Border Environment Cooperation Commission
Comisión de Cooperación Ecológica Fronteriza

Southeast Arizona Citizens Forum

Arizona and Sonora

Projects Status

Rio Rico, Arizona
January 12, 2012

1994
2009

US-Mexico Border Environment Cooperation

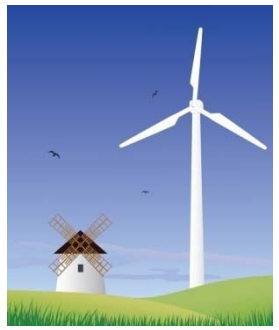
Agreement Signed in October 1993 .
Side Agreement to NAFTA

Border Environment Cooperation Commission (BECC)

North American Development Bank (NADB)

*"Preserve, protect, and enhance US-MEX border region by identifying, developing, implementing and overseeing **environmental infrastructure projects**"*

A project that will "prevent, control or reduce environmental pollutants or contaminants, improve the drinking water supply, or protect flora and fauna so as to improve human health, promote sustainable development, or contribute to a higher quality of life"



Projects certified by BECC are financed by the NADB or other institutions

Board of Directors

A unique and innovating structure among binational organisms, where the civil society is represented within its Board of Directors.

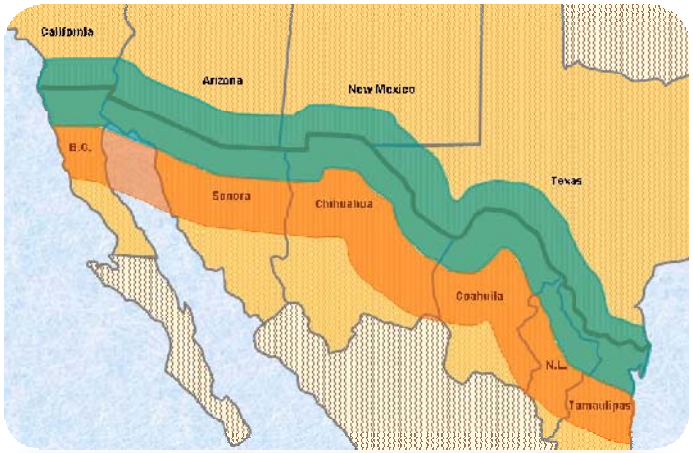
Representative of the border states

Public member who is resident of the border region

Representative of The border states

Public member who is resident of the border region

Mandate Scope



Jurisdiction

100 km north and 300 km south of the international boundary

Projects beyond these areas may be eligible if they remedy a cross-border environmental or health problem.

BASIC SECTORS

- Water
- Sewer systems
- Wastewater treatment
- Water Reuse
- Storm Water Systems
- Solid Waste

EXPANDED SECTORS

- Water Conservation
- Air Quality
- Public Transportation
- Clean and Efficient Energy
- Hazardous Waste
- Solid Waste Reduction& Recycling
- Municipal Planning

BECC/NADB Program Overview

Water
Wastewater
Air Quality
Solid Waste
Energy

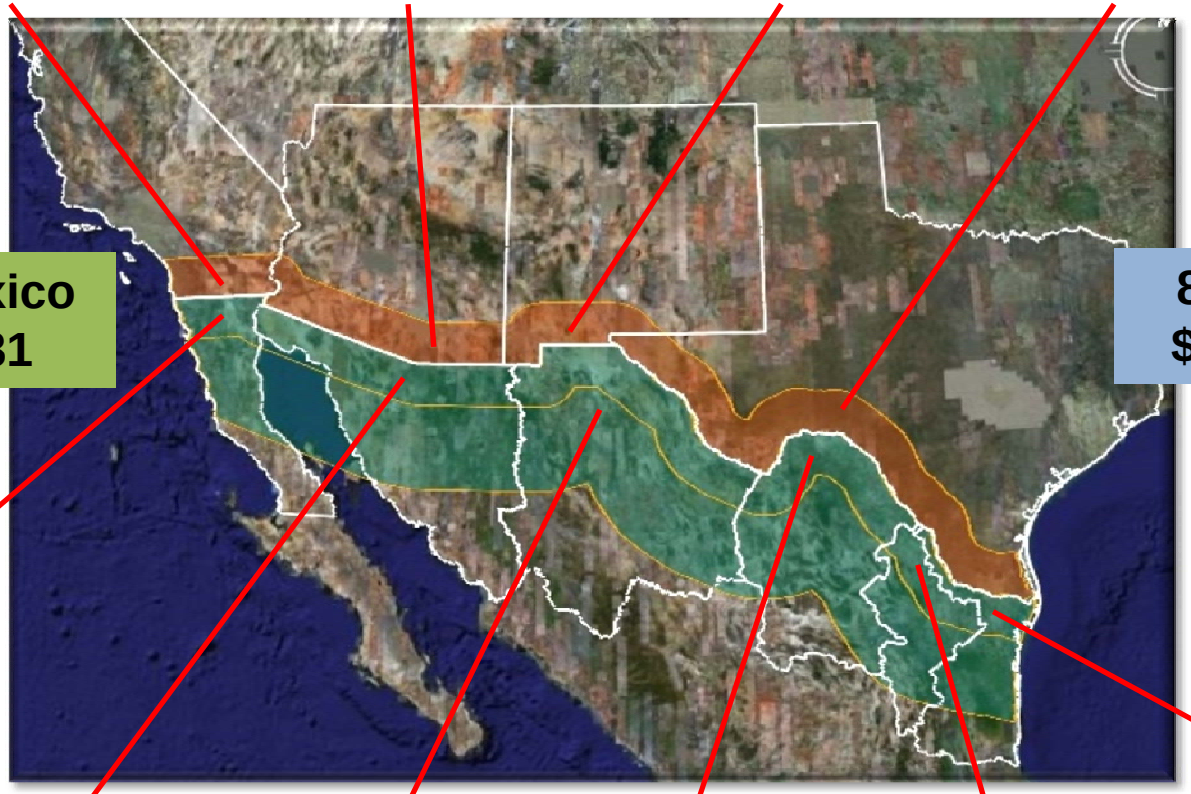
- US-Mexico Border Program (EPA-funded Program for PDAP and BEIF): Water and Wastewater Projects
- Border 2012 and Special Grants (EPA-funded Program): Address Border 2012 objectives
- Solid Waste Environmental Program: NADB grant program for municipal solid waste projects.
- NADB's Loan Programs for construction applicable to water, wastewater, solid waste, air quality, and energy. Includes Bank's role as financial & institutional advisor and as investment banker
- Technical Assistance Programs for all sectors BECC and NADB provide grant assistance to project sponsors for institutional strengthening and project development studies.
- Institutional Capacity Building: BECC and NADB provide training to project sponsors for institutional strengthening through Sector workshops and Utility Management Institute.

