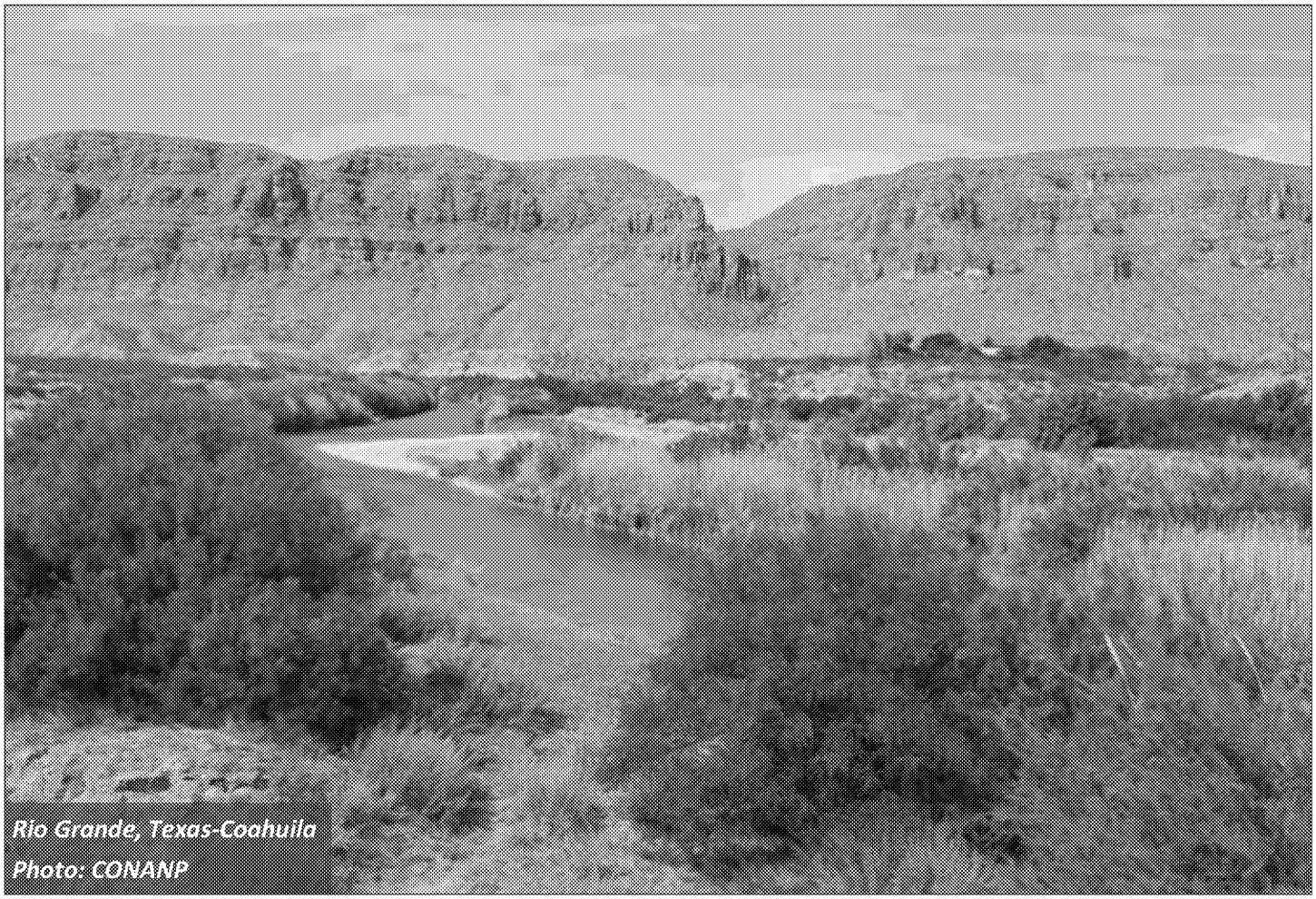
¡Visit our web pages!
www.epa.gov/border2020
www.gob.mx/semarnat

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

PROGRAMA AMBIENTAL MÉXICO - ESTADOS UNIDOS: FRONTERA 2020

FRONTERA 2020
BORDER 2020

REPORTE DE LOGROS OTOÑO 2018

SEMARNAT
SECRETARÍA DE MEDIO AMBIENTE Y RECURSOS NATURALES

EPA
United States Environmental Protection Agency

Foto portada:
Montañas Chisos, Texas
Archivos Fotográficos
Comisión Nacional de Áreas Naturales Protegidas de México (CONANP)

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MENSAGE DE LOS COORDINADORES NACIONALES

El Programa Frontera 2020 continúa brindando una base sólida y dinámica para nuestra asociación binacional brindando soluciones a los desafíos ambientales y de salud pública en la región fronteriza. La colaboración es clave para lograr resultados exitosos, sustentables y de largo plazo. Como Coordinadores Nacionales, estamos comprometidos a trabajar juntos para avanzar la misión del Programa Frontera 2020: proteger el medio ambiente y la salud pública a lo largo de la región fronteriza entre México y los Estados Unidos.

Nuestros esfuerzos de colaboración con las Naciones Tribales fronterizas de los Estados Unidos y los gobiernos federal, estatal y local de ambos países han demostrado beneficiar a nuestro medio ambiente compartido y a los habitantes de ambos lados de la frontera. Hemos creado asociaciones e invertido nuestros recursos en proyectos que abordan temas como la calidad del aire, la calidad del agua, el tratamiento de aguas residuales, la gestión de residuos sólidos, la respuesta a emergencias y la gestión ambiental responsable.

Este informe destaca los logros del Programa Frontera 2020 durante los últimos dos años. Presentamos 22 proyectos que se han implementado y ejemplifican el progreso de nuestros esfuerzos para mejorar las condiciones de las comunidades fronterizas y nuestro medio ambiente compartido. A través de estos proyectos, también hemos podido realizar estudios o aplicar las mejores prácticas de gestión para lograr resultados exitosos en cumplimiento de los objetivos del Programa.

Reafirmando nuestro compromiso con el Programa Frontera 2020, nosotros, como Coordinadores Nacionales, apoyamos a nuestros socios, que incluyen a los tres niveles de gobierno, las Naciones Tribales fronterizas de los Estados Unidos y las comunidades indígenas mexicanas. Nos gustaría aprovechar esta oportunidad para expresar nuestro agradecimiento a las personas, comunidades y organizaciones dedicadas que apoyan y participan en las actividades del Programa para mejorar las condiciones ambientales y de salud pública en la región fronteriza. Reconocemos la importancia y el valor de la dedicación, el compromiso y la contribución de nuestros Socios al éxito del Programa.

La cooperación ambiental entre México y los Estados Unidos en la región fronteriza común es sin duda una historia de éxito y un ejemplo para el mundo, bajo la cual ciertamente vale la pena seguir construyendo. Le invitamos a reflexionar sobre nuestros logros recientes y le pedimos que continúe brindando su apoyo y su participando en la búsqueda de soluciones a los desafíos que aún existen en la región fronteriza.

¡Muchas gracias!

Enrique Lendo
Coordinador Nacional
México

Jane Nishida
Coordinadora Nacional
Estados Unidos de América

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INTRODUCCIÓN

Reafirmando nuestro compromiso, 2017-2018

La frontera entre México y los Estados Unidos es una región geográfica dinámica y única que enfrenta muchos retos ambientales, incluida la mala calidad del aire, agua potable insegura e inadecuado tratamiento de aguas residuales, así como programas y servicios inadecuados para la gestión de residuos. La frontera es el hogar de más de 15 millones de personas, donde aproximadamente el 90% de la población reside en ciudades, mientras que la población restante se encuentra en pueblos pequeños o comunidades rurales. El **Programa Frontera 2020** es la más reciente iniciativa de cooperación México-Estados Unidos implementada en el marco del Convenio de La Paz de 1983, enfocándose en las comunidades ubicadas dentro de los 100 km a ambos lados de los más de 3,100 kilómetros de frontera. El Programa Frontera 2020 fomenta un enfoque regional de abajo hacia arriba para la toma de decisiones, el establecimiento de prioridades y la implementación de proyectos para abordar los desafíos ambientales y de salud pública en la región fronteriza.

El Programa está diseñado para aprovechar a las comunidades e interesados locales, así como para trabajar directamente con socios federales, estatales, tribales e internacionales para implementar proyectos y soluciones ambientales. Específicamente, los objetivos del Programa se centran en mejorar la calidad del aire y el agua, promover suelos limpios, fortalecer la preparación y respuesta a emergencias, fomentar el liderazgo ambiental y abogar por iniciativas de salud ambiental a lo largo de la frontera. Este informe de logros comparte un ejemplo de los éxitos que nuestro Programa ha alcanzado en los últimos años (2016-2018) y que mejoran la calidad de vida y nuestro entorno compartido.

Para obtener más información sobre los detalles de las metas y los objetivos del Programa Frontera 2020, lo invitamos a leer el documento del Programa o si está interesado en conocer más logros del mismo, visite su página de internet en las páginas de la SEMARNAT y/o la EPA para consultar los informes anteriores y otra información de interés.

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MEJORANDO LA CALIDAD DEL AIRE

La mala calidad del aire puede tener importantes impactos económicos y sociales en la comunidad, incluyendo un aumento en la contracción de enfermedades, muerte prematura y una menor calidad de vida. La región fronteriza entre México y los Estados Unidos es vulnerable al movimiento transfronterizo de contaminantes, lo que incluye materia particular inhalable (hollín y polvo), ozono (smog) y monóxido de carbono. Las fuentes binacionales que contribuyen a este movimiento incluyen el polvo de las carreteras sin pavimentar y de las áreas abiertas, el humo de la quema ilícita de basura y llantas, así como fuentes móviles como vehículos pesados de carga, automóviles y camiones que están haciendo fila en los cruces fronterizos. El Programa Frontera 2020 ha apoyado la mejora de la calidad del aire mediante la expansión de las redes de monitoreo con un mayor acceso a sus datos, la mejora de la calidad del aire a través de Planes de Implementación Estatales (en ambos países) y programas educativos sobre la calidad del aire en interiores.

Taller de Eficiencia Energética en Tamaulipas

Participantes en el primer taller de eficiencia energética.

Incrementar la eficiencia energética en México se ha convertido en una estrategia en todos los niveles de Gobierno a fin de mejorar y asegurar la sustentabilidad a largo plazo en los edificios públicos y mejorar la seguridad del suministro eléctrico, a la vez que se reducen los impactos en el medio ambiente. La operación e instalación de los sistemas de alumbrado público, así como el consumo de energía en edificios públicos, representa uno de los principales gastos que enfrentan los municipios, llegando incluso a absorber hasta un 40% de su presupuesto anual, lo cual limita la capacidad de los gobiernos locales para enfocar sus esfuerzos en otras prioridades. Mediante un financiamiento otorgado por el Programa Frontera 2020, la Secretaría de Desarrollo Urbano y Medio Ambiente del estado de Tamaulipas llevó a cabo dos talleres sobre eficiencia energética dirigidos a los 10 municipios fronterizos del estado. Los materiales de los talleres proporcionaron información sobre las herramientas básicas necesarias para lograr una mayor eficiencia energética en la iluminación de espacios públicos, a la vez que se incrementan los ahorros económicos.

Estos talleres fueron parte de una serie de acciones para mejorar la eficiencia energética en el estado, incluyendo dos foros de energía: "Primer Foro Estatal de Energía. Tamaulipas, Energía que Mueve a México" y el tercer Congreso Internacional sobre Energías Renovables titulado "Perspectivas de la Energía en México". La realización de estos talleres coincidió con la puesta en marcha de un proyecto eólico demostrativo que incluye la operación de cuatro aerogeneradores con el objetivo de promover el uso de energías renovables en el estado. Asimismo, el estado realizó la distribución de 10 mil "Guías Prácticas para el Ahorro de Energía" con el objetivo de sensibilizar a la población sobre los beneficios de instalar tecnologías ecológicas en sus hogares. Como resultado de los talleres, 10 municipios se comprometieron a realizar una auditoría energética en sus edificios públicos, beneficiando a 1.7 millones de habitantes.

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Viviendas Sanas y Resilientes en Ciudad Juarez

Las familias de bajos ingresos cuentan con recursos limitados para implementar medidas de ahorro de energía y agua en sus hogares. Esto es generalmente debido tanto a la falta de conocimientos como a insuficiente asistencia técnica y/o recursos financieros. La falta de acceso a financiamiento para cubrir sus necesidades económicas limita su acceso a energías limpias y servicios básicos. La Federación Mexicana de Asociaciones Privadas de Salud y Desarrollo Comunitario de Ciudad Juárez, A.C. (FEMAP) ha operado durante treinta años un programa de microcréditos en la región; en este lapso se han entregado más de 40,000 microcréditos a los habitantes de bajos recursos para mejoras en sus hogares.

Con el apoyo del Programa Frontera 2020, FEMAP desarrolló un proyecto para identificar e implementar opciones de infraestructura verde y elementos de ahorro de energía para las familias de escasos recursos que buscan mejorar sus hogares en una colonia de rápido crecimiento en Ciudad Juárez. El proyecto ofreció asistencia técnica y financiera a 50 hogares (más de 200 personas) para la implementación de estas opciones y elementos energéticamente eficientes. En coordinación con empresas, instituciones académicas y organizaciones civiles sin fines de lucro, los residentes tuvieron acceso a asistencia técnica de expertos que los guiaron y enseñaron sobre los elementos de la infraestructura verde que podrían ser incorporados y adoptados en sus hogares, así como el acceso a materiales ecológicos.

El proyecto resultó en un ahorro de $630 dólares, 11.249 kW/hr, en el costo de energía y un ahorro de 530,000 litros de agua, equivalentes a $500 dólares, luego de las mejoras realizadas en 45 de las 50 viviendas mediante la instalación de:

- Cerca de 250 focos LED;
- 200 sellados de ventanas;
- 50 regaderas de bajo consumo;
- 50 filtros de agua;
- techos y paredes aislantes.

Además de las mejoras realizadas directamente en sus hogares, se desarrolló un catálogo de eco-materiales con el apoyo del Programa de Arquitectura de la Universidad Autónoma de Ciudad Juárez. Este catálogo incluye información sobre mejores prácticas y una evaluación de cada una de las ecotecnologías seleccionadas, identificando aquellas viables de implementación en comunidades marginadas ya que los catálogos existentes están enfocados mayoritariamente en vivienda nueva.

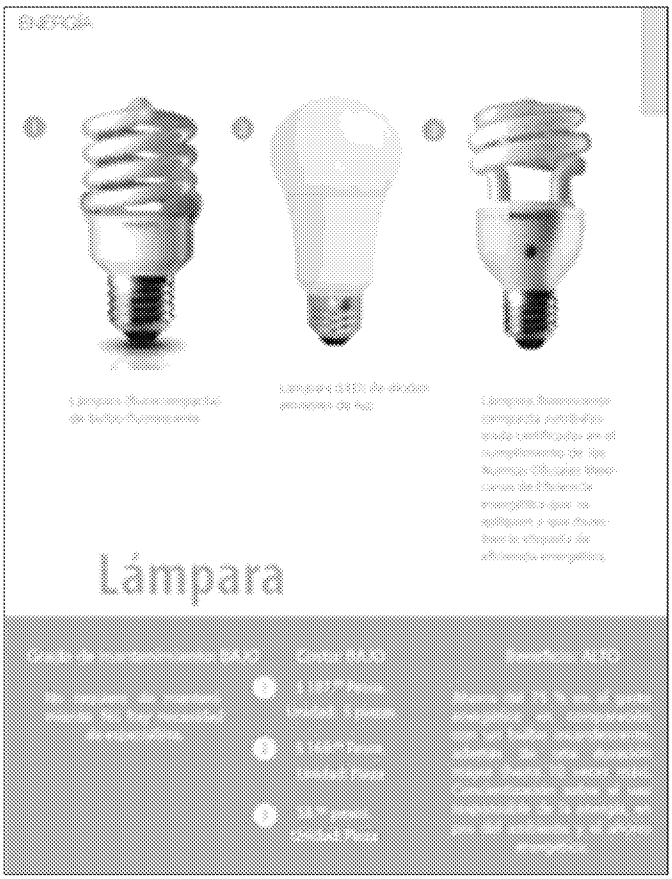

Ilustración. Descripción de los diferentes tipos de focos del catálogo.

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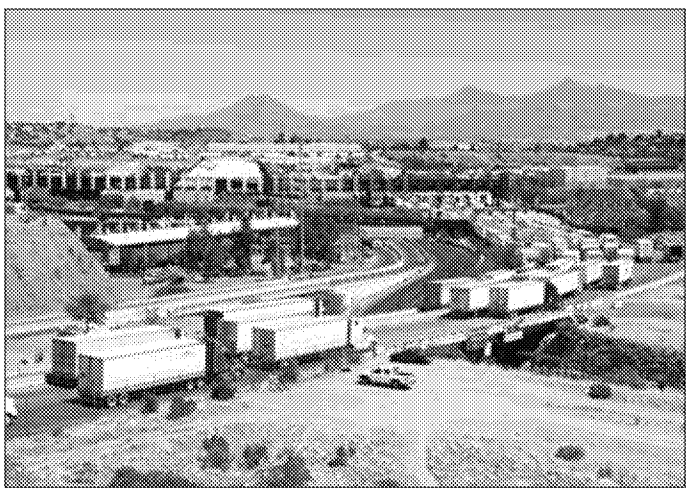
Cuantificando la Disminución de Emisiones Derivada de la Reducción en los Tiempos de Espera en el Cruce Fronterizo Mariposa

El Cruce Fronterizo Mariposa en Nogales, Arizona, es un importante cruce terrestre en la región fronteriza México-Estados Unidos con más de 7 millones de vehículos que cruzan al año, incluidos 350,000 camiones de carga. Las autoridades del cruce fronterizo están implementando un programa piloto innovador realizando inspecciones conjuntas a fin de reducir los tiempos de espera de los camiones de carga. Se espera que este programa piloto reduzca significativamente los tiempos de espera, de 8 horas a 1 hora, para los camiones de carga en dirección a los Estados Unidos. Esta reducción en los tiempos de espera reducirá las emisiones de los vehículos y acelerará el comercio. Actualmente, Nogales no cumple los estándares de emisiones de partículas PM^{10} y $PM^{2.5}$ las cuales pueden causar problemas respiratorios y cardíacos, especialmente en adultos mayores y niños pequeños. La reducción de emisiones de fuentes móviles puede mejorar la calidad del aire y la salud pública en la región.

El Programa Frontera 2020 otorgó financiamiento a la Asociación de Investigación de América del Norte (NARP, por sus siglas en inglés) para implementar un estudio que detalle los beneficios de la reducción de emisiones de este proyecto piloto. Más de 400 vehículos fueron encuestados para obtener información sobre los tiempos de espera, así como la marca y modelo del vehículo, lo que permitió a los investigadores calcular sus emisiones.



Camiones en espera de ingresar a las instalaciones Unificadas para el Procesamiento de Carga en Nogales.

Encuesta a un chofer de un camión después de la inspección.

El Simulador de Emisiones de Vehículos a Motor de la EPA (MOVES, por sus siglas en inglés), un sistema de modelado que estima las emisiones de fuentes móviles a nivel nacional, municipal y de proyecto de los contaminantes atmosféricos criterio, está siendo utilizado por los investigadores para cuantificar las reducciones de emisiones durante los tiempos de espera en el cruce fronterizo. Los datos preliminares muestran que la reducción de los tiempos de espera ha reducido las emisiones vehiculares. Además, se detectó que la reducción de emisiones también se debe a que los vehículos procesados a través de la Instalación Unificada para el Procesamiento de Carga tienden a ser más nuevos y utilizan más tecnologías para la reducción de emisiones. La NARP está trabajando en el análisis de datos de las encuestas y en la cuantificación de la reducción de emisiones, así como en el informe final el cual estará disponible a fines de 2018.

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Reduciendo los Desencadenantes del Asma Infantil en los Hogares

Los niños del Condado Imperial, California, viven con altas concentraciones de factores desencadenantes del asma tanto en el ambiente interior como en el exterior, incluida la contaminación transfronteriza del aire. Estos factores han contribuido a que el Condado Imperial experimente algunas de las tasas más altas de visitas a la sala de emergencias en el estado de California a causa del asma.

Para atender este problema, el Programa Frontera 2020 se asoció y financió el Programa de Asma Infantil del Valle Imperial (IVCAP, por sus siglas en inglés) durante el periodo 2015-2017 con el objetivo de llevar a cabo inspecciones en los hogares e identificar los desencadenantes del asma, así como colaborar con las personas que se dedican al mantenimiento de casas en la implementación de estrategias para fomentar hogares saludables. Durante este período, el 94% de los participantes inscritos en el programa informaron que no visitaron salas de emergencia ni fueron hospitalizados. Además, el IVCAP informó a más de 2.000 personas mediante campañas de difusión y educación, su inscripción en el programa, así como otras actividades de participación comunitaria.

Uno de los eventos comunitarios celebrados en el Condado Imperial.

> *"Disfruto educando a los padres de asmáticos sobre lo que pueden hacer para mejorar el entorno de su hogar, como presentarles productos de limpieza no tóxicos."*
>
> **Rubi Alvarez**
> **Trabajadora de Salud Comunitaria**
> ***(Promotora)***

La EPA continúa apoyando e impactando positivamente a las familias de bajos ingresos financiando actividades educativas sobre asma en el hogar en colaboración con el IVCAP mediante una subvención establecida en la Ley de Aire Limpio. Los fondos aprobados para el periodo 2017-2018 tienen como objetivo proporcionar evaluaciones y herramientas para controlar los desencadenantes del asma en el hogar que afectan a las familias y a los adolescentes de 17 años o menos. Estas evaluaciones son llevadas a cabo por Promotoras o trabajadoras de la salud comunitarias.

A la fecha, IVCAP ha inscrito a casi 90 asmáticos adicionales en su programa, con un 80% de ellos reduciendo, evitando y/o eliminando dos o más desencadenantes de asma identificados en sus hogares después de la evaluación. Las familias recibieron propuestas adecuadas al conjunto único de factores desencadenantes identificados en sus hogares.

Al término de este esfuerzo de dos años, el IVCAP espera atender a otras 70 familias y llevar a cabo evaluaciones en sus hogares esperando disminuir las visitas a la sala de emergencias y las hospitalizaciones. Además de las visitas domiciliarias, el IVCAP aumentará las actividades de divulgación dirigidas a aumentar la conciencia sobre el asma con programas de educación para los residentes diagnosticados con asma sobre los beneficios de mejorar el entorno doméstico interior para mantener el control a largo plazo de esta condición. Para obtener más información sobre el asma y sus desencadenantes, visite la página sobre asma de la EPA.

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MEJORANDO LA CALIDAD DEL AGUA

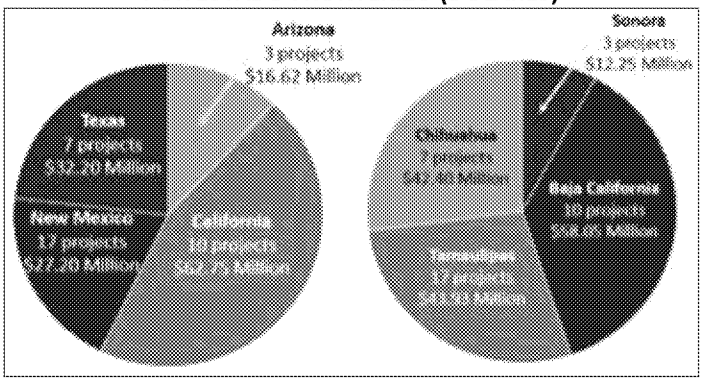
Los ríos y las cuencas hidrográficas no conocen fronteras y, en algunos casos, definen la frontera entre México y los Estados Unidos Las aguas pluviales contaminadas y las aguas residuales de infraestructura deteriorada, así como los fenómenos meteorológicos extremos pueden contaminar los cursos de agua transfronterizos, causando problemas de salud pública en la región fronteriza. El Programa Frontera 2020 ha mejorado la calidad del agua mediante el financiamiento de proyectos piloto para la gestión o mitigación de aguas pluviales, como infraestructura verde, programas para la reducción de residuos sólidos e investigación. Los fondos del Programa de Infraestructura Hidráulica Fronteriza (BWIP, por sus siglas en inglés) se han utilizado tanto para rehabilitar como para construir infraestructura para agua potable y para aguas residuales.

Programa México-Estados Unidos de Infraestructura Hidráulica Fronteriza

A través del Programa México-Estados Unidos de Infraestructura Hidráulica Fronteriza (PIHF) se otorgaron recursos para la planeación, diseño y construcción de proyectos prioritarios de infraestructura de agua potable y aguas residuales a lo largo de la frontera. El FIHF ayuda a las comunidades desfavorecidas a identificar y asegurar las fuentes de financiación disponibles y abordar los déficits de financiación para garantizar el acceso al agua potable y al saneamiento adecuado, a menudo por primera vez.