BECC Overview

CERTIFIED PROJECTS	189	US 86 / MX 103
TOTAL INVESTMENT (BD)	$4.34	
POPULATION BENEFITED (M)	14.0	
NADB FINANCED PROJECTS*	148	
NADB FINANCING* (BD)	$1.53	US 35% / MX 65%

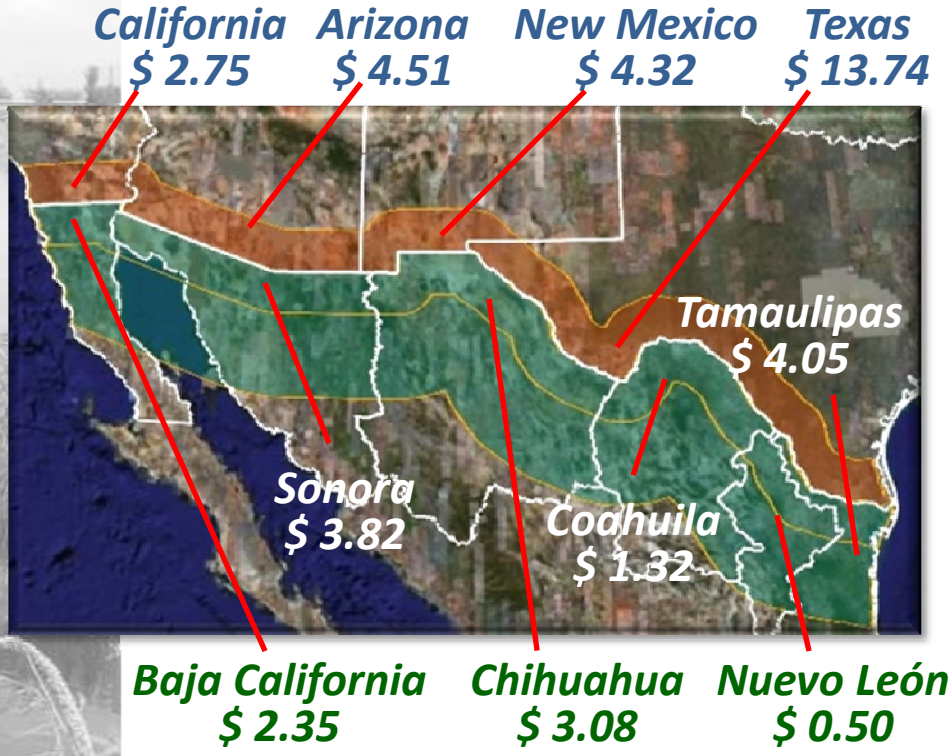
*Only contracted agreements are included, not total approvals.

Certified Projects (US$M)



189 Projects with a total estimated cost of US $ 4,343 billion

Technical Assistance and Training



Technical Assistance

- 72 Communities in Mexico – US$15.12 million
- 88 Communities in U.S. – US$25.32 million
- 2010 PDAP/BECC Technical Assistance = US$1.58 million (45 projects, 32% BECC TA)
- 1995-2011 PDAP/BECC Technical Assistance = US$40.19 million

2010 Training	Attendees	Investment
7 events	722	US$127,000
M2M (2), PEAC (2), Carbon Markets, Energy Forum, Paving		

Methane to Markets, State Climate Action Planning, Carbon Markets and Energy events supported with EPA funds

Measuring Results:

Social and Environmental Benefits

88 Water and Wastewater:
Providing improved drinking water treatment/distribution as well as wastewater collection/ treatment for the benefit of more than 12 million border residents, most significantly impacted by new capacity to eliminate 400MGD of untreated or inadequately treated sewage.

25 Water Conservation:
Estimated annual water savings of 330 million gallons per day. As a comparison, this quantity is sufficient to serve the average drinking water demands of 4 million people.

17 Solid Waste Management:
2.9 million residents with improved waste collection and disposal services, resulting in the capacity to properly dispose of 1,550 tons of waste per day.

12 Air Quality Projects:
8 million residents benefited from reduced exposure to air pollution from vehicular traffic on unpaved streets. Approximately 100,000 tons per year of PM_{10} anticipated to be eliminated.

3 Energy:
Offset demands of traditional fossil-fuel based energy production, avoiding nearly 640,000 metric tons of CO2-e per year.