El FIHF proporciona capacitación administrativa y supervisión técnica a las comunidades que carecen de estas con el propósito de que puedan cumplir con los requisitos de diseño y planificación de proyectos aumentando así las oportunidades de financiamiento para la asistencia de construcción proveniente de otros programas, como el Programa de Áreas Marginadas de Texas, el Fondo Rotatorio Estatal, los programas de agua y medio ambiente para el desarrollo rural del Departamento de Agricultura de los Estados Unidos (USDA, por sus siglas en inglés)) y del Banco de Desarrollo de América del Norte (BDAN).

PRIORIZACIÓN DE PROYECTOS 2017 POR ESTADO FRONTERIZO (DÓLARES)



Los ríos ubicados en la región fronteriza entre México y los Estados Unidos en ocasiones definen de forma natural el límite geográfico internacional, como lo hace el Río Bravo, o bien fluyen desde México a los Estados Unidos, como es el caso del río Tijuana. Los proyectos financiados por el FIHF en ambos países abordan las descargas de aguas residuales transfronterizas, ya que su tratamiento antes de que entren en los cuerpos de agua fronterizos compartidos es la opción más viable desde el punto de vista técnico y financiero para prevenir su contaminación. Como parte de esta asociación, México iguala dólar por dólar las inversiones que la EPA proporciona a proyectos de infraestructura hidráulica, lo que ayuda a proteger la salud pública y el medio ambiente.

Logros del Programa

Desde 2003, a través de 108 proyectos financiados, el FIHF ha proporcionado acceso a agua potable a 70,000 hogares, así como sistemas para la recolección y tratamiento de aguas residuales a 673,000 hogares que nunca habían recibido este servicio. En 2017, a través del BDAN, la EPA anunció un nuevo ciclo de solicitud de proyectos para recibir financiamiento del FIHF. Se identificaron

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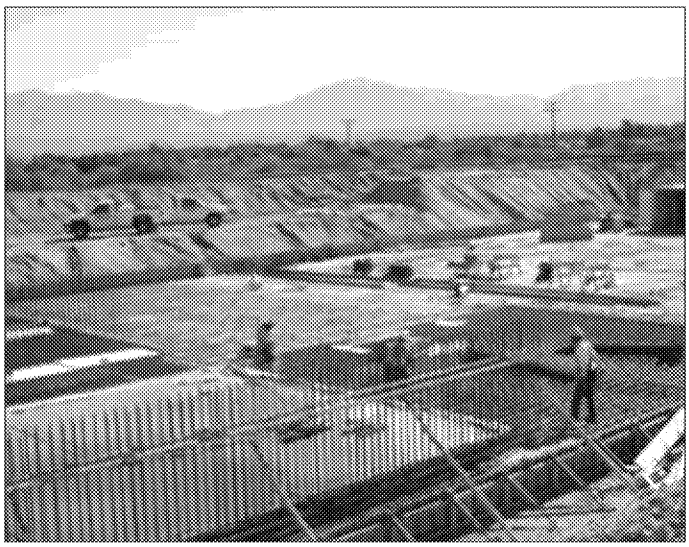
más de 60 proyectos elegibles de agua potable y aguas residuales con un costo de construcción total estimado en $296 millones de dólares que abordan las condiciones ambientales y de salud pública en la región fronteriza.

Desarrollando capacidades técnicas y de gestión en Sunland Park, Nuevo México, mediante asociaciones

La construcción de una nueva planta de tratamiento en Sunland Park, una comunidad pequeña y marginada en Nuevo México, comenzó en agosto de 2017. La Autoridad de Servicios Regionales de Camino Real (CRRUA), la autoridad sanitaria local, se enfrentó a problemas debido a infraestructura inadecuada y obsoleta, el cumplimiento ambiental y la falta de capacidad y recursos gerenciales. Durante casi dos años, la EPA, el Departamento de Medio Ambiente de Nuevo México (NMED) y el BDAN trabajaron en estrecha colaboración con CRRUA para implementar un plan de desarrollo de capacidades para garantizar que esta institución pudiera administrar efectivamente una planta nueva de tratamiento de aguas residuales. La USEPA proporcionó más de $816 mil dólares para implementar con éxito este plan y la asistencia técnica para la planificación y el diseño del proyecto; posteriormente, la EPA y el NMED financiaron la construcción de una planta de tratamiento con un costo de $12.7 millones de dólares, de los cuales la EPA contribuyó con $9 millones y el NMED proporcionó los $3.7 millones restantes con fondos estatales. La planta de tratamiento mejorará el acceso a servicios sustentables de tratamiento de aguas residuales a aproximadamente 6,440 residentes de Sunland Park y Santa Teresa y reducirá en gran medida los riesgos de descargas de aguas residuales no tratadas o inadecuadamente tratadas al río Bravo.



Construcción de la nueva planta de tratamiento de Sunland Park.

El presidente de la junta directiva de CRRUA, Josh Orozco, enfatizó la importancia de finalmente poder proporcionar la capacidad adecuada de tratamiento de aguas residuales en la comunidad. Durante la ceremonia de inauguración en julio de 2017, dijo que esta nueva planta "... no solo permitirá que más hogares y más empresas reciban ayuda, sino que también mejorará la salud de nuestra comunidad."

Protegiendo la cuenca del río Tijuana de la contaminación transfronteriza

El río Tijuana, que tiene su origen en Baja California, México, cruza la frontera en San Ysidro, California, y desemboca en el Océano Pacífico al sur de Imperial Beach, California. Las descargas de aguas residuales y tratadas inadecuadamente en Tijuana pueden afectar la economía, la salud y el medioambiente de comunidades estadounidenses como Imperial Beach y Chula Vista en el condado de San Diego. Como parte de un esfuerzo multilateral y de largo plazo para abordar estas descargas transfronterizas, se está llevando a cabo un proyecto en el marco del FIHF para reparar algunos de los recolectores de aguas residuales deteriorados. Estos recolectores transportan las aguas residuales de los hogares a la planta de tratamiento de aguas residuales de Tijuana. Si no son reparados, pueden producirse colapsos catastróficos que darían lugar a cientos de millones de litros de aguas residuales no tratadas que fluirían hacia los Estados Unidos y hacia las playas del Condado de San Diego. La cooperación existente entre las agencias de agua mexicanas y la EPA se traduce en $7 millones de dólares invertidos en la reparación de poco más de 9.6 km de recolectores de aguas residuales y la rehabilitaron 30 pozos de registro. Asimismo, está en marcha una segunda fase para la construcción de 4 km de líneas de alcantarillado adicionales. El costo estimado de este proyecto es de $3 millones de dólares, con una contribución proyectada por parte de la EPA de $1.4 millones.

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Campaña de Difusión Pública sobre Aceites y Grasas en Brownsville

La Junta de Servicios Públicos de Brownsville (BPUB, por sus siglas en inglés) recibió financiamiento del Programa Frontera 2020 por $25 mil dólares en febrero de 2016 para la difusión de información y educación sobre el impacto de la contaminación con grasas y aceites en la calidad del agua de las comunidades en Brownsville, Texas, y Matamoros, Tamaulipas. Históricamente, las llamadas al BPUB de zonas residenciales y comerciales por problemas relacionados con grasas y aceites ocurrieron en promedio cinco veces por semana, con un aumento de incidencias durante el mes de diciembre.

El BPUB se integró a un programa de reducción voluntario de la Comisión de Calidad Ambiental de Texas (TCEQ, por sus siglas en inglés) llamado Iniciativa Sanitario para el Desbordamiento del Alcantarillado. Este programa voluntario requiere que el BPUB trabaje para reducir la descarga no autorizada de aguas residuales no tratadas o parcialmente tratadas en el sistema de recolección o sus componentes (por ejemplo, alcantarillas, estaciones de bombeo o de limpieza) antes de llegar a una planta de tratamiento de aguas residuales como resultado de problemas relacionados con aceites y grasas. Mediante campañas educativas para el público en general y para establecimientos comerciales, el BPUB tuvo como objetivo reducir el número de llamadas de servicio relacionadas con aceites y grasas, así como crear conciencia sobre las técnicas apropiadas para la de eliminación adecuada de éstas.

Esfuerzos de marketing y educación

El 16 de marzo de 2016, el BPUB lanzó oficialmente su campaña de alcance masivo "Grasas y Aceites" en su reunión pública mensual en Brownsville. Durante la reunión pública, anunciaron su colaboración con la ciudad de Matamoros con el nuevo programa de divulgación sobre aceites y grasas. El BPUB informó a las comunidades de ambos lados de la frontera a través de una serie de actividades que incluyeron anuncios, volantes educativos, videos publicitarios, talleres y cobertura de prensa. Las plataformas de redes sociales como Facebook, Twitter y YouTube también fueron utilizadas para dirigirse al público más joven y compartir las campañas educativas producidas en video y audio. A lo largo del período del proyecto, se llevaron a cabo más de 80 eventos de divulgación pública y difusión en apartamentos y complejos de viviendas, iglesias e instituciones educativas, así como en negocios comerciales en los que participaron más de 1,700 personas.

Evento de difusión en Brownsville.

Más importante aún, el BPUB, a través de sus actividades de promoción, ha reducido consistentemente el número de llamadas relacionadas con grasas y aceites de 731 en 2013 a 417 en 2016, una reducción del 43% en tan solo cuatro años. Durante el período del proyecto, en 2015 y 2016, el BPUB recibió 477 y 417 llamadas, respectivamente, para atender problemas relacionados con grasas y aceites. En general, el proyecto cumplió con sus objetivos, entre los que se incluía el de reducir el número de llamadas de incidencias relacionadas con grasas y aceites en un 13% o en 60 llamadas. Para obtener más información sobre los esfuerzos que el BPUB realiza en este tema, por favor visite su página en internet.

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Construyendo Infraestructura Verde en Espacio Público de la Avenida Valle del Sol

La Organización Mundial de la Salud (OMS) establece un indicador de sustentabilidad de 9 m^2 de áreas verdes por habitante. La región fronteriza de Ciudad Juárez y El Paso experimenta un marcado déficit de espacios verdes urbanos; especialmente en Ciudad Juárez, donde se calcula existen sólo 4.5 m^2 de área verde por habitante. Desde 2013, la ciudad ha buscado activamente asociarse con diversas organizaciones para incrementar su infraestructura y espacios verdes. Estos proyectos no sólo pueden ser rentables, sino que pueden atender problemas de inundación asociados con la falta de infraestructura de aguas pluviales y embellecer las áreas con alto tránsito peatonal.

En 2016, con apoyo del Programa Frontera 2020 se financió un parque situado en la avenida Valle del Sol y la calle Solares. Ubicado a menos de un kilómetro de la línea fronteriza, este parque es el único espacio verde disponible para la comunidad de la zona. Con el paso de los años, la condición del parque se fue degradando debido a la falta de mantenimiento y dejó de servir como un área de esparcimiento y reunión para los miembros de la comunidad. El Instituto Tecnológico de Ciudad Juárez (ITCJ), promotor del proyecto, transformó el parque en un espacio adecuado para ser utilizado por los miembros de la comunidad e implementó medidas para atender los problemas de inundación que experimenta esta zona cuando llueve.

Sistemas pasivos para la recolección de agua de lluvia en el parque.

Con el financiamiento otorgado por el Programa, la ITCJ desarrolló este proyecto con los siguientes objetivos:

- Construir sistemas pasivos para el almacenamiento de aguas pluviales;
- Conservar agua potable usada para regar;
- Proteger el suelo de la erosión causada por el viento; e
- Incorporar y aprovechar la infraestructura urbana existente.

El proyecto inició en junio de 2016 con la limpieza del sitio y el acondicionamiento de la banqueta, posteriormente se trabajó en la construcción de sistemas pasivos para la recolección de aguas pluviales, así como en la recuperación y reconfiguración de la vegetación existente en el lugar. La cantidad de lluvia monitoreada de julio de 2016 a noviembre de 2017 (17 meses) resultó en la captura de un volumen total de 1,788 metros cúbicos de aguas pluviales.

En la actualidad, los sistemas pasivos de recolección de agua continúan funcionando eficazmente y la vegetación está prosperando. El parque se sostiene casi en su totalidad con agua de lluvia, excepto en casos de sequía extrema o para el riego de vegetación recién sembrada.

Gracias a una donación de las autoridades municipales, el suelo del parque está protegido de la erosión eólica por una cubierta de cáscara de nuez que permite que se conserve la humedad del suelo.

Finalmente, las encuestas realizadas en la zona mostraron que el valor social del parque ha aumentado sustancialmente. Antes del proyecto, el lugar era considerado como un espacio negativo por los residentes de la comunidad y ahora se lo ve como un espacio público agradable y con valor social.

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Estudiando Métodos de Desarrollo de Bajo Impacto para la Gestión de Aguas Pluviales en el Sur de Texas

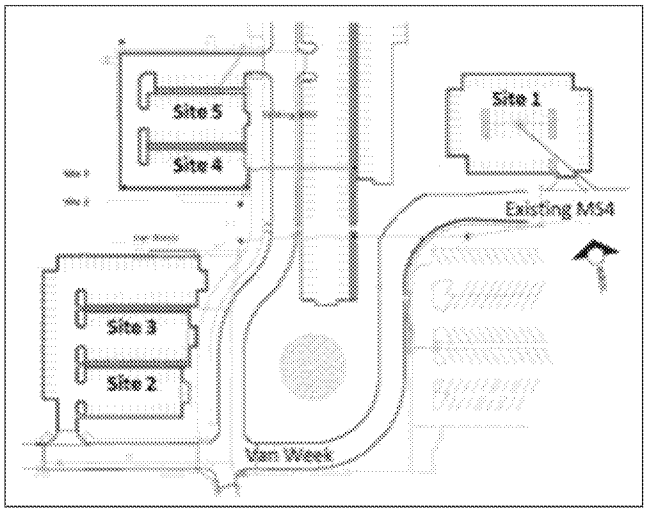
Varias comunidades en el Valle Bajo del Río Bravo en el sur de Texas han estado evaluando varios métodos de Desarrollo de Bajo Impacto (DBI) para incorporarlos a sus comunidades. Los DBI proporcionan varias ventajas sobre las prácticas tradicionales para la gestión de aguas pluviales, tales como: reducir o eliminar la necesidad de grandes estanques de captación y retención de agua; disminuir la contaminación de los cuerpos de agua; disminuir la erosión; incrementar el aspecto atractivo de la comunidad; flexibilidad en el diseño de los proyectos; todo a bajos costos. Un equipo de investigación liderado por el Dr. Jungseok Ho, de la Universidad de Texas en el Valle Bajo del Río Bravo (UTRGV, por sus siglas en inglés)), evaluó el uso de drenajes sostenibles en estacionamientos para determinar el mejor material poroso disponible a nivel local, así como un diseño estándar que podría ser utilizado por las localidades de la región. Los drenajes sostenibles generalmente son diseñados para el manejo de aguas pluviales en superficies impermeables de gran tamaño, como estacionamientos, incorporando materiales porosos y elementos de paisaje urbano con el propósito de eliminar los desechos y la contaminación de las aguas pluviales.

MATERIALES POROSOS Y TAMAÑO DE DRENAJE POR SITIO DE ESTUDIO

Sitios de Prueba	Drenaje Sostenible	Material Poroso	Tamaño (acres)
Sitio 1	Sin drenaje	Sin drenaje	.237
Sitio 2	Drenaje 1	Piedra Pómez	.216
Sitio 3	Drenaje 2	Arena fabricada	.218
Sitio 4	Drenaje 3	Vidrio reciclado triturado	.209
Sitio 5	Drenaje 4	Arena natural	.206

Basándose en estudios previos realizados por el Dr. Ho, su equipo evaluó cinco sitios de prueba que utilizaron varios materiales porosos (piedra pómez, arena fabricada, vidrio triturado reciclado y arena natural) en los estacionamientos del campus Edinburg de la UTRGV.

El proyecto evaluó el rendimiento hidrológico de los cuatro materiales diferentes utilizados en los cinco sitios de prueba. Los resultados obtenidos para el Sitio 2, con el material de piedra pómez, mostraron un mejor rendimiento hidrológico teniendo en cuenta los cuatro criterios definidos para la elección: 1) reducción del volumen de aguas pluviales; 2) reducción del caudal máximo; 3) atenuación de los puntos máximos del caudal; y 4) filtración de los sólidos contenidos en el caudal de aguas pluviales. La piedra pómez mostró la mayor filtración de los cuatro materiales utilizados con un 58% y una atenuación del volumen máximo del caudal en un 64%.



Ubicación de los Sitios de estudio en el Campus Edinburg de la UTRGV.

Los resultados del estudio de suelo muestran que cualquier mezcla que contenga más del 40% de piedra pómez del volumen total produce resultados prometedores. Tres mezclas de arena fabricada, arena natural y vidrio triturado reciclado con un 40% de piedra pómez cada una, alcanzaron un promedio de 30% de retención de aguas pluviales y 52% de filtración de residuos.

En general, con base en las pruebas de campo, la piedra pómez tuvo el mejor desempeño de los materiales porosos utilizados, con resultados que muestran que la utilización de mezclas con al menos un 40% de piedra pómez es el material ideal para esta región. Sin embargo, cabe destacar que es necesario realizar más estudios para conocer la disponibilidad y costo de este material en la región, así como el costo de la construcción de proyectos para determinar su nivel de efectividad final y ser utilizado por las comunidades de la región.

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Infraestructura Verde para Control de Sedimentos y Protección Contra Inundaciones en Ambos Nogales

El Interceptor de Desagüe Internacional (IDI) es una tubería que transporta las aguas residuales no tratadas de Nogales, Sonora, y Nogales, Arizona, (Ambos Nogales) a la Planta Internacional de Tratamiento de Aguas Residuales de Nogales nueve millas al norte de la frontera en Río Rico, Arizona. Dado que el sistema de recolección de aguas residuales en Sonora actúa como transporte combinado de agua sanitaria y pluvial, a lo largo de los años los flujos de sedimentos y la infiltración de aguas pluviales en Sonora han causado la falla del IDI en Arizona. El deterioro ocasionado por el sedimento ha debilitado el sistema, lo que ha provocado roturas en las tuberías del IDI, la última en julio de 2017, lo que ha generado derrames de aguas residuales en el Arroyo Nogales. Las fallas reiteradas del IDI podrían ocasionar la contaminación de los recursos hídricos subterráneos de Arizona.

Parque diseñado para recolectar agua de lluvia y prevenir inundaciones.

El Grupo de Gestión de Cuencas Hidrográficas (WMG, por sus siglas en inglés), una organización sin fines de lucro con sede en Tucson, Arizona, encabezó un proyecto financiado por el Programa Frontera 2020 para demostrar el potencial de infraestructura verde existente para disminuir la cantidad de sedimentos durante las inundaciones provocadas por lluvias que están deteriorando el IDI. La infraestructura verde, de acuerdo con la EPA, utiliza la vegetación, los suelos y otros elementos y prácticas para restaurar algunos de los procesos naturales necesarios para gestionar el agua y crear entornos urbanos más saludables. El proyecto utilizó un enfoque de tres frentes que incluyó:

- Desarrollo de capacidades (capacitaciones comunitarias en actividades de planificación, diseño e implementación);
- Sitios piloto (dos proyectos para el control de sedimentos); y
- Desarrollo de políticas (resolución para expandir y fortalecer las prácticas de infraestructura verde en Nogales, Sonora).

Trabajando con el gobierno local y los residentes de Nogales, Sonora, el WMG completó dos sitios piloto con un área de aproximadamente 10,000 m^2, similar al área de un campo de fútbol. Además, 88 residentes asistieron a un taller de capacitación y más de 500 miembros de la comunidad recibieron información sobre conceptos de infraestructura verde a través de eventos comunitarios y participación en proyectos. Uno de los sitios piloto es un parque de lluvia que ahora colecta un volumen de entre 50,000 y 70,000 litros de agua pluvial cada evento de lluvia. Estas modificaciones de infraestructura verde eliminan casi por completo la contribución de sedimentos originados en el parque durante inundaciones provocadas por lluvias río abajo en el área de Ambos Nogales.

El proyecto atrajo el apoyo de un Diputado del Congreso de Sonora electo en representación del municipio de Nogales y que es miembro de la Comisión de Energía, Medio Ambiente y Cambio Climático del Congreso Estatal; por lo que tuvo un impacto más allá del nivel local fomentando que el Congreso de Sonora adoptara una ley de infraestructura verde en abril de 2017, la primera de su tipo aprobada en México.

Este proyecto incrementó la capacidad de la comunidad para usar infraestructura ecológica para reducir las inundaciones en el área de Ambos Nogales e impulsó al gobierno local a apoyar el futuro desarrollo de infraestructura verde.

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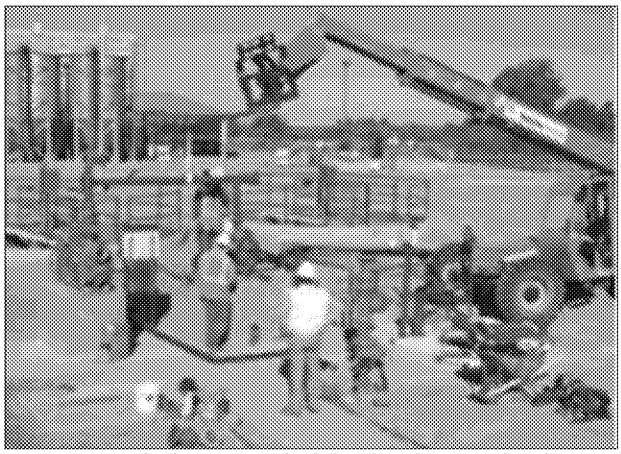
Protegiendo los Recursos Hídricos de la Ciudad de Holtville en el Condado Imperial

Ubicada en el Condado Imperial, California, la planta de tratamiento de aguas residuales (PTAR) de la ciudad de Holtville no cumplía con los requisitos de descarga de amoníaco y otros contaminantes que fluían hacia el drenaje Pear, que alimenta el río Álamo y finalmente el Mar de Salton en el sur de California. Gracias al financiamiento del Fondo México-Estados Unidos de Infraestructura Hidráulica Fronteriza (FIHF) y del Fondo Rotatorio Estatal de Agua Limpia del estado de California, la PTAR existente se modernizó y ahora brinda servicio de aguas residuales al 100% para la zona beneficiando a 6,594 residentes de Holtville.

Considerado un cuerpo de agua deteriorado, las descargas contaminadas de Holtville exacerbaron las difíciles condiciones que enfrentan las comunidades de flora y fauna que viven en el Mar de Salton. Con el paso de los años, los niveles de agua en el Mar de Salton han disminuido rápidamente debido a la evaporación y han aumentado tanto la salinidad y como las concentraciones de contaminantes. El lecho del lago expuesto ha sucumbido a los vientos del desierto que ahora llevan el polvo contaminado a las comunidades circundantes. Estas partículas de polvo pueden contribuir a los ataques de asma en todo el Valle Imperial. La PTAR de Holtville, que ahora cumple con todos los requisitos, no solo aumentará las posibilidades de supervivencia de los diversos organismos dependientes del Mar de Salton, sino que la afluencia de agua tratada adecuadamente evitará que el lecho del lago esté expuesto al viento y, a su vez, el polvo generado no afecte a los residentes urbanos vulnerables.

"La EPA está comprometida a ayudar a las comunidades de todo el Valle Imperial a proteger los recursos hídricos vitales del estado. Nuestras inversiones renuevan la infraestructura obsoleta, lo que puede ser costoso para comunidades pequeñas como Holtville."

Tomas Torres
Director de la División de Agua
Oficina Regional 9 de la USEPA



Construcción de una estación de bombeo de aguas pluviales.

Algunos de los nuevos componentes instalados en la PTAR de Holtville incluyen una cortina de barra de operación automática que maximiza la eliminación de objetos grandes y un sistema de lodo activado que mejora la efectividad del tratamiento y la calidad del agua tratada. Así mismo, se rehabilitó el edificio de operaciones de la planta de tratamiento y se instalaron equipos de laboratorio modernos, lo que permitirá que se puedan llevar a cabo los análisis necesarios para asegurar que el agua tratada cumpla con los requisitos para su descarga.

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PROMOVIENDO SUELOS LIMPIOS

En la región fronteriza entre México y los Estados Unidos, la gestión de los residuos sólidos no ha seguido el ritmo del aumento de la población, lo que ha dado como resultado basura no gestionada así como infraestructura y servicios sobrecargados y la pérdida de posibles materiales valiosos en rellenos sanitarios o vertederos ilegales. La basura sin gestionar contamina la tierra y el agua, y tiene impactos adversos en la salud pública, tales como propiciar incendios contribuyendo a la mala calidad del aire o servir como hábitat de reproducción de mosquitos y la propagación de enfermedades transmitidas por vectores como el Zika. La Gestión Sustentable de Materiales (GSM) promueve un enfoque de ciclo de vida que va desde la optimización del diseño hasta el proceso de producción final de bienes y servicios para reducir el desperdicio, eliminar la toxicidad y maximizar la reutilización. Los Socios del Programa Frontera 2020 han avanzado la GSM a través de limpiezas y proyectos para reciclar residuos domésticos peligrosos, aparatos electrónicos y llantas de desecho.