Need Investment Results

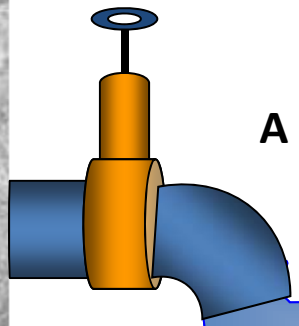
19 Drinking WTP and 32 Drinking Water Distribution Systems

52 WWTP and 70 Wastewater Collection Systems

16 Landfills built or expanded and 16 Dumpsites closed

>26,964,000 Square Meters Paved

Economic and Socio-Economic Impact in US Border Communities



Infrastructure and Well-being

A MILLION DOLLARS INVESTED IN WATER AND WASTEWATER INFRASTRUCTURE OVER 10-YEARS RESULTS IN:

- $11.1 million in private sector investment
- 221 new jobs created
- $1.7 million in tax revenue
- $52.2 million in goods produced by the private sector

Pipeline

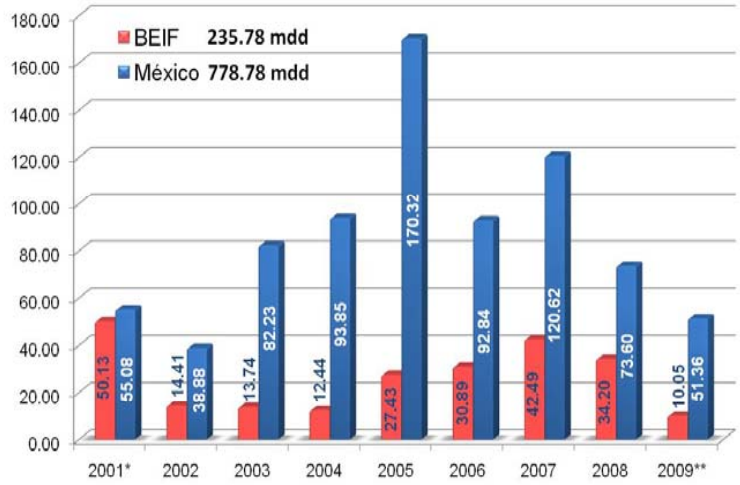
State	Number of Projects in BECC's Pipeline (January -2012)						Est. Cost (MD)
	Solid Waste	Air Quality	Clean Energy	Water /Wastewater		TOTAL	
				Non-BEIF	BEIF		
California	0	0	1	0	4	5	**$11.99**
Arizona	0	0	2	0	5	7	**$32.92**
New México	0	0	0	0	1	1	**$16.62**
Texas	2	0	0	0	9	11	**$67.12**
Total US	**2**	**0**	**3**	**0**	**19**	**24**	**$128.65**
Baja California	0	2	1	2	2	7	**$158.91**
Sonora	0	3	0	1	2	6	**$364.57**
Chihuahua	0	2	0	0	2	4	**$259.31**
Coahuila	0	0	0	0	0	0	**$0.00**
Nuevo León	0	1	0	0	0	1	**$131.00**
Tamaulipas	1	1	1	0	11	14	**$155.55**
Total MX	**1**	**9**	**2**	**3**	**17**	**32**	**$1,069.34**
Total Projects	**3**	**9**	**5**	**3**	**36**	**56**	
						$1,197.99	

US-Mexico Border Program

Program Accomplishments

- More than $33 million in PDAP technical assistance grants and $556.2 million in BEIF, funds have been committed to drinking water and wastewater infrastructure projects valued at $1.7 billion and directly benefiting 8.42 million border residents.
- Leveraging strength of more than $2.00 of other sources to every $1.00 BEIF has been achieved by the funding projects.
- The capacity to eliminate > 350 mgd of untreated or inadequately treated ww discharges, equivalent to the ww discharge of 1.86 M households, has been developed with the support of this program.

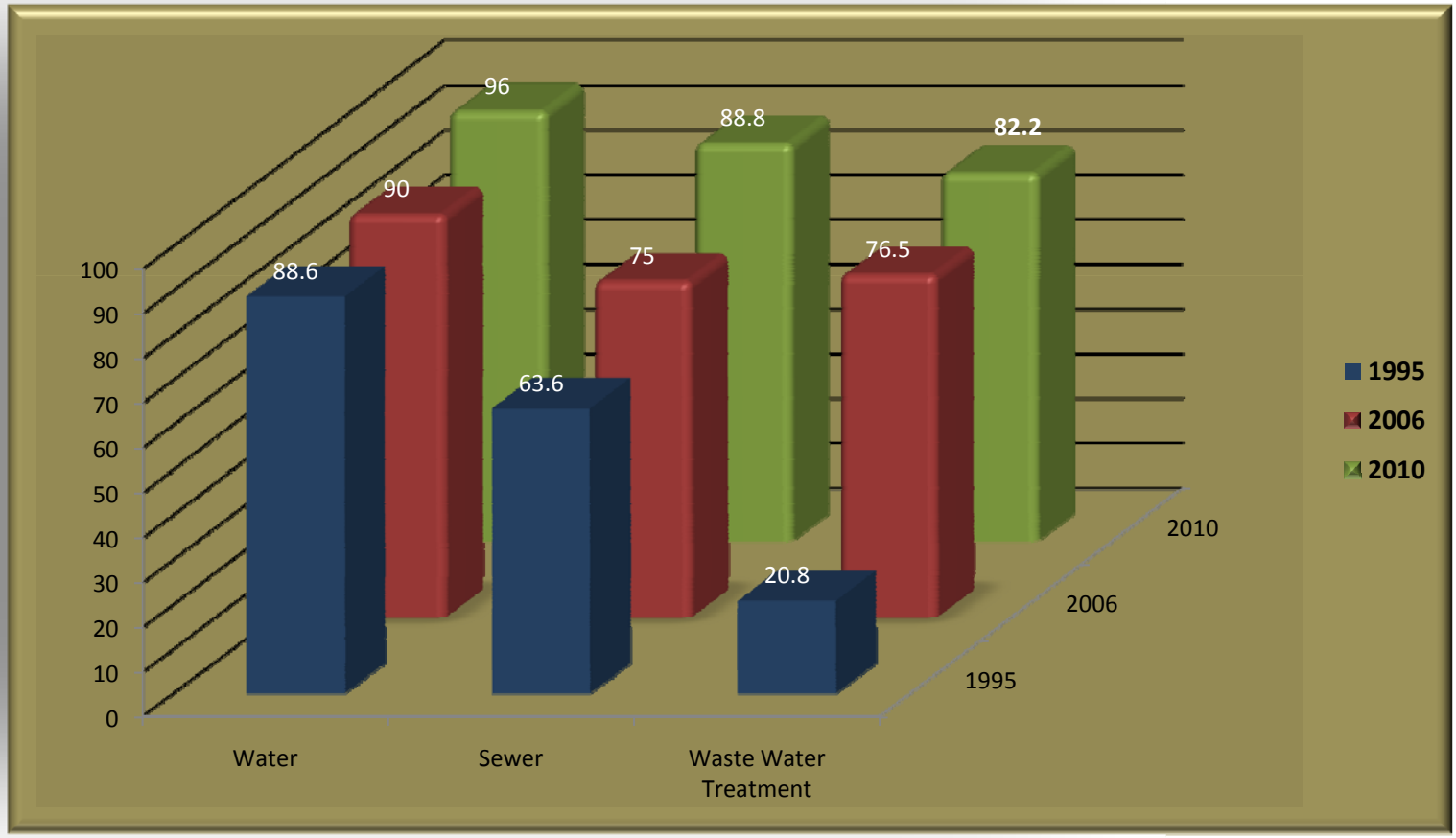
PDAP/BEIF Investments			
	Total	US	Mexico
Water Treatment	18	15	3
Water Distribution	28	18	10
Wastewater Treatment	52	21	31
Wastewater Collection	69	28	41