Apoyando a los Recicladores de Automóviles

Cada año, los vehículos que alcanzan el final de su vida útil son depositados en deshuesadoras ubicadas en la región fronteriza entre México y los Estados Unidos. A menudo, estos vehículos desechados no se procesan adecuadamente para recuperar los materiales reutilizables o reciclables ni eliminar los materiales peligrosos que contienen. A medida que los vehículos desechados se acumulan, el terreno que ocupan se convierte en un paisaje desagradable a la vista dentro de las comunidades locales y representan un riesgo para la salud humana y el medio ambiente. Los vehículos suelen contener materiales peligrosos como anticongelantes, aceite usado o plomo y, cuando se abandonan, se convierten en una responsabilidad legal para los gobiernos locales.

En respuesta a las necesidades de los recicladores automotrices en la región fronteriza, la SEMARNAT y la EPA desarrollaron una "Guía para Vehículos al Final de su Vida Útil". Este documento fue desarrollado para compartir prácticas efectivas en la preparación de vehículos al final de su vida útil para que sean reciclados adecuadamente y contribuir al objetivo del Programa de reducir el desperdicio mediante la recuperación segura y responsable de los materiales contenidos en ellos.

La Guía forma parte de un paquete que incluye también un juego de tarjetas de referencia rápida sobre residuos y un póster. Estos materiales instructivos pueden ser utilizados para proveer información oportuna en las instalaciones de desmontaje a los técnicos sobre la preparación adecuada de los vehículos para que su desmontaje sea conducido mediante una gestión ambientalmente racional. Además, la Guía analiza la eliminación responsable, la recuperación de costos, la salud, la seguridad y la protección, las normas que rigen a la industria y una lista de vehículos que contienen interruptores de mercurio.

Los flujos de desechos específicos que representan un alto riesgo para los trabajadores y el medio ambiente se destacan en la Guía y en un conjunto de tarjetas que incluyen diagramas. Los flujos de desechos incluidos son: plomo, interruptores de mercurio, refrigerantes, baterías de desecho, así como líquidos y combustible residuales. En general, la Guía proporciona materiales que los técnicos pueden utilizar para procesar los vehículos viejos utilizando prácticas de gestión ambientalmente racionales.

La SEMARNAT y la EPA trabajarán coordinadamente para difundir la Guía entre los actores relevantes a lo largo de la región fronteriza en el otoño de 2018. La Guía impresa se encuentra disponible en español, mientras que versiones electrónicas en ambos idiomas están disponibles en la página de la EPA.

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Manejo Integral de Desechos Sólidos y Llantas Usadas en la Frontera México-Estados Unidos

El Programa Frontera 2020 tiene como uno de sus objetivos construir un enfoque más sustentable e integrado para la gestión de materiales de desecho con el fin de minimizar y reducir su impacto en el medio ambiente y mejorar la salud pública. Sin embargo, en una región geográfica donde la población, las condiciones socioeconómicas y las regulaciones ambientales pueden variar significativamente, las diferentes comunidades fronterizas han tenido que adoptar enfoques variados y creativos para construir comunidades sustentables.

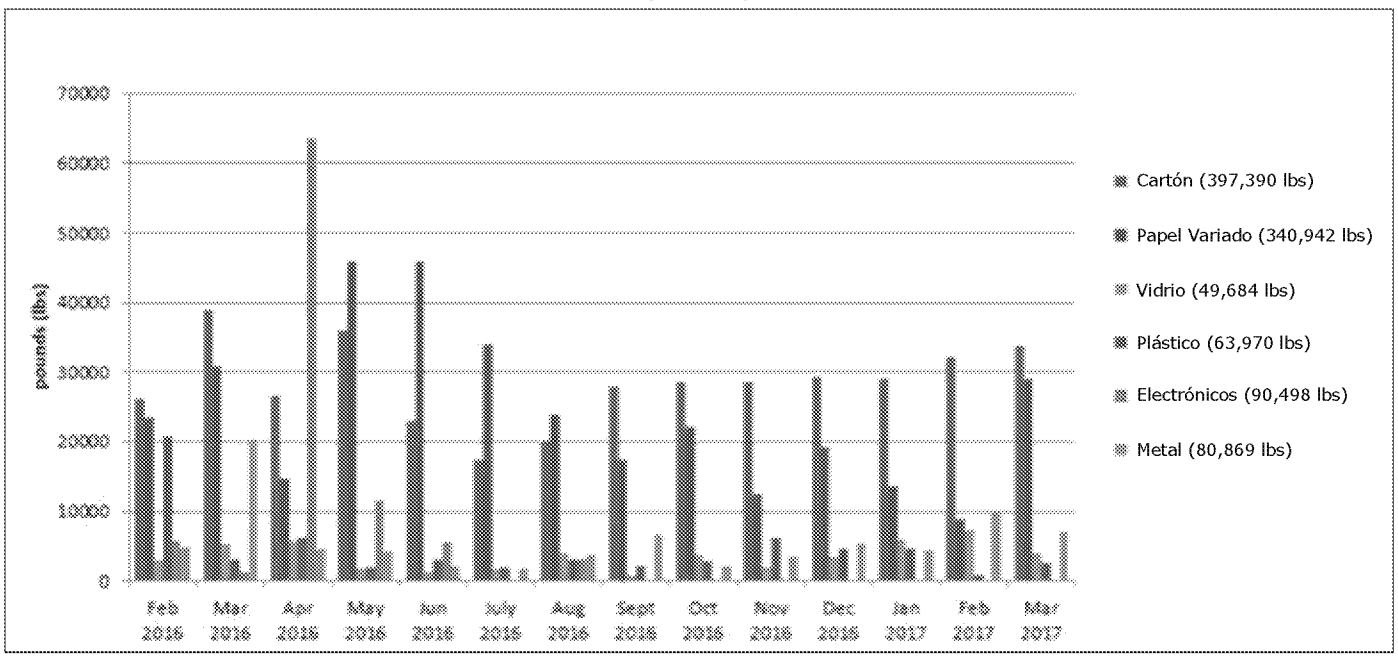
Ciudad de Pharr, Texas

A lo largo de los años, la ciudad de Pharr ha implementado diversas herramientas para la sustentabilidad en el Departamento de Obras Públicas con el objetivo de que esta ciudad sea una de las más limpias en el Valle Bajo Río Bravo. En 2016, Pharr recibió financiamiento por parte del Programa Frontera 2020 por un monto de $36 mil dólares para continuar mejorando sus actividades de reciclaje y educativas en la comunidad con el objetivo de reducir la dependencia de la ciudad en los rellenos sanitarios y construir una comunidad más saludable. Durante un período de 14 meses, la ciudad recolectó:

- Más de 5,700 llantas de desecho;
- 60 toneladas de residuo diversos (Figura 1); y
- 464 toneladas de material reciclado que no fueron depositadas en rellenos sanitarios.

El Departamento de Obras Públicas condujo una campaña de educación pública bilingüe sobre los esfuerzos de reciclaje y sustentabilidad de la ciudad, así como de la contaminación de aguas pluviales y disposición ilegal de llantas usadas, a través de redes sociales, folletos, anuncios de radio y más de 100 actividades informativas (20 reuniones, 40 eventos, 50 presentaciones). El proyecto también fomentó los esfuerzos de reciclaje en algunas escuelas de la ciudad mediante la promoción de un concurso de educación ambiental, así como el suministro de 75 contenedores para el reciclaje en los salones de clase y docenas de contenedores para el reciclaje con una capacidad de 360 litros en el distrito escolar. Para obtener más información sobre el Departamento de Obras Públicas de Pharr y sus esfuerzos, por favor visite su página en internet.

MATERIAL RECOLECTADO Y RECILADO DESVIADO DEL RELLENO SANITARIO DE PHARR, TEXAS. (lbs/mes)



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Valle Hermoso y Rio Bravo, Tamaulipas

En 2014, el estado de Tamaulipas aprobó la legislación que establece su Programa de Gestión y Prevención Integral de Residuos. Dentro de este programa, basado en factores como el crecimiento de la población y la generación per cápita de los residuos sólidos, el estado priorizó los municipios donde era vital establecer un programa municipal integral para la gestión y prevención de residuos. También se delinearon las estrategias y acciones específicas que estos programas municipales deberían contener, incluidos los costos asociados a su implementación a corto, mediano y largo plazo. La implementación de los programas municipales se realiza en tres fases: llevando a cabo un diagnóstico para conocer las condiciones actuales; la adopción por parte del municipio de su programa; y, finalmente, la implementación, monitoreo y evaluación del programa municipal.

La Secretaría de Desarrollo Urbano y Medio Ambiente de Tamaulipas (SEDUMA) recibió financiamiento por parte del Programa Frontera 2020 por un monto de $20 mil dólares para ayudar a los municipios de Valle Hermoso y Río Bravo a completar su estudio de diagnóstico sobre la gestión local de los residuos. El estudio de diagnóstico, que se llevó a cabo en período de dos meses, analizó:

- Actividades actuales, personal, equipo, desechos sólidos recolectados y clasificación de desechos;
- Estrategias específicas recomendadas para ser implementadas a corto, mediano y largo plazo;
- Costos asociados a la implementación de las estrategias (Tabla 1);
- Parámetros del programa de monitoreo; y
- Posibles mecanismos de financiación.

El 22 de agosto de 2016, SEDUMA presentó a los dos municipios el diagnóstico de su sistema actual para la gestión de residuos. Con base en el diagnóstico, en marzo de 2017 el municipio de Valle Hermoso publicó y registró oficialmente ante autoridades estatales su programa municipal para la gestión integral de residuos, pasando a la tercera fase. Los próximos pasos incluyen la aprobación por parte del municipio de Río Bravo del diagnóstico y el registro de su programa.

COSTOS TOTALES DE IMPLEMENTACIÓN DE ESTRATEGIAS A CORTO, MEDIANO Y LARGO PLAZO EN VALLE HERMOSO Y RIO BRAVO, TAMAULIPAS.

Estrategia Considerada por Municipio	Costo Total de Implementación por Municipio (Dólares)	
	Rio Bravo	Valle Hermoso
Administración/Operación	$4,776,923.00	$1,296,428.00
Reciclaje	$1,648.00	No Considerada / No Aplica
Servicios Generales	No Considerada / No Aplica	$10,989.00
Difusión Pública y Campañas Educativas	$16,373.63	$17,032.00
Participación Sector Privado/ Asociaciones	Sin costo para el Municipio	No Considerada / No Aplica
Creación de Capacidades Institucionales	$155,495.00	$122,527.00
Financiero/Legislativo	Sin costo para el Municipio	No Considerada / No Aplica

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Atendiendo los Desafíos Binacionales de la Basura Electrónica en Coahuila y Texas

Los rápidos avances en la tecnología y el uso de productos electrónicos por parte de los consumidores hacen que los productos electrónicos se vuelvan obsoletos rápidamente y sean desechados. A diferencia de otros materiales reciclables, los desechos electrónicos (e-waste) no son tan fácilmente reciclables debido a los metales tóxicos que contienen (plomo, mercurio, cadmio y arsénico). El desafío con el reciclaje de desechos electrónicos es a menudo la eliminación inadecuada en los rellenos sanitarios locales y la falta de infraestructura en las comunidades para apoyar el correcto manejo y reciclaje.

Centro de recolección permanente ubicado en las instalaciones del Departamento de Obras Públicas de Eagle Pass, Texas.

En 2016, el Programa Frontera 2020 otorgó financiamiento a dos proyectos, promovidos por la Secretaría de Medio Ambiente del estado de Coahuila (SEMA) y por la organización Green Tecosos, grupo ambientalista del Instituto Tecnológico de Piedras Negras, para el reciclaje de residuos electrónicos en las comunidades de Ciudad Acuña, Piedras Negras y Guerrero, en el estado de Coahuila, e Eagle Pass en Texas. Estos proyectos tuvieron como objetivo evitar que los desechos electrónicos generados en estos municipios fueran vertidos ilegalmente en el lecho del Río Bravo, en los alrededores de la presa La Amistad, así como en arroyos, lotes baldíos y rellenos sanitarios de la región. También proporcionaron información y educaron a la comunidad sobre los beneficios de reutilizar productos electrónicos.

Para mejorar las prácticas sustentables se establecieron 10 centros permanentes de recolección de desechos electrónicos en las cuatro comunidades. A través de eventos comunitarios, los proyectos lograron la recolección de más de 113 toneladas de desechos electrónicos. Además, con la asistencia de más de 60 socios del Programa y a través de talleres, capacitaciones y medios de comunicación; los residentes fueron educados sobre los impactos positivos que el reciclaje adecuado de los desechos electrónicos tiene en el medio ambiente.

EVENTOS COMUNITARIO DE RECOLECCIÓN EN COAHUILA Y TEXAS
FEBRERO, 2016 - MARZO, 2017

Tipo de	*e-waste* Recolectado (tons)	Población Atendida
22 colonias de Piedras Negras	32.22	45,000-50,000
Escuelas de los municipios de Piedras Negras y Nava	8.83	5,500
Negocios y otros	5.56	2,500
Eagle Pass	14.83	28,765

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La Tribu Campo Band Avanza en las Prácticas Cero Desperdicios

En la región fronteriza, la disposición inadecuada de basura tiene impactos negativos en el medio ambiente que pueden llegar a tener efectos transfronterizos, como el deterioro de la calidad del agua, la obstrucción del flujo de la corriente de los ríos y la creación de hábitats para vectores de enfermedades. En 2015, la tribu Campo Band, ubicada en California, expresó su preocupación a los representantes del Programa Frontera 2020 por los problemas de desechos sólidos transfronterizos. Para atender estas preocupaciones, en el año 2016 el Programa proporcionó financiamiento para realizar una evaluación del flujo de los desechos sólidos y preparar un Plan de Cero Desperdicios. Este Plan tendría como objetivo reducir significativamente el desperdicio y establecer acciones para eventualmente eliminar los desechos enviados al relleno sanitario.

Miembros de la Tribu Campo Band identifican y separan diferentes tipos de residuos.

El Plan de Cero Desperdicios se completó en enero de 2018. Junto con las recomendaciones de este Plan, la tribu Campo Band está explorando activamente otras acciones para la gestión de materiales, incluyendo metas a corto y largo plazo para desarrollar un programa autosustentable de reciclaje y desechos, así como establecer una estación de transferencia. Este Plan fue un importante primer paso o herramienta para que la tribu pudiera alcanzar sus objetivos relacionados con los residuos sólidos y así mejorar la salud de sus miembros y de la región fronteriza en general. La tribu Campo Band continúa aprovechando otros recursos como el Programa de Asistencia General (GAP, por sus siglas en inglés) de la EPA para cumplir sus objetivos sobre desechos sólidos, crear prácticas que tengan sentido para su comunidad y utilizar el plan de cero residuos como una herramienta valiosa para satisfacer sus necesidades. Actualmente, la tribu Campo Band obtuvo $18 mil dólares de financiamiento por parte del GAP para que continúe trabajando con su Plan de Cero Desperdicios.

Miembros de la Tribu Campo Band pesan diferentes tipos de residuos.

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El Compostaje Desvía Valiosos Materiales Orgánicos de los Rellenos Sanitarios

Donación de composta a participantes del programa Ecoparque.

La composta es un recurso valioso formado por desperdicios de comida, esquejes de jardinería u otro material orgánico. Sin embargo, con base en el estudio de 2018 "Caracterización y Manejo de los Desechos Orgánicos", publicado por la Comisión de Cooperación Ambiental (CCA), los residuos orgánicos en México y los Estados Unidos son depositados principalmente en rellenos sanitarios. El Programa Frontera 2020 ha trabajado para aumentar las tasas de reutilización de los residuos orgánicos, estimadas en 7% para México y 32% para los Estados Unidos, trabajando con socios y actores gubernamentales, académicos, organizaciones sin fines de lucro e industriales para mejorar el manejo de desechos orgánicos a través de prácticas para el composteo y las prácticas "Jerarquía para la recuperación de alimentos" de la EPA.

En el año 2012, el Programa otorgó financiamiento a la organización Tijuana Calidad de Vida que tuvo como resultado la implementación del primer programa piloto fronterizo de composteo municipal, el cual produce composta y educa a futuros compostadores. En el año 2016, el Centro de Finanzas Ambientales de la Oficina Regional 9 de la EPA financió un proyecto para identificar nichos de mercado para la composta en Tijuana que pudieran ser aprovechados por las empresas que necesitaban alcanzar metas de reducción de desechos para sus calificaciones de responsabilidad social corporativa. En 2017, el Colegio de la Frontera Norte (COLEF) condujo un programa piloto que trabajó con casi 120 hogares de Tijuana capacitando a sus integrantes en un total de 27 talleres. Esto dio como resultado la reutilización de 10,067 kg de residuos de comida de sus hogares. La composta generada fue utilizada en Ecoparque, un programa para modelar y enseñar prácticas sustentables y se donaron 107 sacos de composta a los participantes del programa piloto. Los resultados de este programa fueron incluidos en el informe 2018 de la CCA.

El 13 de junio de 2018, el programa *Compost Cats* de la Universidad de Arizona celebró la adjudicación de un financiamiento por $91 mil dólares del Programa para establecer el Centro de Composteo del Condado de Santa Cruz; una alternativa muy necesaria a los rellenos sanitarios. Cerca de 3,000,000 de toneladas de productos cruzan cada año por el cercano cruce fronterizo Mariposa en Nogales, uno de los cruces terrestres más concurridos de la frontera, con destino a los mercados estadounidenses. Alrededor de 8,000 toneladas de residuos se generan anualmente, lo que equivale a dos camiones de volteo por día al año, y son depositados en el relleno sanitario de Rio Rico, por lo que se espera que el Centro de Composteo ofrezca beneficios ambientales y económicos a la región (Comunicado de prensa de la Universidad de Arizona). En su primer año, el Centro de Composteo utilizará 3,000 toneladas de residuos orgánicos creando 6,880 metros cúbicos de composta. Esto equivale a 4.3 campos de fútbol cubiertos con 30 centímetros de composta. El objetivo a largo plazo es utilizar las 8,000 toneladas de residuos generadas anualmente.

El Centro de Composteo se establecerá siguiendo el exitoso programa "Compost Cats" de la Universidad de Arizona en Tucson, que no sólo genera composta, sino que también trabaja con los bancos de alimentos locales para donar los sobrantes de comida del campus para alimentar a indigentes. En 2015, el trabajo de este programa fue reconocido con el premio "*Food Recovery Challenge*" de la EPA por reducir el desperdicio de alimentos en el campus principal de la Universidad de Arizona y en la ciudad de Tucson. El Centro de Composteo también servirá como un centro de aprendizaje agrícola para estudiantes de secundaria y universitarios, evitando que este valioso recurso sea depositado en rellenos sanitarios.

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FORTALECIENDO LA PREPARACIÓN Y RESPUESTA A EMERGENCIAS

Reconociendo que los incidentes que involucran químicos peligrosos y otras emergencias ambientales, independientemente de la frontera internacional, pueden amenazar a las comunidades locales y binacionales, México y los Estados Unidos continúan trabajando juntos para mejorar la preparación y la respuesta a emergencias internacionales. El Programa Frontera 2020 y sus Socios apoyan actividades para la capacitación binacional, ejercicios conjuntos, así como la actualización de los equipos esenciales y de los planes conjuntos de emergencia lo que ha incrementado las capacidades de comunicación y respuesta. Juntos, hemos reducido la magnitud de los incidentes y mejorado la seguridad en la región fronteriza.

La Capacitación Binacional Reduce el Peligro y los Impactos Negativos en las Comunidades Fronterizas

Mediante la coordinación con agencias federales, estatales y locales de ambos países, el Programa Frontera 2020 ha organizado ejercicios y actividades de capacitación conjunta, y ha tomado las medidas necesarias para garantizar que los socorristas cuenten con el equipo de protección personal adecuado para responder de manera segura y efectiva a incidentes. Desde el inicio del Programa, más de 10,500 bomberos, brigadistas para la atención de emergencias, policías, militares, representantes de la industria, personal médico y otros líderes comunitarios relevantes han recibido capacitación a través de: 153 cursos de capacitación, 32 ejercicios binacionales y 245 ejercicios de notificación entre México y los Estados Unidos en la región fronteriza de Sonora-Arizona y Baja California-California.

"Gracias a la EPA, así como a los bomberos de la ciudad de Douglas, Arizona, que han participado como instructores, por enriquecer nuestro conocimiento HAZMAT. Gracias a esto estamos preparados para cualquier emergencia. Nuestro objetivo es proteger a la comunidad de nuestras ciudades hermanas. Gracias a la EPA por proporcionarnos el equipo ya que, debido a su alto costo, está fuera de nuestro alcance. Gracias por confiar y creer en los bomberos de Agua Prieta."

Teniente José Romero
H. Cuerpo de Bomberos de Agua Prieta

Bomberos de ambos países combaten el incendio de Diciembre.

Conseguir que personal y equipo crucen la frontera de manera oportuna para ayudar a responder a emergencias siempre ha sido un desafío que requiere de un esfuerzo coordinado entre una amplia gama de agencias y organizaciones. Las actividades de capacitación y los ejercicios binacionales con socorristas, funcionarios de aduanas, distintas agencias gubernamentales, militares, industria y el público en general; han sentado las bases para una respuesta eficiente a situaciones reales de emergencia.

Respuesta Binacional a un Incendio en el Invierno de 2017

Cuando un gran incendio de llantas produjo peligrosas nubes de humo en Agua Prieta, Sonora, que se desplazaron hacia Douglas, Arizona, en diciembre de 2017, los bomberos de Douglas cruzaron la frontera y ayudaron a apagarlo en cuatro

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Participantes del taller de capacitación en HAZMAT Tech.

horas. La capacitación binacional y los ejercicios en campo, realizados cuatro meses antes del incendio, ayudaron enormemente a aumentar la eficiencia de la respuesta así como a reducir la escala y el impacto del incidente. Además, la Patrulla Fronteriza destacada en el cruce fronterizo entre ambas comunidades permitió el paso oportuno a los bomberos.

La colaboración binacional, con el apoyo de los bomberos de Douglas, evitó que el fuego creciera y potencialmente cruzara a los Estados Unidos y se redujo la cantidad de humo, el cual puede causar problemas respiratorios a poblaciones sensibles como niños, ancianos y asmáticos en esas localidades de la región fronteriza.

Capacitación Puesta a Prueba por Incendio de Llantas

Un taller de capacitación en HAZMAT *Tech*, con duración de 200 horas, para los bomberos de Douglas y Agua Prieta se está impartiendo los fines de semana y terminará en el otoño de 2018. Como resultado, se tendrán más bomberos capacitados en HAZMAT en Douglas y se formará un equipo completo de HAZMAT en Agua Prieta. Este taller permitirá a los cuerpos de bomberos de estas localidades fronterizas estar mejor entrenados y equipados para responder a incidentes y apoyarse mutuamente en la atención de emergencias.

El 26 de mayo el taller de capacitación tuvo que ser interrumpido y pospuesto debido a la necesidad de atender un llamado de emergencia originado por un incendio en un tiradero de llantas de desecho en Agua Prieta. Se activó y utilizó el Plan de Emergencia Binacional para las Ciudades Hermanas Agua Prieta-Douglas, el cual había sido actualizado recientemente, para atender la emergencia. Con el apoyo del Departamento de Bomberos de Douglas, el incendio fue controlado en menos de tres horas.

Gerardo Romo, miembro del Departamento de Bomberos de Douglas comentó: "Gracias a los esfuerzos binacionales y la capacitación en HAZMAT proporcionada a los bomberos de Agua Prieta, tuvieron la capacidad de responder a los incidentes de una manera más rápida y eficiente. En el pasado, el Departamento de Bomberos de Agua Prieta atendió voluntariamente las emergencias de incendios dando su mejor esfuerzo; sin embargo, ahora que están recibiendo el entrenamiento HAZMAT por parte del Departamento de Bomberos de Douglas, entienden la necesidad de contar con un equipo de protección personal adecuado para responder y enfrentar el riesgo de cada evento, como los incendios de llantas. Personalmente, vi a los bomberos usar el equipo de protección respiratoria adecuadamente durante el incendio de llantas que ocurrió el 26 de mayo."