* *Incluye inversiones anteriores a 2001*

** *Información Preliminar*

Service Coverage in Mexico 100 km Border Region 1995-2010



Wastewater treatment coverage in Mexico's border region has increased from 21% to 82% (1995-2010), whereas Mexico's national average wastewater treatment coverage is less than 40%.

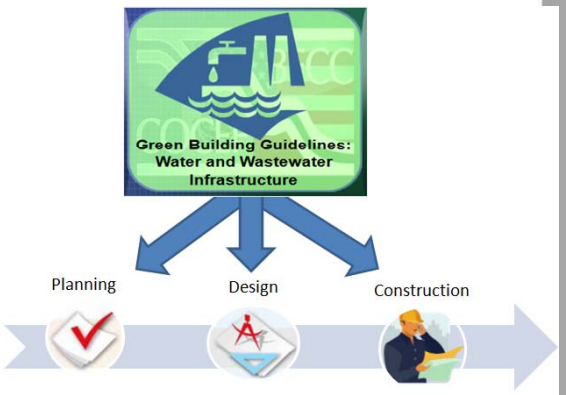
Meeting the Challenge

- **Sufficient Investment in Planning**
  - Identify Funding Sources
    - US-Mexico Border Water Infrastructure Program - PDAP
    - Green Building Guidelines
    - Transportation and energy efficiencies
  - Inspiring Community Participation / Education Outreach
- **Local Initiatives and Partnerships**
  - Capacity Building at all levels – “Best Practices”
  - Water and Energy Audits / Benchmarking
  - Enhanced Rate Structures
- **Policy Consideration**
  - Funding Source Prioritization Schemes
    - US-Mexico Border Water Infrastructure Program - BEIF/PDAP
    - State Revolving Fund – Capitalization Policies
    - Border 2012
  - Binational Agreements - Water Management Planning

Advancing Sustainability

FOCUS: Water Infrastructure Strategies

- Infrastructure Planning
  - Green Building Guidelines
- Water Management:
  - Demand Management
  - Conservation Practices
  - Financial Sustainability
- Energy Management:
  - Water Demand Reduction
  - Capacity Strengthening
  - Clean and Renewable Energy



Potential Impact: Improved Resource Management, Reduced Operational Costs, Reduced Greenhouse Gases

Energy Management

Conservation and Efficiency

- **Demand Reduction**
  - Water Resource Management
- **Capacity Strengthening**
  - Energy Audits
  - Facility and Process Lighting
  - Equipment Replacement
  - Load Management / SMART software
- **Clean and Renewable Energy:**
  - Wind, Solar
  - Biomass

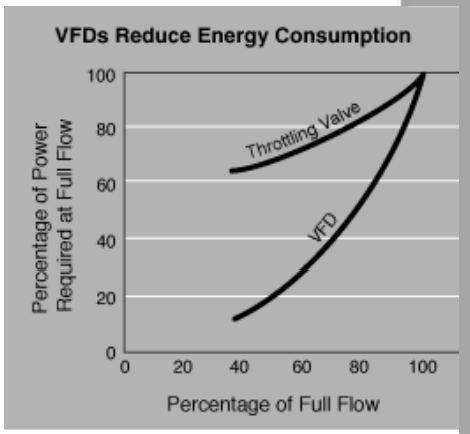
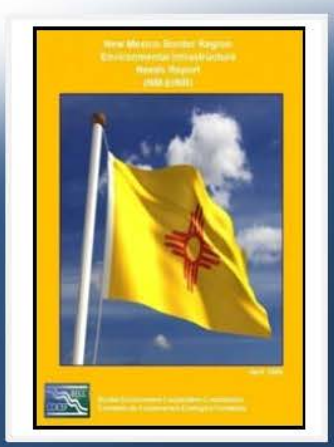
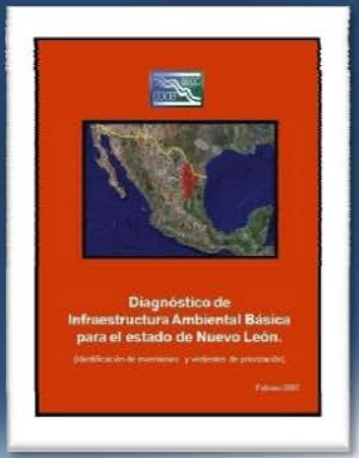


Figure 1. Energy consumption of VFDs and throttling valves.