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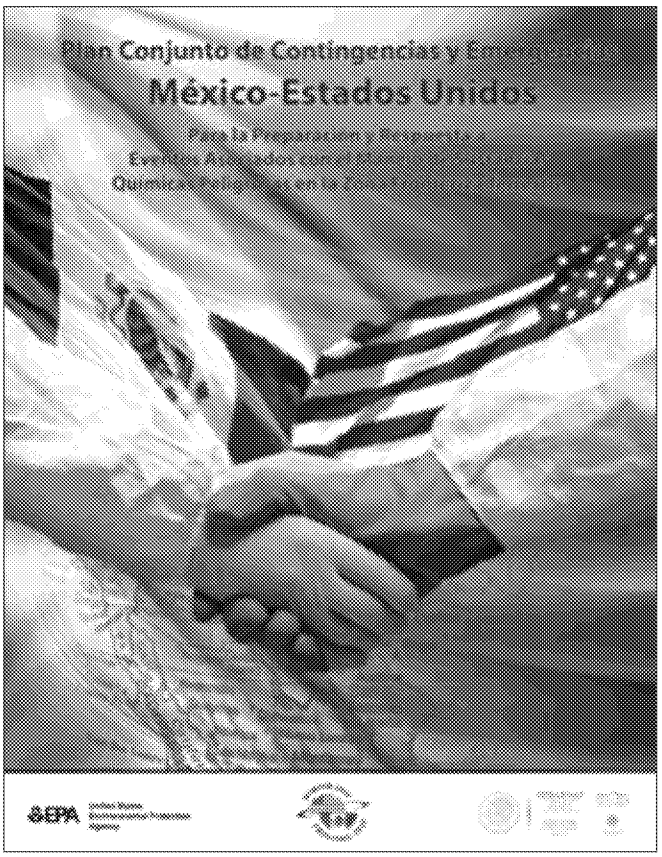
Mejora la Preparación Conjunta para la Respuesta a Emergencias Ambientales en el Marco del Programa Frontera 2020

Las emergencias químicas y de otras sustancias peligrosas no respetan las fronteras internacionales por lo que mantener una adecuada preparación para atender una posible emergencia en la región fronteriza es esencial para mejorar la capacidad de respuesta a incidentes, protegiendo al medio ambiente y a la población de sus impactos.

El Anexo II del Acuerdo de La Paz de 1983 estableció el Plan Conjunto de Contingencias (PCC), el cual proporciona un mecanismo de coordinación binacional para proteger la salud humana y el medio ambiente, así como la respuesta a contingencias químicas o petrolíferas significativas o emergencias que afecten la región fronteriza entre México y los Estados Unidos. Atendiendo este compromiso, dos versiones anteriores del PCC han sido revisadas y actualizadas, resaltando que el 17 de noviembre de 2017, en la Ciudad de México, la última actualización del PCC fue firmado por la Secretaría de Medio Ambiente y Recursos Naturales (SEMARNAT), a través de la Procuraduría Federal de Protección al Ambiente (PROFEPA), y por la Coordinación Nacional de Protección Civil de la Secretaría de Gobernación (SEGOB). Previamente, en representación de los Estados Unidos, la Oficina de Gestión de Emergencias (OEM) de la EPA firmó la actualización del PCC.

El PCC actualizado establece un sólido sistema de notificación binacional que ha sido reestructurado para reflejar las lecciones aprendidas de las emergencias reales y los simulacros de notificación. Los cambios al sistema de notificación fueron coordinados con el Centro Nacional de Respuesta (NRC) de los Estados Unidos, el Centro Nacional de Comunicaciones/Sistema Nacional de Protección Civil (CENACOM) de México y la PROFEPA, así como con las Oficinas Regionales 6 y 9 de la EPA. Expertos en normatividad de la Oficina del Asesor Jurídico General, la Oficina de Derecho Internacional y la Oficina de Asuntos Internacionales y Tribales de la EPA, así como del Departamento de Estado de los Estados Unidos realizaron revisiones exhaustivas a estos cambios.



Portada del Plan Conjunto de Contingencias.

La capacidad de planificar y prepararse binacionalmente mejora la probabilidad de responder adecuadamente a los incidentes y proteger el medio ambiente y a la población de la exposición a contaminantes dañinos y de posibles impactos ambientales o en la salud. Esta asociación binacional también está aumentando la capacidad de respuesta a emergencias mediante eventos de capacitación diseñados para mejorar la cooperación, fortalecer los planes de contingencia binacionales a nivel local, tribal, estatal, regional y nacional, así como para reducir los riesgos de emergencias y desastres en toda la región fronteriza.

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FOMENTANDO UNA GESTIÓN AMBIENTAL RESPONSABLE

La frontera entre México y los Estados Unidos es una región económica vibrante con un movimiento transfronterizo diario de una gran variedad de bienes de consumo y materiales peligrosos destinados a reciclaje o eliminación. Cuando no son manejados adecuadamente, los materiales peligrosos representan una amenaza inmediata para la salud ambiental transfronteriza. En respuesta, autoridades federales, estatales y locales de ambos países se asocian para vigilar los movimientos fronterizos en ambas direcciones, proporcionar asistencia para el cumplimiento de leyes y mejorar el acceso a la información sobre posibles fuentes industriales de sustancias tóxicas a través de actividades de capacitación y talleres. Estas acciones aumentan el cumplimiento transfronterizo de las normas vigentes, fomentan la gestión ambiental responsable y reducen los riesgos que plantean los desechos y materiales peligrosos.

Reforma Legislativa y Educación Ambiental en Nuevo Laredo

La Universidad Autónoma de Tamaulipas recibió financiamiento por parte del Programa Frontera 2020 para continuar educando a las comunidades fronterizas sobre los desafíos ambientales (en temas como: contaminación del agua, desechos sólidos urbanos, grasas, aceites) que persisten en esta región. El proyecto se enfocó en los siguientes objetivos:

Página de internet de la UAT con los documentos genéricos de las normas ambientales que pueden ser adaptadas por los Municipios de los estados de Tamaulipas y Nuevo León.

- Capacitar a estudiantes de escuelas públicas y a inspectores ambientales acerca de los retos ambientales más comunes en la localidad.
- Desarrollar propuestas para actualizar la legislación municipal de Nuevo Laredo.
- Crear una base de datos disponible en internet con toda la reglamentación ambiental de los municipios que componen la región fronteriza del estado de Tamaulipas.

El proyecto permitió la capacitación en temas de conservación ambiental para más de 2,300 estudiantes, 50 directores de escuelas públicas y 20 inspectores ambientales de la ciudad de Nuevo Laredo. Adicionalmente, el proyecto ayudó en el desarrollo y entrega a autoridades municipales de la propuesta de ley para el "Ordenamiento Ecológico Territorial del Municipio de Nuevo Laredo, Tamaulipas". Finalmente, los municipios de Ciudad Mier, Camargo, Jiménez y Jaumave, Tamaulipas, también adoptaron leyes de ordenamiento ecológico territorial que beneficiarán aproximadamente a 300,000 residentes.

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Los Inspectores de los Cruces Internacionales Protegen a las Comunidades Fronterizas

La aplicación de las normas de importación/exportación establecidas por la Ley de Conservación y Recuperación de Recursos de los Estados Unidos (RCRA, por sus siglas en inglés) protege la salud pública y el medio ambiente al proporcionar salvaguardias para prevenir el manejo inadecuado y derrame de residuos y materiales peligrosos. También reduce las actividades binacionales de empresas fraudulentas que implementan prácticas ilegales, creando una competencia comercial desleal. La EPA otorga financiamiento al Departamento de Sustancias Tóxicas de California (DTSC, por sus siglas en inglés), un socio del Programa Frontera 2020, para proteger la frontera entre México y los Estados Unidos.

Los inspectores del DTSC y del Condado de San Diego trabajan en estrecha colaboración con la Oficina de Aduanas y la Patrulla Fronteriza de los Estados Unidos (CBP, por sus siglas en inglés) para vigilar y garantizar el cumplimiento de las normas vigentes para garantizar que los materiales peligrosos y los productos de desecho se transporten de manera segura a través de los cruces fronterizos hacia sus destinos finales en ambos países. Estos inspectores, capacitados en el procedimiento HAZMAT, forman parte del equipo de respuesta de emergencia, una primera línea de defensa en caso de un derrame o accidente peligroso en el cruce fronterizo. Los inspectores del DTSC y del Condado de San Diego, a solicitud de CBP, también participan en operaciones especiales, como inspecciones de carga fuera de días y horas permitidas para transportar materiales peligrosos. Para reforzar el cumplimiento de las normas vigentes, México y los Estados Unidos brindan asistencia técnica y capacitación para facilitar que las industrias de ambos países comprendan los requisitos reglamentarios vigentes.

El 20 de junio de 2018, con fondos otorgados por el Programa Frontera 2020 y el programa RCRA, el DTSC organizó, en coordinación con la SEMARNAT, la PROFEPA y la Secretaría de Protección Ambiental del Estado de Baja California (SPA); un taller en la ciudad de Tijuana sobre las normas y requisitos para la importación/exportación, dirigido a las empresas e industrias mexicanas generadoras de residuos peligrosos y residuos especiales que operan en Baja California. El taller se centró en los requisitos para la importación/exportación incluyendo: transporte, el nuevo sistema electrónico de manifiesto y verificación, la definición de residuos y materiales peligrosos, así como resaltando las diferencias entre los requisitos federales

Asistentes al taller sobre requisitos para la importación/exportación celebrado en Tijuana.

y estatales. Asistieron casi 200 personas de los sectores industrial, gubernamental y académico, lo que demuestra la demanda que existe por este tipo de información y la voluntad de la industria en cumplir con las normas.

Con base en el último informe del Mecanismo Consultivo México-Estados Unidos, la SEMARNAT autorizó a 33 empresas mexicanas a tratar, almacenar o eliminar los desechos peligrosos generados por los cientos de negocios en la región fronteriza. Ofrecer este tipo de talleres de capacitación en Tijuana ayuda a la industria e informa a las partes interesadas clave sobre los requisitos para el cumplimiento de las regulaciones de los Estados Unidos ayudando, en última instancia, a proteger la salud pública y el medio ambiente.

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PROTEGIENDO LA SALUD AMBIENTAL

La salud ambiental se enfoca en analizar cómo el entorno natural y el ambiente construido afectan a la salud humana y cómo se pueden gestionar para mejorar la calidad de vida. Nuestras poblaciones más vulnerables, como los niños, los ancianos y las personas con problemas respiratorios, a menudo son las más afectadas por la combinación de la mala calidad del aire interior y exterior, el agua contaminada, los residuos no gestionados y otras condiciones ambientales. El Programa Frontera 2020 y sus Socios han apoyado conferencias binacionales de salud ambiental, actividades para la capacitación de capacitadores de promotoras (trabajadoras comunitarias de la salud), aplicaciones de mapeo interactivo para identificar retos ambientales así como la implementación de soluciones y estrategias de comunicación clave para mejorar la salud pública en la región fronteriza entre México y los Estados Unidos.

Trabajando en Equipo para Atender la Enfermedad de *Zika* en Brownsville

En 2016, el brote de *Zika* en los Estados Unidos surgió como una amenaza significativa para la población. En noviembre de ese año, la ciudad de Brownsville, Texas, informó sobre el primer caso del virus *Zika* transmitido por un mosquito en el estado. La ciudad trabajó en coordinación con el Centro para el Control de Enfermedades (CDC, por sus siglas en inglés), el Departamento Estatal de Servicios de Salud de Texas (TDSHS, por sus siglas en inglés), el Condado de Cameron y el Departamento de Salud de Brownsville para obtener más información sobre la transmisión y las precauciones que debe tomar la población.

En 2017, la EPA se asoció con el Departamento de Salud de Brownsville para identificar las áreas de riesgo y los factores que llevaron a la diseminación del mosquito *aedes aegypti*. El proyecto se desarrolló bajo un enfoque holístico para identificar las condiciones subyacentes que permiten la cría de mosquitos y cómo prevenirla. Gracias al análisis de los datos ambientales existentes junto con los datos socioeconómicos y la información disponible sobre este mosquito, fue posible crear un mapa de las áreas de riesgo dentro de la ciudad. A la fecha, la ciudad está utilizando una aplicación con una plataforma de colaboración abierta en la que los residentes puedan informar sitios potenciales para la reproducción de mosquitos y cargar fotos georreferenciadas. El sitio web también proporciona acciones recomendadas que las personas pueden implementar para combatir los riesgos que representan los mosquitos.

El Departamento de Salud de la ciudad de Brownsville también está trabajando con las Promotoras, que sirven como enlaces comunitarios públicos, para educar a los residentes a través de un modelo de "capacitación de capacitadores". El proyecto está en curso y los investigadores de la EPA presentaron sus hallazgos iniciales en una conferencia y recientemente publicaron los resultados.

> *"Combinamos datos ambientales (cobertura terrestre, precipitación y temperatura) con datos socioeconómicos y de la actividad de mosquitos con el fin de obtener una imagen más precisa del riesgo. Por lo que sabemos, este es el primer estudio de mitigación de vectores que tiene en cuenta tanto los datos de la cobertura terrestre de 1x1 metros como de los determinantes socioeconómicos."*
>
> **Dr. Pai-Yei Whung**
> **Líder del proyecto e**
> **Investigador Titular del la EPA**

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La EPA Trabaja con las Comunidades para Atender la Salud Ambiental Infantil

Jacobo Sandoval durante un evento comunitario de difusión en Nogales, Arizona.

> *"Las familias en Nogales, Arizona, están muy contentas con la evaluación de hogares saludables y especialmente con las alarmas de humo instaladas por el Instituto Sonora de Investigación Ambiental (SERI). Muchas familias mencionaron que en Nogales no existen muchos programas de salud ambiental infantil disponibles para las familias de bajos ingresos, y están agradecidas por la oportunidad de participar en el programa."*
>
> **Jacobo Sandoval**
> **Gerente del Programa SERI**

Según la Organización Mundial de la Salud, en el año 2012 se estimó que 1.7 millones de niños menores de cinco años murieron debido a factores ambientales. Los niños que viven en la región fronteriza entre México y los Estados Unidos son particularmente vulnerables debido a que la región tiene las tasas promedio más altas de niños que viven en la pobreza, no cuentan seguro médico y padecen de enfermedades crónicas (Organización Panamericana de la Salud, 2014).

En los últimos años, la asociación entre la Oficina de Salud Ambiental Infantil de la EPA, el Programa Frontera 2020, la sección estadounidense de la Comisión México-Estados Unidos de Salud Fronteriza, que depende del Departamento de Salud y Servicios Humanos de los Estados Unidos, y organizaciones civiles locales han trabajado en proyectos colaborativos para identificar las necesidades de salud y brindar oportunidades de acción

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local con el objetivo de mejorar las vidas de los niños que viven a lo largo de la frontera entre México y los Estados Unidos. Estas acciones incluyeron la organización de tres simposios de salud infantil desde el sur de Texas hasta California, así como subsidios federales para educar a las familias, a trabajadoras comunitarias de la salud, a maestros y a profesionales médicos sobre cómo abordar las necesidades de salud de los niños.

En el año 2018, la EPA otorgó más de $214 mil dólares para financiar cinco proyectos destinados a atender la salud ambiental de los niños en las comunidades fronterizas de Texas, Nuevo México y Arizona. Estos cinco proyectos abordaron temáticas de salud ambiental relacionadas con la pintura a base de plomo, la calidad del aire interior y el manejo integral de plagas.

Muchos de estos proyectos están estableciendo nuevas formas para mejorar los programas e iniciativas actuales de salud ambiental de las agencias que trabajan al interior de las comunidades ubicadas en la región fronteriza. Estos proyectos capacitarán a cerca de 350 especialistas, incluyendo a trabajadoras comunitarias de la salud, proveedores de cuidado infantil y médicos; e informarán a más de 2,000 miembros de las comunidades sobre temas de salud ambiental tales como: mejorar la calidad del aire interior, reducir la exposición a pintura a base de plomo e implementar estrategias integrales para el control de plagas. A través de estos proyectos, y el continuo liderazgo de las comunidades fronterizas, la salud ambiental de los niños continuará mejorando.

"Las enfermedades crónicas como el asma, padecimientos cardiovasculares y la diabetes están relacionadas con la contaminación del aire. Proporcionaremos educación sobre una variedad de riesgos ambientales a las Promotoras, a los padres de niños que asisten a primarias y secundarias así como a las mujeres embarazadas. Esta educación proporcionará a los participantes el conocimiento necesario para identificar los contaminantes interiores y exteriores, los químicos dañinos contenidos en los pesticidas utilizados en el hogar y cómo pueden cambiarlos o controlarlos sin exponer a sus hijos a sus efectos nocivos."

Dra. Genny Carrillo
Escuela de Salud Pública
Universidad de Texas A&M

"El Centro de Salud Comunitario Mariposa se complace en haber recibido este financiamiento. Proteger a nuestros hijos garantizando un entorno de vida saludable es esencial para su salud y bienestar a largo plazo. Estos fondos proporcionarán capacitación para trabajadoras comunitarias de la salud a lo largo de la frontera entre México y los Estados Unidos con el objetivo de ayudarlos a identificar contaminantes ambientales, así como capacitar a las mamás y papás en los métodos apropiados para reducir o eliminar la exposición a estos contaminantes dentro de sus hogares."

Ed Sicurello
Director Ejecutivo
Centro de Salud Comunitario Mariposa

"El Centro del Suroeste para la Salud Ambiental Pediátrica se complace en enterarse de que se nos ha otorgado este financiamiento. Servirá para aumentar la atención de los niños desfavorecidos en la región fronteriza entre El Paso y Brownsville. Trabajando desde el Centro de Ciencias de la Salud de la Universidad Texas Tech en El Paso, nos hemos asociado con colegas de la Facultad de Medicina de la Universidad de Texas en el Valle del Río Bravo para ampliar nuestra zona de trabajo. Los fondos se destinarán a la organización de dos talleres y el desarrollo de guías de capacitación para la Promotoras. Asimismo, apoyará el desarrollo de módulos de enseñanza electrónicos que serán utilizados en la materia optativa para estudiantes de medicina sobre salud ambiental pediátrica de estas universidades."

Director Stephen Borron, M.D.
Centro del Suroeste para la
Salud Ambiental pediátrica

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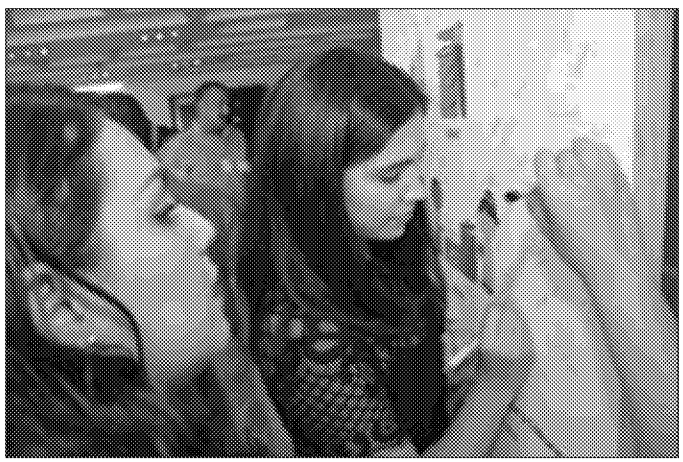
Atendiendo la Amenaza del *Zika* en la Frontera

Además de los ecosistemas compartidos por México y los Estados Unidos en la región fronteriza, el Programa Frontera 2020 también reconoce que "[el] movimiento de personas y productos entre los dos países crea un ambiente binacional único para prevenir y controlar enfermedades propagadas a través de alimentos y agua, de insectos o animales, y entre personas" (Centro para el Control de Enfermedades, 2018). En respuesta a estos riesgos, el Programa ha apoyado los esfuerzos para aumentar la concienciación y proporcionar capacitación sobre el uso del manejo integrado de plagas, así como para prevenir la propagación de enfermedades transmitidas por vectores, como el *Zika* que es transmitido por mosquitos.

En el otoño de 2016, dos conferencias binacionales de salud ambiental sobre enfermedades transmitidas por vectores se llevaron a cabo en Mexicali, Baja California, y Nogales, Sonora. Participaron la Universidad Autónoma de Baja California (UABC), el Instituto Técnico de Nogales (ITN), El Colegio de la Frontera Norte (COLEF), el Centro para el Control de Enfermedades (CDC, por sus siglas en inglés) de los Estados Unidos y su contraparte mexicana, El Centro Nacional de Programas Preventivos y Control de Enfermedades (CENAPRECE), entre otros. Asistieron más de 360 personas, entre los que se encontraban estudiantes de medicina, profesores, profesionales de la salud, funcionarios gubernamentales y 30 expertos en enfermedades transmitidas por vectores. Los temas clave incluyeron: medidas preventivas para combatir el *Zika* y otras enfermedades transmitidas por vectores, estrategias integradas para el control de plagas y el uso apropiado de repelentes de insectos.



Participantes de una de las conferencias se comprometen a eliminar las fuentes de vectores manteniendo sus hogares y el medio ambiente limpios y libres de basura y agua estancada.

En 2017, para confirmar el impacto a largo plazo de los eventos, los organizadores y anfitriones de las conferencias (UABC e ITN) contactaron a los asistentes y llevaron a cabo una evaluación, aprendiendo tres conclusiones clave:

- Después de su participación en las conferencias, tres de cada cuatro encuestados compartieron la información ambiental y de salud pública que aprendieron con sus conocidos.
- Más de la mitad de los encuestados informaron que ahora leen la etiqueta de los productos antes de usar repelentes de insectos.
- De importancia crítica, casi la mitad de los asistentes han comenzado a vaciar el agua estancada en macetas para eliminar los huevos de los mosquitos, lo que reduce sus hábitats de reproducción.

De acuerdo con los resultados de esta evaluación, es posible afirmar que las conferencias aumentaron el conocimiento y el comportamiento de los asistentes. Para obtener más información sobre estos eventos, visite la página de internet del Programa Frontera 2020 de la EPA.

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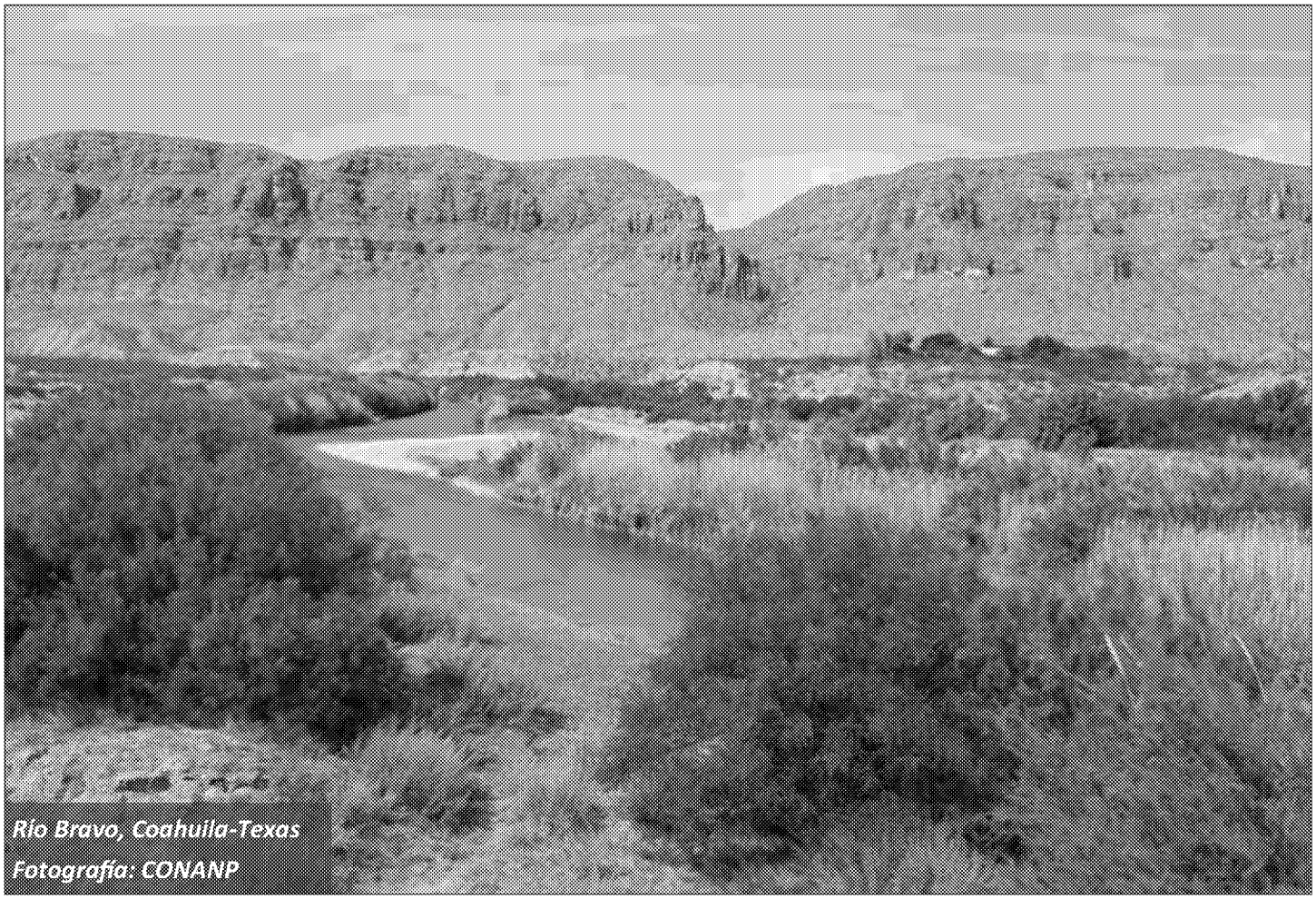
MISSION STATEMENT

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.



Río Bravo, Coahuila-Texas
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