Environmental Infrastructure Needs Assessment





Pipeline Arizona

Prj. ID	Project Name	Cost (MD)	Benefited Population
642	Community of Tintown, City of Bisbee, AZ - Wastewater Collection system	$1.38	112
730	Pirtleville and Bay Acres Colonias, Sanitary Sewer Improvements Project	$5.88	TBD
761	Drinking Water Quality Improvement (Arsenic Removal) in Pomenere, AZ	$0.62	375
759	Wastewater Collection System Extension to Sulger Subdivision in Sierra Vista, AZ	$3.12	390
757	Wastewater Treatment Plant Improvements in Willcox, AZ	$7.20	3,900
763	AstroSol Solar Tech Park	$14.72	2,800

Arizona Certified Projects

Prj. ID	Updated Project Name	Cost (MD)	Benefited Population
14	Douglas, Arizona - Wastewater Treatment Plant	$2.00	14,000
23	Somerton, Arizona - Wastewater	$2.72	7,000
67	Bisbee, Arizona - Wastewater	$30.07	6,500
126	Patagonia, Arizona - Wastewater	$2.39	945
217	Douglas, Arizona - Water and Wastewater	$8.47	14,000
225	Somerton, Arizona - Water	$3.44	7,000
283	Somerton, Arizona - Wastewater	$7.88	7,000
292	Nogales, Arizona - Wastewater	$74.10	22,000
294	Nogales, Arizona - Water	$0.98	22,000
295	Solid Waste Landfill Project in Patagonia, AZ	$0.66	1,265
368	Gadsden, Arizona - Wastewater	$5.47	1,000
421	Yuma, Arizona - Water Conservation	$6.16	46,000
423	Yuma, Arizona - Water Conservation	$1.77	46,000
488	Yuma County - Construction of a Wastewater Collection System.	$22.00	6,149
734	FRV Tucson 20 MW Solar Photovoltaic Park Project	TBD	21,500

Pipeline Sonora

Prj. ID	Project Name	Cost (MD)	Benefited Population
675	Naco - Wastewater Treatment Improvement	0.87	5,200
676	Naco- Drinking water distribution improvement (Storage Capacity)	0.18	2,400
729	Drinking Water Project, Located at Hermosillo	312	TBD
753	Basic infraestructure project in Nogales,Son.	49.52	27,365
10377	Drinking Water Distribution and Wastewater Collection Expansion and Construction of a Wastewater Treatment Plant for Agua Prieta, SONSonora.	6.66	11,712
10379	Drinking Water Distribution and Wastewater Collection Expansion to Topahue I and Topahue II, in San Luis Rio Colorado, SON	2.8	16,000
10380	Drinking Water Distribution and Wastewater Collection Expansion to Southwest area of Nogales, SON	12.42	34,560

Sonora Certified Projects

Prj. ID	Project Name	Cost (MD)	Benefited Population
10	Integral Project for Water, Sewage and Wastewater Treatment of Naco, Sonora.	2.07	6,108
32	Construction of a Wastewater Treatment Plant and Rehabilitation of the Wastewater Collection System San Luis Río Colorado, Sonora.	16.74	161,795
35	Comprehensive Municipal Solid Waste Collection and Final Disposal Project for Agua Prieta, Son.	1.91	60,236
47	Water Supply and Distribution Project (Phase I) Nogales, Sonora	27.01	213,976
56	Comprehensive Project for Collection and Final Disposal of Municipal Solid Waste, Puerto Peñasco, Sonora.	2.18	33,115
160	Construction of Landfill in San Luis Rio Colorado, Son.	4.01	161,795
206	Nogales, Sonora - Wastewater.	11.09	213,976
233	Construction of Wastewater Collection and Treatment System, in Sásabe, Son.	0.94	1393
349	Municipal Solid Waste Project for Naco, Son.	0.6	6,000
351	Reduction of Suspended Air Particles thorough a pavement Project in Agua Prieta, Son.	17	80,000
453	Project for Air Quality Improvement through Street Paving in Nogales, Sonora.	17.08	213,976
459	San Luis Rio Colorado, Sonora - Air Quality	10.92	160,000
462	Puerto Peñasco, Sonora Paving project	4.55	40,000
469	Sonoyta, Sonora - Air Quality	2.18	13,000

Sonora Certified Projects

Prj. ID	Project Name	Cost (MD)	Benefited Population
485	San Luis Rio Colorado, Sonora - Comprehensive Sewer and Wastewater Project.	15.19	160,000
492	Agua Prieta, Sonora - Improvement of the Water and Wastewater SYstems.	0.65	80,000
510	Sonoyta, Son - Wastewater Treatment Plant and Sewage System Expansion and Improvements	2.61	11,278
553	Nogales, Sonora - Improvements to the Solid Waste System.	2.83	213,976
555	Naco, Sonora - Paving Project	0.91	6,108
573	Wastewater Collection System Expansion to Unserved Areas (Phase III) of San Luis Rio Colorado, Sonora	6.99	55,129
574	San Luis Rio Colorado, Sonora - International Commercial Port.	15.39	180,886
601	'Los Alisos' Wastewater Treatment and Conveyance Project in Nogales, Sonora	19.308	70,000
621	Nogales, Sonora - Improvements to the Solid Waste System.	2.97	213,976
710	Paving Project for 58 Munic. in Sonora	190.26	1,464,302
723	Air Quality Improvements through Street Paving in Agua Prieta, Sonora	29.64	70,000
726	Wastewater Treatment Plant Project for the City of Hermosillo, Sonora.	86.15	785,082
731	Air Quality Improvements through Street Paving in Hermosillio, Sonora	68.25	154,000

"Los Alisos" Wastewater Treatment and Conveyance Project in Nogales, Sonora

Project Description

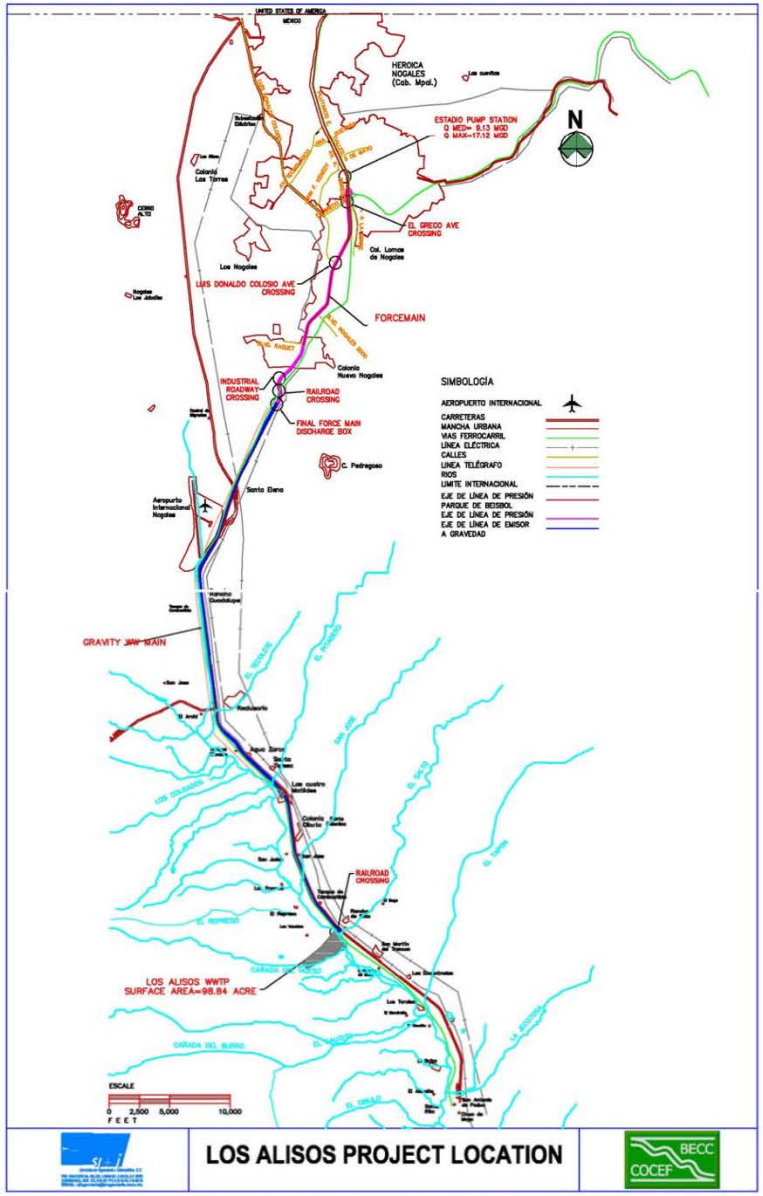
Wastewater Collection:

- Construction of one Lift Station "Estadio"
- Construction of 4.49 miles (7.19 km) of 30 inch (76 cm) diameter force main.
- Construction of 10.15 miles (16.25 km) of 24-inch (61 cm) diameter gravity outfall.

Wastewater Treatment:

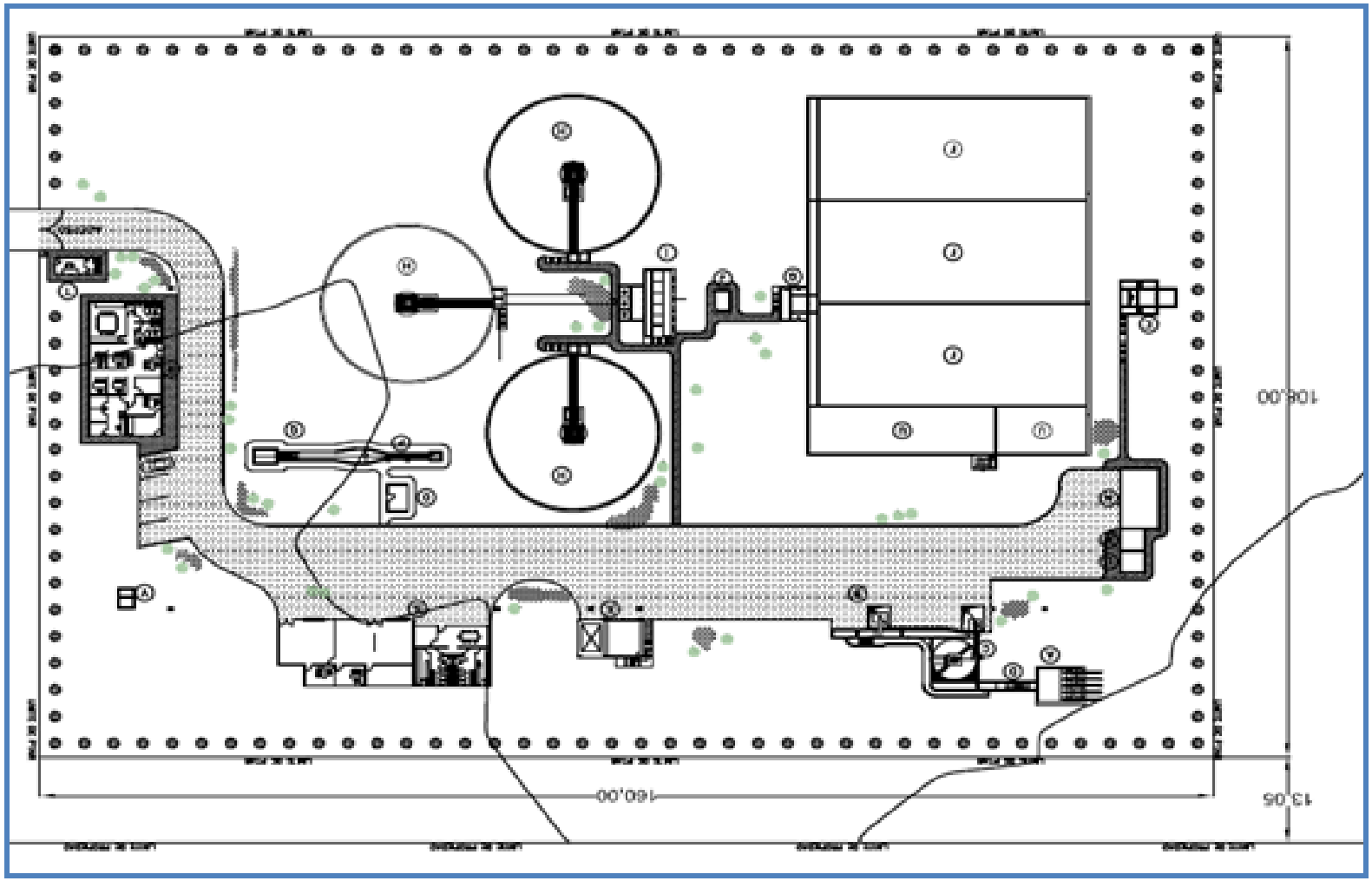
- Construction of a new WWTP with 5 MGD (220 lps) initial capacity composed of two treatment modules, each with 2.5 MGD (110 lps) capacity. The WWTP includes screening, grit separator, secondary treatment and disinfection; as well as sludge digestion, thickening and dewatering.
- Population Served: 70,000 inhabitants
- Number of Connections: 20,308
- Project Cost: $19,308,864 dollars

“Los Alisos” Wastewater Treatment and Conveyance Project in Nogales, Sonora



“Los Alisos” Wastewater Treatment and Conveyance Project in Nogales, Sonora

Los Alisos Wastewater Treatment Plant Layout



“Los Alisos” Wastewater Treatment and Conveyance Project in Nogales, Sonora

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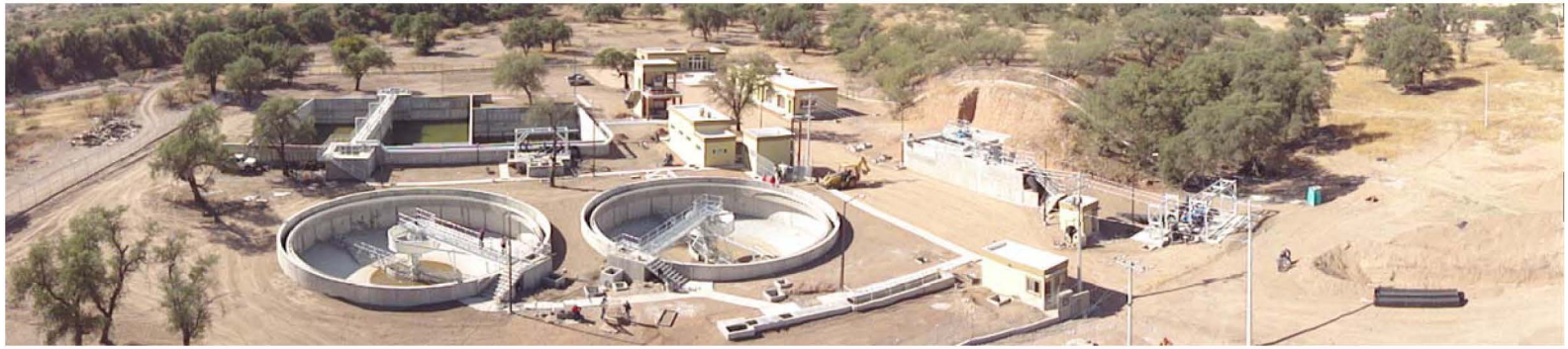


Photovoltaic Project "WWTP Los Alisos"

A photovoltaic project will be constructed to provide electricity to the "Los Alisos" Wastewater Treatment Plant in Nogales, Sonora. The project will be financed with the USEPA and the Mexican Government funds (federal, state and municipal).

An alternative analysis was developed in order to select the type and arrangement of photovoltaic panels according to the site characteristics, with less area requirement, lowest capital investment and operation/maintenance cost.

It considered three alternatives.

- Fixed panels, tilt 25°
- Mobile panels on one axis, horizontal
- Mobile panels on one axis, tilt 20°

The selected alternative was the fixed panels, tilt 25°, which could fit in the available land (3.7 acres, 1.5 hectares), with the lowest capital investment and o/m costs. These panels are also easier to maintain.

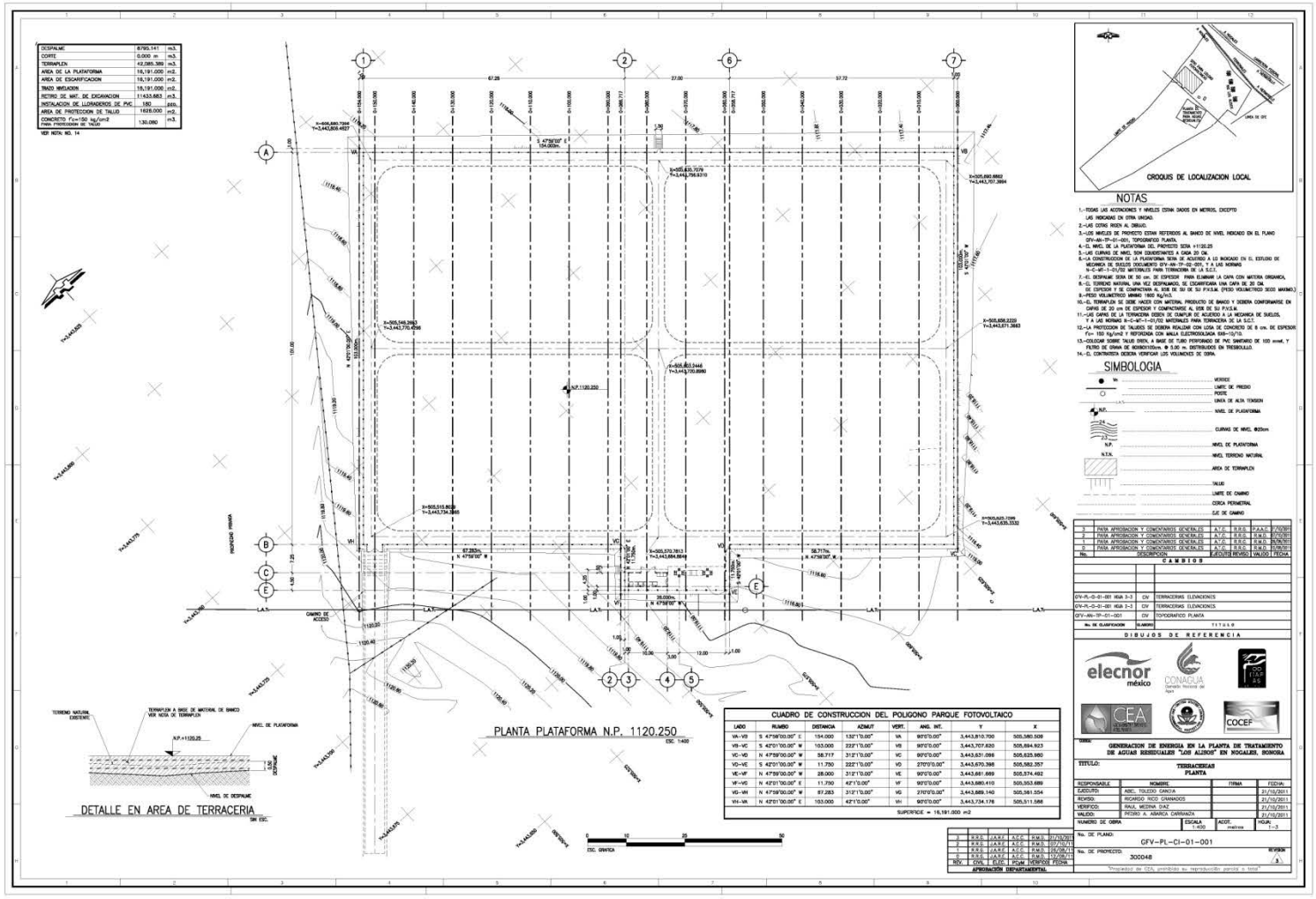
Photovoltaic Project "WWTP Los Alisos"

Currently the detailed engineering and procurement package is under development.

According to SOW required specifications the most important project characteristics are:

- Two inverters (500 KW each, 20 year guarantee, UL certified).
- No batteries.
- Solar Panels with a minimum 17% output efficiency (25 year guarantee, UL certified).
- Two transformers between inverters and the Grid connection.
- Bidirectional meter.
- CFE/CRE considers a Virtual Energy Bank one to one.
- International procurement process.
- CEA will be responsible for the procurement process.

Photovoltaic Project “WWTP Los Alisos”



Photovoltaic Project “WWTP Los Alisos”

BECC's 4 Pillars

- **Consolidated BECC's programs into 4 pillars and a transversal program of General Support**
  - **Pillar 1: Project Certification** to access NADB funding to implement environmental infrastructure projects that will enhance quality of life
  - **Pillar 2: Technical Assistance through Grants or Technical Expertise** for the development of environmental infrastructure projects and initiatives that could access NADB funding, Border 2012 or other special grants
  - **Pillar 3: Collaboration with other Stakeholders** - institutional relationships with Border stakeholders, including federal, state and local agencies, international organizations, academia, private sector and civil society
  - **Pillar 4: Institutional Capacity Building through Information & Training** Strengthen institutional capacities by generating information such as studies, reports and assessments, and providing training (seminars, workshops, etc.)
- **Transversal Program:** General support and performance improvement, to facilitate the work conducted under all pillars

Advancing the BECC/NADB Mandate

- Water/Wastewater Projects through the US Mexico Border Program
- Solid Waste Management Projects
- Air Quality Improvement Projects such as Paving and Ports of Entry
- Global Climate Change Initiatives
  - ❖ Climate Action Planning
  - ❖ Energy Source study for Mexican States
  - ❖ Bio Fuels Projects
  - ❖ Methane to Market Projects
  - ❖ Clean and Efficient Energy Projects
  - ❖ Training on Climate Change Activities
- Border 2012
- Environmental Infrastructure Strategic Planning
- Institutional Capacity Building

1994

2011

Border Environment Cooperation Commission
Comisión de Cooperación Ecológica Fronteriza

Thank You.

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1994
2009